

The Future of National Development Banks

Initiative *for* Policy Dialogue



In 2017 the BNDES completes 65 years of history. Like many other Development Banks, it has always played a fundamental role in promoting investment and transforming the Brazilian economy. Over time, it has assumed several missions associated with the different development cycles of the country. The Bank offers several financial support mechanisms to Brazilian companies of different sizes as well as public administration entities, enabling investments in all economic sectors.

Being a national Bank, the BNDES operates in regions of large productive diversity, with different economic and social realities. It interacts directly with the market (basically through companies and banks) and with the government, building bridges between public policies and projects from the private sector.

Knowing the experiences of other Development Banks, their current challenges and their agendas, is fundamental for the BNDES to improve its policies and practices and to broaden its own vision of the future. For this purpose, the BNDES sponsored the two seminars that gave rise to this publication. Here, it will be possible to find the experiences of some specific institutions: Nafinsa (Mexico), Corfo (Chile), CDC (China), KfW (Germany), and the BNDES (Brazil) itself. Also, there are articles dealing with more than one institution, as in the case of the papers that discuss the Peruvian Development Banks and the Colombian Development Banks. Additionally, the book contains articles on specific major themes such as: fostering innovation, challenges of long-term financing, regulatory and risk management issues, and a reflection on the anti-cyclical performance of Development Banks in the subprime post-crisis. In that sense, the publication represents an effort to broaden the discussion of the roles of development banks, highlighting important initiatives for a more developed and sustainable world.

The Future of National Development Banks

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I. Introduction

This paper presents the framework for Columbia University's Initiative for Policy Dialogue (IPD) research project on national development banks, which has been supported by the Brazil's National Economic and Social Development Bank (BNDES) and the Development Bank of Latin America (CAF). The project focuses on development banks, including public sector banks active in project financing for development purposes (for example in infrastructure), but excludes public sector commercial banks.

The main activity of most development banks is second-tier lending –i.e., partial or full rediscounting of loans provided by other financial intermediaries, particularly commercial or investment banks. However, as is indicated below and is detailed in the case studies for this project, many also do first-tier lending, and clearly so do the banks active in project financing. Several are also involved –and, in fact, increasingly so— in guaranteeing private sector operations rather than lending, and those active in inclusive finance or agricultural lending also run guarantee funds. Equity investments are less common today than in the past, but at least one type of such investments, in equity or debt funds active in sectors of priority of the different banks, has become a growing activity of some of these banks in recent years.

In the wake of the 2007/09 North-Atlantic financial crisis, there has been renewed support for these institutions, as the limitations and problems of a purely private financial sector have become more evident to different strands of economic thinking. It became obvious after 2007/09 that the private financial system on its own cannot perform well to support the real economy. It has been pro-cyclical, over-lending in boom times but rationing credit during and after crises. In both tranquil, but more in turbulent times, it has also not funded sufficiently long-term investment in innovation and skills, which businesses need to grow and create jobs. Key sectors, like infrastructure, renewable energy and energy efficiency, have been insufficiently funded. And small and medium enterprises, as well as poor households, get insufficient credit, which is often costly and short-term. The implication of this is that “irrespective of policy orientation, the failure of private financial markets to deliver adequate long-term finance forces governments to rely on development banking institutions” (Chadrsekhar, 2016, p. 24).

The depth of concern about the financial sector is illustrated by IMF Managing Director, Christine Lagarde, stating: “*We need a financial system that serves society.*” (Lagarde, 2015).

At the same time, as concerns about the limitations of a purely private financial system grew, the positive role that many development banks played during the crisis and its aftermath, especially but not only by providing counter-cyclical finance, have been increasingly accepted, both in emerging and developing countries –where development banks have played a key role in countries like Brazil, China and India, to mention only a few cases—but also increasingly in developed economies. The latter is

evidenced by the recent creation of development banks in countries like France and Ireland and the positive evaluation of long-established successful development banks, like KfW, which is widely seen as having played a positive role in the growth and structural transformation (e.g., to a greener economy) in the most successful European economy, Germany.

The recent creation of two large multilateral development banks, the Asia Infrastructure Investment Bank (AIIB) - that 57 countries, including all major European countries and important emerging economies like Brazil initially joined as members, followed by many more countries joining later - and the BRICS's New Development Bank (NDB), also seems to reflect the shift in the development finance paradigm towards a more balanced public-private mix for provision of long-term funding.

More broadly, development banks play at least five crucial roles in the development process: (i) counteracting the pro-cyclical behavior of private financing; (ii) promoting innovation and structural transformation, which are inherent to dynamic economic growth; (iii) enhancing financial inclusion; (iv) supporting the financing of infrastructure investment, which is also crucial for economic growth; and (v) supporting the provision of public goods, and particularly combatting climate change and, more broadly, promoting environmental sustainability and “green growth”. In several countries, development banks are also active in rural and export financing, as well as in investment of risk capital in specific firms or projects associated with their development mandates.

It is interesting that institutions like the World Bank, which in the past were quite critical of national development banks, drawing on papers such as that by La Porta, Lopez-de-Silanes, and Shleifer (2002), have increasingly become supportive of these institutions, especially since the 2007/09 crisis. Thus, drawing on a global survey of national development banks carried out by the World Bank, Luna Martinez and Vicente (2012), conclude that “DBs with clearly defined mandates, high corporate governance standards, strong risk management capability, proper regulation and supervision, and a strong management team have been successful.” (Luna Martinez and Vicente 2012, p. 24).

Along similar lines, the London School of Economics’ Growth Commission concluded that for the UK: “An Infrastructure Bank (IB) to facilitate the provision of stable, long-term, predictable, mostly private sector finance for infrastructure is desirable. There are good theoretical reasons for the creation of such a bank... There are good practical examples that show the advantages of a bank with this sort of mandate, such as Brazil’s BNDES, Germany’s KfW, the European Bank for Reconstruction and Development and to some extent the European Investment Bank.” (Aghion et al 2013, p.25).

Furthermore, the Addis Ababa Action Agenda, approved by all United Nations members after the 2015 Financing for Development Conference, expressed very strong support for development banks. The Agenda stated, in particular, that: “National development banks...can play a vital role in providing access to financial services. We encourage both international and domestic development banks to promote finance for micro, small and medium-sized enterprises” (AAAA, 2015,

p.21). It expressed similar support for using national development banks, in collaboration with private financial institutions and investors, to help fund infrastructure and, more broadly, achieve the sustainable development goals.

An important point not frequently made in the literature is that, for emerging and developed economies in particular, a more diversified financial structure than one that is focused mainly on private (often large) banks, may have several advantages, including for competition and financial stability. Firstly, it may encourage competition between different types of financial institutions, which could lead to reducing the interest rates they charge. Secondly, a more diversified financial system, *especially* if not having inter-connected risks, could result in less systemic risk and therefore contribute to financial stability. Thirdly, if different varieties of financial institutions have different strengths, having a more diverse system could make it more likely that the financial sector fulfills the functions needed for inclusive growth.¹

Many development banks, though having paid-in capital provided by governments, raise their funds on the national and sometimes international private capital markets. Typically, their loans are also co-financed by private agents, helping prolong the maturities that private finance provides. Leveraging public resources with private ones has been especially valued in contexts of limited fiscal space, like in the European Union in the wake of the Eurozone debt crisis. This has led to important increases in the capital of some banks (e.g., KfW) and to the expansion of the capital

¹ To include some stylized facts, development banks are good at counter-cyclical lending and at providing long-term finance for private investment in infrastructure; private banks are good at providing international trade credit as well as financing the needs of large domestic and foreign companies; and low end institutions are good at giving credit to MSMEs, especially in specific localities.

of the European Investment Bank (EIB), as well as to the launch of the Juncker Plan, with the EIB at its center, but with a major role for the private sector.

It is important to underscore that what should be promoted are “good” development banks. To have “good” development banks implies having institutions that have clear mandates and are well governed and well run, so they can fulfill their functions well. Their main objective is to maximize their development impact rather than profits, though assuring at least minimal commercial returns. Their creation and consolidation can thus be understood as part of the effort to build strong state capacities. Indeed, when they fulfill these objectives, they can play a central role in implementing crucial government policies, such as industrial policy, infrastructure investment and social inclusion. A key challenge is how best to achieve these goals in different categories of countries, which is one of the central themes of this project. Furthermore, “good” national development banks need to collaborate effectively, both with private financial institutions and investors, as well as with regional and multilateral development banks.

In what follows (section II), we briefly outline key analytical and theoretical analysis underpinning the need for development banks. In section III, we use mainly existing studies to outline key features of national development banks. We will then discuss the main roles that national development banks do and should play in section IV. We draw this analysis from the thematic papers and key questions for the case studies of the project.

II. Brief review of analytical and theoretical literature

Despite their size and importance, little research has been done on the analytical rationale for national development banks.

In the three decades after World War II, the financial sector functioned quite well in developing and developed countries. National development banks performed, and were broadly seen to play valuable roles. However, policy concerns that the so-called “financially repressed” systems were inefficient started to emerge. This was the basic argument that encouraged financial liberalization (Gurley and Shaw, 1955; McKinnon, 1973). In the framework of this efficient financial market school, the existence of public financial institutions, such as development banks, was –almost by definition— seen as negative. As a consequence, development banks were criticized –fairly and unfairly— and their role was reduced sharply in many countries. Some were liquidated.

An alternative theoretical framework that arose as the financial liberalization process was gaining traction emphasized credit rationing, which describes a situation in which, even when agents are willing to pay a higher interest rate to get the funds to finance their investments, private banks may refuse financing. In contrast with the previous school, this framework justifies the existence of development banks, which would supply the necessary credit to investment, unavailable in the private financing system. This approach is associated with the theory of market failures in financial markets (Stiglitz and Weiss, 1981; Stiglitz, 1989). Credit rationing occurs due to a

malfunction of the financial markets, caused by imperfect information and information asymmetries that prevent financial markets from functioning efficiently.

Furthermore, in this context, adverse selection and moral hazard accentuate these market imperfections.

Stiglitz (1994) argues that market failures in financial markets are likely to be endemic as those markets are particularly information intensive, thus making information imperfections and asymmetries as well as incomplete contracts more important and disruptive than in other sectors. Therefore, in this context, market failures tend to be greater than government failures. The benefits of government interventions tend, therefore, to outweigh their costs. This provides a first robust case for a “visible hand of government,” both through effective public development banks and through robust regulation of private financial markets.

Stiglitz and Greenwald (2014) further argue that knowledge and information markets also have huge market imperfections, and that they are basically public goods. As a consequence, governments have a clear role in promoting a learning society, to help achieve increases in productivity. Development banks are an institutional vehicle to help achieve this objective. Besides providing long-term finance, they can provide specific incentives for innovation. Furthermore, because of their long-term perspective, they can help fund, accumulate and coordinate expertise in specific areas of innovation. Naturally in this task they need to, and do, collaborate with other actors, both public and private.

From a complementary theoretical perspective, several commentators (e.g. Wray, 2009) argue there is a preference for liquidity amongst investors, as well as banks, which is responsible for the limitations of the supply of credit for investment. Given the uncertainty about the future, depending on the characteristics of the new sectors/projects that require resources, banks often offer no or insufficient credit (especially long-term credit) even if the financial system is fully developed.

Therefore, the existence of development banks is justified by the existence of key sectors and investment projects for structural transformation in different phases of development, which face high uncertainty as to their future success (Mazzucato, 2013). For this reason, they may not be funded by the private financial system, which prefers sectors or investment projects whose expected returns are less uncertain. These are often highly complex and expensive sectors/projects, which require sophisticated expertise in their evaluation, taking account of positive impacts across the economy (positive social externalities, for example in terms of helping mitigate climate change via lower carbon emissions). For this reason, Kregel (2015) has argued that historically it has been public banks that have led the way in financing the long-term investment necessary for the economic industrialization and transformation; furthermore, he argues that “the recent dominance of private financial institutions and the presumption of their efficiency advantage have reduced the availability of long-term finance for development.” (Kregel, 2015, p.1)

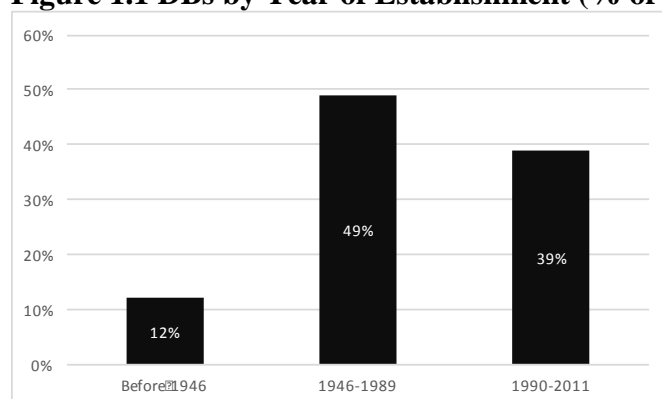
Furthermore, a key market imperfection in the operation of financial markets, basically across the board, is the tendency to “boom-bust”, with a feast of finance followed by famine (Keynes, 1936; Minsky, 1977; and Kindleberger, 1978). The pro-

cyclical nature of private finance implies the need for public development banks to provide both short-term, and especially long-term, counter-cyclical finance, as discussed below. Moreover, the 2007/8 financial crisis has shown that there is no guarantee that even developed financial markets promote the capital development of the economy during both non-crisis and crisis periods (Luna-Martinez and Vicente, 2012; Wray 2010).

III. Key features of national development banks

Several national development banks were created before the end of WWII. However, as Chandrasekhar (2016) points out, most were established in different periods after WWII: “although almost half of national development banks (49 per cent) were established... between 1946 and 1989, nearly two-fifths (39 per cent) came into existence ... between 1990 and 2011” (see also Figure 1.1, for distribution through time, including pre-WWII period).

Figure 1.1 DBs by Year of Establishment (% of DBs)



Source: Luna Martinez Vicente (2012), p.6

One first important feature that national development banks share is their large scale. According to Studart and Gallagher (2016), as well as Gallagher and Sklar (2016), the

level of total assets of national development banks is very large, reaching approximately US\$5 trillion in 2015, which is, for example, far larger than the level of loans of the multilateral development banks, which reached around \$1 trillion in the same year. It should be mentioned that other estimates for national development banks' assets are somewhat smaller, though in the same order of magnitude.

Besides their large scale, a second important feature seems to be their large number. According to Chandrasekhar (2016), drawing on a 1998 study by Nicholas Bruck, there were 550 development banks worldwide, of which around 520 were national development banks (NDBs). These were located in 185 countries, with developing countries in particular hosting an average of three or more NDBs. Latin America and the Caribbean had the largest number of NDBs (152), followed by Africa (147), Asia and the Pacific (121), Europe (49) and West Asia (47).

The task of analyzing and evaluating comparatively different NDBs is rather complex, as they differ, according to the following characteristics, as identified in the World Bank study by Luna-Martinez and Vicente (2012)

- a)* Ownership structure (fully vs. partially owned by government)
- b)* Mandate, targeted sectors and clients (narrow vs. wide focus)
- c)* Different business (lending) models to carry out their lending operations (first-tier vs. second-tier)
- d)* Credit conditions (subsidized vs. market interest rates)
- e)* Regulation and supervision (special regime vs regime applicable to all banks)

- f) Corporate governance (independent vs. government-controlled boards)
- g) Size (absolute and relative)
- h) Loan portfolio and performance indicators.

Below we summarize what existing studies say about the main characteristics of NDBs listed above. This is complemented with an analysis of key variables of these vs. other financial institutions, such as proportion of loans going to productive lending to corporates by development banks in Latin America and the Caribbean, based on original empirical analysis made by two of the co-authors of this paper, Michael Brei and Alfredo Schclarek, which is detailed in their own contribution to the project.

III. A. Main features of national development banks according to existing studies

Typically, NDBs “are institutions owned, administered, and controlled by the government (state), which provides the strategic direction of the DB and appoints their senior management and board members.” (Luna-Martinez and Vicente, 2012). Almost three quarters of NDBs surveyed by the World Bank are 100% State owned, 21% are have between 50 and 90% of State ownership, and in only 5% governments have a minority ownership.

According to Luna-Martinez and Vicente (2012, pp. 11-12), “53% of NDBs are “institutions with a narrow and specific mandate, which explicitly refers to the sector(s), type of customers or activities that a NDB is expected to support...[while] 47% of NDBs are institutions with broader legal mandates and are expected to support a broader range of activities and sectors”.

The advantages and disadvantages of a broad vs. narrow mandate is, of course, a central policy issue. Narrow mandates encourage institutions to specialize in their target market. Monitoring and performance evaluation is, therefore, easier for these institutions. In contrast, NDBs with broad mandates require resources to finance a wide range of activities and sectors. This may be valuable as the challenges and needs of the broader economy change, and thus the emphasis required from NDBs.

A good example of the advantages of a broader mandate is the emergence of climate change mitigation and adaptation as a major challenge for governments, and therefore the new priority given for NDBs to play a key role. The strategic role that NDBs play in this new and much needed frontier of investments is clear: out of total financing, approximately 35% or US\$123 billion of investments were financed by development finance institutions, of which about 60% were funded by National Development Banks (based on estimates provided in Mazzucato and Penna, 2016, drawing on data from the Climate Policy Initiative (2013)).

Economic sectors targeted by NDBs vary: “86% of NDBs targeted the trade and services sectors, 84% industry and manufacturing, 83% agriculture, 74% construction and housing, 66% energy, and 65% infrastructure. On the other hand, only 48% of the NDBs targeted the health sector, 45% education, and 43% mining” (Luna-Martinez and Vicente, 2012). There is therefore a smaller emphasis on lending to social sectors. In turn, “92% of DBs responded that they target small and medium enterprises, 60% large private corporations, 55% individuals and households, 54% other state-owned enterprises (SOEs) and 46% private financial intermediaries” (Luna-Martinez and Vicente, 2012, p.13).

In a more detailed analysis of some of the largest NDBs (CDB, KfW, BNDES and JFC), three of which are being studied in this project, Ferraz et al (2016) show that all these large banks lend to MSMEs, for innovation, for the green economy, for internationalization and for capital market development; three out of four lend to agriculture and to infrastructure.

In terms of business models, according again to Luna-Martinez and Vicente, 2012), 52% of NDBs lend through a combination of first- and second-tier operations, while only 12% of NDBs only do second-tier lending. Interestingly, a large number of “second-tier-only” NDBs are located in Latin America.

In terms of credit conditions, products offered by NDBs are mainly concentrated in “long-term loans (90%), followed by working capital loans (85%), whereas syndicated loans consisted of 52% of all DBs, and unsecured loans 25%” (Luna-Martinez and Vicente, 2012). The maturity of loans that NDBs offer is presented in table 1.1. It shows that 54% of NDB loans are over 10 years maturity. This is why it is correct to say that NDBs are a major source of so-called patient capital, especially well suited to fund projects - like in infrastructure - which become profitable only after a long period.

Table 1.1. Maximum Loan Term Offered by DBs

Maximum loan term	Percent of DBs
Up to 5 years	16%
6 to 10 years	29%
11 to 15 years	19%
16 to 20 years	22%
21 to 25 years	7%
26 to 30 years	6%
Total	100%

Source: Luna-Martinez and Vicente, (2012), p.16

Moreover, “credit at subsidized interest rates is a practice adopted by 50% of DBs covered in the survey. In this category, 66% of DBs fund these subsidies using transfers from their respective governments.” Finally, “73% of all DBs offer loan guarantee products to partially offset the losses faced by a private financial intermediary when a customer defaults” (Luna-Martinez and Vicente, 2012).

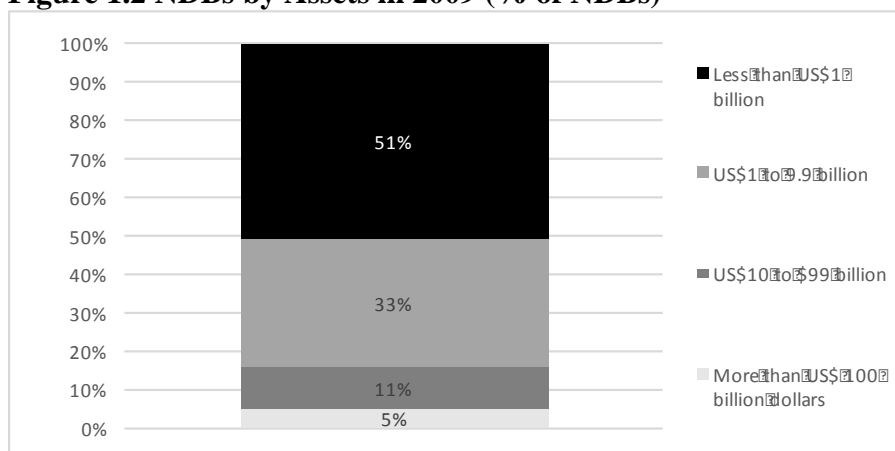
The World Bank survey shows that “76% of DBs are in fact regulated and supervised by the same institution that supervises private commercial banks in their countries, such as the central bank or the bank supervisory agency...[while] 78% of DBs indicated they are required to comply with the same standards of prudential supervision (minimum capital, minimum capital adequacy requirements, loan classification and provisioning, etc.) as private commercial banks or any other private financial institution” (Luna-Martinez and Vicente, 2012).

The fact that the regulatory agencies and principles are the same for NDBs as for other financial institutions poses some questions, which are analyzed in detail by Lavinia Barros de Castro in her contribution to this project. The major issues are the treatment of risks of long-term lending and portfolio concentration. As has been

widely recognized, existing regulation has biased commercial bank lending toward the short term. This effect must be clearly avoided in the case of NDBs. In turn, in infrastructure lending in particular, portfolio concentration is inevitable, or projects would be inadequately financed. So, regulatory norms must be revised to avoid the adverse effects they could have on the activities of NDBs.

As can be seen in Figure 1.2, there is a large range of NDBs, according to the scale of their assets. According to the World Bank survey, 5% of these banks have assets of over \$100 billion; at the other extreme, 51% of these NDBs have assets of under \$ 1 billion.

Figure 1.2 NDBs by Assets in 2009 (% of NDBs)

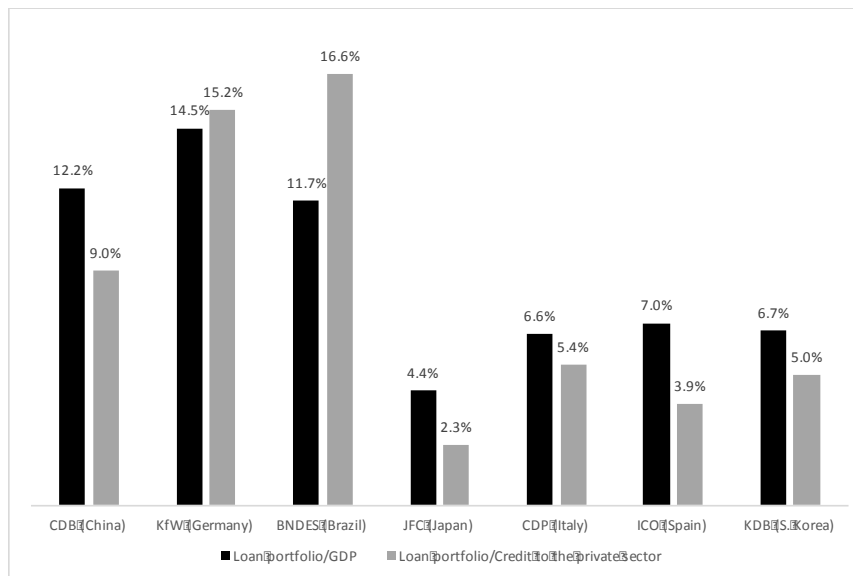


Source: Luna-Martinez and Vicente (2012), p.7

Naturally, the key variable to explore is their scale in proportion to the size of economies, as well as to the size of total credit to the private sector. Figure 1.3 shows these indicators for 2013, for some of the largest development banks. According to this data, the largest loan to GDP ratio is that of KfW, fairly closely followed by CDB and BNDES. On the other hand, if total loan portfolio is looked at as proportion of

total credit to the private sector, also for 2013, the highest ratio is for BNDES, followed by KfW and CDB. In both ratios, the other NDBs analyzed have significantly lower figures than KfW, BNDES and CDB.

Figure 1.3. DFI Loan Portfolio and Representativeness – 2013 (%)



Source: Além and Madeira (2015), p.114

Even though profit maximization is not the objective of NDBs, the World Bank survey and report shows that “In 2009, 53% of the surveyed NDBs had a Return on Assets (RoA) exceeding the average of their banking systems. This was up from 42% in 2006 and 2007, and 46% in 2008. In terms of the Return on Equity (RoE), 19% of DBs exceeded the national average in 2009, up from 15% in 2006, 13% in 2007, and 18% in 2008.” (Luna-Martinez and Vicente, 2012, p. 18). In turn, “Non-performing loan (NPL) ratios of all “second-tier-only” DBs fell within the less than 5% bracket” (Luna-Martinez and Vicente, 2012, p.17).

Looking at the some of the largest NDBs, a fairly positive picture also emerges for 2013. As Além and Madeira (2015) point out (see also Table 1.2.), delinquency rates on loans are very low, with the highest rates for Spanish ICO (that was probably worsened significantly by the Eurozone debt crisis) and for Japanese JFC. According to this information, BNDES, KfW and CDB have the lowest delinquency rates. As regards RoE, the best results according to this source are from BNDES and CDB, whilst the worst are from KDB (Korean) and JFC (Japan), both of which show actual losses.

Table 1.2. Structure and economic and financial* performance of selected DFIs-2013

	CDB	KfW	BNDES	JFC	CDP	CDC	ICO	KDB
	China	Germany	Brazil	Japan	Italy	France	Spain	S. Korea
Assets (US\$ billions)	1,331.30	719.70	63.40	60.40	42.40	190.70	136.30	131.10
Loan portfolio (US\$ billion)	1,172.30	628.80	63.50	22.80	37.60	nd	95.00	7.90
Net profit (US\$ billion)	3.00	1.17	8.60	(2.90)	8.10	2.50	0.10	(1.30)
Delinquency rate (%)	0.48	0.13	0.01	2.98	0.20	nd	5.30	5.10
Return/assets (%)	0.02	0.27	0.01	(1.13)	0.29	0.33	0.08	(1.01)
Return/equity (%)	5.07	6.21	5.34	(6.84)	4.00	nd	1.76	(8.85)
Number of employees	8,468.00	5,374.00	2,859.00	7,361.00	1,440.00	nd	310.00	n.d
Year of foundation	1994	1948	1952	2008	1850	1816	1988	1954

Source: Além and Madeira (2015), p. 110

A final important feature of NDBs is funding. According to the World Bank survey, 89% of NDBs borrow from other financial institutions or issue debt on local capital markets. This shows the close and positive symbiosis between public development banks and private financial institutions. 40% of these NDBs receive budget transfers from the government and 64% receive government guarantees.² It is interesting that 41% of NDBs reportedly take deposits from the general public.

² “It should be noted that receiving direct transfers from the government does not necessarily mean dependence on government funds. Sometimes, DBs - such as KfW in Germany - receive transfers from

III.B. Lending and funding structure of national development banks, from a comparative perspective.

This subsection investigates the lending and funding structure of national development banks and compares it with that of commercial public and private banks. In addition, it explores the lending and funding rates with which these banks operated. Finally, it examines the lending quality of these banks with a focus on non-performing loans. The data used covers 422 banking institutions (27 national development banks, 36 public banks and 359 private banks) from 35 jurisdictions in Latin America and the Caribbean over the period 2000-14. All values are unweighted averages across banks and countries.³ A detailed discussion of the underlying data is provided in another chapter in this book, written by Brei and Schclarek (2017).

The lending activity of national development banks differs remarkably from that of private banks. As can be seen in Figure 1.4(a), development banks have focused their activities on lending, as evidenced by an average loan-to-asset ratio of 58.6% over the period 2000-14 (with the rest being composed of assets like securities and liquid assets).⁴ This pattern is to some extent similar to commercial public banks, which have invested 52.6% of their assets in customer loans. However, these ratios stand in contrast to those of private banks in the region, which recorded a far lower average

the government to fund interest rate subsidies to a particular type of borrower. (Luna-Martinez and Vicente, 2012, p.10-11).

³ Our results do not change significantly if we weight for the size of banks.

⁴ Total loans includes residential mortgage loans, other mortgage loans, other consumer/ retail loans, corporate and commercial loans, other loans and reserve against possible losses on impaired or non-performing loans.

loan-to-asset ratio of 43.7%.⁵ Interestingly, the lending activity of national development banks has been focused mainly on the provision of productive lending in the form of corporate and commercial loans (see Figure 1.4(b)).⁶ To be more precise, an average of 49.3% of assets have been devoted to the productive lending activity, compared to 31.2 and 20.1% in the case of public and private banks, respectively. Clearly, national development banks are an important source of productive funding for corporations, reaffirming their role as promoters of economic development.

Over the considered period, public banks have had the highest ratios of holdings of government securities as a proportion of total assets, as can be seen in Figure 1.4(c).⁷ In the more recent period, however, it appears that national development banks have increased their share of government securities, thereby counteracting the decrease in government securities of their public bank peers. Private banks, on the other hand, have invested much less into government securities. The results might be a sign that national development banks are refocusing their lending activities towards infrastructural lending to the government, an important determinant of economic development. However, if the increased holding of government securities were due to increased financing of government current expenses, this would be problematic. Note, however, that from our data it is impossible to assess the exact reason for the holding of government securities or the use of these funds by the government. For example, it could be the case that the government is recapitalizing the bank by granting it

⁵ On average, total assets of national development banks are composed of approximately 60% loans, 20% securities (which include any bonds), 10% liquid assets, and 10% interbank positions (may include lending to the central bank). If weighted by total assets, the ratio of loans in total assets increases, which suggests that the large development banks have a heavier focus on lending than smaller development banks.

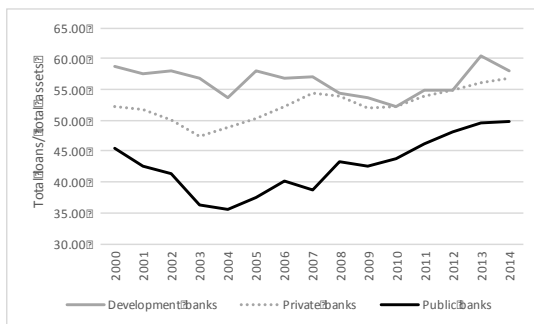
⁶ Corporate and commercial loans include loans and leases to corporate and commercial enterprises.

⁷ Government securities include all treasury bills and government securities.

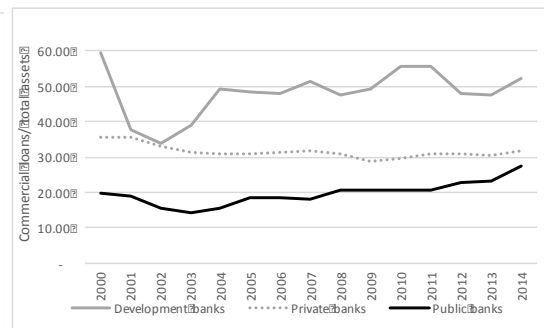
government securities. In this case, the increased holding of government securities would not be evidence that the bank is financing the government, but quite the opposite. To get a thorough answer to these questions a detailed case study of funding and lending structures should be carried out for each national development bank, which is not the objective here.

Figure 1.4. Selected indicators on bank balance sheets, 2000-2014

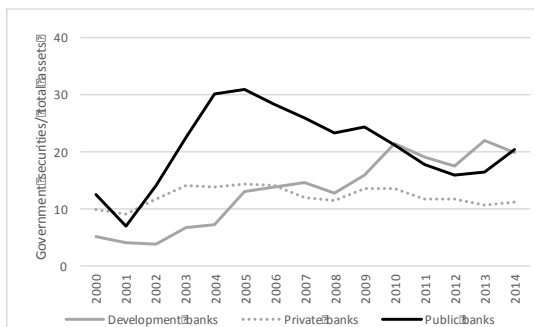
(a) Total loans



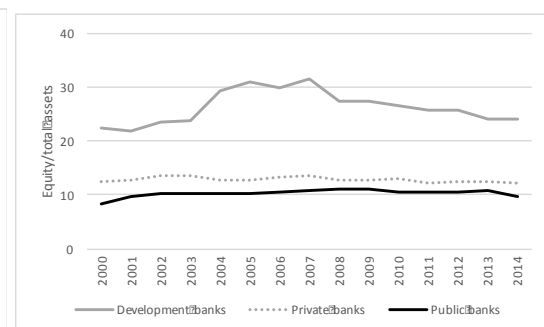
(b) Corporate and commercial loans



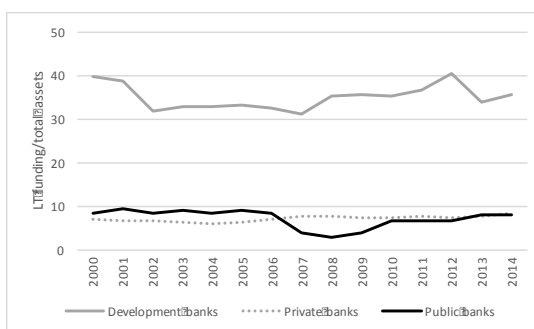
(c) Government securities



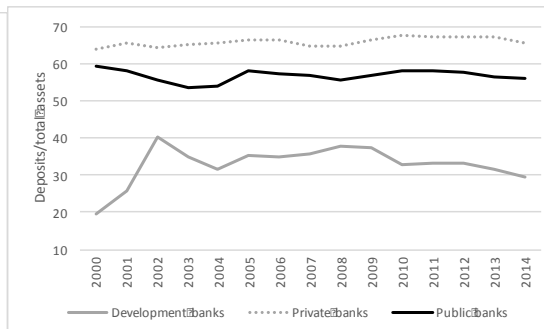
(d) Equity



(e) Long-term funding



(f) Deposits



Note: The figures are based on 422 banks (27 national development banks, 36 public banks and 359 private banks) from 35 jurisdictions in Latin America and the Caribbean. Development banks are banks that are state-owned, non-retail deposit taking, and not foreign- or multilateral-owned development banks. Public banks are majority-owned banks by a government, and private banks are the remaining banks. Government securities include treasury bills and other government securities. Long-term funding includes senior debt maturing after 1 year, subordinated borrowing and other long-term funding. All values are unweighted averages across banks and countries. Sources: BankScope, Claessens and von Horen (2015), authors' own calculations.

The funding structure of development banks is inherently different from that of public and private banks (see Figure 1.4(d)-(e)). The average figures suggest that development banks have relied on more stable sources of funding, as evidenced by significantly higher equity (bank capital) and long-term funding ratios.⁸ More specifically, while development banks recorded on average equity and long-term funding ratios of 25.8 and 35.7% of assets, respectively, these ratios have been much lower for public and private banks. Their long-term funding represented on average 7.4% of assets, while the equity-to-asset ratio averaged 12.5% in the case of private banks and 9.9% in the case of public banks. This difference can be explained by the fact that both private and public banks financed their activities mainly through deposits (see Figure 1.4 (e)), which is not the case for development banks.⁹ Evidently, the funding structure of development banks shows that they are better prepared for financing long-term projects without suffering a term mismatch.

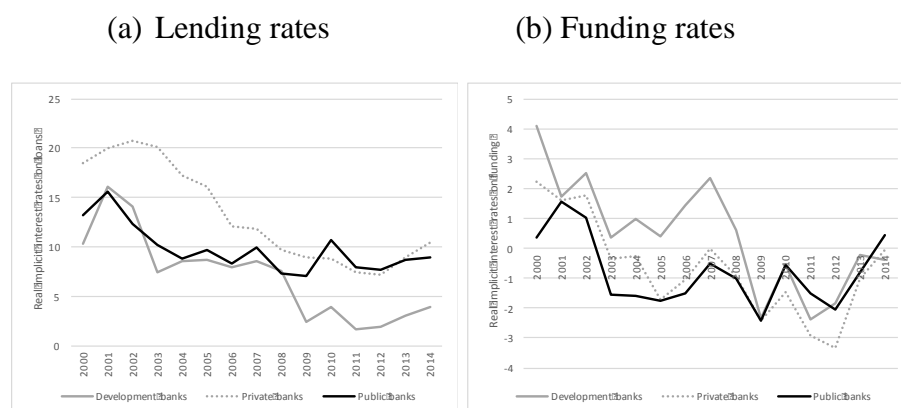
Regarding real lending rates, national development banks tend to provide their loans at lower interest rates compared to public and private banks in the region (see Figure 1.5 (a)). Across all banks, there has been a declining trend in real lending rates,

⁸ Equity includes common equity, non-controlling interest, securities revaluation reserves, foreign exchange revaluation reserves and other revaluation reserves. Long term funding includes senior debt maturing after 1 year, subordinated borrowing and other funding.

⁹ Deposits include current, savings and term deposits by customers.

presumably associated with the increased macroeconomic stability in the region and the reduction in US, European and Japanese interest rates that came about after the financial crisis. While the real lending rate of private and public banks averaged 13.2 and 9.8% over the period 2000-14, development banks have lent at an average rate of 7.1%. Here again, the evidence shows that national development banks are fulfilling their objective by providing economically more affordable loans to foster economic development. Note that charging a lower real interest rate than other banks does not mean necessarily that development banks are “subsidizing” lending rates. Although development banks may not be maximizing profits, they still often are making profits at these interest rate levels.

Figure 1.5 Real lending and funding rates, 2000-14



Note: Lending rates are calculated as interest income on loans divided by total loans, while funding rates are calculated as total interest expense divided by total liabilities net of equity. Real rates are calculated using predicted inflation, estimated from a simple autoregressive model. All values are unweighted averages across banks and countries.

Sources: BankScope, Claessens and von Horen (2015), authors' own calculations.

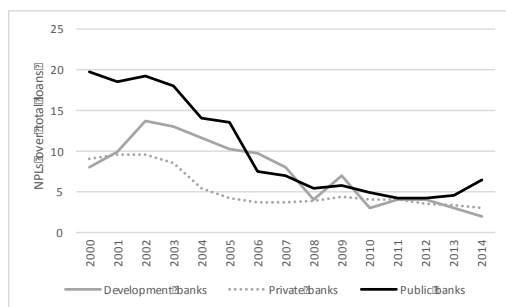
With respect to funding rates (see Figure 1.5 (b)), development banks have consistently had higher costs of external funding prior to 2008. After 2008, real funding rates across banks seem to have converged to levels below zero (after accounting for inflation) with an increasing trend in 2013-14. The lower funding costs

are presumably explained by the fact that private and public banks fund themselves mainly in the form of insured deposits, which typically pay less interest rates than long-term funding in the form of bonds and securities, which is one of the main sources of funding by development banks.

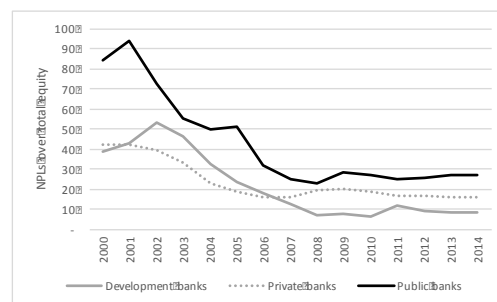
As can be seen in Figure 1.6, the riskiness of the loan portfolios across all bank types has declined significantly over the period 2000-14 for Latin American and Caribbean banks. Presumably associated with the increase in banks' risk aversion, risk management and macroeconomic stability, non-performing loans have declined to about 5% of loans since 2008. Note also that, currently, development banks have the lowest non-performance of loan ratios among all bank types, which is very positive. Development and private banks faced loan defaults and restructurings in the order of 40% of equity in 2000-2001. This pattern can be explained by the various crises that hit the region, including Argentina's and Uruguay's financial crises of 2001 and Brazil's confidence crisis of 2002. Since then, banking sector stability has increased significantly. Fostering risk management by banks and macroeconomic stability clearly reinforces the positive working of national development banks.

Figure 1.6. Lending quality, 2000-14

(a) Non-performing loans, % of loans



(b) Non-performing loans, % of equity



Sources: see Figures 1.4 and 1.5.

IV. The roles of national development banks

As indicated in the introduction to this paper, development banks play at least five crucial roles in the development process: (i) counteracting the pro-cyclical behavior of private financing; (ii) promoting innovation and structural transformation; (iii) enhancing financial inclusion; (iv) supporting infrastructure investment; and (v) supporting the provision of public goods, and particularly combatting climate change.

There are other roles that NDBs could or should play. These include helping develop and deepen financial markets, promote entrepreneurship, and promote internationalization of national firms. Indeed, some of these functions may be included in the five on which we concentrate our analysis. This is also true of other areas in which NDBs are active, particularly rural development and export growth, which will also be analyzed only in relation to the five crucial functions on which we will focus.

IV.A. Counter-cyclical lending

There is growing consensus that a first valuable function of development banks in general is their counter-cyclical role when private lending falls sharply or collapses, especially during and in the aftermath of financial crises (Griffith-Jones and Ocampo, 2008). This is particularly crucial to help maintain long-term investment, including in infrastructure, thus ensuring the continuity of existing projects and helping new ones start, valuable both for short-term growth and long-term development. It should also

help mitigate the business cycle and help prevent financial crises from deepening (Rezende 2015).

The 2007/09 North Atlantic financial crisis showed especially clearly that multilateral, regional, and national development banks of the developed and developing world significantly increased their total lending to developing countries in the years when these were most affected, through the rapid expansion of existing mechanisms, as well as via specially created ones

Indeed, the multilateral development banks (MDBs) collectively increased their lending commitments to emerging and developing economies by 72% between 2008 and 2009, the year when private capital flows to these countries fell most sharply as a result of the crisis (Griffith Jones and Gottschalk, 2012). Their disbursements also grew significantly in the same year by 40%, though at a slower rate than commitments. This represented a major counter-cyclical response, which helped sustain investment in those countries.

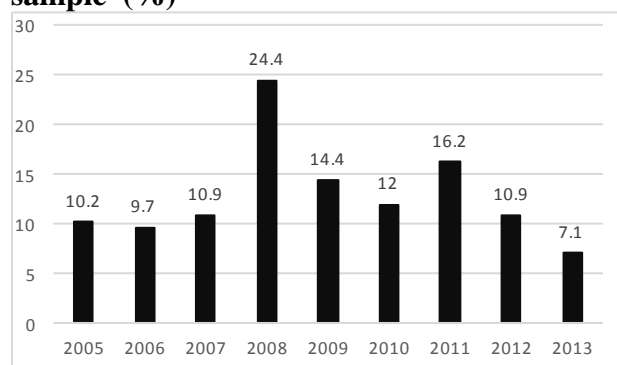
This counter-cyclical lending by multilateral and regional development banks was complemented by that of NDBs, in emerging and developed countries, as we illustrate below. Furthermore, a group of NDBs (like the Brazilian development bank BNDES and several national development banks in Asia)—also contributed to giving continuity to trade finance in cases where private trade lines fell.

Luna-Martinez and Vicente (2012) provide evidence that these banks increased their lending from US\$1.16 trillion to US\$1.58 trillion dollars between 2007 and 2009.

This increase in lending of 36% was larger than the 10% increase in private bank credit in these countries. They also find that development banks increased short and long-term lending to old and new customers who faced difficulties in refinancing their loans or receiving new lines of credit.

The clear counter-cyclical role played by the large NDBs can be seen visually in Figure 1.7, which shows that the average growth of their loan portfolio increased from around 10% in the 2005-2007 period to almost 25% in 2008, and then declined.

Figure 1.7 Average Growth of the Loan Portfolio of some DFIs from the sample*(%)



Source: Além and Madeira (2015), p. 112

There is also a small but growing body of detailed empirical evidence that national public banks provide counter-cyclical finance. Brei and Schclarek (2013 and 2015) compare the lending responses to financial crises across national public and private banks, using balance sheet information for about 560 major banks from 52 countries during the period 1994 to 2009. They find evidence that the growth rate of lending during normal times is higher for the average private bank compared to the average public sector bank. During financial crises, however, private banks' growth rate of lending decreases while that of public banks increases. These results indicate that

public banks have played a counter-cyclical role in their banking systems, while private banks behaved pro-cyclically.

They offer three explanations for this. First, the objective of state-owned banks, in contrast to their private peers, is not only to maximize profits given risks, but also to stabilize and promote the recovery of the economy. This is a similar argument made by Rudolph (2010), who argues that state financial institutions have less volatile risk aversion and therefore provide a more stable source of financing. Second, public banks may suffer less deposit withdrawals or avoid a bank run in a severe crisis, because of the implicit guarantee of the state; the securities issued by these institutions also have a preference in the market during crises. Finally, in crisis conditions, public sector banks may be more easily capitalized by governments than private banks, which may have difficulties raising the associated additional equity funds in the market.

In addition, Mazzucato and Penna (2016), as well as Turner (2015), argue that the pro-cyclical behaviour of private banks is further increased by the fact that these banks have become increasingly focussed over the past decades on short-term profits, meaning that they target low-risk, short-term gains through the trade of securities and other investments, being less interested in financing long-term productive and innovative projects.

Other papers reach similar conclusions. Thus, Micco and Panizza (2006) use bank-level data for 119 countries for the period 1995-2002 and find that lending by government-owned banks is less sensitive to business cycle fluctuations than that of

private banks. They find that this differential behavior is due to an explicit objective to stabilize credit. Bertay et al. (2015) find that lending by state banks varies less with the economic cycle, and it even rises during a banking crisis. The empirical analysis is based on an international sample of 1,633 banks from 111 countries for the period 1999-2010.

The findings may be important in policy terms. It seems key to have fairly large public sector development banks (as proportion of the total banking sector) so they can play a more significant role in generating counter-cyclical finance, and they can thus contribute more to economic recovery in times of crisis or slowdown. A significant scale of development banks may be also important for other reasons, which we elaborate below: helping ensure enough long-term finance for key sectors, like sustainable infrastructure and innovation, where profitability tends to be long-term, as well as supporting structural transformation to a sustainable and inclusive development path, helping channel sufficient and sufficiently low-cost credit to small and medium enterprises and others.

IV.B. Promoting innovation and structural transformation

There is a growing consensus that national development banks have to prioritize their role in fostering innovation and structural transformation in national economies (Gutierrez et al., 2011; Mazzucato and Penna, 2016; Olloqui, 2013). Moreover, all of the eight national development banks surveyed by Além and Madeira (2015) foster innovation. In terms of fostering industry or sector diversification, as an objective for national development banks, the recent literature is relatively limited, Mazzucato and

Penna (2016), as well as the authors of this paper, being amongst recent exceptions. This objective is easy to justify when considering, as Hidalgo et al. (2007) and Ocampo et al (2009) show, that fostering product and sector diversification is an important determinant of innovation and economic development. Moreover, as Schclarek and Navarrete (2016) argue, industry or sector diversification, by lowering aggregate credit risk, is also an important factor in fostering financial development.

The greater need for instruments to implement more long-term national development strategies for structural transformation and innovation, and in particular national development banks, has been increasingly recognized in general terms. This coincides with the acceptance of the value of a modern “industrial policy” (Rodrik, 2004) and the importance of an “entrepreneurial and development State” (Mazzucato, 2013), which, working closely with the private sector, helps give a dynamic push for private innovation and structural transformation. This builds on the success stories of the past, for example in East Asia, as well as more recently in China and India. Mazzucato (2013) also shows that much key innovation in the USA, the most free-market of economies, was spearheaded by public funding for innovation, though implemented by the private sector.

However, there is an important new element, which we discuss in more detail in the section on public goods. There is an urgent need for a major structural transformation in the development model, to make it compatible with the needs of the planet. This implies the urgency of major investment in green development. Renewable energy, partly financed by public development banks, is a valuable instrument for this.

In a complementary perspective, Stiglitz and Greenwald (2014) argue that successful and sustained growth requires the creation of a learning society and a knowledge economy to increase productivity. National development banks are an important institutional vehicle to support this aim. Indeed, development banks can help overcome market failures in both financial and knowledge markets simultaneously.

