

WORKING PAPER SERIES

Infrastructure Finance in the Developing World

**National Development Banks and Infrastructure Provision:
A Comparative Study of Brazil, China, and South Africa**

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The *Infrastructure Finance in the Developing World Working Paper Series* is a joint research effort by GGGI and the G-24 that explores the challenges and opportunities for scaling up infrastructure finance in emerging markets and developing countries. Each paper addresses a unique piece of the infrastructure finance puzzle and provides critical analysis that will give impetus to international discourse and play a catalytic role in the creation and success of new development finance institutions. The papers have been authored by top experts in their respective fields, and the process has been carefully guided by the leadership of both organizations. This work has important implications in the post-2015 environment, given the essential role infrastructure must play in achieving sustainable development. To this end, GGGI and the G-24 look forward to further development and operationalization of the contents of these papers.

National Development Banks and Infrastructure Provision: A Comparative Study of Brazil, China, and South Africa

Chris Humphrey¹

1. Introduction

National development banks (NDBs) are specialized public finance institutions, common in many developing and industrialized countries. At least 280 NDBs operate in the world, defined as having a minimum 30% government ownership stake and an explicit developmental mandate.² Many NDBs supply a significant share of credit in their countries of operation and have significantly contributed to the development of numerous major industrialized economies, notably Japan and several European countries.³ Their role in infrastructure provision—the topic of this paper series—is less clear: some NDBs have almost exclusively focused on infrastructure finance, while for others it is one of many aspects of their operations.

The organizational and operational characteristics of NDBs worldwide vary greatly, as a recent World Bank survey highlights.⁴ This paper seeks to better understand the challenges faced by NDBs in providing development financing, particularly for infrastructure investment, both within their own countries and in other countries. The analysis considers patterns in development finance operations, instruments utilized, sources of finance, administrative organization, and relations with governments to draw lessons from the NDBs' experiences and their various operational models, particularly as they relate to infrastructure in the developing world. Therefore, this paper examines three prominent NDBs in emerging economies, each with considerable diversity in geography, operations, and finances: China Development Bank (CDB), National Economic and Social Development Bank of Brazil (BNDES), and Development Bank of Southern Africa (DBSA).

This paper does not comprehensively evaluate NDBs in general, or even these three NDBs in particular. Rather, it

assesses the challenges and tradeoffs faced by the three major NDBs in emerging economies in their efforts to (1) reach the goals set by their governments, (2) obtain the resources needed to function at a meaningful scale, and (3) operate within their unique economic and political contexts. A comparative analysis can hopefully elucidate the potential for NDBs to serve as a significant source for infrastructure finance in light of the massive needs,⁵ as well as highlight strategies and techniques that may be advantageous for other development finance institutions, existing or future.

Three caveats are required before proceeding. First, this research is largely a desk review, limited to publicly available information from each NDB as well as secondary sources (news reports and other available studies). This makes direct comparisons challenging as each NDB has different disclosure and reporting policies. Second, this paper does not address the question of development effectiveness—such an undertaking would be extraordinarily complex and require extensive on-the-ground investigation. This includes issues related to social and environmental impacts of NDB projects, which have been questioned by some observers but are not analyzed here.⁶ Third, while comparisons between the three NDBs here are revealing, they are not entirely “fair”—each one operates in an extremely different political, social, and economic contexts, which significantly impacts NDB goals, capacities, and financial outcomes.

2. Overview of Three NDBs⁷

The three NDBs considered in this paper range tremendously in size due to, among other factors, the scale of the economy or economies in which they operate, access to funding sources, and the role intended for them by their governments. For example the CDB, the

Box 1. Justifications and Risks of NDBs

Numerous potential NDB functions have been used to justify their continued relevance to economic growth and improved social outcomes. These include, among others

- Overcoming market failures due to lack of information or risk aversion by private actors;
- Addressing divergence between private and social returns that may inhibit investment;
- Matching maturity, price, currency or other financial characteristics to the project needs with positive social externalities;
- Playing a counter-cyclical financing role during economic crisis;
- Supporting companies and/or sectors considered to be strategic for a country's economic growth and development;
- Providing project appraisal and technical assistance that private sector actors cannot supply at a reasonable cost.

Simultaneously, NDBs have numerous inherent risks that can limit or undermine their positive role in promoting development:

- Being captured by powerful political and/or economic interests;
- Distorting the functioning of private markets through overly activist operations;
- Making faulty investment decisions based on poor judgment or lack of knowledge;
- Becoming a major fiscal burden if not properly managed.

Sources: UNCTAD 2012, Luna and Leonardo 2012, Arnedáriz de Aghio 1999.

world's largest NDB (US\$1.3 trillion in assets at the end of 2013), is more than 200 times larger by assets than DBSA (US\$5.8 billion assets at the end of 2013), the largest in the African continent. BNDES, the world's third largest NDB, is approximately one-quarter the size of CDB. They are similar in at least one aspect: all three are 100% owned by their respective governments, with no other shareholders.

2.1. China Development Bank (CDB)

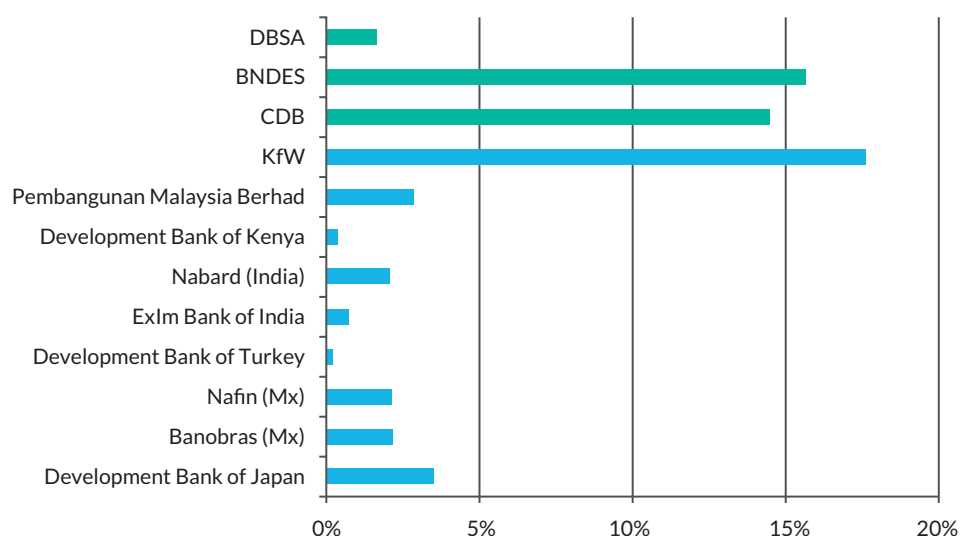
CDB is currently the largest NDB in the world, with US\$1.3 trillion in total assets and a loan book of US\$1.1 trillion as of end 2013. It is the fifth largest bank in China, constituting approximately 5.5% of the country's total banking system assets, and was by one account the 23rd largest bank in the world at the end of 2013.⁸ CDB is an increasingly major player outside China, with an international loan book of US\$176.7 billion at the end of 2013, well above the US\$141.7 billion portfolio of the main lending wing of the World Bank in the same year.

Since its establishment in 1994, CDB has grown tremendously, in particular, since the arrival of new leadership and thorough overhaul of the bank in the late 1990s. It is a critical tool for China's leadership to implement its domestic (and, increasingly, foreign) investment policy. While much of China's economic

boom in the 1980s and early 1990s was driven by foreign investment, the almost unbelievably fast growth of infrastructure since the late 1990s has been largely funded by domestic resources, and CDB has played a fundamental role in this process. It is, in short, difficult to overstate the importance of CDB to China's overall economic development strategy and, in particular, the infrastructure sector.

CDB is formally a joint-stock corporation (as of 2008), although it is wholly owned by the Chinese government and is not listed on any public exchanges. The Ministry of Finance controls 50.18% of CDB shares, Central Huijin Investment Ltd. controls 47.63% shares (a wholly owned subsidiary of China Investment Corporation, the country's sovereign wealth fund), and the National Council for Social Security Fund controls 2.19% shares. As a sign of its importance to China's economic development strategy, CDB has full ministerial rank within the government.⁹ The Board of Directors has 13 members, three of which are reported to be independent,¹⁰ although more details on how the CDB is actually governed are unavailable. CDB has just over 8,000 employees. Unlike the other two NDBs considered here, it has an extensive branch network, with 38 offices within China and three overseas offices (Rio de Janeiro, Cairo, and Moscow).¹¹ Besides the main bank, CDB

Figure 1. Total Assets as % of GDP, Selected NDBs, 2012/2013



Source: Annual reports, all banks; World Development Indicators.

Note: 2013 data for all except Banobras, Development Bank of Turkey, and Pemangunan Malaysia Berhad (all 2012).

Table 1. CDB Subsidiaries (2013)

	Registered Capital	% Owned by CDB	Main Business
CDB Capital Co., Ltd.	US\$7.8 billion	100%	Equity investments
CDB Leasing Co., Ltd.	US\$1.3 billion	88.95%	Equipment and machinery leasing
China–Africa Development Fund	US\$3.3 billion	100%	Investment in Africa
CDB Securities Co., Ltd.	US\$1.2 billion	100%	Brokerage and underwriting
Upper Chance Group Ltd.	1.6 billion British Pounds	100%	Investment holding company

Source: 2013 CDB Financial Statement.

has five subsidiaries (four fully owned and one majority owned) (Table 1). The vast majority of CDB’s activities are managed by the main banking division, which holds 98% of CDB consolidated assets.

2.2. Development Bank of Southern Africa (DBSA)

DBSA was established in 1983 and is fully owned by the South African government. It was first created during the apartheid era, mainly to promote rural development within the country and the “homelands” in both South Africa and present-day Namibia. As part of the transition to democratic rule in South Africa, the organization and role of DBSA was thoroughly reformed through the DBSA Act of 1997. It has no subsidiaries.

The bank’s primary mission is to promote basic infrastructure development in South Africa and, secondarily, to the countries of the Southern African Development Community (SADC).¹² To achieve this goal, lending is focused primarily on South Africa’s 283 municipalities, public utilities, and state-controlled entities in other SADC countries. DBSA is unusual among NDBs in its very strong focus on basic infrastructure. The bank drifted away from this core area to a degree in the mid-2000s, but since 2013 has reduced its operations

outside infrastructure and refocused on its original mandate as part of a major restructuring triggered by poor financial performance.¹³ By assets, DBSA is roughly one-third the size of the country’s largest bank, and it is not among the top five banks in South Africa. DBSA’s portfolio as of 2013 constituted less than 5% of the South African banking system’s assets.¹⁴ Due to a sharp downturn in financial results in 2011–2013, DBSA received its first capital injection from the government since 1994, and has undertaken a major restructuring of its operations, including shutting the operations of the DBSA Development Fund. The government has proposed a reform to the legislation governing DBSA such that it can expand lending to all countries on the African continent, but as of October 2014 the amendment had not yet been approved.¹⁵ The DBSA is fully owned by the government, and the sitting Minister of Finance serves as the governor of the bank. The bank’s board has 13 members, of which five are currently from DBSA, five from the private sector, one is a union leader, one academic, and one is the head of an urban non-profit organization.¹⁶ This governance arrangement—with significant input from outside directors—stands in contrast to the other two NDBs considered in this paper. DBSA’s annual borrowing plan must be submitted to the National Treasury for approval, and it has statutory restrictions on capitalization (equity

to loans minimum of 28.6%) and borrowing (maximum 2.5 times shareholder equity) unlike the other two NDBs. The bank had a single office and 566 employees as of March 2013.

