

Chapter 4

Investment in the Brazilian food and agriculture system

This chapter presents an overview of Brazilian regulations that govern entrepreneurship, access to natural resources, products, and processes and the extent to which they affect the adoption of innovative practices and the introduction of new products. It also discusses Brazilian policies related to trade, investment, finance and taxation and their impact on the capacity of farms and agri-food firms to invest and take advantage of market opportunities.

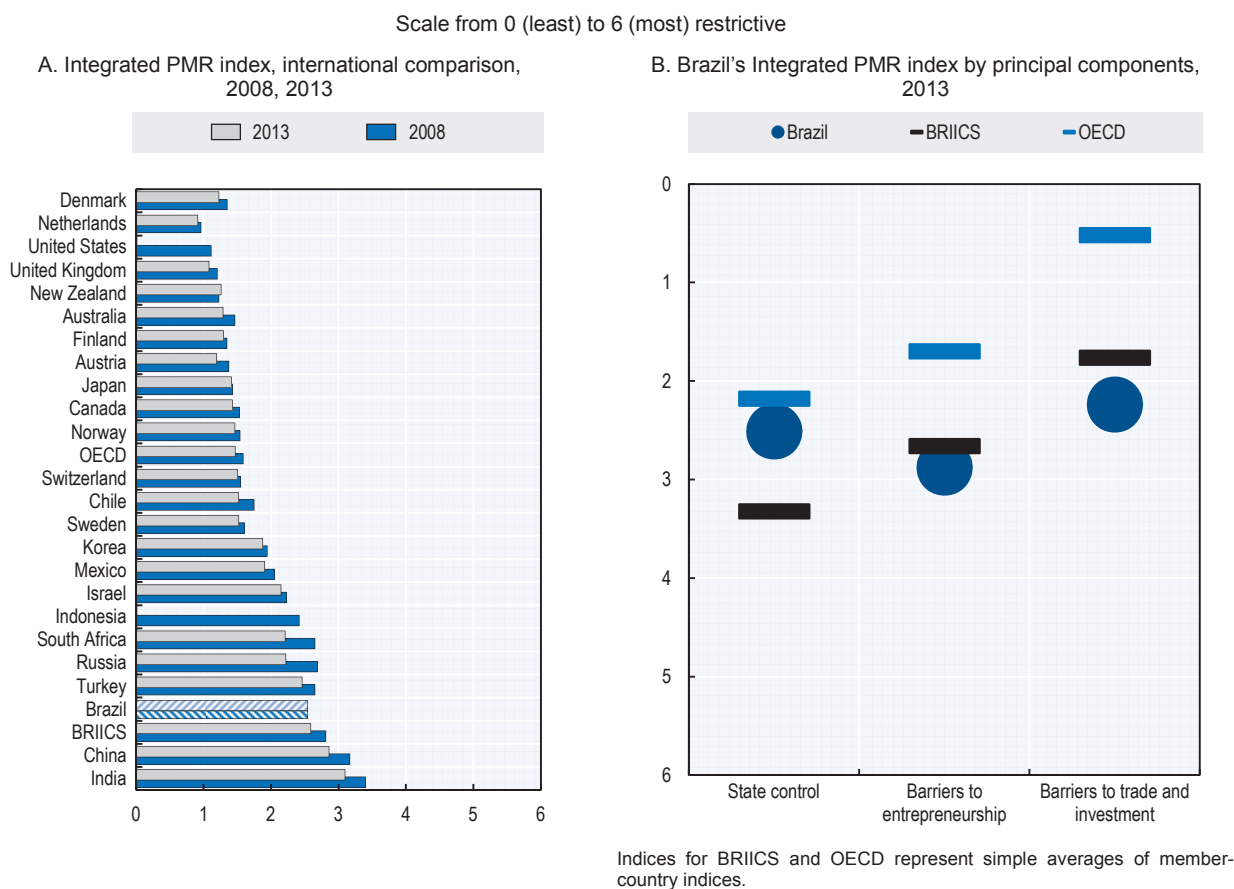
The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Regulatory environment

Regulations affect innovation through many links and may increase or impede knowledge advancement and technology transfer. Regulations influence the size and behaviour of firms, the ease of entry into and exit from markets, they set standards and impose administrative burden on doing business – all of these factors determine the costs and risks for businesses to innovate.

A broadly recognised link between regulations and innovation is that they determine conditions for competition, and thus incentives for companies to increase productivity. Empirical evidence shows that competition-restraining regulations slow the rate of catch-up with the technological frontier, where labour productivity is the highest (OECD, 2007, based on Conway et al., 2006). Low barriers to enter the markets favour innovation as new companies tend to exploit technological or commercial opportunities which have been neglected by more established companies. While entry and growth of new firms is important, so is their ability to exit (OECD, 2010a). There is also evidence that good product market regulation is associated with increased inflows of foreign direct investment and thus technology spill-overs (OECD, 2011; Nicoletti et al., 2003).

Figure 4.1. OECD's Integrated Product Market Regulation (PMR) indicato. 2008 and 2013



Source: OECD (2014), *OECD Product Market Regulation Database*, www.oecd.org/economy/pmr.

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The OECD Product Market Regulation (PMR) indicators measure the degree to which countries' regulatory framework promotes or inhibits competition in the product markets. They cover key regulations in the areas of state control, barriers to entrepreneurship, and barriers to trade and investment and quantify them as an entirety and according to specific dimensions. The integrated PMR indicator indicates that on a scale from 0 (least) to 6 (most) restrictive regulation, Brazil scores more restrictive on aggregate than OECD and other BRIICS countries (except China and India), with barriers to trade and entrepreneurship representing the most important constraints (Figure 4.1).

