Report 2: Development Financing

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# Introduction

The reduced levels of labor productivity in the Brazilian economy are strongly associated with its low capital/labor ratio. This indicator, in turn, is the result of low rates of investment. In fact, in recent decades, these rates have remained at levels consistently lower than 20% of the gross domestic product (GDP). Thus, increasing the rate of investment is a *sine qua non* condition to restore the country’s productivity gains and economic growth. However, the rate of investment is limited by, among other things, the financing conditions that characterize the Brazilian economy. Not only does the country have particularly high real interest rates, but it has capital and credit markets that are relatively low in relation to the GDP. Thus, the shortage of long-term financing may be indicated as one of the chronic bottlenecks for Brazilian economic development.[[3]](#footnote-3) In acute crisis conditions, such as what the Brazilian economy is currently experiencing, where investor confidence is shaken by high levels of uncertainty regarding the country’s future growth potential, the financing shortage tends to worsen. In cases such as this, the actions of the public sector, through national development banks, can contribute to mitigating this problem.

The need to provide long-term financing for investments led to the creation, in the 1950s, of the National Economic and Social Development Bank (BNDES). Essentially, it is a public bank that, using compulsory savings and the national treasury, provides financing under the most favorable conditions for investments in the country. Since funding costs for the Brazilian government (expressed in the basic interest rate set by the National Monetary Council) are higher than the interest rates imposed by BNDES, the bank’s financing operations embody some type of subsidy. In this sense, BNDES actions are, ultimately, limited by the fiscal conditions of the Brazilian government. In a context marked by such restrictions, the bank’s actions must be calibrated toward investments actually capable of contributing to increasing productivity levels and generating positive external effects for the Brazilian economy. Additionally, the bank’s choice of financing priorities must also be geared towards segments in which there is a credit shortage or restricted access to available credit.

In this group, the micro, small, and medium enterprises (MSMEs) and the infrastructure projects – including those focused on renewable energy –were selected as the objects of a loan operation by IDB to BNDES (operation BR-L1442), whose objective is to stimulate the productivity growth of the Brazilian economy. This perception is justified because these segments *i)*have the potential to contribute to increasing the productivity levels of the Brazilian economy, as demonstrated in the first document prepared under the scope of this study; [[4]](#footnote-4) and ii) they are subjected to proportionately higher levels of credit rationing, as discussed later in this document.

Thus, the aim of this study is to contribute to the production of the supporting documentation for a loan operation from IDB to BNDES, whose objective is to provide financing to specific segments, in order to stimulate productivity growth of the Brazilian economy. This paper presents information on financing the MSMEs, infrastructure, and renewable energy production projects. The study is structured into three sections, in addition to this introduction. In section 2, we discuss the financing pattern of the Brazilian economy, its bottlenecks and the role of BNDES within this context. In the third section, we present information about the patterns of financing in the selected sectors and their bottlenecks. Finally, in section 4, we present the final considerations of this work.

# Pattern of investment financing in the Brazilian economy.

As indicated in this paper’s introduction, in recent years the investment rate in Brazil has remained low. As illustrated in Chart 1, that this indicator oscillated from 2000 and 2013, between 15% and 20%, without, however, presenting a sustainable growth trend.

Chart 1: Investment Rate in the Brazilian Economy, 2000 - 2013

Source: IBGE - National Accounts System (SCN).

|  |  |
| --- | --- |
| Taxa de investimento (preços correntes) | Investment Rate (current prices) |

The low investment rates are associated with a series of factors that involve expectations, regulatory standards, business climate and, especially, long-term financing conditions. In fact, this final aspect can be considered one of the main bottlenecks for the country’s sustainable growth. According to Prates (2016), “historically, the financing of Brazilian economic development required compulsory savings funds, managed by BNDES (Workers’ Assistance Fund – Fundo de Amparo ao Trabalhador – FAT) and the Federal Savings Bank (Caixa Econômica Federal – CEF) – (Government Severance Indemnity Fund – Fundo de Garantia por Tempo de Serviço – FGTS), and external funding, since a long-term financial system had not been developed in the country”.