2.3. National Bank for Economic and Social Development (*Banco Nacional de Desenvolvimento Econômico e Social*—BNDES)

BNDES was established in 1952 as a government agency that was later converted into a state-owned company. Since its creation, BNDES has played a major role in Brazil’s economic trajectory, supplying critical planning and financing inputs to develop the country’s infrastructure, agriculture, and industry. Today, BNDES labels itself justifiably “the main financing agent for development in Brazil,”¹⁷ supplying an estimated 70% of long-term lending in Brazil, including one-third of financing for all industrial and infrastructure investment in 2011.¹⁸ With an outstanding portfolio of US\$237 billion at the end of 2013, it is the largest bank in Brazil and the largest creditor in South America, constituting 11.8% of Brazil’s total financial assets.¹⁹

BNDES has a very broad mandate to support “investment projects, acquisition of equipment, and exporting of goods and services, in addition to working on strengthening the capital structure of private companies and non-reimbursable financing of projects that contribute to social, cultural, and technological development.”²⁰ As a result, it is involved in almost all aspects of the Brazilian economy. Lately, it has also begun promoting the internationalization of Brazilian companies, particularly in Latin America and Africa. BNDES has three subsidiaries: FINAME (to finance machinery purchases), BNDESPAR (equity investments), and the newly created BNDES Plc (to support Brazilian companies abroad).

BNDES is fully owned by Brazil’s federal government and is directly answerable to the president. The executive decides on BNDES’ strategic policy while the bank has

considerable autonomy in determining operational policies.²¹ The executive exercises control over BNDES via the Ministry of Development, Industry and Trade. As with DBSA, BNDES offers regular briefings to the Brazilian Congress, but the legislature has no direct influence on BNDES policy. BNDES is operated by a nine-member Board of Directors, all appointed by the Brazilian president and all internal to BNDES. External input and review of BNDES policies and performance comes from the Fiscal Council (two members appointed by the Ministry of Development and one by the Ministry of Finance) and the Advisory Board (10 members, three from BNDES and seven appointed by various ministries). BNDES has 2,858 employees at the end of 2013, four offices within Brazil and branches in Uruguay, London, and (as of December 2013) South Africa.

3. Development Finance Operations

3.1. Overall Patterns

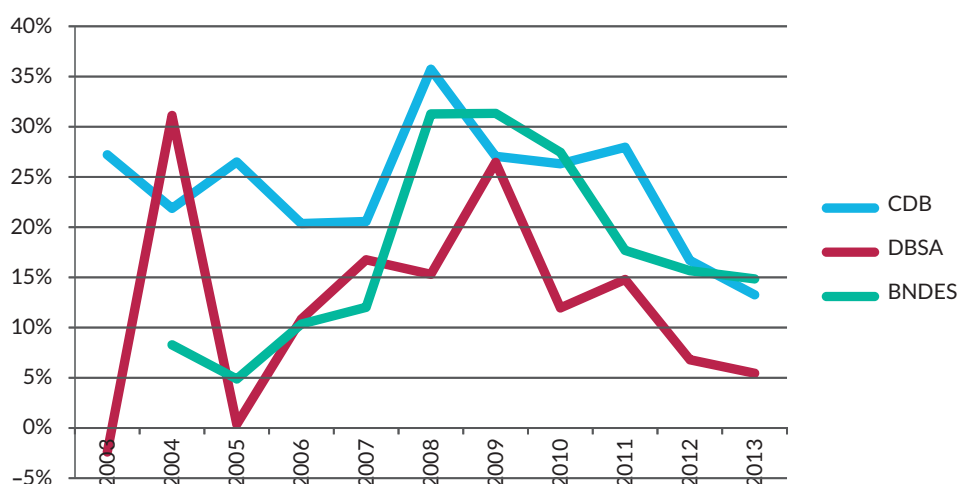
The lending of the three NDBs considered here has grown strongly in the last ten years (Table 2 and Figure 2). DBSA’s loan portfolio has more than doubled over the period, whereas that of BNDES nearly quadruples and that of CDB grew more than fivefold. In contrast, the loan book for the World Bank’s main lending window only grew by 22% over the same time period. Hence, it is clear that these NDBs are highly relevant development finance institutions in their respective countries and, increasingly, abroad as well. CDB has maintained a steady and strong growth pattern, averaging over 20% annual loan portfolio growth since the late 1990s. DBSA, by contrast, has grown more slowly

Table 2. Cumulative Growth in Loan Portfolio, 2003–2013

CDB	508%
DBSA	259%
BNDES	397%

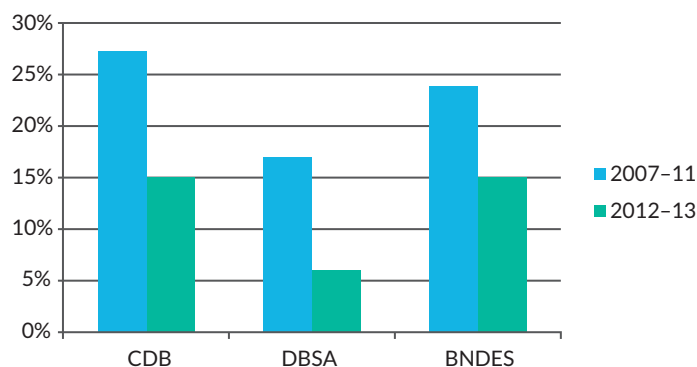
Source: 2003–2013 annual reports.

Figure 2. Percentage Annual Loan Portfolio Change, 2003–2013



Source: 2002–2013 annual reports.

Figure 3. Average Annual Growth in Loan Portfolio



Source: 2007-13 financial statements.

and in a volatile fashion,²² while BNDES' portfolio rose sharply during the financial crisis from a previous period of relatively slow growth.

All three banks ramped up lending in the late 2000s, clearly as a counter-cyclical response to the global financial crisis and tightening of international credit markets (Figure 3). Although counter-cyclical lending is not the stated purpose of any of the three NDBs, the respective governments have apparently deemed this to be an appropriate role in support of direct counter-cyclical fiscal policy on the part of the government. While each of the banks sharply increased lending and then returned to more "normal" growth patterns as the crisis eased, it is evident that DBSA was relatively less aggressive in its counter-cyclical efforts. This is likely due to the difficulties faced by DBSA in accessing funding compared to the CDB and BNDES, as will be discussed below.

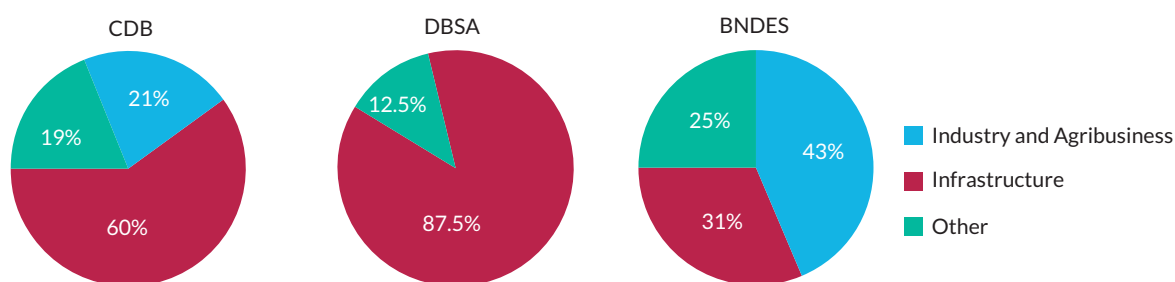
3.2. Sectoral Financing Patterns

Comparing the sectoral distribution of financing activity of the three NDBs is inexact, due to differences in how categories are defined and reported by each. However, data give a broad sense of priorities, particularly in relation to infrastructure and industry (Figure 4). Of the three, DBSA places by far the highest priority toward infrastructure in its operations, with approximately 90% of all lending

directed to this area. Infrastructure is also the top priority of CDB, constituting 60% of lending, while industrial development and other areas each total 20%. BNDES has a much more diverse breakdown of lending, reflecting its broader mandate and priority focus on overall economic activity, including supporting the development of Brazil's private sector.

Within the umbrella category of infrastructure, CDB dedicates over half of its lending to transportation (mainly roads and rail), while energy and water infrastructure are lower priorities (Figure 5). Transport lending represented over half (53%) of infrastructure projects in 2013, surging from the 43% share of total infrastructure in 2006, indicating among Chinese policymakers a growing sense of the importance of transport links for economic growth. DBSA, in contrast, currently has a balanced portfolio of infrastructure lending between the three main categories. In 2013, three-quarters of DBSA's infrastructure loans emphasize energy and transport, with approximately one-quarter going to water and social projects. This is a change from 2006, when over half of lending was for water and social projects, indicating a shift in recent years from addressing the social legacy of apartheid toward promoting the underpinnings of economic growth. BNDES does not report a category of type of infrastructure projects.

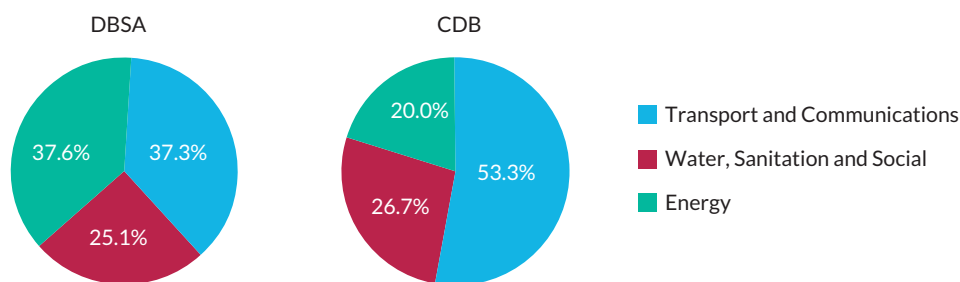
Figure 4. Sectoral Distribution of NDB Loan Portfolio, 2013



Source: 2013 financial statements.

Note: Comparisons are inexact due to (1) category definitions, and (2) the fact that BNDES categorizes disbursements by sector, while CDB and DBSA categorize the outstanding portfolio by sector.

Figure 5. Breakdown of Infrastructure Lending, CDB and DBSA, 2013



Source: 2013 financial statements.

CDB covers a huge array of different areas, but infrastructure has been the top priority, with the CDB backing many of the major high-profile infrastructure projects of the past 20 years, including the Three Gorges Dam, the massive South–North Water Diversion Project, the Ertan Hydropower Dam in western China, and several major cities practically *ex novo*. The 2013 annual report emphasizes continued infrastructure lending in traditional areas (roads, power, water), as well as a newer focus on projects in rural and poorer urban areas (particularly for housing), in line with the government’s stated efforts to mitigate China’s growing inequalities. Environmental-oriented projects are also increasing, and at the end of 2013 constituted US\$146 billion. The overall share of infrastructure has slightly declined in relative terms from 75% of the loan portfolio in 2006 to 59% by 2013. This may reflect CDB’s ability to stay ahead of (or even lead) economic trends, notably the easing of China’s massive infrastructure boom.

DBSA has generally followed the priorities of the national government in infrastructure provision, and currently bases its lending goals on the 2012 National Infrastructure Plan. Priorities have evolved somewhat between 2005 and 2013, with a declining focus on water and sanitation and increases in lending for energy and transportation. Transportation and energy together constituted over 60% of the portfolio at the end of 2013, followed by water and sanitation, commercial and social infrastructure. The increase in energy lending has gone overwhelmingly (85%) to non-municipal clients, mainly public utilities. Lending within South Africa is explicitly not permitted to the mining, agriculture, manufacturing, or tourism sectors, although lending occurred in these sectors in the past.²³

BNDES is present in nearly all sectors of the economy, including infrastructure, agribusiness, information technology, aircraft, oil and gas, consumer goods, pharmaceuticals, retail, engineering services, tourism, education, sports, and cultural services. This is a result of BNDES’ broad mandate to promote many aspects of Brazil’s economic activity and social services. Infrastructure and industry have been clear priorities in recent years (as well as historically), constituting two-thirds or more of disbursements in the past decade.

