A Practitioner’s Narrative of Brazil’s Industrialization and the Role of the Brazilian Development Bank

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Development, as economists say, is path dependent. That is, it is based on the context of individual countries and is historically determined. This chapter adopts a very pragmatic approach to this issue—from the viewpoint of a practitioner—and takes a bird’s eye view of Brazil’s industrialization before focusing on the role the Brazilian Development Bank (Banco Nacional de Desenvolvimento Econômico e Social) has played in the country’s growth since the 1950s.

The chapter reviews the successes and failures of the country’s past industrial policies, as well as new industrial policies in the 2000s focused on innovation and competitiveness. It then discusses the policies and instruments the Brazilian Development Bank has implemented as a development-oriented venture capitalist.

BRAZIL’S INDUSTRIALIZATION AND NEW INDUSTRIAL POLICY

Industrialization during 1950–2000

The Brazilian Development Bank has played an important role in Brazil’s substantial economic structural transformation and diversification. Founded as a joint effort between the American and the Brazilian governments in the early 1950s to industrialize and transform the country, the development bank has ingrained into its operations the idea of structural change. Development is also a process of structural change, and this is what Brazil has witnessed. A more dynamic economy has emerged, as the country has risen from lower-productivity to higher-productivity activities with linkages within and outside product value chains.

More important, structural change has created domestic competencies. National institutions are being built and firms are focusing on innovation. At the same time, in recent years, the emphasis has shifted toward an inclusive and environmentally sustainable development path.
In the past, Brazilian policymakers did not attach much importance to innovation, and had they read Schumpeter1 when they were implementing the first stage of industrial policy, the country could have set the stage earlier for innovation-driven growth.

That said, even though a military regime controlled the country during the 1950s, consistent and convergent policies provided a favorable environment for implementing industrial policy. Supportive macroeconomic policies, a high level of coordination, and an intense use of classic instruments such as tariff protection, financial support through the Brazilian Development Bank, and fiscal incentives helped the transformation process. State-owned enterprises were deployed to overcome coordination problems common in the implementation of development strategies.

Industrial policy helped transform the country from what was a huge plantation into an industrialized country; without this change in the 1950s to 1970s, Brazil would probably have remained primarily an agricultural economy. Instead, with its high growth, it was the China of the time. High productivity growth fueled industry, the seeds of a national science and technology system were sown, and most of the current economic structure and institutions were founded.

Manufacturing increased steadily, reaching more than 20 percent of GDP (in constant prices) by the late 1980s from about 10 percent in the early 1950s (Figure 9.1). New sectors, such as petrochemicals, pulp and paper, and capital

![Figure 9.1 Manufacturing Share of GDP (Percent)](image)

Source: Brazilian Institute of Geography and Statistics (data obtained from IPEADATA).

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1 Joseph Schumpeter, an early twentieth-century Austrian-American economist, emphasized the importance of innovation and entrepreneurship and the process of “creative destruction” in sustaining economic growth. Also see Chapter 7 for more details.
goods, were established. Exports of agricultural commodities, such as soybeans, were developed substantially after considerable technological advancement from Empresa Brasileira de Pesquisa Agropecuária, a government agency devoted to agricultural research. Mineral commodities were developed, driven by another state-owned enterprise established in the 1940s, which received considerable support during the industrialization period. In the pulp and paper sector, the state supported the building of competencies, while in high-technology sectors, such as aircraft making, state-owned Embraer Air beat all odds to carve out a global niche.

But Brazil was less successful at spurring innovation and technology development. Other dynamic industries that emerged in the 1960s–1970s, such as computers, failed to take off. The country was also ineffective in regulating existing sectors such as textiles and the automotive sector, and nonselective trade protection of these areas was used for far too long. In contrast to Asian countries, the country did not push export promotion much and gave little importance to education-oriented policies.

From the late 1980s until recently, macroeconomic policies and the reform of the state took center stage in the debate, with no industrial policy as such during this time, despite some stop and go in that area. The focus was instead on reforming the country’s state governments, including through privatization, a fiscal responsibility law, deregulation, and so on. From the 1990s until the early 2000s, economic stabilization was on the agenda in the form of the Real Plan.2

But industrial policy made a comeback from the early 2000s, in three different waves, with the common elements of innovation and competitiveness. Innovation was especially important as the private sector had invested too little in research and development (R&D) and was inward looking, an approach that was in place from past development strategies.