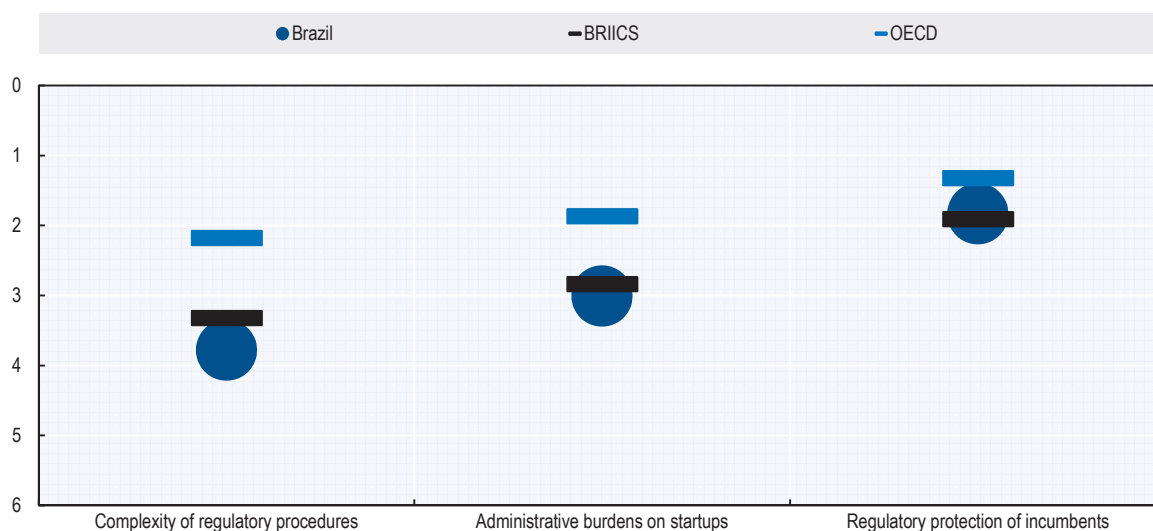
Entrepreneurship regulations

A dynamic business is a key source and channel for innovation. Regulatory barriers to entrepreneurship form the environment for dynamic business as they determine the ease of entry into business and exit from it, the number and complexity of regulations, the time that businesses spend to comply with these regulations, as well as regulatory protection of incumbents (Figure 4.2). Of these different dimensions, complexity of regulations is constraining and administrative burdens on start-ups are estimated to be quite high in Brazil, particularly as they apply to sole proprietor firms, although constraints to sole proprietor start-ups are less in Brazil than in India, China, Mexico or Chile.

Regulations translate into direct and indirect costs of doing business. The World Bank's *Doing Business* survey evaluates procedures required to start a business, obtain various permits, register, get credit, pay taxes, and trade across-borders. In 2012, Brazil ranked 116th among the 189 surveyed economies, suggesting that entrepreneurs in Brazil face more significant administrative barriers than in the majority of the world (Table 4.1). Although direct compliance costs to do business in Brazil are typically comparable, for example with the OECD area or neighbouring Latin American countries, the indirect costs, such as the number of procedures and time required to go through these procedures, with few exceptions, are much higher (Table 4.A1.1).

Figure 4.2. Barriers to entrepreneurship indicator for Brazil by regulatory area, 2013

Scale from 0 (least) to 6 (most) restrictive



Indices for BRIICS and OECD represent simple averages of member-country indices.

Source: OECD (2014), *OECD Product Market Regulation Database*, www.oecd.org/economy/pmr.

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Table 4.1. Brazil's ranking in Word Bank's Ease of Business

Overall rank out of 189 economies	116
Ranking by specific regulatory area	
Starting a business	123
Dealing with construction permits	130
Getting electricity	14
Registering property	107
Getting credit	109
Protecting investors	80
Paying taxes	159
Trading across borders	124
Enforcing contracts	121
Resolving insolvency	135

Source: World Bank (2013), *Doing Business 2014*, <http://www.doingbusiness.org/reports/global-reports/doing-business-2014>.

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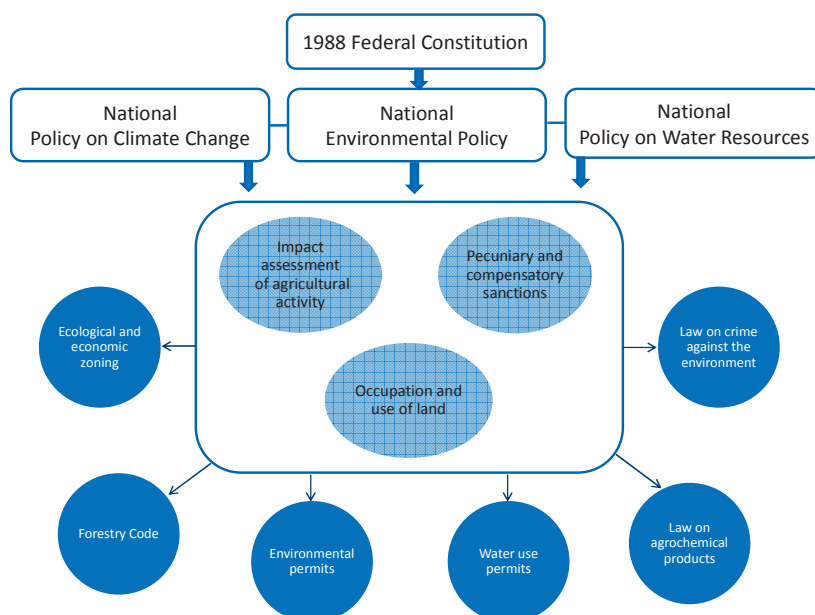
Regulations on natural resources

Brazil's environmental policy is based on the provisions of the national Constitution and a number of basic environmental laws. Current environmental objectives and strategies are outlined in three principal frameworks: the *National Environmental Policy*, the *National Policy on Water Resources* and the *National Policy on Climate Change*. A broad range of regulatory instruments underpins these frameworks, including environmental quality standards, environmental zoning, permits, impact assessments, licensing and review of polluting activities, creation of special protected areas, penalties for environmental degradation, and incentives for the introduction of technologies designed to improve environmental quality. A National System of Environmental Information gathers essential information to carry out environmental monitoring, control, enforcement and planning. Institutionally, Brazil's environmental policy is implemented by agencies and environmental institutions at all governance levels, with state and municipal authorities empowered to develop additional and complementary environmental regulations and programmes beyond those set up at the federal level. The principal laws and activities that concern agriculture are depicted in Figure 4.3.

Brazil's environmental regulations affect agriculture first of all through provisions related to land use. The *Brazilian Forestry Code* is the most important nation-wide act regulating land use. It defines forest and other forms of vegetation as so-called "public interest" goods, thus effectively setting the limits on private property rights and implying restrictions on land use in private farms (Box 4.1).

A closely related stream of regulatory activity affecting agriculture is implemented within the programmes to combat deforestation of the Amazon and *cerrado*. An *Action Plan to Prevent and Control Deforestation in the Amazon* and an *Action Plan to Prevent and Control Deforestation and Fires in Cerrado*, launched respectively in 2004 and 2010, contain measures to orient farmers towards environmental objectives, mostly consisting of regulations, monitoring, control and other administrative instruments to curb illegal deforestation in these two regions. These plans rest on two principal axes: the creation of natural protected areas in endangered zones and a more rigorous enforcement of land use regulations.

Figure 4.3. Brazil's key environmental policy areas and regulatory instruments related to agriculture



Source: Adapted from a presentation by Daniela Aparecida Pacifico, "Project on Agro-environmental Policy", FAO and the Ministry of the Environment of Brazil.

Box 4.1. Brazilian Forestry Code and agricultural land use issues

The *Brazilian Forestry Code* distinguishes between permanent protection areas and a legal reserve. The natural vegetation on permanent protection areas should be preserved, meaning that it cannot be used for farming, grazing or any other agricultural activity. A legal reserve is defined as a share of rural private properties, beyond permanent protection areas,¹ where only sustainable activities may be performed, including "the conservation and rehabilitation of ecological processes, biodiversity conservation and shelter for native flora and fauna." These shares are region-specific and vary on average from 20% of the farm area in the south, central and north-eastern Brazil, to 80% in forest areas of the Amazon region. The Rural Environmental Cadastre is an instrument of land use control, forming a part of the National System of Environmental Information. It represents a national electronic register, containing geo-referenced information on the borders of each agricultural holding, areas within the holding covered with indigenous vegetation, representing areas under permanent protection, restricted use, or belonging to the legal reserve (see below). A new *Law on Forestry Code*, which came into effect in 2012, made registration in the Rural Environmental Cadastre obligatory for all rural properties.