Industrial lending has slightly declined in recent years, while operations in trade and services have risen to constitute approximately one-quarter of disbursements in the first half of 2013.

3.3. Clients

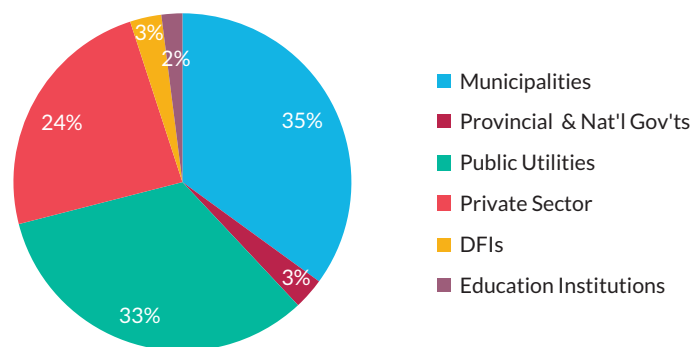
The three NDBs present a clear differentiation in terms of their client base, obeying the realities of their respective countries’ political structure and investment needs and—in the case of CDB—a degree of entrepreneurial leadership and initiative. CDB’s lending has gone overwhelmingly to private corporations created by local government instances in China to channel investment; DBSA focuses on municipalities and public utilities; and BNDES lends mainly to the private sector, either directly or with second-tier lending via private banks.

This pattern in clientele impacts the ways in which each NDB is involved in infrastructure projects—CDB and DBSA are much more directly involved in planning major projects and at all stages of implementation, whereas BNDES tends to be more involved in public–private partnership (PPP) projects, acting as an intermediary to create the best regulatory framework and contract details. The latter model may be more successful in a country with a well-developed private sector and local-level governments with a fairly high degree of planning capacity.

As CDB does not publicly release information on borrowers, it is not possible to ascertain the share of its loans to different levels of government, state-owned enterprises or private businesses, either within China or in its international activity. However, a major part of CDB’s client basis is local government authorities, via special purpose investment vehicles known as local government financing platforms (LGFPs). This unique arrangement was pioneered by CDB as a solution to the fact that local governments are prohibited from taking out loans or issuing bonds on their own, but are simultaneously responsible for most infrastructure investment in China.²⁴

Beginning in the southern Chinese city of Wuhu in the early 2000s, CDB helped local authorities create special companies, frequently backed by local real estate assets, and then loaned to these companies to support

Figure 6. Client Distribution of DBSA Portfolio, 2013



Source: 2013 DBSA Annual Report.

Note: DFIs = development finance institutions.

infrastructure projects.²⁵ With CDB's loans on their books, the LGFPs were then able to access credit from other financial institutions. This formula led to the explosion of infrastructure investment across China in the past 15 years, and is a major foundation of CDB's portfolio growth. According to a recent International Monetary Fund (IMF) study, two-thirds of CDB's loan portfolio in 2011 went to the estimated 10,000 existing LGFPs, compared to only 4–7% for the top four commercial banks in China (IMF 2013). While this poses some risks, particularly should real estate prices stop rising, it has been undeniably successful in fueling China's sky-high investment rates—49% of GDP in 2011, by far the highest among G20 countries (IMF 2013).

The traditional focus of *DBSA* lending activity has been to municipalities and public utilities for the provision of basic infrastructure services. Municipalities and public utilities together constituted just over two-thirds of the total outstanding portfolio in 2013, with 24% dedicated to private sector clients and the remaining 8% to provincial and national governments, development finance institutions in SADC countries, and education institutions (Figure 6). The rationale for the strong focus on municipalities is to overcome the lack of long-term commercial financing options for most of the 283 municipalities in South Africa, as well as local governments in SADC countries. While lending to private sector clients had been rising in recent years, this will be curtailed going forward as the bank refocuses on its core strategy of municipal infrastructure provision.²⁶

The bulk of BNDES' lending goes to private sector clients, although the share of public sector lending has more than doubled from 17.1% in 2006 to 35.5% in 2013. The majority of this recent increase has been to local (state and municipal) authorities to finance infrastructure investments. Among private sector clients, the majority of disbursements in 2013 (63%) went to large companies, while the remainder went to small and medium enterprises. Clients also include non-governmental organizations and cooperatives, in keeping with the bank's strong social mission.

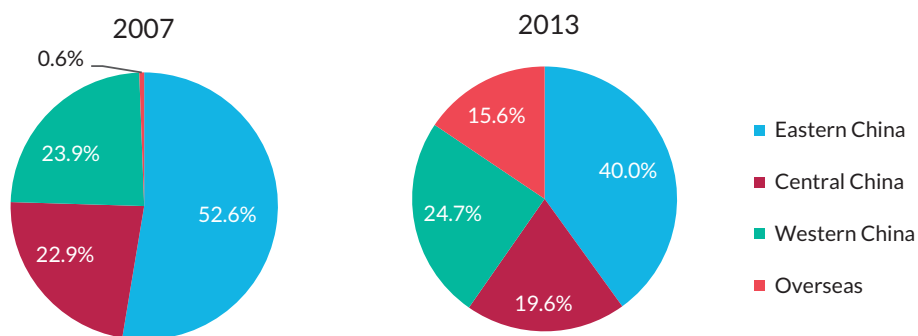
Approximately half of BNDES' lending is channeled through commercial banks via second-tier lending, wherein BNDES specifies the sectors where the resources should be on-lent at a subsidized interest rate compared to regular commercial bank loans. This indirect operation technique constitutes approximately half of BNDES' current total loan portfolio, and is a model not utilized by DBSA or CDB. This enables BNDES to spread resources across many sectors and geographic regions, while keeping its own operating costs down and sharing risk with the private sector. At the same time, it necessarily limits BNDES' direct involvement in infrastructure provision, as this is most frequently undertaken by the public sector (either directly or via a PPP).

3.3.1. Geographic Distribution

A common theme for all three NDBs is a predominant focus of lending in geographic regions that tend to be more economically active. For example, 40% of CDB's loan portfolio in 2013 is in the wealthier eastern region of China (down from 53% in 2007) (Figure 7); 71% of DBSA's loans are in metropolitan municipalities; and 62% of BNDES' loan disbursements are in the more developed southeastern region of Brazil (Figure 8). For all three banks, rural and poorer regions are clearly not the main focus of their activity. At first glance, this may seem to go against one of the rationales for NDBs: to channel financing to clients and regions unable to obtain it at reasonable terms through other sources.

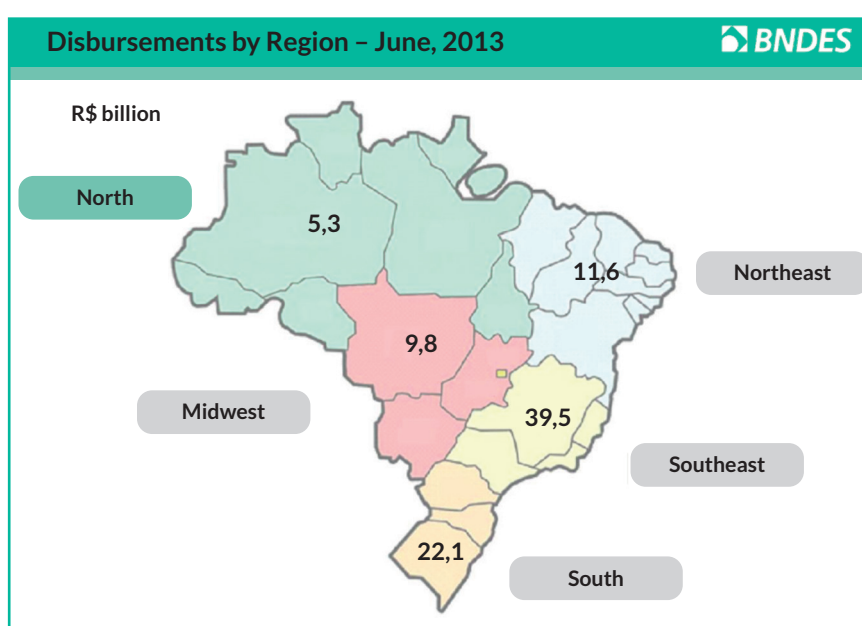
This pattern of lending could be driven by bureaucratic and financial incentives within the NDBs. Wealthier regions are likely to have clients able to handle much larger investment projects, which is attractive from a purely banking perspective. Similarly, clients are likely to be less risky, which strengthens NDB loan portfolios and requires smaller risk-based equity capital set-asides. For example, land prices in eastern China are much higher than elsewhere, and many CDB loans use local real estate as collateral, meaning loans in that region have relatively greater security (as long as land prices remain high). It could also point to untoward

Figure 7. Regional Distribution of CDB Loan Portfolio



Source: 2007 and 2013 CDB Annual Reports.

Figure 8. BNDES Disbursements by Region



Source: BNDES 2013b.

influence on NDB lending policies by political or economic elites.

At the same time, a government’s developmental strategy may consider it more efficient and effective to direct investment resources to where they are likely to have the highest rates of return. In other words, it may make more development sense to “back a winner” rather than pour resources into poorer regions that may face structural obstacles to economic growth. In addition, the majority share of the population in each of these rapidly urbanizing countries is not coincidentally located in the most economically developed regions, providing an equity-oriented justification for this type of investment strategy. For example, DBSA states that the prioritization of urban municipalities will continue in the future due to the very high rates of population growth in urban areas (more than double the national rate) from in-migration.²⁷

Both DBSA and BNDES have strong and explicit social agendas to reduce inequality and ensure the provision of basic needs, rather than simply promoting economic growth. As such, each manages a series of funds and special programs specifically targeting poor regions and populations, as well as building capacity with local governments in these regions. While CDB’s mandate is less explicitly social, it has followed the growing concern of the national government to address inequality and develop poorer regions in western China. For example, the 2013 annual report highlights the high rates of CDB lending activity in the politically sensitive and economically less developed Tibetan region and Xinjiang province, as well as its role in providing low-income housing in urban areas.

3.3.2. International Operations

The three NDBs considered here, as well as many others from emerging economies across the globe, are increasingly seen by governments as a tool to support the

economic activities of the national companies abroad. DBSA was explicitly designed considering an international role—hence “Southern Africa” as opposed to “South Africa” in its name. BNDES and CDB, in contrast were similar to most NDBs created to address specifically national economic development, and have only recently lifted their gaze abroad. For countries that intend to play a growing regional or international economic role in the future—certainly, including China, South Africa, and Brazil—NDBs can play a useful role in this expansion.

At the same time, the international activities of NDBs are likely to be marginal to address the huge gaps in infrastructure finance in developing and emerging economies. These banks have a mandate to support development in their own countries, and international operations must further that goal. In the case of BNDES and CDB, this means making loans to projects that will specifically benefit Brazilian or Chinese companies. This is not an operational model designed to rapidly expand infrastructure in other countries. Of the three, DBSA most extensively supports infrastructure finance widely around its neighboring countries, in the broader interest of economic development in the region (as well, to be sure, to the benefit of South African companies).