The role of national development banks related to innovation is particularly important for two reasons. First, technologies need significant financing for research and development (R&D), where investment is high risk due to factors such as failure of some projects in the search for successful solutions, and the lengthy project timeframes with limited interim financial returns. These factors constrain private investment in these areas. This requires special financing by the state, but NDBs could help finance the private component of that task. Second, as new technologies become increasingly operational and their implementation gathers speed and scale, financing is needed for large-scale and long-term investment. In this area, NDBs need to be involved in financing the required large-scale infrastructure (e.g., funding of green grids) that has important positive externalities. This will enable full-scale execution, for example of clean energy projects which otherwise may be less attractive to the private sector due to their scale or time length, and because social benefits may outweigh private benefits.

More broadly, in terms of the capacities that NDBs already possess and that makes them especially suited for providing financing to innovation as well as creation and development of new sectors or industries, Mazzucato and Penna (2016) make the point that:

“Because these are banking institutions, NDBs already have the capability and knowledge to access the economic feasibility of projects. Moreover, NDBs have traditionally supplied long-term funding (for capital-intensive projects, for example), and patient long-term committed capital is crucial for making new mission-oriented projects economically feasible. These institutions are also well positioned to coordinate stakeholders, as part of the development banking process is to coordinate stakeholders, to establish relationships, and to build up a network with an array of actors (from government officials to corporate actors to consumers). The fact that NDBs have a vast portfolio of funding tools (equity, loans, grants, etc.) will likely enable them to match the most appropriate tool to the project, whether it is incremental or radical (for example, equity or risk contracts for radical innovation, loans to incremental innovation projects, and grants to blue sky R&D). Finally, NDBs have traditionally executed their roles in coordination with governmental policiesand new missions could potentially build on this important node in the governmental network.”

The last point is perhaps particularly important. NDBs should not be seen in isolation. Their success also depends on the coordination among national economic policy agents to foster development and its funding. The latter would usually be provided in part by NDBs, which also play a key role in catalyzing private finance for key societal aims (Rezende, 2015). A good example of this is German KfW, which has played a key role in starting up renewable energy in Germany, by funding initially all private investment in solar energy; this was

done in the clear frame of government policies designed to encourage such private investment. The coordination of both elements led to an important success in this field (Griffith-Jones, 2016).

An important aspect to underscore here is the need for close collaboration and consultation between the government and the private sector to help design the best strategy, to define the right targets for structural transformation, and to achieve them most effectively. Amongst the issues that we will explore in more depth in the different case studies is, therefore: what is the role of development banks in public-private articulation to identify and select enterprises, sectors, chains and regions?

When evaluating which sectors and sub-sectors to foster, governments and development banks should put more emphasis on maximising development returns, not just financial returns. Development banks should also take the long-view, prioritising sectors that yield the highest development returns over the longer term. After sectors have been selected on this basis, projects within prioritised sectors need to be scrutinised for both potential development impact and their ability to generate positive financial returns (Griffith-Jones et al., 2016)

IV.C. Enhancing financial inclusion

There is much agreement about the important role that national development banks do and should play in providing access to financing for SMEs and microenterprises (including family agriculture), especially but not only long-term credit (Gutierrez et al., 2011; de Olloqui, 2013; UN-DESA, 2005; and World Bank, 2012). This relates

firstly to NDBs' playing an important role in assisting implementation of national development strategies, which is helping improve financial inclusion in those sectors traditionally excluded from the formal financial sector, such as the rural sector. Financial inclusion for SMEs is a pre-requisite for productive development, innovation, and higher productivity. In turn, financing microenterprises is critical for poverty reduction and for improving the low-quality standards that characterize self-employment in developing countries. In non-inclusive financial systems, it is normally small firms and poor individuals that do not have access to finance. This in turn is a mechanism that reinforces inequalities. In many emerging economies, and even in some developed ones, access to finance both by individuals and small firms is still an issue that needs major policy action, especially but not only during and after financial crises or downturns. In general, financial systems in developing countries exhibit problems of segmentation and exclude broad segments of the productive sector such as micro, small and medium-sized firms.

SMEs play a crucial role in most market-based economies as providers of employment and income opportunities and as vehicles of innovation and growth. On average, SMEs account for 45 and 67% of total formal employment in the manufacturing sector of high-income countries and developing countries respectively, as well as contributing to sizable shares of GDP (Financial Inclusion Experts Group 2010).

SMEs consistently report having severe obstacles in their access to finance in comparison to larger firms, which limit their ability to grow. In turn, the higher financing obstacles are reflected in their financing pattern, as they tend to use

significantly less external funding than larger firms for both working capital and fixed asset investment, and tend to finance the latter with a very large component of short-term financing.

Cross-country evidence shows that the gap in access to financial credit between SMEs and large firms is much smaller in higher-income countries than in emerging ones. Nevertheless, the Eurozone debt crisis has reduced access to private credit for SMEs, especially in the crisis countries, showing that even developed economies are not immune to cyclical downturns of such credit, requiring compensating actions by public development banks.

The problems faced by microenterprises, including family agriculture, are even more severe than those of SMEs, and tend to make these agents highly dependent on informal channels of financing. In this regard, it is important that a broad view of financial inclusion be taken, embracing old and new agents active in small scale financing –credit unions and microfinance institutions, for example—but also the mainstream financial sector (both private and public).

When access to external funding is limited, the production capacity of firms and their ability to grow and prosper is constrained, as they have to rely on their own resources to operate. This creates a vicious cycle that maintains smaller production units in a permanent state of vulnerability and low growth with large social consequences in terms of poverty and inequality.

However, it is important to emphasize that credit to micro and SMEs should meet the standards of creditworthiness, and thus the capacity of these enterprises to pay back. There is broad evidence that this is quite frequently the case, and can be enhanced by the design of appropriate guarantee funds for these firms. In broader terms, services to these agents must be provided responsibly, sustainably, and in a well-regulated environment.

A common rationale for development banks and similar institutions in industrial and developing countries alike is to provide financing for micro and SMEs, which tend to be too small (implying high transactions costs) and risky to be of interest to most commercial lenders. Many of these firms can be viable institutions, and in the case of microenterprises move from subsistence to competitive firms. Furthermore, many SME start-ups do not survive very long, yet they can generate benefits going beyond their lifespan. Private markets will thus tend to under-invest in all these enterprises. Public development banks, or special mechanisms that focus on lending to micro and SMEs are designed to overcome this market failure by designing their lending and other facilities to meet the particular needs of their small business clients, including providing technical support.

Although lending to micro and SMEs is risky, experience has shown that it can be done on a commercially viable basis. For example, the Business Development Bank of Canada (BDC) is required under federal law to return a profit to its only shareholder, the Federal Government, a requirement it has met annually for the past decade. It has been able to do so because it operates independently, at arm's length and without interference from government (Culpeper et al, 2016).

Not all national development banks are necessarily well positioned to meet the financial needs of small businesses. In this context, other kinds of intermediaries such as credit unions and community-based banks may offer valuable insights and channels on how to meet the financial needs of micro and SMEs. So, access of these agents to rediscounting as well as direct lending from NDBs is crucial. On the recipient side, it is important that different forms of association of producers be used as agents of inclusion, as they may be the appropriate mechanisms to reach the poorest producers.

Furthermore, according to Mazzucato and Penna (2016), there is an additional challenge to detect, finance and follow up on those SMEs with the highest growth and innovation potential. Perhaps a combination of criteria is desirable here: fund SMEs that seem commercially viable, generate sustainable jobs, but give priority to SMEs that seem more likely to grow and innovate. For these companies, providing risk capital (for example in the form of venture capital) is as important as providing them with social capital (for example in form of support for networking and co-management). Furthermore, for national development banks, one of the main challenges when investing in innovation projects is how to cope with not knowing the chances of success –i.e., fundamental uncertainty. As Griffith-Jones et al. (2016) argue, the best response to these possible financial losses is to finance portfolios of SMEs in order to diversify idiosyncratic risks.

Regarding the evidence on the prevalence of SME financing by NDBs, Além and Madeira (2015) show that all eight reviewed banks provide lending to SMEs. Furthermore, the EIB and many NDBs put special focus on SME lending when they

implemented countercyclical policies in the aftermath of the 2007/09 crisis. In the case of the EIB, not only did they increase lending via private banks to SMEs but they also increased the available funds to the European Investment Fund (EIF), which is a specialized fund of funds dedicated exclusively to SMEs, within the EIB group.

Despite the growing consensus on the important role played by NDBs in financing SMEs and their effective involvement in this financing, there is scarce econometric evidence on the differential behaviour of private banks and state-owned banks regarding SME financing. A notable exception is the work by Behr et al. (2013), who focus on small state-owned commercial banks in Germany and find that SMEs are less financially constrained when they have access to these types of banks in comparison to private commercial banks. Furthermore, they find evidence that these state-owned banks neither underperform commercially nor do they take more risks than other banks. In addition, Behr et al. (2017) find that SME lending by these small state-owned commercial banks is less cyclical than lending by cooperative banks.

IV.D. Infrastructure

NDBs are especially well suited for infrastructure financing, as they can provide the long-term financing needed for infrastructure investment to become profitable, given the large scale of the initial investment and the long period of time for amortization. Furthermore, NDBs can finance at relatively low cost, as they often have very high credit ratings (typically as high as their governments) so they can borrow relatively cheaply on capital markets and pass on that cost advantage to their borrowers (Griffith-Jones and Kollatz, 2015).

There is a broader case for NDBs to play an important role in financing infrastructure investment. In this regard, Studart and Gallagher (2016), for example, argue that: “National development banks can play leading roles in reducing costs and identifying risks of projects, leveraging global and local finance, and in governance and leadership on projects and project goals. At their best, national development banks can impart confidence, reduce risks, bring relevant instruments and encourage participation of other sources of financing both at the initial phase and once a project reaches maturity. As honest brokers they can help bring together governments, the private sector, investors and civil society and help establish replicable and scalable models.” They also note a few challenges faced by NDBs to financing infrastructure. A major one is their size relative to countries’ investment needs. This goes beyond a simple balance sheet constraint but, with a small size, limits the “capacity to engage in an efficient manner with project identification, design, and beyond.”

Before the 2007/09 North Atlantic financial crisis, private investors financed a fairly high volume of infrastructure in emerging economies. Banks and other private investors granted loans with long maturities, which were refinanced by them with shorter tenors on the capital markets. When the crisis emerged, the maturity mismatch turned out to be one of the reasons for rapid contagion, because refinancing was far more difficult. Following the crisis, banks have reduced the maturity mismatch and new regulation seems to be forcing them to do so even further. Though this is good for financial stability, it will reduce the supply of long-term private financing for infrastructure projects, especially in the short to medium term. This accentuates the “good-time” problems facing pure private infrastructure finance in emerging, and

sometimes even in developed, countries, such as “long maturities” and “big tickets”, particularly in certain sectors with high, perceived risks.

This limitation of private lending, combined with the massive need for infrastructure in the emerging and developed world (see below), strengthens the case for enhanced financing by NDBs, their close collaboration with the private sector to achieve valuable leverage, as well as with MDBs, including regional development banks (like CAF, that has played a major role in infrastructure in Latin America). The creation of new MDBs, such as the New Development Bank (NDB) and the Asian Infrastructure Investment Bank (AIIB), initially mainly devoted to infrastructure, shows the importance attached, for example in Asia and among the BRICS to the area of infrastructure. Similarly, the European Union has launched major initiatives to enhance the role of the EIB and NDBs in financing infrastructure.

NDBs face some restrictions in their ability to provide support to infrastructure but nonetheless have numerous advantages regarding financial terms, information and ability to cope with risk, which implies that they can play a significant catalytic role. This will particularly be the case if NDBs continue to move toward developing an appropriate mix of traditional long-term loans with other financial instruments to achieve project closure, such as equity investments, guarantees or partnerships. NDBs have unexploited potential to ramp up the use of instruments that can leverage greater volumes of private sector lending. However, the risks of non-traditional financial instruments are significant, so caution is needed in their application, to avoid excessive contingent liabilities (for further discussion of these issues, see Griffith-Jones and Kollatz, 2015).

A key issue in infrastructure finance is the design of instruments such as guarantees, which involve NDBs assuming enough risk to make the investment attractive for private lenders and investors, but do not imply excessive future risk for the NDB or the government, via contingent liabilities. This can be complemented by attempting to design instruments that help the NDBs and the government “capture the upside” for those projects that become more profitable than expected.

In infrastructure, the type of risks varies through the cycle of the project, and therefore NDB mechanisms may need to vary with the stage of the project, including in the crucial preparation stage. As discussed in *Bhattacharya, Romani and Stern (2015) and others*, there are different stages of infrastructure projects and the risks and financing considerations involved vary for each stage.

Two parameters (maturity and scale) are simultaneously crucial for the development of infrastructure, as the investment normally is high up front, the construction period can be very long, and the amortization time usually required is also long. So, financing by public banks and/or governments may be needed to overcome market gaps or imperfections, such as lack of large-scale long-term finance. In some cases, especially in green infrastructure (see below), NDBs and governments are better to deal with externalities, where social costs and benefits differ from private ones. This is also true for strategically important infrastructure, for example linking several countries, which implies large benefits, but may impose additional risks, due to different regulations in different countries.

In the past, a high share of infrastructure was financed by public budgets. But the demand for infrastructure cannot be served by budgets alone. On the contrary, since the 2007/09 North Atlantic financial crisis, constraints (real and perceived) on budgets in many countries across the globe have led to reduction in investments financed by public budgets, with negative effects on output, private investment, increased unemployment, and future growth, as IMF (2015), and many others have pointed out. Furthermore, existing MDBs, whilst playing a valuable role in funding infrastructure, can only finance a part of the vast needs for infrastructure financing of developing and emerging economies. NDBs can play a key role in general in helping fund infrastructure, and thus complementing public and private investment in infrastructure, but also especially in fiscally difficult times; they can do this well, particularly in cases where they have previous accumulated expertise and have access to long-term funding.

According to Bhattacharya and Holt (2015), there are vast unmet infrastructure needs in both emerging and developing economies, which will constrain these countries' growth if not met soon and on a sufficient scale. They estimate the gap between current and required investment in infrastructure in those countries to reach between US\$1 and US\$1.5 trillion per year for the core infrastructure sectors only between 2014 and 2030. Other estimates are even higher. For example, Studart and Gallagher (2016) estimate up to \$ 3.5–4.0 trillion for infrastructure investment needs each year for the next 15 years in emerging market and developing countries; as current levels are about \$1 trillion per year, this implies unmet needs of \$2.5-\$ 3.0 trillion per year.

The magnitude of the unmet needs provides a clear rationale for NDB activity to help, together with other actors, fill this massive unmet gap in infrastructure financing currently existing.

IV.E. Financing the provision of global public goods

A final and extremely important area of engagement for the NDBs in the coming decades relates to combating climate change, perhaps the most crucial “global public good” of our time.

The international community has defined preventing and adapting to climate change as a major new priority, given the great urgency of the subject. Indeed, the aim of “sustainable” growth makes environment issues central to development strategies, so as to balance climate and environmental needs with economic growth.

Because the NDBs bring the advantages of accumulated expertise, administrative efficiencies, and convening power, they can play an important role. They can help mobilize additional funding, design the necessary policy frameworks, and implement effective projects that can showcase the viability of certain green investment, as in renewable energy (see Spratt, Griffith-Jones and Ocampo, 2013). Above all they can help ensure that a sustainable climate policy is wholly compatible with, indeed facilitates, the achievement of the post-2015 global development goals and the Paris agreement. Given these advantages, some elements for a strategy for the NDBs to combat climate change could include:

i) *Mainstreaming climate change into current policies and operations.* To begin with, in conformity with the Hippocratic principle, the NDBs should “do no harm.” This is more than a platitude when it comes to otherwise meritorious development projects that nonetheless lead to, or do not try to limit, greenhouse gas emissions. The NDBs are in a key position to pursue low carbon options that also support poverty reduction and other development objectives. In this sense, the traditional financing role of the NDBs should be adapted to incorporate environmental externalities and to facilitate the introduction of required technologies –e.g., for renewable energy, even when this is less commercially attractive in the short term. Of particular relevance to emerging economies, in relation to externalities, is the opportunity to “leapfrog” by immediate adoption of post-carbon technologies. Not only will this contribute to the adaption to and mitigation of climate change globally, but it will also avoid the transition costs that are being incurred by developed nations today and that would be required to be incurred where carbon-based technologies are adopted instead.

ii) *Green initiatives by NDBs.* It seems especially valuable when NDBs, jointly with the government, which designs the policy framework, and with the private sector, which plays a large role in financing and implementing, take major, mission-oriented initiatives in the field of green finance, such as building green grids, helping introducing new forms of renewable energy, etc.

An interesting and positive example is the key role that KfW played in the initial phase of introduction of Solar PV to Germany. In fact, KfW funded ALL the investment in Solar PV during 2007-09 in Germany, when solar PV began to be

introduced on a major scale in the country (see Griffith-Jones, 2016, op. cit.). It then played a diminishing role as other, basically private, funding sources stepped in.

Such a catalytic role is precisely what a development bank should do, to kick-start a major structural transformation, by funding and showcasing new technologies and sectors. Thus KfW Germany successfully crowded-in private financing: from 2010, at least half of the new investment in Solar PV came from private or other non-KfW sources.

iii) Adaptation. According to recent estimates on the uses to which the current flow of climate finance is put, \$93 billion of the \$97 billion total is allocated to mitigation; only \$4 billion is allocated to adaptation (Buchner et al., 2011). An emphasis on mitigation initiatives is understandable—it seems more sensible to allocate resources to tackling the problem at its source, rather than to helping victims of climate change. More mitigation today could mean less need for adaptation in the future. But this misunderstands the crucial importance of adaptation today (Culpeper et al, forthcoming).

First, much of the worst devastation caused by climate change will be visited upon the poorest people, who are largely blameless for climate change. Second, “adaptation” is best considered as “building resilience” against climate change, that is, as a strategy to reduce risk, which is essential for all developing countries.

These considerations point to the key role that NDBs (in cooperation with the private sector and MDBs) increasingly need to play in spearheading climate change

prevention and adaptation projects. Mitigation has the characteristics of a global public good, the benefits of which would be universally felt, while adaptation has fewer aspects of a global public good and is more consistent with traditional support for development. But both are crucially necessary, and since the bulk is presently flowing into mitigation, more funding is crucially needed for adaptation (Ghosh, 2010).

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CDB: Born Bankrupt, Born Shaper

Qiyuan Xu¹

Established in 1994, China Development Bank was soon on the verge of bankruptcy in the late 1990s, then it miraculously rejuvenated in early 2000s. Now with total assets of USD 1.85tn, CDB ranks as one of the most dynamic and the largest national development bank in the world. What happened to CDB? What contributions has CDB made to China's rapid development? This chapter will explore in detail the CDB's role in light of China's transition economy. CDB is a key contributor to the establishment of an accommodative local government credit system and facilitator for infrastructure constructions. Therefore, CDB's role goes beyond a bank financing tangible infrastructure, but above all a shaper of the government credit system. CDB is one of the starting points to understand China's economy.

1. Introduction

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This paper is a contribution to the project "The Future of National Development Banks" sponsored by Initiative for Policy Dialogue (IPD) of Columbia University, Brazil's BNDES and the Development Bank for Latin America. The author got great help from Dr. Jingying Sun, and has benefited from early discussion and comments from the participants of this project. Besides, the author also appreciates the comments and help from Shuai Du, Yi Zhang and Zhi Tian from CDB, Jiajun Xu from Peking University, Jucheng Zhang from China Association for the Promotion of Development Financing, Dongmin Liu and Yongzhong Wang from Chinese Academy of Social Sciences and many other colleagues. This acknowledgement does not however implicate any of these colleagues for possible errors and omissions found in this paper.

In China, there are three policy banks, CDB (China Development Bank), EIBC (Export-Import Bank of China) and ADBC (Agricultural Development Bank of China). CDB is the largest and most influential one. This paper will elaborate on how CDB transformed its role from born bankrupt in 1990s to born shaper in 2000s. As a key background, China has been a transition economy in last three decades. Meanwhile, CDB's story can enhance our understanding of China's transition.

Established on Mar 17, 1994, CDB was born with planned economy marks and its inherent disadvantages. Affected by the shocks from the Asian financial crisis in 1998, CDB suffered a NPL ratio of 42.7%, and came to the verge of bankruptcy. Both China and CDB desperately needed to change. But as a developing and transition economy, what was China's priority in 1990s?

1.1 Born in a Transition Economy

China set to reform and open its economy at the end of the 1970s, when the focus was mainly the real sector, instead of the financial one. Until 1992, China explicitly defined the reform target as establishing the market economy (Jiang, 1992). In the 1992 framework, the financial system was on top of the list.

Since the end of the 1970s, the reform and opening policies have resulted in a great change in the national income distribution among the central government, local government and private sector. By the early 1990s, the central government's fiscal resources were substantially weakened, and being crowded out by the disordered expansion of local government fiscal capacity. The proportion of local government revenue to the total revenue rose from 59.5% in 1984 to 78.0% in 1993; at the same time, the proportion of central government revenue decreased from 40.5% to 22%.

In early 1994, China's first budget law was published and came into effect in the beginning of 1995. This law redefined the framework of the fiscal system, and redistributed the financial resources between local and central government. More tax revenues were transferred to the central government, and local government was even forbidden to run a deficit². This was the situation in China's fiscal system when CDB was born in 1994. We will explain later how CDB played its role to rebalance the fiscal capacity between central and local government.

Before 1994, one of the many functions that Chinese commercial banks served in financial markets was to share a policy bank's role.³ At that time, Agricultural Bank of China (ABC) was also heavily involved in the national agricultural policies. China

² Budget Law of the People's Republic of China, Beijing, Law Press, 1994.

³ In 1993, the four largest state-owned commercial banks, ICBC, BOC, CBC, ABC, were the leaders with 80.4% market share in terms of total assets. The remaining market share was taken by joint-equity commercial banks controlled by the local or the central government. In 2014, the four largest banks' market share decreased to 40%, leading to a more diversified banking system.

Construction Bank (CCB)’s business also covered infrastructure policy financing. Therefore, commercial business and policy responsibilities were mixed. In 1994, the central government decided to establish CDB and the other two policy banks, the EIBC and ADBC. ADBC took over the agricultural policy business mainly from ABC (Bai and Li, 2005), while CDB took over the policy finance business from CCB and six state investment corporations (see section 2) (Gao and Chen, 2008). These arrangements aimed to separate policy finance from commercial banking.

From then on, commercial banks became more market-oriented. Finally, in 1995 China’s Commercial Bank Law was published. At that time, the role of commercial banks was clarified by Article 4 of the law: commercial banks should work under the principles of efficiency, safety and liquidity with full autonomy and full responsibility for their own risks, profits and losses and self–restraint. Stripped of their policy financing functions, commercial banks could move forward with fewer burdens. However, these burdens were transferred to the policy banks, rather than addressed.

In addition, in late 1990s, China suffered from two external shocks: the Asian financial crisis in 1998 and the internal impact of SOE reforms. A policy bank like CDB, on the verge of bankruptcy, could hardly support the projects assigned by central government, and it became an extra burden itself. At the same time, resolving financial risks became the priority of the central government (Literature research division of the central

committee of CPC, 2011). With the new priority of the central government and a recently appointed mighty president for the bank, CDB was willing to make every possible effort.

1.2 CDB Contributes to Reconstruct the Credit System

For China, it is critical to build a sound credit system for the market economy. As a transition economy, China has met bottlenecks both in public and private credit systems. According to Adam Smith, division of labor and specialization are the sources of productivity and economic growth. But a poor credit system hinders labor division and specialization and undermines economic development.

China's WTO entry in 2001 has led to an improvement in the private credit system. The tradable sector was forced to reconstruct its credit system in order to do international business. Foreign direct investment companies also facilitated a sound credit system in some cities. On the other hand, the emergence of third-party e-commerce payments platforms, such as Alibaba, Taobao, Tencent, Jingdong Mall, helped boost the private credit system. All these positive factors spread to the whole of China's economy and significantly improved the domestic private credit systems.

Yet, the underdeveloped local government credit system hindered the provision of local

public goods and infrastructure projects, the latter being both capital- intensive and government-credit-intensive. From 1998 to 2003, CDB carried out a series of significant reforms, to ensure, on the one hand, the sustainability of its own business, and, on the other, also promote central-local government credit system rebalancing and improve adaptability. Prior to 1998, CDB had been operating in strict accordance with the instructions of the central government. The lack of independence and its nature as an extension of the central fiscal system, which was viewed by local government as a quasi-central fiscal system, pushed CDB`s operations to the brink of bankruptcy. Chen, a powerful CDB president, came to this position just at that time. He restructured the framework of the policy bank and repositioned CDB as a shaper: “Our mission is not merely to support social and economic development, but to drive the formation of sound markets and institutions that underpin such development.” (Chen, 2013)

Outsiders trying to understand China`s transition economy often encounter many puzzling aspects: mismatch of fiscal capacity between local and central government, mounting local government debt, controversial land finance, investment-driven economy, rapidly developing infrastructures, and China`s confidence in AIIB initiative, whereas a study of CDB would offer a special perspective to better comprehend them.

The rest of the paper is organized as follows. Section 2 reviews the birth dilemma of CDB in the 1990s, which caused its bankruptcy and presents a sharp contrast with

CDB's achievements in 2000s. These achievements will be described in section 3. Section 4 explores CDB's substantial self-reforms. Then in section 5, we observe CDB as a shaper of China's financial system. Section 6 concludes the chapter.

2. Born Bankrupt in The 1990s

In March 1995, one year after CDB's foundation, when he met with the director of the Industrial Bank of Japan, then prime minister ZHU Rongji explained to his guest that CDB benefited from a mixture of two kinds of talent: people from the financial sector, familiar with financial business, and the rest from central government, ministries, with a good knowledge of the macro economy (The editorial board, 2013). The two advantages combined would allow CDB to excel. Nevertheless, CDB's early operations failed to live up to the expectations.

2.1 CDB: A Born Bankrupt Bank

In its early days in the late 1990s, CDB struggled, not to grow but to survive. By the end of 1997, CDB's total assets amounted to RMB 381bn, and its NPL ratio reached 42.65 % (RMB 162.5bn)⁴. At that very moment, the total volume of mid and long-term

⁴ For the whole banking system, the People's Bank of China (PBoC) estimates that at end 1997, around 20–25% of total bank loans, or about RMB 1,500 billion (US\$ 180 billion), were non-performing. See Mo, Y. K. (1999). A review of recent banking reform in China. Strengthening the Banking System in China: Issues and Experience, BIS Policy Papers, No.7, pp. 90.

loans was RMB 365.6bn, of which RMB 155.9bn were NPLs. Among them, the coal industry was the hardest hit. By June 1998, the amount of CDB loans to coal industry was RMB 64.2bn, of which 48.3bn were non-performing. The NPLs ratio for this single industry reached 75% (The editorial board, 2013). Theoretically, NPL on such a scale would bankrupt CDB many times. Indeed, CDB was on the verge of bankruptcy.

When the state investment corporations were established in 1988⁵, they suffered from chaotic internal governance due to the absence of corporate law or banking law, because China had just begun its market-oriented reforms. Meanwhile, the task of the managers of the six corporations was described as ferrying money to various projects (Guo, 2006). So, when CDB took in the policy investment finance from the six state investment corporations in 1994, it planted the seeds for the later NPL crisis, which became CDB's historic burden.

Furthermore, the six state investment corporations were set up to finance policy projects. All the projects were featured as having significant positive spillovers. Although these projects were supposed to be socially bankable, they were not economically bankable. Consequently, when the loans were transferred from the six corporations to CDB in 1994, the quality of these loans was worrying. Except the NPL problem, in terms of

⁵ In 1988, learning from the Temasek model in Singapore, China's central government established six state investment corporations to take the financing functions from the ministries. These six corporations provided financing to agriculture, forest, energy, transportation, raw material, mechanical and electronic textile, taking the national perspective into consideration. For example, the Three Gorges Dam, the largest hydropower project in the world was financed by the six corporations and then by CDB.

lending volume, CDB accounted for 2% of the total lending system with RMB 81.9bn.

It was a second-tier bank.⁶

The six corporations were based in Beijing, and had no subsidiaries in other cities; CDB therefore inherited no branches in 1994. Thus, other commercial banks that had local branches played the role of CDB's local loan agents. By 1998, 88.6% of CDB's loans had been lent through the commercial banks' network (The editorial board, 2013). However, because of insufficient incentives and supervision mechanisms, it was difficult for CDB to monitor the ultimate borrowers through the commercial banks, and the losses were solely borne by CDB.

Chen, the former president of CDB, remembers that when he joined CDB in 1998, a foreign media report described CDB as a bank that had "nearly exhausted" its initial capital, "sits on a mountain of bad debt", and "toes the line" in lending to government projects (Chen, 2013)

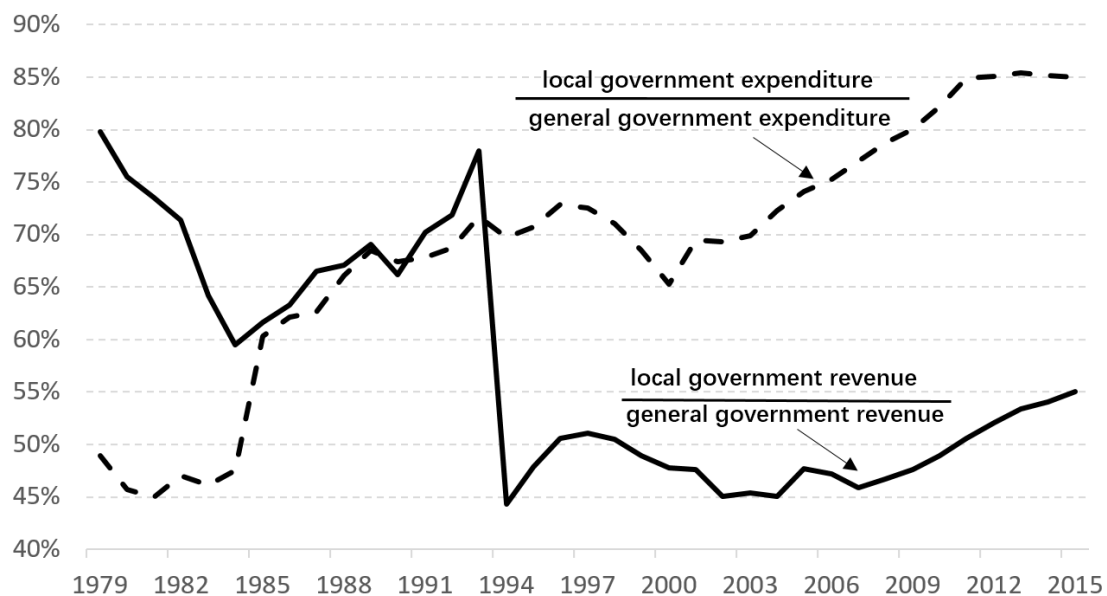
2.2 Local government with poor capacity to finance infrastructures

From the late 1980s to the beginning of the 1990s, when CDB was about to be founded, many local governments had issued too many municipal bonds to finance local

⁶ In 2015, this ratio increased to 10%, according to CDB's annual report published in 2016.

infrastructure projects. Some even went beyond the local governments' capacity and could only be sold through forced administrative measures. For instance, in some cities, staff were forced to purchase apportioned bonds issued by the local governments and their affiliates. In other cases, instead of the cash, the staff got part of their wages in the form of local government bonds, with zero-interest rate (Wang, 2006).

Figure 1: The mismatch between Local Government Revenue and Expenditure



Sources: National Bureau of Statistics of China and WIND data, 2017.

The over-indebted local government had not only crowded out central government financing resources, but also pushed up the fiscal risks. In this regard, the central government issued a new budget law in 1994⁷ and centralized the most lucrative tax sources, including value-added tax (VAT), resource tax, and personal and enterprise

⁷ Before 1994, the fiscal relations between central and local government were similar to those between parent company and subsidiaries. Roughly, a local government that ran a surplus would submit its “profits”, according to a given ratio, while if it ran a deficit, it would get transfers from the central government.

income tax. Meanwhile, local governments were prohibited from having a budget deficit and from issuing local government bonds (Lu and Sun, 2013)⁸.

Consequently, local governments' financing capacity to support infrastructure projects was significantly weakened. As shown in Figure 1, the mismatch between local government revenue and expenditure appeared suddenly in 1994, and it remains.⁹

To balance fiscal revenue and expenditure, and make use of market resources, many local governments have established city investment companies (CICs) since the beginning of the 1990s. The first CIC was launched by the Shanghai municipal government in 1992. Then many CICs emerged in other cities. But the city investment companies faced challenges in at least two ways:

First, the CICs' financing model was project-oriented, that is, each project was individually financed by a borrowing arrangement. However, infrastructure projects, which have positive spillovers, long-term and capital-intensive features, can only be unevenly financed, due to their diversified and heterogeneous natures. Projects like water utility and environment protection are hardly be bankable in economic terms, even if they could profoundly enhance the overall social welfare; others like highways

⁸ Until 2015, in the wake of the updated budget law, local governments continued to have a deficit and they resumed issuing bonds.

⁹ After 1994, there was no possibility for local government to run a deficit, and transfers from the central government were far from adequate. This large fiscal gap was closed by CDB's innovations in LGFV and land finance. We will elaborate on this later.

and power stations are relatively more profitable and therefore bankable. Consequently, although the projects have significant positive spillovers, they could not attract abundant capital in the financial market (Shen, 1999).

Second, in the early and mid-1990s, CICs found it difficult to finance capital-intensive infrastructure projects, because they only had limited self-owned capital. To enhance the CICs' financial capacity, it was natural for the local government to become its guarantor. With the direct endorsement of the local government, CICs got more loans with favorable interest rate.

The Law of Guarantee, issued in 1995, banned local governments from acting as guarantors, including for the provision of guarantees for CICs or any infrastructure projects¹⁰. This new law cut off the guarantee relations between the CICs and the local governments, without which CICs' high leverage (debt/asset ratio) became unsustainable. Consequently, the CICs' model was on the verge of collapse. Again, the local government's fiscal situation was in difficulty.

2.3 Central Government: Excessive Intervention in CDB

¹⁰ There was an exception: if the local government provided on-lending loans extended by foreign governments or international financial institutions, then it could play the role as a guarantor. But the volume of such kind of loans was very limited. For details, see the third article of the second chapter, in Guarantee Law, Beijing: Law Press of China, 1995.

Since CDB was founded in 1994, the People's Bank of China (PBoC) had forced CDB bonds onto other Chinese financial institutions via administrative command. With such rules of play, when CDB attempted to expand its business, it inevitably brought more pressure for the other commercial banks to buy more CDB bonds. Besides, CDB bonds had no liquidity in the secondary market at that time. With growing assets and large NPLs on CDB's balance sheet, the commercial banks complained and opposed such compulsive arrangement (The united study groups, 2007). Correspondingly, the commercial banks demanded a higher yield rate premium to purchase CDB bonds. CDB's financial costs, in turn, increased. CDB was thus caught in a vicious circle.

On the other hand, when CDB was established, it had followed the lead of the State Planning Commission (SPC), which was the predecessor to the National Development and Reform Commission (NDRC) (Chen, 2013). In the early years of CDB, most of its projects were decided by the SPC and the state, which meant that the central government had absolute control over the project selection. The main concern of the central government and the SPC was long-term social development, but not necessarily being economically bankable. Consequently, CDB's responsibility was solely to provide funds for pre-selected projects. In this way, CDB acted almost as an "ATM machine". Many borrowers used to view CDB as the second ministry of finance. Yuan Chen, the president from 1998 to 2012, said, "They feel like it's a free lunch. You can borrow and you don't have to pay back." (Sanderson and Forsythe, 2013)

But the relations between the government and the “ATM machine” were not always harmonious. Excessive intervention from the central government had derailed CDB’s operations, which went from market-driven to politically driven. The borrowers, usually SOEs (state owned enterprises) or “joint stock” firms controlled by the state, considered CDB as a de facto extension of the treasury, and they also regarded CDB loans as zero-cost fiscal appropriation. Consequently, this aggravated the massive NPLs problem.

In 1997, a full three years after CDB was set up, the East Asian financial crisis deteriorated China’s economy and its financial market. Overcapacity emerged as a problem in many industries in China. CDB’s loans to the designated pillar industries suffered. In the same year, CDB’s NPL ratio rose to 42.65% (The editorial board, 2013).

3. An Amazing Turnaround

CDB was born bankrupt. Indeed, CDB’s high NPL ratio back then would instantly have caused the bank to go bankrupt, according to the Basel Accord III¹¹. Nonetheless, CDB survived into the late 1990s, and developed at a breathtaking pace afterwards, playing

¹¹ According to the Basel Accord III, the capital adequacy ratio of a bank should not be under the level of 8%.

a significant role in both China’s infrastructure construction and the improvement of people’s living standards. How did CDB managed to survive and change? We will elaborate on the reforms undertaken by CDB in section 4, and how CDB has played a role as shaper of the fiscal and financial system in section 5. Beforehand, we will focus in detail on the outcomes of this amazing turnaround.

At the end of 1990s, CDB survived the NPL crisis and East Asia financial crisis. From then on, CDB speeded up its development. In 1994, CDB’s total assets amounted to USD 11bn, equal to 1.9 percent of China’s GDP. They rocketed up to USD 1,849bn and 18.6 per cent of China’s GDP in 2015¹². Meanwhile, CDB has played a critical “crowd-in” role of drawing capital from commercial banks and other financial institutions (Wang, 2016).

The high NPL ratio was a fatal issue for CDB in late 1990s. After Chen took the position as the president of CDB in 1998, he primarily restructured CDB’s internal governance, so as to decrease the NPL ratio. We will review the basket of measures he introduced in section 4. The trajectory of the NPL ratio declined substantially from 42.7% in 1997, to 1.8% in 2002; and then, for the first time, CDB’s NPL ratio fell below 1% in 2005. Since then, the NPL ratio has been kept at or below 1% for 11 years. Even during the global financial crisis, CDB’s NPL ratio did not exceed 1%. From 2012 to 2015, it

¹² Source: The data in 1994, is drawn from the editorial board of The History of China Development Bank (2013). The data of 2015 is from the annual report of CDB in 2016.

experienced a moderate growth from 0.3% to 0.8%¹³.

CDB's capital adequacy ratio and CDB's ROA (return of assets) have not shown a continuous increase. In 2006, the former declined to just above 8%. It was not due to write-off and equity capital losses, but because of the rapid expansion of total assets. Corresponding to the relatively low capital adequacy ratio in 2006, CDB's ROA reached a peak of 1.32% in the same year. Since 2007, the capital adequacy ratio has been maintained around 11% to 12%¹⁴.

CDB's ROA was shocked by the global financial crisis. In 2008, CDB's ROA decreased to 0.62%. It rose moderately to 0.9% in 2015, but never came back to its peak level in 2006. Part of the reason is that CDB took the initiative to operate at lower leverage and be more prudent about financial risks.

Because CDB's balance sheet became sounder and more sustainable, CDB bonds gained popularity in the bond market. Generally speaking, the oversubscription rate in the issuance market for CDB bonds is around 3 times. The last CDB bond issue of 2016 was on December 20, when three CDB bonds with 3-year, 5-year and 7-year maturities were issued on the same day. The oversubscription rate in the issuance market was

¹³ Source: The data before 2013, from the editorial board of The History of China Development Bank (2013). The data starting from 2013, from the annual report of CDB in 2013, 2014 and 2015.

¹⁴ Ibidem.

above 3 times for all of them. For the 3-year bond, it was even close to 5 times (Wang, 2016). The central government no longer forces CDB bonds onto other commercial banks. With favorable market conditions, CDB's annual bond issuance has expanded from RMB 0.2tr in 1998¹⁵, to RMB 1.48tr in 2016¹⁶.

When CDB expanded its business rapidly, it funded large investments in railway, public highways, electric power, water resources, petroleum and petrochemical, public infrastructure and strategic emerging industries. In addition to these core businesses, CDB also provided financing to people's livelihood. By 2015, CDB's loans outstanding in education had accumulated to RMB 56.2bn, in rural development RMB 855.7bn, poverty alleviation RMB 962.3bn, small and medium enterprises RMB 1,120bn, transformation of shantytowns RMB 1,310bn, and green credit RMB 1,570bn.

4. CDB as a Self-shaper

Before CDB can play its role as a shaper to China's financial system, it must first shape itself. As mentioned in section 2 and 3, CDB was born bankrupt and then turned prosperous. How CDB achieve such an amazing turnaround?

¹⁵ The editorial board, The History of China Development Bank, Beijing: China Financial Publishing House, 2013.

¹⁶ Wind Data, 2017.

4.1 Improving Internal Governance

The disposal of NPLs: In 1999, China set up four Asset Management Corporations - Great Wall, Cinda, Huarong, Dongfang - to strip toxic assets from Chinese national banks. In that round, the NPLs of the four largest national commercial banks, which amounted to RMB 1.4tr, were stripped. At the same time, Cinda Corporation acquired CDB's bad assets for RMB 100bn. In 1999, CDB launched a debt-to-equity swap plan for qualified enterprises. At last, 36 enterprises were included, and the debt-to-equity swap amounted to RMB 44bn. In this way, CDB's NPLs decreased by RMB 18.8bn (The editorial board, 2013).

In 1997, the stock of NPLs in CDB was RMB 162.5bn. In 1999, the NPL problem was largely solved when 100bn toxic assets were stripped and 18.8bn NPLs were solved through a debt-to-equity swap plan. Because of these measures, CDB's NPL ratio decreased from 42.6% in 1997 to 18.7% at the end of 1999.

Besides, to resolve NPLs whose borrowers were the local government and SOEs (state owned enterprises), CDB kept in close communication with the higher authorities responsible for these issues, and collaborated with them.¹⁷ In the imperfect financial

¹⁷ As the Chinese administrative system is relatively centralized, provincial leaders are appointed by the central government and municipal leaders are appointed by provincial leaders. At the same time, CDB is based in Beijing and has a close relationship with the central government and the local government. With this background, CDB kept in close communication with the higher authorities, to use their influence on the debtor (a provincial or a municipal government).

market of 1990s China, CDB and its president had to resort to the higher authorities to exert pressure on the borrowers in order to recover the loans. The strong position of CDB, and especially of its president, was critical in this process.

Build up the national network of branches: In section 2, we have mentioned that CDB heavily depended on the other commercial banks as local loan agents. But there was a serious principal–agent problem. It was difficult for CDB to operate inter-bank supervision. That was also one of the explanations for the NPL surges. Until 1998, CDB had only one branch in Wuhan city and three offices in Chendu, Xi’an and Shenzhen (The editorial board, 2013). To internalize the principal–agent relations and smooth the coordination between head office and local agents, CDB needed to set up a national network of branches and subsidiaries.

At the end of 1998, CDB took over China Investment Bank and restructured the bank. At the end of 1999, CDB had a national network of 20 subsidiaries on the mainland and one office in Hong Kong. In April 2002, the mainland network increased to 29 subsidiaries and 2 offices. After the branch banking system was established, CDB transferred nearly 3,000 loan projects and 16,000 correspondent banking accounts to the local branches (The editorial board, 2013). Since then, the local branches have entirely replaced the external loan agents; meanwhile, internal governance has replaced

the inter-bank principal–agent coordination.

Reform the loans approval process: In this respect, CDB introduced a firewall mechanism (in 1999) and independent review committee (in 2002 and 2004) to control potential risks. The framework of firewall consists of three new departments: market and industry analysis division, financial analysis division, evaluation and review division. A local branch will firstly submit a project plan to the head office in Beijing. Then, the above-mentioned three departments will review the project respectively in terms of: market future, repayment capacity and compliance. Next, the evaluation and review division will report all the information to an independent review committee, which will vote to make the decision.

When the evaluation and review division reports to the independent committee¹⁸, the borrower of the project will also hold a road show through electronic means. This way, the commissioners get more information from the borrower but they do not appear in front of the borrower.

Each time, member selection for the independent committee is generated randomly from a candidate pool, and commissioners vote in an anonymous way. The mechanism is designed to enhance the objection weight. A project will be rejected if 30 percent or

¹⁸ The members of the independent committee consist of internal specialists, external lawyers, accountants and economists.

more of the commissioners are against it. In the first year after the firewall was built, among 308 projects submitted, nearly 200 projects, or 65%, required substantial revisions or were rejected (The editorial board, 2013; Chen, 2013).

Following this step, the approved projects are submitted to the committee at the head office, and finally to the president. In this way, the president cannot approve a project from the beginning, and he only has the power to veto at the end.

4.2 Be Independent of Central Government Intervention

As mentioned in section 2, CDB got “excessive support” or too much intervention on both sides of the balance sheet from the central government in the 1990s. On the credit side, since CDB was founded in 1994, PBoC had forced CDB bonds onto other Chinese financial institutions via administrative command. Because CDB bonds have no liquidity in the secondary market, the investors, usually commercial banks, demanded a higher yield rate premium. The Central Bank designed an administrative issuing rate with a tradeoff between CDB and other investors.

But in 1998, because China’s economy continued to face downward pressure, PBoC lowered interest rate 5 times in one year to the lowest level in history. In such a situation, CDB faced a much narrower spread between lending interest rate and financing costs

(the bond issuing rate). The bond issuing rate determined by PBoC was unfair, according to CDB, while it was very supportive of other commercial banks. The conflict of interest between CDB and commercial banks was clear (The editorial board, 2013).

Finally, a consensus was built to develop a bond market, where bonds would be priced by the market instead of the government. Meanwhile, it was also necessary to foster the liquidity of CDB bonds. But in the late 1990s, the bond market was not mature enough to sustain such liquidity.

In September 2, 1998, CDB issued RMB 5bn bonds for the first time as a step towards marketization. Beforehand, PBoC gave three assurances: (1) CDB bonds' liquidity in the inter-bank market, (2) guarantee to buy-back through open-market operations, (3) 2 to 3-year transition period. Meanwhile, CDB bonds would be issued through a dual-track system, with traditional administrative pricing and market pricing system (The united study groups, 2007).

The above measures amounted to an endorsement of the market liquidity for CDB bonds, and ensured the confidence for investors. On September 2, 1998, the oversubscription rate for CDB's first bond issuance was 3.73 times. The coupon rate was 5.19%, relatively lower than the administrative rate 6.12%, and even lower than PBoC's re-lending rate of 5.58% (The editorial board, 2013). By 2004, Ministry of

Finance of PRC, China Export-Import Bank, China Agricultural Development Bank, in succession, also realized marketization issuance for their bonds. With the development of China's bonds market, CDB has also become fully independent to decide when to issue bonds and how much to issue. Meanwhile, the bond market developed quickly, and PBoC had more instruments for open market operations.

On the debit side, the central government identified and selected the projects for CDB before 1998. CDB played the role of a "cash machine" at that time. As mentioned earlier, since 1998 CDB has restructured the loans approval process, introducing three firewalls and an independent review committee. Since then, the loans approval system has rejected project applications not only from local government, but also from the powerful State Planning Commission (SPC). The loans approval system decentralized the decision-making power from the president, releasing the president from external pressures, and kept the CDB more independent. In 1998, CDB launched 437 new projects on its own initiative, which accounted for 30.5% of the total amount that year. In 1999, it even exceeded 60% (The editorial board, 2013).

Unlike commercial banks that select profitable projects from applications, CDB is to actively provide development financing for potential projects, or so called pipeline. One effective way to nurture such projects is "planning first" (Chen Yuan, 2013). CDB is actively involved in the five-year plan at the national level, regional planning and

industrial planning in many provinces and cities, and it has sometimes even led the development of certain programs. In this way, CDB nurtured a pipeline project pool by taking into consideration global development tendencies, national economic growth strategies, regional and industrial plans. As a result, CDB has not only gradually gained independence from the over-intervention of the central government, but also bridged the gap between central government plans and regional and local plans.

5. CDB as a Shaper to Financial System

CDB positions itself as a development bank. In this case, development not only means to directly develop the economy or the related public infrastructures, but also means to develop sound markets and institutions.