Inadequate enforcement of the Forestry Code during the previous decades led to the expansion of agriculture into areas not eligible for exploitation, as defined by this act. No official figures on compliance with the legislation exist, but even government officials assume that full compliance is rare. The Forestry Code has been the source of controversy between environmental and farm groups. While the former have insisted on the reinforcement of monitoring and control of the Forestry Code, farmer groups considered the norms inadequately adapted to real situations and advocated to make them less restrictive. In recent years, this debate has come to the forefront of agricultural and environmental agendas, leading to the adoption in 2012 of a law that introduced comprehensive amendments to the Forest Code, which covered also restrictions related to land use.

1. Permanent protection areas are defined as specified-width margins along rivers, lakes and other water bodies and areas around water springs, top of hills and mountains, areas with specified altitudes and slopes, dunes, mangroves and cliffs.

Source: Zanella, M.A. and L.V. Cardoso (2011), "Agri-environmental Policies in Brazil and Perspectives for Evaluation", Paper presented at the OECD Workshop on the Evaluation of Agri-environmental Policies, 20-22 June, Paris.

The climatic risks zoning and the palm and sugar cane agroecological zoning (*Zoneamento Agroecológico*, ZAE) as instruments of territorial planning are other regulatory instruments having an important bearing on agriculture as a sector dependent on rules for spatial allocation of economic activity. They were designed to minimise natural risks in agriculture and prevent the expansion of sugar cane and the agricultural frontier into sensitive areas. These programmes allow each municipality to identify the best time for crop planting based on a methodology designed by the Brazilian Agricultural Research Corporation (EMBRAPA). The methodology quantifies agricultural risks using parameters such as climate, soil, and crop cycles. Compliance with zoning is not legally binding, but incentives are generated by making the provision of credit and insurance subsidies conditional on compliance with zoning rules (Chapter 6). Furthermore, private providers of financial services increasingly condition their services on the respect of zoning rules. By 2012, zoning rules were applied to 40 crops in 25 of the 26 Brazilian states.

A Law and various by-laws regulate organic farming, covering: a) organic primary animal and crop production, b) organic extractive production, c) production of processed organic products, d) quality control of organic products, and e) labelling of organic products. In order to obtain a status of organic producer, entities are required to undergo conformity assessment, audit and inspection of the entire network of organic production and trade. In October 2013, Brazil launched a *National Plan for Agro-ecology and Organic Production* with the aim to coordinate policies and actions for environmentally friendly agriculture and the organic food production. The areas covered are certification, research and education, technical assistance, financing and accessible prices for consumers. The programme's initial budget allocates BRL 8.8 billion for 125 initiatives across the country.

Among other important acts are: a Law on Access to Genetic Resources regulating the use of gene pool in support of technological innovation for sustainable development; a Law on Management of Public Forests enabling forestry concessions based on sustainable practices with the aim of generating social, environmental and economic benefits. Agricultural activity is also subject to regulations on recycling of waste water and control of water quality and regulations on utilisation and disposal of elements with toxic content.

In addition to regulations, the Brazilian government has been introducing various economic incentives for environmentally-friendly agricultural practices. Thus, a number of programmes targeted to agricultural producers and rural families have been introduced since the mid-2000s providing credit concessions, specific payments and cash transfers for various environmental actions. These programmes are reviewed in Chapter 6.

Trade and investment policy

Trade openness and foreign direct investment (FDI) are critical parts of framework conditions for innovation. The expansion of markets worldwide has been a main driver behind technological innovation and productivity gains as larger sized markets have become available to innovators and consumers (OECD, 2010). The countries that have shown high innovation performance have in common that their growth strategies are oriented towards international markets. Besides increasing external markets, international openness results in more competition domestically and thus increases the pressure on companies operating on the domestic market to innovate in order to hold up to competition.

Apart from creating market size and competition drivers for innovation, trade and FDI operate as immediate channels of technology, know-how and managerial expertise, they also have indirect effects on innovation. Inward FDIs not only bringing innovations to the businesses directly involved, but may have spill-over effects on other companies in the same industry. This may come through a competition effect when domestic businesses improve their processes and products in response to FDI; through demonstration effect when domestic actors imitate better practices of companies with foreign capital; or through labour market effect when training of local workers prompts a learning

process that can, with time, reach out to the rest of the economy. FDI spill-overs may also go through the businesses upstream or downstream the firm with FDI which may face the need to meet new standards to adapt to the requirements of that firm (ECLAC, 2013 based on Havarek and Irsova, 2012).

Exposure of Brazil's overall economy to foreign markets is low in international comparison; an average of total imports and exports was around 7% of GDP in 2009-11, one of the lowest shares among OECD and BRIICS countries. Low overall trade exposure is in part explained by the fact that Brazil has a large domestic market and is geographically remote from some of its principal external markets. However, agriculture and agro-processing sectors are more exposed to trade than the economy overall (Chapter 6).

Figure 4.4. Index of regulatory restrictions to trade and investment, 2008 and 2013



Tariff index is based on an average effectively applied tariff, scaled within a range between 0 and 6 points, whereby a tariff below 3% is attributed zero points and a tariff above 19.5%, 6 points.

Indices for BRIICS and OECD represent simple averages of member-country indices.

Source: OECD (2014), *OECD Product Market Regulation Database*, www.oecd.org/economy/pmr.

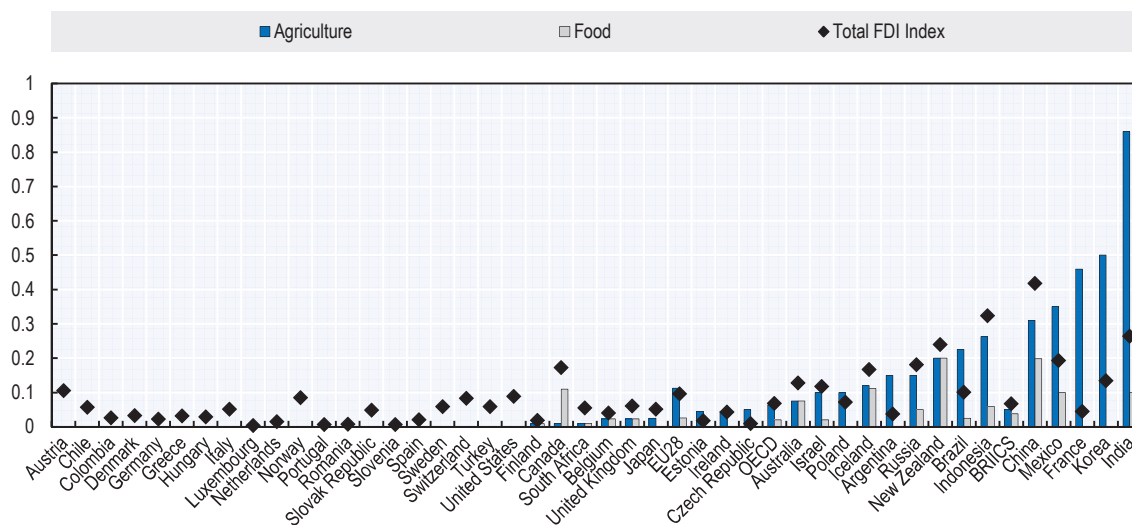
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The integration of sectors of the economy with international markets, apart from geographic characteristics and the size of markets, is facilitated or impeded by trade policies. Protection of domestic markets through tariff and non-tariff barriers weakens competitive pressure on local producers and thus affects their incentives to innovate and their capacity to do so if protection relates to capital and intermediate goods. OECD evaluates Brazilian trade and investment regulations to be among the most restrictive across OECD and BRIICS countries (Figure 4.4.A). Brazil's relatively