The international lending operations of CDB have taken off in recent years, rising as a share of the overall loan portfolio from only 0.6% in 2007 to 15.6% in 2013. CDB does not release specific data on the destination of its lending, but numerous accounts indicate that the vast majority is in Africa and Latin America, and is focused to a large extent on funding the acquisition of energy and mineral natural resources.²⁸ This growing international presence is directly linked to the “going out” policy formulated by the government in the early 2000s, encouraging Chinese firms to expand outside China. CDB has in many ways been one of the main financing arm

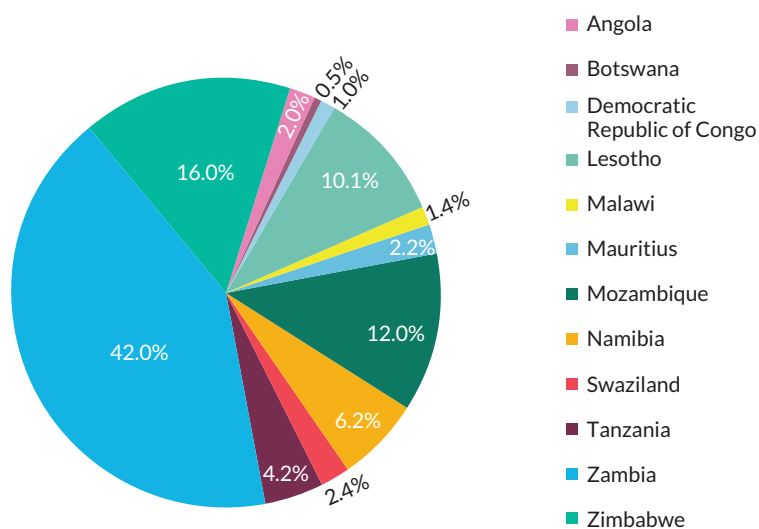
of this expansion, as many Chinese commercial banks are wary of financing risky projects overseas, and major international banks have been in a retrenching phase since the global financial crisis.

Much international lending by CDB has been in US dollars—19.5% of the loan portfolio in 2013—to help finance the purchase of international assets by Chinese companies. To fund these loans, CDB has increased its issuance of US dollar denominated bonds, initially in the international market but now even within China. In addition, CDB has begun utilizing yuan-denominated loans overseas (61.5 billion in 2011, by one account),²⁹ the proceeds of which are in turn used mainly by governments to purchase goods and services from Chinese companies. CDB has also issued yuan-denominated bonds purchased by African central banks, linked to trade with China. Thus, CDB has in many ways become the leading instrument of the Chinese government to begin internationalizing its currency.

Originally designed to operate solely in South Africa and the apartheid-era “homelands” (in South Africa and present-day Namibia), DBSA broadened its scope for operations to the countries of the SADC in 1997. Despite its formal link to the Southern SADC in DBSA’s legislation, the other countries receiving DBSA financing have no say in the bank’s governance.³⁰ As of early 2014, the South African government was seeking a change in DBSA’s legislation to expand lending to any country in Africa.

By statute, not more than one-third of total lending is allowed outside South Africa, with the 2013 level at 26%—approximately the same level since 2005—divided among 12 countries (Figure 9). Over the past decade, Zambia and Mozambique have been the main recipients of DBSA financing, with the former increasing considerably in recent years and the latter declining (due mainly to an

Figure 9. Geographic Distribution of DBSA Portfolio in SADC Countries, 2013



Source: 2013 DBSA Annual Report.

upswing in other investment sources). Currently, Zambia constitutes 42% of SADC lending, and 8.3% of DBSA's total investment portfolio. Operations outside South Africa do not require a guarantee of the host country government, nor does DBSA have preferred creditor status. Unlike operations within South Africa, financing in other SADC countries are intended to support mainly commercially viable projects, particularly focusing on power, water, transportation, and telecommunication infrastructure.

BNDES has until recently not been highly active in other countries, but that has begun to change. BNDES first began offering export credits in 1991, but ramped up activity considerably during the Lula presidency.³¹ It created its international division in 2008, specifically focusing on promoting the activities of Brazilian businesses in Latin America and Africa. BNDES has an office in Uruguay to manage its activities in the Southern Cone, and opened an office in South Africa in 2013. In the same year, BNDES Plc was established in the United Kingdom to internationalize Brazilian firms. BNDES Plc's strategy and activities are not yet publicly available. Interviews with government officials in several Latin American countries indicate that BNDES is increasingly offering lending resources to governments to pay for major infrastructure projects led by Brazilian companies, for example, the construction firm Odebrecht. BNDES also finances the international purchase of Brazilian manufactured goods, although this business line has declined in recent years in relative terms from 30% of disbursements in 2005 to 7% in 2012. BNDES does not release information on the share of its loans to projects located outside Brazil, but 14.4% of the 2013 loan book was in currencies other than the Brazilian *reals*.

3.3.3. Instruments

The bulk of operations for all three banks comprises development loans, equivalent to approximately three-quarters or more of total assets. CDB is the most concentrated on loans (91% of total assets), whereas

BNDES is the most diversified of the three (72% of total assets), and DBSA in between (79% of total assets). The maturity structure of loans offered by the three banks varies considerably, with CDB offering by far the largest share of loans over five years and BNDES the least (Figure 10). This is likely linked to the high share of BNDES lending channeled to private sector development, whereas CDB and DBSA focus more on public sector infrastructure projects that require longer maturities.

Besides loans, each bank also undertakes considerable equity investments in private companies or projects as another way of achieving their institutional goals. This is a slightly higher priority at BNDES—again in line with its greater focus on the private sector. Both BNDES and CDB have dedicated subsidiaries for equity investing, whereas DBSA invests directly as part of its main operations. One particular advantage of equity investing from an institutional standpoint is that it tends to generate higher income than regular lending operations, which can strengthen an NDB's finances. For example, both the International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD) multilateral banks generate considerable net income on their equity investments, which build operational capacity through reserve accumulation. The tradeoff is that equity income tends to be much more volatile than loan revenue.

Equity investments constitute 3.1% of total CDB assets, which although small compared to the total portfolio still represents US\$36.4 billion—three times the value of IFC's 2013 equity portfolio. According to its 2013 annual report, CDB's main equity investments are in five companies and between 20% and 40% of equity shares. The companies cover a range of industries, including land development, advisory services, financial services, electronic instruments, and African commodities. No policy statement clarifies the investment policy, but CDB

Figure 10. Maturity Structure on NDB Loans, 2013



Source: 2013 annual reports.

appears to be taking major stakes in what it considers to be strategic industries. CDB also invests in bonds issued by private entities, although that constitutes only 0.7% of total assets.

DBSA is permitted to take minority equity stakes in private firms and projects, including corporations, state-owned entities, PPPs, concessions, and independent power producers. The share of equity investments has risen steadily in recent years, from 4% of the total development finance portfolio in 2006 to 9.5% in 2013. As DBSA no longer reports the details of equity investments in its annual reports, an analysis of the current sectoral distribution is not possible. In 2006 (the last year for which specific investments were reported), equity stakes covered a broad range of sectors, including mining, tourism, pharmaceuticals, and development banks, among others.³² Due to criticism that DBSA was moving out of its core mission with these investments and also due to poor financial performance, as of 2013, the bank is explicitly reducing its operations to companies and sectors outside the core areas of infrastructure development.³³

Equity investments are an important segment of BNDES' business services, and generate a considerable share of its net income (though with volatility, due to mark-to-market accounting and stock market fluctuations). Stakes in Brazilian companies constitute over 10% of BNDES' total assets in 2013 (unchanged since 2006), but constituted 17.3% of BNDES' income. The majority (86%) of BNDES' equity is done directly with individual companies, with the remainder invested via various equity investment funds. Most investments are in the range of 10–15% of company equity, and if ever BNDES acquires more than 20%, it restricts its voting share to 20%, to limit its influence in company management.

Purchasing corporate bonds is another technique used by BNDES to support major infrastructure projects. Although a relatively small share of total BNDES' assets—just 2% in 2013—bond purchases can be useful, particularly as a way for BNDES to invest in infrastructure projects and then sell out of a project once the construction phase is completed and risks are lower for private investors. This practice also supports the development of Brazil's domestic bond market—an added benefit. However, BNDES officials noted in interviews that the bank must have more confidence in a project to purchase a bond as it is less involved in project design than with a loan.³⁴

3.4. Role in Policy and Planning

Project planning is a key aspect of CDB's operations, and it is deeply involved in formulating major multi-year infrastructure plans for local governments and the national government, as well the strategies of Chinese companies moving overseas. According to the CDB's 2012 Sustainability Report, the bank began prior planning in 2003, to ensure the quality of industrial,

regional, and urban project investments. This has been a key advantage of CDB, particularly in its relations with LGFPs. Some commercial banks consider the CDB to have an unfair relationship with LGFPs, but CDB long-time leader Chen Yuan countered in an interview that this is based on CDB's close planning relationship with local authorities, which is a fundamental part of the bank's service offer.³⁵

The details of CDB's planning relationship with clients are not publicly available, nor are data on the number of staff, resources spent, or specific expertise. However, the 2012 Sustainability Report offers impressive numbers on their breadth (p. 25):

- 62 regional development plans linked to national strategies;
- 75 plans for infrastructure facilities, industrial development, and environmental protection;
- 450 plans related to energy, transportation, and manufacturing;
- 319 plans for client strategic development;
- Cooperation agreements with 54 countries and 21 inter-country regional planning projects;
- Participation in the design of the national urbanization plan, the overarching framework for China's urban expansion.

The extent of CDB's involvement in the development of China's overall economic expansion, and particularly the build-out of its infrastructure, clarifies that the bank functions almost as a parallel ministry, not simply implementing government plans but actively helping design them. This tight linkage with government policy gives CDB a very high credibility with local government and company officials, and also ensures that permitting and regulatory issues do not impede project progress.

Due to its focus on basic infrastructure and service provision, particularly in municipalities, DBSA has traditionally taken an active role in helping prepare projects and providing technical assistance on projects and policies. This has normally been funded out of its own annual surplus, supplemented with funding from third parties (including the European Investment Bank, Agence France Development, UK's Department for International Development (DfID), Japan International Cooperation Agency (JICA), and Germany's KfW).

In 2006, DBSA ramped up its capacity development services with the creation of the DBSA Development Fund (also called Siyenza Manje). The main thrust of the program has been to send teams of engineers and project managers to municipalities (as well as national governments in SADC countries) to develop capacity and help roll out basic services. A training academy was also established for local government officials. Funding for

the program came from DBSA annual revenue, averaging just over US\$20 million per year in 2006–2013. The Fund was seen as having limited success due to weak demand from local governments and coordination difficulties with government ministries.

As part of DBSA's retrenchment and renewed focus on core activities, the Development Fund was discontinued as of 2013, and its services were absorbed into government departments and other parts of DBSA. Current capacity building by DBSA strictly focuses on education and health, in line with government priorities, and involves building trained project management units in municipal governments to plan, contract, and implement projects. Funding for these services will be on a contract basis with the Treasury and departments of Health and Education. As a result, the role of DBSA in infrastructure planning and technical assistance support to local governments may weaken further, possibly to the detriment of its effectiveness.

Since its establishment in the 1950s, BNDES has played a major role in shaping the economic strategies and developmental policies of successive Brazilian administrations. Rather than simply implementing government policies, BNDES has acted as a developmental think tank, stocked with highly trained technocrats and a well-funded research department that produces a steady stream of influential economic and policy research. In this, BNDES appears somewhat more active in shaping policy compared to the CDB, which while innovative on a technical level tends to leave overarching development strategy to the relevant ministries.

In the current economic context, BNDES dedicates considerable planning efforts for shaping the design of infrastructure concessions and PPPs. BNDES staff members consider it essential to guide local government authorities in the details of project design, contract details, bidding processes, and even appropriate regulatory arrangements to ensure that projects achieve the desired public impact and are financially sustainable.³⁶ This also extends to frequent informal discussions with potential bidding companies, which later often receive financing from BNDES to undertake the project.