CDB plays a role as a key shaper to the financial market and the credit system, at least through the following ways: it reshapes the local government credit system through a local government financial vehicle (LGFV) model, contributes to construct primary interest rate in bonds market, and acts as a tool of monetary policy to guide long term interest rates.

5.1 Local government funding vehicle model, launched in Wuhu city

As mentioned in section 2.2, with the constraints of the updated Budget Law introduced in 1994 and the Guarantee Law issued in 1995, China's local government met financial bottlenecks for infrastructure projects.

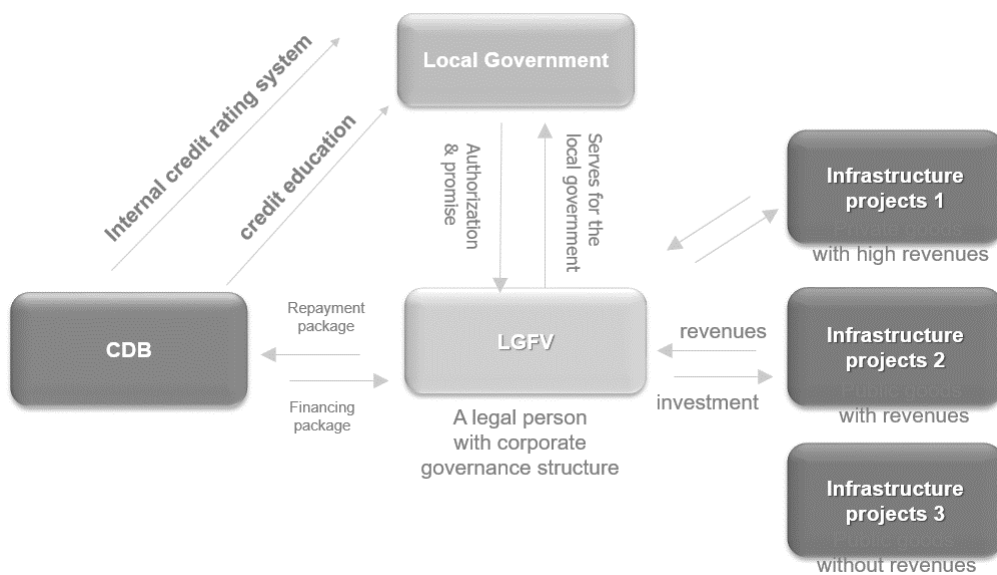
In cooperation with CDB, in early 1998, the municipal government of Wuhu, a port city alongside the Yangtze River, set aside its quality assets to establish the Wuhu Urban Construction Investment Co. Ltd. (WUCI). Authorized by the local government, WUCI was mandated to raise funds for the city's infrastructure. It marked the start of the Local Government Funding Vehicle (LGFV), which leverages government credit (Sanderson and Forsythe, 2013).

The first feature of the Wuhu model is the legal person status of WUCI, which was registered as a local state-owned enterprise (Chen, 2013). WUCI's borrowing behavior was not restricted by the 1994's budget law. Meanwhile, the local government also issued a promise with a stamped document, yet not a guarantee¹⁹, to CDB. As a specific form of promise, the local government injected its quality assets into the company. If the infrastructure asset, such as a highway or power station was profitable, WUCI could take the future profits as collateral and borrow from CDB. To enhance the credibility of the promise, there were more innovations such as BOT (build–operate–transfer) model. On the other hand, CDB kept informal but close relations with its superior

¹⁹ Because the 1995's guarantee law forbids local government to do so.

government, Anhui province in the Wuhu case. These arrangements avoided the constraints of the Guarantee Law published in 1995. As a bottom line, CDB has an internal credit rating system for the local government and its officials. If a loan becomes non-performing and cannot be resolved, the local government and its officials will be recorded in the credit rating system (figure 2) (Chen, 2013).

Figure 2. Wuhu model: the start of LGFV



Source: summarized by the author.

The second characteristic is bundled loans (Liebman and Milhaupt, 2015). Urban infrastructure projects are highly diversified and heterogeneous. In late 1998, CDB

signed an agreement with Wuhu municipal government and the latter was promoted to designate WUCI to raise and repay funds for various projects in a basket (figure 2). This way, WUCI got financing from CDB for six infrastructure projects on highway, water utility, waste disposal and landfill. Consequently, socially bankable infrastructure projects are financially supported by economically bankable ones. And conversely, economically bankable projects also benefit significantly from the positive spillovers of socially bankable infrastructure projects.

The third feature is land finance. In 2002, the Wuhu model was upgraded with an innovation. In August of that year, CDB signed a new Financial Collaboration Agreement with WUCI. Based on this, CDB agreed to provide an additional lending of RMB1.095bn. Correspondingly, the municipal government authorized WUCI, the LGFV of Wuhu municipal government, to bid and auction its land to get land transfer revenue, which would at the same time guarantee the repayment to CDB (The editorial board, 2013; Chen, 2013). This is the origin of China's land finance.

Since 1998, infrastructure in Wuhu has improved remarkably; meanwhile, the overall business and investment climate has become more attractive. In the wake of fully equipped infrastructure, related sectors such as construction, building materials, real estate, tourism, cars have boomed as pillar industries. In last two decades, per capita

GDP of Wuhu has risen from USD\$ 1,000 in 1998 to USD\$ 10,000 in 2015²⁰.

In 2003, the Wuhu model was applied to Tianjin City, one of China's four municipalities. In this case, Tianjin city got financing from CDB to support a basket of urban infrastructure projects: highway and subway construction, watershed management of a river, urban landscaping, and land acquisition and reclamation. In 2009, as China was facing the external shock of the global financial crisis, the Wuhu model was widely replicated and applied to other provinces and cities. At that time, all the other Chinese commercial banks were encouraged to follow the LGFV model²¹. As a comparison, in 2007, the total debt of China's local government amounted to RMB 13.9tr; by 2014, it had rocketed up to RMB 30.3tr (CASS, 2015).²² Meanwhile, more potential risks lay in the explosive local government debt in real terms²³. When more banks began to cooperate with local government, they were blind to the whole situation. For example, the local government probably made promises to several banks at the same time backed by the same asset. In such a case, if there is a default, even solid-looking promises could

²⁰ Source: National Bureau of Statistics of China, 2016.

²¹ It was not the case in 2006. At that time, the stance of central government was not favorable to LGFV. But in 2009, it changed dramatically to stimulate the economy.

²² For the same criterion, in 2007, China's local government assets totaled RMB 49.9tr, then in 2014, RMB 108.2tr, which was much larger than the debt in the corresponding year. This criterion for debts includes the most comprehensive items, such as contingent debt, like a guarantee, and indirect/implicit debt incurred by the local SOEs. If the implicit debt (by SOEs) is excluded, then the total debts of local government (including the contingent debt) would be RMB 3.0tr in 2007 and RMB16.8 in 2014 respectively.

²³ As described above, the LGFV was registered as a local state-owned enterprise. Meanwhile, the local government gave promises to LGFV, but not guarantees. This arrangement was a way to bypass the constraints of the 1994 budget law and 1995 guarantee law. As a result, LGFV debts become contingent liabilities of the local government. But this does not mean the LGFV model has no other value than bypassing constraints. Land finance, bundled loans are forms of Chinese practices in development finance.

prove very weak. This may lead to a mess, to some extent, and moral hazard as well.

In spite of this, the main problem for China's local government debts is not the stock, but the surging flow. In 2007, the total debts of local government, including all of the contingent liabilities, accounted for only 30% of GDP (or RMB 17.9tn). If we combine the central and local government debts, the general government debt, including all contingent liabilities, accounted for 50.9% of GDP in 2013. Comparing with other countries in the world, it was a fairly moderate ratio.

But, after all, local government debt had rocketed up from RMB 3.0tr in 2007 to RMB17.9 in 2013. With the explosion of local government debt burden, it seemed that LGFV had opened a Pandora's box in early 2010s. Many economists and decision makers were afraid that local government debt would be out of control, and the LGFV model had already made the financial supervision ineffective (Wei, 2010; Liu and Zhang, 2010). Consequently, after a fierce debate, China's finance ministry published *Measures for Screening Outstanding Debts of Local Governments and Including Them in Budget Management*, which was launched to reorganize and suppress LGFVs. As a substitution to LGFVs, local government needs new funding to meet the financing demand for infrastructure. The central government introduced some supporting measures, as follows: a new budget law was issued at the very beginning of 2015, which formally allowed local government to run a deficit and issue bonds. In addition, the

central government promotes the PPP (Public—Private—Partnership) financing mode as well. Nowadays, the financing mode are still going forward in the course of exploration

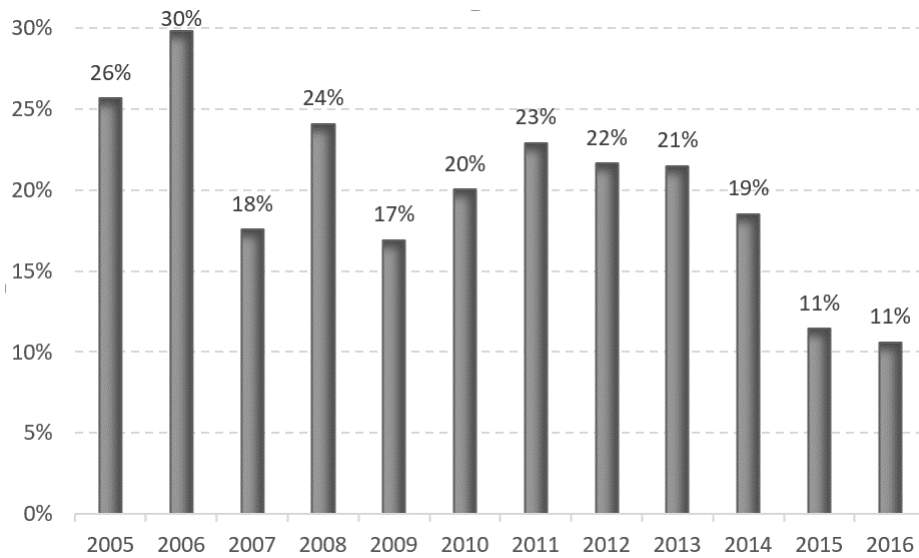
China has learned many lessons from the explosion of local government debt, and it is still facing trouble to some extent. But undoubtedly, China’s economy has significantly benefited from well-developed infrastructure networks. LGFV model is set to exit the stage of history, but it did substantially free local government from budget constraints and facilitate infrastructure construction. From the perspective of institutional evolution, although LGFV was a temporary innovation, it finally forced and accelerated national fiscal reforms from top to bottom. Even in some emerging markets, land financing, bundled loans and “planning first”, the kind of modes applied by CDB, have achieved rapid development.

5.2 CDB as a key player in monetary policy framework

China’s central government remains conservative about running a large deficit and issuing a big volume of government bonds. Insufficient government bonds, and consequently liquidity, are the key reasons why China’s bond market has lacked a developed benchmark for yield curve for decades. To some extent, CDB has filled in the gaps. CDB is the second largest bond issuers in China, after the Ministry of Finance. For most years in the last decade, the issuance of CDB bonds generally accounted for

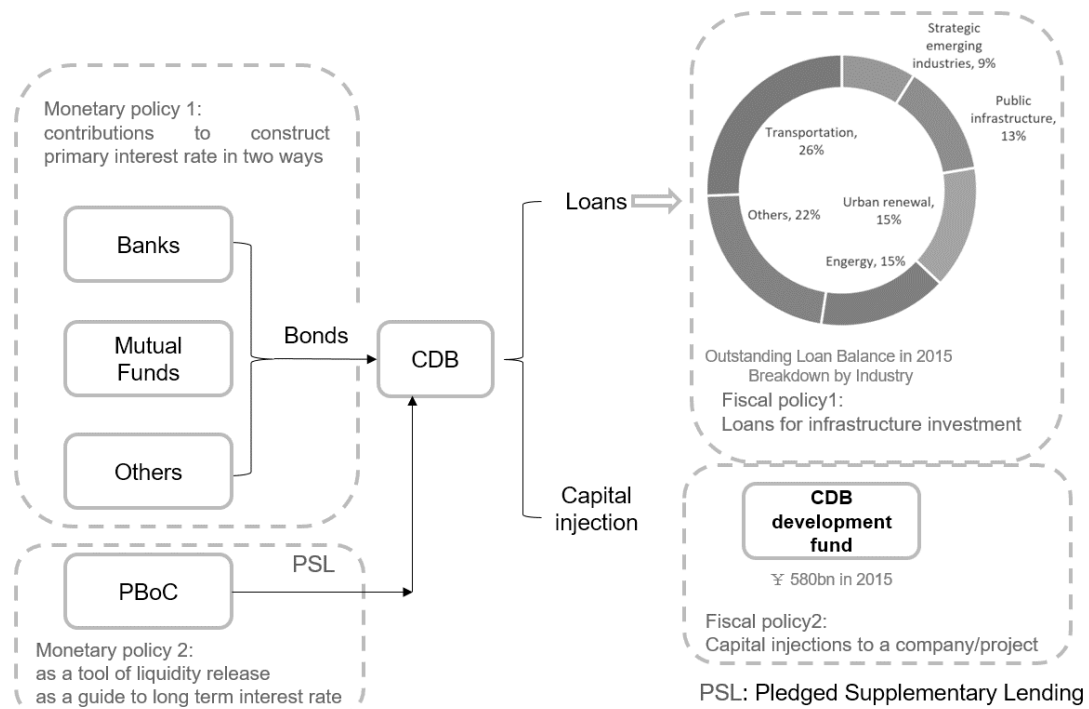
about 20% of the whole bond market (figure 3).

Figure 3 CDB bonds issuance accounts for a key portion of the market



Source: WIND Data, 2017.

Figure 4 An overview of CDB's counter-cyclical role



***: this circle diagram describes CDB's outstanding loan balance, which is broken down by industry. Source: CDB's annual report of 2015 and the author's summary.

In addition to its large scale, (1) CDB covers all bond maturities, (2) its bonds are issued regularly and traded with a high liquidity in the secondary market, (3) CDB's credit rating is as high as China's sovereign credit rating. Under these conditions, CDB bonds contribute to develop the yield curve of benchmark interest rate.

On April 24, 2015, Guangxi Yuchai Machinery Group issued the first bond taking CDB bond rate as a benchmark (Gao, 2015). Since then, the CDB bond rate itself has behaved as a kind of benchmark in the market. On June 30, 2016, China Securities Index Co.,

Ltd released the price index for the 10-year CDB bonds to set up new benchmarks and references for the investors²⁴. By the end of August 2016, the trading volume for bonds of China's three policy banks, among which CDB plays the leading role, amounted to 53 trillion yuan, with a ratio of 46% in the total volume²⁵. In China's secondary market, CDB bonds are the most liquid asset with the most active quotations and the minimum spread. Consequently, many financial tools, such as bond index funds are created based on CDB bonds.

Since the end of 2014, the PSL tool (pledged supplementary lending) has been introduced as a new channel to inject liquidity into the market. It is a new type of supplementary lending instrument backed by collateral, injecting liquidity into the market at the same time. The collateral includes high credit rating bond assets and high-quality credit assets.

As the direct and effective funding support for infrastructure and shantytown renovation, PSL distributes major resources to CDB. At the very beginning of PSL in 2014, CDB got a quota of RMB 1tr for PSL from PBoC. CDB has become the dominant borrower in PSL. On the other hand, PBoC designed and created this monetary policy tool to

²⁴ CSI 10-Year CDB Bond Index is composed of the China Development Bank (CDB) bonds of which the term-to-maturities are between 6.5 and 10.25 years. See the web site of China Securities Index Co.,Ltd:

http://www.csindex.com.cn/sseportal_en/csiportal/zs/jbxx/report.do?code=930849&&subdir=1

²⁵ For the first time, a CDB's bonds (7-10 years term) index fund was issued, Sep. 22, 2016.

http://finance.ce.cn/rolling/201609/22/t20160922_16160776.shtml

lower medium and long-term funding cost. By the end of 2016, the outstanding balance of PSL has accumulated to RMB 2.1tr.

6. Concluding Remarks

CDB was born in 1994 in a transition economy. In the 1990s, the features of a planned economy lay in both the macro economy and CDB's internal governance. CDB's revival can be attributed to (1) the reconstruction of its internal governance, (2) the restructure of the domestic credit system and financial market, which was motivated by CDB's reform efforts, (3) corrections to the excessively strict 1994 fiscal reform. This refers specially to rebalancing the fiscal capacity between the local and central government with the constraint of the 1994 budget law. In addition to the reconstructions and corrections, (4) CDB works as a coordinator between the central government's macro-economic plans and local government fiscal capacity.

In macro-economic textbooks, there is consensus on the need for an independent central bank. CDB's history in the 1990s proved an independent development bank is also necessary. Otherwise, with excessive support or administrative interventions, CDB could easily have ended up as a second ministry of finance and gone bankrupt. In the late 1990s, CDB was lucky to have a powerful president. The disappointment of the central government, weakened macro-economic situation and high NPL ratio gave

CDB a valuable opportunity to make substantial reforms.

But independence does not mean a development bank should cut off all relations with the central government. On the contrary, CDB should work closely with the state on national plans. CDB is actively involved in the state five-year plan, national industry plan and should closely cooperate with the related ministries to integrate their ideas into the provincial and municipal plans.

Last but not least, CDB grows against a special background, which does not necessarily apply to other countries. One special characteristic is that China's economy took off again in the early 2000s. CDB's expansion is also closely linked to interactions with the macro economy. Another key point is that China's local government is in possession of massive resources, in many aspects, such as local state-owned enterprises, land-transferred revenues, which directly enhance local government credit.

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Appendix: CDB's role as counter-cyclical lender

Most development banks play a role as counter-cyclical lender. CDB is no exception.

We focus on its role in this appendix.

CDB's shareholders include the Ministry of Finance of China (36.54%), Central Huijin Investment Ltd. (34.68%), Buttonwood Investment Holding Co., Ltd.²⁶(27.19%) and the National Council for Social Security Fund (1.59%)²⁷. MoF of China and PBoC are two major direct shareholders of CDB. Thus, CDB was not only established for sustainable development, but also to facilitate fiscal or monetary policy for counter-cyclical purpose. CDB's assets business reflects its counter-cyclical role. On the assets side, CDB invests through lending and capital injection, both playing a role as a quasi-fiscal policy (figure 4).

As to the fiscal system, CDB is a crucial policy vehicle to provide funding to quasi-fiscal projects. Through credit support and capital injection, CDB leverages more capital from the commercial system. By the end of 2015, the composition of CDB's outstanding loan balance in different industries was: strategic emerging industries 9%, public infrastructure 13%, urban renewal 15%, energy 15%, transportation with 26%

²⁶ Buttonwood Investment Holding Co., Ltd. is an investment corporation solely invested by SAFE (State Administration of Foreign Exchange). And SAFE is also directly affiliated to PBoC.

²⁷ Source: CDB's annual report of 2015, pp. 27.

and others 22% (figure 4).

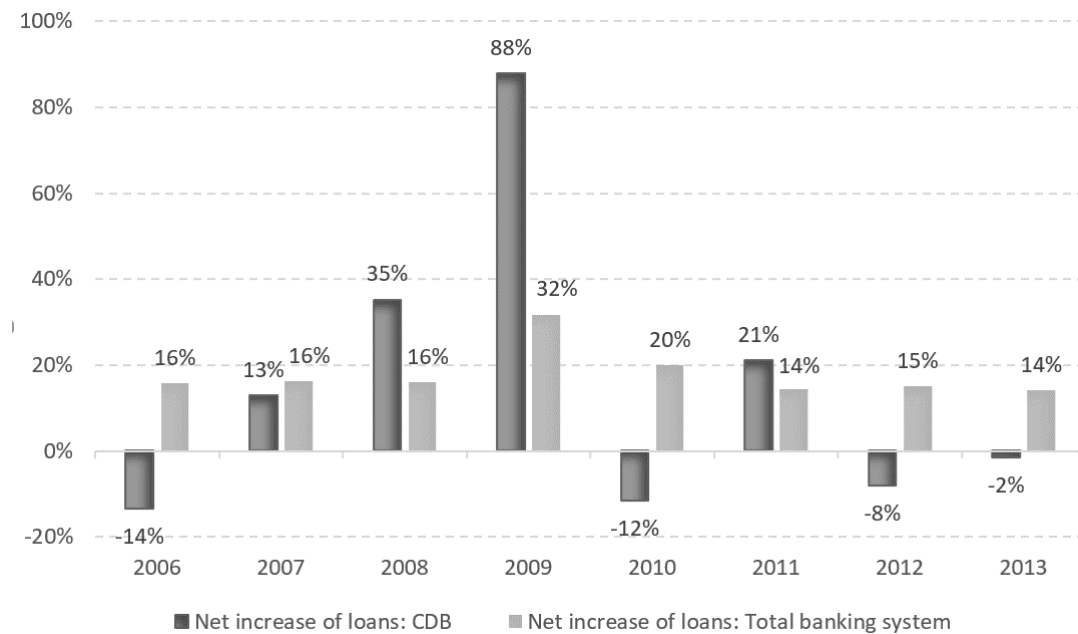
On August 25, 2015, CDB Development Fund (CDF) was established to support domestic investment in key fields. Different from the traditional loan business, CDF supports the projects as a shareholder by means of capital injection, equity investment and loans to a project.

It is possible that some projects, which are not qualified to get loans according to the standard of risk control, are initiated with a high leverage. But among these projects, some are potentially profitable and featured as having positive external effects. If a project is identified and qualified by CDF, then CDF can directly inject capital to the project to become a shareholder. At the same time, the debt/asset ratio will be expected to decline to a desired level because of the capital injection. Thus, the project will also be qualified and enabled to borrow more from CDB, commercial banks or the bond market. In the process, CDF (including CDB) can obtain interest rate subsidies from MoF of China, and dividends and interest on loan from the project. These lead to a sustainable business. Besides CDF, CDB Capital²⁸ and China's Investment Fund of Integrate Circuit Industry²⁹ also operate equity investments.

²⁸ CDB's wholly-owned subsidiary, established in 2009.

²⁹ Initiated by CDB and other institutions, established in 2014.

Figure A.1 CDB's counter-cyclical: net increase of loans



Source: the editorial board of The History of China Development Bank, 2013. And CDB's annual report in 2013. PBoC, 2016.

As a fiscal policy vehicle, CDB's loan business is characterized as counter-cyclical. At the end of 2008 and throughout 2009, just after the global financial crisis, CDB's loans for investment projects rocketed. In 2009, to deal with the shock of the global financial crisis, the growth rate of CDB loan was a striking 88%. In 2010, by contrast, facing an overheated economy, CDB loan grew at a speed of -12%.



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National Development Banks as Active Financiers: The Case of KfW

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Updated: 19 May 2017

DRAFT Final – Please do not quote

1. Introduction

National development banks (NDBs)¹ were originally hailed as critical institutions to rebuild war-torn Europe and ameliorate economic bottlenecks, but by the early 1980s interest in them had waned significantly (Verdier 2000). The spread of the neoliberal school of thought and the lack of financial firepower severely curtailed both their abilities and influence. Yet beginning in the late 1990s, and accelerating after the 2008 Global Financial Crisis, national development banks were once again in vogue across Europe. Armed with both expanded mandates and larger balance sheets, supporters argued that NDBs could intervene in the domestic economy when private actors were unwilling or unable to do so. More recently, support for NDBs grew after the European Commission highlighted the critical role that NDBs could play in catalyzing long-term finance, countering the procyclicality of the macro economy, promoting the green economy, and fostering innovation (European Commission 2015). In particular, this growth in interest in NDBs has elevated the profile of Germany's KfW, the largest NDB in Europe. With a total balance sheet of EUR 500 billion and new yearly loan issuances of EUR 80 billion, KfW serves as one of Germany's largest financial institutions. KfW has participated in financing numerous domestic economic programs ranging from SMEs to housing efficiency projects to student loans, and has been instrumental in the retooling of the German economy for innovation and green technology. As such, KfW operates as a classic NDB, supplying financing to important projects that may be underinvested in by private actors.

While the activities of KfW have been well documented, less scholarly attention has focused on *why* KfW has grown to strategic importance. We contend that KfW's status as a

¹ In Europe, these institutions are often called national promotional banks (NPBs), yet they are functionally equivalent to a NDB.

quasi-state organization is central to understanding its influence. On the one hand, KfW is tasked with implementing policy objectives of the German government. In order to do so, KfW receives the full financial backing of the federal government, which allows it to borrow cheaply on capital markets and follow social, economic, and environmental goals rather than purely commercial ones. In this way KfW can ameliorate market failures and compensate for the underprovision of private capital. On the other hand, the operations of KfW are largely conducted according to market principles; KfW creates a spectrum of investment support instruments, takes advantage of its easy access to the capital market, and cooperates extensively with the commercial banking sector. This chapter aims to explore this duality. In particular, we ask the following questions: how is KfW able to bridge the objectives of the public and private sector? More importantly, how does this position at the nexus between the public and private impact the ways in which KfW can contribute to reaching policy objectives – particularly in areas where regulatory standards and economic competitiveness are often seen as antagonists?

We argue that the key to understanding the role of KfW in the German economy extends beyond its official tasks of ameliorating market failures or providing countercyclical financing. Rather, KfW's importance rests on its active participation within the domestic policy cycle, ranging from project proposal to evaluation. Since KfW is able to dynamically engage with the German government at all stages of policy, KfW can profoundly impact *how* these policies are determined, designed, implemented, and evaluated. KfW derives this legitimacy as an important policy actor through three characteristics: (1) KfW acts on the financial market with a government backing to pursue economic—rather than purely commercial—objectives; (2) as a government agency, KfW has privileged access to officials and regulators; and (3) it has extensive technical and engineering expertise. Consequently, KfW has advantages that other institutions—both public and private—do not. For one, KfW's stronger financial position can be leveraged to pursue beneficial investments from a societal perspective that would otherwise go unfunded. In addition, KfW exists within a protected policy space in which it serves as an expert actor, allowing it to coordinate with government policy and impact the commercial and regulatory environment in which it operates. KfW has a role in developing these policies, such as providing technical advice or collaborating in the program design. In this way, KfW can create and expand the policy space in which it operates. This potent dynamic results in KfW being an

active and effectual economic institution, provided that none of these channels are systematically abused by either the government or the public bank. This close operational relationship allows KfW and the German government to achieve policy synergy, where regulation and financing can be simultaneously coordinated for maximal benefit within the domestic economy.

The chapter proceeds as follows. First, we examine the particularities of the relationship between KfW and the German government within the policy cycle. We highlight how the three aforementioned characteristics profoundly impact the ability of KfW to operate and implement programs from project proposal to implementation. Next, we examine this dynamic through the lens of two cases studies, the structural change towards a low-carbon economy and the financial sector after the 2008 Global Financial Crisis. Finally, we conclude with thoughts on the replicability of KfW's institutional model to other countries, noting both the advantages and limitations of such an approach.

2. The Nexus between Private and Public: KfW, the German Government, and the Policy Cycle

National promotional banks are unique entities because they are institutions that occupy a space between the private market and government, allowing them privileged access to both policymakers and the commercial market. As opposed to the government, which typically limits its engagement to macroeconomic policy and regulatory spheres, a public national promotional bank (NPB) engages as a modified market participant; it plays by the rules, but does not behave entirely with commercial motivations. As Europe's largest NPB, KfW has served this function since the end of WWII. Yet while the particular programs have changed, KfW has persisted as one of the most important domestic German financial institutions, and has consistently served to finance policy priorities that are underserved by the private market. As such, KfW has served an important role throughout the policy cycle.

2.1 KfW in Historical Context

KfW was originally established in 1949 to expedite the reconstruction of post-war Germany. KfW received its initial capitalization through the European Recovery Program (ERP), colloquially known as the Marshall Plan, and channeled American funds for investment in the

housing, agricultural, power, and heavy industrial sectors (Grünbacher 2004). By the end of the 1950s, as the *Wirtschaftswunder* took hold in Germany, there existed less need for a purely reconstruction credit agency. Yet rather than eliminating KfW, the objectives of KfW were adapted to the new challenges facing the German economy. Beginning in the 1960s, KfW assumed more global responsibilities, and began providing financing for foreign investments to secure primary commodities for German manufacturers as well as for international development aid projects. Domestically, KfW began emphasizing SME financing, vocational training, and more advanced industrial projects. From an early stage, KfW emphasized prudent investment over subsidization. Rather than providing a one-time grant to a specific project, KfW would instead extend a loan or provide a guarantee that did not erode its capital base. Any earned profits would be used to expand the capital base and reinvested to support new promotional programs. Over the next few decades, the particular emphasis of KfW vacillated between domestically- and internationally-oriented projects, yet KfW's mission of promoting economic development via targeted financing remained largely unchanged. The reunification with East Germany and the fall of the Soviet Union ushered in a greater role for KfW in the early 1990s, when it became more active in SME financing, technical assistance, and governance and transparency initiatives (Harries 1998). Ultimately, KfW was critical in financing German reunification.

Today, KfW is one of Germany's largest financial institutions and one of Europe's largest bond issuers. In 2015, KfW had total assets worth EUR 503 billion and issued EUR 79.3 billion in new development activities, of which EUR 50.5 billion was targeted domestically (KfW 2015, 2). SME financing still accounts for a substantial portion of KfW's domestic activities; in 2015, EUR 20.4 billion was committed to SME promotion and development. Significant expenditures were also recorded in housing investment (EUR 16.44 billion), education and social development (2.64 billion), infrastructure (4.95 billion), and state promotional banks (4.69 billion). Outside the domestic promotion bank, KfW also has 27.9 billion in international activities, with a majority (20.2 billion) directed towards German export promotion. KfW's Development Bank and DEG account for a relatively small portion of total

activities, comprising only 6.8 billion in 2015. In the past few years, KfW has also become very profitable, earning EUR 2.17 billion in consolidated profits in 2015.²

2.2 KfW within the Policy Cycle

As one of the largest economic institutions in Germany, KfW has certainly impacted how the German government implements domestic economic priorities. In order to gain analytical traction into this dynamic, we examine the relationship between the German government and KfW using the heuristic of the policy cycle (Blum and Schubert 2009). The policy cycle identifies how a particular policy is created from initial conception, through implementation, to finally evaluation. According to Abbott and Snidal (2009), the policy cycle can be conceptualized as a five-stage process consisting of agenda setting, negotiation, implementation, monitoring, and enforcement (46). By focusing on how a single policy is developed from beginning to end, we can limit the scope and better understand the mechanisms through which KfW affects policies, project implementation, and outcomes. The disaggregation of the process into five distinct stages also allows a detailed analysis at each stage, and permits comparisons across different policies across time and space.

Yet defining the scope and steps of the policy cycle does not explain the dynamics of this process. In order to better understand the actions of KfW within this policy cycle, we utilize the theoretical framework of new institutionalism within organizational sociology (DiMaggio and Powell 1983; Powell and DiMaggio 1991), combining it with resource dependency theories that assign a greater degree of agency to organizations in shaping their environment (Pfeffer and Salancik 1978; Oliver 1991; Wry et al 2013). We make two assumptions. First, we assign institutional agency to KfW—that is, we expect KfW not to be merely a passive actor in policy cycle, but rather be cognizant of its preferences and environmental limitations and, critically, to strategically operate to achieve these desired outcomes. Moreover, as resource dependency theories posit, we can expect the institution to attempt to shape the environment within which it operates. Second, and a key assumption of new institutionalism, we assume that organizations seek legitimacy within their environment. As such, they will adopt scripts and behavior that will

² https://www.kfw.de/KfW-Group/Newsroom/Aktuelles/Pressemitteilungen/Pressemitteilungen-Details_353088.html

raise their legitimacy vis-à-vis their peers, independent of economic efficiency or rational-choice considerations. Consequently, we expect that KfW will act strategically within the policy cycle in order to both achieve legitimacy within its operating environment and pursue its interests, broadly defined.

A cursory examination of KfW's actions in the policy cycle bears this out. Rather than passively serving as the German government's financing agency, KfW has instead actively participated in affecting the outcomes of policy at each of the five stages. As will be detailed in the two case studies, KfW has routinely assisted the government in selecting targeted policy areas, designing projects and programs, implementing and financing them, monitoring the progress, and finally adjudicating the results that then inform the next iteration of the program. Throughout the process, KfW is keenly aware of its institutional objectives. It is careful to create programs that do not strain its resources (most critically, ones that ensure a continuation of its AAA credit rating), that allow it to better use available, but possibly unused, resources (such as manpower), and that allow it to expand its business operations in a fiscally responsible manner. Moreover, KfW has demonstrated an understanding of its environmental limitations. Since it engages actively with both the German government and financial markets, in particular bond markets and rating agencies, KfW must constantly adjudicate between the competing pressures of the public and the private.³ On the one hand, the Ministries of Finance, Economy, Environment, and Economic Cooperation seek to guide KfW towards a public mission; on the other hand, KfW also relies on financial markets and rating agencies to raise funds. Navigating these various demands can be challenging, as KfW must therefore balance technical government requests while maintaining high-quality standards in its credit decisions that allow it to operate on a commercial basis. The necessity of obtaining consent from the Ministry of Finance as a prerequisite to fund disbursement adds to these challenges.

Yet KfW's status as a quasi-public institution bridging the public and private spheres also affords it significantly more flexibility than other institutions, both public and private. For instance, KfW often has an information advantage. As a consequence of its proximity to policymakers KfW may know more about policy trends and government priorities than its

³ There is an argument to be made that commercial banks also play an important role, but because of space constraints, it will not be addressed here.

commercial peers. Due to its nature as a bank it also better understands how commercial investment and financing decisions are undertaken than most government ministries. Additionally, KfW is acutely aware of the demands of the rating agencies, as well as the technical limitations of policy objectives. This information arbitrage assists KfW in navigating between the public and private spaces. More specifically, we identify three reasons as to why KfW is able to so successfully pursue its objectives within the policy cycle: a broad economic objective with government financing, proximity to both policymakers and regulators, and extensive technical expertise.

1. A Financial Market Actor with an Economic Objective and Government Financing:

KfW's objectives are to compensate for market failures and promote socially- or environmentally-beneficial projects. These projects tend to be public goods, which are desired from an economic or social objective, but are underprovided by the private market, yet they have included a spectrum including innovation, a broad spectrum of clean energy through renewable energy or housing energy efficiency programs, technical and financial support for SMEs, revitalizing post-industrial economies, and student loans. KfW is able to support these underfunded projects largely because of its government financial backing. In exchange for implementing the government's policy objectives, the German government also effectively guarantees the institution. KfW receives the same credit rating as the government, and this AAA/Aaa rating provides a huge advantage on the bond market as KfW can borrow more cheaply than its commercial banking counterparts. The indirectly subsidized financing (via government guarantees) compensates KfW for undertaking financial projects that the commercial sector deems insufficiently profitable. In order to prevent KfW from undercutting the commercial banks,⁴ KfW typically does not directly lend to businesses or consumers. Instead, it relies on the network of commercial banks to assess risk, distribute the loans, and monitor repayment. Finally, even though KfW receives both its mandate and its financing advantage from the government, the German government gives KfW a remarkable

⁴ The challenge to avoid crowding out commercial financing by public financing institutions is, however, omnipresent and an issue of constant concern for an NDB and its government.

amount of flexibility in project implementation. This allows KfW to more quickly adapt to funding needs and respond to market conditions. Perhaps more critically, since it is able to retain any profit it earns, KfW has an incentive to prudently invest.

2. Proximity to Policymakers and Regulators: By virtue of its institutional structure as a government agency, KfW has close ties with multiple German ministries. In fact, the Federal Minister of Economic Affairs and Energy and the Federal Minister of Finance are the Chairman and Deputy Chairman of KfW's Board of Supervisory Directors, respectively. Numerous members of the Bundestag, state parliaments, and trade unions similarly serve on the supervisory board.⁵ KfW regularly communicates with the parliament⁶, it also has direct relationships with the Federal Ministry for the Environment, the Federal Ministry for Economic Cooperation and Development (BMZ) and its implementing agency, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and many other ministries. These relationships distinguish KfW from its commercial banking counterparts. On the one hand, the proximity to policymakers can increase the amount of pressure they exert on KfW to implement new policies. This means that KfW may in fact be required to implement policies it would otherwise have little interest in independently supporting. KfW is frequently called upon to provide its expertise on potential policy programs and, as a trusted independent voice, has a substantial amount of influence. Perhaps more importantly, KfW and the government can coordinate policy, usually in a carrot and stick dynamic. For example, the federal government may increase the stringency of environmental regulations (the stick), but KfW will simultaneously provide a new subsidized financing instrument (the carrot). This institutional dynamic creates policy synergy, and allows the economy to more quickly respond to policy directives.

⁵ <https://www.kfw.de/KfW-Group/About-KfW/Vorstand-und-Gremien/Verwaltungsrat-und-seine-Aussch%C3%BCsse/>

⁶ Bernau, Patrick. "Der Staat als größter Lobbyist," *Frankfurter Allgemeine Zeitung*, 29 Nov 2015. <http://www.faz.net/aktuell/wirtschaft/wirtschaftspolitik/lobbyisten-liste-des-bundestags-kfw-und-gkv-spitzenverband-vorne-13939161.html>

3. Technical Expertise: A substantial portion of KfW is also dedicated to technical expertise beyond what is required for a technical credit decision. As a primarily financial institution, it is unsurprising that a lot of these specialists examine the financial sector. These experts have profound knowledge of capital markets, risk assessment, bond issuance, and even financial securitization. They assist both KfW's in-house operations as a financial institution as well as its investments in the domestic economy or, on occasion, in an exchange with other public institutions and authorities. However, KfW additionally employs experts with specific—often engineering-type—sector knowledge in agriculture, energy, transport, water, natural resources, and civil engineering, to name a few. This substantively distinguishes KfW from the commercial banking sector. This allows KfW to base its investment decisions on a broader set of criteria from internal employees rather than relying on the market generally or external actors, such as consulting firms. This deeper understanding of sectors and the related markets is also essential not only to identify market imperfections, but also to anticipate the consequences of the respective interventions and programs. This knowledge further increases the likelihood that a particular project will be more successful from a socioeconomic as well as a commercial perspective. Technical expertise further allows KfW to serve as an important conduit between its investments in the private sector and government policy, adding to its information advantage. Finally, KfW's stamp of approval can effectively signal to other private investors that the project is viable.

In short, these three characteristics ultimately allow KfW to more effectively operate within the policy cycle. At each stage, KfW can leverage its financial advantages, access to policymakers, and technical expertise to both satisfy its institutional objectives and obtain legitimacy within its operational environment. For instance, in the first stage of agenda setting, KfW has an incentive to seek projects that are coterminous with its objectives. Since KfW must clarify to the ministries why and how this matters, its connections and extensive technical knowledge help bolster the legitimacy of KfW's analysis. KfW also actively organizes conferences, temporarily loans employees to the ministries, and provides information events for parliamentarians. While the role of KfW in the agenda setting phase is probably less direct than

in other phases, together, these all serve to establish the parameters of the debate. In the second phase, or negotiation phase, KfW transforms a policy objective into specific policies, standards, programs or combinations thereof. In this phase, KfW often seeks to protect its financial reputation, due to requirements by rating agencies. KfW therefore pushes the projects into areas where it perceives to have expertise and/or where it seeks to develop expertise, all while using financial instruments that will keep it financially secure. In cases when these projects are not bankable, even with a government guarantee for its debt, KfW will attempt to secure additional financing such as supplementary grants from the German government. During the implementation phase, KfW is afforded substantial operational latitude, yet solutions are always performed with an eye towards its legitimacy and financial sustainability. Finally, the stages of monitoring and enforcement refer to reflecting on whether rules are followed or offered programs used, but also on what can be learnt to improve policies. For KfW, in monitoring as well as evaluation, pressures arise from both the markets—which require adequate financial performance—and the government—which prioritizes policy outcomes and socioeconomic gains. Consequently, KfW has an interest in generating performance metrics that are favorable to the institution, as well as influencing how certain policies will be negotiated and implemented. The relative success of the project also determines the nature of the subsequent project, informing KfW of the best course of action to achieve the economic objectives.

The outcomes of this active participation of the policy cycle are dual. First, KfW can better achieve its stated social objectives by coordinating its capabilities with the government policy. With a staff of technical experts on hand, KfW can provide recommendations to the government on the best strategy to achieve those desired policy outcomes, whether it be in the project design phase or the project evaluation phase. Moreover, KfW can coordinate with the government to achieve policy synergy. It can also signal to the government if the demands are too strenuous. For example, KfW has directly requested additional funds or risk guarantees from the government in order to implement their desired policies in case these are assessed as not being directly economically viable. Elsewhere, it is often argued that “credit agencies [...] are having a substantial and negative impact on the ability of MDBs to undertake their development mission” (Humphrey, 2016). Second, and more critically, KfW can also serve to influence those very policies, thereby creating or expanding KfW’s policy space. As noted before, KfW will

frequently advise the government on the different possibilities for the implementation of projects. Both their technical and on-the-ground knowledge is useful for policymakers, and this provides opportunities for KfW to guide the creation and implementation of the policy. Possessing the ability to establish the parameters of the policy that the same institution implements is a substantial advantage.

Taken together, KfW's active engagement in the policy cycle ultimately assists in its pursuit of serving as Germany's national development bank. Since KfW possesses greater knowledge of on-the-ground factors, as well as having a wide range of in-house technical experts, KfW can better interact with policymakers throughout the policy cycle to implement more effective development and promotional policies. In the past, this has enabled KfW to provide extensive support for structural transformation, critical infrastructure projects, and underfinanced programs such as SME financing. More recently, KfW has been critical in supporting Germany's economic transformation to a green economy, both in terms of supply (through the support of green technology firms) as well as demand (through the financing of solar and wind power) (c.f. Griffith-Jones 2016). KfW's active engagement in the policy cycle has therefore enhanced its capabilities as a national development bank, though, as will be addressed later, it may not be entirely reproducible in other economic contexts.

It is important to note that the policy cycle is a heuristic to better understand how the processes of KfW function, and neither provides answers to all available questions, nor does it provide predictive power (Blum and Schubert 2009, 102). In practice, the policy process is also infinitely more complex. It should not blind the analysis to the fact that anticipation of problems with respect to, for example, monitoring and enforcement do not already shape the behavior of KfW at the agenda setting or negotiation phase. We are observing experienced policy shapers (at least that is the assumption), who having that experience about the policy cycle of tools shape the tools to be implemented in the future. However, we maintain that by using the framework of the policy cycle, we can achieve a better understanding of the complex process by which policy is created. The next two case studies explore these policy cycle dynamics, detailing how KfW's unique role as a government institution-cum-commercial bank has shaped investment and policy in the structural change towards a low-carbon economy and the financial sector after the 2008 global financial crisis.

3. Greening the Economy

One prominent aspect of KfW's domestic promotional mandate is the support of the structural change towards a low-carbon economy. While this particular shift has adopted added urgency with the German government's recent *Energiewende* program, this shift towards supporting environmentally sustainable practices on a comprehensive scale has its roots decades earlier. As such, KfW has had an active and important role throughout the numerous iterations of the policy cycle. This is particularly evident in two areas: energy efficient housing for consumers, and energy saving and renewable energy promotion for businesses.

Housing quickly became an economic and social political priority in post-war Germany, if for no other reason than to neuter potential social tensions that could lead to increased support for radical political parties (Harries, 1998). In 1949, KfW allotted DM 34 million to building homes; in 1950 that figure grew to DM 400 million, and continued to rise in the subsequent years. While KfW unwaveringly supported housing, it was not until 1990 that energy efficiency became an important component within KfW's housing policy. In particular, the German government faced the daunting task of reunification; increasing energy efficiency was seen as a positive step forward for both business and East German residents alike, particularly with regards to the installation of modern heating systems. KfW had a natural role in shaping this phase of agenda setting and negotiation as it was already experienced in housing finance for decades. The first step in implementation seemed almost business as usual. A scalable program was designed that managed to modernize about 3.2 million flats by the end of 1997; some estimate that this was half the housing stock in the GDR before reunification (Harries, 1998). However, a closer look reveals another role that KfW played in the monitoring and enforcement phase. Despite the government providing funds to reduce the interest rate by 3% relative to the market, the program was insufficiently attractive to induce modernization of the pre-fabricated, low-quality apartment complexes ("Plattenbauten"). KfW identified that owners (often municipal cooperatives) were not even able to pay interest on their old pre-unification loans after the West German currency was introduced. Consequently, the government and the governments of the "new" states absorbed approximately DM 29 billion (EUR 14 billion) as *old debt assistance* ("Altschuldenhilfe"). The federal government and the states then asked KfW to completely

administer the corresponding liquidation process. After a controversial discussion within the KfW board, it was decided that KfW would—as a bank—take on this purely administrative task (Harries, 1998), which would normally be the task of a government agency⁷. Following this change in 1993, the pace of apartment complex modernization accelerated⁸. Those who received the relief invested Euro 45 billion to modernize their flats until the end of 1999.

The policy cycle in energy efficiency took another turn in 2010, when the government decided to substantially increase its efforts in reducing the energy consumption of buildings. KfW, armed with long-term experience and established connections with related research institutions, contributed to the design of the strategy put forward by the Ministry for the Economy (“Energieeffizienzstrategie Gebäude”). The strategy as published by the government emphasized the parallel approach through “Informing, Promoting and Challenging.” It explicitly referred to the KfW program “Energy Efficient Building and Renovating” as an important pillar of implementing the strategy. During the negotiation phase of this new policy, KfW—with the help of its internal technical/engineering expertise in energy efficiency in buildings—played a critical role by defining the standards for an energy-efficient house. This standard referred to the baseline as defined by the government in the building code (minimum standard in the so-called EnEV). For a new building, this indicates how much energy it will take to heat the house; a KfW Efficiency-house 55, for example, means that the house can be expected to only need 55% of what is required by the building code. If the building code changes, this relative standard changes accordingly. In addition, the Efficiency-house standard determined the level of financial support offered by KfW. As of January 2017, all loans within the program are offered at slightly below-market rates, 0.75%, yet as a result of the low-interest environment the level of support is reflected in a parallel grant support that is expressed as a fraction of the loan size. Highest grant

⁷ In 1993, a law was passed, that defined this “old debt” and at the same time created an interest subsidy which fully covered interest payments for about two years at first. In the years to follow, a significant part of this debt would be paid for by a newly created public fund (“Erblasten Tilgungsfonds”) if the housing cooperatives (or private owners) who applied for the relief agreed to sell or privatize 15 per cent of the flats over the coming years.

<https://www.kfw.de/KfW-Konzern/%C3%9Cber-die-KfW/Auftrag/Sonderaufgaben/Altschuldenhilfe-f%C3%BCr-ostdeutsche-Wohnungsunternehmen/>, accessed on 15th of May 2017.

⁸ <https://www.kfw.de/KfW-Konzern/%C3%9Cber-die-KfW/Auftrag/Sonderaufgaben/Altschuldenhilfe-f%C3%BCr-ostdeutsche-Wohnungsunternehmen/>, accessed on 15th of May 2017.

support (27.5% of the loan) is offered if the effort to be financed leads to the building consuming less than 55% of what the building code mandates. Still 12% (of the loan volume) are granted if a renovation leads to the building consuming less than 115% of what would be required for new buildings.⁹ On top of determining the support level, the standard is established on the real estate markets as a quality signal and typically part of the basic description of the house¹⁰.

Additionally, KfW has routinely engaged in the monitoring and evaluation of its housing energy efficiency programs. Typically on an annual basis, KfW's internal department for research commissions a monitoring report of the building efficiency programs.¹¹ The monitoring exercise tracks loans, the number of flats, expected CO2 emission savings, as well as quantitative estimates of employment effects of the program. Less frequently, KfW asks research institutions to examine specific topics looking beyond the program itself. One recent example of this evaluative research has been an empirical analysis of the most relevant drivers of the decision whether to engage in an energy-efficiency investment in buildings or not.¹² In this case, the scope included surveying households that had decided against energy efficiency investments. The objective was to identify the reasons why these households did not participate in the program, and subsequently provide recommendations as to how to improve future programs.