In recent decades, different factors have competed to explain the weaknesses of the long-term financing system in the Brazilian economy. Until the mid-1990s, the high inflation rates limited the economic agents’ capacity for long-term planning and the elevated risks impaired the emergence of a credit and capital market in the country. Thus, one of the conditions for the development of this market was the monetary stabilization achieved in 1994. Since then, however, the high interest rates necessary to finance the Brazilian public debt took on an important role, given that the combination of risk, return, and term associated with public debt tends to be more attractive than alternative forms of investment. Torres Freire (2012), for example, argues that “it is essential for the functioning of a private securities market that the sovereign debt profile be capable of generating the types of interest rate structures, anchored in liquid and long-term vertices. The information regarding the National Treasury’s cost of funding for a given time horizon is a key variable for the credit risk pricing models of private issuers.” According to Freitas (2011), “the elevated risk of long-term investment projects deters private investors and banks, who find better options in public securities, which are profitable assets with high liquidity.” Under these conditions, the spontaneous emergence of a long-term financing market within the country is unlikely.

The prevalence, within the country, of a minimally developed capital market is also a factor that limits the economy’s ability to finance its long-term development. According to Prates (2016), the Brazilian capital market has always been characterized “by the lack of private investors and the presence of fewer institutional investors than needed, in addition to being highly concentrated in few titles.” The minimally developed private securities market forces investors to hold the securities until maturity and, thus, banks and companies struggle to raise funds by issuing debt securities with longer maturities and with a level of remuneration compatible with that of business (Freitas, 2011). According to the author, raising funds in the primary fixed income market generates around 2.5% of the GDP, which is very little, and is carried out through the issuance of short and medium term securities.

Reinforcing this perception, Torres Filho (2012) presents the Brazilian financial market’s asset profile for a recent period (table 1) and calls attention to the growing dynamism in the local capital market, particularly between 2006 and 2007, when there was the highest number of initial public offerings (*IPO’s*). According to the author, one of the most important elements for stimulating this market was the foreign investors, who represented, in 2011, 40% of the spot market liquidity. However, in recent years, the economic and political crises caused a decline in foreign investments in the Brazilian economy. Foreign direct investments in Brazil went from US$130 billion to US$113 billion, from 2014 to 2015, while outflows rose from US$33 to US$48 billion during the same period.

Table 1: Stock of the Brazilian financial market in selected years (in billion R$)

|  |  |  |  |
| --- | --- | --- | --- |
| **Assets** | **2006** | **2011** | **Growth** |
| Fixed Income Market (a + b) | 1621 | 3304 | 104% |
| Total private securities (a) | 527 | 1521 | 189% |
| Corporate Securities | 157 | 410 | 161% |
| Bank Securities | 346 | 932 | 169% |
| Credit Assignment Securities | 24 | 179 | 646% |
| Total government bonds (b) | 1094 | 1783 | 63% |
| Stock market | 1545 | 2294 | 48% |
| Financial Instruments | 461 | 1195 | 159% |
| Derivatives Market | 1723 | 5943 | 245% |
| Total | 5350 | 12736 | 138% |

Source: adapted from Torres Filho (2012).

As you can see, in the fixed income market, public securities still dominate, representing 54% of the total in 2011, although it is apparent they have declined when compared with their share in 2006, which reached over 67% of the total. One of the reasons for the growth of the private securities market was the reduction in real interest rates observed until early 2013. Once again, it is worth remembering that this trend has reversed in recent years, making it difficult for this growth trend to continue, at least in the short-term.

Despite the significant growth during the recent period (more than 180% between 2006 and 2011), the private securities market still represents a very small portion of the total assets in the domestic financial market (Torres Filho, 2012). This finding is clear when you compare the size of the corporate securities market in Brazil *vis-à-vis* select countries (table 2).

Table 2: stock of corporate securities in selected countries (as % of the GDP), 2010

|  |  |
| --- | --- |
| **Country** | **% of the GDP** |
| United States | 19.7 |
| Germany | 10.7 |
| France | 10.9 |
| United Kingdom | 0.9 |
| Brazil | 0.5 |
| Chile | 14.6 |
| Mexico | 3.4 |

Source: Torres Filho (2012)

According to Torres Filho (2012), the development of this market throughout Latin America, with the exception of Chile, has been much slower than in other countries, which has resulted in a very low ratio between stocks of private debt and GDP stocks. In Brazil, this ratio reaches 1%, while in the United States, it reaches nearly 20% and in some European countries, it is around 10%.