4. Sources of Finance

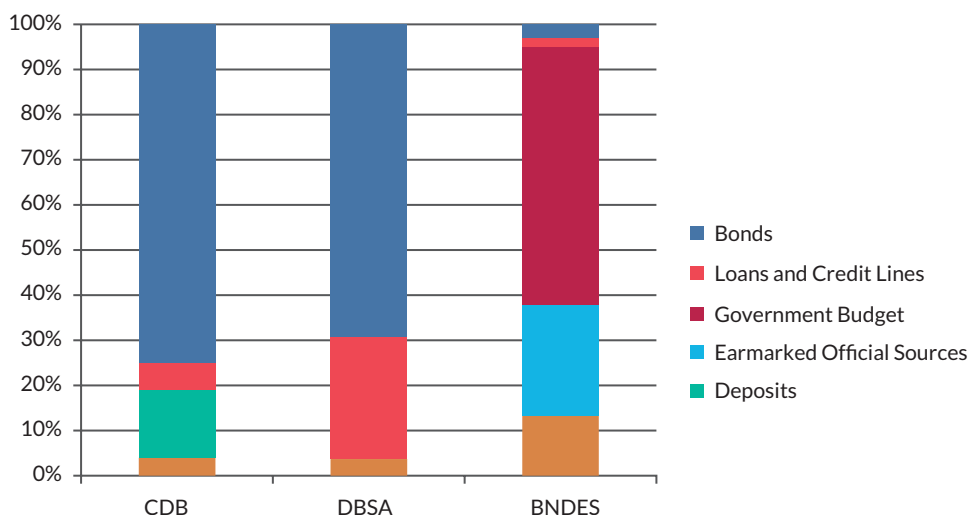
A critical issue faced by every NDB—and indeed all development finance institutions generally—is accessibility to sufficient funding at adequate terms to support the developmental goals of the organization. The principle characteristics necessary for NDB financing include (1) reliability, (2) low enough price to allow for on-lending at attractive rates for the types of projects and borrowers the NDB is targeting, (3) reasonably long maturities to match up with the long-term maturity profile inherent in most NDB-supported projects, and (4) sufficient volume to bring operations to scale.

To meet these criteria, an NDB could consider accessing resources from one or a combination of the following sources, each of which come with tradeoffs:

- *NDB equity* is an essential foundation for accessing other financing, but is inadequate by itself to bring NDB operations to a meaningful scale.
- *Bonds* are prime candidates for raising financing, particularly domestic capital markets (if sufficiently liquid). However, even with the implicit or explicit guarantee of the sovereign, bond yields and maturities may not be sufficient to permit on-lending at attractive terms for end borrowers. In addition, capital market fluctuations can hamper a steady flow of resources.
- *Commercial bank loans* are theoretically an option, but these are not a realistic source of funds in many developing countries due to relatively limited resources, high interest rates, and low maturities.
- *Deposits* from individuals or businesses are the means by which most commercial banks obtain resources for lending, but this is not widely used by NDBs as it would require creating an expensive and extensive infrastructure of branches and systems for deposit management, distracting from the main mission of the NDB and competing with commercial banks.
- *Government fiscal resources* can be allocated to an NDB, which can be a useful means to mitigate fluctuations in other financing sources. Simultaneously, relying on the government budget can open up an NDB to undue political influence, and changing government priorities and fiscal restrictions can limit reliability. In addition, if resources are lent at a below-market interest rate, this implies a taxpayer subsidy to the NDB.
- *Other official domestic sources* such as pension funds or other savings funds can be routed through an NDB for on-lending. Such resources have the advantage of reliability and (in many cases) sufficient scale. However, achieving low enough interest rates for NDB operations may require a subsidy, which would be paid for as an opportunity cost by the beneficiaries of the fund.
- *Official external sources* such as bilateral or multilateral financial institutions are an attractive source of funding due to generally low interest rates and extended maturities that suit NDB operations well. The issue here is the reliability of funding (due to changing priorities for the external source) as well as sufficient volume.

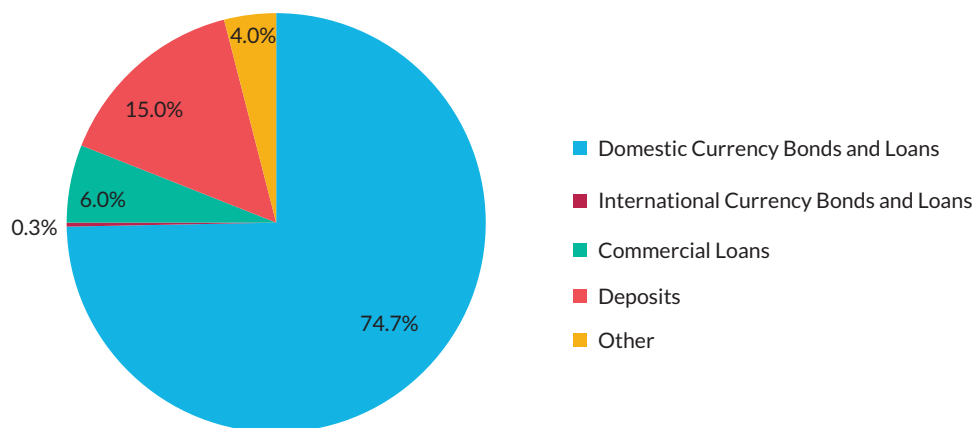
The three NDBs considered in this chapter have come up with different solutions to the issue of securing financing, each obeying the political economy realities of the countries in which they operate. In all cases, the NDBs use a combination of financing arrangements, although they place a strong emphasis on one or another source, with varying degrees of success (Figure 11).

Figure 11. Funding Sources for NDBs, 2013



Source: 2013 financial statements.

Figure 12. CDB Funding Sources (Liabilities), 2013



Source: 2013 CDB Annual Report.

4.1. CDB

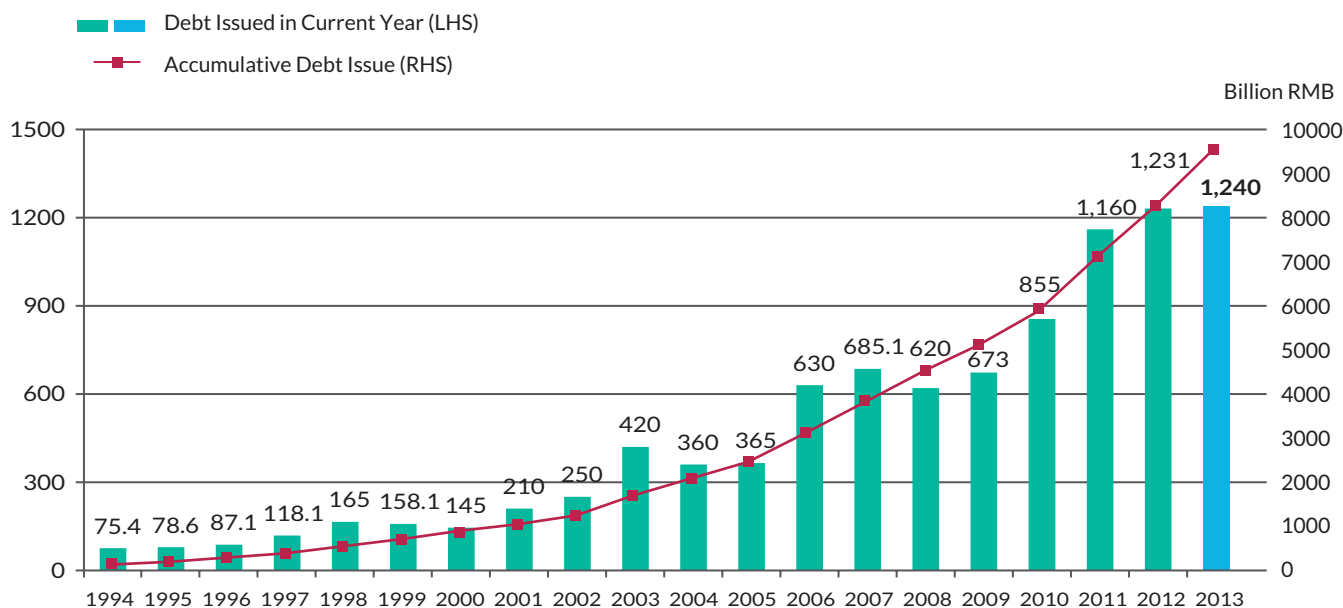
Domestic bonds supply the overwhelming majority of CDB funding, supplemented by a small but growing move into international currency bond issues as well as a significant share of deposits (15% of liabilities) and direct loans and credit lines (Figure 12). CDB does not rely on government budgetary allocations for any of its funding requirements, besides its equity capital stake in the bank (the last capital increase in 2008).³⁷

From its inception until 1999, CDB funded itself through bonds distributed administratively among state-owned banks, supplemented with borrowings directly from the central bank. In 1999, CDB sold its first bonds at auction in the interbank market, at a time when bond issues were just beginning in China. In the words of one observer, “In many ways, the country’s bond market owes its existence to the bank.”³⁸ CDB has been a pioneer in defining a complete baseline yield curve (now up to 50 years), and has constituted approximately 20% of China’s bond issues

in the last several years, only behind the combined weight of national and municipal government issuers (31% in 2013). The growth of annual CDB bond issues has been tremendous, increasing more than 16 times between 1994 and 2013 (Figure 13). CDB’s average cost of funding on its bond issues is relatively low, at just over 4%, and at relatively long maturities, which matches up well with the asset side of its balance sheet.

While this model would appear to be an example of an NDB funding itself on a commercial basis without government assistance, the reality is somewhat more nuanced. When CDB began issuing bonds on the interbank market, Chinese regulators decreed that the bonds would be considered completely risk free by the commercial banks purchasing them. Hence, banks can earn a modest return simply by investing the deposits of individual customers (which generally pay a very low interest rate, often under 1%)³⁹ without having to provision any risk capital. As Chinese savers have few options for depositing

Figure 13. Renminbi Debt Issue by CDB



Source: 2013 CDB Annual Report.

their money apart from the main commercial banks, and these banks have few (or no) risk-free investment options, CDB bonds are extremely attractive and have a steady stream of buyers at interest rates below the prevailing commercial lending rate.

As a result, the regulatory status of CDB bonds functions to channel a significant portion of China's very high domestic savings via commercial banks to some of China's most important investment projects. To ensure this continues, until recently CDB only issues bonds on the interbank market, insuring that individual investors cannot access the bonds themselves (which would obviously be more attractive than the low returns they earn on savings deposits in commercial banks). The issue of discontinuing the zero-risk regulatory status of CDB bonds has come up in recent years, particularly in the context of the move toward converting the CDB to a corporation in 2008. However, although the change was initially to be effected by 2011,⁴⁰ it has repeatedly been delayed and eventually the report will not be prepared until at least the end of 2015.⁴¹ Removing the regulatory status could have two major negative impacts: (1) reducing the CDB's ability to access a steady stream of low-interest funding to support China's investment agenda, and (2) requiring commercial banks to utilize capital to provision for the huge amount of CDB bonds on their balance sheets. Hence, it may not be a surprise that the change has been delayed. The 2013 issue of bonds in the Shanghai exchange open to individual investors may indicate that CDB is preparing the ground should its bond status be modified.

CDB has been a ground-breaker in bond markets abroad as well, although on a much smaller scale than in the domestic yuan market. It issued the first dollar-denominated bond in the China market in 2003 for US\$500 million, followed

by an asset-backed bond in New York in 2005 for US\$1 billion, as well as samuri, yankee, and global euro bonds. Perhaps more significantly, it has led the way in issuing yuan-denominated bonds outside China, beginning the gradual process of internationalizing China's currency. The first yuan-denominated bond outside China's borders was floated by CDB in Hong Kong in 2007, the first of what has come to be known as the dim sum market, and it is by far the largest issuer of yuan bonds outside China. In 2012, CDB made yuan-denominated placements with several African central banks, another important move to internationalize China's currency.