The three waves were designed and implemented within the context of the time, each with its specific sectoral concentrations. The first wave, the Industrial, Technology, and Trade Policy (2004–07), was launched at the time of trade balance constraints, with the aim to reduce the trade deficit and spur technology-based innovation. It focused on sectors such as software, semiconductors, pharmaceuticals, and capital goods.

The second wave, the Productive Development Policy (2008–10), started during the commodities boom, a strong domestic market, and income redistribution policies to innovate and invest for sustainable growth. The sectoral concentration policy focused on strategic areas, strengthening competitiveness, and promoting national champions.

Finally, the Brasil Maior Plan (2011–14) was initiated after the global financial crisis in an environment of slow growth and loose monetary policies to innovate, compete, and add value. It had a sectoral focus on innovation diffusion, agro-business, and services, and was scale- and labor-intensive.

2The “Real Plan” was instituted to fight inflation, and one of the basic features was the introduction of a new currency, the real, that was allowed to float against the U.S. dollar.
Shifting Economic Landscape and the Focus on Innovation

Since the early 2000s income distribution in Brazil has undergone a major shift. More than 30 million people were lifted from the poor class to low-middle-income class, significantly transforming the domestic market. Yet, as the economy has developed, infrastructure bottlenecks have become apparent, with the last major investments seen in the 1970s. Naturally, a large pipeline of investments is directed toward infrastructure and industry. In this, however, the focus on innovation and competitiveness cannot be cast aside.

Brazil has also done well in commodities and minerals, part of an evolution of trade that underpins the economy. Yet the dynamism of its export basket and innovative industries has substantially lagged behind other emerging markets, despite the importance of manufacturing in exports such as aircraft making. And even in traditional, labor-intensive industries, the country has been losing competitive ground. At the same time, its exchange rate has appreciated compared with other countries such as Korea and Mexico over 1994–2014, constraining the types of initiatives and projects it can pursue to remedy the problems.

As noted, innovation is crucial for Brazil’s development strategy. But the country has not done well in this area, in keeping with the record of other Latin American countries. More important, many firms report innovation primarily through acquisition of machinery, which is different from implementing R&D activities. The reported innovation is in fact imported machinery, and Brazil lags behind other countries on private R&D, both as a share of GDP and in the growth rate of expenditures (shown in Figures 9.2 and 9.3 and Table 9.1).

![Figure 9.2 Innovation Rate (Percent of companies)](source: Brazilian Institute of Geography and Statistics, Survey of Technological Innovation 2008.)
Brazilian Development Bank and Innovation—Three Short Tales of the New Industrial Policy

With the changing economic landscape in Brazil and the need for sustainable growth, the Brazilian Development Bank has focused much of its activity and agenda on innovation. Money lent to companies for this purpose has been growing, both in equity investments and loans and grants, increasing from 332 million...
reals (R$) in 2007 to R$5.2 billion in 2013, a remarkable increase in the R&D disbursement. We now look at the pharmaceutical, sugarcane, and software industries to illustrate the new drive for innovation.

**The Pharmaceuticals Industry**

Brazil’s pharmaceutical market has been growing substantially since the early 2000s. As in many countries, the population is aging, with the share of the population 60 and above expected to overtake the under-15 group by 2030. As a result, the health care market has also shifted alongside changes in prevalent disease. Noncommunicable diseases such as cancer and heart disease are becoming more commonplace and already represent about two-thirds of the disease burden, replacing communicable diseases as the main concern demanding resources.

The growing middle class further changes the nature of the health care market, and Brazil has been rising in the global rankings of pharmaceutical market size (by sales in constant U.S. dollars), from 10th in 2005 to a projected sixth in 2015, according to IMS Health reports.

Development of the pharmaceutical industry was one of the first initiatives undertaken after the return of industrial policy in the early 2000s. Emphasis was put on best manufacturing practices and incremental innovation. More recently, however, the country has attempted to leapfrog and catch up with the technology frontier to produce “biosimilars” in the biotech industry. The pharmaceutical industry is the most R&D intensive in the country, with a ratio of R&D to sales of about 2.5 percent compared with just over 0.5 percent for the total industry in 2011. Crucially, local companies’ share of the Brazilian pharmaceuticals market has been growing, reaching about 60 percent in 2013, from about 35 percent in 2003. Companies receiving support from the Brazilian Development Bank have been doing better than the industry average on growth, revenues, and R&D.