At the root of many of these problems with the long-term financing market in Brazil are *i)* the low domestic savings rate, which makes the country more dependent on external savings; and *ii)* issues related to the regulatory and institutional environments that do not provide adequate incentives for the emergence of a private long-term financing market.

In the early 2000s, the country experienced progress in some microeconomic reforms that favored credit growth and the extension of their terms within the country, namely the bankruptcy law, the effects of which were analyzed by Araújo and Funchal (2009).[[5]](#footnote-5) Thus, the credit/GDP ratio went from nearly 30%, at first, to 50% in the late 2000s.[[6]](#footnote-6) Obviously, alongside the microeconomic reforms, the economic stability attained in the previous decade was an essential condition for this expansion to occur, in addition to the real income growth in the 2000s – derived from both salary increases above inflation and the actual evolution of the terms of trade.

Due to the limitations of the national financial system in providing long-term financing, historically, the pattern of financing in Brazil – of companies or families – relied heavily on internal resources, derived from savings or retained profits, followed distantly by the credit market (public and private) and the capital market. Even with the increase in the ratio between credit and the GDP, internal resources continue to play an important role, though less so than at the beginning of the decade. According to estimates of the Brazilian Institute of Capital Markets (IBMEC), own resources represented, in 2015, more than 50% of the investments, compared to 65% in 2004 (Chart 3).

Chart 3: Financing pattern for business and household investments in Brazil, 2004 to 2015 (in % of the total)

Source: IBMEC. Available at: <http://goo.gl/W3Hq1A>. Accessed on: September 1, 2016.

|  |  |
| --- | --- |
| Recursos Próprios (poupança e lucros retidos) | Private resources (savings and retained earnings) |
| Emissão primária de ações | Primary share issue |
| Desembolso BNDES (FINEM E FINAME) | BNDES Disbursement (FINEM [Financing for Companies] and FINAME [Financing for Machines and Equipment]) |
| Habitacional (FGTS+SBPE) | Housing (FGTS [Guarantee Fund for Time of Service] + SBPE [Brazilian Savings and Loan System]) |
| Investimento Estrangeiro Direto | Direct Foreign Investment |
| Mercado de Capitais | Capital Market |
| Fontes Financ. Mercado Internacional | Fin. Sources International Market |

In this context, the main source of long-term financing in the Brazilian economy are still the public banks. Currently, nearly 90% of the loan portfolio, with credit maturing in more than five years is offered by these institutions (Brazil, 2010 apud Freitas, 2011), and BNDES is responsible for more than 67% of the long-term financing in the country (Torres Filho, 2012). According to the same author, the Federal Savings Bank accounts for 12% and Banco do Brazil for a little more than 8%. In turn, some of the largest private Brazilian banks, such as Bradesco and Santander, account for 3.8% and 2.5%, respectively, of the financing maturing in more than five years.

As we can see in the aforementioned data, BNDES stands out in the set of public banks. In fact, the bank, which was created in the early 1950s, has played a central role in the Brazilian economy since then. This is the main instrument of industrial policies adopted in Brazil and it played a key role in the privatizations that occurred through the 1990s.

BNDES is the main source of long-term credit for production investments and for investments in infrastructure in Brazil. As indicated in Chart 2, the bank accounted for nearly 8% of the gross fixed capital formation (GFCF) in 2004 and, in 2015, reached 12%, having peaked at 18% in 2009, the year in which the Investment Support Program (ISP) was established as one of the main instruments used by the Brazilian government to mitigate the effects of the international crisis on the country. In 2015, the BNDES disbursements reached R$ 135.94 billion. (equivalent to US$40.72 billion, according to the average exchange rate for that year). Between 2000 and 2015, the disbursements reached R$220.92 billion (in constant values for 2015, deflated by the General Price Index – Internal Availability (GPI-IA) and equivalent to US$95.75 billion) in 2010 (Chart 4).