restrictive score on trade regulations is due to high overall tariff protection and barriers to trade facilitation (Figure 4.4.B).

Figure 4.5. OECD FDI Regulatory Restrictiveness index, 2012

Scale from 0 (least) to 1 (most) restrictive

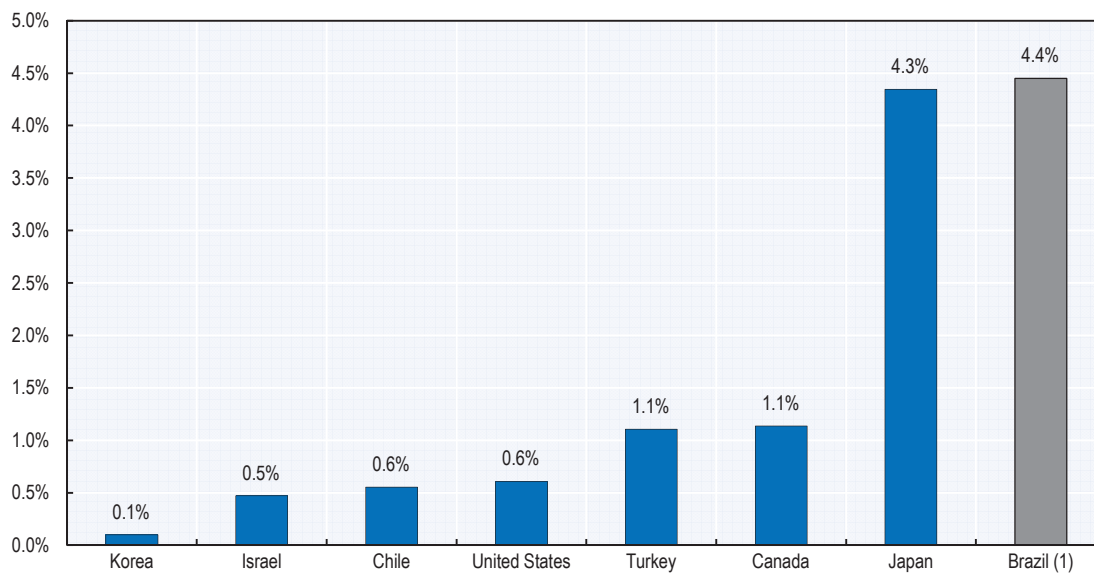


Source: OECD (2013c), *OECD FDI Regulatory Restrictiveness Index*. <http://www.oecd.org/investment/fdiindex.htm>.

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Figure 4.6. Inward FDI stock in the agriculture and food processing sectors, 2012

As a percentage of GDP



1. For Brazil, 2011 data is presented; data does not include the FDI in the ethanol sector.

Source: OECD International Direct Investment Database; Central Bank of Brazil.

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Box 4.2. Foreign Direct Investment in Brazil

Brazil implemented a major FDI liberalisation in the late 1980s when foreign investors were entitled to repatriate their investments and/or profits. Reforms continued in the 1990s by allowing foreigners to organise companies and fully own them. Some activities, formerly closed to foreign participation, were opened, notably in the sectors of resource exploration and mining, banking and insurance (OECD, 2004).

A general FDI restriction that applies to the agricultural and agro-processing sectors is that access of foreign companies to the national financial system may be restricted by the Central Bank in case of balance of payments disequilibrium. There is also a restriction that applies specifically to the agricultural sector (as well as to the forestry sector) which concerns acquisition and leasing of rural land by foreign legal or physical persons. To purchase or lease, they must be residents in the territory concerned and can only purchase land plots that do not exceed a specified size and there is also a limitation on total land area purchased or leased by foreigners. Foreign residents are permitted to acquire up to three modules of land without an official approval and foreign acquisition is limited to fifty modules (a standard parcel with the size ranging from 5 to 100 hectares depending on the region). Acquisitions of between three and fifty modules require approval by the Ministry of Agricultural Development. Foreign companies can only acquire rural land for crop farming, cattle-raising, and industrial or development projects. The total land area purchased or leased by foreigners must be no greater than 25% of the rural area of any municipality (*município*) to which the property belongs and no more than 10% may be owned by foreigners of the same nationality. This restriction is more flexible when the foreigner is married to a Brazilian citizen or has Brazilian descendants. Specific authorisation is required, depending on the size of the property, for it to be purchased or rented by foreigners (OECD, 2013a).

A controversial issue related to land access by foreigners has been the legal distinction between national and foreign enterprise, which has been subject to different interpretations by the authorities. The current interpretation is that Brazilian enterprises in which the majority of capital is owned by foreigners are subject to the same provisions as foreign enterprises authorized to operate in Brazil. The previous interpretation of this same law treated such enterprises as national (Government of Brazil, 2013).

Brazil today is a net FDI recipient and has seen a surge of inward FDI since the late 2000s. The total stock of inward FDI amounted to almost one-third of the country's GDP in 2012, which places Brazil ahead of the rest of BRICS. It is the largest regional recipient of total FDI, e.g. in 2012 it attracted almost 40% of total inflows into Latin America and the Caribbean. Uncertainties in the developed economies amidst the economic crisis displaced investments towards emerging markets. Local conditions in the Latin American region, such as good natural resource endowments, also attracted investors at a time of commodity price boom, while the region's fast economic growth created strong demand. Natural resource-based activities and services account for a large and growing share of FDI inflows into Brazil, with the telecommunications sector virtually dominated by transnational corporations (ECLAC, 2013).