Similar to the area of energy efficient housing, improving energy savings and the use of renewables by businesses has its origins in policy initiatives from decades ago. In the late 70s, after having faced two oil crises, the German government asked KfW to support its economic stimulus policies. As part of the request, KfW was involved in two ways. First, it executed programs on behalf of the government where the full volume of the loans that were provided

⁹ This is more than 100%. Note that this support targets the renovation of already existing buildings. Energy efficiency requirements for new buildings in the building code show strongly increasing ambition over time. Therefore, bringing the efficiency of an old building even close to what is required from a new one (e.g., 115%) is considered to qualify for some support.

¹⁰ <https://www.immobilienscout24.de/bauen/baulexikon/kfw-55.html>, accessed on 15th of May 2017.

¹¹ Monitoring der KfW-Programme „Energieeffizient Sanieren“ und „Energieeffizient Bauen“ 2015; https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-alle-Evaluationen/Monitoringbericht_EBS_2015.pdf, accessed on 26th of January 2017.

¹² Einflussfaktoren auf die Sanierung im deutschen Wohngebäudebestand Ergebnisse einer qualitativen Studie zu Sanierungsanreizen und -hemmnissen privater und institutioneller Eigentümer; https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-alle-Evaluationen/Einflussfaktoren-auf-die-Sanierung-im-deutschen-Wohngebäudebestand_2016.pdf; accessed on 26 of January 2017.

came from the government budget rather than from KfW's own funds. Second, KfW expanded its "own" so-called M-Program, which supported SMEs via funds that KfW itself raised on the capital market. Those were lent at below-market interest rates. When KfW decided to keep the artificially low interest rate in 1981, despite the rising market interest rate, the institution recorded very low profit margins while strengthening its ties to German policymakers. More importantly, these events established the pattern of cooperation between the German government and KfW, whereby KfW would raise funds on the capital market and then would combine them with government funds to subsidize interest rates.

As opposed to the 1970s and 1980s, when energy efficiency promotion was a consequence of a global petroleum shock, in the recent years the promotion of SMEs using clean energy is strongly driven by climate concerns. One important program targeting SMEs demonstrates how KfW engages in all stages of the policy cycle, ultimately leading to an improved program design. The program "Renewable Energy (Standard)" began in 2009. As the program is implemented via on-lending through commercial banks, as per normal guidance, those institutions are responsible for finding customers and selecting the projects that are supported. The commercial banks have contact points at KfW, with whom they regularly discuss the programs and provide market feedback. Since 2010, KfW received increased feedback that customers were expressing demand for financing the storage attached to photovoltaic (PV) installations—something that was not possible to finance under the current program. KfW then entered into discussions with relevant government agencies such as the grid-regulator and the ministry for the economy, which was also independently interested in potentially promoting storage. KfW suggested a change in the program, further discussed this with the ministry, which approved the new version in 2016.

Finally, there are examples where excess institutional capacity has prompted KfW to seek expansions of existing environmental programs. This example has its origins in a program that substantially differs from traditional on-lending programs such as the "Renewable Energy (Standard)." In the aftermath of the 2007 Global Financial Crisis, KfW operated an economic stimulus program to mitigate the negative economic consequences (see following section). During the implementation of the stimulus package, KfW had to quickly act to build-up expertise

in direct lending to medium, but also larger, corporations. As opposed to the case of on-lending through commercial banks (where the commercial bank takes the loan risk), in this case, the loan would go to corporations directly, involving the corresponding risk. The goal of this intervention was not to provide an interest-rate subsidy, but rather the immediate goal was to compensate for the consequences of commercial banks' reluctance to lend, that is KfW did counter-cyclical lending. The end of that stimulus package coincided with the emergence of the *Energiewende* as a policy priority, during which this policy had gained bipartisan momentum. While there was a continuous exchange between KfW and the government regarding the investment side of the *Energiewende* and what KfW could contribute, KfW initiated a discussion about programs that would in a broader way support companies driving the structural change forward. This would have the added benefit of utilizing the direct corporate-lending expertise that was just built-up in the context of the stimulus package. Discussions with the government shaped the program further, and the new promotional program "Financing Initiative Energiewende," later renamed to "Konsortialkredite Energie und Umwelt" (consortium loans for energy and environment) was then designed and implemented. In the case of this program, the design keeps KfW in the role of a catalyzer rather than a driver "picking" companies or technologies. The program finances only jointly with other banks, and KfW will not finance more than 50% of any one deal. Neither does it offer conditions more favorable than other commercial co-financiers. Correspondingly it is not using funds from the government budget and KfW is actually taking investment risk.

These cases illustrate that the full promotional effect of KfW can only be achieved through positive interactions of NDBs with the national policy and domestic financial sector throughout the policy cycle. Through this relationship, NDBs can serve an important role in serving as technical experts that can aid both policy creation and investments from the financial sector.

4. Financial Crisis and the Aftermath

The involvement of KfW in the turmoil of the financial crisis and its aftermath shows both the advantages and challenges of having KfW as the intermediary between the government and the commercial banks. Before the crisis, KfW actively supported the installation of a (synthetic) securitization market in Germany, engaging in substantial purchases of loans bundled

in asset-backed securities. These purchases were undertaken with clear industrial policy goals, seeking to increase the provision of both SME loans and housing loans to German SMEs and households respectively while mitigating declining profitability across the banking sector (Asmussen 2006, Mertens 2016). In particular, the upcoming Basel II regulations and their feared negative impact on SME loan provision were an important element in these considerations (Kraemer-Eis 2000). Due to regulatory and taxation issues, KfW in the beginning mostly engaged in synthetic securitization, selling CDS to banks for specific loan portfolios, bundling the revenues of these CDS in turn and selling credit-linked notes based on these revenues through a special purpose vehicle.

In order to strengthen this synthetic form of securitization, KfW established the Promise Platform in December 2000 and the Provide Platform for mortgage related loans in 2001. Until the summer of 2007, credit risks for more than EUR 100 billion were transferred to financial markets, freeing up banks' balance sheets to expand lending. Due to its promotional duties, KfW passed any gains to be had from this business onto the banks originating the loans, thereby assuring the approval of commercial banks regarding this business.¹³ In this policy initiative, KfW was already active in the agenda setting stage, seeking a role in the upcoming business of securitization (Kraemer-Eis et al 2001). Engaging in synthetic securitization in the 2000s was an attractive role for the KfW, signaling its prowess as a modern commercial bank. Its engagement in capital markets exposed KfW to these trends and made it keen to apply them in the German market. In the negotiation phase with the government as well as the banks, KfW secured a certain amount of fee business to compensate for manpower and risks taken, arguing for a cautious stance with respect to the evaluation of credit default risks of SMEs without hindering the takeoff of the market (interview March 2015). Implementation and monitoring was based on experts stemming from the capital markets division, which were actively learning about the techniques and were vital in disseminating knowledge on the new form of financing and its advantages (c.f. Ranne 2005). Nevertheless, such expertise could not prevent that the well-known problems of SME loan securitization, in conjunction with the financial crisis and

¹³ More than 2/3 of the loans insured by KfW were mortgage-related loans, indicating that the mortgage-related Provide Platform was more successful than the insurance of SME loans.

structural constraints in the German financial system, would lead to the termination of both of the platforms KfW had set up (interview KfW March 2015, Mertens 2016). As part of the push of the German government for more true-sale securitization (BCG 2004),¹⁴ KfW became the central player in a consortium of 14 private and public commercial banks, which set up the True Sale Initiative in 2004. The True Sale initiative acted and still acts as a catalyst for securitization in Germany, providing knowledge, platforms for securitization as well as a true sale certificate, reducing transaction costs for engaged commercial banks.

Yet the most illustrative engagement of KfW with securitization occurred through a quasi-subsiary of KfW, the IKB. The IKB was a medium-sized SME lender that was to become infamous during the financial crisis due to its off-balance sheet engagement in the Asset-Backed Commercial Paper market. In the 2000s it became a major player in the issuance of SME-related securitization, a direction it had taken under the supervision of KfW and the Ministry of Finance. KfW had become the major shareholder of that bank in 2001, when two large German insurers were selling their stakes in the bank. Thereby, the independence of IKB came into question as foreign banks were interested in taking over the lender. Through its relationship with the German government, KfW was advised to acquire the shares (interview KfW official March 2015). In line with the policy goal of creating and shaping the market for asset-backed securitization for SMEs in Germany, a goal KfW has pursued since 1999, IKB also began to set up large Asset-Backed Commercial Paper programs with the goal of securitizing portfolios of SME loans through this vehicle. Approved by both the Ministry of Finance and KfW, IKB, in order to build up the size of its ABCP program, began to acquire billions of US RMBS, which led to large losses once the crisis erupted in 2007. As the majority shareholder, KfW had the task of stabilizing IKB during the financial crisis, and eventually became liable for losses of several billion Euros.¹⁵ The government guarantee, which continued to secure cheap

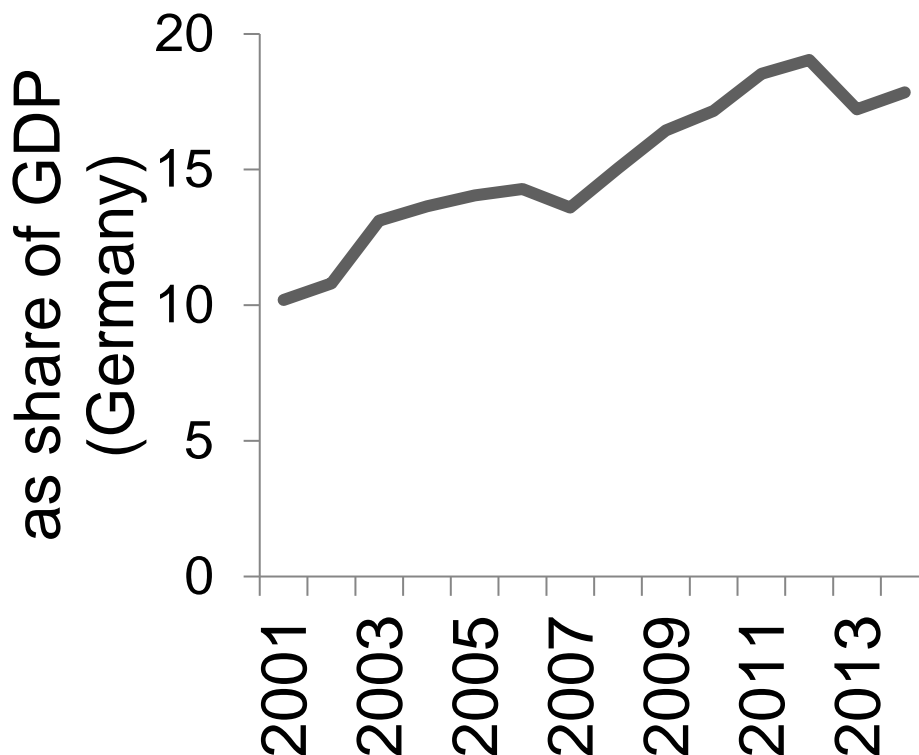
¹⁴ True sale refers to the actual transfer of assets from banks' balance sheet. The initiative was initiated by the Ministry of Finance in 2003, when it assigned the Boston Consulting Group the task to investigate the optimal conditions for such a true sale in Germany.

¹⁵ In addition to those protracted rescuing efforts for IKB, the KfW had its fair share of criticism when in 2008 it sent about 300 Million Euro in payment to Lehman Brothers the day after it declared bankruptcy, earning it the title of "the dumbest bank in Germany."

financing and the equity capital accumulated during the years of successful business before, provided the cushion to deal with this particular aspect of the crisis.

Once the crisis reached the real economy in the fall of 2008, however, the advantages of having a large national promotional bank became fully visible. KfW acted as the primary countercyclical lender, expanding its on-balance sheet loans in 2008, and most dramatically in 2009, despite a substantial reduction in securitization activities. As a consequence, its balance sheet, which made up 340 billion Euros in 2005, reached 441 billion Euros in 2010 (KfW 2010, s. figure 1 below).

Figure 1: Balance sheet size of KfW 2001-2013 as a % share of GDP (source KfW Annual Reports)



Furthermore, KfW programs became a major policy tool for the German government when implementing the government’s economic stimulus packages.¹⁶ In particular, it played a central role in administering the Deutschlandfonds, a program which had a maximum size of 115 billion Euros, backed by government guarantees and risk capital (Welt 2010). The latter allowed KfW to expand lending to SMEs by 7.2 billion Euros in 2009, both directly and indirectly via lending programs through large commercial banks and state guarantees. Overall, the program helped 11,000 enterprises; 94% of the number of loans and about half of the overall volume went to SMEs (Welt 2010, Augsburger Allgemeine 2010). For this program, the capacity of KfW to quickly implement and properly monitor these loan programs was of great advantage to the

¹⁶ https://www.kfw.de/Download-Center/Finanzpublikationen/PDF-Dokumente-Berichte-etc./2_Jahresberichte/Jahresbericht_2008_D.pdf

German government. One needs only to compare the positive effects of this program with the failure of the British Government to achieve similar results by incentivizing private British banks to increase lending during the slump (Macartney 2014). Without a public development bank and with no capacity to force private banks to expand lending, the British government failed to implement anti-cyclical policies and SME lending basically remained flat.

The KfW programs during the financial crisis were also designed to address liquidity needs of SMEs, whose liquidity lines through commercial banks had shrunk and whose existence was thus put in peril. Indeed, this part of the program would make up the majority of the 3,700 applications and more than 7.4 billion Euros of credit granted to SMEs, thereby making up the majority of the volume of the entire program (Pichler 2010). The task of providing liquidity to these companies during a financial crisis highlights the problems of information asymmetries and adverse selection as several of the companies that were not receiving continued financing were excluded from refinancing for business reasons. Separating unsound companies from healthy ones that were merely suffering from the reduced lending capacity of private lenders, due to the fallout of the financial crisis, was a particularly difficult task that KfW had to face. Nevertheless, overall welfare can be enhanced if the losses caused by the closure of otherwise viable companies and the destruction of human and physical capital it entails can be avoided. Countering the volatility of the financial system in order to provide the social benefits of liquidity assistance requires a risk absorption capacity that private, profit-making activity could not provide. Luckily for the German government, KfW had begun to engage in this task already by 2003 on a much smaller scale (BBP 2003, 152). Hence, at that moment, the government could rely on an existing program and scale it up in order to deal with the problem of market disruptions. In the negotiation process with the government, KfW sought to make sure it was not forced to take excessive losses, seeking to protect its triple A credit rating, which was seen as the foundation of the business model. For that reason, KfW requested budgetary means from the government in order to bear the losses it would undoubtedly accrue when expanding its program, a subsidy of several hundred millions which it received (interview KfW official 24th of May 2016). Its financial expertise allowed KfW to better assess the problem of separating insolvent

firms from illiquid ones than a simple government agency could have done and it was able to avoid using the entire subsidy granted (same interview).¹⁷

These measures undoubtedly helped the German economy absorb the shock of the financial crisis. Based on its financial expertise, KfW was thus able to stabilize the provision of capital from a financial system that has become ever more unstable. KfW officials further supported government efforts to cost-effectively mitigate the financial crisis when they were assigned to the bad bank FMS, which the German government founded in 2010, to deal with the “toxic loans” accumulated before the crisis.¹⁸

Since then, KfW has continued its engagement in ABS transactions, purchasing more than 1 billion Euro worth of high grade ABS in 2015, thereby stabilizing the ABS market during the downturn (KfW 2015). Furthermore, it has collaborated with the European Investment Fund (EIF) of the EIB and engaged in InnovFin and other European platforms for the securitization of SME loans. In 2016, in conjunction with the EIF the European National Securitization Initiative (ENSI), it founded a platform for European SME loans, taking the idea of Promise to the European level. Expanding this platform to the European level allows KfW to pursue its promotional mandate itself at the European level, seeking to relieve the balance sheets of banks to allow for more SME financing. While limited in size, this activity, as several others, points to KfW increasingly expanding its function at the European level in the wake of the crisis (Mertens and Thiemann 2016).¹⁹ In these processes, KfW was acting as a policy entrepreneur, seeking to extend its capacities to the European level. Overall, during the crisis, KfW did not only offer the German government a capable bureaucratic apparatus that could execute anti-cyclical policies, but it also provided it with an infrastructure of already existing and tested programs (such as the liquidity assistance for SMEs), which could be scaled upwards to meet the challenges of the crisis.

¹⁷ An important aspect here was also the rapidly improving economic situation in Germany, which itself was partially caused by the quick intervention of the German government.

¹⁸ Arguably, government action could have been more forceful. Using the expertise of KfW officials, the restructuring of newly partially state-owned banks such as the Commerzbank could have been more extensive.

¹⁹ Such as the issuance of loans of more than 1 billion to the Spanish promotional bank ICO during the crisis.

5. The Case for Replication: Prospects and Limitations

KfW's unique role between the public and private sectors has allowed it to have substantial success in the promotion of the domestic German economy. As the two case studies illustrate, KfW has played an integral part in the support of the development and use of green technology and the financial sector precisely because of a combination of its general economic mandate, its hybrid financing structure, its technical expertise, and its participation in national policymaking. The recent successes of KfW have also attracted attention elsewhere in Europe, especially following the financial crisis when governments sought to increase the amount of countercyclical financing for SMEs and the private sector. KfW has served an advisory role in the establishment of other NDBs, including the Portuguese Development Financial Institution, the Strategic Banking Corporation of Ireland (SBCI), and the UK's Green Investment Bank. KfW has also partnered with the European Investment Bank (EIB) to promote innovative financing schemes across Europe. These include some of the traditional domains of NDB financing, such as financing for underprovided sectors, as well as more recent goals, such as encouraging Europe's structural transformation to a green and innovative economy. Thus far, billions of euros have been raised through various investments funds, a trend that is likely to continue.

While by most accounts KfW has successfully promoted the German government's economic and social policies, this does not mean the results are easily replicable in other contexts. A few cautionary notes are warranted. First, KfW's institutional model largely functions because of a strong legal framework. With such close proximity between business and government, there is a significant risk that investment decisions ultimately become determined by political interests rather than societal objectives. This can lead to a slow siphoning off of funding from other investments that reduces the positive impact that the NDB is designed to engender. At its extreme, NDBs can serve as an extra-budgetary balance sheet that can channel funds to lavish political projects, and can likewise become fertile grounds for corrupt transactions. Therefore, even though KfW may be a government-owned institution, it requires operational autonomy that is legally protected. Moreover, this separation allows the NDB to

function in conjunction with financial markets, a move that, at least in theory, engenders market discipline.

Second, NDBs require a relatively well-functioning domestic financial system to achieve optimal results. Even though in KfW's fledgling days the German economy was in ruins, there was still an underlying commercial banking sector with significant technical expertise that could be revived. Modern financial instruments also require deeper financial markets than before. Today, KfW both leverages its own funds on the domestic capital markets and distributes loans through the commercial banking sector. Without the private financial sector, these operations would not be possible. It is therefore necessary for the government to establish a well-functioning financial system as a precondition for an NDB, as the purpose of NDBs is to exploit the financial markets for the objectives of government policy, not to create these financial markets *de novo*. In this regard, NDBs are not substitutes for a functioning financial market. Moreover, this also means that NDBs may not be the most effective instruments in countries with shallow financial markets or weak economic protections, or, the KfW is at least not immediately replicable in other institutional and macroeconomic contexts.

Finally, enormous technical capacity is required to achieve positive economic outcomes. The operations of KfW are inherently difficult because it is not always apparent *a priori* whether a particular instance of an underprovision of financing constitutes a market failure. There is an inherent risk that NDBs will artificially prolong investment in a project that is either economically inefficient or socially unbeneficial. In order to mitigate these risks, NDBs must have extensive knowledge in capital markets, banking, regulation, and, most importantly, the individual sectors in which it is supporting. NDBs cannot wholly rely on the financial market to allocate these resources and therefore must possess the technical capacity to do so independently. Relatedly, it requires policy clarity on the part of the government. Policymakers must implement clear guidelines on what the priority of the NDB should be and, moreover, having faith in the NDB to independently implement these goals.

Despite the limitations to exact replicability across the developing world, KfW serves as an important example of how a national development bank can successfully serve the interests of the public while simultaneously maintaining its connection to the private sector. In this regard, the model of KfW provides important lessons on how national development banks can operate.



For instance, developing country governments should ensure that NDBs are incorporated into the policymaking process, yet also operate independently in domestic financial markets. Resources should be provided to NDBs so they can develop in-house technical capacity. Perhaps most importantly, NDBs should be promoted as part of a broader and more coordinated strategy of policy change, enabling a synergy to develop between NDBs, policy, and regulation. Under these conditions, NDBs can serve as an important tool to compensate for market failures, promote economic sectors, and encourage structural transformation of the economy.

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COLOMBIA'S SYSTEM OF NATIONAL DEVELOPMENT BANKS

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The major feature of Colombia's national development banks is that they constitute a system of multiple, specialized institutions. They were created at different times to promote sectors that were considered strategic for the country's development: agriculture, manufacturing, non-traditional exports, regional and local infrastructure¹, energy and, more recently, public-private infrastructure partnerships. In economic terminology, it can be said that they were meant to counteract market failures, including, in particular, helping to overcome the risks inherent in the development of new firms, the inadequate supply of long-term credit in a financial system with a strong short-term bias of financial assets, and limited financial inclusion. The system survived the domestic financial liberalization that took place around 1990, when it was restructured as the system of specialized institutions in place now. Some of these banks have been subject more recently to significant and still ongoing restructurings.

This paper analyzes the characteristics of the system of national development banks in Colombia, with a focus on specific market failures. It is divided into five sections. The first looks at the history and current structure of the system. The next three look at how the system is managing three major market failures: infrastructure financing (the major case of market failure in long-term financing), financial inclusion, and the promotion of entrepreneurial growth. The last

* Initiative for Policy Dialogue and School of International and Public Affairs, Columbia University. The issues covered in this paper have not been subject to significant research in recent years. The analysis is, therefore, largely based on interviews with the Presidents of the development banks, information provided by the staff of the institutions and publically available data. Throughout the paper, we use the Spanish acronyms of the banks and funds.

¹ By local infrastructure, we refer here to investments made by different departments (the major political division that are equivalent to provinces or states in other countries). However, in the rest of this paper, we will use the term "local" to refer to both investments by departments and municipalities.

presents some conclusions. Since the system has not addressed in particular the issues associated with environmental sustainability, we leave this topic out of the analysis.

1. The History and Structure of the System

Colombia has a long history of public sector banks, going back to the Banco Nacional in the late nineteenth century (a quasi-central bank) and Banco Central in the early twentieth century (despite its name, a commercial bank), but particularly to the 1920s and 1930s, which saw the creation of several institutions to serve the rural sector (Banco Agrícola Hipotecario in the 1920s and Caja Agraria in the early 1930s, to be joined in the 1950s by Banco Cafetero and Banco Ganadero), housing (Banco Central Hipotecario in the early 1930s, which also absorbed the assets of mortgage banks, public and private, that had been created in the 1920s and went bankrupt during the Great Depression), and access to finance (Banco Popular in the 1950s, as well as Caja Agraria).² This was part of a larger set of interventions into the financial sector, which also included several norms forcing financial institutions to allocate credit to particular sectors (“directed credit”), strong regulation of interest rates and strict specialization of financial intermediaries (commercial banks and a series of non-banking institutions)³ based on the principles introduced by the 1923 Kemmerer reforms, which also created a modern central bank (Banco de la República).

² The Corporación Colombiana de Crédito was also created in the early 1930s, but basically to absorb the bad loans from private institutions. A few banks would be nationalized in the 1980s to manage a domestic financial crisis, but were later re-privatized.

³ They initially included commercial and mortgage banks, to which Corporaciones Financieras (a type of private investment bank) were added in the 1960s, Corporaciones de Ahorro y Vivienda (for housing finance, which operated with inflation-indexed deposits and loans) in the early 1970s, and Compañías de Financiamiento Comercial in the mid-1970s. To this we can add credit unions (the largest being supervised by the Superintendencia Financiera since the mid-1990s) and, more recently, microfinance institutions.

The first development bank⁴ was Instituto de Fomento Industrial (IFI), created in 1940 as part of a Latin American wave with the major objective of promoting manufacturing development through equity investments (in partnership with private investors) and long-term lending. A second push came with the banking reforms of 1951, which gave development functions to the central bank, which were reflected in particular in the establishment, in the 1950s and 1960s, of several “Development Funds”, which created rediscount facilities directed to sectors that were prioritized in the policy agenda (agriculture, small and medium-sized manufacturing, non-traditional exports, local infrastructure, and electricity).⁵ The Funds were financed from reserve requirements, directed credit obligations, bonds issued by Banco de la República in the domestic market, and credit lines from Multilateral Development Banks (MDBs). They provided credit under preferential interest rates and maturities. Interest rates subsidies were reduced and in some cases eliminated by the first (moderate) domestic financial liberalizations of the mid- and late 1970s. A different type of fund was created in the early 1970s to guarantee the liquidity of a new financial intermediary created at the time for housing construction financing (Corporaciones de Ahorro y Vivienda), with the central bank basically facilitating the transformation of the short-term liabilities of these intermediaries into long-term inflation-indexed financing for the housing sector. In turn, the urban development fund was transferred to Banco Central Hipotecario in 1975. IFI equity investments were sharply reduced from the mid-1970s. A new development bank, Financiera Eléctrica Nacional (FEN) was

⁴ For the history of the development banks and funds through the 1980s, see Gómez (1990) and Ocampo (2015, chapters 1 and 2).

⁵ They included: Fondo Financiero Agropecuario, Fondo de Promoción de Exportaciones, Fondo de Desarrollo Industrial, Fondo para Inversiones Privadas, Fondo Forestal, Fondo de Desarrollo Urbano and Fondo de Desarrollo Eléctrico. The Fondo de Capitalización Empresarial was also created during the domestic financial crisis of the 1980s to support the financial restructuring of non-financial firms facing high levels of indebtedness.

created in 1982 to finance the electricity sector, which at the time was essentially state-owned; the central bank's electricity development fund for the sector was transferred to the new institution.

The main reforms of the system were introduced from 1989 to 1991, and were part of a major domestic financial liberalization. The liberalization included the privatization of most first-tier public sector banks (the only exception being Caja Agraria, which was restructured and transformed into Banco Agrario) and the development of universal banks –thus eliminating the historical specialization of domestic financial institutions. It also encompassed sharp reductions of reserve requirements, the full liberalization of interest rates, and free access by financial institutions to external capital markets (subject, during some periods, to reserve requirements on capital inflows) (Ocampo, 2015). More importantly from the point of view of this paper, the central bank's development functions were eliminated, as part of a broader reform of Banco de la República, which became an autonomous institution in charge of monetary and foreign exchange policies with the 1991 Constitution.

In the transition from the old to the new policy regime, three development banks were established to manage the old development funds: (i) Financiera de Desarrollo Territorial (FINDETER), created by Law 57 in 1989 to finance local development infrastructure⁶; (ii) Fondo para el Financiamiento del Sector Agropecuario (FINAGRO), formed by Law 16 in 1990 to finance the agricultural sector, under the policies set by the Comisión Nacional de Crédito Agropecuario, CNCA (National Commission for Agricultural Credit); and (iii) Banco de Comercio

⁶ These include a myriad of local infrastructure needs: roads, water and sanitation, social infrastructure (education and health), sports and cultural centers, and housing.

Exterior (BANCOLDEX), which was set up by Law 7 in 1991⁷ to finance non-traditional exports and started operating in 1992. These institutions took over most of the development funds managed by the central bank; the remaining funds, those for industrial development, were transferred to IFI in 1994. In turn, FEN was transformed into the Financiera Energética Nacional in 1990, with the objective of financing energy activity. Domestic financial liberalization thus left a network of five development banks: IFI, FINAGRO, BANCOLDEX, FINDETER and FEN. The system was mostly designed as a system of second-tier banks, though with some first-tier functions in the case of IFI and FEN. Directed credit was essentially dismantled with one major exception⁸: the agricultural sector, for which there is still the commitment to allocate 15% of all commercial bank credits. If banks fail to do so, they have to buy bonds issued by FINAGRO (Títulos de Desarrollo Agropecuario –Agricultural Development Bonds— or TDA⁹), which provide the funds that are then used to rediscount loans from other institutions –notably from Banco Agrario. Other development banks must get their resources from the domestic or external markets, or from government equity contributions or securities (see Figure 1 below).

Later reforms included broadening the responsibilities of these institutions, notably as we will see with greater attention to financial inclusion. They also included two major transformations. The first was the absorption of IFI by BANCOLDEX in 2002, essentially to manage the financial strains faced by the former, but mixing two entirely different business models. In turn, growing access by private commercial banks to external financing has reduced the demand for rediscount

⁷ This law also created an export promotion agency, PROEXPORT, managed by Banco de la República, together with the rediscount facilities of the development fund for non-traditional exports. This institution has more recently been renamed PROCOLOMBIA and given the additional responsibility to promote foreign direct investment in Colombia.

⁸ Special commitments to allocate credit for the housing of low-income households were also preserved for some time, but were eventually discontinued.

⁹ There are two types of bonds, one carrying a lower interest rate, which is used to finance lending to small agricultural producers.

facilities for exporters, the major historical role played by BANCOLDEX. This fact, together with the old functions of IFI that it had absorbed, led to a redefinition, in 2015, of the role of BANCOLDEX as a bank for entrepreneurial growth –supporting rapidly growing firms, including Colombian firms investing abroad. In turn, due to the restructuring of the energy sector in the 1990s, which included a large-scale privatization of state-owned enterprises in this sector, there was a decision to reduce FEN’s capital. The major reform in this case was, however, its transformation into the Financiera de Desarrollo Nacional (FDN) in 2011, with the broader objective of financing infrastructure in partnership with the private sector. Interestingly, a large part of the capital of the new institution has come from the privatization of the major remaining electricity generator in which the central government had partial ownership, ISAGEN.

Table 1
Colombia’s System of Development Banks

Entity	Predecessor funds (managed by Banrep)	Sector	Date of creation
Instituto de Fomento Industrial IFI		Industrial development	1940 - 2002
Financiera Energética Nacional/Financiera de Desarrollo Nacional FDN	Electric Development Fund	Infrastructure	1982, 2011
Financiera de Desarrollo Territorial FINDETER	Urban Development Fund	Urban and regional infrastructure	1989
Fondo para el Financiamiento del Sector Agropecuario FINAGRO	Agricultural Development Fund	Agriculture	1990
Banco de Comercio Exterior BANCOLDEX	Export Promotion Fund	Non-traditional Exports/ Business development	1991



Table 1 briefly summarizes the history of the five, now four national development banks. Three of these institutions essentially operate as second-tier institutions that facilitate the flow of funds to banks through their rediscount facilities. FDN does first-tier lending and BANCOLDEX, as part of its recent transformation process, has started to do so again (using the old IFI facilities) and is planning to continue expanding its first-tier operations to co-finance strategic projects that require larger amounts of long-term financing. All these institutions can also undertake equity investments, but have done so only sparingly. The major exception are special investment funds of sectorial interest: BANCOLDEX, FINDETER and FDN have invested in different funds with their own equity, as partners of other domestic or foreign investors, while FINAGRO administers capital funds with the resources of the national government, but it is planning to change its strategy to invest in funds instead (Table 2). FDN also offers guarantees and credit enhancement facilities, while FINDETER and BANCOLDEX are planning to do so.

Table 2

Investments in Private Equity and Capital Funds

BANK	FUND	SECTOR	AMOUNT INVESTED (COL\$ million)
BANCOLDEX	Aureos	Small and medium-sized businesses in Latin-America	10,563,450
	Escala	Companies that have a proven and successful business model	10,378,678
	Progresal Capital	Colombian firms that have developed innovative products or services	3,146,213
	Fondo de Infraestructura Colombia Ashmore - FCP	Infrastructure investments	29,219,213
	Brilla Colombia	Tourism sector	1,771,068
	Amerigo Ventures Colombia	Digital economy	845,099
	Velum Early Stage Fund	Companies with high technological and innovative value associated with information management	3,685,298
	MGM Sustainable	Energy efficiency and renewable energy sectors in Colombia, Central America, and the Caribbean	USD 61
FINDETER	Fondo de Infraestructura Colombia Ashmore - FCP	Infrastructure investments	49,802,360
FDN*	FCP G Credicorp Capital SURA AM	Motorway projects and unsolicited proposals	50,000
	Fondo de deuda senior para infraestructura en Colombia CAF-Ashmore	Motorway projects and unsolicited proposals	50,000
FINAGRO**	Fondo de Inversión Forestal Colombia	Forestry projects	USD 6.3
	Fondo de Inversiones de Capital de Riesgo	Almidones de Sucre	

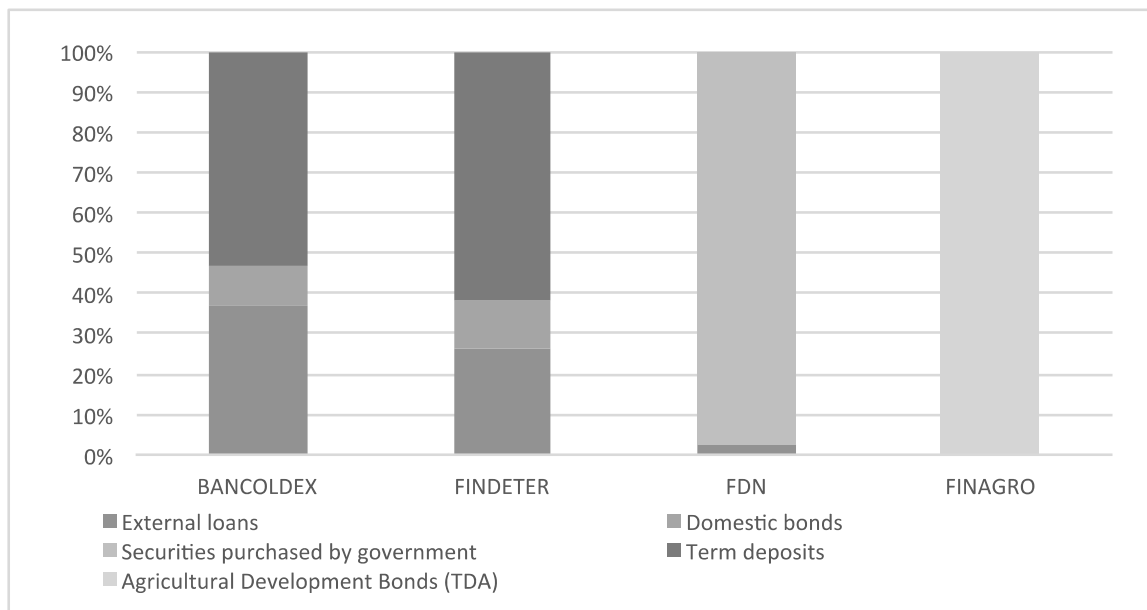
*Commitments.

**These funds are administered by FINAGRO.

Sources: BANCOLEX, FINDETER, FDN and FINAGRO

Except for FINAGRO, which benefits from the only remaining mechanism of directed credit, the others must fund their operations in the domestic or external markets. BANCOLEX and FINDETER mix domestic term deposits and bond issues with loans from MDBs and international banks. FDN is essentially financed from equity investments from the national government or the government’s purchase of securities issued by this institution (Figure 1). They also provide other services, including advising, project structuring, technical assistance and training, and portfolio administration. All of them are subject to the oversight of the Financial Superintendency (Superintendencia Financiera de Colombia).

Figure 1
Source of funding
Percentage



Source: Superintendencia Financiera de Colombia



FINDETER and BANCOLDEX are controlled by the national government and state institutions have a large majority ownership (99.7% in both cases). FINAGRO and FDN have a more complex shareholding structure. In the case of FINAGRO, 78% of the capital is owned by the national government and Banco Agrario, and the remaining from two private banks (Davivienda and BBVA, which bought the two public sector agricultural banks that were privatized –Banco Cafetero and Ganadero, respectively). Aside from a large capital contribution from the national government, which controls 67% of FDN’s capital, the government has actively sought to attract strategic investors to this bank, which now include a 17% share by the International Financial Corporation (IFC), and 8% by both the Development Bank of Latin America (CAF) and Sumitomo Mitsui (SMBC).

All banks are linked to one ministry, their majoritarian shareholder, aligning them with National Government policies. BANCOLDEX and FINAGRO are each connected to the ministry in charge of policy design and coordination for their sectors, which are the Ministry of Commerce, Industry and Tourism and the Ministry of Agriculture, respectively; while FINDETER and FDN are linked to the Ministry of Finance and Public Credit.

Despite this common feature, the shareholding structure has obvious implications for the governance of the institutions: whereas the government names the presidents of FINAGRO, BANCOLDEX and FINDETER, and the relevant Minister heads the boards of these institutions while board members are designated by law or appointment by the President of Colombia, in FDN, the strategic investors chair the board and have veto power over crucial decisions. There is still an ongoing discussion on whether the boards of other development banks should cease to be chaired by Ministers to meet OECD standards. Regardless of the involvement of public capital in their

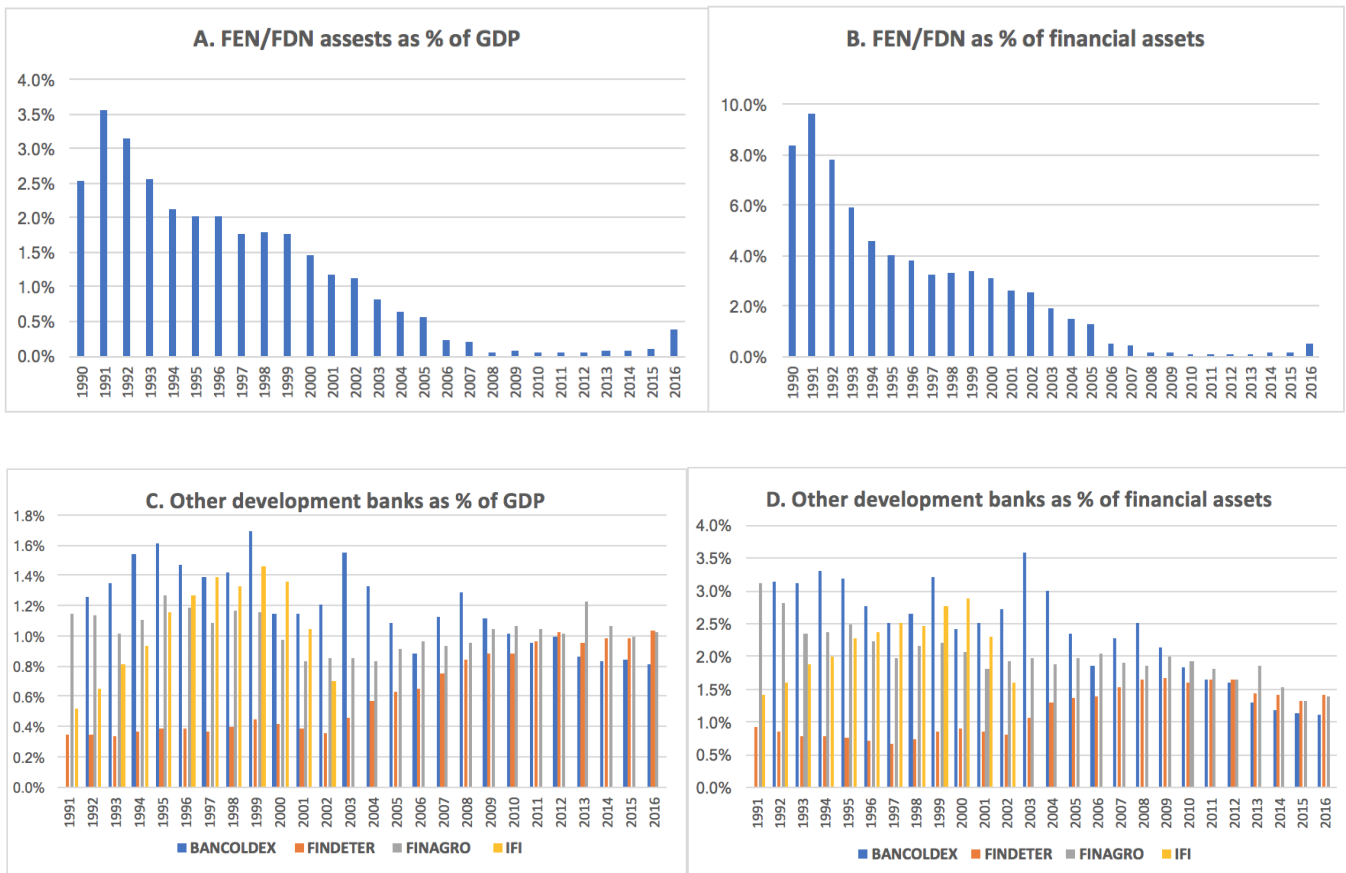
equity, all banks can hire their employees (with minor exceptions) under the private law regime, allowing them to find high-level executives and build a qualified technical team, competitive with the market.

In terms of their weight in the Colombian economy and financial sector, the evolution of the four institutions has been very uneven. FEN was by far the largest bank in the early 1990s, at the time of the major financial liberalization, with its assets peaking at 3.5% of GDP and about 10% of financial institutions' assets in 1991 (Figures 2.A and 2.B).¹⁰ Those shares came down dramatically in the 1990s and 2000s and were very small by the late 2000s. This is also true of FDN today, but it is growing fast and will again be an important institution in the future (see section II). BANCOLDEX, (together with IFI until 2002), has also shrunk relative to the economy from close to 3% of GDP in the early 1990s to a third of that level in recent years (Figure 2.C). In contrast, FINAGRO lending has remained around 1% of GDP and FINDETER has expanded in relative terms since the turn of the century: it now represents about 1% of GDP, about three times

¹⁰ From its creation until 2000, FEN lent around \$8.9 billion, funded by domestic and external bond issues and financing from MDBs and international banks. It was the first Colombian institution to get an international credit rating, after the national government.

its weight in the economy in the early 1990s. As a share of financial institutions' assets, all the banks, with the exception of FINDETER, have shrunk (Figure 2.D).

Figure 2
Assets of Development Banks as % of GDP and of Assets of the Domestic Financial System



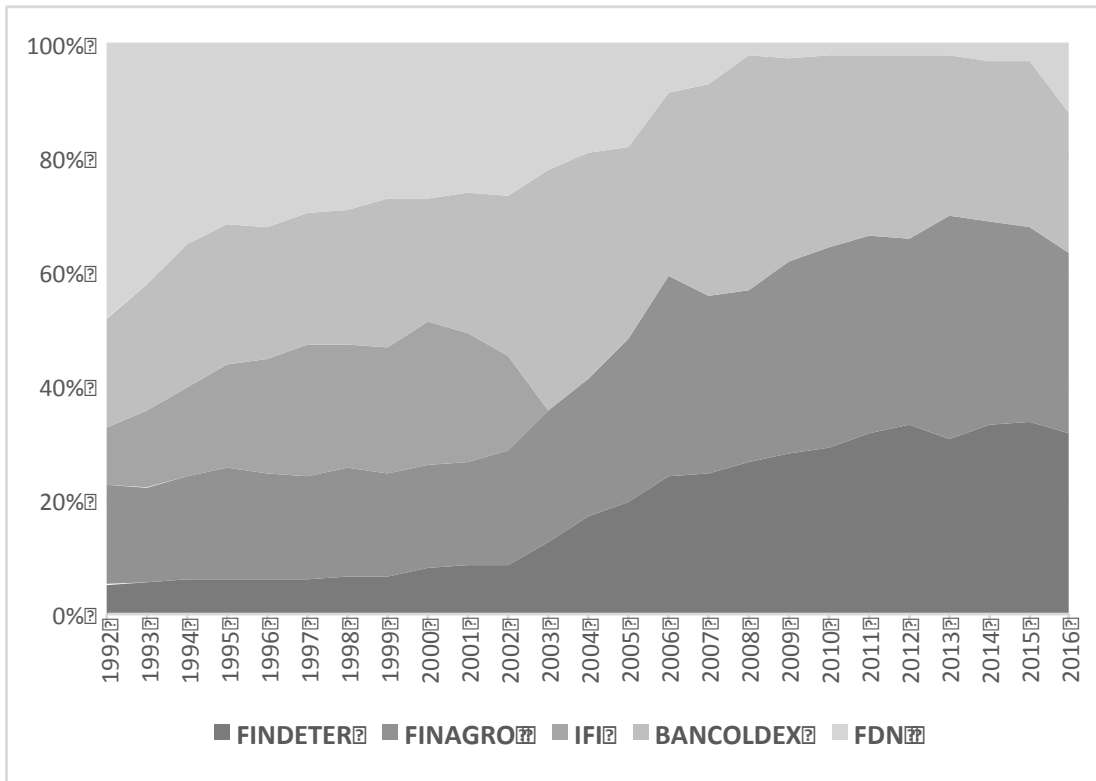
Source: Superintendencia Financiera de Colombia.

The net result is that the share of development banks as a percent of GDP has declined relative to the economy and, furthermore, they have lagged behind the dynamic growth of the domestic financial sector after liberalization. This is true even if we exclude FEN. Overall, the share of development banks, excluding FEN, has been around 3% of GDP in recent years vs. a peak of 4.4-4.8% of GDP in the second half of the 1990s. As a proportion of financial institutions' assets, the share of the banks, again excluding FEN, has declined even more: from close to 10% in the early 1990s to less than half that level in recent years. The dynamic restructuring of several development banks in Columbia reflected the recent recognition of the central role played by these institutions in public policy, and their declining share in the economy represents, therefore, a suboptimal performance.

Over this period, development banks have assumed a moderate counter-cyclical role by slightly scaling up their lending activities during times of crisis, when private banks were finding it hard to expand their loan portfolio. Indeed, all five banks (including IFI at the time) moderately increased their share of financial institutions' assets in the aftermath of the 1998 Colombian financial crisis, while all, except for BANCOLDEX, did the same after the 2008 North Atlantic financial crisis.

The structure of the system has also changed dramatically. FDN is the smallest institution today, whereas FEN was by far the largest in the early 1990s. Jointly, BANCOLDEX-IFI became the largest institution by the mid-1990s, peaking at close to half of all development bank assets around the turn of the century, but it then also fell in relative terms, while FINAGRO and, particularly, FINDETER expanded their shares in the system (Figure 3).

Figure 3
Share of Development Banks in the System



Source: Superintendencia Financiera de Colombia.

2. Infrastructure Financing

1. The national infrastructure program

The infrastructure lag of Colombia is unquestionable. According to the World Economic Forum's global competitiveness indicator, Colombia ranked 113th among 138 countries in 2016, based on the quality of its overall infrastructure, and 120th in terms of the quality of its roads. Furthermore, according to government data, the quality of infrastructure has deteriorated during the first decade of the current century. The proportion of paved national road infrastructure in good condition managed by Instituto Nacional de Vías fell from 71% in 2003 to 48% in 2010 (Yepes *et al.*, 2013). This raises the transportation and logistics costs for all activities, affecting both domestic market integration and exports – a substantial problem given the rugged geography of Colombia.¹¹

As a result, the government has placed this issue at the center of its policy agenda since 2010 (DNP, 2010). One of its major components is the attraction of private investment into infrastructure, notably roads, through Public-Private Partnerships (PPP), to leverage the resources and administrative capacity of the private sector. This is also necessary to overcome fiscal constraints, which have become more severe with the fall of oil prices in recent years.

¹¹ According to World Bank estimates for 2016, Colombia had a Logistics Performance Index of 2.66 (out of 5 maximum), and it scored 2.43 for infrastructure (World Bank, 2017). Internal transportation costs for a container traveling from the main city to the main port is US\$1535 (2014 prices) vs. \$280 for Peru, \$450 for Chile and \$900 for Mexico. Given geographical conditions, this last comparison is probably the most relevant.