Chart 4: BNDES Disbursements, 2000 – 2015

Source: prepared by the authors, based on BNDES data.

|  |  |
| --- | --- |
| R$ ctes de 2015 (defl. IGP-DI) | R$ Electronic Bills of Lading 2015 (defl. GPI-DA) |
| US$ (taxa média do ano) | US$ (avg. annual rate) |

The peak of BNDES participation in investments is, clearly, accompanied by the peak in Bank disbursements derived from the countercyclical measures associated with the ISP. These measures had a significant impact on the economy in 2009 and in 2010, maintaining heated economic activity while the rest of the world suffered with the international crisis. On the other hand, these measures had a high fiscal cost and did not necessarily prioritize sectors or activities that could have major impacts on economic recovery over the long-term. Just the subsidies from the National Treasury to BNDES reached R$28.53 billion in 2015 (Chart 5). These values (the magnitude of the annual budget for the “Bolsa Família” [Family Stipend] program) arose from the interest rate differentials and the equalization of expected rates, for example, under the ISP.

Chart 5: National Treasury subsidies to BNDES, 2008-2015 (in billions of reais)

Source: National Treasury. Available at <http://goo.gl/aXSUgI>. Accessed on September 5, 2016.

|  |  |
| --- | --- |
| Financial subsidies | Financial subsidies |
| Credit subsidies | Credit subsidies |
| Total | Total |

The role of BNDES in providing long-term financing for the economy tends to be more relevant in a crisis context, like the present, due to the deepening of the existing bottlenecks in the long-term financing of the Brazilian economy. An important factor in recent years is the upward trend in real interest rates, which further reduces the attractiveness of alternative investments. In addition, there has been an increase in the default rate, both of individuals and legal entities, and the risk associated with private credit, which tends to reduce its supply, particularly in segments with higher risk levels. Worsening expectations also tend to slow down the private credit market and the capital market in the country, affecting the rate of investments. Finally, external savings, one of the historically relevant pillars for the country, also tend to diminish in times of crisis and uncertainty, and this is indeed taking place.

Of course, the solution to long-term financing in the country requires regulatory and institutional changes much deeper and with longer maturity periods. However, in the short term, the worsening of some of the factors that hinder the financing of investments in the country tend to make the role of BNDES even more relevant. However, restrictions to the performance of the bank, particularly the fiscal constraints, also tend to become more relevant. Although there have been signs since 2015 that new operations involving subsides from the National Treasury to BNDES would be reduced, the existing contracts, which involve long-term operations, generate costs up to 2060. In this sense, it is unlikely that, in a context of fiscal constraints, BNDES can get abundant resources from the National Treasury, as it has in recent years, to expand its credit portfolio. This finding suggests the need to prioritize segments that are likely to contribute significantly to increasing the productivity levels of the Brazilian economy and that are subject to greater long-term credit rationing levels.

# Financing for strategic themes

The document entitled "Report 1:Productivity and Economic Growth," prepared under the scope of this study, showed that, in general, the data collected on MSMEs in Brazil indicate that their productivity levels are lower than those of larger companies. In this sense, actions that contribute to the reduction of this gap can contribute to increase the aggregate productivity levels of the country. The same study found that the infrastructure conditions are directly related to the aggregate indicators of productivity in the country. Finally, the above mentioned report showed that the concentration of the energy matrix in hydroelectric generation can make the supply of energy vulnerable to climate events and the promotion of investments in renewable energy can help to mitigate any problems related to price, offer and security of energy supply in the country.

However, these segments, for reasons indicated throughout this section, face high levels of restrictions for project financing in the private credit and capital markets. This assessment reinforces the need to focus public credit on industries with the greatest potential to generate positive externalities for the economy or whose increased productivity levels contribute significantly to the improvement of aggregate indicators of the Brazilian economy. In the period following the 2008 crisis, however, public credit does not seem to have been especially aimed at these industries. Bonomo et al. (2014), for instance, show that, although public credit may be particularly important in industries that generate positive externalities, they were not the industries receiving the greatest benefits from the wide credit expansion directed to the Brazilian economy after the 2008 crisis.

In this sense, due to their impact on the productivity aggregated indicators in Brazil and the credit rationing they have to face, the MSMEs, the infrastructure, and the renewable energy emerge as the areas that deserve special attention from the BNDES over the coming years.