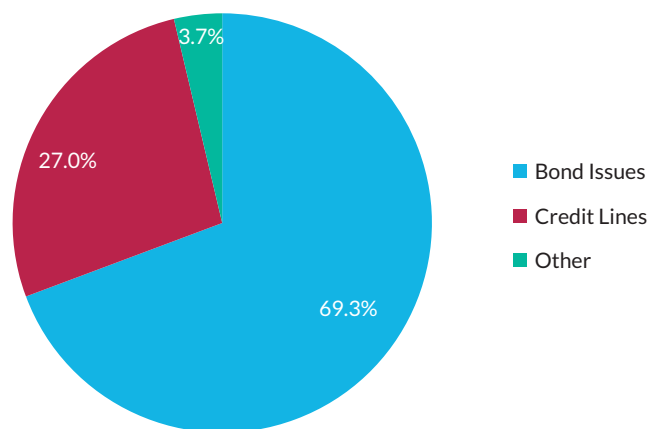
4.2. DBSA

DBSA was created to be self-financing, hoping that it would be able to raise funds for on-lending mainly from private capital markets, supplemented by official credit lines. The bank does not take deposits and was not intended to receive budgetary allocations from the South African government. Rather, it has a share capital of US\$21.6 million and US\$410 million in permanent, interest-free government funding granted in 1994, which along with reserves forms DBSA's total equity.

However, due to the financial difficulties faced by DBSA in the last three years, the government committed to injecting US\$853 million in fresh capital between 2013 and 2016. This is the first new government funding provided to the bank since 1994. Originally undertaken as an emergency measure, the capital injection will increase government shares if and when the proposed new legislation covering DBSA is passed.

DBSA, like the CDB, heavily depends on issuing debt in capital markets to raise funds for lending—69.3% of total funding in 2013 (US\$2.8 billion)—with the remainder

Figure 14. DBSA Funding Sources (Liabilities), 2013



Source: 2013 DBSA Financial Statement.

coming from official credit lines (27%) and other sources (3.7%) (Figure 14). Although DBSA does not release details of its bond placements, the vast majority are within the South African market rather than abroad. Due to the reliance on the domestic market and its profile as a medium-to-long term lender, DBSA must diversify the maturity of its bond offerings to minimize the risk posed by market tightening. This, in turn, leads to a relatively high cost of funding: 7% as of March 31, 2013, compared to 3.4% average for the top five domestic commercial banks.⁴²

DBSA reduces its overall cost of funding using credit lines from bilateral and multilateral institutions, including Germany's KfW, the European Investment Bank, the African Development Bank, and the Nordic Investment Bank. Funding from these sources totaled US\$1.1 billion in 2013. DBSA also implements three funds, two of which (focused on job creation and green energy) are entirely funded by the South African government. The third—Infrastructure Programme for South Africa (IIPSA)—is a joint initiative by the European Union (EU) and the South African government, which blends EU grant resources with funding from South African and international development finance institutions to support infrastructure development in southern Africa. IIPSA was announced in March 2014 for a total of €100 million,⁴³ and had not yet begun operations as of this writing.

This higher cost and lower maturity access to capital markets highlights a weakness for DBSA—and any NDB—depending on bond issues as a major source of funding. South Africa has for years had a relatively well-developed capital market with numerous competing corporate as well as municipal and national issuers, unlike the case of China and the CDB. In these circumstances, and without any special regulatory status like that enjoyed by CDB's bonds, DBSA's access to funding is difficult and costly, which in turn impacts the competitiveness of the financial terms it can offer borrowers. This directly impact edits ability to fulfill its development goals and maintain its own financial strength, as noted by the DBSA in the 2013 annual report:

“The Bank's cost of funding relative to other market participants...further impacts on its ability to provide cost-effective funding to clients and therefore achieve sufficient volumes of business to maintain the appropriate levels of financial performance.”⁴⁴

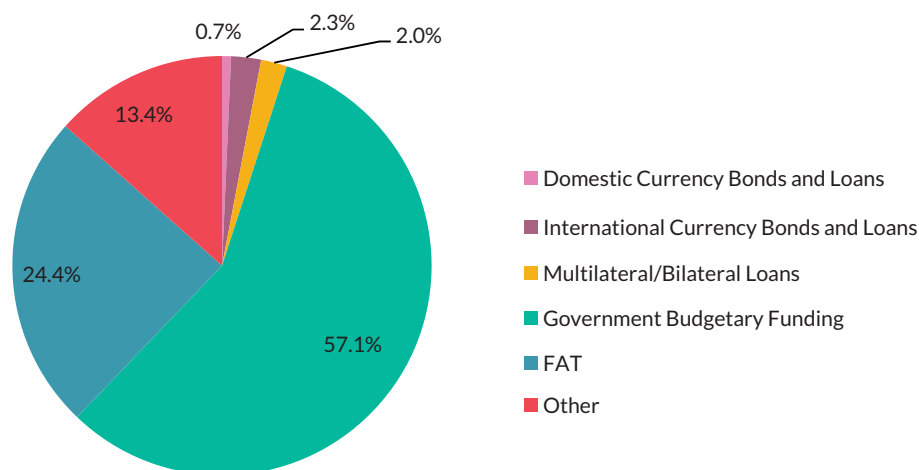
4.3. BNDES

BNDES is unusual among the three NDBs considered in this paper in that the majority of its funding comes from official sources—either directly from the national treasury, or from various earmarked funds, the main being the Workers' Assistance Fund (FAT). According to the Brazilian constitution, 40% of FAT resources are required to be lent to BNDES, ensuring a stable source of funding for the bank. These resources are repaid at a subsidized, below-market interest rate, which in effect means that Brazilian workers are lending their savings to BNDES rather than obtaining higher returns available elsewhere (even by purchasing Brazilian government bonds). National treasury resources are also lent to BNDES at a (mainly) subsidized interest rate, which implies further taxpayer support for the bank.

The dedicated funding supply that BNDES receives from FAT and, more recently, from the Brazilian treasury is a unique arrangement among the NDBs reviewed here. FAT funding in particular frees BNDES from, on the one hand, the political influence that seeking budgetary allocations might bring, and on the other, from having to focus on the views of potential bond buyers, which would reduce its ability to fulfill BNDES' social mission. Several observers have highlighted the FAT financing structure as a key feature defining BNDES' relative autonomy from political and market pressure.⁴⁵

In 2013, official sources constituted 81.5% of total BNDES liabilities (at a subsidized interest rate, for very long or essentially unlimited maturities), with the remainder covered by domestic and international bond issues (3%), bilateral/multilateral loans (2%), and other sources (13.4%) (Figure 15). This funding profile gives BNDES considerable

Figure 15. BNDES Funding Sources (Liabilities), 2013



Source: 2013 BNDES Financial Statement.

room to maneuver with less reference to the views of capital market participants compared to NDBs that are funded mainly by bond issues. It also means that BNDES can lend at very attractive financial terms without threatening its own financial stability—a key point strengthening its operational effectiveness, especially in a country with very high commercial interest rates (27.4% bank lending rate in 2013 according to the World Development Indicators, compared to 6% in China and 8.5% in South Africa). BNDES has also historically borrowed considerable resources from multilateral and bilateral organizations, including the World Bank, Inter-American Development Bank, European Investment Bank, Japan Bank for International Cooperation (JBIC), Germany’s KfW, and the CDB. These loans are all at below-market interest rates, with the exception of those from CDB.

The role of national treasury financing has grown very sharply in recent years, from only 6% of funding in 2001 to the 2013 level of 57%. BNDES states that this shift was specifically intended “to compensate the credit crunch installed with the international financial crisis of 2008.”⁴⁶ According to the government, this use of treasury resources is expected to decline in coming years,⁴⁷ and budgetary transfers in 2013 (41 billion *reais*) were in fact 25% below the previous year.

4.4. Financial Performance

As public non-profit institutions with developmental goals, NDBs’ financial performances are not in itself the top priority guiding their operations. Nonetheless, financial results are a fundamentally important means for achieving significant and sustainable developmental outcomes. On the one hand, an NDB that generates annual losses will require financial support from scarce budgetary resources, which is generally not a sustainable model. On the other hand, strong financial performance will permit access to private financing (particularly from bond markets) on better terms than would otherwise be the case, as investors will view the NDB as a safe investment risk. This,

in turn, lowers the NDB’s cost of funding and improves its ability to on-lend resources at attractive terms for developmental purposes.

Credit rating agencies currently rate each of the three NDBs the same as the bonds of the sovereign. This has generally been the case in recent years, although BNDES was previously rated slightly above the sovereign until 2013. The sovereign rating appears to act as a “floor” for the NDB, as the agencies consider it almost certain that they will receive financial support from their governments if required. Hence, although the rating agencies highlight potential financial risks related to each NDB analyzed here in their most recent reports, they retain the sovereign rating.⁴⁸

All three NDBs have generated annual net income in most recent years, although net income as a ratio to assets and to shareholder equity has declined steadily since 2007 for BNDES and quite sharply since 2009 for DBSA, which posted losses in 2012 and 2013 (Figures 16 and 17).⁴⁹ This declining financial performance is directly linked to the sharp increase in lending activity as part of both NDBs’ efforts to counteract the impact of the global financial crisis. DBSA has also had a generally low return on equity ratio, due to its very high level of equity rather than to low net income (as discussed below). In contrast to the other two NDBs, CDB has showed much less volatility in its financial performance and also has a growing share of income from non-loan advisory services and fee income.

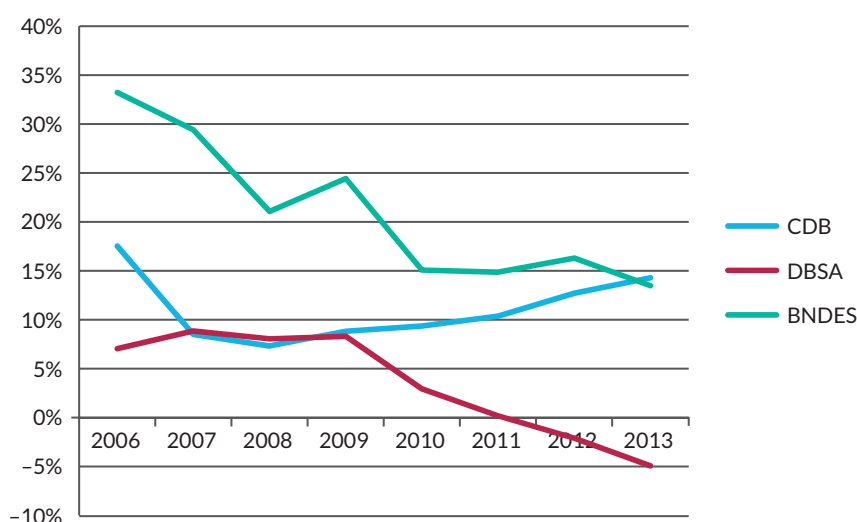
Compared to a group of other development finance institutions, all three NDBs have reasonably strong performance, with relatively high net income as a ratio to assets and equity in 2013 (Table 3). DBSA is the exception, but if one considers its performance in the years prior to the recent sharp financial deterioration, it has historically generated high levels of annual net income.

Figure 16. Return on Assets, 2006–2013



Source: Annual reports.

Figure 17. Return on Equity, 2006–2013



Source: Annual reports.

Table 3. Key Financial Ratios, 2013

	Return on Assets	Return on Equity
CDB	1.0%	14.2%
DBSA	-1.5%	-4.9%
BNDES	1.0%	13.4%
KfW (Germany)	0.3%	6.2%
Nafin (Mexico)	0.5%	7.8%
DB of Turkey	1.5%	7.6%
World Bank (IBRD)	0.3%	2.2%

Source: Annual reports.

The quality of an NDB's asset book—mainly the loan portfolio—is another key indicator of financial strength. Both CDB and BNDES currently have extraordinarily low levels of non-performing loans (NPLs) as a ratio to total loans—0.48% for CDB and 0.01% for BNDES. These ratios are far below those of most financial institutions, both globally and within their respective countries. DBSA, on the other hand, has a relatively high NPL ratio,

7.3% of the portfolio in March 2013, up from 4.9% the previous year.