For the fourth generation of highway PPPs (4G) now in place, the government redesigned the legal and institutional framework and strengthened the public institutions in charge, in order to overcome the problems experienced during the previous three generations of that program. These included construction delays relative to schedules and multiple demands that led to several disputes being brought to arbitration tribunals. According to an OECD study, which compares the renegotiation of concession contracts of Colombia with those of Chile and Peru (Bitran *et al.*, 2013), the 25 Colombian contracts done under the first three generations of PPPs were renegotiated approximately 17 times per contract. The study concluded that the major problems were bids without adequate studies and designs, deficient contractual processes, and opportunistic behavior on the part of the private contractors, such as submitting artificially low bids on the expectation that contracts would be renegotiated. The fiscal costs of renegotiations were outrageous: an average 280% increase in contract costs vs. around 15% in Chile and Peru. A third of the additional costs were due to the inclusion of new stretches of roads in the renegotiated contracts (about 50 km. on average). There is no doubt that, despite close cooperation with World Bank experts, the guarantees granted in the contracts were excessive.

Institutional restructuring is an essential element of the new strategy. It has included: (i) the creation in 2011 of a Vice-Ministry of Infrastructure in the Ministry of Transportation, in charge of the sectorial coordination for planning, policy formulation, strategies and studies related to multi-modal infrastructure; (ii) the transformation of the Instituto Nacional de Concesiones into the Agencia Nacional de Infraestructura (ANI), an agency with great autonomy and technical resources to structure and administer the concessions; (iii) the already mentioned transformation of FEN into FDN in 2011; (iv) the development of a new legal framework, through Law 1508 of 2012, which designed a new institutional framework for PPPs, which redistributed the risks

between the private sector and the government in these partnerships. The new framework prohibits advanced public sector payments, imposes limitations on additions to the contracts and their extension, and ties government payments to the level of service already achieved.¹²

The 4G program includes 33 PPP projects to build approximately 5,600 km. of highways for a total cost of Col\$55 trillion pesos (about US\$19 billion at 2017 exchange rates). There could also be additional projects, as the program allows for unsolicited proposals by private parties. ANI had awarded 31 projects at the end of 2016, but financial closure had been achieved for only eight of them costing a total of Col\$12.6 trillion. As we will see below, a major challenge is the size of debt requirements for these projects relative to the size of the Colombian financial sector and of individual financial institutions. The mobilization of resources through different modalities of finance –not only *corporate finance*, the basic instrument used during the past three generations of PPPs, but also *project finance*— is therefore one of the major challenges that the program faces.

2. Market failures

Major market failures in transport infrastructure financing lead to the inadequate supply of long-term lending with adequate risk profiles. In the case of domestic commercial banks, the problems are both the size of the sector and the lack of experience in project financing. The 24 projects of the first three generations of PPPs (1993-2013) were largely financed by public sector advances based on the progress of the investments, with no attention paid to the level of available services. Domestic banks provided corporate financing to the firms in charge of concessions, with 10- to 12-year maturities, which complemented public sector advances. If domestic commercial

¹² An additional legal instrument is Law 1682 of 2013, which among other things speeds up the purchase of land required by infrastructure projects, which caused major delays in the past.

banks were to finance the whole 4G program, which demands Col\$45 trillion, 22% of their current loan portfolio would be required (see Table 3). This would significantly increase the concentration of risks in infrastructure financing, as it would more than triple current lending in this area (which reached Col\$14.3 trillion in December 2016). Furthermore, individually, these institutions can only contribute 25% of their net worth to a specific project, according to prudential standards that financial institutions must meet. This implies that only the largest domestic financial institutions can participate by themselves in individual 4G projects; indeed, given their net worth, smaller institutions not detailed in the table could finance at most Col\$100 billion per initiative, which represents between 5 and 20% of the needs of individual projects. Since banks have to add up all lending to specific borrowers to estimate the 25% of their net worth, even the largest banks have limited capacity if they primarily use corporate finance and the same firms are involved in several PPPs. Therefore, only the largest domestic financial institutions can participate in the 4G program.

BANKS	ASSETS	LOANS	COMMERCIAL LOANS	EQUITY	25% of NET WORTH
BANCOLOMBIA	137,880,703	99,591,827	73,121,746	18,433,048	4,608,262
BANCO DE BOGOTA	80,149,713	51,487,757	38,957,651	14,982,759	3,745,690
DAVIVIENDA	72,706,965	56,650,646	28,718,565	9,076,663	2,269,166
BBVA	51,660,690	39,618,528	16,021,097	5,394,457	1,348,614
OCCIDENTE	32,837,103	26,280,751	18,551,253	3,783,943	945,986
BANCO CORPBANCA	30,784,905	21,428,365	14,113,132	3,297,553	824,388
BANAGRARIO	23,860,857	13,146,873	6,868,836	1,752,027	438,007
RED MULTIBANCA COLPATRIA	23,694,300	19,872,450	8,922,021	2,474,174	618,544
BANCO POPULAR	20,595,634	16,351,840	6,984,543	2,053,373	513,343
GNB SUDAMERIS	19,866,911	7,519,989	4,178,340	1,833,276	458,319
OTHER BANKS	54,156,790	42,475,222	11,104,484	7,197,705	1,799,426
TOTAL	548,194,571	394,424,247	227,541,668	70,278,976	

Source: Superintendencia Financiera de Colombia.

For their part, major domestic institutional investors and pension funds have concentrated their portfolio in low-risk instruments with fixed yields, high level of liquidity and high ratings. Therefore, they have very limited appetite for infrastructure bonds, even highly rated. Most of these institutions also lack the risk assessment capacity to invest in these instruments. In the case of pension funds, the Financial Superintendence establishes minimum yield requirements, which are largely based on the effective yields of the portfolios of different funds. There is, therefore, no incentive to buy infrastructure bonds if other pension funds do not invest in these instruments. Furthermore, the concentration of the pension fund industry is extremely high, with the two largest holding 80% of the funds in 2016. Furthermore, the owners of the largest funds are also proprietors of major financial institutions, and in some cases investors in the firms undertaking the PPPs, a fact that generates additional risks and potential conflicts of interest.

International banks and institutional investors also face important problems. Due to international prudential standards (Basel II and III), there is a clear disincentive for banks to lend with the 18-20 year maturities that these projects require. Given this constraint, a clear framework must be put in place to refinance the loans with the 7-10 year maturities that they normally offer, to eliminate the maturity mismatch between the project requirements and the loans. International financing is also limited by currency mismatches associated with the fact that the revenues from these projects are mainly in local currency. In this case, the problem is the short maturities of the available hedging instruments, as well as the fact that only a portion of future fiscal commitments (*vigencias futuras*) is denominated in dollars.

3. The role of FDN

These constraints set the stage for the actions of the new development bank given the responsibility to support infrastructure financing. FDN has been involved in a rapid, and very interesting, process of defining its business model to play a key role in helping overcome market failures. It has defined its mandate around three clear areas for action: (i) directly providing part of the financing required by PPP infrastructure projects; (ii) creating incentives for other market agents to participate in the financing of these projects by mitigating some of the market failures that limit the availability of long-term financing with adequate risk profiles; and (iii) supporting the creation of an infrastructure “project bank” for all types of initiatives (including local projects and social infrastructure), in collaboration with ANI, FINDETER and FONADE (Fondo Financiero de Proyectos de Desarrollo).¹³ The major objective is to guarantee that projects are well structured to have access to market financing. As indicated, the major constraints are the limited

¹³ FONADE is an institution that supports pre-investment financing. It is part of the national planning institutions.

size and concentration of the domestic financial sector and the limited development of the domestic capital market, as well as the high and sometimes insufficiently known risks that these projects face and the limited capacity and experience in this type of financing of all domestic, and even international, agents involved.

FDN has been developing an innovative set of financial instruments, which include the following:

- Direct long-term financing facilities: as a development bank that can undertake first-tier operations, FDN has offered senior and subordinated loans with longer maturities than those provided by other domestic institutions, but otherwise under market conditions. In practice, other financial institutions then match FDN terms. FDN has also been offering guarantees to firms in charge of the concessions, as well as credit enhancement facilities to guarantee sponsors' equity contributions and to improve the financial structure of different projects, such as covering some risks and stabilizing cash flows through the development of the projects, to allow them to access international financing. By December 2016, FDN had participated in five of the eight projects that had already achieved financial closure with commitments and disbursements totaling about Col\$780 billion in liquidity lines, Col\$300 billion in senior debt, and Col\$37 billion in guarantees of sponsors' equity contributions.
- Support for the creation of debt funds for infrastructure financing, with FDN's participation providing a strong incentive for the involvement of other institutional investors. The board has approved contributions for up to Col\$200 billion, of which half has already been made effective. These investments are meant to generate confidence in these new instruments,

and are complemented with active advice to support the creation of new funds. Two funds have already been created with FDN contributions,¹⁴ which have provided partial financing for three projects, and two additional funds are on the way.

- Product standardization to facilitate access to the capital market: FDN has also worked on the design, standardization and promotion of financial instruments that facilitate the participation of institutional investors in infrastructure financing. The instruments are designed for two specific moments in the project history: in the initial stages, participating in long-term financing of the project, and during the operation of the project facilitating the refinancing and improvement of credit conditions. Notably, two of the first 4G projects successfully issued project bonds with support from FDN, and the bank designed a “prototype” instrument for the second phase of the project, which offers partial liquidity guarantees. The project bonds got a BBB- international and a AA+ rating from Fitch, and the prototype instrument a AA+ rating. Additionally, FDN has bought 4G project bonds in the primary market for Col\$18 billion.

Aside from the design of new financial instruments, FDN has also promoted regulatory changes that facilitate the participation of institutional investors in debt and equity funds for infrastructure investment and enable lending by commercial banks and FDN by increasing the individual loan limits to 25 and 40% of net worth, respectively. It has also contributed to increase the technical capacity and standards of private and public institutions involved through different training courses, jointly undertaken with universities and industrial associations, the dissemination

¹⁴ They are Fondo 4G Credicorp Capital/Sura Asset Mangement and CAF/Ashmore Group (the first are domestic investors, the second external ones, including a MDB). See Table 2 above.



of guides on good international practices on project finance, and broad-based socialization of the 4G program.

In addition, FDN has played an important advisory role, providing technical assistance, structuring projects, and conducting research on good management practices in infrastructure to support other institutions in the public sector, and also to provide infrastructure bank projects with adequate pre-investment standards, thus helping increase the availability of bankable projects. Together with IFC, it created in 2013 a pre-investment fund to help design projects in sectors where the private sector has been traditionally absent. It has also participated in a myriad of plan and project designs such as the 2015-2035 Master Plan for Multimodal Transportation, the financial structuring for the first metro line for Bogotá and the light metro line in the 80th street in Medellín, the deepening and expansion of the access channel to Cartagena bay, and in the structuring of pilot projects for educational infrastructure.

FDN had assets of Col\$725 billion in December 2015, made up essentially of liquid investments and a few remaining energy loans from its predecessor institution, FEN. Growth was very fast in 2016, with assets increasing to Col\$3.3 trillion by December, thanks to the transfer of the funds obtained by the government in the privatization of ISAGEN. Liabilities also increased rapidly, from Col\$21 billion to Col\$2.6 trillion, during the same period. A basic reason for this is that the funds from this privatization were transferred in the form of a purchase of FDN subordinated bonds by the national government. The net worth of the institution has thus remained relatively constant at just over Col\$700 billion.

4. Local infrastructure and the role of FINDETER

As indicated in the first section of this paper, FINDETER was created in 1989 to support local infrastructure investments, and has been the fastest growing development bank in Colombia. Its assets in December 2016 were Col\$8.9 trillion, equivalent to about 1% of GDP, and its net worth was close to Col\$1trillion. Its major assets are rediscount lending, which represented about 87% of the total. The maturity of 90% of these credits is over five years and for 45% of them, it is over eight years. As for its major liabilities, they were term deposits, borrowing from domestic and international banks, including MDBs, and some bonds in circulation. A bond issuance was carried out during 2015 in the international market for an amount equivalent to US\$500 million. The 10-year note was rated BBB by Fitch Ratings and Standard and Poor's.

FINDETER's main responsibility is to correct the market failures that lead to very limited availability of long-term financing for local infrastructure, but also to help strengthen the technical capacity of departments and municipalities to design infrastructure plans and bankable projects. It operates essentially as a second-tier bank that rediscounts lending by financial institutions, mainly commercial banks. Its facilities finance new investments but also working capital and debt restructuring for local infrastructure projects under favorable maturity, grace period and interest rates. In contrast to FDN's financial innovations, FINDETER's rediscount facilities follow a very traditional model and, in some cases, include subsidies.

The sectors that benefitted the most from its facilities in 2016 were health (40%), energy development (22%), transportation (20%), urban development and housing (8%) and education (6%). Lending comes in three modalities: ordinary rediscounts, those with subsidized interest rates, and special credit lines. The first are rediscounts at market conditions. The second are provided at

subsidized interest rates and longer maturities, with funds provided by the Ministry of Finance or another national or local public sector institution to cover the differences in interest rates. Today, they benefit specific sectors: water and sanitation, health infrastructure and environmental projects. The special credit lines also benefit specific sectors: renewable energy, sustainable cities, water and sanitation, and education.

FINDETER lending is complemented by its supply of non-financial services, as it supports the regional and local governments through the whole infrastructure project cycle. This includes, in particular, the development of three programs – “Sustainable and Competitive Cities”, “Emblematic Cities” and “Diamante Caribe and Santanderes”¹⁵— to help cities in the planning, identification and prioritization of strategic projects, with the support of other organizations and, in particular, of the Inter-American Development Bank. Additionally, FINDETER supports local governments in the structuring of projects, to guarantee that they are viable from a technical, legal and financial point of view. For this purpose, it is supported by a pre-investment fund created in 2012, which provides both non-refundable financing and support, subject to a payment by the local institution undertaking the project. In terms of technical assistance, it provides a diverse array of services: financial advisory to public and private-sector entities, training on fiscal issues to mayors and governors, revision of local PPP projects, and formulation and revision of projects that the

¹⁵ “Sustainable and Competitive Cities” is a platform led by the IDB and FINDETER to promote strategic projects, focused on the transformation of middle-sized cities through orderly planning. Seventeen cities have joined this program and Col\$4.1 trillion in loans have been mobilized for the development of these territories. “Emblematic cities” is a program designed to close inequality gaps and support the planning and development processes of cities that are strategically important for the country, located in areas of vulnerability. Thirty-one municipalities are part of this program, which has already disbursed Col\$750 billion. “Diamante Caribe and Santanderes” is a program implemented by FINDETER in partnership with Microsoft, Fundación Metrópoli and Colciencias to identify and manage physical or digital projects to consolidate a sustainable mega-region (the Colombian Caribbean and the Departments of Santander and Norte de Santander). This program has already identified 65 key projects for this region.

local governments finance with their share of the oil royalty payments.¹⁶ It also supports the national government in its strategic projects for the regions, including in the formulation, implementation, supervision and evaluation of strategic projects such as the “100,000 Free Houses” and “Water for Prosperity” – the major national programs for social housing and water and sanitation, respectively.

3. The Role of Development Banks in Financial Inclusion

1. The level of financial inclusion (and exclusion) in Colombia

According to the report on financial inclusion, now regularly prepared in Colombia by the Financial Superintendence and Banca de las Oportunidades –the major institution in charge of promoting financial inclusion—, 74.3% of the adult population (24.9 million persons) had access to at least one financial product in 2015, a proportion that has systematically increased over the past five years (by about ten percentage points). In terms of active banking products, the proportion was 64.5% (21.1 million adults) (Superintendencia Financiera and Banca de las Oportunidades, 2015a). Despite the fact that these levels of access are high relative to other Latin American countries, the actual meaning of this high level of financial inclusion is questionable, particularly in terms of effective use of banking products.

In particular, although Colombia surpasses the standards set by the international Alliance for Financial Inclusion of 250 access points per 100,000 adults, it is below the standards in relation to savings accounts and access to loans (Superintendencia Financiera and Banca de las

¹⁶ According to legal provisions, oil royalties in Colombia are distributed between the national government and the departments.

Oportunidades, 2015b). The share of people with access to savings accounts in 2015 was 50%, with large disparities between major cities (65%) and low-density rural areas (9%). In terms of lending facilities, access to credit cards stood at 25%, but it was very low for microcredits and housing loans –9% and 2%, respectively—, again with large urban-rural disparities. In fact, the financial system is mainly used as a system for payments (transactions), rather than for savings or borrowing; this is in part due to the fact that government subsidies (conditional cash transfers, in particular) are paid through the financial system, by depositing them in the savings accounts of the beneficiaries (see in this regard Ocampo, 2015, pp. 181-3).

In terms of access of firms to banking products, there has also been a rapid growth over the past five years –10% a year, according to the 2015 report on financial inclusion. However, there are large differences according to firm size. According to the World Bank’s Enterprise Survey, access to bank accounts for firms is high in Colombia, but whereas 92% of large firms had access to bank loans in 2010, only 64% of medium-sized and 50% of small-sized firms did (World Bank and IFC, 2010). According to a recent study, the major determinants of access to credit for the latter two groups are the size and the technological capacity of the firms (Botello, 2015).

In 2006, the government launched a major program of financial inclusion, Banca de las Oportunidades, to coordinate the actions of the public and private sectors to enhance access to finance. This initiative included the formulation of new regulatory norms to facilitate and generate incentives for the development of special products to serve the needs of low-income households and small firms, including special channels and institutions to provide them (Comisión Intersectorial de Inclusión Financiera, 2016). This includes special mechanisms to support the

geographical spread of the financial sector, particularly the broader use of “bank correspondents” in rural areas and poor neighborhoods in urban areas (see below).

In 2015, the government reformulated its strategy of financial inclusion, with four specific areas of action: (i) promotion of the effective use of financial services; (ii) incentives to increase access and use of financial services in rural areas; (iii) new frameworks to finance small and medium-sized enterprises; and (iv) increased financial education/literacy. Financial inclusion is seen as a major instrument of poverty reduction, increased standards of living and formalization. It is consistent with research that shows that Colombian firms that have access to lending tend to grow and invest more (Zuleta, 2016).

2. The role of BANCOLDEX

BANCOLDEX inherited from IFI the responsibility to facilitate access to credit for small and medium-sized firms (PYMES, according to the Spanish acronym), to which a special focus on microenterprises has been added in recent years.¹⁷ This includes administering Banca de las Oportunidades as well as a series of special credit facilities: microcredits, micro-insurance facilities and credits for entrepreneurial formalization. As indicated earlier, BANCOLDEX has recently redefined its role as a bank for entrepreneurial growth. So, aside from the special credit lines mentioned, young and dynamic small and medium-sized firms can access the special credit lines and guarantees to promote rapid growth, which encourages innovation, redefinition of markets for the expansion of the firms and production sector development.

¹⁷ Microenterprises are defined as firms with less than 10 workers and assets of less than 500 minimum wages (equivalent today to Col\$369 million or somewhat above US\$120,000 dollars at current exchange rates). In turn, PYMES are defined as those with assets in the range of 500 to 30.000 minimum wages, i.e., currently up to around US\$7.5 million.

In 2016 BANCOLDEX disbursed almost Col\$2 trillion for small and medium-sized enterprises through financial institutions, NGOs and credit unions, which represented 51.4% of its overall lending. However, the share of microenterprises and PYMES in the total lending portfolio of BANCOLDEX has been falling in recent years (Zuleta, 2016). Access to the rediscount facilities is complemented by the guarantees provided by the Fondo Nacional de Garantías of the Ministry of Trade, Industry and Tourism, or by the regional guarantee funds it supports (nine currently), which provides this service for both working capital and longer-term investment loans, with a smaller ceiling in the first case.

BANCOLDEX is also in the process of designing a new unit of financial inclusion specialized in microfinance, which will provide special credit facilities for institutions that have no access to existing rediscount facilities, as they are not supervised by the Financial Superintendence. This includes not only non-banking institutions specialized in microcredit but also Non-Governmental Organizations (NGOs) and smaller credit unions (the largest of them are subject to traditional prudential supervision). Credit facilities will be complemented with technical assistance to these institutions.

Banca de las Oportunidades was created in 2006 to promote access to credit and other financial services for small firms and poor households. It was also in charge of guaranteeing the spread of financial services to all municipalities. It does not directly provide financial services but it channels subsidies and other services to promote financial inclusion. They include: (i) subsidies to strategic activities or products that can enhance financial inclusion and can be standardized for broad market use, but that are not profitable in the short term; (ii) co-financing of strategic pilot projects that cannot be standardized, as they have to be custom-designed for each institution; and

(iii) technical support to microfinance institutions, credit unions and NGOs, as well as the promotion of research that can increase knowledge about the country's financial inclusion needs.

Among the achievements of Banca de las Oportunidades, we must underscore the design and promotion of the program of bank correspondents in municipalities or poor urban neighborhoods where financial institutions are absent. In 2016, there were 94,260 correspondents in stores, drugstores, post offices, telecommunication centers and credit unions that provided financial services from one or more banks, thus guaranteeing access to those services in all Colombian municipalities. Since the launch of this program in June 2007 to the end of 2016, there were 702 million transactions carried out through these correspondents totaling Col\$178 trillion. This program also includes subsidies to promote the opening of new offices in targeted localities.

Another major achievement of Banca de las Oportunidades is the program of financial education provided physically, virtually and through mass communication media. This program also serves to overcome the tendency of small firms to claim that they do not need credit, which may be associated with the lack of financial education. The broader provision of financial services and associated education is also essential to break informal channels of credit and the associated usury.

3. Promoting financial inclusion in rural areas

Financial exclusion is more severe in rural areas (Superintendencia Financiera and Banca de las Oportunidades, 2015b). This problem is enhanced by Colombia's rough geography, as well as the large areas characterized by low population density, notably in the Pacific coast, and the Orinoco and Amazon basins. A historical reason for the creation of Caja Agraria but also Banco

Cafetero, as well as the decision to keep Banco Agrario as the only state commercial bank, was precisely to provide financial services in rural municipalities. The development of the new model of bank correspondents has lessened the need for such an institution, but the largest network of rural offices of any bank remains that of Banco Agrario.

The provision of financial services in rural areas is indeed quite limited. According to the 2014 agricultural census, only 27% of producers have access to credit (Comisión Intersectorial de Inclusión Financiera, 2016). The problem is particularly severe for smallholders. The 2011 household survey on living conditions indicates that the major reason for the limited access to credit is the lack of guarantees. This is associated, in turn, to the high level of informality of land property. To this, we should add limited knowledge and the high transaction costs of formal credit. This leads to the use of costly informal credit channels. Limited financial inclusion has been a constraint for the sector's competitiveness and for the supply of foodstuffs, which, in Colombia, depends largely on smallholders (Misión para la Transformación del Campo, 2016, Volume 3, chapter 18; Estrada *et al.*, 2011). It has not only affected the standards of living of the rural poor, but also their capacity to mitigate adverse shocks, which also cause a deterioration of their living standards (Marulanda *et al.*, 2010).

The 1990 reform of the agricultural credit system included the creation of FINAGRO and the agricultural credit commission (CNCA), for which FINAGRO serves as the technical secretariat. As indicated in part I, this is the only case in which directed credit was maintained after the domestic financial liberalization that took place at the time. The credit system includes three basic resources for the agricultural sector¹⁸: (i) the rediscount facilities that FINAGRO provides,

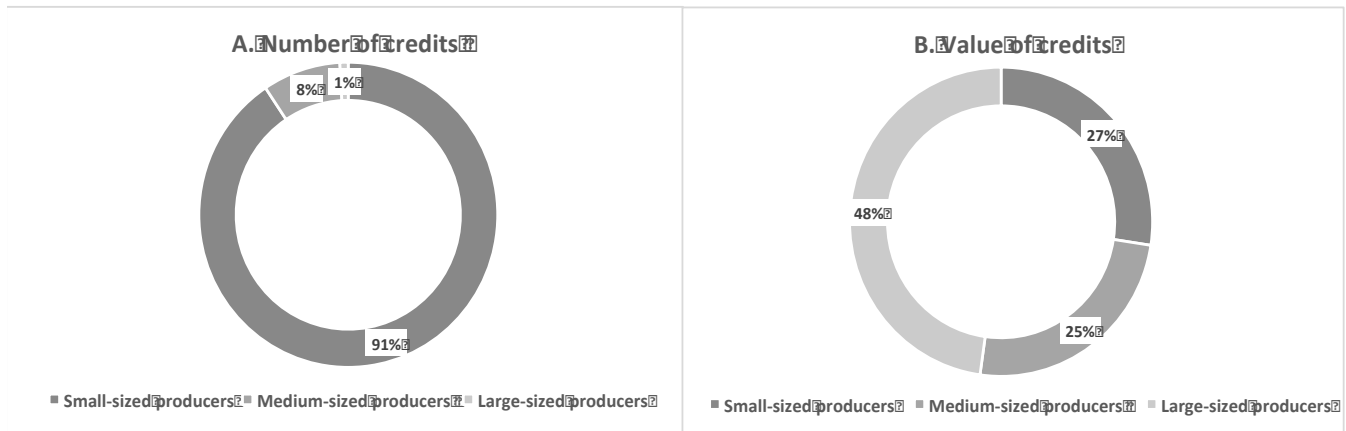
¹⁸ For a detailed analysis of the system, see Misión para la Transformación del Campo (2016, Volume 3, chapter 18).

financed by the Títulos de Desarrollo Agropecuario (TDA) that banks must buy when they fail to reach the 15% of credit allocated to the sector; (ii) the substitution portfolio (cartera sustitutiva) that is made up of the credits directly allocated to the sector, and therefore reduces the amount of TDAs that banks must purchase; CNCA regulations have generated an incentive to provide credits to small producers through this channel¹⁹; and (iii) other credits extended by commercial banks that do not meet the requirements of agricultural credits according to CNCA. Credits to small producers through the first two channels also benefit from access to a special guarantee fund (Fondo Agropecuario de Garantias, FAG) that FINAGRO administers (see below).

In 2016, the total agricultural credit portfolio amounted to Col\$16.9 trillion, of which 44% was financed by the rediscount lines, 52% was made up of the substitution portfolio and 4% came from other bank loans. Credits to small producers represent 91% of the number of credits but absorb only 27% of their value vs. 25% and 48% for medium-sized and large-scale producers, respectively (Figure 4). An overwhelming majority of smallholder loans and associated discounts and guarantees have been provided by Banco Agrario. However, these credits do not generally reach the poorest producers.

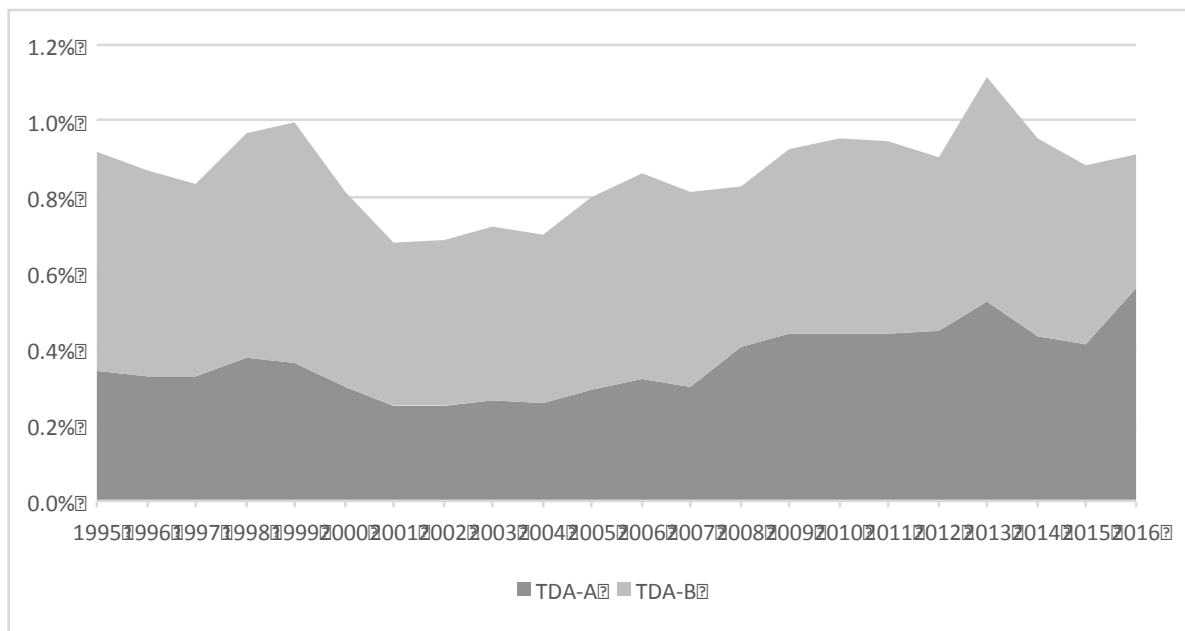
¹⁹ The portfolio that is used to estimate the reduction in the obligation to buy TDAs is a weighted one, with weights of 25% for large, 50% for medium-sized, and 150% for small producers.

Figure 4
Agricultural credit according to size of producers



As indicated, FINAGRO is financed by the subscription of TDAs by institutions that do not meet the 15% directed credit threshold. There are two types of TDAs. TDA-A, which have a yield equivalent to the market interest rate for term deposits (DTF according to the acronym used in Colombia) minus 4 percentage points (DTF-4), and are used to rediscount lending to smallholders at subsidized interest rates. They now represent 50% of the TDAs, this proportion having been raised in December 2015 from 37% previously. TDA-B can be used for any rediscount, and have a yield of DTF-2. As Figure 5 indicates, total TDAs have fluctuated between 0.7 and 1.1% of GDP. This has largely determined the total size of the rediscount facilities. Though FINAGRO can access other facilities, they would have a higher cost than the TDAs –which, as shown, pay interest rates under the domestic market rates.

Figure 5
Agricultural Development Bonds (Títulos de Desenvolvimento Agropecuario, TDA) as % of GDP



Source: FINAGRO.

Since existing smallholder credit lines do not really reach the poorest producers, there has been an attempt in recent years to develop new financial solutions for the bottom of the pyramid in the rural sector. This includes three facilities: (i) a new microcredit line; (ii) a special program for rural microenterprises (Programa de Apoyo al Desarrollo de la Microempresa Rural, PADEMÉR); and (iii) a special fund for microfinance (Fondo para las Microfinanzas Rurales, FMR).

The first of these facilities is aimed at formal financial intermediaries that have access to FINAGRO's rediscount facilities, but in this case for lending to microenterprises that have no access to formal credit, and in smaller amounts than the traditional loans for smallholders. The average loan has been Col\$1.8 million, much below the traditional loans for small producers



(Col\$8.6 million on average). However, this facility has been used on a very limited scale, reflecting the fact that traditional banking institutions are not the major providers of microcredit. There is, however, a subset of financial institutions specialized in microcredit, some of which have become banks and are now under the supervision of the Financial Superintendence: Bancamia, Mundo Mujer and WWB (Women's World Banking) Colombia. These three institutions only represent 0.8% of the assets of the banking sector but concentrate 28% of microcredits.

There is also a larger set of non-banking institutions active in the provision of microcredit, including small credit unions, NGOs and producer associations. This led to the creation of the second mechanism in 2005, PADEMÉR, a program from the Ministry of Agriculture. This instrument operates through direct loans from special facilities administered by FINAGRO that create rotating funds managed by the non-banking institutions, which then lend to the relevant microenterprises. Until 2016, PADEMÉR had provided 70,585 microcredits for Col\$131 million, mostly for working capital (84%) and benefiting women to large extent (62%) (FINAGRO, 2016). This program has therefore familiarized FINAGRO with these non-banking institutions –also a way forward for similar BANCOLDEX facilities. Interestingly, the default rates for these loans have been significantly lower than for bank loans.

The third mechanism, FMR, is a joint initiative of FINAGRO and the Inter-American Development Bank, with technical assistance from Banca de las Oportunidades. The new FMR, which started operating in 2016, based on the experience of PADEMÉR, wants to offer a more integral solution for rural inclusion that, in addition to credits aimed at non-banking institutions, also includes technical assistance for these institutions as a key pillar. FINAGRO is expected to capitalize the FMR with resources from PADEMÉR and has already provided Col\$6,500 million

for credits to 2,600 producers by 2016. Currently, FINAGRO is developing FMR's strategy to get new resources and operationalize its funding procedures.

Furthermore, FINAGRO changed the requirements for the associative loans in 2016 to promote more financial inclusion. To have access to these credit lines, associations are now required to have at least 50% of small-sized producers. Finally, as indicated, FINAGRO also administers the guarantee fund (FAG), which supports lending to smallholders, including micro-entrepreneurs. This is a similar mechanism to the Fondo Nacional de Garantías but exclusively for small agricultural producers. It has been critical to expand access to credit: in 2015, 89% of producers who had access to credit for the first time benefitted from FAG guarantees (FINAGRO, 2016).

4. Business and Entrepreneurial Growth

Structural transformation has always been at the center of the development funds and banks' priorities in Colombia. In the 1940s and 1950s, equity investments and lending by IFI were crucial to create firms to produce steel, cement and tires, among others, and in the 1960s and 1970s to support the development of the petrochemical, metal mechanic and automobile assembly sectors. This role has been reduced significantly since the first (moderate) financial reform of the second half of the 1970s. During the 1980s, equity investments by this institution focused on the support of firms and sectors that faced difficulties as a result of the domestic financial crisis the country faced at the time. For its part, the Export Promotion Fund (Fondo de Promoción de Exportaciones), the predecessor of BANCOLDEX, was created in 1967 to promote export diversification –a task that was fulfilled in a relatively successful way, like that of IFI promoting industrial diversification.

With the market reforms of the early 1990s, the focus of structural change policies shifted to enhancing competitiveness, through several committees and actions that were much less effective than past policies in terms of the structural diversification of the economy. The export promotion activities continued to be exercised by BANCOLDEX, using its rediscount facilities, and by an export promotion agency, PROEXPORT, which inherited the activities that in that regard had also been a responsibility of the central bank's Export Promotion Fund; it was transformed into PROCOLOMBIA in 2014, with the tasks of also promoting tourism and foreign direct investment. A special subsidy for agricultural investment, the Incentivo a la Capitalización Rural (ICR), was created in 1993. It is managed by FINAGRO and operates as a reduction in the principal of investment loans that the institution rediscounts (up to 40% for small producers, and up to 20% for medium-sized and large producers). The most recent mechanisms, on which we will focus in this section, are the redefinition of BANCOLDEX as a bank for entrepreneurial growth and the specific innovation program it manages, which was created in 2012, iNNpulsas Colombia.

The redefinition of BANCOLDEX's role not only responds to reduced demand for its export rediscounting facilities but also to the identification of the strong links between innovation and the growth of firms. According to the institution's analysis, the average growth of firms' revenues in Colombia is only 2% in real terms (according to tax records), a reflection of the fact that 78% of them have one-digit or negative growth. In contrast, firms that grow at two-digit rates, which represent 22% of all firms, generate more employment, more social inclusion and pay 63% of corporate taxes. A major feature of these firms is that they innovate in their respective regions and sectors.

BANCOLDEX thus defined as one of its major tasks supporting the entrepreneurial modernization of firms of all sizes and in all regions –including the expansion abroad of firms that see such strategy as part of their business growth. Its major instrument is medium and long-term rediscount facilities that help them in their growth strategy. Out of its lending portfolio of Col\$3.89 trillion at the end of 2016, Col\$1.56 trillion focused on its program of entrepreneurial modernization (BANCOLDEX, 2017). This is complemented by its platform of “dynamic ecosystems” that supports organizations that promote competitiveness and business growth in different regions through three tools: (i) structuring of projects in science, technology and innovation relevant for business growth; (ii) training to build up entrepreneurial capacities, such as the program 3E for entrepreneurs active in export activities; and (iii) information to the regions on how to improve the entrepreneurial “ecosystem”.

The institution has also been very active in promoting private equity venture funds to support business growth. It has supported them with its own equity investments as well as the promotion of good practices. As of 2016, it has leveraged around Col\$1.5 trillion in different funds active in the sectors of infrastructure, agro-industry, information technologies, reforestation and energy (BANCOLDEX, 2016). As part of this activity, it signed an agreement with the Inter-American Development Bank to develop a catalogue of private investment funds in Colombia, which includes information on investment policies and relevant contacts. It also promotes forums and other events to increase connectivity among firms and investors. It is in the process of designing a “fund of funds” to enhance its activities in this field.

The iNNpulsa program supports innovation for business growth for firms of all sizes and ages, and in all sectors and regions of Colombia. It starts from the identification of a strong

correlation between business growth and innovation (iNNpulsa, 2015). It has defined three strategic areas of action: (i) interventions to generate a culture favorable for business growth based on innovation; (ii) correction of market failures, in particular by connecting actors active in the supply and demand for innovation; and (iii) strengthening regional agents promoting innovation and entrepreneurial development.

During its four years of existence, it has supported entrepreneurial communities of interest through promotional tours, fairs/festivals, the “week of entrepreneurship” and the news agency iNN (in alliance with the Spanish agency EFE). In terms of market failures, its activities have focused on three areas: financing of firms in their early stages of development; promoting knowledge relevant for entrepreneurial growth; and access to information and business connections. Among its specific instruments, we should underscore the national network of “angel investors” (Red Nacional de Ángeles Inversionistas), which it co-finances, and different regional initiatives to promote the incubation and growth of firms, promote training in technology transfer and commercialization, and support strategies to promote rapid business growth.

According to a study by Estupiñán, F. et al (2015), the fact that iNNpulsa is housed in BANCOLDEX has been critical to give it flexibility in the execution of its program and enable it to make adjustments according to emerging demands. In 2016, INNpulsa mobilized Col\$85 billion through its co-financing instruments (BANCOLDEX, 2017). It is expected that this program will be transferred to Fiduciaria BANCOLDEX, a fiduciary trust owned by the bank, which is a specialized vehicle to administer this kind of programs.

5. Conclusions

Development banks are organized in Colombia as a system of four (initially five) specialized institutions, with sectorial priorities. This system was adopted during the major reforms that took place around 1990, which eliminated the development functions of the central bank and liberalized the domestic financial sector but, interestingly, kept a strong development banking system. Two of these institutions, FINDETER and FINAGRO have increased or kept their share in the economy, while the other two, BANCOLDEX and FDN (previously FEN) have shrunk, but also are now in a process of restructuring and growth, notably in the case of FDN. Except for the agricultural sector, which kept instruments of directed credit, the other institutions must fund themselves in the local or international markets, or count with government resources for specific programs (very large now in the case of FDN).

We have explored three areas of market failures in which these banks are very active and in most cases have significantly redefined their instruments in recent years: infrastructure development (and associated long-term lending), financial inclusion, and entrepreneurial growth. They operate mainly through rediscount facilities –except FDN, which is a first-tier institution, and BANCOLDEX, which is starting again to use first-tier facilities— but are also very active in the promotion of debt and equity funds in their areas of activities, manage investment incentives and innovation funds, administer or link with guarantee funds that support financial inclusion, and do a myriad of technical assistance activities, many of them in support of regional processes in their areas of interest.

FDN was recently restructured to support investment in infrastructure, particularly the fourth generation of highways PPPs (4G), in association with the private sector. It has developed numerous instruments to overcome the market failures that limit long-term infrastructure financing

from both local and foreign investors. It was conceived as a catalyzer of lending and investment in different infrastructure programs. It faces major challenges, particularly guaranteeing the development of a dynamic local capital market and market instruments to cover the long-term currency risks that foreign investors face.

FINDETER, the bank specialized in local infrastructure, has been the most dynamic institution in the development banking system, particularly since the turn of the century. It has been very instrumental for the implementation of a series of programs with a strong regional content in the areas of local and urban infrastructure for social services, transportation, housing, and water and sanitation.

Two institutions are active in financial inclusion. Close to half of BANCOLDEX's rediscounts are destined to micro, small and medium-sized enterprises, and this institution manages the major program to coordinate financial inclusion, Banca de las Oportunidades. A large proportion of FINAGRO rediscounts go to medium and large-sized agricultural producers, but lending to smallholders is largely done by the only remaining first-tier state commercial bank in the country, Banco Agrario, and financed by rediscounts from FINAGRO. FINAGRO has also been developing new instruments to promote microcredit through non-banking institutions, and BANCOLDEX is in the process of doing so. Financial inclusion is also supported by two guarantee funds, with FINAGRO managing the fund for agriculture.

The traditional activities of BANCOLDEX (and IFI, which it absorbed in 2002) in terms of structural change were redefined in recent years with a focus on the business growth of firms of all sizes and ages, and in all sectors and regions. It operates for this purpose through discount facilities, but it is in the process of rethinking its role as a first-tier institution (an activity which

IFI had in the past). Although BANCOLDEX does not have specific innovation policies, it manages one of the major policy instruments in this area, the program iNNpulsa.

The redefinition of the functions of these institutions looks promising, and today, there is probably the strongest support for the role of development banks since the market reforms of the early 1990s. This system of specialized banks has worked well so far as it has allowed cooperation between the relevant ministries –sectorial ministries, the Ministry of Finance and, in some cases, the National Planning Department. Therefore, the National Government should keep it as it is, setting aside any idea of merging these entities into a big national development bank, based, for example, on the experience of BNDES in Brazil or KfW in Germany. Notwithstanding, it is important that they continue operating as a system, with clear policies from the relevant ministries to guide them in the priority-setting and coordination processes. It is also crucial that the banks interact, in particular in areas where the mandates of two or more of them intersect: infrastructure development, financial inclusion and the promotion of debt and equity funds, in particular. Additionally, it is also important to keep technical staff independent, reducing the possibility of political capture, a problem that can become an important source of inefficiency in the lending activities of the banks.

Funding strategies could also be an area of mutual interaction and learning, particularly to guarantee that their lending programs are consistent with the more competitive financial sector that characterizes Colombia today; indeed, limited competitiveness has caused BANCOLDEX to shrink. There is, however, no institutional mechanism in place that guarantees coordination among development banks.

Except for FDN, which has minority strategic partners who chair the board and have control over critical decisions, the other institutions are controlled by the national government (though with minority private ownership in the case of FINAGRO). There is an ongoing discussion on whether the respective ministers should stop chairing the boards of the other banks to meet OECD standards, and BANCOLDEX is thinking of adopting a governance structure similar to that of FDN. This should not be seen as a crucial reform, and it would weaken an essential characteristic of Colombia's public sector administration and, in particular, undermine the alignment of the priorities of the banks with the plans and strategies of the national government. Also, there are no specific prudential regulations for these institutions. This is also a feature of world financial regulations, and should be corrected, as these institutions face risks that are very different to those of commercial banks.

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The future of development banks: the case of Brazil's BNDES

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1. Introduction

Infrastructure and logistics (I&L) in Brazil fall short of the demand for basic needs, are a drag on national productivity and competitiveness, and may be inappropriate to address the challenges imposed by climate change. In a country facing one of the most significant recession of its history, this paper claims that increasing investments in *sustainable I&L* may, in turn, offer a golden opportunity to raise growth and to achieve sustained, inclusive and environmentally development. It is Brazil's necessary step out of its current middle-income trap.

The challenge of boosting I&L investment seems enormous at a moment when i) national and subnational governments face severe fiscal constraints; ii) private sources of long-term funding continue to be scarce and the cost of capital too high; and iii) project development capabilities, particularly for more complex and innovative projects, are limited. Recent studies, including by this author (e.g. Gallagher and Studart, 2016), indicate that national development banks may be critical to promote projects, and leverage and crowd-in private capital to transformational investments – such as *sustainable I&L* ones. Brazil's national development bank, we argue, should be no exception.

Founded in 1952, the Brazilian Economic and Social Development Bank (BNDES) has had a catalytic role in promoting *transformational investments* in different phases of Brazil's socioeconomic development. From 2002 to 2015, the bank increased its support for badly needed I&L projects, and its lending level increased hiked exponentially. BNDES became a financial giant, but in this process, it paid a high price: the political and economic turmoil that engulfed the nation, put it under strong scrutiny from a public opinion. An abrupt change of economic orientation of the federal government since 2015, and particularly in 2016, led to a “change of heart” about its role play in Brazil's future development path.

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This paper analyzes the potential role of BNDES in promoting *transformational changes* needed for Brazil now – which in our view, must come from, but not solely, a wave of *sustainable infrastructure and logistics (I&L) investments*. The paper argues that BNDES could, and should, play a critical role in developing a needed I&L **investment financing architecture** - through its potential in fostering project development capacities, and financing, leveraging and crowding-in private resource for the sector

It is organized as follows. Section 2 assesses the I&L gaps and their consequences for Brazil’s growth, and discusses why raising *sustainable* I&L presents an opportunity to help overcome the current crisis, setting a new and promising path of socioeconomic development. Section 3 reviews the history, financial performance and funding of BNDES. Section 4 presents a preliminary analysis of more recent changes of its orientation and operational policies, and their likely effects on I&L financing. Section 5 summarizes our findings and offers our main conclusions.

2. An Economic Giant Trapped by I&L Gaps

Brazil’s growth in the past three decades has been characterized as a typical case of “middle-income trap”.² Indeed, Brazil’s per capita GDP trajectory, which had been quite robust in the 1970s, was almost nil during the whole 1980, and extremely low in the 1990s. Only in the 2000s this performance improved. More recently, though, the country has entered in economic recession which is producing a reversal of such achievements. In our view, much of Brazil’s “middle-income trap” results from the significant decline in public and private investments during the so-called lost decade, 1980s. This deterioration may have affected at least three pillars of economic development: education and knowledge, innovation and infrastructure and logistics (I&L). The lag in I&L investments, in particular, has created enduring challenges for Brazil’s capacity to remain on a sustainable and inclusive path, what was chosen for itself after its return to democracy in the 1990s.

² Kharas and Hohli (2011) defines “middle-income trap” as follows “In a steadily growing economy, per capita Gross Domestic Product (GDP) rises continuously over time (growth) toward higher income levels. That has been the experience of the Republic of Korea. But many middle-income countries do not follow this pattern. Instead, they have bursts of growth followed by periods of stagnation or even decline, or are stuck at low growth rates. Instead of steadily moving up over time, their GDP per capita simply gyrates up and down. They are caught in the Middle-Income Trap—unable to compete with low-income, low-wage economies in manufactured exports and unable to compete with advanced economies in high-skill innovations. South Africa and, until recently, Brazil are examples of this phenomenon”.

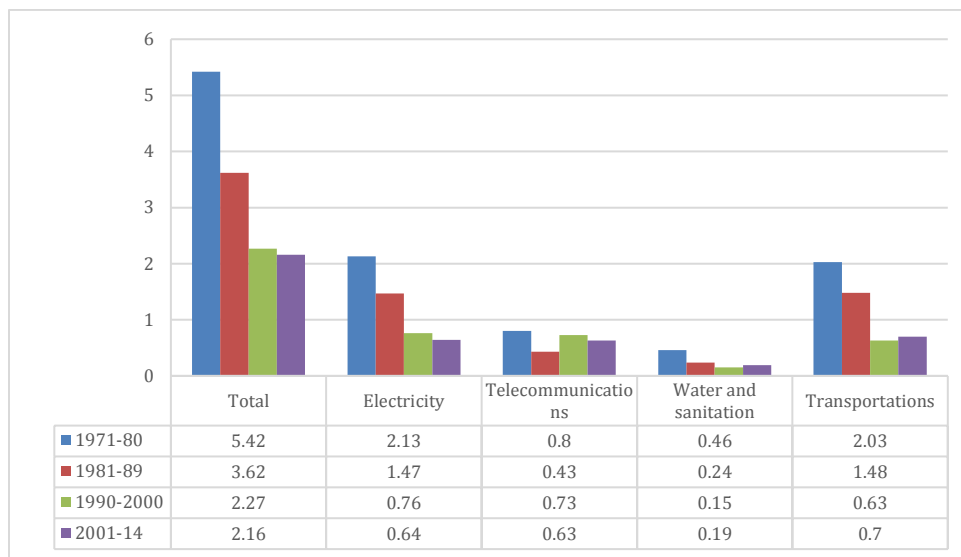
2.1. *THE DOUBLE LEGACY OF A “LOST DECADE”*

Brazilian early industrialization was a result of the closure of international trade during the first world war, which allowed to pursue import substitution (ISI) started in the beginning of the 20th century initially (Furtado, 1959). The postwar period was characterized by a government-sponsored import substitution strategy, accompanied by a rapid urbanization and emergence of an incipient middle-class, particularly in industrial cities, such as Sao Paulo. These changes class had social, political and economic consequences, as the pace of demand growth generated constant mismatches of aggregate supply and demand of goods and services. Not surprisingly, the experience of post-war growth was followed by macroeconomic imbalances, inflation or balance of payments difficulties, and increased social and political tensions.