## Micro, small, and medium enterprises

There are several bottlenecks and market failures that limit access to credit for the MSMEs. First, the low scale of operations with smaller companies make credit operations less profitable and less attractive for private banks than the operations with large companies, since the operating costs of financing represent a greater portion in small operations . Second, smaller companies are not always capable of providing the guarantees required to access financing, especially in the longer term, when the operation risk increases and in the case of informal companies. Not surprisingly, smaller companies tend to finance themselves more strongly through own capital than large companies. An indicator that reflects in a rough manner this greater trend, in the case of industry, is the value of financial expenses of industrial enterprises as the proportion of their costs. This value is between 2% and 3% for companies with less than 100 employees and it reaches about 5% in companies with more than 500 employees.[[7]](#footnote-7) Another indicator of credit access divided by company size is presented in the Banking Economy and Credit Report of the Central Bank of Brazil. This indicator, displayed in table 3, shows that large companies (over 500 employees) have 43% of the credit balance for legal entities in the Brazilian economy, whereas the set of companies that have between 1 and 50 employees account for 22% of total credit.

Table 3: credit balance for legal entities in the Brazilian economy by company size: December/2014 (R$ million)

|  |  |  |
| --- | --- | --- |
| **Number of Employees** | **R$ millions** | **% Part. %** |
| Total | 1,605,698 | 100% |
| No employees\* | 223,760 | 14% |
| 1 to 4 | 89,136 | 6% |
| 5 to 9 | 67,770 | 4% |
| 10 to 19 | 77,399 | 5% |
| 20 to 29 | 42,200 | 3% |
| 30 to 49 | 69,907 | 4% |
| 50 to 99 | 89,907 | 6% |
| 100 to 249 | 112,896 | 7% |
| 250 to 499 | 141,257 | 9% |
| 500 or more | 691,465 | 43% |

\*It includes individual companies, inactive companies, and headquartered abroad.  
Source: Central Bank - Banking Economy and Credit Report, 2014.

In the case of BNDES, the participation of the MSMEs in the total disbursements reached, on average, in the 2001-2015 period, about 27% of total disbursements. In the recent period, there has been a trend of growth for this participation, and in the last five years, the participation of MSMEs in total bank disbursements reached, on average, 32.07% (Chart 6).

Chart 6: BNDES Disbursements, according to company size: 2001-2015 (in constant 2015) R$.

Source: BNDES.

|  |  |
| --- | --- |
| Micro | Micro |
| Pequena | Small |
| Média | Medium |

As observed in the table, disbursements made to MSMEs reached the equivalent to more than R$ 35 billion. In the case of small and medium-sized enterprises, the highest amounts observed are around R$ 20 billion. This trend is directly linked to specific actions taken by the bank. The BNDES Card, for example, is an important bank tool and it is exclusively for MSMEs. In 2015, withdrawals through this card reached R$ 11.2 billion, or nearly 30% of total withdrawals for this segment in that year.[[8]](#footnote-8)

## Infrastructure

The World Bank (2005) estimates that Latin America countries would require infrastructure investments of about 3% of the GDP in order to maintain the existing capital stock and keep up with population growth and the demands of universalization of basic services. However, data show that, in Brazil, these investments have been around 2% of GDP in the recent period (Frischtak, 2008). Estimates of a consulting firm specializing in the topic indicate that between 2011 and 2014, this indicator was between 2.18% and 2.37% of GDP (table 4).

Table 4: Infrastructure Investments in Brazil, 2001 – 2014 (as % of GDP)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Period** | **2001-2010** | **2011** | **2012** | **2013** | **2014** |
| Transportation | 0.63 | 0.80 | 0.84 | 1.01 | 0.96 |
| Electricity | 0.62 | 0.72 | 0.70 | 0.72 | 0.68 |
| Telecommunications | 0.69 | 0.49 | 0.51 | 0.43 | 0.53 |
| Water and Sanitation | 0.18 | 0.17 | 0.20 | 0.21 | 0.20 |
| **Total** | **2.12** | **2.18** | **2.27** | **2.37** | **2.37** |

Source: Inter B Consultoria. Available at <http://goo.gl/VNGcOC>. Accessed on Sep. 5, 2016.