Transnational companies control a large share of the fertiliser industry in Brazil. These companies include Bunge Fertilisantes, the largest fertiliser company in South America, Mosaic Company (United States), and Yara (Norway) (ECLAC, 2013). Trans-Latin companies operate in the Brazilian meat sector, including JBS-Friboi, the world's largest meat producer, BRF Foods Group, Grupo Marfrig and Grupo Minevra. Four leading transnational companies – ADM, Bunge, Cargill and Louis Dreyfus – account for around a quarter of the country's total volume of soybean crushing. However, Brazil's sugar and ethanol sectors are those where there has been the strongest foreign investor activity, particularly since the late 2000s. The four transnationals mentioned above and 17 other companies, wholly or partially foreign-owned, concentrated 23% of operating sugar and ethanol production capacity in Brazil in 2008 and had new facilities under construction. According to the Brazilian Sugar Cane Industry Association (UNICA), the share of foreign-owned sugar cane processing may further increase, with major global petroleum companies becoming more active in mergers and acquisitions. The ethanol sector is an illustrative case of FDI's role as a driver of innovation when foreign companies entrusted the entire task of technological development to Brazilian scientists. The transnationals may have a similar role in the development of second-generation (biomass) ethanol (ECLAC, 2013).

At the same time, Brazil applies little discrimination of foreign suppliers and has a pretty open FDI regime, although certain constraints exist as reflected in the OECD FDI Regulatory Restrictiveness index, covering 22 economic sectors in each country (Figure 4.5).² Restrictions to FDI in the agricultural sector are scored substantially above the cross-sectoral aggregate, while the agro-processing sector faces much fewer restrictions. An FDI restriction that is specific to the agricultural sector (as well as the forestry sector) concerns acquisition and leasing of rural land by foreign legal or physical persons (Box 4.2).

FDI in agriculture and the agro-processing sectors is a small share of Brazil's overall inward FDI, but are more important to the overall economy than in some other countries (Figure 4.6). Brazil is the largest recipient of such investments in Latin America and the Caribbean. The country's

attractiveness is due to its good agricultural resource endowment, the considerable overall deregulation of the sector implemented in the 1990s, the relatively favourable FDI regime, and the important technological advancements and promotion policies in some sectors, e.g. the biofuel sector.

Finance policy

Innovation typically requires borrowing or other types of external funding, particularly by start-up businesses. A well-functioning domestic financial system with sufficient provision of varied services to borrowers of different profiles facilitates the innovation process. As innovation usually requires long-term investment, a strong long-term finance segment is of critical importance. An adequate domestic financial system is important from the perspective of innovating SMEs as they are likely to depend more on internal sources of finance compared to large businesses capable of drawing on international funding. This is particularly relevant in the rural context where SMEs dominate.

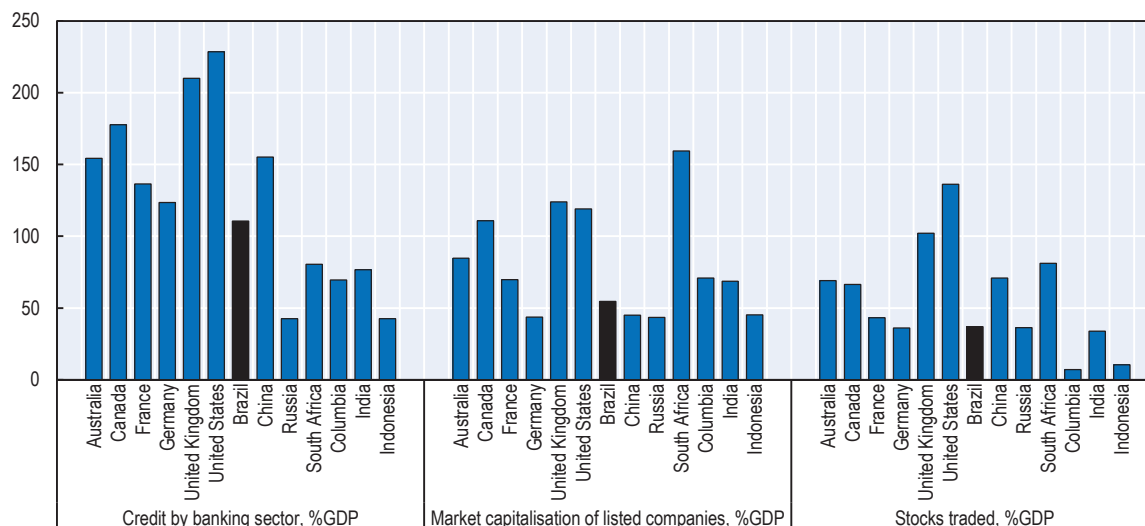
Considering the level of market capitalisation of listed companies and the value of stocks traded relative to GDP, Brazil's equity market is fairly small, even in comparison with BRIICS countries such as China and South Africa (Figure 4.7). Financial markets in Brazil are largely bank-based. Bank credit relative to GDP in Brazil is the second-largest among BRIICS after China, but is nevertheless significantly below the levels of some of the largest OECD economies. Bank's intermediation spreads are high by international standards (Figure 4.8). This increases the cost of capital and creates a bias toward short-term high-risk investment instead of long-term investment. High borrowing costs are particularly onerous for small and medium firms whose access to foreign finance is limited. Several factors may explain the increased borrowing costs in Brazil: a high Central Bank refinancing rate, high by international standards compulsory bank reserves, a high level of taxation of the banking sector, and the existence of directed credit which banks are obliged to provide at regulated interest rates, possibly leading to high spreads charged on non-regulated lending (OECD, 2011).

In its global competitiveness report, the World Economic Forum scored Brazil's financial market development at 4.4 points on a scale of 1 to 7 (best) (Figure 4.9.A). This evaluation is based on the opinions of Brazilian business on key dimensions of credit markets. Their evaluation of the trustworthiness and confidence in the financial markets is mixed: while they evaluate the soundness of banks and the regulation of security markets to be relatively high, they give a low score to the degree of legal protection of borrowers. Similar to businesses in OECD countries and the rest of the BRIIS group, Brazilian businesses consider access to finance through local equity markets and venture capital insufficient and access to loans difficult (Figure 4.9.B). Difficulties in obtaining credit are also diagnosed by the 2013 World Bank's *Doing Business* evaluation, which ranks Brazil 109 out of 189 economies for ease of getting credit (World Bank, 2013).

The short-term bank credit segment is represented by many competing private and public banks, including foreign banks. At the same time, long-term bank credit is poorly developed, with one public institution, the National Bank for Economic and Social Development (Banco Nacional de Desenvolvimento Econômico e Social – BNDES) operating as a dominant long-term lender. Satisfying Brazil's financing needs as the country develops will require increased private sector participation in the long-term credit market beyond merely distributing BNDES loans (Box 4.3).