A dramatic political turmoil of the early 1960s ended up with a military coup in 1964 and twenty-five years of dictatorship. Following several years of stagnation, paradoxically with policies focused on macroeconomic adjustment and reforms, the military regime resumed import substitution industrialization, anchored in the development of intermediary goods – including the chemical complexes. Brazil reached the end of the 1970s with a diversified internationally competitive manufacturing sector, but also with one of the highest poverty and inequality levels in the planet. An additional vulnerability inherited by Brazil’s high growth period in the 1970s was linked to its balance of payments. Indeed, the international interest shock of the 1979 transformed a relatively small external debt situation into a full-fledged debt crisis.

This was the beginning of the “lost decade” characterized by structural adjustment, economic stagnation and rampant price hikes that led to hyper-inflation. But also distinguished by processes that had direct impact on the infrastructure challenges faced by Brazil until now: the rapid decline of private and public investments, particularly in I&L, and deterioration of the State capacity to develop, implement and monitor large investment undertakings. Finally, it was a period of rising inequality and poverty, which together with the infrastructure gaps became the two main heritages for the governments after 1990, when Brazil entered in a period of democratic and inclusive course.

Figure 1 - Brazil: investments in infrastructure (% GDP)



Source: CNI (2016).

This heritage only began to change with the successful stabilization program in 1994, and the establishment after 1999 of a macroeconomic model anchored on a “tripod”- based on its fiscal responsibility law, central bank autonomy and flexible (dirty floating) exchange-rate regime. Even though inequality fell as a one-off consequence of price stabilization in 1994, the achievement of macroeconomic stability opened the possibility of addressing the social debt through, for instance, the enhancement of social programs and real-wage growth policy. Poverty and inequality fell significantly, and whereas GDP per capita had the highest advances since the 1990s. In this process, a new middle class emerged and access to credit expanded significantly, which led to a boom in consumption of goods and services.

Albeit the socioeconomic advances, I&L investments needed to increase the provision of public goods and services did not follow. Widening I&L gaps contributed for the increasing pressure put on infrastructure in general, but particularly in the urban areas where 85% of Brazil’s population live. This is what we shall see next.

2.2. I&L GAPS AS CONSTRAINTS TO SUSTAINED INCLUSIVE DEVELOPMENT

It seems to be a consensus among analysts and policy makers that I&L gaps have become a true constraint on Brazil's growth and particularly for a future of sustainable development (e.g. Castelar Pinheiro and Frischtak, 2014). Whatever measure applied, they are extremely large and their negative externalities in Brazil's recent socioeconomic history cannot be understated. For instance, the 2010 World Bank Enterprise Survey pointed out that 28 percent of firms considered transportation to be a major constraint, against 23 percent in LAC (Garcia-Escribing, Goes, and Karpowicz, 2015).

Another evidence that I&L gaps represent a drag on the national business environment and competitiveness is that Brazil ranks 120, out of 144 countries surveyed, in the 2014 World Economic Forum overall infrastructure quality. Only in electricity and telecommunication, Brazil is in a better ranking than some competitors, areas in which it has invested comparably more in recent years - with greater interest and participation of the private sector.

Poor I&L also creates significant bottlenecks in Brazil's social development, and arguably political "ceilings" for a process of inclusive growth. In this vein, despite recent hikes in social infrastructure investments, access to improved sanitation was still denied to 12.0% of the urban population, and almost 50% of the rural population.

Other indicators also paint a grim picture of the obstacles created by I&L gaps for the new needs generated by inclusive growth and rapid urbanization. For instance, even though the national fleet of cars and trucks almost doubled, less than 15 percent of Brazil's roads are paved (including municipal roads) and multi-lane roads are still relatively rare, although they have doubled over the past half-decade. This makes traffic jams a major concern in any of its largest urban centers.

Finally, when it comes to environmental sustainability most I&L are not climate-smart, both when it comes to mitigation and adaptation, even though the effects of climate change are already being felt. Building an I&L that simultaneously helps the country be on a path of low carbon, climate-resilient, and inclusive growth may be the challenge in the next decades for Brazil.

Overcoming the existing I&L financing gaps will not be easy, as it requires investments estimated to be as high as R\$1.1 trillion, the equivalent of one-fourth of Brazil's 2012 GDP (Wagner et al, 2015). This will demand a simultaneous increase of public and private investment, at a moment when the national and subnational government face tremendous budgetary challenges, and long-term private financing – traditionally very limited – is scarcer than ever. BNDES could play an important role in achieving these goals. This is our next topic.

3. BNDES: history, business model and funding challenges

BNDES's history is profoundly connected with Brazil's post-war development. In the early years, its main role was to finance economic infrastructure projects and develop the steel industry that were critical for industrialization based consumer durables. (Studart, 1995). Already in the 1960s, it helped finance the development of the consumer goods industry. BNDES played a fundamental role in 1970s import substitution programs that strengthen several industrial input-producing sectors (e.g. petrochemical industry) and capital goods, and even created completely new ones (e.g. information technology and microelectronics). Indeed, BNDES helped shape what is now the most diversified industrial sector in Latin America (Castro and Souza, 1985).

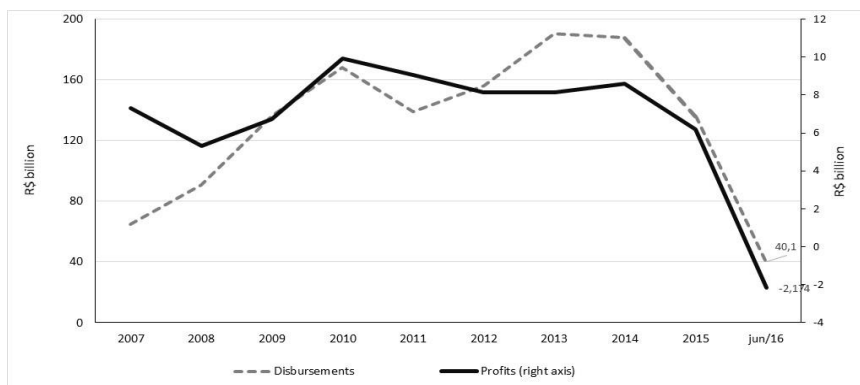
During the 1980s, in addition to its other mandates, BNDES promoted the expansion of the energy exports, agriculture and promoted social integration. In the 1990s, it was a critical part of the federal privatization program, by assisting in the sale of large State-owned Brazilian companies. From 2002 to 2015, besides all other activities, BNDES increased its support for large I&L projects and for their global presence. In the last decade, its lending level increased exponentially, until it fell dramatically in the past year (more on this later); and despite its attempts to leverage and crowd-in private capital, so did its dependency on transfers made from the National Treasury for its funding. BNDES became a financial giant, and a centerpiece of Brazil's social and economic development.

Since the early 2000s, BNDES has become an even more critical player in major government infrastructure investment programs. Its business model and funding strategy were adapted to facilitate PPI and other government programs, but they also became a source of political vulnerability. Partly, this vulnerability explains some of the more recent changes in its orientation and operational policies.

3.1. BUSINESS MODEL, PERFORMANCE AND FUNDING

The overall financial performance of BNDES has been impressive in the past decade. Disbursements have been multiplied by more than four times (in average US dollars), whereas profits almost quadrupled. This performance is partly due to its role in supporting the two large government-sponsored investment programs, the growth acceleration program (**PAC** in its Portuguese acronym) and the logistics investments program (PIL), and the countercyclical role it played in the aftermath of the 2009 crisis.

Figure 2 - BNDES – Disbursements (left axis) and profits (R\$ bi)

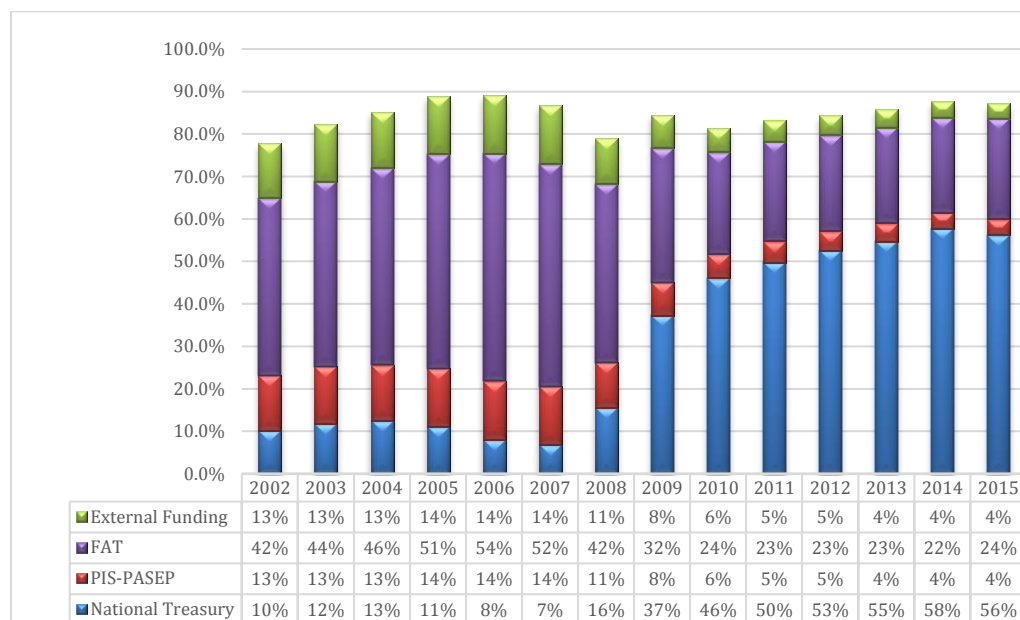


Source: BNDES.

PAC was launched in early 2007, still under the Lula da Silva Administration. It consisted of a set of economic policies and investment projects with the objective of eliminating the I&L bottlenecks and easing growth in Brazil. The program had a budget of R\$503.9 bi between 2007 and 2010, and soon after the 2009 global financial crisis became one of Brazil’s main countercyclical efforts. The Rousseff administration (2010-15) continued the program under the name **PAC-2**. The Logistics Investment Program (**PIL**) was launched in 2012 to promote concessions of 7,500 kilometers of highways and 10,000 kilometers of railroads. The total planned investment over 25 years was to reach R\$133 billion (R\$42 billion for highways and R\$91 billion on railroads), with R\$79.5 billion to be invested in the first five years.

BNDES became one of the largest financial institutions in Brazil – in addition to becoming one of the five largest development banks (be it national, regional or multilateral) in the world. This market position did not come without challenges. And one of them became increasingly controversial in Brazil: its funding strategy. Indeed, until very recently the main sources of funding to BNDES were provided by investments of “quasi-public” funds (PIS-PASEP and FAT) associated with social insurance and workers’ safety nets, returns of its outstanding loans and equity investments, bond issuance, and/or borrowing from multilateral institutions. This has changed since 2009, when BNDES stepped in to fill the post-crisis 2008 crisis created by the retrenchment of private financing. Incapable of tapping the market at a pace compatible with the expansion of its loan portfolio, BNDES’ funding became highly dependent on transfers from the National Treasury and the volume of resources coming from it increased substantially, becoming higher than 50% of the total.

Figure 3 - BNDES's funding structure (% of total liabilities)

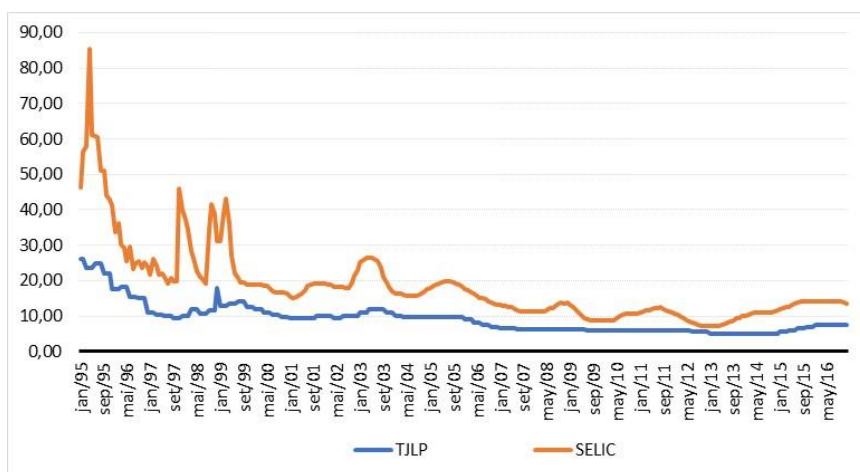


Source: BNDES.

This extraordinary growth of transfers from the national treasury revived an old controversy on the societal costs of promoting industrial policies, and therefore on the validity of BNDES funding strategy.

The problem lies in the fact that Brazil does not have a developed term-structure interest rates curve (or yield curve), because most private debt instruments have short maturities. For that reason, BNDES uses the so-called TJLP, the acronym for the long-term interest rate, which is the benchmark rate created by BNDES, around which it sets the interest rates charged on its loans. Since its creation, TJLP has been set systematically below the Treasury interest rates, even the rate on their most liquid bonds (SELIC) – as can be seen below.

Figure 4 - TJLP and SELIC (%)



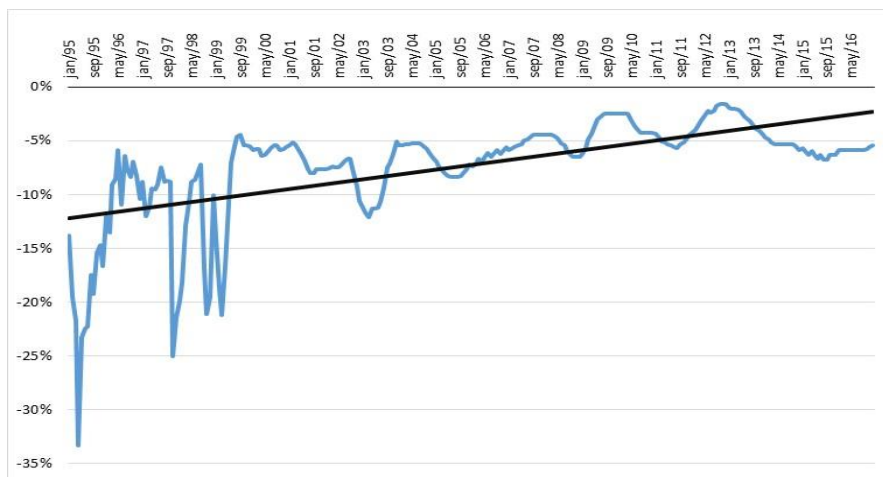
Source: Central Bank of Brazil database.

As the participation of Treasury loans to BNDES reached historical levels, critics raised concern about the fiscal impact of such transactions. For many of them, the difference between the roll-over cost of the national public debt and the long-term interest rate charged by BNDES represents a fiscal burden, “handouts” that are higher than the societal benefit coming from the projects financed. In addition, some claim that BNDES strategy to lend to large companies and/or exporters should not have been part of its mandate as instrument of public policy, as it supposedly created unnecessary distortions in the macroeconomic supply of credit (e.g. Lazzarini et al, 2011).

Others, like these authors (e.g. Ramos and Studart, 2016) argue that the lack of private long-term financing and high short interest rates makes it necessary for BNDES to set an interest rate that is less volatile than Treasury rates, and compatible with the maturity structure of the projects and investments

it supports. In addition, attention is brought by the same approach to the important role that BNDES loans play in directing investment as part of broader industrial policy, and their externalities and multiplier effects (on production, employment and competitiveness). It is important to notice that there has been a convergence of TJLP towards Treasury interest rates, including SELIC, over the years, particularly in the years when they declined and/or became less volatile.

Figure 5 - TJLP-SELIC differentials (% and trend line)



Source: Author’s calculations based on data from Central Bank of Brazil.

This debate is not easily settled and would deserve a document of its own. For our purposes, here, however, we emphasize that the increasing dependency on semi-fiscal sources of funding creates challenges for the bank model. Not surprisingly, much before 2015, there had been raised pressure on BNDES to adjust its pricing (and reduce the differential with Treasury bond rates), to widen the co-financing of larger projects, and to simply downsize.

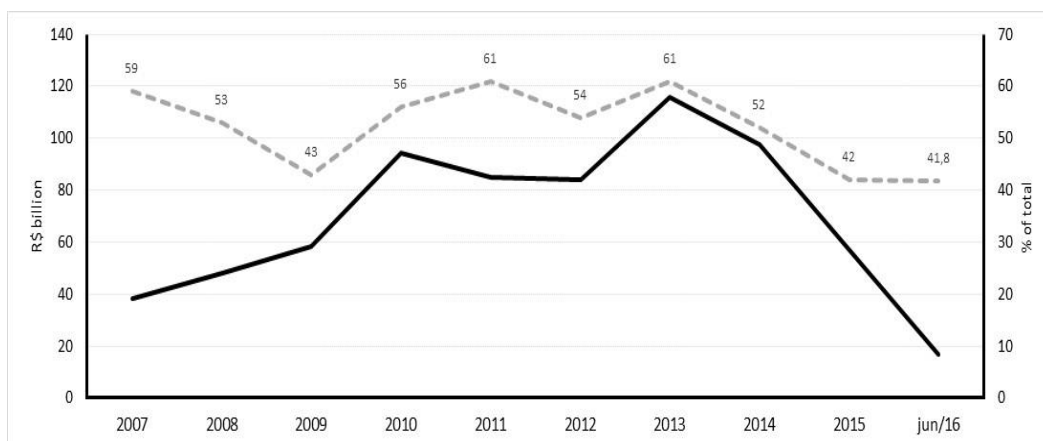
Therefore, for financial and political reasons, this model needs to evolve if BNDES wants to expand its relevance in addressing the significant challenges faced by Brazil – particularly those related to the improvement of existing infrastructure and logistics. This evolution could, and perhaps should, build on the long-standing experience of BNDES in leveraging and crowding-in private financing resources. This is our next topic.

3.2. LEVERAGING AND CROWDING-IN PRIVATE CAPITAL FOR INFRASTRUCTURE

BNDES has a history of policies and instruments to leverage its own resources. This includes **lowering final loan cost** through co-financing projects; **risk mitigation** through their tier-2 (indirect) lending operations; and **risk sharing** through its project finance platform and guarantee funds. It has also started a program to **crowd-in** private capital, by fostering the issuance of infrastructure bonds that goes beyond the traditional risk-sharing initiatives. The latter efforts started in 2012, and were particularly intensified in 2015.

Co-financing and indirect lending have been part of BNDES's model for a long while. Indeed, indirect operations through a network of public and private banking agents constitute approximately half of its credit operations. The partner banks conduct project analyses and take on the credit risk behind loans. The returns of financial intermediaries come directly from project financing, but also from having access to BNDES resources with longer maturities, which allows them to increase the customer base, with which they can intensify their business relationship - including management of cash flow, structuring of new operations, absorption of employees' salary accounts and sales of direct services. In a way, BNDES indirect operations do more than just reducing loan costs: once private banks become more acquainted with certain types of clients, sectors and investments, they can better analyze the credit risk and directly finance the best clients. On some occasions, this has led private banks to take the lead in consortia to finance long-term undertakings. This partnership also gives capillarity to BNDES financial products, once the network reaches commercial banks in at least most of the 5,570 Brazilian municipalities.

Figure 6 - BNDES: evolution of indirect lending (R\$ billions and % of total)



Source: BNDES.

Yet another example of **risk sharing** is the evolution of a very “peculiar” type of **project finance** operations carried out by BNDES since 2003. Knowingly, project finance is backed by the projected cash flows of the **project** rather than the balance sheets of its sponsors. But in the case of those sponsored by BNDES, corporate or banking guarantees are required from the companies participating in a concession consortium. Despite the limitations of this “sponsored” project finance, by introducing this innovation, BNDES does share risks by inducing private players, both developers and their private bankers, to increase their participation in infrastructure financing. Indeed, in the past, private financial institutions increased their participation in such projects — with equity, providing advisory service, offering collaterals, guarantees and insurance; and by leading loan consortia.

Risk sharing through guarantees became part of BNDES’s attempt to leverage private financing. The increased funding constraints on BNDES led to the creation of guarantee funds to reduce the uncertainty of certain projects and to leverage private sector financing in sectors previously only funded by public institutions. Two were built to support small and microenterprises in securing credit with financial intermediaries: Investment Guarantor Fund (IGF) and Guarantee Fund of Free Investment Credit (FGI - free credit).

BNDES’s role as a financier of I&L was enhanced further as it became a critical financial player in the government commitment to address I&L gaps through extremely large programs – the Program for

Growth Acceleration (PAC and PAC2) and the Logistics Investment Program (PIL). PAC was a strategic investment program that combined management initiatives and public works. In its first phase, launched in 2007, the program called for investments of US\$ 349 billion (R\$ 638 billion).

Similarly, PAC 2 focused on investments in the areas of logistics, energy and social development, organized under six major initiatives: urban infrastructure, and particularly mobility; safety and social inclusion; popular housing; sanitation and access to electricity; renewable energy, oil and gas; and transportation (highways, railways, airports). PIL, in turn, was aimed at increasing investments in infrastructure, enhancing the competitiveness of the economy and improving transportation conditions.

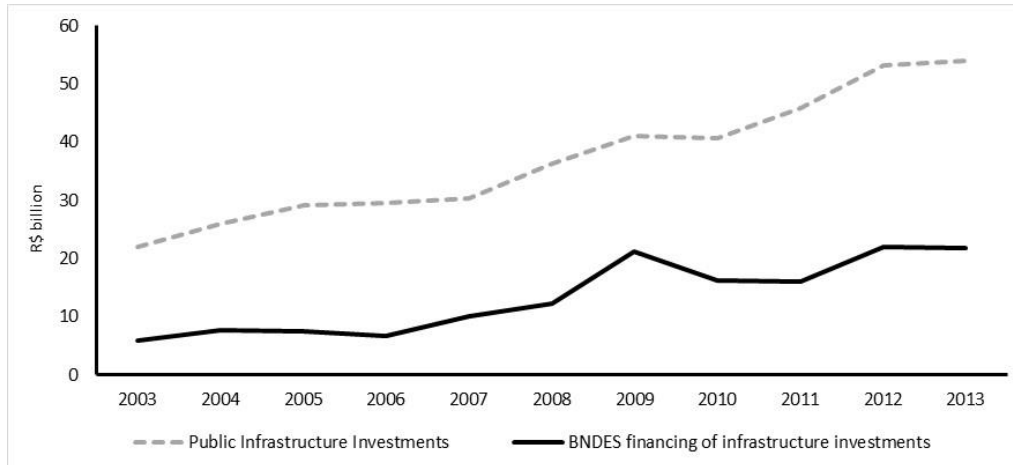
Table 1 - I&L investments as share of GDP

Segment	PAC				PAC2			
	2007	2008	2009	2010	2011	2012	2013	2014
Electric Energy	0.56	0.61	0.63	0.69	0.72	0.7	0.7	0.66
Telecommunications	0.46	0.8	0.56	0.41	0.49	0.5	0.42	0.52
Sewage	0.14	0.22	0.24	0.21	0.17	0.19	0.2	0.19
Transportation	0.62	0.74	0.90	0.96	0.84	0.84	0.96	0.92
Roads	0.35	0.4	0.55	0.57	0.48	0.39	0.47	0.44
Railroads	0.11	0.16	0.11	0.14	0.14	0.13	0.14	0.16
Urban mobility	0.05	0.1	0.17	0.1	0.08	0.1	0.15	0.16
Airports	0.03	0.02	0.01	0.02	0.03	0.06	0.11	0.09
Ports	0.07	0.04	0.03	0.1	0.09	0.15	0.08	0.06
Hydroways	0.01	0.02	0.03	0.03	0.02	0.01	0.01	0.01
Total	1.78	2.37	2.33	2.27	2.22	2.23	2.28	2.29

Source: CNI (2016).

In both programs, BNDES had a critical role in helping build a financing structure for the concessionaires that won the auctions for specific projects. That is why there is a significant correlation between overall infrastructure investments and BNDES disbursements to the sector. PAC and PIL aimed to expand access and improve infrastructure services for the emerging middle class. Therefore, in addition to guaranteeing the feasibility of higher risk and more complex projects, the explicit goal of BNDES intervention was to allow lower tariffs to be charged once the project became operational.

Figure 7 - Infrastructure investments and BNDES Disbursements



Source: Coutinho (2015).

BNDES's financing model traditionally included fixed and variable-income products with very favorable financing conditions – both in term of maturities and cost. BNDES, through its subsidiary BNDESPAR, has also bought stakes in companies that could prospect for new business in the sector. For that reason, BNDES ended up assisting the federal and state governments structure concessions for the private sector and public-private partnerships (PPP).

In the 2000s, BNDES's "coverage" of I&L sectors widened in scope and in commitments as large volumes of its investments went to energy production, transmission, distribution, and efficiency. BNDES also financed large logistics projects, such as highways, railways, airports, navigation, and ports. Urban mobility projects grew in number and volume, amounting to R\$ 92 billion in 2014. Investments in high and medium-capacity transport systems financed by BNDES became part of a larger block of investment headed by the federal government PAC programs dedicated to mobility in the states.

The financial arrangements around the concessions issued by the federal government always involved BNDES directly as financier. This involvement had positive and negative consequences. First, BNDES support increased the share of I&L investment in Brazil's GDP, and private participation in the concessions of the I&L investment programs (PAC and PIL). In fact, according to the World Bank in

2014, Brazil was a leader among developing countries in private participation in I&L project, with 44% participation (MFB, 2015) – a situation that only reverted in 2015 as the federal government promoted a fiscal retrenchment, mainly through cuts in government expenditures in I&L projects.

Secondly, though, this arrangement created significant fragility for BNDES, as its loans were used as “adjustment variables” to make infrastructure projects viable. Indeed, the federal government was determined to maintain at low levels the tariffs charged by I&L projects concessionary, even though private cost of capital remained extraordinarily high. To lower the overall cost of capital for those projects, BNDES had to offer lending rates below its own funding and operating costs. Not surprisingly, it had to receive significant support from the National Treasury to expand its operations. This funding strategy significantly increased BNDES dependency on Treasury transfers, and was already becoming a source of concern for the government, and BNDES management. That is why they introduced initiatives meant to attract and crowd-in private sources to finance I&L, as was the case for its program to sponsor the infrastructure bonds markets.

3.3. FOSTERING THE MARKET FOR INFRASTRUCTURE BONDS

In 2011, the federal government launched an effort to build the market of infrastructure bonds, and BNDES became an important part of this initiative. For that, the government created several tax benefits for investments in market instruments to channel funds to finance I&L investment. These incentives included a tax exemption on incomes generated by bonds acquired by domestic and foreign investors. BNDES in turn expanded guarantees-sharing clauses in its financing contracts, equalizing the level of seniority of bondholder to loans co-financed by BNDES. Lastly, in some projects, BNDES relaxed financial requirements in its credit operations in case there was issuance of bonds.³

These efforts were only intensified in 2015, for two reasons: (i) under a severe fiscal adjustment agenda, the government could no longer commit to the increased volume of public investment - as it had done in the last twelve years; and (ii), by setting the reduction of gross debt as a policy goal, the government

³ The first was to reduce coverage ratio of debt services, increasing the maximum leverage of the projects, which improved profitability and reduced the capital requirement of the project. The second was to change the amortization schedule for the issuance of bond infrastructure to allow to redistribute the cost of capital for later phases in the investment cycles.

decided not to increase the funding for BNDES with Treasury resources.⁴ BNDES responded to this new challenge by enhancing its infrastructure bond issuance program including additional de-risking engineering, and pricing incentives.

The efforts paid off. From 2012 to 2016, total issuances have reached R\$11 billion in 55 issuances. This may seem to be a significant amount. However, it is significantly smaller than the total investment needed. Only in 2013, according to the Brazilian Association of Infrastructure and Basic Industry (ABDIB), the annual infrastructure investments, excluding the oil and gas sector, amounted to R\$ 125 billion.

Such modest results should not be taken as a failure of the government's attempt to foster the market for infrastructure bond, for at least two reasons. First, as pointed out by Wajnberg (2014), there is a learning curve needed for both potential issuers and potential bondholders to start operating with such instruments. Second, there are high costs involved in this learning process - such as hiring banks, lawyers, rating agencies, auditors and costs related to documentation and offer record-keeping. So, only issuances that exceed a certain critical value manage to reach the market. Third, and perhaps most importantly, the macroeconomic environment was not friendly as the launch of the bond instrument coincided with the years of greatest economic turmoil and a steep rise in Treasury interest rates. Finally, the level of corporate debt has increased substantially since 2012.

Despite the results, BNDES followed the correct guideline to help build a market for infrastructure bonds, fostering their issuance and stimulating their secondary market (see box below). It is quite possible that in a more stable political and economic environment, with declining interest rates, these efforts would bear fruit. That is, they may contribute to the development of a market for securities, particularly those backed by infrastructure.

However, no matter what incentives are created to promote the issuance of infrastructure-backed assets, developing an infrastructure bond market will depend on the capacity and interest of institutional investors to acquire them. In other words, it will require "building bridges" between potential demanders

⁴ As mentioned above, from 2009 to 2014, total Treasury funds to BNDES amounted to about US\$ 430 billion. The way to reconcile the growth of investments in infrastructure, which is one of the guidelines to move the Brazilian economy towards a new growth cycle, is to promote private participation, not only as an investor in concession projects, but in long-term financing as well.

of long-term funds for I&L projects and those institutions that have a need to acquire such types of assets. In Brazil, the potential was there.

The pension fund segment in Brazil, for instance, is relatively large, and has been growing strongly. The total amount of its investments in September 2016 was R\$750 billion. There is plenty of room for infrastructure bonds in their portfolio – indeed, little more than two percent of Brazilian pension funds’ assets are currently invested in infrastructure. However, there remain difficulties in placing infrastructure bonds with pension funds.

The first one is more intrinsic to infrastructure projects: uncertainty about the funded project’s ability to generate sufficient resources for the payment of interest, especially in the first years of operation. Second, infrastructure projects have a high degree of indivisibility—that is, most of the investment is done prior to cash generation. Thus, it is not possible to adapt it to the growing demand, and if the desired degree of use is not achieved during the planned period, cash flows will be insufficient for the payment of financial obligations. Third, pension funds in Brazil are used to allocate their resources to fixed rates investments in government bonds and public companies that have low risk profiles and relatively high returns. They lack the incentives and capabilities to diversify their portfolio towards long-term riskier assets, particularly companies that are not listed.

Finally, the development of an I&L bond markets depends on the existence of a pipeline of projects that in turn requires public and private project development capabilities. This is a critical issue that deserves a section of its own.

3.4. PROJECT DEVELOPMENT CAPACITY

One of the greatest challenges to boost sustainable infrastructure is to create a pipeline of projects that are simultaneously technically solid, environmentally smart and financially sustainable. Infrastructure projects are not exactly “plain vanilla” investments, and their “risk” depend on how well they are developed. As pointed out in a 2013 report:

The long-term character of such projects requires a strategy that appropriately reflects the uncertainty and huge variety of risks they are exposed to over their life cycles. Infrastructure projects also involve many different stakeholders entering the project life cycle at different stages

with different roles, responsibilities, risk-management capabilities and risk-bearing capacities, and often conflicting interests. While the complexity of these projects requires division of roles and responsibilities among highly specialized players (such as contractors and operators), this leads to significant interface risks among the various stakeholders that materialize throughout the life cycle of the project, and these must be anticipated and managed from the outset.

Despite the sophistication of domestic players, the country faces project development constraints, for reasons already mentioned. Indeed, since the 1980s until the 2000s, there had been **a deterioration of the State capacity to plan, develop, implement and monitor large investment undertakings**. There were at least three consequences of this process.

The first one is straightforward: the government's capacity to plan and develop large scale infrastructure projects shrank, which naturally later created problems in project development and implementation - particularly at subnational levels. The problem became more evident in the 2000s, due to the push given by PAC and PIL programs, including PPPs and concessions as part of Brazil's federal government to boost infrastructure investments, which demanded resources far beyond the existing budgetary and other public financial resources. Not surprisingly, a strong effort was made in the 2000s to promote the recovery of such capabilities, some of which directly involved BNDES, such as the creation of the Brazilian Project Development Company - Estruturadora Brasileira de Projetos S.A. (EBP) – in 2008.

Second, project development was transferred to private actors, but the financing of such projects often involved governments' budgets and/or financing from public institutions. This transfer made it very difficult for governments to evaluate and monitor projects independently, and may partly explain excessive delays in their constructions and governance problems that became obvious in the recent corruption investigations.

A third characteristic is indirectly related to the bankability of projects. Indeed, it is quite possible that a significant number of the infrastructure concessions could be developed with the view of using private sources from their outset. That is, if the projects were structured from the outset with the view of mitigating the risks throughout their life cycle, many of them could have had access to private financing, at least from international capital markets. However, if the public entities possess limited project development capabilities, their capacity to propose alternative financial modeling for the projects

brought to them is constrained. This creates a “catch-22” situation, where the dependency on public financing is perpetuated.

Despite this effort in capacity building, most project development capabilities remain in the hands of very large private developers and consulting firms. Smaller companies have been thriving in new types of infrastructure projects – such as those in sustainable infrastructure – but are even less prepared to produce projects that are simultaneously technically sound, environmentally smart, and bankable from the outset. This may create important challenges for attracting the interest of private investors, even in a friendlier macroeconomic environment of steady growth and low and stable interest rates.

BNDES may play a role in capability building, sponsoring the development of an investment financing architecture. This has been the case of its support for sustainable infrastructure projects and particularly for renewable energy ones. It is worth then describing briefly this interesting experience. This is our next topic.

3.5. BNDES AND SUSTAINABLE INFRASTRUCTURE: A CHAPTER ON ITS OWN

BNDES is an important player in the current financing architecture sponsoring sustainable infrastructure projects in Brazil. This is associated with a history of promoting internal project development capability and expertise in sustainable energy since the early 2000s. Like other national development banks in the world, (Gallagher and Studart, 2016) BNDES has not only implemented government directives towards “greening the economy”, but has had a role in drafting and improving them. Indeed, when assessing direct and indirect non-automatic operations, it not only checks if they comply with its own environmental standards, but also assesses the environmental risks, and promotes environmentally related improvements in investment and company management.

Additionally, BNDES has for a while offered products and instruments to other sectors, with special financial conditions that depend on sustainability standards. It also manages three dedicated “green funds”: Amazon Fund, BNDES’ Atlantic Forest Initiative, and the Climate Fund. Indeed, BNDES disbursements increased almost six times from 2004 levels (R\$ 4.7 bi) to 2014 (R\$ 27.8 bi). Despite this increase, the proportion of green investments never exceeded 15% of total lending, still a small portion of loans outstanding.

The potential role of BNDES as a promoter of sustainable I&L, although already substantial, is still far from being fully tapped. First, a significant part of BNDES “green” pipeline still consists of hydroelectric power plants, but the case for diversification for other sources of renewable energy is there. For instance, in the past ten years, the Brazilian energy matrix has not been able to cope with the fast increase of demand, which forced the more intensive use of costlier and environmentally damaging coal-generated energy. These mismatches of supply and demand are due to rise demand and to the increased intensity of droughts, a probable consequence of climate change, and can only be mitigated through expansion towards renewable energy. Because of the privileged climate conditions in Brazil, there is significant scope for other alternative, cleaner sources of energy – such as solar energy and wave power - and, definitively, for more energy efficiency.

Further, freight and transportation systems in Brazil are still highly geared towards automobiles and trucks – and this explains why almost 40% of its energy is produced by oil and derivatives. The actual roads are in poor state and unfit to address the current demand, which is the main source of traffic congestion in urban areas and inefficient freight transportation system. Developing alternative, “green” transportation systems would not only reduce transportation costs for consumers and producers, but also improve urban mobility.

Finally, BNDES can be a key player in financing, leveraging and crowding-in private capital to I&L – *sine quo non* condition for a sounder and more stable financing of the sector in the future. The Climate Bond Initiative (2016) indicated that despite the macroeconomic and political uncertainties, the outstanding volume of bonds in Brazil 2016 was US\$ 2.4 bi. Of those, 54% were transportation projects and 23% were associated with clean energy. The potential expansion of this market is significantly, particularly if it develops an appropriate *architecture* (of regulation, the institutions, risk management tools and instruments), that can build the bridge between final demanders and suppliers of such bonds.

BNDES efforts in boosting such investments show its comparative advantages as a central point in establishing this *architecture* – a role, as we insisted elsewhere, that has been successfully been played by other national development banks. They were undermined by many external factors – particularly the limited pipeline of technically sound and “financeable” projects and because of the constraining macroeconomic environment.

With the change of government in July 2015, a new leadership has been put in place with the clear mandate to change the focus and business model of the institution – including a greater focus on sustainability and on crowding-in private capital for green investments. An analysis of these changes can only be preliminary. But given the importance of the institution to Brazil’s development, it cannot be avoided. In the next section, we present some of the main features of these changes and speculate about their possible consequences.

4. BNDES: New Directions

After the impeachment of former president Dilma Rousseff in July 2016, a coalition government led by former vice-president Michel Temer came to power. With it, a new economic team was appointed and there was a replacement of leadership in BNDES, and significant changes of orientation happened.

The first one was associated with the pressure put on BNDES to make an anticipated repayment of its debts with the National Treasury, starting with an R\$ 100 billion (US\$ 30 bi) in December 2016. This transfer, comprised of R\$ 40 billion in securities and R\$ 60 billion in cash, was justified by the need to reduce overall federal debt (corresponding to 70% GDP). The early payment is the equivalent of nearly 19% of the total debt that BNDES holds with the Treasury, and over 120% of the disbursements in 2016, but it would only lead to a fall of 1.6% of the debt-over-GDP ratio.

Another important change was very recently announced by BNDES senior management concerning the pricing system method and the creation of the TLP (long-term interest rate). Even though the acronym of the new rate seems like the earlier one (TJLP), this change has important governance and operational consequences.

Concerning the governance of this policy instrument, the TJLP was set quarterly by the National Monetary Council, which includes representative the ministries of finance and planning, as well as of the central bank. This composition allowed the final decision to be determined by the overall development strategy set by the executive branch, but also influenced by the monetary policy objectives. The new TLP will be determined solely by the central bank, which is guided by targeting price stability (Table 2).

The announcement of the changes emphasized an even greater focus towards environmental sustainability. Indeed, BNDES stopped financing coal-fired power plants, and, as pointed out by its new president, will now focus even more on green technologies. Given the current levels of subsidization of other sectors, it is significant that BNDES is prepared to contribute up to 80% of the financing needs of “green projects” supported.

Also, even though BNDES already has its own M&E procedures, the current leadership created a department that will be responsible for implementing the new policies and for producing a “results matrix”, in which goals will be defined per each project. This is very similar to what is already in place in multilateral development banks, such as the World Bank – which is reported to have been a source of advice in creating the new system for the Bank. And, following through with the criticisms that have targeted BNDES in the past two years, the actual board has placed emphasis on efficiency, and processes are being reviewed, with more use of technology to speed up loan applications and improve operations.

Table 2 - TJLP and TLP – A Summary

Source: Santander (2017).

	TJLP	TJP
Frequency	Set on a quarterly basis by the National Monetary Council (CMN, comprising the Central Bank Governor and the ministers of Finance and Planning)	Announced monthly by the Central Bank, based on a pre-defined formula
Formula	TJLP = international interest rate in real terms + country risk + inflation, all evaluated from a long-term perspective	TLP = 5-year sovereign inflation linker (NTN-B) yield x smoothing factor + 12-month IPCA
Nature of BNDES loans	Fully floating rate – loans benchmarked on TJLP will have their cost oscillating according to changes in TJLP over the duration of the loan	Hybrid rate – loans benchmarked on TLP will have their cost defined by two components: a real rate component (fixed for the duration of the loan at the level prevailing when the loan was granted), brought to nominal terms according to accumulated inflation over the lifetime of the loan
Validity	All life of loans granted by BNDES up to December 31, 2017	All loans granted by BNDES from Jan 1, 2018 onwards.

Finally, BNDES is moving towards a “transversal” approach in its interventions. The bank seemingly will cease to promote “sectors” and large firms and/or exports of services. It is introducing the use of external auditing firms for large-scale infrastructure projects with a financing of more than R\$1bn and for financing of more than R\$500mn in other sectors. BNDES participation will be limited to 80% of the cost of projects. As is currently proposed, they will focus on six categories of investment with differentiated financial conditions: education, health, innovation, export promotion, MSMEs and infrastructure projects are priorities.

It is still very early to draw conclusions about these changes. But it is worth discussing some possible consequences.

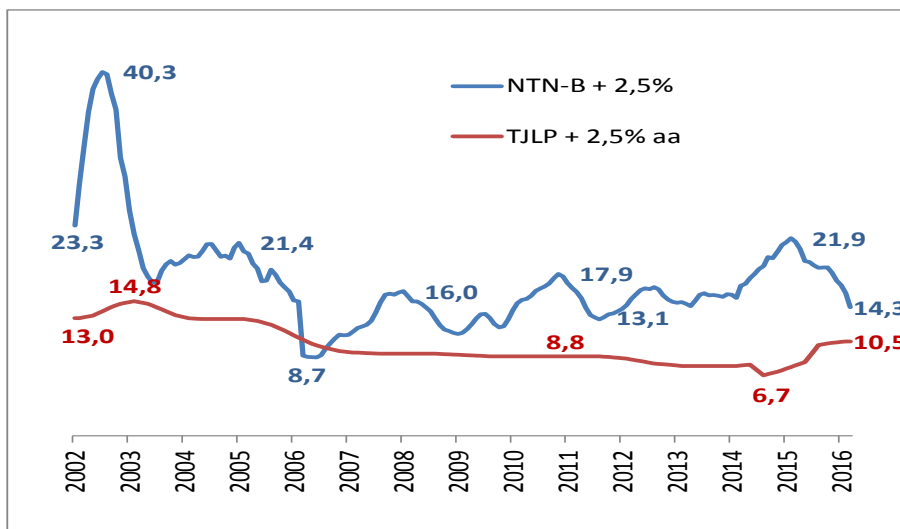
First, focus on sustainability seems to be a correct strategic decision. Sponsoring sustainable I&L may have significant positive externalities on overcoming the current crisis and promoting long-term inclusive sustainable growth. In addition, BNDES already has significant experience in supporting green and climate-smart projects and, building on this experience, can promote project development, leverage and crowding-in private capital to a critical area. Finally, BNDES can also benefit from the potentialities of the green bond market, both in Brazil and abroad, to significantly open its funding basis.

The second one is related to the transfer of resources back to the National Treasury. Given the significant fall in the demand for its resources in the past two years, BNDES is experiencing a moment of high liquidity. According to its capital position, it is unlikely that BNDES will have any difficulties in maintaining its current lending – which is, as mentioned earlier, the lowest level since 2008. However, when investment demand increases, the institution is likely to be under pressure to expand its lending, and will have little capacity to do so.

The third question refers to its new pricing policy. It remains to see how this directive is implemented, but some observations should be made. First, TJLP is already set using several variables in consideration, including Treasury bonds. Changes in the rate were implemented with a certain delay and a significant amount of discretion. The lag was necessary to avoid volatility in TJLP, which would make it inconsistent as a rate guiding long-term undertakings, such as infrastructure projects. And the discretionary approach was meant to avoid TJLP ending up being pro-cyclical – a role of development banks since the 2009 crisis, which has been supported by G-20, multilateral institutions and think tanks.

In addition, the new TLP will be set monthly and will peg a rate that for the past decade has not only been very volatile, and significantly higher than TJLP. Indeed, according to several recent reports, including Santander (2017) and Torres (2017), if the TLP had been used as a reference rate on BNDES loans, except for 2006, it would be systematically higher than TJLP – which in turn has already been one of the highest interest rates in the world for the past decade. When adopted, the TLP may end up being too high to be relevant in financing long-term investment, and BNDES may cease to be a potential instrument for countercyclical policies, when needed. Indeed, it may even turn to be pro-cyclical, given that in the past Treasury rates have behaved that way.

Figure 8 - Final cost of BNDES loans using NTN-B and TJLP



Source: Torres (2017).

Finally, there remain some question marks around the change of orientation of BNDES operational policies towards a horizontal support for investments. Until now, it is unclear how this new guidance will be able to handle the fact that BNDES has traditionally been an industrial policy instrument, providing support to specific government programs and initiatives that usually target sectors – and not crossing issues. How this problem will be dealt with will evidently be fundamental to define the future

of this institution, but also the role that BNDES may have in structural changes that Brazil required. With that, we can move to the conclusions of the paper.

5. Summing-up and Concluding Remarks

Low public and private investment levels have generated a sizable overall infrastructure gap in most nations, but particularly in developing ones, that creates strict “ceilings” on potential socially inclusive and environmentally sustainable paths. Brazil would appear to be an extraordinary case of such phenomenon, where these gaps have been structural impediments in its overcoming a “middle-income” trap. Indeed, despite the recent socioeconomic achievements, this nation now faces new daunting challenges related to its outdated, and to a certain degree dysfunctional and “climate-dumb” infrastructure. If Brazil aims to achieve sustained inclusive growth in the future, it must find ways to fill its significant sustainable I&L gaps.

This will not be an easy task, for many reasons. An important one is related to the capacity of governments, in different spheres (federal, state and municipal), to expand their required investments in a very delicate (to say the least) fiscal situation. Another constraint is the peculiar Brazilian financial landscape. Indeed, for the past two decades, Brazil’s financial system has undergone significant transformations that increased its sophistication and linkage with international markets. However, one feature has not changed: private capital continues to be allocated to short-term assets and its securities markets are relatively shallow. This has led to a “catch-22” situation, whereby the financing of long-term and/or riskier undertakings was left mainly to public financial institutions.

The main conclusions that we have reached in this paper are:

1. Promoting transformational investments are a “sine qua non” condition for Brazil to overcome the trap of low productivity and competitiveness, required for guaranteeing an inclusive and environmentally sustainable path. Part of such efforts should come from addressing its significant social and economic infrastructure gaps by promoting sustainable I&L.
2. A hike of such investments will require an effort to raise public investments, to expand the pipeline of technically solid and financially smart projects, and to leverage public finance and crowd-in private capital to finance them. In our view, policy is required to achieve these goals -

particularly in the case of I&L projects, in which investing in greenfield projects or during the construction phase means financing assets with long time maturities and with highly uncertain returns.

3. Such architecture needs an appropriate macro and microeconomic environment, incentives (embedded, for instance, in a carbon pricing system) and policies. However, the right policy to address this challenge is to sponsor the development of an I&L financing architecture – with specific incentives, appropriate regulatory framework, new players, innovative instruments, and markets. It is also to expand the pipeline of projects, improve the efficiency of public money dedicated to them, and bridge the gaps between ultimate borrowers and large institutional investors. It will require “institutional leadership” to speed up a process that in many economies took decades to be built. This is where a national development bank, such as BNDES, is fundamental.
4. With the experience achieved throughout its history, BNDES is perhaps one of the few institutions in Brazil that can play that leadership role, by (i) investing more in project development, particularly in support of developers in building a pipeline of technically sound and bankable projects - either by increasing in-house capabilities and expertise in project development or by developing a “origination” fund that can be used to outsource it; and by (ii) fostering the development of new instruments that can leverage additional resources from private banks and can create a bridge between infrastructure developers and institutional investors.

Finally, this paper has discussed the potential impacts of the new operational policies of BNDES launching in January 2017. Obviously, any analysis of these changes now can only be preliminary. Here are some of them.