The need for expansion of infrastructure investments in the country comes up against a series of related bottlenecks both due to market failures and government failures. According to Frischtak (2008), government failures are related to the legal and regulatory framework of the country, the vagueness of the rules, and the delay in decision-making. The lack of regulatory clarity affects the perception of investment risk, with a negative impact on the supply of credit for infrastructure.

The infrastructure investments tend to be irreversible, indivisible, high and with a long maturity. Therefore, financing of projects in this segment should be adjusted to these characteristics. Not surprisingly, almost every large infrastructure investment project in the country depends on BNDES financing to be made possible. Estimates of the National Confederation of Industry show that BNDES and the Brazilian Federal Savings Bank financed 62% of total infrastructure investments in the country in 2014. [[9]](#footnote-9)

The BNDES presence is also related to the weaknesses of the regulatory standard observed in the country. Cavalcante and Uderman (2011) argue that the presence of BNDES in the financing of the privatization of infrastructure sectors was used as a kind of *hedge* against changes in the regulatory standards, for example. It is possible to leverage a greater presence of the private sector, but in this case it is necessary to clearly define the tariff setting standards (e.g., reduction of electrical energy prices in 2012, which inhibited investment in the sector) and to guarantee stability of the regulations.

Over the past few years, BNDES was directly involved in the financing of infrastructure projects included in the Growth Acceleration Program (GAP). In fact, the bank stated that "the progress of the actions related to the GAP has been a priority for the Bank".[[10]](#footnote-10) This perception is consistent with the participation of this segment in the total disbursements provided by the bank, which reached just over 30% in 2015. Total disbursements for infrastructure reached R$ 45.62 billion in 2015 (in constant Reais of that year). There were peaks in 2009 (R$ 65.08 billion) and 2010 (R$ 63.20), due to the Investment Support Program (ISP), the GAP, and the countercyclical measures adopted by the government in response to the international crisis.

The Bank's infrastructure financing is classified as:

* Water, Sewage and Waste;
* Electricity and Gas;
* Telecommunications;
* Air Transportation;
* Water Transportation; and
* Ground Transportation.[[11]](#footnote-11)

Chart 7 shows the growth of the disbursements made by BNDES for infrastructure in the recent period segmented according to that classification.

Chart 7: BNDES Disbursements by selected infrastructure sectors, 2000-2015   
(in constant R$ million)

Source: BNDES.

|  |  |
| --- | --- |
| Água, esgoto e lixo | Water, Sewage and Waste |
| Eletricidade e gás | Eletricity and Gas |
| Telecomunicações | Telecommunications |
| Transporte | Transportation |

Most financing disbursements made by the bank for infrastructure were allocated to the transportation industry, mainly ground, and electricity that represented between 2000 and 2015, more than 90% of the disbursements made for this industry. The disbursements made by the bank to the transportation industry reached more than R$ 40 billion in 2010, but there has been a decreasing trend since then. The electricity and gas industry has been the second most important industry in the Bank's infrastructure portfolio in recent years, and in 2015, reached the same level as the transportation industry (about R$ 20 billion).

## Renewable energy

In the first document prepared within the scope of this document, we presented evidence that the focus of the Brazilian energy matrix in hydroelectric generation may make the energy supply vulnerable to climate events, such as prolonged droughts, for example. Conversely, the thermoelectric generation is associated with production cost problems, uncertainty in the supply of fossil fuels, and environmental problems. In this sense, the diversification of the Brazilian energy matrix with a view to mitigate occasional problems related to price, supply, and security of the supply is directly related to the expansion of renewable energy in Brazil.

Infrastructure projects, in general, require financing conditions compatible with their greater likelihood for irreversibility, indivisibility, the large amounts involved, and the long maturation period. In the case of renewable energy, uncertainties related to the greater technological dynamism of the sector and the regulatory standards still not completely consolidated, entail additional restrictions on the supply of financing through private credit and capital markets. Simulations presented by Aquila et al. (2016), using the Monte Carlo technique, indicate that, in the specific case of wind energy, the wind speed, the selling price of energy, and the disbursement for the investment are aspects that have greater impact on the financial return of the project. The authors also indicated that the regulated market is less risky for investors than the free market and they concluded that the support of BNDES is necessary to offset the financial risks of the producers of this type of energy. Support from BNDES to renewable energy, however, is not limited to wind power. The bank has a set of credit lines specifically geared to renewable energy.[[12]](#footnote-12)

Chart 8 below shows the financing sources used to finance energy projects in Brazil.