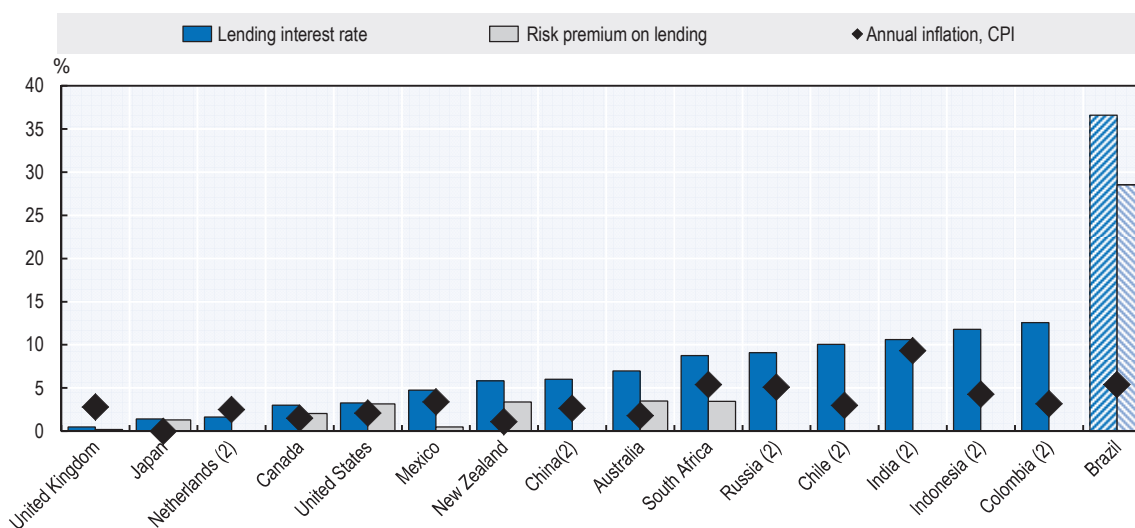
Figure 4.7. Selected indicators of financial markets, 2012

As a percentage of GDP



Source: WDI (2013), *World Development Indicators Database*, World Bank, <http://data.worldbank.org/data-catalog/world-development-indicators>.

StatLink <http://dx.doi.org/10.1787/888933242467>

Figure 4.8. Lending interest rates and lending risk premiums, international comparison,¹ 2012

1. Lending interest rate is the bank rate that usually meets the short- and medium-term financing needs of the private sector. This rate is normally differentiated according to creditworthiness of borrowers and objectives of financing. The terms and conditions attached to these rates differ by country, however, limiting their comparability. Risk premium on lending is the lending rate minus treasury bill rate.

2. Data on risk premiums are not available for these countries.

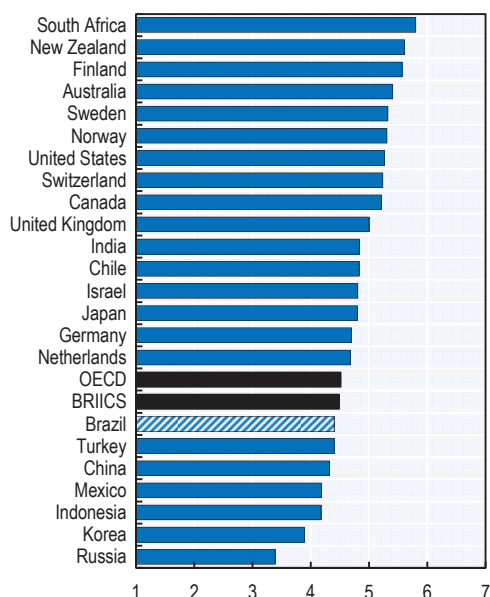
Source: WDI (2013), *World Development Indicators Database*, <http://data.worldbank.org/data-catalog/world-development-indicator>.

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Figure 4.9. Global Competitiveness Index: Financial market development, 2013-14

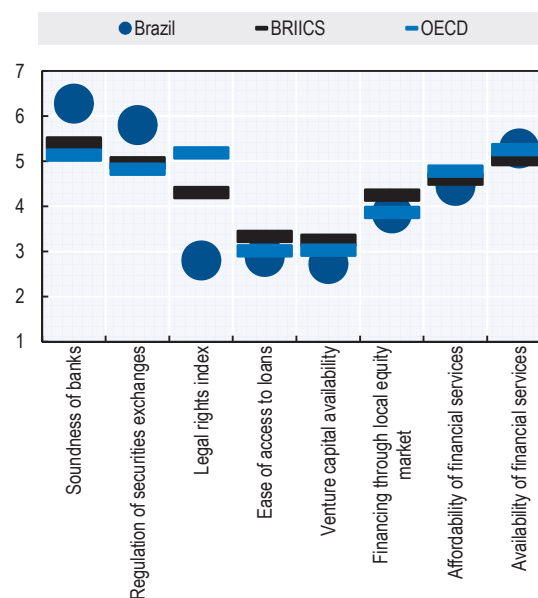
Scale 1 to 7 (best)

A. Total index of financial market development, international comparison



Indices for BRIICS and OECD represent simple averages of member-country indices.

B. Brazil's index of financial market developments by component



Legal rights index has been rescaled from a 1 to 10 scale. The average for BRIICS reflects significant variations of this index across the group: from 3 points for Indonesia and Russia, 6 points for China, 8 points for India and 10 points for South Africa.

Source: World Economic Forum (2013), *The Global Competitiveness Report 2013-2014: Full data Edition*, <http://reports.weforum.org/the-global-competitiveness-report-2013-2014/#>.

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Box 4.3. A challenge of private long-term credit in Brazil

Long-term lending is dominated by the BNDES state bank. Its original mandate was to function as the main financing agent for industrial development, but subsequently evolved to include strategic areas of innovation, local development and socio-environmental development. BNDES does not have agencies and the majority of its operations are carried out through a nationwide network of accredited financial institutions which perform credit analysis and approval. It offers a variety of financial products to support various investments, some cross-sectoral, others targeted to specific sectors, including agriculture (Chapter 6). Beyond that, BNDES has a dedicated credit programme to support the creation and adoption of innovations.

BNDES is financed through contributions from the Fundo de Amparo ao Trabalhador (FAT), a tax-financed workers' welfare fund. Direct transfers from the national budget are another principal source of capital; these have substantially increased since 2009 to reach, by 2013, over half of the Bank's total funding. Increased availability of budgetary funds has enabled BNDES to double its loan volume since the beginning of the economic crisis.

BNDES dominates long-term lending in Brazil, not least due to its privileged access to state funding. Increased participation of private providers can help relieve long-term credit constraints and improve allocation of credit. This may be achieved in several stages; initially, by requiring private co-financing for BNDES loans and subsequently by reducing BNDES own lending volumes outside areas where market failures tend to be pervasive. Over time, the expansion of private finance will allow financial support to BNDES to be phased out or limited to specific lending for specific projects, e.g. to those that have social or environmental objectives. In the latter case, private lenders should have access to state support as well.

Attracting private lenders could also help concentrate BNDES lending in areas likely to be more exposed to market failure problem. Around two-thirds of BNDES lending is currently provided to large and very large companies, which may be best placed to receive credit from other sources. BNDES credit portfolio could focus more on traditional development areas, such as financing SMEs, infrastructure and innovation. This would be beneficial for agricultural, agro-processing and agro-food businesses, generally characterised by a smaller scale structure compared to some other Brazilian industries and facing significant infrastructure gaps.