The evolution of CDB's loan book quality since the late 1990s is extremely impressive, with NPLs declining from 42.7% of the portfolio to 5% in 2001 to the current level of 0.48%.⁵⁰ This was partly due to the creation of asset management companies to clean up CDB's books in the late 1990s, but the subsequent evolution is due more to CDB's intensive involvement with loan projects, its ability to get involved in promising projects and to ensure repayment due to CDB's special status and links to the government.⁵¹ This outcome of course reflects the very high growth rates of the overall Chinese economy. Due to its access to a relatively captive capital market for funding, CDB is able to operate with relatively low capitalization levels. Its equity to loans ratio (not adjusted for risk) was only 8% at the end of 2013, which is slightly lower than many private financial institutions and less than a third of the 20–30% range for most multilateral development banks.

Despite the superlative performance of its loan book in recent years, numerous observers have highlighted CDB's very high exposure to LGFPs as a potential risk, in particular should the price of real estate (used in many cases as collateral) begin to decline and if economic growth slows. An IMF study⁵² found that two-thirds of CDB's loans in 2011 were to LGFPs, while none of the other four top banks in China had exposures above 7%. The study estimated that if 35% of LGFP loans become NPLs, CDB's NPL ratio would skyrocket from 0.4% to 23.3%. CDB's growing non-LGFP portfolio—including abroad—and its stated policy of reducing LGFP funding⁵³ suggests that this risk may decline in coming years from its current high levels.

Between 1994 and 2009, DBSA had generally strong financial results and required no financial assistance from the government. Starting in 2010, however, surpluses began to fall off, turning to losses of US\$48 million in 2012 and US\$89 million in 2013. The losses were largely due to impairments on development loans and equity investments equivalent to roughly US\$200 million over 2012–2013. This can be attributed to weaker vetting of financing operations during the rapid upswing in activity during the global financial crisis. Most of DBSA's NPLs (76% of the total) are to private sector clients, compared to 13% to local governments, 10% to public utilities, and 1% to education institutions. In addition, the bank's high concentration of lending to a relatively small number of clients (mainly municipalities and utilities) is viewed by rating agencies as a potential risk.⁵⁴ DBSA's largest client constituted 16% of the total loan book at the end of FY 2013, and the top seven exposures constituted 44% of total loans.

Despite the recent weak financial results, DBSA's financial ratios remained within its own statutory limits, with an equity to loans ratio of 31.2% as of March 2013 (required minimum level: 28.6%). Nevertheless, the government opted to inject additional capital of US\$853 million into DBSA starting in 2013 to ensure its financial solvency and also to act as a base for expansion going forward. This very high capitalization level compared to CDB (and BNDES, see below) indicates the importance of strong capitalization for an NDB with no special regulatory advantage seeking funds in a competitive capital market. This capital injection came hand-in-hand with a major reorganization, refocusing DBSA activity on core infrastructure activities, reducing expenditures on personnel (down to 566 at the end of 2013 from 703 in 2011), and eliminating the DBSA Development Fund.

As with the other two NDBs, BNDES is rated at the same level as Brazil's sovereign debt, but unlike the others, BNDES was until recently rated one or two notches above sovereign. The reason for the downgrade is linked to the dramatic expansion in lending to counteract the global financial crisis and ensuing pressure on capitalization and growing loan portfolio.⁵⁵ Furthermore, as noted previously, BNDES derives a larger share of its income

from equity investments than the other two NDBs. While this has been a successful strategy—investment revenue grew from R1.5 billion in 2003 to R7 billion in 2011, whereas loan revenue increased from R3.4 to R6 billion over same period⁵⁶—it poses some risks. Over 70% of these investments as of end of 2013 were in just four companies;⁵⁷ hence, BNDES income is exposed to significant fluctuations depending on the performance of their stock. One of those four companies, Vale S.A., has seen the value of its American Depositary Receipt (ADR) stock (NYSE listing) decline from US\$36.15 in January 2011 to US\$12.81 in June 2014.⁵⁸

BNDES has an extraordinarily low level of NPLs—only 0.01% of its portfolio at the end of 2013. This may be due to many factors, including BNDES' propensity for funding large corporations and financial institutions as part of its “national champions” strategy. In addition, considering that BNDES plays such a huge role in financing the Brazilian private sector and that it is by far the lowest price option for many companies and projects, one may imagine that borrowers do not wish to get detached from future funding by delaying repayment. BNDES' capitalization ratio, at 10.7% in 2013, is relatively low, but due to its reliance on non-market sources of funding, the views of investors are less concerning for BNDES than, for example, at DBSA.

5. Discussion and Conclusions

This paper has primarily focused on the viability of the three NDBs to supply a significant share of financing for infrastructure investments in developing and emerging economies, supporting economic growth and improved living standards. The comparison of the CDB, DBSA, and BNDES indicates that NDBs have a significant role to play in this task and gain numerous important advantages. However, it is also clear that their role is inherently limited in nature.

The final section of this paper draws some tentative conclusions and lessons regarding the role of NDBs in providing infrastructure finance. These are necessarily limited due to the nature of the study, but may be useful for considering several “big picture” issues that give a better understanding of NDBs' role in infrastructure finance. In addition, the comparisons may provide useful input for policy makers considering the reform or creation of new NDBs or multilateral development banks focusing on infrastructure provision.

5.1. Reliable, Low-Cost Financing is Fundamental to Sustainability and Scale

For an NDB to operate successfully at a large scale, it is essential that it secures financing at relatively low interest rates and long maturities. Without this type of financing, the NDB will find it more difficult to support projects with important social benefits—notably, major infrastructure facilities—that have high up-front costs and take considerable time to complete.

The three NDBs analyzed here utilize a different mix of financing strategies, with varying degrees of success. CDB and BNDES are quite successful in raising very large amounts of long-term, low-cost financing, but with very different techniques. CDB raises funds through heavy bond market issues to intermediate high domestic savings, with an important regulatory advantage for its bonds in a relatively closed capital market, whereas BNDES can access large amounts of official financing, including direct government budget resources and constitutionally mandated worker fund savings. In both cases, governments play a key role in ensuring these resources. DBSA, on the other hand, has no special government advantages and faces a highly competitive capital market. As a result, it has a much higher cost of funding, which it mitigates somewhat through loans from international development agencies.

Due to the uncertainty and political complications of reliance on budgetary resources, capital markets tend to be the main source of financing for NDBs. However, this can only work successfully in specific contexts. First, the NDB must be issuing in a country with relatively liquid and deep capital markets—which restricts the ability of many developing countries to use this strategy. In the case of the CDB, the very high level of domestic savings in China and restricted investment options gave it a unique opportunity to establish itself as a (if not the only) major player in the local bond market. Such opportunities may present themselves in other emerging economies as domestic capital markets grow, but on a smaller scale.

Second, NDBs may require some type of regulatory advantage to be able to issue at good financial terms, particularly in a competitive, open capital market. CDB did not need this advantage initially due to its near monopoly position, but it is increasingly important now as China's capital markets liberalize. DBSA shows the opposite: it has no regulatory advantage in a highly competitive capital market, and consequently struggles to raise low-cost, long-term funding.

Third, capital markets are unlikely to be a major source of financing unless the NDB can show strong financial results. Bond investors will want considerable information regarding the loan portfolio and financial ratios of an NDB, and their views may not always coincide with the developmental goals of the bank and government. CDB has to a degree been insulated from this due to the fact that it has special regulatory status in a somewhat captive market, but this may change going forward. DBSA's difficulties accessing domestic private capital demonstrate this—bond buyers clearly have little confidence in the bank's financial strength, as evidenced by the high NPL ratio and poor return on equity. The limited recourse of BNDES to bond issues reduces the importance of financial performance, but official financing may wind down in future years and bonds could grow in importance as a funding source.

Relying on official financing sources is another viable option for NDBs, but it also brings tradeoffs. Budgetary resources are particularly problematic, dependent as they are on evolving political priorities and a country's economic and fiscal situation. It can also open an NDB up to unwanted external influence. The recent need of both BNDES and DBSA to draw on budgetary resources, and the political pressure that came along with it, are cases in point. The other potential source of official financing would be earmarked pools of savings, such as the Brazilian constitution's guarantee of a portion of the FAT channeled to BNDES. This has the advantage of locking in a significant stream of resources at very good financial terms, but it also implies an opportunity cost to the FAT, which could likely have earned better returns investing elsewhere. Such a constitutional provision was possible in Brazil in the 1950s, but would be much more politically difficult today to establish in Brazil or elsewhere.

Another option to consider is accepting deposits. Of the three NDBs analyzed here, only CDB accepts retail deposits (15% of total liabilities), and faces the tradeoff that it must dedicate staff and resources for managing those deposits. In addition, deposits are usually short-term, meaning that a bank must ensure it does not lead to asset-liability mismatches as development loans tend to be long-term. Any type of deposits would also compete with commercial financial institutions, and must be carefully considered to avoid unfair competition and undermining a country's private financial market.

5.2. NDBs Have Several Operational Advantages in Infrastructure Investment

Due to their official nature, links to different levels of government and financial strength, NDBs have several important advantages in supporting infrastructure projects. A first critical benefit is a significant degree of influence on recipients of financing as well as other project partners. NDBs can play a key role mediating between local governments and private sector actors, for example BNDES' involvement to structure a successful regulatory and investment framework for PPPs. Their official status also serves to give additional comfort to private investors who may participate in an NDB-led project, as it gives an implicit government backing and helps ease the way through potential regulatory or permit hurdles. In addition, the extremely low NPL rates registered by CDB and BNDES indicate strong incentives on the part of borrowers to promptly repay loans to a government bank.

The role of NDBs in helping (or even leading) a government's economic and social development planning can shape their ability to impact projects. CDB and BNDES both have ministerial rank and are critical players in designing their government's development strategies. Hence, local level governments and domestic private sector actors are much more receptive to technical assistance and input on project design and implementation, as this is viewed as part of a broader national strategy. In contrast,

DBSA is more of an implementing agency for government priorities, and has not developed the knowledge and technical capacity characterizing the other banks, as well as the prestige and authority. This limits its ability to play a strong role in designing and implementing major projects involving the private sector and different levels of government. Developing the type of in-house technical expertise to engage in high-level planning requires a considerable budgetary investment, which many governments (including South Africa's) are not willing to grant to their NDBs.

A useful aspect of most NDB interventions is the relatively high degree of flexibility related to financial instruments. Most NDB financing is in the form of medium and long-term loans—which is likely to remain a necessity for many major infrastructure projects. However, NDBs also have flexibility to take equity stakes, buy corporate or project bonds, offer guarantees, or engage in second-tier lending via commercial banks. This differs from many multilateral and bilateral development financiers, who are largely more restricted in their available instruments (although this is changing). This operational flexibility can be extremely useful, particularly in attracting private investment partners. NDBs can tailor their interventions specifically to the needs of a specific project, including upfront equity financing that can then be sold off to private actors once a project is through the high-risk construction phase.

5.3. International Operations Likely to be Marginal to NDB Activity

A key limitation of NDBs is found simply in the first word of the name of the institution in question: “national.” NDBs are designed to support development in a single country. Thus, their role as cross-border financiers is restricted to situations where operations are clearly linked to national interests. This most often relates to supporting national firms undertaking activity abroad, as in the case of CDB and BNDES. This can involve infrastructure, but in the case of CDB this has generally not been the case, whereas BNDES is just beginning its international operations. DBSA has engaged in more infrastructure operations in neighboring African countries as a share of its total activity, but the overall impact is limited due to the relatively small amount of resources that DBSA can leverage.