Chart 8: Financing sources for energy projects

Anbima Newsletter (May 2016).

As shown in the chart, more than 90% of the funds that made up the financing sources for these projects come from BNDES. The remaining funds came from capital market sources (5.8%, especially through infrastructure debentures), private financing (1.8% through bridge loans), and transfer of resources from BNDES to private banks (0.5%). These data reaffirm the importance of BNDES in the financing of the sector in Brazil. Although these data are not restricted to renewable energy, it is not difficult to assume that this pattern should be the same for this particular case, even if there are occasional differences between the various types of energy.[[13]](#footnote-13).

In operating statistics released by BNDES, it is not possible to segment the disbursements for renewable energy. Data are aggregated for "electricity and gas." However, the bank reported that, between 2014 and 2015, "the most significant increase in financing for the energy sector was for wind energy projects, which had an increase of 85% in terms of disbursements, from R$ 3.3 billion to R$ 6.1 billion." The amount is significant, representing 27.35% of the disbursements for electricity and gas in that year.[[14]](#footnote-14) Approvals in 2015 reached R$ 7.42 billion, which were allocated to 82 new power generation projects from this source.[[15]](#footnote-15) Chart 9 below shows the upward trend of approvals geared to this segment by BNDES.

Chart 9: BNDES approvals for wind power projects, 2003 - 2015

Source: BNDES

The bank also recorded that the "BNDES disbursements for projects related to the so-called Green Economy reached R$ 31.3 billion in 2015, an increase of 11%. The so-called Green Economy includes projects of energy efficiency, renewable energy, water management, sewage and solid waste, agricultural improvements, adaptation to climate change, reforestation, and passenger public transportation (subways and trains), among others".[[16]](#footnote-16)

# Final Considerations

In this document we present information collected on the financing pattern of investment in the Brazilian economy and, in particular, on the financing for MSMEs, infrastructure, and power generation projects from renewable sources.

There was an attempt to show that the reduced investment rates that marked the Brazilian economy over the past decades are closely associated with the weaknesses of the financial system in the country, especially with regard to long-term credit supply. For this reason, the performance of a national development bank capable of providing long-term credit and appropriate conditions for investment has played an important role in the Brazilian economy. However, due to the fiscal costs associated with BNDES and the Brazilian government budgetary constraints, it is necessary to select the segments to be supported by the bank. Even under circumstances where external resources are obtained, such as in the case of the loan operation from the IDB for BNDES, it is necessary to identify segments capable of generating positive externalities (or whose elevated levels of productivity contribute significantly to the improvement of the aggregate indicators of the Brazilian economy) and for which there is credit rationing as the preferred targets of BNDES.

Because of their impact on the aggregate indicators of productivity in Brazil (which were discussed in the first document prepared in the scope of this work) and the credit rationing that they face, the MSMEs, infrastructure and, in particular, renewable energies emerged as objects of a loan operation from the IDB to BNDES. It was shown then that the MSMEs face difficulties to get credit due to a number of bottlenecks and market failures. The low scale of operations and the difficulties to provide the necessary guarantees are obstacles that limit the access of companies in this sector to long-term credit. Empirical data reaffirm this perception. The participation of the MSMEs in the disbursements made by BNDES reached an average of over 30% in the period between 2001 and 2015. This trend is directly linked to specific actions taken by the bank, such as the BNDES Card.

Data collected on infrastructure showed that investments in this sector have been at around 2% of GDP in recent years in Brazil. This is a small and insufficient percentage to support the growth of the Brazilian economy. However, a number of market failures and government failures restricts the supply of credit for this type of investment. This is because investments in infrastructure tend to be irreversible, indivisible, high, and have a long maturation. In addition, uncertainty about the regulatory standards affect the risk of projects and adversely impact the availability of credit for the segment. The data collected indicate broad participation of BNDES in financing infrastructure investments in Brazil and the segment's share in the total disbursements made by the bank reached just over 30% in 2015.