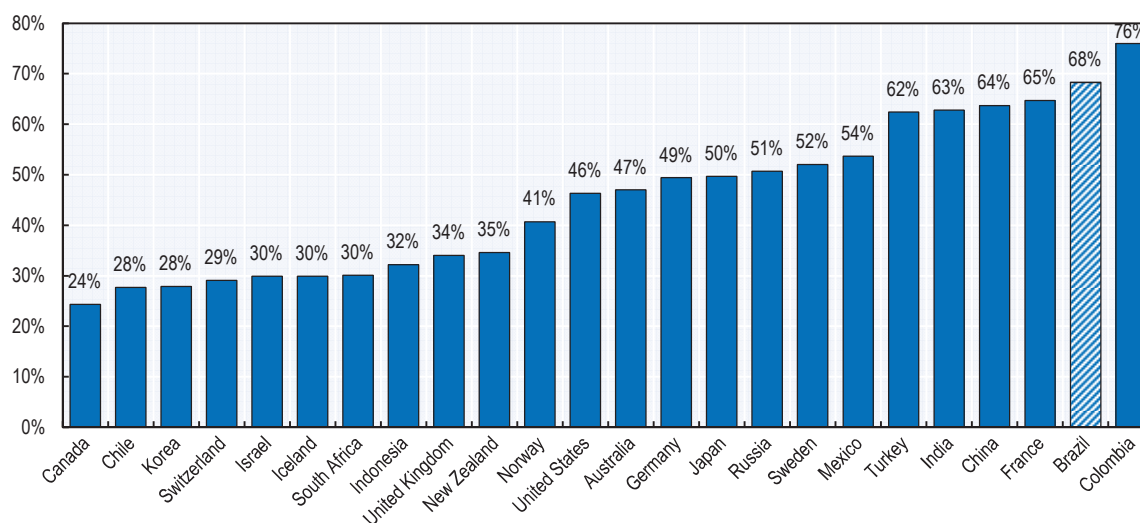
Source: OECD (2013b), *OECD Economic Surveys: Brazil 2013*. DOI: http://dx.doi.org/10.1787/eco_surveys-bra-2013-en.

Tax policy

The principal link between tax policy and innovation is that taxation affects the returns to innovation and thus the decisions of firms and individuals to invest. Taxation also affects the relative price of production factors and therefore priority areas for innovation. Beyond that, taxation often acts as a targeted tool to stimulate innovation, e.g. through providing preferences to private businesses that invest in R&D, through preferential regimes for young innovative companies, VAT concessions on innovative products, etc. Furthermore, tax policy can steer innovation towards specific areas, for example, to address particular societal concerns and towards greener technologies and practices, or environmental R&D. Tax policies can also work on the consumer side of innovation by creating incentives for households to purchase products with particular characteristics, for example, by providing consumer tax concessions on newly developed national products or environmentally friendly goods.

Over the last two decades, Brazil's tax and contribution systems increased revenues from 24% to 34% of GDP, a share which is comparable to that of many developed economies but is high relative to most Latin American and other BRIICS economies (e.g. 17% in China, 18% in India, 12% in Indonesia and 27% in South Africa) (OECD, 2013b). High revenues translate into a high tax burden: the World Bank estimates the total tax rate on Brazil's company profits – including all taxes on income and factor usage – at 67%, above an average of 47% in Latin America and 43% in OECD countries (Figure 4.10). These estimates, however, may not take into account the long-term incidence of some elements of this tax burden, such as employer-paid social security contributions or payroll taxes, parts of which may fall on employees rather than employers.

Figure 4.10. Total tax rate on company profits for Brazil, international comparison, calendar year 2012
As a percentage of commercial profit



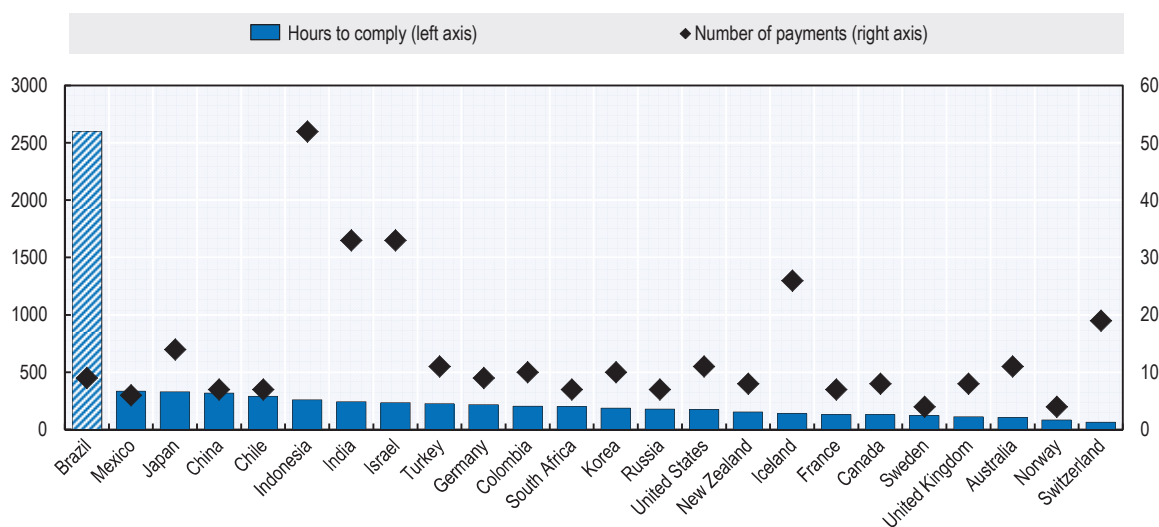
The evaluation uses a concept of a "standardised business", defined on the basis of several criteria, including the legal form of business (limited liability), start date of operation (January 2010), geographic location (the largest business city in the country), origin of ownership (100% owned by domestic natural persons), type of activity (general industrial and commercial), size (own capital, number of employed, turnover, etc.) and others. Total tax rate is the sum of taxes and contributions payable after accounting for allowable deductions and exceptions related to commercial profit of businesses before all taxes borne. The groups of taxes covered include: profit or corporate income tax; employer's social contributions and labour taxes; property taxes; turnover taxes and other (such as municipal fees, vehicle and fuel taxes).

Source: World Bank Group and PwC (2013b), *Paying taxes 2014 – The Global Picture*, <http://www.pwc.com/payingtaxes>.

StatLink  <http://dx.doi.org/10.1787/888933242490>

Brazil's taxes are not only high, but burdensome to comply with, in particular as this relates to indirect taxes, including the state VAT tax (*Imposto sobre Circulação de Mercadorias e Serviços*, ICMS), for which each of Brazil's states has its own tax code, tax base and tax rates. Due to the origin-taxation, companies wishing to offer goods and services nationwide are required to comply with each state's individual tax rules, and credits for interstate transactions are frequently delayed or refused. This cumbersome situation is the principal reason why Brazil compares so poorly to other countries in terms of tax compliance costs (OECD, 2013b). When measuring the time requirement to comply with taxes in 183 jurisdictions across the world, the World Bank finds that Brazil comes a distant last, with 2 600 hours required as opposed to 367 on average in Latin American countries or 176 in OECD countries (Figure 4.11).