Many of the key advantages of NDBs in their domestic operations do not pertain abroad, which further restricts their ability to successfully support infrastructure finance in other emerging and developing economies. The lack of any official standing in another country, or formal links to planning and line ministries, removes one of the great strengths of NDBs in their domestic setting. In a foreign country, NDBs do not have the same credibility and influence with local level government officials or private sector actors to help design projects and shape regulatory and budgetary frameworks needed for complex infrastructure projects. Finally, NDBs have no particular advantages related

to repayment of loans in a foreign country, unlike their domestic status. This could act as an important constraint in relation to risky infrastructure projects.

As a result, one cannot expect NDBs to play a major role outside their own countries. Few NDBs have the financial scale to do so, and those that do face significant limitations. The ability of NDBs to support infrastructure financing is clearly most relevant in their own countries, with international operations currently a relatively marginal activity and likely to remain so as they progress.

5.4. Governance Underpins Accountability and Effectiveness

This paper has not extensively investigated the governance of the three NDBs. Such an analysis would be difficult due to the limited amount of publicly available records, particularly at the level of approving projects or overall developmental/business strategies. However, it is evident that this is a critical determinant of how effectively an NDB can ensure the non-politicization of its operations, transparency of resource use, effective and efficient administration, and avoidance of a drain on public finances—the main risks posed by a government-run bank.

A country's political leadership must decide on the appropriate level of external, independent oversight for an NDB. In the case of CDB and BNDES, this is relatively limited. The boards of each bank almost entirely comprise government officials, mainly from the NDB. In addition, neither of them faces any relevant level of legislative oversight. This is not to say that the two NDBs are not scrutinized, but rather that review comes from a relatively small set of government officials with little in the way of formal channels for input from external sources, such as the civil society or the private sector. Potentially, this can lead to problems such as “group think” in decision making or a lack of consideration of alternative viewpoints (such as the private sector or municipal governments). Lack of public oversight can also in theory make it easier for an NDB to mask problems such as looming financial difficulties with a lending portfolio and avoid taking steps to address them.

DBSA, in contrast, has a more diverse management arrangement, with a majority of its board coming from outside the bank, as well as more accountability (via the Finance Ministry) to the South African legislature. One possible tradeoff of greater public oversight (particularly from a legislature) could be opening a venue for political pressure and also more tightly restricting the operational capacity of an NDB. For example, in the case of DBSA, the highly publicized poor financial results and subsequent fiscal bailout led to a major cutback in its operational prelude as well as closing down its training program—cost-effective measures, but also ones that could reduce its operational effectiveness.

Endnotes

- ¹ The author would like to thank Corinne Graessle for her excellent research and writing contributions that underpin much of this paper, as well as valuable assistance from other sources including Seth Colby (IADB), João Carlos Ferraz, Rodrigo Madeira and Nelson FontesSiffertFilho (BNDES), Nancy Alexander (Heinrich Boell Foundation), Mark Grimsditch (consultant), and Larissa Rininsland (Standard and Poors). All errors and omissions are the author's.
- ² World Bank 2012. Another source put the number at 550 (Yeyati et al. 2004, p. 15).
- ³ See for example Armedáriz de Aghion 1999.
- ⁴ World Bank 2012.
- ⁵ As highlighted by Bhattacharya and Holt 2015, also in this paper series.
- ⁶ For example, a commentator from a German development think tank recently criticized CDB, BNDES, and DBSA as they do not utilize the same environmental and social safeguards as many multilateral development banks. Quoted in Gies, 2014.
- ⁷ See Annex Table 1 for a summary of key attributes of CDB, DBSA, and BNDES.
- ⁸ <http://www.relbanks.com>. SNL Financial published a list of the top 100 banks by assets, but did not include CDB as it is not listed on a stock market. See <http://www.snl.com/InteractiveX/Article.aspx?cdid=A-26316576-11566>
- ⁹ Downs 2011, p. 6.
- ¹⁰ CDB 2012 Sustainability Report.
- ¹¹ A fourth overseas office was due to open in Caracas, Venezuela in 2014.
- ¹² The SADC currently has 14 members besides South Africa: Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Swaziland, Tanzania, Zambia, and Zimbabwe.
- ¹³ See 2013 DBSA Annual Report as well as Magubane 2013 and Barron, 2013.
- ¹⁴ Standard and Poor's 2013a, p. 6.
- ¹⁵ South Africa Government Gazette, 13 December 2013, No. 37163 and Parliamentary Monitoring Group, 21 October 2014.
- ¹⁶ DBSA Annual Report 2013.
- ¹⁷ BNDES 2014.
- ¹⁸ Colby 2012, p. 6–8.
- ¹⁹ Standard and Poor's 2014.
- ²⁰ BNDES 2013a, p. 3.
- ²¹ Colby 2012: 15.
- ²² Unless otherwise noted, all data taken from DBSA annual reports, which reports based on a fiscal year ending on March 31. All numbers converted from rand to US\$ at prevailing exchange rates (from www.oanda.com).
- ²³ As stated on the DBSA website; see DBSA 2014a.
- ²⁴ For details, see Downs 2011 and Sanderson and Forsythe 2013.
- ²⁵ Sanderson and Forsythe 2013.
- ²⁶ DBSA Annual Report 2013, p. 15.
- ²⁷ DBSA Annual Report 2013, p. 29.
- ²⁸ Downs 2011, Sanderson and Forsythe 2013, Gallagher et al. 2012. The China Ex-Im Bank is more involved in infrastructure finance in countries outside of China than CDB.
- ²⁹ Sanderson and Forsythe 2013.
- ³⁰ Qobo and Motsamai (2014) argue that this can undercut the legitimacy of DBSA's international activity and may lead borrowers in other countries to perceive it as an instrument of South Africa's efforts to dominate the region. This, in turn, can undermine DBSA's developmental effectiveness.
- ³¹ See Hochstetler 2014 for details on BNDES' international activity.
- ³² DBSA Annual Report 2006–07, pp. 100–103.
- ³³ DBSA Annual Report 2013.
- ³⁴ João Carlos Ferraz, vice president, November 8, 2013.
- ³⁵ Sanderson and Forsythe 2013.
- ³⁶ Interview, Nelson FontesSiffertFilho, BNDES Superintendent for Infrastructure, November 8, 2013.
- ³⁷ See CDB Annual Report 2008, Financial Statement.
- ³⁸ Sanderson and Forsythe 2013, p. 69.
- ³⁹ Sanderson and Forsythe 2013.
- ⁴⁰ Downs 2011, p. 21.
- ⁴¹ Standard and Poor's 2013b.
- ⁴² Standard and Poor's 2013a.
- ⁴³ DBSA 2014b.
- ⁴⁴ 2013 DBSA Annual Report, p. 45.
- ⁴⁵ Taveres 2013 and Colby 2012.
- ⁴⁶ BNDES 2013a, p. 12.
- ⁴⁷ The Economist, October 19, 2013. "A Ripple Begets a Flood".
- ⁴⁸ See for example Standard and Poor's 2013a, 2013b, and 2014.
- ⁴⁹ Comparing the financial results of NDBs to other financial institutions, or even to one another, is not necessarily appropriate. Not only are the financial outcomes not goals in and of themselves, as noted above, but the institutions also differ very greatly in the markets in which they operate, types of clients they are permitted to finance, and support from the government for accessing funding and ensuring repayment, among other factors. At the same time, standard financial ratios provide a rough-and-ready snapshot to the performance of an NDB.
- ⁵⁰ Downs 2011, p. 12.
- ⁵¹ Ibid., p. 15.
- ⁵² Lu and Sun 2013.
- ⁵³ Dow Jones Business News 2014.
- ⁵⁴ Standard and Poor's 2014.
- ⁵⁵ Leahy 2013.
- ⁵⁶ Colby, p. 18.
- ⁵⁷ Standard and Poor's 2014.
- ⁵⁸ This does not automatically imply a financial loss, since BNDES does not have to sell its shares, but it affects the fair market valuation of its assets.

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Interviews

- João Carlos Ferraz, BNDES Vice-President, November 8, 2013, Rio de Janeiro.
- Nelson Fontes Siffert Filho, BNDES Superintendent for Infrastructure, November 8, 2013, Rio de Janeiro.

Annex Table 1. Summary of Key Operational Characteristics of NDBs (2013)

	CDB	DBSA	BNDES
Size Assets Employees Offices	<ul style="list-style-type: none"> • US\$1.3 trillion assets • 8,000 • 38 in China, 3 overseas 	<ul style="list-style-type: none"> • US\$5.8 billion assets • 566 • HQ only 	<ul style="list-style-type: none"> • US\$328.5 billion assets • 2,800 • 4 in Brazil, 3 overseas
Ownership	100% nat'l government	100% nat'l government	100% nat'l government
Governance	Full ministerial rank. 13 member board; 3 nominally independent (details not available).	Minister of Finance is bank governor. 13 member board: 5 DBSA, 5 private sector, 3 civil society.	Ministry of Devpt runs bank. 9 member board all from BNDES appointed by nat'l president; separate advisory board from various ministries.
Sectoral Patterns	Majority (59%) infrastructure, particularly transport, including many major projects; remainder for various sectors. Increasing focus on environment and socially oriented projects.	Nearly 90% for basic service delivery infrastructure (particularly transport and energy). Some private sector lending, but declining.	Largest share (43%) to private sector and industry; about a third to infrastructure. Widely spread through different economic activities, no single focus.
Clients	Large share to local gov't financing vehicles for infrastructure development (details not available).	Two-thirds to municipalities and public utilities, one-quarter to private sector, remainder to national gov'ts, DFIs and education institutions.	Two-thirds to private sector of which most (63%) to large companies; remainder mainly to local governments.
International Activity	15% of portfolio, up from 0.6% in 2006. Mainly finances investment in natural resource by Chinese firms in LatAm and Africa. Mainly in USD but increasingly yuan also.	1/4 of lending in 12 southern African countries, with Zambia taking 40% of that. Seeking legislative authority to expand lending throughout Africa.	Began International operations in 2008 mainly in LatAm; opened office in Africa in 2013. 14% of portfolio in foreign currencies.
Instruments	Over 90% in direct loans, mainly for longer maturities (>5 years). Small but growing equity investments (3% of assets), mostly in 5 companies of 20–40% stake, via wholly owned subsidiary. Corporate bonds 0.7% of assets.	About 80% direct loans, about 60% of which <5 years' maturity. Growing direct equity investments as minority shareholder (10% of assets, though may decline in the future).	Over 70% loans, most of which <5 year maturities; about half direct and half via commercial banks. Equity investments 10% of assets, usually below 20% stake (via a wholly owned subsidiary). Corporate bond investments 2% of assets.
Financing Sources	Strong supply of low-cost, long maturity funding, mainly from domestic capital markets. 3/4 of liabilities from low-yield domestic bond issues, supported by risk-free regulatory status (due to expire in 2015). Only of the three to accept deposits (15% of liabilities). No gov't funding apart from equity capital stake.	Relatively high cost of funding at variable maturities. 70% domestic bond issues at relatively high yields and short maturities. Remainder mostly from credit lines from external dvpt agencies at low rates and long maturities. Recent capital injection to strengthen bank first gov't resources since 1994.	Highly dependent on gov't sources for low rate, long maturity funding. Over 80% from gov't sources at subsidized interest rates and long maturities. A portion of this (worker pension fund) guaranteed by constitution. 3% from bond issues, 2% from external dvpt agencies, remainder commercial loans and other sources.
ROE (2006–13 avg) NPL (2013)	<ul style="list-style-type: none"> • 11.1% • 0.5% (concern re future real estate prices and local gov't loans) 	<ul style="list-style-type: none"> • 3.5% • 7.3% (spike in 2012–13 mainly from private sector clients—led to refocus on public sector lending) 	<ul style="list-style-type: none"> • 20.9% • 0.01% (concern re upswing in counter-cyclical lending following 2008–09 crisis)

Note: ROE=return on equity; NPL=non-performing loan ratio



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