In particular, more than 90% of the resources that comprise the financing sources of investment projects in energy came from BNDES. It is reasonable to assume that these percentages also apply to renewable energies. In this case, in addition to the common aspects of infrastructure projects that hinder access to private credit and capital markets, uncertainties related to greater technological dynamism and unconsolidated regulatory standards imply additional restrictions to financing supply. In this sense, the support from public banks may contribute to neutralize the financial risks for producers of wind energy. BNDES support to renewable energy, however, is not limited to wind energy, as the bank has a set of credit lines specifically geared to renewable energy. It is indisputable, however, that wind energy has an important role in the bank, as it accounted for over 27% of the bank's disbursements for electricity and gas in 2015.

# References

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1. \* Director of DISET / Ipea. [↑](#footnote-ref-1)
2. \*\* Legislative Consultant in the Federal Senate. [↑](#footnote-ref-2)
3. Although fundamental, these factors - discussed in more detail in Section 2 of this document - are not the only ones limiting investment in the Brazilian economy. Expectations, regulatory standards and the business environment itself are also factors that contribute to the explanation for the low investment rate in Brazil. [↑](#footnote-ref-3)
4. The document entitled “Report 1: Productivity and Economic Growth” includes information regarding the relationship between the three topics mentioned and productivity. [↑](#footnote-ref-4)
5. Most of these reforms - including in the areas of bankruptcy law, payroll loans and the promulgation of Trust Law - took place during the 2003 - 2006 period. There is strong evidence that the simplest resolution of the problem of insolvency has contributed to the expansion of the volume of credit in the economy (Araujo; Funchal, 2009). Another important factor in credit growth, particularly in the case of businesses, was longer terms. [↑](#footnote-ref-5)
6. Debt to GDP Ratio - exclusive of credit to financial intermediaries - % (available at: <http://goo.gl/ge7tn>; accessed on Sept. 5, 2016). [↑](#footnote-ref-6)
7. This figure was estimated by the authors based on the relationship between the variable "interest expense" and the variable "total costs" as per IBGE's 2014 Annual Industrial Survey (AIS). Although a more accurate estimate would require consideration of financial expenses in relation to assets which, as compared with the total costs, suggest a lower availability of credit to MSMEs. [↑](#footnote-ref-7)
8. I t's worth noting that the definitions of micro and small enterprises adopted by BNDES are based on annual revenue and not the number of employees (microenterprises are those with revenue up to R$ 2.4 million; small businesses up to R$ 16 million and medium-sized enterprises are those with revenue up to R$ 90 million annually). Therefore, these data cannot be compared directly with those shown in the table. [↑](#footnote-ref-8)
9. Available at: <http://goo.gl/Isf4u0>. Accessed on Sept. 5, 2016. [↑](#footnote-ref-9)
10. Available at: <http://goo.gl/nFiqPn>. Accessed on Sept. 5, 2016. [↑](#footnote-ref-10)
11. In analyzing the infrastructure sector, BNDES includes the "auxiliary transportation and delivery activities" and "construction" sectors (some of which are classified as urban mobility projects). (available at: <http://goo.gl/9h0uYz>; accessed on Aug. 12, 2016). In this report, however, only the listed sectors were considered. [↑](#footnote-ref-11)
12. Available at: <http://goo.gl/oNzSoi>. Accessed on Sept. 5, 2016. [↑](#footnote-ref-12)
13. For example, the implementation time for a medium or large-scale hydroelectric power plant (assuming no environmental licensing problems or opposition from local communities) can be twice as long as that for a wind farm. [↑](#footnote-ref-13)
14. Accessed on: [http://goo.gl/ge9tn](http://goo.gl/EZU9SG). Accessed on Sept. 5, 2016. [↑](#footnote-ref-14)
15. Accessed on:  [http://goo.gl/utrABg](http://goo.gl/EZU9SG). Accessed on Sept. 5, 2016. [↑](#footnote-ref-15)
16. Available at: <http://goo.gl/EZU9SG>. accessed on Sept. 5, 2016. [↑](#footnote-ref-16)