5. Focus on sustainability seems to be a “spot-on” strategic decision. Sponsor sustainable I&L is not only a moral imperative to warrant a better future for all, but it contributes to overcoming the current crisis and to promoting long-term inclusive growth.
6. In view of the shortages and the important role we ascribe to BNDES in supporting I&L investment, we have raised concerns about whether the recent return of National Treasury resources could impact in BNDES's balance sheet and long-term lending capacity. In addition, the change of pricing methodology by the new TLP seems to rest on an optimistic view about

the perspective for the rapid development of a private long-term corporate debt market. If such expectations are not met, access to long-term financing will be even more limited than it already is.

7. Finally, we are puzzled by the changes from vertical to horizontal orientation of its operational policies. At a moment when Brazil needs significant transformation investments, particularly those related to sustainable I&L, this shift may be incompatible with BNDES acting as a government policy instrument in this task.

The future of BNDES will evidently depend on these policies, and they are very uncertain now.

However, it is certain that BNDES is one of the few institutions that can help promote transformational changes that will allow Brazil to aspire to a future of inclusive and sustainable growth – a future its citizens set for themselves almost three decades ago, when, after years of dictatorship, they were finally given a chance to decide it.

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The role of CORFO in Chile's Development: Achievements and Challenges

Stephany Griffith-Jones, María Luz Martínez Sola and Javiera Petersen¹

I. Introduction

CORFO (Corporación de Fomento de la Producción or Production Development Corporation) was created in 1939. In the initial period, it was an overarching and powerful institution that participated in the funding of over 30% of Chilean investment in equipment and machinery and 25% of public investment (Durán and Fernandois, 2011). Through many instruments, it played a key role in the process of Chilean economic development, including the creation of many crucial enterprises that it also helped to run.

In later years, its relative scale diminished significantly, both in terms of the part it plays in promoting development, and the share that its operations have in relation to total credit to the private sector. In 2015, the financial support deployed by CORFO (through grants, credits and guarantees, see Table I) amounted to USD 2,863 million, which represents only 1% of Chile's GDP. As discussed below, guarantees granted by CORFO now play a much larger role than loans made by CORFO to banks, which on-lend to the private sector. It is noteworthy that CORFO's credit to the private sector is

¹ We thank BNDES and CAF for their financial and intellectual support; we are especially grateful to Lavinia Barros de Castro, Vinicius Carrasco and Pablo Sanguinetti, for their valuable comments on the initial draft, and Lavinia for her valuable comments on the second draft. We are very grateful to all colleagues interviewed, who gave their valuable time and knowledge; these included the current Executive Vice President of CORFO, Eduardo Bitran, and two former Vice Presidents, Carlos Alvarez and Gonzalo Rivas; a full list of people interviewed and who provided information is provided at the end of the paper.

not just relatively far smaller than it was in earlier periods in Chile, but is also significantly smaller in scale, compared to the size of the Chilean economy (as proportion of GDP) and to total domestic credit to the private sector, than national development banks in other countries, such as KfW in Germany, with a ratio of loan portfolio to GDP of 14.5% and to domestic private sector loans of 15.2 %; BNDES in Brazil with 11.7% and 16.6% respectively or CDB in China with 12.2% and 9% respectively.

An important question to ask is whether the relatively small scale of resources that CORFO provides at present is sufficient at a time when Chile urgently needs to undertake a major structural transformation of its economy, for ‘smart’ and higher productivity diversification, so as to achieve more dynamic, inclusive and sustainable growth. The urgency of the challenge is clearer at a time when the sharp fall in the copper price in recent years has contributed to a major slowdown of Chile’s economic growth, which shows the vulnerability of a model based on exports, mainly of primary commodities. There are more long-term structural challenges for future growth based on natural resources, which also make structural transformation urgent. These are linked to the physical and environmental limits for further natural resource development in Chile; they relate for example to scarcity of water (to produce one glass of wine requires an input of 100 liters of water!), limits of land available to expand forestry, for wood, as well as paper and cellulose, and resource limits to the production of salmon. Furthermore, very slow productivity growth in Chile makes it crucial to accelerate investment aimed at enhancing productivity growth and thus increase the competitiveness of the Chilean economy.

While the fairly deep Chilean banking and capital markets may have been relatively efficient in financing established enterprises and sectors at a relatively low cost, they may not be able or willing to take on the risk of financing the new enterprises in new sectors that the current and future circumstances of Chile demand, especially at sufficient maturities. Thus, funding ‘*mission-oriented investments*’ (Mazzucato & Penna, 2015) that could catalyze transformational impacts in the economy is essential and requires the action of public financial institutions, such as CORFO, capable of channeling sufficient resources to strategic sectors with large positive externalities, such as renewable energy (see below). Such channeling of public resources would help raise additional private resources, which would co-finance such investments. Thinking of the new industrial revolution worldwide, Chile needs more and better investment in high-speed connectivity, such as a network of fiber optic; it also requires the digitalization of agriculture to improve productivity. It may require large and lumpy finance for major projects that are socially profitable: an example is a potential major investment in Chile’s smelting copper capacity, which could help the country move up the value chain in copper exports. Often such activities are not profitable in the short term, as they involve major economic or environmental externalities; also large-scale investment, even if profitable in the long term, may be difficult to fund purely with private finance.

An institution like CORFO could help provide and catalyze funding necessary for such initiatives. In this sense, it seems important to both expand the scale of CORFO and make sure that the instruments it uses are appropriate for the current stage of Chilean development.

Fiscal resources are currently fairly constrained, and perceived to be constrained in Chile, (like in many other Latin American countries), as growth has slowed down, and tighter fiscal policies have been adopted. At the same time, there has been greater emphasis in Chile on prioritizing the use of the limited fiscal resources to meet social needs (especially in education), with long-term development benefits. This, however, limits the scale of CORFO, which currently relies mainly on fiscal resources for funding, as there are (or are perceived to be), relatively less fiscal resources available to finance structural transformation, such as support for R&D, financing innovation in new companies and new sectors.

R&D is particularly key for natural resource-based economies, which reportedly need to invest more in relation to GDP than other economies to be successful; furthermore, R&D spending is fairly low in Chile, so support by institutions like CORFO, in collaboration with other public and private institutions, is very relevant.

It would therefore seem desirable to use CORFO to help fund and catalyze further private funding towards such key activities. Given Chile's deep domestic capital markets, favorable access to international capital markets, as well as the fact it has investment grade credit rating, an interesting funding alternative for CORFO would be getting authorization from the Finance Ministry to raise funds on the local capital markets. This is the most regular source of funding for many other national development banks, such as KfW in Germany, the Business Development Corporation (BDC) in Canada and others. Indeed, according to Martinez Luna and Vicente (2012), 89% of national development banks borrow from other financial

institutions or issue debt on local capital markets; it would therefore seem appropriate for CORFO to do so as well.

This would mean public resources could be significantly leveraged, as the enlarged activities would be financed from the private capital market, and any public contribution would be related to relatively small increases of CORFO's capital, to comply with Basel capital requirements; the latter would be the only part which would go into calculations of the fiscal deficit, as is the case, reportedly, for KfW, for example. Therefore, there would be very limited impact on the fiscal deficit, and CORFO could benefit from a potentially very large expansion, with resources raised on the capital markets to increase its credits and guarantees.

Reportedly, in the late 2000s, the then Vice-president of CORFO had suggested that CORFO could issue bonds for USD 500 million to fund new credit lines for SMEs (interview material). However, the Finance Ministry preferred to increase the fiscal contribution to CORFO. As the precedent for such a proposal exists, and CORFO is authorized to raise funding in this way once the Finance Ministry approves it, this should make it easy for CORFO to raise funds on capital markets.

Besides raising funds in national and international capital markets, CORFO could further increase its scale through additional funding from other development banks. It already successfully taps institutions like CAF, Inter-American Development bank and KfW, and could do more; this could be further expanded to include institutions like the Chinese Development Bank, especially given the strong trade and investment links that Chile has with China, and the European Investment Bank.

As detailed below, CORFO has been innovative in deploying a number of activities (such as supporting entrepreneurship through innovative programs like *Start-Up Chile*), and supporting a variety of sectors. However, within the range of instruments it has used, it has given a decreasing role to credit, and an increased role to grants and, especially, guarantees. Though this may be a fairly common trend in some Latin American development banks (e.g. NAFINSA in Mexico), it is different from the instruments used by highly successful banks like German KfW, which continue to use credits, mainly channeled through financial intermediaries, as a major instrument, especially for new sectors (such as renewable energy) and for SMEs; this is the case even though German capital and banking markets are more developed than their Chilean counterparts.

Helping promote Chilean exports in new sectors, as well as helping Chilean companies invest abroad, is another key challenge that CORFO should address more to boost Chile's long-term international competitiveness (going beyond sectors where Chilean firms have already successfully expanded abroad, such as retail and paper). This is an important new function of public development banks, carried out by institutions like the Chinese Development Bank and BNDES.

Particularly in this new phase of Chilean development, which urgently requires economic diversification into new sectors, but faces initial risks and uncertainty that may be far higher than in the past, it seems crucial that CORFO swiftly deploys a full battery of instruments. These should include credits especially, to support more innovative enterprises and sectors that generate a high proportion of employment in the Chilean economy - as well as SMEs more generally -, especially for loans of

longer maturities, which private banks are less likely to grant. This will allow these companies to obtain enough credit, at sufficiently long maturities and at reasonable cost. Naturally, such an expansion of credit should be combined with the continued use of currently deployed instruments, such as guarantees, grants and contributions to risk capital. The above-mentioned expansion of the scale of CORFO's resources would thus facilitate not just an increase in the level of activity of the institution, but allow the deployment of a more complete mix of instruments required to finance private enterprises and support structural diversification.

In what follows, we first briefly analyze the history of CORFO, linking it to the needs of Chile's development model. Then, we outline the objectives that CORFO is pursuing. Later, we describe the main features of CORFO today, as well as emphasizing its counter-cyclical role. Then, we explain and analyze the main programs and activities that CORFO pursues currently. This is not easy, as CORFO has developed a large number of instruments and activities; as we argue below, there may be a case for streamlining some of these instruments, making access to them simpler to users, as well as possibly putting greater focus on fewer priority sectors. We then examine in some detail the role of CORFO in the development of solar energy in Chile, and in launching *Start-Up Chile*. Finally, we conclude and draw policy implications.

II. Brief history of CORFO

Since 1939, CORFO, seen overall by governments of different persuasions as an efficient instrument to serve their development objectives and strategies, has played very varied roles (Muñoz Goma, 2009).

Its launch in 1939 made CORFO one of the first national development banks in Latin America, after México's Nafin, established in 1934. At the time, the needs of import substitution industrialization (ISI), blended with the catastrophic consequences of the 1939 Chillán earthquake, set the stage for CORFO's creation. In the initial period, it was a large and influential institution that participated in the funding of over 30% of investments in equipment and machinery and 18% of gross capital formation. (Durán and Fernandois, op.cit). Furthermore, CORFO created and played an important role in many of the key public enterprises central to Chile's development. In the initial years, these included the enterprise for electricity distribution (ENDESA), steel (CAP), sugar beet processing (IANSAs), oil (ENAP) and national airline (LAN). In the 1960s, it continued creating key enterprises, in sectors like telecommunications (ENTEL) and public TV (TVN) (Rivas, 2012). CORFO also supported the transition to a more export-oriented model, for example by providing financial backing to the forestry sector, which helped develop the paper and cellulose industry (personal experience).

During the Popular Unity government, CORFO played an important role in nationalizing enterprises, whereas under the military government, it did the reverse and was involved in the privatization-of many companies. Also under the military government, CORFO was forbidden from owning or creating state enterprises; it is interesting that other national development banks, like KfW, still own shares in public

enterprises today. During the 1982/3 debt and banking crisis (which hit the Chilean economy especially hard), as well as more recently during the 2008/9 financial crisis, CORFO played an important counter-cyclical role by significantly increasing its credit to private enterprises and guarantees for such credit to banks.

When democracy returned, CORFO was in a very weak financial position, with USD 1.6 billion of liabilities linked to the privatization process and over USD 700 million of impaired loans. Some voices then raised the possibility of dissolving CORFO, but the view prevailed that the institution ~~CORFO~~ should continue to play a key role in supporting private investment to achieve productive development. CORFO managed to improve its financial position, and focus on its new tasks. Furthermore, its credibility was enhanced both by a series of independent evaluations of impact, as well as the Ministry of Economy setting clear guidelines for CORFO and identifying challenges (Rivas, 2012).

Following suggestions made by the World Bank, CORFO switched from giving credit directly to becoming a second-tier institution providing credit and, increasingly, guarantees through financial intermediaries. The shift towards reducing the role of credit, while increasing the role of guarantees and targeted grants, accelerated since the Pinera Government came in.

Currently, CORFO implements long-term strategic goals determined by the National Council for Innovation and Competitiveness (CNIC), which advises the executive and legislative branches of government (Ministry of Economy, 2015). Several Ministers



sit on the Board of CORFO. Thus CORFO is closely linked to the development aims of the government, while having a close dialogue with the private sector.

III. Development Strategy in Chile and the role of CORFO

The legacy of privatization during the military regime and of unpaid debts to the institution relegated CORFO mostly to tasks related to financial management in the early 1990s. The difficult financial situation that CORFO inherited required efforts directed towards a solution. Thus, for a time, CORFO's historical role was pushed into the background of its activities.

With the return of democracy, a debate started on the appropriateness of keeping CORFO. Within the political and academic sphere, questioning the very idea of economic intervention through industrial policies had become quite widespread. However, the prevailing stance suggested that even within a market economy, there are important market imperfections and failures, which can undermine productivity and overall growth. These market failures and imperfections, as well as some (then weak) concerns about the need for a structural diversification of the Chilean economy, justified policy interventions, looking to correct market imperfections.

The most decisive step towards official confirmation that a policy agenda for productive development was needed was the design of new CORFO instruments, as well as evaluations to assess their impact, especially important to justifying them to the Finance Ministry.

Subsequently, with the creation of The National Council of Innovation and Competitiveness, more ambitious progress was achieved in terms of the need to direct efforts at the sectorial level. A study by the *Boston Consulting Group* proposed eleven

sectors as priority: aquaculture, functional foods, fruit farming, mining, pig and poultry farming, global services, special interest tourism, logistics and transportation, wideband and financial services. A committee of ministers chose five clusters, to propose a policy design that would boost each industry.

In recent times, CORFO and the Ministry of Economy has launched the Strategic Program of Smart Specialization (SPSS), *Transform Program: ‘The Transform Program aims to improve the competitiveness of our economy through the development of eleven strategic sectors’*. This phrase commits to the implementation of productive development policies. Chile had already embarked on this path with the proposal made earlier by The National Council of Innovation and Competitiveness.

‘Chile needs to change its productive structure – with the production and export of goods based not only on natural resources – and advance towards a more sophisticated, specialized, diverse and innovative economy, which will enable it to create a new national productive baseline’. Productive sectors chosen for the SPSS are high-grade mining, tourism, health foods, building industry, fishing and aquaculture, solar industry, logistics for exports, smart industries, creative economy, advanced manufacture and technologies and health Services.

In 2014, the Productivity, Innovation and Growth Agenda was launched, which aims to overcome obstacles preventing the increase of economic productivity. A Fund for Strategic Investments (FSI) was created to finance initiatives aimed at improving productivity and productive diversification. Among the funded projects are the SPSS from the Transform Program (Comisión Nacional de Productividad, 2014).

Priority sectors for the FSI are fishing and sustainable aquaculture, sustainable tourism, solar Industry, logistics, sustainable building Industry, advanced manufacturing, smart industry, creative industry, services and health technologies, high-grade mining and healthy food.

The previous paragraphs show clearly which sectors Chile is looking to promote; the Chilean productive development strategy is thus set. However, different government entities play a role in the productive transformation of the country, often with their own policy agenda, and there is not full coordination between them, nor with the private sector. It is important for them to coordinate better, and develop and implement a productive development approach in a strategic way at institutional level.

IV. CORFO and its institutional relationship with the government

CORFO is attached to the Ministry of Economy, and is led by a governing board chaired by the Minister. The Vice-President of the Board and the Executive Vice-President of CORFO are appointed by the President of the Republic. Moreover, this Board includes the Ministers of Foreign Affairs, Finance, Social Development and Agriculture.

Until 2006, the relationship between CORFO and the government was focused on the composition of its board and the reach of its instruments and programs, involving the participation of other ministries. The creation of the National Innovation and Competitiveness Council established a new institutional design to support the proposed national strategy (Rivas, 2012). Within this strategy, CORFO has a defined role, and it is therefore possible to identify its relations with other government institutions more clearly.

The objective of the National Council of Innovation and Competitiveness, apart from setting long-term strategic guidelines for the policy, is to propose ideas for the use of the Innovation and Competitiveness Fund (ICF), funded by income from the royalties paid by the mining sector. ICF works as a financial implementation entity for CORFO and CONICYT; the latter, as a branch of the Ministry of Education, specializes in tasks related to science, technology and production of human capital.

There is also the Committee of Ministers for Innovation, whose executive secretariat is headed by the Ministry of Economy. The Innovation Department of the Ministry of Economy is in charge of coordinating several public entities related to the programs defined by the Innovation Policy and Strategy.

In addition to the innovation strategy, there is the Productivity Agenda for Innovation and Growth, which has a shorter and medium-term scope of action. CORFO and the Agenda are related through the Strategic Inversion Fund, which finances CORFO programs that are aligned with the objectives proposed for the Agenda.

Even so, CORFO is committed to policies and instruments that go beyond the national system of innovation. A big percentage of their programs are own-initiatives funded mainly by the allocated public budget.

The national system of innovation establishes networks that only respond to one part of the productive development policy of the country. The institutional organization needs to be expanded to all the spheres of action of public policies working on productive transformation, search for innovation and promotion of competitiveness, with the aim of coordinating all efforts and available resources efficiently to maximize the impact on the economy.

V. CORFO today

In 2015, CORFO had total assets worth USD 6,272 million, which represent 2.6% of Chile's GDP. When analyzing their composition, we can note that in 2015, the

financial support deployed by CORFO (through grants, credits and guarantees, see Table I) amounted to USD 2,863 million, which represents only 1.2% of Chile’s GDP. This makes CORFO significantly smaller in scale than national development banks in other countries, such as KfW, CDB and BNDES.

Table I

Financial Support (million USD)	2010	2011	2012	2013	2014	2015	2016
Subsidies	194.54	181.89	194.68	199.61	304.96	332.94	332.17
Guarantees	1,219.59	2,277.88	2,541.56	3,414.83	2,729.42	2,360.37	2,457.36
Loans	508.34	192.97	166.41	104.08	80.13	61.07	74.35
TOTAL	1,922.47	2,652.74	2,902.65	3,718.52	3,114.50	2,754.38	2,863.88

* million USD

As pointed out, CORFO’s main financial support to the private sector in recent years has not been through loans, which only amounted to USD 74 million in 2016, but through loan guarantees to financial institutions. By 2016, the guarantee stock level was USD 2,467 million. Indeed, in GDP terms, CORFO’s guarantees are among the highest granted by a public institution in Latin America. Given the importance of guarantees in CORFO’s current activities, we focus more on this instrument below.

It seems useful to point out here, that there is a perception among many observers and users of CORFO’s resources, that the institution has too many priority sectors and too many instruments. As one observer commented, ‘*for every problem, there is a separate instrument*’ (interview material). Reportedly, users also find procedures for application for resources in some programs unclear and cumbersome, sometimes even discouraging them from applying or requiring major transaction costs for such



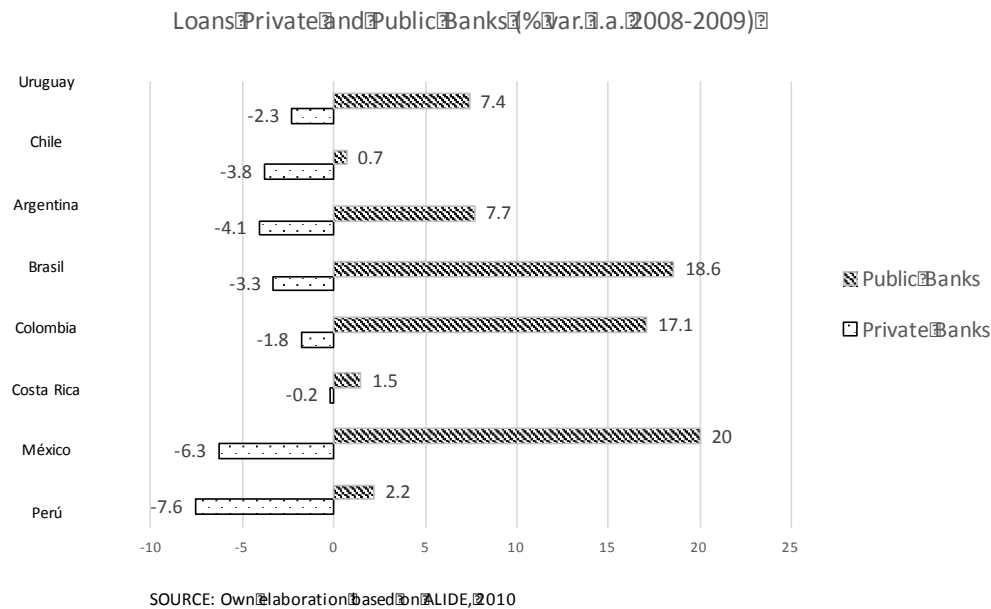
applications. There are exceptions, and users report that some programs -including guarantees- operate in a fairly agile way. Streamlining priority sectors and instruments, and working on the simplification and transparency of application procedures may be a valuable and high priority task to increase CORFO effectiveness.

VI. CORFO's Countercyclical Role

The role that governments should play in the financial system has been much debated. Some authors had negative views about the role of public development banks as growth catalyzers, basing their critique on the risk of political favoritism and corruption, as well as efficient private financial markets arguments (La Porta, 2002; Sapienza, 2004). During the 1980s and 1990s, public banks were severely criticized by neo-classical economists, who argued that what they called 'financial repression' was inefficient. Thus, regions such as Latin America, where 65% of the banks were publicly owned during the 1970s, went through massive privatizations in the 1990s, and by mid 1990s only 40% remained state-owned (Micco & Bank, 2005). Nonetheless, in the aftermath of the 2008-2009 financial crisis, the previous trend was reversed in many emerging and developed economies (Culpeper, 2012). In European economies, national development banks were either expanded or even created, and the regional development bank, the European Investment Bank, was given a far greater role since the 2008/9 crisis as well (Griffith-Jones and Cozzi, 2016).

In many Latin American economies, public banks' operations surged due to the counter-cyclical lending they deployed after the crisis, while private banks' lending shrunk (Figure I). Empirical evidence has been collected by authors such as Bertay, Demirgüç-Kunt & Huizinga (2015:327), who studied more than 1,600 banks in both emerging and developed economies and found that '*...state banks can play a useful role in stabilizing credit over the business cycle as well as during periods of financial instability.*' Furthermore, Schclarek et al, in this volume, provide empirical evidence that shows how counter-cyclical public development banks have been.

Figure I



In the case of Chile, Banco del Estado, the public bank that lends directly to small businesses, increased its loans sharply, while private loans plummeted. Ribeiro de Mendonça, Ana Rosa & Sibin (2008) show how Banco del Estado increased its corporate loans by 32% in 2009, while others shrunk more than 7%. At the time, Banco del Estado also encouraged the construction sector by reducing mortgage interest rates. This was part of a more general anti-cyclical policy encouraged by the national government, which, in the wake of the international financial crisis, increased its fiscal expenditure by 15% in a clear counter-cyclical move.

Chile's previous adoption of the so-called Cyclically Adjusted Balance (CAB) rule, compels the government to follow spending targets that enable the deployment of general counter-cyclical fiscal policies, which is very positive. However, authors such as French-Davis (2010) argue that it was only during the 2008/9 global financial

crisis that the fiscal rule operated in a really counter-cyclical manner, whereas this should become the case generally. Instead, he regards the general Chilean rule as more ‘cyclically-neutral’ and not sufficiently counter-cyclical, though superior to the pro-cyclical nature of private finance, both domestically and internationally.

It is important to stress, in the context of this paper, that CORFO, whose funding sources are to an important extent provided by the Chilean Finance Ministry, also expanded its programs counter-cyclically. This is clearly evident when examining CORFO’s annual budgets, which almost doubled from 2008 to 2009. CORFO provided liquidity to the financial market by injecting an additional USD 850 million in 2008, intended to leverage USD 1,800 million. Out of this figure, most of the money was targeted to long-term investments (USD 500 million), but short-term lending was also supported. Ensuring solid payment chains across the different sectors is of the utmost importance in crisis settings. Thus, CORFO tendered USD 300 million to support working capital through the banking system and using factoring mechanisms that could target the usually unattended smaller firms.

Apart from providing liquidity to the financial system, CORFO also made most of its guarantee scheme’s requirements more flexible and increased its limits to expand its reach (ALIDE, 2009). Overall, between 2007 and 2011, Hermann (2014) shows that CORFO increased the guarantees for SMEs seven times. This partly reflected the shift of preference for the guarantee instrument, but also had an important counter-cyclical aim.



Along with the general countercyclical stimulus implemented by national governments in Latin America, national development banks had a crucial role supporting the economy, when private lending fell (ALIDE, 2009; Griffith-Jones et al in this volume). It is also important to notice that the counter-cyclical role of national development banks is complemented by the important counter-cyclical role that regional and multilateral development banks play; this was very clear in the case of CAF and IADB lending to Latin American countries, in the wake of the 2008/9 crisis.

VII. Areas of Activity

In terms of areas of activity, CORFO has three focal areas: productive diversification, support to innovation and entrepreneurship and foreign and national investment promotion (CORFO, 2016).

a. Structural Transformation and economic diversification

The Total Factor Productivity (TFP) growth rate in Chile dropped from an average of 2.4% in the 1990s to 0.5% in the 2000s, a situation that becomes even gloomier when considering Manufacturing TFP. In addition, the export sophistication index significantly decreased in the last years (Bitran, 2016). These figures illustrate that Chile needs to develop dynamic competitive advantages and achieve structural transformation, through greater and ‘smarter’ diversification. The need for such a strategy has received increased support in the last few years, especially from the Bachelet Government; the urgency of both increasing productivity and diversifying the Chilean economy was made clear by the sharp fall in copper prices and the apparent end of the ‘commodities super-cycle’.

CORFO is seen by the Chilean Government as a valuable policy instrument, which should play a key role in the coordination of private companies, channelizing appropriate finance for them and identifying market gaps, as well as opportunities. Furthermore, far higher priority than in the past is given to the task of diversifying the Chilean economy, and especially exports. In this context, in 2014 the Chilean government launched the ‘*Chile Transforms*’ program, which makes CORFO

responsible for 37 *'Strategic Schemes of Intelligent Specialization'* and grants support, including subsidies to 10 sectors, selected as engines for development: advanced manufacturing and mining, solar energy (see Green Policy section below), food, tourism, fishery and aquaculture, intelligent industries, construction, logistics and creative economy.

The main goal of this tool is to try to diversify Chile's productive structure, moving from an economy exclusively based on natural resources to one that is more complex, knowledge-intensive and competitive. For example, in 2013 CORFO launched a financial program called *'Engineering 2030'* to help diversify Chile's economy and scale up to a more knowledge-intensive economy. The scheme consists of subsidies to Chilean universities, which aspire to transform their educational program in engineering, focusing on key areas (health and sustainability) that could boost ~~trigger~~ international competitiveness across several productive sectors. (interview material). With the same developmental purpose, complementary subsidy lines are given to *'Strategic Nodes'*, which aim to promote engagement among entrepreneurs and SMEs, in order to foster collaboration in areas of mutual interest. The type of nodes covered are related to public and private coordination failures and include market information, quality control or the improvement of standards for suppliers; the project is presented by an intermediary consultant, who deploys the program. An important difficulty of using nodes is the risk of capture by consultants, which can be minimized by filtering demands by companies requiring these services. (interview material).

Also, initiatives such as PROFO (Programa de Proyectos Asociativos de Fomento), aim to enhance firms' associativity and grouping for common tasks to gain

competitiveness in both internal and external markets. This program was inspired by similar initiatives supporting clusters in Spain and Italy; its success is illustrated by the example of small winemakers, who used to sell to larger producers, but decided to team up and improve market access by constituting their own brand (Rivas, 2012). In a similar way, the PDP scheme (Programa de Desenvolvimento de Provedores) provides subsidies to stimulate local value chains and co-finance the development and improved quality of local providers. Overall, financial support to encourage competitiveness given through these different programs to 24,963 beneficiaries involved in 1,473 projects, amounted to USD 60.2 million in 2015.

b. Innovation and entrepreneurship

Leapfrogging into higher value-added activities in Chile entails taking full advantage of previous productive capabilities and enhancing them through the creation and diffusion of new technological opportunities. However, a reverse trend seems to have unfolded in Chile in the last decade, when the percentage of innovative firms plummeted from 37.9% in 2004 to 16.6% in 2014 and expenditure in R&D lagged behind many countries, at only 0.39% of GDP (Bitran, op. cit). To tackle this obstacle, and in consideration of the constraints that uncertain innovative projects and start-ups with no track record face, an important part of CORFO's programs rightly focus on this area, where externalities and high risk investment play such an important role.

According to a report by the Chilean Ministry of Economy, Chile is positioned among the top 20 entrepreneurship ecosystems in the world and first in Latin America,

creating more than 200 new dynamic firms per year (Ministry of Economy, 2015).

The main CORFO programs to support entrepreneurs are *'Seed Capital'*, which had applications from over 5,200 firms and granted over USD 4 million to 118 of them in 2015; *'Start-Up Chile'*, further detailed below, and the *'Scheme for Regional Entrepreneurship and Innovation'*, with more than 250 applicants and over USD 2,5 million granted to 80 projects. The budget for financial support to innovation exceeded USD 60 million in 2015, which entailed a 98% increase compared to the average in 2010-2013. These programs include interesting instruments, such as tax exemptions for R&D given to private companies. A significant 80% of the 680 approved projects were from SMEs. Also, CORFO stimulated the creation of technology centers and technology transfer programs, which received support for over USD 33 million in 2015. The above-mentioned schemes, in large part, provide funds given as subsidies, granted through public tenders. Subsidies disbursed by CORFO in 2016 totaled over USD 330 million (Table I).

Part of the explanation given for a structure of instruments that gives priority to guarantees and grants, is that, overall, there is plenty of funding available in Chilean private markets for established companies, allegedly for relatively long maturities at relatively low costs. Loans by CORFO to commercial banks for on-lending are apparently seen as less necessary than in other Latin American countries. This seems, however, not to be the case for innovative enterprises and start-ups, due to uncertainty, a situation typical for new activities and enterprises, which often do not have tangible guarantees; nor is it clear that long maturity loans are available for SME projects.

The fact that such high priority is given to sectorial diversification, which implies going into new sectors where uncertainty and externalities are higher, as well as to the need for Chilean companies to invest abroad in new sectors, implies private banks and capital markets may not be up to the task on their own, especially for providing long-term finance to new sectors, as well as to new enterprises, and start-ups.

Acknowledging this funding gap, CORFO, since 1999, has been providing long-term resources to expand the role of Risk Capital Funds, which aim to support innovative firms, both during their early and growth stages. Up to 2016, the historical investments amounted to USD 630 million, provided to 43 funds and 194 beneficiaries, which in their vast majority were SMEs, in the Information, Technology and Communications (ICT) sector (interview material).

Furthermore, there are gaps in Chilean non-banking financial intermediaries, such as for cooperative financial institutions, leasing and factoring companies; CORFO is developing initiatives to support the development of these institutions. Often the issue with the funding that these institutions are able to provide relates not so much to the amounts granted, but to the conditions (of cost and especially maturity). Furthermore, these financial institutions need both financial support and technical assistance, which CORFO is providing with its new initiative, funded by KfW. Also, the banking system is fairly concentrated in Chile, which can lead to excessive spreads on borrowing, and very high return on equity of banks (interview material). CORFO and other institutions are designing measures to deal with these market gaps and imperfections.

c. Foreign and National Investment Promotion

CORFO works in cooperation with Chile's Foreign Investment Committee to attract foreign capital to the Chilean market. Also, CORFO encourages local investments by granting loan guarantees, financing Reciprocal Guarantee Institutions (IGR) and operating through financial institutions.

The guarantee mechanism consists of ten different programs. The main three are FOGAIN, by far the largest scheme, which represented 93% of CORFO's guarantee transactions in 2016, and covers long-term investments and working capital; the other interesting programs are COBEX, which covers export operations and PROINVESTMENT, a new program that represents only 3% of the guarantee portfolio and encourages the long-term investments of larger firms. In addition, CORFO also provides financial support to Chilean Institutions of Mutual Guarantee, namely IGRs.

The IGR system was born in Europe and diffused in some Latin American countries since the 1990s. In Chile, the IGR fund was established in 2007 and its norms have been designed by CORFO, which can leverage private investments up to ten times. However, its size has always been modest, covering only 2% of the guarantees issues between 2010 and 2016.

CORFO's main area of intervention is now guarantees. However, this focus has only been stressed since March 2010, when FOGAIN and IGR systems were reformulated by CORFO. At their origin, public guarantees were mainly issued by FOGAPE

(Fondo de Garantía para el Pequeño Empresario), a government fund launched in 1982. Until 2011, FOGAPE was still the main protagonist in the public guarantee landscape, far ahead of the IGR system and CORFO. For instance, in 2010 the number of its transactions reached 76,171, while IGR and CORFO only recorded 1,522 and 4,484 transactions respectively. However, by 2013, FOGAPE's activities had dropped by 36% while CORFO's surged by almost 2,000%, to more than 93,000 guarantees. It is noticeable, though, that apart from taking the lead in the guarantee system, CORFO's intervention also enabled a general increase of support to a wider range of beneficiaries. This is because, unlike FOGAPE, which only supported small and micro enterprises, CORFO reached medium-sized firms (Hermann, 2014).

It is also noteworthy that, at the same time, in 2011, the credit lines managed by CORFO fell sharply, dropping 62% in only one year. In the period between 2010 and 2014, the value of loans fell even more dramatically by 84%, with some fairly minor recovery in 2016 (Table 1). In 2011 and in the following years, many medium and long-term credit lines for SMEs ceased to exist, which partly explains the sharp fall in the level of loans (interview material). This structural shift in CORFO, away from the loans that were granted during President Piñera's government, is attributed by some observers to the belief that public financial institutions should not crowd out private banking but, instead, cover the private banking sector's risks, by guaranteeing its loans.

VIII. CORFO programs relevant today

a. Impact of guarantee programs

An interesting question is why CORFO has used guarantees far more than credits in recent years, a trend that became particularly marked during President Piñera's 2010-2014 government, even if it continued in later years. Though guarantees are clearly a valuable instrument, especially for providing access to companies without sufficient physical assets to offer as collateral (e.g. those who have mainly intangible assets, like an innovative idea), and they allow for additional leverage of CORFO's capital, guarantees often need to be complemented by other instruments, such as credits and subsidies.

The emphasis on guarantees seems based on the idea that banking and capital markets are well developed in Chile, which is true. However, this line would also argue that guarantees are sufficient to encourage additional private finance to previously excluded SMEs and that credit granted by institutions like CORFO may 'crowd out' private finance. This is certainly not true for financing in sectors where there is much uncertainty, where economic, social and environmental externalities are not privately internalized and where there is a need for patient capital (e.g. new strategic sectors that demand high initial investments, innovative companies, etc.) and in sectors or activities in which private finance is unwilling to take the risks, especially on its own. Furthermore, the problem with guarantees is that, although profits from the loans will go to the private financiers, the risks or at least those portions covered by the guarantees, will be assumed by the public sector. This asymmetry may be

problematic, as it may result in large contingent liabilities for CORFO. In this sense, it is important that enough provisions are made up front; CORFO seems to have been prudent in this aspect by restricting the scale of its leverage well below the limits established in its regulations. It is a source of some concern that CORFO's guarantee programs, which have been scaled up so much, have only partly been evaluated; however, as discussed immediately below, the evaluation of FOGAIN, which represents the largest guarantee mechanism, has shown positive results, especially in terms of broadening financial inclusion.

Indeed, the FOGAIN scheme was evaluated in 2013 through qualitative interviews, in which 84% respondents declared to have experienced a positive impact from using the scheme, 40% in terms of productivity, 16% in terms of increased sales, 13% of profit and 5% of employees. Furthermore, the scheme enabled the financial inclusion of previously excluded companies, which amounted to 15% of the total.

The impact of guarantee granting is allegedly large, as the funds are allowed to extend collateral for up to eight times its value, implying high leverage. The lack of adequate collateral is one of the most severe limitations to financing long-term projects in Chile. In many cases, traditional banks demand real assets that duplicate the value of the loan, to cover any potential unpaid interests or associated expenses. Thus, many firms, especially SMEs, that intend to pursue investments to increase their productive capabilities or efficiency, cannot access such funding, unless it is provided with guarantees, an area where CORFO plays a key role. Though the guarantee instruments have been successful in helping leverage additional credit, they have reportedly been less successful in lowering its cost (interview material).

b. Start-Up Chile

The main aim of the National Innovation Policy, designed by the Innovation Department of the Ministry of Economy, is the promotion of entrepreneurship and innovation to achieve the objectives of the productive development strategy. The plan granted great importance to the establishment of an ‘innovation and entrepreneurship ecosystem’, creating the Start-up program, a competition for global entrepreneurs that offers rewards to entrepreneurial initiatives with high potential in Chile.

Participants in the program have to develop their projects with minimal financial resources (bootstrap) within a six-month deadline. The grants reached up to USD 40,000 USD for Seed Capital and a one-year work visa. The pilot plan, carried out by Innova Chile with 22 start-up projects, was successfully completed during the testing phase. The program was then officially implemented.

Since mid-2011, more than 10 generations, with around a hundred projects, have gone through *Start-Up*. Over the years, modifications have been made to the benefits and requirements. Currently, *Start-Up* offers 90% of total program cost funding, with a maximum of USD 40,000 USD per project. Beneficiaries should contribute 10% of the expenses. There is an additional prize of USD 20,000 for carrying out the projects in regions outside the capital and for Chilean repatriated students with postgraduate degrees obtained in the best 150 universities around the world. Finally, successfully completed projects can apply for a second stage of funding, which can reach up to USD 120,000.

Within the institutional framework of the national system of innovation, the impact evaluation of the instruments and programs is a key element. In 2015, the Ministry of Economy hired an outside consultant to evaluate *Start-Up*. The main objective was to evaluate specific results from the program, as well as assessing the aggregate impact on the economy.

For the evaluation, four objectives of the program were identified: i) world class entrepreneurs develop companies with global potential in Chile (attraction/retention), ii) local entrepreneurs develop knowledge, skills and networks, iii) other participants in the Chilean entrepreneur ecosystem improve their access to information and become more entrepreneurial and open to innovate, and iv) the international community improves its perception of the Chilean innovation and entrepreneurship ecosystem. (Verde, 2016)

The first nine generations of beneficiaries, involving 785 projects, were evaluated. The methodology included surveys of project leaders and interviews of participants from the national entrepreneurship ecosystem, considering intermediate and final variables. Results showed that the program had a positive impact on raising capital and the amount of capital raised. However, the program did not have a statistically meaningful impact for the projects in term of: continuity of the start-up, sales (total value and growth), profits, exports, level of employment, later support from business incubators and accelerators, and number of subsequent entrepreneurial ventures launched by the project leader.

Finally, the evaluation makes a series of suggestions, including defining as the main purpose that world-level entrepreneurs have to develop start-ups with high global potential in Chile (a recommendation that has started to be implemented), as well as prioritizing criteria related to the entrepreneurship potential and its permanence in the country, and the incorporation of specialization alternatives for the program, by market or technology.

The evaluation carried out by Verde clearly has value regarding the understanding of the impact of Start-Up on the economy. However, while having evaluation reports is key to test the effectiveness of instruments, the results have to be interpreted within the context of the limitations of the methodology used, in order to determine the value of the evaluation and its limits.

The high reputation of the *Start-Up Chile* project is evident and acknowledged in the national and international press as well as publications by important international organizations, such as the OECD Development Center (OECD, 2016), which concluded that Start-Up programs reveal a different, more dynamic side to the Latin American region, and to Chile, specifically. According to OECD (2016), '*Start-Up Chile media impact has helped make Chile a talking point around the world and inspired young people to become entrepreneurs*'. Besides, *Start-Up Chile* has been an example for the creation of similar initiatives aimed at establishing favorable environments for startups in other countries of the region (www.startupchile.org). Engineering projects, 3D educational projects, applications to facilitate communication with suppliers, and others that offer digital books to children

represent the range of entrepreneurship projects that have successfully gone through the program.

At the end of 2015, the family of start-ups in Chile included 1 unicorn (start-up of at least USD 1 billion), 4 centaurs (with a valuation between USD 100 million and USD 1 billion), and 31 little ponies (with a valuation between USD 10 and USD 100 million). This is one of the most positive situations in the Latin American region, and is even comparable in scale to Singapore, one of the vanguard countries in terms of entrepreneurship, which has generated 2 unicorns, 12 centaurs and 27 little ponies (OECD, op.cit).

General perceptions of Start-Up within the Chilean innovation ecosystem are positive, particularly due to the way the program is conceived, with identification and project selection, and the resulting international positioning of Chile within the start-up field (Rivas, 2012). Assessing the overall impact of the program from a broader economic point of view (value generation, quality employment, productive diversification and sophistication) is complex, but there have been positive individual results from the projects, and perceptions of the program show a favorable picture regarding its impact in Chile. Specific problems, such as excessive concentration in the capital city, are seemingly being corrected, with special emphasis on encouraging start-ups in different regions.

One of the benefits of the CORFO Start-Up program, which has its own dedicated Division in CORFO, is that it has encouraged the modernization, improvement and broadening of the policy mix to support these companies in Chile. For example,



relevant regulations have been simplified, with a new law that allows people to start a new business in a single day. Furthermore, available financing has been expanded to support different phases of the projects. CORFO, the rest of the government, the private sector and universities seem to be collaborating effectively to support the creation of start-ups, which will hopefully contribute to the greater technological sophistication and diversification of the Chilean economy.

IX. Green industrial policy: the case of solar power in Chile

Designing an effective strategy for development is still a matter for debate. Many mainstream scholars allege that the state should not build capabilities and steer resources to specific sectors because they tend to ‘pick losers’, thus creating inefficiencies. More heterodox economists, such as Chang (2002), show that now developed countries, which had applied highly interventionist policies to promote a leap in their development, are now ‘kicking away the ladder’ to prevent emerging countries from climbing a few rungs. Some authors may claim that boosting a global green growth strategy to reduce carbon emissions could hamper developing countries’ abilities to follow the Global North countries’ growth path. However, there is growing consensus that green growth could act as a job-creating, inclusive, developmental strategy, if correctly encouraged.

According to Carlota Perez (in Mazzucato & Jacobs, 2016), the next techno-economic paradigm could take a green direction, due to the innovative potential, ability to transform linked industries and to renovate societal consumption habits of green projects. Thus, developing countries seeking to take advantage of this new ‘window of opportunity’ in development (Perez, 2010), should build capabilities around these technologies. Latin American countries, such as Chile, highly endowed with natural resources, could use them as a platform for development. Renewable Energy Technologies (RET), such as solar energy, on which we focus, have the potential to catalyze inclusive growth and sustainable development for various reasons.

Firstly, in Chile, diversifying the energy matrix through the incorporation of Renewable Energy Sources (RES) was necessary to gain more self-sufficiency and stability in energy provision. In the 1990s, Chile's energy generation was based on large hydroelectric projects, insufficient when demand increased and droughts turned more frequent. The country imported gas from Argentina and invested in combined-cycle power stations. However, since the mid-2000s, Argentina stopped providing gas at a convenient price and Chile suffered provision shortages (Nasirov & Silva, 2014). In 2008, Chile, seeking to diversify its energy matrix, launched its Renewable Energy Policy (NCRE). The law established a 10% renewable energy target for 2024. However, the NCRE policy proved so successful that, by 2012, Chile had already met a 7% target. In 2013, a new target of 20% was set for 2025. Stabilizing the energy supply by developing RES has had a huge impact on individual and industrial consumers, who could access energy without interruptions and at lower price. The incorporation of NCREs to Chile's last electricity tender, in 2015, reduced the price by 40%, from USD 47 MWh to USD 29 MWh.

Secondly, a mission-oriented policy to develop the solar power industry (for which Chile has great comparative natural advantages) is helping catalyze sustainable and inclusive growth. It incentivizes local producers to develop innovative business models that introduce new technologies and use local natural resources. It fosters dynamic comparative advantages that could position Chile as an internationally competitive producer. Besides this potential for exporting renewables to neighboring countries, there is also the possibility of exporting industrial products produced with renewable energy, which can reach new market niches and secure higher prices.

Currently, only 17% of the solar energy firms are local, but the target for 2050 is to reach 55% of the market (Fundacion Chile, 2015). In addition to the limitations that local players encounter as they seek to compete with foreign solar power firms, they also find it difficult to take advantage of the upstream and downstream positive externalities that this new industry creates. Foreign firms have high quality standards, which are not always met by local players. In the case of Chile, most solar firms' suppliers are from China and Europe. Thus, the scope to add local value in the solar energy value chain is reduced. Nonetheless, Fundación Chile's report (2015) shows that Chilean companies have a potential niche, as providers of solar power plants' related services, such as the provision of software products to measure and control energy supply or engineering services. The study estimates that more than 45,000 new jobs could be created in Chile.

Thirdly, providing solar energy contributes to reducing inequality and social exclusion, by giving access to electricity to off-grid remote rural areas, based on a cost-effective new business model. One essential aspect for this to work is to grant financial facilities to rural households to acquire the panels and pay for the energy. Digital finance solutions, such as Pay As You Go platforms to pay for solar energy consumption have become increasingly popular in African and Asian countries, but they need to be developed in Latin America. In Chile, more than 3,500 rural communities are still excluded from the interconnected power system (Letter, June, & Erlick, 2015) and could take advantage of Pay As You Go systems. This figures in the 'Energy 2050' policy, which proposes energy access to 100% of Chile's vulnerable households by 2050. Furthermore, the Ministry of Energy encourages the use of solar panels on the rooftops of every household, small and medium businesses and public

buildings. This initiative targets energy self-sufficiency for regulated clients, who can also provide their surplus energy to the grid (Relac, 2016b).

The impact of using technology innovations to grant access to decentralized energy solutions is immediate. It bolsters job creation as it enables business to grow by giving them more time to operate and improves education conditions by giving children more time to study. This could bring new opportunities to achieve transformational social change and development outcomes in developing countries.

According to Ban Ki-Moon, former Secretary General of the United Nations, USD 48 billion per year need to be invested to reach universal energy access by 2030 (Ban Ki-moon & Nations, 2011).

A final reason to deploy a green growth strategy is for environmental reasons. In 2015, Chile committed to the Paris Agreement and its global goal of mitigating climate change by reducing fossil-fuel energy sources and carbon emissions.

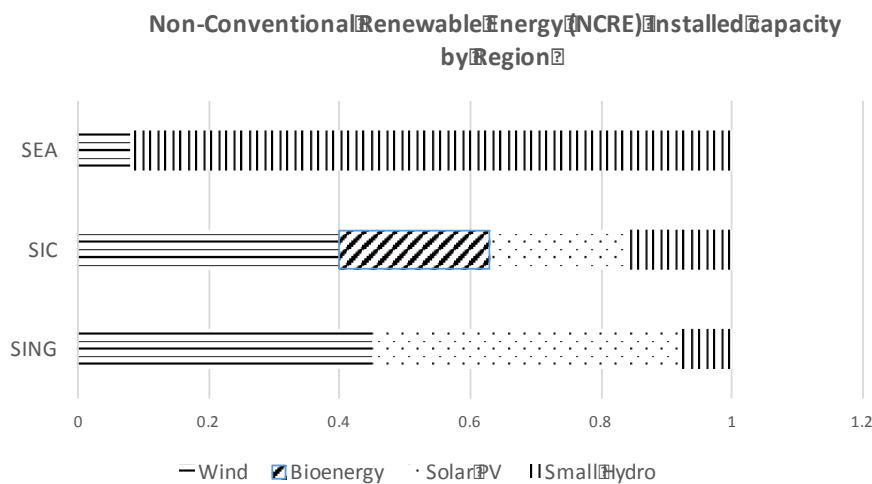
According to the NRDC Issue Brief (2013), targeting the 20% would reduce CO₂ emissions by 83 million tons. In addition, if hydro projects are replaced by NCRE, savings in water consumption will represent 11%, significant when considering Chile's lack of access to water.