Figure 4.11. Number of taxes for a business company and hours required to comply, calendar year 2012¹



1. The evaluation uses a concept of a "standardised business", defined on the basis of several criteria, including the legal form of business (limited liability), start date of operation (January 2010), geographic location (the largest business city in the country), origin of ownership (100% owned by domestic natural persons), type of activity (general industrial and commercial), size (own capital, number of employed, turnover, etc.) and others. Total tax rate is the sum of taxes and contributions payable after accounting for allowable deductions and exceptions related to commercial profit of businesses before all taxes borne. The groups of taxes covered include: profit or corporate income tax; employer's social contributions and labour taxes; property taxes; turnover taxes and other (such as municipal fees, vehicle and fuel taxes).

Source: World Bank Group and PwC (2013b), *Paying taxes 2014 - The Global Picture*, PwC, World Bank and IFC, Washington, DC. <http://www.pwc.com/payingtaxes>.

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It is important to highlight that the World Bank-PwC's business taxation indicators relate to a "standardised business," which is defined using a number of assumptions. They include, among others, the assumptions that only companies performing general industrial and commercial activities and which do not participate in foreign trade are covered. Both these criteria narrow the inference that can be made from these estimates with respect to agriculture and agro-processing firms. However, to the extent the latter faces a taxation regime similar to World Bank-PwC's "standardised" company, the estimates remain instructive.

Brazil's agriculture and agro-processing sectors benefit from a range of tax concessions; there are also tax incentives to support the development of the sectors important for technological advancement and innovation (Box 4.4).

**Box 4.4. Tax concessions to Brazilian agro-food sector
and priority sectors for industrial development**

Agriculture and agro-processing sectors, as Brazil's principal exporting sectors, benefit from tax preferences generally applicable to exporters and from some sector-specific preferences. One is the exemption from the ICMS tax of raw material and semi-processed products destined for export, which effectively applies to the bulk of Brazilian agricultural exports. This preference, since its introduction in mid-1990s, has contributed to the expansion agro-food exports.¹ ICMS preferences are also granted on sales of agricultural inputs. Thus, various reductions in the ICMS taxable base apply to inter-state trade in agricultural inputs. Federal legislation also empowers states to adopt similar preferences for transactions within states.² Other preferences concern social security contributions. Exports, including agro-food exports, are free from PIS/COFINS taxes; PIS/COFINS rates are also set at zero on imported agricultural inputs, and the payment of these taxes is suspended on some domestically produced primary agricultural products supplied for processing. Agricultural producers also have the right to write off losses incurred in the previous year from taxable income, and companies engaged in agricultural activity may depreciate the integrity of the value of acquired capital goods in the same fiscal year (OECD, 2005; World Bank and PwC, 2013a).

Brazilian tax policy allows for a range of incentives to support the development of the sectors important for technological advancement and innovation. Special tax regimes apply to the computer and automation industries, the development of infrastructure and telecommunications networks, information technology services and some others activities. Typically, these activities are exempt from social contributions, and may benefit from other preferences. A special tax regime applies to companies undertaking technological innovations in general; they may benefit from deductible expenses, full depreciation, accelerated amortisation and deductions from 60% to 80% of some expenses from corporate income tax. A range of additional tax incentives for technical innovation and research were introduced in 2011 as part of the government's Greater Brazil (Brasil Maior) plan. Thus, the IT industry, among several others, has benefitted from a reduction of payroll costs (World Bank and PwC, 2013a).

1. Before the introduction of this exemption, agriculture was the only sector eligible for ICMS on raw material and semi-processed products destined for export.

2. These provisions are aimed at reallocating economic activity across different Federative Units of Brazil by promoting investments in certain territories. There is a view that this proves to be ineffective as a stimulus and worsens the allocation of resources and overall competitiveness of agriculture.

A micro-level analysis undertaken as part of the OECD *Economic Survey of Brazil* (OECD, 2013b) finds that the tax burden is negatively related to the productivity of Brazilian firms. These results support the view that the tax burden on companies should be reduced to improve both productivity and the competitiveness of Brazilian firms. This would require moving towards a more simple tax system, including making further progress towards a unification of indirect taxes into a national unified system. Current efforts to provide tax stimulus to selected sectors through a replacement of a payroll-based by turnover-based contributions and other special preferences may make corporate taxation more distortionary. The use of less distortionary taxes, such as well-designed consumption or property taxes, should be considered.

Notes

1. For example, the Sugar Cane Agroecological Zoning (Zaecana) identifies areas: (1) with climate and soil potential for sugar cane production with mechanical harvesting; (2) with potential for sugar cane production previously used for livestock production; and (3) without environmental restrictions and with potential for sugar cane production (no irrigation). The main environmental restrictions of Zaecana are: (1) exclusion of the Amazon and the Pantanal Biomes and Upper Paraguay River Basin; (2) exclusion of the national parks, indigenous areas, urban areas and other protected areas; and (3) prohibition of deforestation for planting sugar cane. 92.5% of Brazilian territory was set aside for sugar cane production after Zaecana was concluded. Some policies related to the sugar cane sector expansion are guided by Zaecana, such as (1) provision of public and private funding; (2) installation of new ethanol plants; and (3) environmental license procedures.

2. Certain limitations on foreign citizenship of investors exist in radio, TV and publishing activities; foreign participation is restricted in air and road transport and fishing and it is forbidden in security and transport of valuables, as well as in the health sector, except in cases established by law (OECD, 2013a).

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Table 4.A1.1. Ease of doing business in Brazil, 2014

Action	Brazil's rank out of 189 economies	Procedures			Time			Cost					
		Unit	Brazil	Latin America and Caribbean	Unit	Brazil	Latin America and Caribbean	Unit	Brazil	Latin America and Caribbean			
Starting a business	123	Number of procedures	13	9	5	Days	108	36	11	% of income per capita	5	33	4
Dealing with construction permits	130	- "	15	13	13	- "	400	216	147	- "	35	137	84
Getting electricity	14	- "	4	6	5	- "	58	65	89	- "	34	503	79
Registering property	107	- "	14	7	5	- "	30	65	24	- "	3	6	4
Getting credit	109	..	..	..	..	..	..	..	..	..	..	..	..
Protecting investors	80	..	..	..	..	..	..	..	..	..	..	..	..
Paying taxes	159	Payments per year	9	30	12	Hours per year	2 600	369	175	Total tax rate in % of profit	68.3	47.3	41.3
Trading across borders	124	Documents to export/import	6	6	4	Days export/import	13/17	17/19	11/4	USD per container export/import	2 215/ 2 275	1 283/ 1 676	1 070/ 1 090
Enforcing contracts	121	Number of procedures	44	40	31	Days	731	734	529	% of claim	17	31	21
Resolving insolvency	135	..	..	..	..	Years	4.0	2.9	1.7	% of estate	12	16	9

Source: World Bank (2013), *Doing Business 2014*, <http://www.doingbusiness.org/reports/global-reports/doing-business-2014>.

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