**The Sugarcane Industry**

Sugarcane, an important crop in Brazil since colonial times, provides a traditional agro-industrial asset base. And in recent years, the country’s high land availability and the low cost of feedstock has supported the development of flex fuel, based on the crop. More than 60 percent of the Brazilian vehicle fleet runs on both ethanol and gasoline, and sugarcane biomass now not only provides all the energy needed for the industry, but also adds its energy surplus to the electric grid. The sugarcane industry creates possibilities for

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3 Biosimilars are pharmaceutical products that are almost identical to the original products but manufactured by a different company after the original product’s patent expires.
building a green economy and developing economies of scope from biofuels to biochemicals.

The Brazilian Development Bank has therefore focused on developing the industry. The Plan to Support Technological Innovation in the Sugar and Ethanol Industries—with good preliminary results—was set up to develop new technologies and facilitate partnerships of Brazilian companies with foreign firms, supporting a transfer of technology. The industry has begun to show tangible results, with the productivity yield of second-generation ethanol expected to increase from about 7,000 liters per hectare in the mid-2000s to more than 10,000 liters by 2020. With a $57 million portfolio invested in new technologies in 2010, the development bank grew its portfolio to more than $1.5 billion, by early 2014, in biofuels and renewable chemicals.

The Software Industry

Until 1994, the Brazilian Development Bank had very little involvement in the software industry, with its focus instead on brick-and-mortar-type industries. In its shift in focus to innovation, it implemented a program that grew to more than $2.5 billion investment in the segment (Figure 9.4). The three software companies listed on the Brazilian stock market received funds from the development bank before going public. One of these is now an internationally renowned company in enterprise resource planning.

![Figure 9.4](image_url)

**Figure 9.4** Brazilian Development Bank Support for Software Companies, 2006 and 2010 (Annual growth rate)

Source: Brazilian Development Bank.

Note: M&A = mergers and acquisitions; R&D = research and development.
THE BRAZILIAN DEVELOPMENT BANK AS A VENTURE CAPITALIST

The Brazilian Development Bank’s venture capitalist role as a development-oriented equity investor is a typical one. In the 1970s it set up a specific arm devoted to equity investments, BNDES Participações (BNDESPAR)—doing so at the same time as the inception of the Brazilian corporation law—which provides equity funding and fosters domestic capital markets. The equity arm has shared decision processes through independent committees, the same executive board as Brazilian Development Bank, and specific policies and procedures to comply with when investing in a company. The agency is compliant with the Brazilian Security and Exchange Commission.

The total portfolio of the equity arm has grown substantially since the 1970s, investing in more than 300 companies and, since the mid-2000s, most of its companies have received funds through seed venture capital and private equity funds. In 2013, total market value exceeded R$80 billion. Equity shares are bought and sold every year, and the agency has generated stable dividends and profits.

The activities of the equity arm have also evolved. Initially, in the 1970s, the agency only engaged in direct equity investments, but instruments now include convertible bonds, private equity, and venture capital funds, as well as seed capital investments.

The equity arm is the biggest venture capital and seed investor in Brazil, and the equity portfolio through venture capital and private equity funds comprises 34 funds, 162 companies, R$2.5 billion invested, 15 different sectors, and 3-to-1 leverage from the private sector for each real invested. The agency aims to build institutional capacity, and because of this mandate in developing the Brazilian capital markets, it constantly introduces new funds. It established the country’s first seed capital fund and is building a small and medium-sized enterprise access fund, and corporate venture funds, in addition to public-private partnership funds.

The agency’s strategy is to focus on long-term company fundamentals and total portfolio performance. Benefiting from the portfolio approach, rather than focusing on the losses of specific ventures, the equity arm invests in leapfrog and risky ventures.

It does not do buyouts, however, and no longer practices debt-to-equity balance sheet restructurings, such as debt-to-equity swaps, because of many failed deals in the 1980s. The agency backs companies and their market dynamics rather than stock market trends. And there is a thorough review process with the companies on performance and other firm activities.

The development bank used to take control of companies, but it no longer follows this micromanaging approach. It does not appoint any managers, but encourages the best corporate governance practices. In fact, the involvement of Brazilian Development Bank implies a stamp of approval, and as a result, it is an influential and a key shareholder in most companies that it invests in.
CONCLUSION

A broader view of development requires a review of its historical aspects and implementation of policies to lift constraints. Building professional state institutions is crucial, and the Brazilian Development Bank is one of these. Despite some of its failures, it has been relatively successful overall in promoting Brazilian development, including in the industrialization of recent decades and in the focus on innovation today.

To promote innovation and the growth that follows it, it is important to support firms in strategic industries, engage in risky and leapfrog investments, focus on the long term, and integrate best governance practices and performance measures, among other things. Brazil’s experience makes clear that the state can play an important role in implementing development strategies and attaining a sustainable growth path.

REFERENCE