Currently, Chile is among the highest energy consumers in Latin America, with 3,568 kWh per capita, but it produces less than 35% of what it consumes. Thus, encouraging diversification of energy sources is crucial for a long-term development strategy. The government's decision to set a green policy direction was initially reflected in the National Energy Strategy 2012-2030, documented by Chile's Ministry of Energy

(Agostini, Nasirov, & Silva, 2015). Later, the current government launched a new energy policy, called 'Energy 2050', which established a 70% threshold of NCRE to be reached by 2050.

Within non-conventional sources, the generation distribution is even between wind, with 28% of the market, small hydro 23%, bioenergy 23% and solar 21% (Center for Innovation and Development of Sustainable Energy (CIFES), 2015). Installed capacity for electricity generation based on renewables is also evenly distributed, but varies substantially by region (see Figure II). However, solar power in Chile is regarded as one of the sources with the largest estimated potential. The Atacama Desert, in north Chile, has the world's most powerful solar radiation. The location of these photovoltaic (PV) panels is strategic, because they feed energy into the Northern Interconnected Power System, SING, used by mining companies, which are the largest energy consumers in Chile (Griffith-Jones et al, 2017).

Figure II



SOURCE: Own elaboration based on CIFES, 2015

However, both financial and non-financial barriers impede the deployment of renewables at full capacity in Chile. As Nasirov et al. (2015) show, many renewable energy projects approved by Chile's Environmental Evaluation Service have not gone to market yet. In 2015, only 52 projects with capacity to generate power for 2,338 MW were under construction, while approvals reached a power generation capacity of 17,543 MW (Center for Innovation and Development of Sustainable Energy (CIFES), 2015). While many limitations may be involved in preventing these projects deployment, this section will mainly focus on the financial constraints.

Nonetheless, many non-financial factors are also at play. For instance, price instability, contract negotiations, path dependence, infrastructure conditions related to the poor grid connection between the Northern Interconnected Power System (SING) and the Southern Interconnected Power System (SIC) are also factors. All these issues impose constraints on the supply side. However, policy makers should also focus on the demand side, which may frustrate promising projects from taking place if, for instance, local communities oppose PV solar projects because they occupy vast land portions. This has been raised by '*Energy 2050*', which introduced a requirement for community-firm 'associativism' in every green energy project. Greater efforts to involve local representatives are needed to prevent opposition. (Moguillansky, 2016). In this regard, Germany's '*Energiewende*' ('Energy Turnaround') green policy is well known for its capacity to involve the local community in the construction process, providing them with clear information on the benefits of green energy (Zoellner, Schweizer-Ries, & Wemheuer, 2008). In fact, many of the actions taken by KfW, Germany's National Development Bank, went far beyond funding green energy producers; they also targeted consumers by helping to promote the green economy

and funding (and even subsidizing) households to increase their energy efficiency.

Considering both sides of the green economy when designing and implementing renewable energy policy seems key.

However, one of the main barriers to the deployment of renewable energy projects is financial. Long-term innovative projects have limited access to traditional financial sources due to their particular characteristics. Their future cash flows are uncertain, their projects' payback periods lengthy and their technical specificities difficult for credit rating evaluators to assess and monitor. Finally, positive externalities from green growth projects, such as carbon emission reduction or job creation, are not internalized by private investors. States conducting mission-oriented policies that intend to shape the market in a 'green direction', ought to support NRCE projects with long-term, patient, public funding (Culpeper, 2012). In particular, Chile's solar projects have a payback period of 8 or 9 years on average (Moguillansky, 2016) and the private financial sector is not familiar with potential risks. Moreover, local bankers have limited experience with Project Finance structures, the mechanism through which these projects are usually funded (Nasirov et al., 2015). Local companies that intend to enter the solar industry often have no track record or real collateral. On the contrary, the players in the electricity market that can use contracts as collateral are the traditional providers, frequently reluctant to diversify into green energy.

Traditional electricity generation firms in Chile did not show an interest in the new market, but they are gradually being compelled to diversify their services into new venues such as desalination, due to the sudden increase of players in the electricity

market and its plummeting price. However, they are still protected by national regulation, which ensures a 30% technical minimum for traditional companies with large variable costs. This norm, in fact, prevents solar power companies located in the North from injecting electricity into the Northern Interconnected System.

As a consequence of this lack of market for renewables, many solar firms located in the Atacama Desert are facing severe restrictions from both local and foreign financial institutions, which have become more risk-averse and increased their requirements for NCRE projects. In this regard, representatives of private banks in Chile, have declared their concerns about new actors entering the market without proper expertise, and they have made it difficult for them to borrow (Relac, 2016a; Relac, 2017). This additional restriction poses a serious danger for the achievement of the renewable energy production target, set by Acera. According to Acera, the Chilean Association for Renewable Energy, 2017 could deliver investments for USD 2,300, estimated based on 1,500 additional MW of installed capacity, at USD 1,5 million per MW. However, it is worth noting that reaching this challenging target, which would reflect a 40% MW rise, would necessarily entail a steep increase in the available public financial mechanisms for the sector.

CORFO designed special financial mechanisms to provide a solution to the aforementioned concerns. As part of the productivity agenda, carried out by the National Government and the Ministry of Economy, in 2014, CORFO designed a National Strategic Solar Industry program, within the Strategic Program of Intelligent Specialization and the '*Transforma*' initiative. As part of this program, CORFO designed specific credit lines, whose funds are offered through public tenders.

The main financial support program that CORFO has launched is a scheme to co-finance up to 70% of solar PV projects, the PV Solar Energy for Desert Weather and High Radiation, to encourage adaptation of the solar energy industry to the local environment... Its main goal is to nudge developers' adaptation to local conditions (for example, very high heat in the sun) and diminish the energy price. Among the requirements, CORFO demands that beneficiaries innovate, associate with technology centers and strengthen local value-added and exports. Also, public funding will be provided to incentivize self-sufficient solar models, quality certification and R&D.

Finally, CORFO has designed a credit line to support and help create value for local suppliers to develop prototypes, scale them and take them to market. Considering the government has detected a niche in service and product provision to the solar industry, this program could catalyze local sustainable growth throughout the value chain. However, even if many of these programs are promising, they are relatively underfunded by the Ministry of Economy. As with many other programs, the target is not always clear and the bureaucratic procedures reportedly deter firms from applying (Moguillansky, op. cit).

X. Conclusions

Since 1939, the year it was created, until today, CORFO has played very varied roles, being seen overall by governments of different persuasions as an efficient instrument to serve their development objectives and strategies.

Unlike many developing countries' national development banks, and despite a high level of non-performing loans in the late 1980s, CORFO proved resilient to policy recommendations that advocated for its dismantling, with a highly positive outcome in the Chilean case (Rivas, 2012). The prevailing position argued that CORFO was essential to tackle market failures that could hamper SMEs' development potential, as well as to support greater innovation and diversification.

Over the years, CORFO's instruments evolved and it stopped granting direct loans, to continue as a second-tier bank, on-lending through financial intermediaries. Later, it shifted further from granting credit through financial intermediaries to focusing more on guarantees for credit (through financial intermediaries) and on subsidies.

Currently, it concentrates mainly on innovation and entrepreneurship, by granting subsidies through public tenders as well as guarantees. CORFO has emphasized strategic collaboration with the private sector. Furthermore, it has given importance to a careful evaluation of the impact of many of its activities, which is a positive feature.

In recent years, CORFO has been very innovative in several of its instruments.

Above, we have discussed in some depth the *Start-Up Chile* program, which has received international recognition and been emulated by other Latin American countries; there is however, room for improvement, for example by increasing its

impact on variables, such as employment and sales, as well as decentralizing its activities more to the provinces. We have also detailed in depth the support that CORFO instruments have granted, in specific sectors, illustrating it with the case of solar energy development, which, combined with a very favorable policy framework, has positively contributed to the highly successful growth of solar energy. It is noteworthy that private financial mechanisms played a significant role in financing solar energy in Chile. However, the Chilean case clearly shows that private funds will discontinue their support towards RES projects as soon as price volatility scenarios or other risks emerge. Private financial institutions are not capable, nor willing, to take the risks that green growth investment demand. Thus, relying only on their funding could jeopardize the green economy national strategy, if not supported by public financing. The role of CORFO is essential to provide stable funding to producers capable of adapting to special local conditions and fostering local value added, as CORFO does through its credit line encouraging PV Solar Energy for Desert Weather and High Radiation.

More broadly, with the *'Chile Transforms'* program, launched in 2014, the government decided to enhance CORFO's goals by selecting strategic sectors with the potential to create dynamic competitive advantages, foster innovation, support structural transformation and increase productivity. This seems very valuable, and CORFO has undertaken the task with great enthusiasm; this is especially crucial, at a time when the urgency of undertaking structural diversification was increased by the sharp fall in the price of Chile's main exports, and particularly that of copper. Though many valuable steps have already been taken by CORFO, and by the government more broadly, and great efforts are being made to increase coordination with the

private sector, it would seem desirable to improve the coordination between government agencies, including CORFO, to better focalize resources and efforts, as well as improve collaboration with the private sector on both sides.

It is noteworthy that an important part of the funding provided is non-reimbursable, instead of loans. Furthermore, as pointed out, guarantees play a large and growing role. Thus, as discussed above, CORFO's main instrument is not its loan granting, but its loan guarantees, which indirectly enabled loans for over USD 2,000 million in 2016. There seems to be a strong case for revisiting this approach, as credit instruments may be valuable and necessary for the task of major diversification, as the experience of KfW and renewable energy seems to demonstrate, for example (Griffith-Jones, 2016, Moselen et al, in this book).

A further, very important, issue to consider is whether CORFO's capital and operations are sufficiently large in scale given the magnitude of the existing challenges, even though the institution has grown in recent years, and overall CORFO is a very effective and efficient institution.

As pointed out above, CORFO's activity is much smaller than some of the other national development banks, in proportion to the size of the economy and to the total size of credit to the private sector... A larger scale may be needed, particularly given the growing consensus that productive diversification and innovation are necessary for Chile to achieve more dynamic, sustainable and inclusive growth, as well as higher productivity increases. In this case, mission-oriented finance on a sufficiently large scale may be especially valuable. It would be feasible to increase CORFO's

scale with a small contribution from fiscal resources, as CORFO can raise funding at low cost on international capital markets, given Chile's fairly high credit rating, and especially, given the depth of Chilean capital markets, also find funds at fairly low cost and long maturities on domestic capital markets. This would allow greater leverage for fiscal resources.

Furthermore, CORFO, in coordination with other parts of the Chilean government, and in dialogue with the private sector, has already clearly defined important sectors and activities that need support to achieve structural transformation. CORFO is carrying out a number of programs, many of them innovative, which have a very positive impact on the Chilean economy. Furthermore, CORFO is broadly seen as an efficient institution. It also has good teams, which can help design a more detailed industrial strategy, in close collaboration with the private sector. However, it lacks sufficient scale to deliver significant impact. It is therefore clearly necessary for CORFO to reach an appropriate scale to have a sufficient effect on helping fund the major structural transformation needed; the proposed mechanism, raising funds in capital markets, seems to offer a tested and effective way of doing so. It could also help deepen and further develop Chilean capital markets, and possibly encourage the use of new financial instruments, with CORFO playing the role of 'market maker'. Finally, like many national development banks, CORFO has a vast range of programs. Though most of them seem very effective (which is verified by evaluations regularly carried out), the question can be asked if it may not be more efficient to streamline them somewhat, to allow greater focus. Better information and transparency on application procedures (and CORFO's operations), as well as a simplification of these procedures also seems important for users. Finally, another question to ask would be



whether CORFO programs should be made more flexible, to respond even better to companies' needs that are not already met by the private financial sector.

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Changing challenges in the modernization of Nacional Financiera: Mexico's key development bank

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1. Introduction: NAFINSA and the History of Development Banking in Mexico

Mexico has a long tradition in development banking that dates back to the mid-1920s and early 1930s when the State put in place the pillars of its monetary, banking and financial intermediation systems. Fundamental in this was the creation in 1925 of the Central Bank, with exclusive rights to issue notes and to control their circulation, as well as to set nominal interest rates and the exchange rate. It was also empowered to directly fund the government, through an open line of credit of up to 10% of the bank's capital.

Development banks were created and designed to be the leading actors in the provision of long-term credit for infrastructure and for major investment projects aimed at boosting the fixed capital stock necessary for Mexico's long-term economic expansion and social progress. They also had a significant political leverage given their discretionary power to grant preferential access to long-term finance, which could be exerted to favor selected business interests and groups.

¹ The opinions here expressed are the authors' own and may not coincide with the institutions with whom they are affiliated. The authors' gratefully acknowledge the advice and comments of Juan Manuel Andrade Hernández, Félix Arredondo Ortega, Jesús Gutiérrez Hernández, Eduardo Mápés, Jorge Muñoz, Noel Pérez, Francisco Suárez Dávila and Juan Manuel Ugarte, as well as of Stephany Griffith-Jones, Lavinia Barros de Castro, Oscar Dancourt, Pablo Sanguinetti, Felipe Rezende, Rogerio Studart, José Antonio Ocampo and Mariana Mazzucato as well as the valuable research assistance Kevin Jamel Sandoval and Ismael Valverde.

A landmark in this institutional building process was the creation of Nacional Financiera (NAFINSA) in 1934, which soon became the most powerful policy bank and a key instrument in Mexico's political consolidation and economic reconstruction in the aftermath of the Revolution (1910-1921). Three more development banks were then created: Banco de Crédito Agrícola (1926), Banco Nacional Hipotecario y de Obras Públicas (1933) and Crédito Hotelero (1937). Each of them was in charge of promoting one specific sector of economic activity (See Table 1 below). The first one explicitly targeted its financial resources to assist small farmers and members of the Ejido (Mexico's ancestral form of communal land in the rural areas). The second one focused on road building and irrigation systems. The last one provided finance to private firms for hotel construction and renovation.

The main priority of NAFINSA at the time of its establishment was to manage the productive and financial assets of a number of then recently nationalized banks. This task included the design and implementation of a program for public land redistribution; a responsibility that was later shifted to Banco de Crédito Agrícola. Most importantly, NAFINSA was designated as the main financial agent for the government and, in addition, also given two major tasks: developing Mexico's stock exchange and building up an active open market for government bonds.

Table 1: Development banks in Mexico, date of creation and mandate

Bank	Date of creation	Mandate and functions
Banco Nacional de Obras y Servicios Públicos (BANOBRAS)	Feb - 1933	Provide direct and induced credit Promote participation of commercial banks in financing of infrastructure Attract resources of institutional investors to finance infrastructure projects Promote the financial and institutional strengthening of federal entities, municipalities and their agencies Promote financial inclusion of municipalities not served by commercial banks, with emphasis on those in the National Crusade against Hunger and the National Program for the Social Prevention of Violence and Delinquency
Nacional Financiera (NAFINSA)	Apr - 1934	Expand access to finance in preferential conditions Provide finance for long-term projects in priority and high-impact sectors Foster regional and sectorial development Contribute to the development of financial markets Aim to maximize the impact on economic development, with a flexible and innovative management structure to ensure a results-oriented administration.
Banco de Comercio Exterior (BANCOMEXT)	Jul - 1937	Promote finance for foreign trade and for the expansion of productive capacity of exporting companies. Help internationalize selected firms by providing quality services, credit, guarantees and other specialized financial services
Banco Nacional del Ejército, Fuerza Aérea y la Armada (BANJERCITO)	Jul-1947	Provide credit to Army, Air Force and Navy staff, and the general public.
Banco del Ahorro Nacional y Servicios Financieros (BANSEFI)	Dec - 1949	Boost saving and financial inclusion Help consolidate and streamline social programs Act as the main instrument for financial inclusion policies
Sociedad Hipotecaria Federal	Apr - 1963	Promote the development of housing markets through guarantees and other financial instruments for construction, acquisition and residential improvement.
Financiera Nacional de Desarrollo Agropecuario, Rural, Forestal y Pesquero (FND)1_ /	1926*	Provide financial resources, directly and indirectly as “second floor” intermediary, to foster economic activities by the rural population in locations of less than 50 thousand inhabitants.

Notes: 1_ / FND was created with the financial reform of 2014, by consolidating a number of financial entities dealing with rural development. It performs the functions of "Financiera Rural", the development bank for the agricultural sector, which in 2002 replaced the “Banco Nacional de Crédito Rural”, that in turn englobed the three institutions that preceded it until 1965: "Banco Nacional de Crédito Ejidal"; "Banco Nacional Agropecuario" and "Banco Nacional de Crédito Agrícola". Of these institutions, the last one is the oldest and dates back to 1926. Source: Authors’ own elaboration based on official information

In 1940, NAFINSA's Organic Law was modified, turning it into a fully-fledged development bank. The change in its legal status reflected two fundamental concerns of the government. The first concern was to promote industrialization, manufacturing, earmarked by planners as the economy's future and most dynamic engine of growth. The second one was to have a strong financial institution, not only with significant capital resources, but also technical, managerial capacities and lending instruments to promote investment in infrastructure, as well as in selected activities. These concerns reflected on the one hand, the state of the global economic situation resulting from World War II. On the other, they responded to the Mexican government's commitment to have a direct role in the allocation of resources to bring about a major structural transformation and modernization of Mexico and thus become an industrialized economy.

The New Organic Law defined NAFINSA's following functions: (i) monitor and regulate the stock market and supervise the evolution of long-term credit; (ii) promote investment and help to strengthen and modernize private firms, a task that also covered possible mergers and acquisitions; (iii) operate as a financial intermediary to carry out investment projects by different firms through direct credits as well as provision of guarantees; (iv) act directly as a financial and investment institution, (v) operate as a financial agent for the government and public entities; and (vi) act as a savings institution.²

2. NAFINSA and State-led Industrialization

During the period of state-led industrialization (1940-1982) NAFINSA responded to the view that a major, concerted effort between the public and the private sectors to boost fixed capital

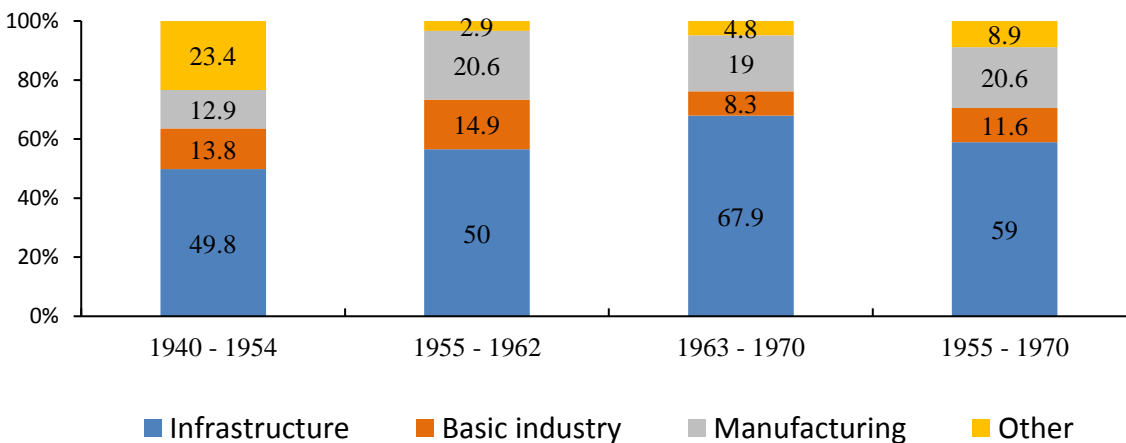
² Diario Oficial. Órgano del Gobierno Constitucional de los Estados Unidos Mexicanos. 31 Dec. 1940, p. 6.

accumulation was a *sine qua non* for Mexico’s long-term economic development. This view presupposed that ‘market forces’, by themselves, would be incapable of creating a robust and competitive industrial sector and, thus, lift the Mexican economy out of its low-development trap. Consequently, development banks were given a prominent role in the State-led industrialization that went beyond funding fixed capital accumulation, and also included the commitment to expand and modernize the infrastructure and engage in strategic planning to jump start and finance strategic sectors linked to the production of machinery and equipment or technologically advanced activities. Helping to reduce regional disparities in Mexico’s economic development was also one of its concerns.

As shown in Figure 1, between 1940 and 1954, infrastructure accounted on average for 49.8% of the total financial resources provided by NAFINSA’s for sectorial development increasing to 67.8% during 1963-1970. In the 1940s decade, the predominant public works projects of NAFINSA included mainly irrigation, and the development of roads and bridges. Between 1948 and 1954, the areas of electricity and transport became the main beneficiaries.

Figure 1: Sectorial destination of NAFINSA’s resources, 1940 – 1970

(Percentage of the Total)



Source: Authors’ own elaboration based on official figures

Basic industry absorbed on average between 13% and 15% of NAFINSA's financial intermediation from 1940 until the early 1960s, declining to 8.3% during 1963-1970. For its part, manufacturing represented 12.9% of NAFINSA's total resources for the 1940-1954 period, rapidly expanding to reach an average of roughly 20% thereafter. In practice, this support was provided through various instruments, including direct credits at preferential, subsidized rates or as part of specific development-cum-investment projects on selected activities. In addition, NAFINSA's role went far beyond that of fund provider and covered planning, operations management and ensuring technical support or upgrading as required.

In the mid-1950s Mexico entered a new, most successful phase in its long-term development marked by high and sustained growth of output and employment, low inflation and financial stability. However, in the early 1970s, adverse shocks in the international oil market and in the world monetary order affected Mexico's economic performance. Important to note, during this period a fixed exchange rate regime prevailed. Indeed, after the drastic devaluations of the early 1950s, the nominal exchange rate remained unaltered until 1976 when the peso was acutely depreciated in the midst of Mexico's first major balance-of-payments crisis in decades. This event signaled the end of the economy's golden era, locally known as "Stabilizing Development", characterized by high and persistent expansion of economic activity coupled with low inflation, and significant advances in key indicators of social development. During this time NAFINSA maintained its status as the key policy bank to selectively and preferentially provide long-term funds to boost fixed capital formation in key activities, mainly industrial ones. One of its mechanisms to achieve these goals was by obtaining resources from abroad (in US dollars) and channeling them to private companies (in Mexican pesos). In this way, it absorbed the exchange rate risk and made funds available at rather preferential rates. It also played a key role directly

managing a number of large firms with the aim to promote industrialization.

In the second half of the 1970's, the discovery of vast oil reserves in the country and their exploitation for export purposes permitted to fund an ambitious industrialization program. With oil prices forecasted to rise in real terms in the foreseeable future, this developmental agenda was enhanced further and public investment, manufactures and oil became the pillars of a new phase of rapid and strong economic expansion. The López Portillo's administration launched an ambitious industrialization strategy to deepen the import substitution strategy and extend it to heavy industry. The plan was to use oil revenues as a fund to develop the capital equipment and machinery industries in Mexico.

Thus Mexico's state led industrialization strategy received a second and most significant boost. NAFINSA, with a revision of its Organic Law, was granted more attributions to directly participate in the management, and even have full ownership, of public enterprises. Associated to this shift, there was a major rise in the share of total financing granted by NAFINSA to the industrial sector, much linked to the expansion of heavy, capital intensive, industries.

The end of the oil boom in the world markets, the rise in US interest rates and the slowdown of the US economy in 1981-1982, coupled with Mexico's mishandled fiscal policy, dramatically terminated the era of high expansion. In August 1982, Mexico declared a moratorium on external debt service payments. In the aftermath of this crisis, the exchange rate sharply depreciated, the government nationalized the banking system and implemented fully-fledged foreign capital and exchange rate controls, as well as standard contractionary monetary and fiscal measures. In this scenario the new administration of President De La Madrid decided to launch a new agenda for development, moving away from the traditional one of State-led industrialization and trade protection and towards prioritizing economic stability, understood as low inflation and negligible

fiscal deficits and at the same time, opening the domestic goods and financial markets, as well as drastically reducing State intervention in the allocation of resources

3. Market Reforms: A New Dawn for NAFINSA and Development Banks

The new neoliberal agenda placed the private sector as the pivotal agent for capital accumulation through the interplay of market forces, in a macroeconomic context marked by low inflation and moderate fiscal deficits.

This agenda had a major impact on development banks functions and their scope of action. Essentially, with the phasing out of the State-led industrialization strategy, the new administration saw neither a rationale for policy banks nor for state owned enterprises (SOEs) to have any leading role in investment for a structural transformation of the economy. Such responsibility was shifted to the private sector—businesses, banks and other financial intermediaries—with as little intervention as possible from the public sector. Market reformers portrayed Mexico’s traditional development banks and SOEs as bureaucratic, inefficient institutions that distorted market mechanisms and induced a rent-seeking behavior that undermined the very foundations for growth and development (see table 2 for a comparison of the functions and responsibilities of development banks in Mexico before and after the market reforms).

In the neoliberal era, policy makers justified the need for development banks only to the extent that they could help to solve the major imperfections in Mexico’s financial markets that in their view caused credit rationing and, thus insufficient and far from optimal capital accumulation by the private sector.

In this context, a main concern is the effect of information asymmetry on the performance of financial markets. This difference in the information held by lenders and by borrowers regarding

specific investment projects gives rise to two undesirable effects—adverse selection and moral hazard—that, in turn, translate into credit rationing of the private sector. This rationing distorts fund allocation among the whole set of investment initiatives. Thus, at market interest rates, numerous very good projects end up blocked due to lack of finance, while other not-so-good investment proposals, riskier and more likely to end in default, receive funding and begin to be executed.

How does the specialized financial literature tackle the problem of asymmetric information? Let's assume the case of a potential entrepreneur that needs bank financing for a number of investment projects. Assume too, a unique probability distribution—known by the entrepreneur but not by the banker—of success of each one of those investment projects. The bank may be aware of the average return on similar projects but is not able to assess the degree of risk involved and probability of failure of each specific venture. Increases in the bank's active interest rate may not help to select the best projects. Instead it may attract riskier ventures, due to problems of adverse selection and moral hazard. These possibilities reduce the bank's expected earnings, as they will be severely affected if the borrower can't pay the loan or interest. Attempts by the bank to effectively discriminate projects/borrowers according to their risk or probability of default fail, due to the existence of asymmetric information. In this situation, the preferred route of action for the bank, given the objective to maximize profits, leads to credit rationing; i.e. at the prevailing market interest rate, the demand for loans from the private sector exceeds the supply of them by the banking system (see *inter alia*, Jaffee and Stiglitz 1990).

Another approach to tackle the issue of information asymmetry in financial markets, somewhat more associated with a macroeconomic view, allows for banks to have the capacities to reduce adverse selection and moral hazard (Ball, 2009). Under this vision, banks do have the power

to gather and process relevant information, to evaluate projects, discriminate among borrowers assessing their associated risk, and adequately monitor them if they are granted a loan. Within these views, development banks become potentially useful tools to overcome the difficulties and market failures associated with credit rationing if and only if they act as complements and subordinates of commercial banks. They are seen as well positioned to provide funding to the segment of micro, small and medium-sized enterprises (MSMEs) whose credit needs, due to structural obstacles such as market failures, are simply unmet by the private commercial banking and financial system.

In practice, the responsibilities inherent to development banks' new ancillary role included offering long-term loans, working capital loans, syndicated loans and unsecured loans.³ They also began promoting a series of products tailored for this MSMEs segment of firms and funding necessities. The former included loan guarantees, leasing and factoring services, microcredits, seed capital, and financial support to entrepreneurship, as well as education, health and insurance services. The latter comprised advisory services, capacity building and training programs on various key areas.

³ A recent survey of development banks across the world shows that 90% of banks offer long-term loans and that 85%, 74% and 52% of the banks offer loans for working capital, short-term loans and syndicated loans. Less than 50% of the institutions surveyed offered loans for a new product and unsecured loans. Martínez de Luna and Vicente (2012).

Table 2. Mexico’s traditional structuralist view and post-market reform view of development banks

	Traditional perspective (pre-mid 1980s)	Market reform view (post-early 1990s)
Perspective and criteria	Industrialization, market creation. Long-term development	Services, commerce, industry; open markets, unprotected
Priorities	Policy set key industries, infrastructure and regions	Preserve bank’s capital, do not endanger or pressure fiscal balances. Financial inclusion.
Tools	Preferred loans/credit, direct intervention in capital formation with SOEs	Financial instruments to help, as second tier intermediaries—private commercial banks lending to SMEs
Target population	Mega-projects and large firms, mainly SOEs	Mainly SMEs. Support and modernize them, ease access to new technologies. Mainly private firms, as number and scope of SOEs acutely shrunk with the new so-called neoliberal agenda and market reforms.
Marketing	Supply –actually development policy- rooted and promoted	Demand driven by investment projects of private firms, including needs for working capital
Fund allocation	Direct / first tier	Indirect / second tier
Relative competitiveness	Subsidized interest rates, ease of access, total funds	Products, advisory service, serve as support to facilitate loans of commercial banks to SMEs
Resources	Federal funds as well as deposits of the private sector.	Private and external/foreign funds

Source: Authors’ own work based on Gurría (1994) and other sources.

To a certain extent, development banks kept partial responsibility for contributing to the development of the financial sector and capital markets. In theory, development banks could still be allowed to mobilize savings, especially in a period of high liquidity, for public or private projects in strategic economic, social and environmental areas. However, in practice this is a relatively minor role compared to the provision of credit to micro, small and medium-sized firms and the task of strengthening Mexico's domestic capital markets. This latter responsibility was simply stripped away from development banks in Mexico with the market reforms of the 1990s.⁴

The neoliberal agenda brought a new and formidably binding constraint on development banks brought: preservation of the financial capital —i.e. financial sustainability—was set as their top concern in their lending operations! Thus, first and foremost, development banks would have avoiding generating any pressure on the fiscal budget as the main guideline for their lending practices. Preserving fiscal soundness took precedence to promoting structural change for development. In practice, such financial sustainability implied: (i) maintaining real capital constant; (ii) achieving a rate of return no lower than the government's long-term borrowing cost; (iii) setting an explicit rate of return on capital (ranging from 7%-11%).⁵

In full accordance with the new paradigm, NAFINSA's mandate was radically changed. First of all, it had to preserve its capital and ensure its financial sustainability. Second, it had to promote financial inclusion. Most important, it now had to act exclusively as a second-tier financial intermediary. Moreover, its target population was set to be general MSMEs in commerce and

⁴ In the case of Latin America and the Caribbean, this role has been taken on by regional development banks including the Central American Bank for Economic Integration (BCIE), the Latin American Development Bank (CAF) and the Caribbean Development Bank. With the exception of the national development bank of Brazil (BNDES), national development banks in Latin America remain committed basically to provide financing for micro, small and medium-sized firms with a few initiatives to develop the financial and capital markets.

⁵ Martinez de Luna and Vicente (2012).

service activities. The (small) size of the firms became the key variable to be considered in NAFINSA's lending operations, rather than their specific activity or place in global value chains. The share of funds oriented to industry declined from 100% in 1989 to 41% in just five years. Contrarily, commerce and services, which did not receive any funding in 1989, captured 32% and 26.6% of the total by 1994.

In addition, NAFINSA was subjected to additional and multiple regulatory and supervision constraints. They included compliance with each and every regulation as any private commercial bank even those set in Basle III standards. In line with its new mandate NAFINSA sold or divested its industrial firms, and cancelled its key role as promoter of industrialization. The trust funds it had devoted to such objective were dwarfed, merged or eliminated. The New Organic Law limited its activities, in particular stating that it could engage directly in investment projects only as minority partner (up to 15%) and only for a maximum of 3 years.

4. NAFINSA: New Objectives, Instruments and Target Population

NAFINSA's current mission is: "To contribute to economic development through facilitating access to financial resources to micro, small and medium-sized enterprises (MSMEs) and priority investment projects, as well as financing business development services and contributing to the formation of financial markets and acting as trustee and financial agent of the Federal Government, allowing drive innovation, improve productivity, competitiveness, job creation and regional growth."

In relative terms, and taking only into account the credit directly granted as first-tier or as second-tier financial intermediary, NAFINSA is now second only to Banco Nacional de Obras (BANOBRA). This latter institution is dedicated to providing finance to investment projects in

infrastructure or in public services. BANCOMEXT has grown very rapidly, providing financial support to export and import activities (table 3).

Table 3: Mexico Development Banks and Commercial Banks, total credit granted, 2013-16
(in constant billions of pesos, of 2013)

	2013	2014	2015	2016
Banobras	272,693	295,059	315,379	321,402
NAFINSA	120,608	143,980	159,754	173,951
Bancomext	82,789	109,713	141,473	161,643
Sociedad Hipotecaria, SHF	70,612	69,491	67,908	65,613
Banjército	20,245	23,971	28,293	32,203
Bansefi	498	1,924	2,323	2,014
All development banks (A)	567,445	644,140	715,132	756,829
Commercial banks (B)	3,033,539	3,206,226	3,575,575	3,917,176
Dev. Banks share in total (A/(B+A)), %	15.8%	16.7%	16.7%	16.2%
NAFINSA's share in total	3.4%	3.7%	3.7%	3.7%

Note: the amounts registered for development banks include credit granted both as a first-tier and as a second-tier financial intermediary.

Source: Authors' own calculations based on data from CNBV

In line with the revised mandate set by Mexico's market reforms of the 1990s, NAFINSA's financial support is granted entirely to the private sector. The new regulatory framework radically transformed it to operate as a second-tier intermediary that, essentially, meets short-term and working capital needs of micro, small and medium-sized private firms, mainly in the service sector. Since 2005, or even earlier, it stopped directly financing the government or state-owned

enterprises. Moreover, in full accordance with its mandate to preserve its capital, it has not received any resources from the fiscal authorities and has obtaining its funds from other sources. As an example, in 2015 NAFINSA's funding came from money market operations (16%), bank bonds (2%), interbank loans and international organizations (42%), as well as, in a very small proportion, share capital (7%). Moreover, in many recent years, it has become NAFINSA's regular practice to have part of its operating profits retained or transferred—defined as the item *Aprovechamientos* in the fiscal budget—to the Ministry of Finance to engross public revenues. Given this change in mandate, its financial support to the private sector rapidly expanded, through diverse tools tailored to meet the needs of MSMEs, its new target business population.

Notwithstanding, NAFINSA's share in the aggregate flow of credit to the private sector is very small: less than 4% of the total. In fact, the overall share of development banks is 16% (See table 3). To better grasp the situation, in Mexico, total financing to the non-financial private sector reached the equivalent of 36% of GDP in 2014, way below the average of the OECD (146%) and the figures of Chile (109%) and Brazil (69%).⁶ Moreover, at that time in Mexico, total financing provided by all development banks to the non-financial private sector reached the equivalent of 3.9% of GDP: 1.7% of GDP in the form of guarantees for the commercial banks and 2.2% of GDP as direct credit. This low participation of development banks in providing resources to the non-financial private sector prevails today, notwithstanding that a financial reform, implemented in 2014-16, gave them more leeway in their day-to-day operations and, in particular, liberated them from the mandate set by the neoliberal reforms of the 1990s that made preservation of their capital a top priority. Two additional queries arise immediately concerning development banks' impact on Mexico's economic growth potential. First of all their funds are targeted at MSMEs—(and not

⁶ See Instituto Belisario Domínguez (2016).



at specific industries or regions as is the case with major development banks elsewhere)—regardless of their capacity to innovate, to export or to augment capital formation. Second, with regard to Nafinsa’s guarantees, the consensus is that such programs do not significantly expand credit to sectors, groups or activities traditionally excluded from formal finance. Guarantees do not correct for that market failure, but merely allow commercial banks an ampler management of their credit portfolio with their usual clients. In fact, the main beneficiaries and users of NAFINSA’s guarantees programs are large retailers and commercial businesses whose impact on innovation and on fixed- capital formation on plants, machinery and equipment is weak.

Mexico’s development banks’—in particular NAFINSA’s—current credit portfolio is limited partly by the regulatory framework, partly by the lack of an active industrial policy and also by the deterioration in the investment perspectives of the private sector. Indeed, Mexico’s business sector has become much less concerned with the expansion and modernization of its capital equipment than with just having short-term finance to maintain its day-to-day operations. A similar discussion is currently taking place in Mexico concerning the extremely low figure of commercial banks’ lending to the private entrepreneurial sector. Banks’ surveys tend to indicate that there is a lack of demand for long-term credit for investment from trustworthy, sound creditors. Also, the commercial banks tend to complain that the existing legal and judicial framework makes it very difficult for them to “execute” guarantees in case of creditors’ default on loans. On the other hand, surveys among private users of the banking system picture a totally different situation, fully consistent with the view of a severely credit rationed financial market in Mexico.

Between 2000 and 2013, NAFINSA’s total financing to the public and much more to the private sectors grew more than tenfold, rising from 86.8 to 631.9 billion constant pesos. Although it decreased slightly in the next couple of years, by 2015 it still stood at 500.4 billion constant

pesos as shown in table 4. This spectacular expansion was accompanied by a major sectorial shift in its public/private composition. In 2000, more than 50% of its direct and indirect funding went to the public sector. Soon, virtually all its financial support was directed to the private sector. By 2005, more than 90% of its funding was channeled to the private sector, a percentage that kept on climbing to reach 99%. In fact, NAFINSA has virtually stopped funding the public sector; from 65 billion constant pesos granted to it in 2002, it channeled only 2.9 billion constant pesos in 2015.

NAFINSA's funding to the private sector had an interesting transformation in terms of its composition between, on the one hand, credit directly granted -essentially as second-tier bank and, on the other hand, financial support given indirectly through guarantees and induced credit. In 2000, the first component totaled 36.4 billion constant pesos and the second ten times less. By 2015, their magnitudes were much more similar: \$270.3 vs. 227.1.1 billion constant pesos respectively. NAFINSA's financing by sector of economic activity during 2008-15 shows that a majority of its funding is targeted at commerce, distribution and other services (54%), while industrial activities receive only 13% of the total.⁷ This sectorial composition is rather incidental and does not reflect any policy intention on the part of NAFINSA to promote a particular change in the productive structure. It is more a by-product of its focus on financing MSMEs.

In 2000, MSMEs accounted for 49% of NAFINSA's portfolio, 78% in 2003 and 82% by 2005. It has remained around that percentage thereafter. In line with this policy trend, the number of firms supported by NAFINSA has grown exponentially. Available evidence shows that in 2000, it provided financial resources to 12,185 firms. By 2005, the cumulative number of beneficiary firms had expanded to 743,295 and by 2012, to nearly 2 million (1,949,223). The impact of such

⁷ The latest available figures for 2016 show a 48% share of commerce and distribution in NAFINSA's total financing, with 29% going to industry and 22% to services (See NAFINSA, 2016).

financial support for each firm is yet to be measured. In 2015, the number of recipients of some direct or indirect financial support from NAFINSA was 534,270. Approximately one third of them (176,979) were firms and the other two thirds (357,291) were microcredits given in their entirety to very low income entrepreneurs to cover the following credit needs: personal loans, insurance and housing. Interestingly, 53% of the overall recipients were first time users of some kind of financial support from NAFINSA (NAFINSA, 2016). However, when measured in relative terms, NAFINSA's coverage is rather limited. Indeed, measured as a percentage of the total universe of firms in Mexico, NAFINSA provides direct or indirect financing to only to 15% of large firms and 14% of micro firms (NAFINSA, 2012).⁸

The limited coverage is explained, in part, by firms' self-exclusion from financial markets. Indeed, available evidence shows that vast numbers of entrepreneurs claim not to need financial support or credit. One of the most recent surveys by INEGI (2014) revealed that 54%, 74%, 75%, and 82% respectively of micro, small, medium and large-sized firms do not need financial support to carry their activities. This is consistent with the well-known stylized fact that firms tend to finance their operations with retained earnings or by deferred payment to suppliers. On average Mexican firms finance more than 70% of their investment in fixed and circulating capital with retained earnings (Pérez Caldentey and González, 2015).⁹ And, what is particularly worrying, is that the main source of credit for day-to-day operations for a majority of firms, especially MSMEs, is deferred payment to suppliers.

⁸ Following INEGI, firm size is determined by the number of employees as follows: micro (1-10 employees); small firm (11-50 employees); medium-sized firm (51-250 employees); and large firm (more than 250 employees).

⁹ The literature argues that firms prefer different sources of finance for capital formation in the following order: retained earnings, bank credit and funds through the capital market. See, Leary y Roberts, 2010. This ranking did not consider suppliers' credit, in Mexico fundamentally associated with current operations' credit practices.

Obviously, there are other reasons for the absence of credit demand, including high interest rates. According to the same survey quoted above, 33%, 15.3%, 10.5% and 6.8% of micro, small, medium and large-sized firms surveyed cited high interest rates as an important obstacle to access credit.¹⁰ In the case of NAFINSA, financial support for MSME's is provided basically through induced credit and second-tier operations. In line with the supply-side view emphasized, NAFINSA provides finance through a series of instruments: mainly second-tier credit, guarantees and induced credit. Among NAFINSA's second-tier credit programs, the one that has drawn major attention is Productive Chains, but it also has others such as fixed asset finance, micro-business and traditional programs. In 2015, it started a program specifically targeted at young first-time entrepreneurs, which is still in its infancy.

¹⁰ Another reason that prevents firms' access to formal bank credit is the lack of collateral. According to the World Bank (2016), the average value of the collateral for a loan in Mexico is among the highest in the region: 179% of the value of the loan for large firms and 243% for small sized ones.

Table 4: NAFINSA's total financing by program. 2000-2015. In billions of constant 2010 pesos and as a percentage of the total

Financing programs	2000	2002	2005	2010	2012	2013	2014	2015
Productive chains		24.5	102.2	250.3	230.2	208.9	197.0	178.1
Fixed asset financing		16.1	13.8	4.1	4.3	24.2		
Micro-businesses		1.4	4.3	11.3	17.0	18.7	28.9	16.6
Traditional programs	34.0	37.6	24.7	32.0	29.5	33.4	53.9	57.7
Second- Tier Credit	34.0	79.6	145.0	297.7	281.1	285.1	279.9	252.3
First Tier Credit	2.4	1.8	0.9	7.1	3.5	6.6	10.4	18.0
Total Private Sector Credit	36.4	81.4	145.9	304.8	284.6	291.7	290.3	270.3
Guarantees and Induced credit	3.0	7.1	33.5	200.0	315.3	339.8	255.9	227.1
Total Private Sector Financing	39.5	88.5	179.4	504.8	599.9	631.5	546.2	497.5
Public Sector Financing	19.2	65.0	14.4	0.4	1.8	0.5	3.9	2.9
Other	28.1	10.9	0.5					
Total Financing	86.8	164.4	194.4	505.2	601.7	631.9	550.1	500.4
Productive chains	0.0	27.7	56.9	49.6	38.4	33.1	36.1	35.8
Fixed asset financing	0.0	18.2	7.7	0.8	0.7	3.8	0.0	0.0
Micro-businesses	0.0	1.6	2.4	2.2	2.8	3.0	5.3	3.3
Traditional programs	86.2	42.5	13.8	6.3	4.9	5.3	9.9	11.6
Second-Tier Credit	86.2	90.0	80.8	59.0	46.9	45.2	51.2	50.7
First-Tier Credit	6.2	2.0	0.5	1.4	0.6	1.0	1.9	3.6
Total Private Sector Credit	92.3	92.0	81.3	60.4	47.4	46.2	53.1	54.3
Guarantees and Induced credit	7.7	8.0	18.7	39.6	52.6	53.8	46.9	45.7
Total Private Sector Financing	45.5	53.8	92.3	99.9	99.7	99.9	99.3	99.4
Public Sector Financing	22.1	39.5	7.4	0.1	0.3	0.1	0.7	0.6

Note: ... denotes not available

Source: Authors' own elaboration based on data from NAFINSA's annual reports 2000-2015
<http://www.nafin.com/portalfn/content/sobre-nafinsa/otra-informacion/informes-anuales.html>

The intermediaries through which NAFINSA operates include commercial banks, specialized financial institutions as well as micro-financing institutions. Currently it works with roughly 150 financial intermediaries (NAFINSA, 2016). In practice, NAFINSA's financial support is channeled through different credit instruments and intermediaries to reach different segments of MSMEs. Such original financial strategy is denominated in NAFINSA as "segment-product-channel". On the one hand, second-tier credit and guarantees are channeled through three types of financial intermediaries: commercial banks, specialized financial entities and micro-financing institutions. On the other hand, the credit provided through productive chains uses commercial banks and specialized financial institutions. In turn, commercial banks attend to all types of firms including large, medium, small and micro firms. For their part, specialized financial institutions work with small and medium-sized firms. Finally, micro financial institutions focus only on micro firms.

NAFINSA has several programs of microcredit: i) Entrepreneurs; ii) Financing Program, iii) Supporting women micro-entrepreneurs, iv) Comprehensive Modernization Microenterprise, and v) Fiscally Compliant Business (*Adheridos*). This last program aims at strengthening the "formalization" of SMEs, i.e. to increase the number of firms complying with fiscal obligations and registering their employees in the social security system. None of these programs involve large amounts of funding. They seem to be pilot studies to be operated in the future on a larger scale.

Productive Chains has become, without doubt, the most important second-tier credit program in Mexico; far surpassing the others. Credit granted through it by NAFINSA reached 13.9 billion pesos in 2002 and expanded exponentially thereafter to reach 250 billion pesos by 2010, though declining to 211.8 billion pesos by 2015. Currently, in relative terms, Productive Chains accounts for 71% of NAFINSA's total of second-tier credit granted, and for 35.8% of its total

finance to the private sector. One of the key traits explaining the success of the Productive Chains program is innovative reliance on an electronic platform, extremely user-friendly for potential borrowers to rediscount their bills. It is precisely through this reverse factoring scheme —i.e. rediscount of unpaid bills before maturity—that the program helps suppliers to keep operating smoothly as a link of the productive chains. As mentioned above, given the shallowness of Mexico’s financial market, supplier credit is one of the main sources of credit for private firms to finance their current operations. In this regard, Productive Chains most successfully tackles a key weakness of the financial system in Mexico. It has achieved great effectiveness and efficiency. It has been praised and recently imitated by other intermediaries for its great administrative and marketing dynamics. The number of incorporated companies and the amounts financed give solid proof of its role in strengthening local supply chains.

Large companies as well as government entities participate in the Productive Chains program. By doing so they may invite their suppliers (whether MSMEs or individual entrepreneurs) to form part of a productive chain of suppliers. For each of these chains, a website is developed that becomes an e-marketplace, where information, products and services can be shared. Membership in a productive chain opens attractive financing options to its participants. Perhaps the key instrument in this set, as mentioned above, is the innovative technological platform for immediate, electronic factoring. Through very simple and transparent procedures, it allows MSMEs suppliers in any such designated Productive Chain to rapidly obtain finance through a rediscount mechanism of accounts receivable by electronic billing before their expiration date.

This so-called Reverse Factoring scheme differs from that of Traditional Factoring because it targets a select group of MSMEs associated with the supply chain of large companies of renowned strength and solvency. In the case of reverse factoring, the participating companies are

chosen on the basis of high standards in terms of business strength and risk in order to reduce and practically eliminate credit risk. In NAFINSA's Productive Chains program, the participants are large companies of the highest level and also their suppliers. In addition to substantially reducing risk, in this reverse factoring operation by NAFINSA, all transactions are carried out electronically, which helps to reduce costs and transaction time.

The financial resources for such factoring are provided by NAFINSA, in its role as an intermediary with other banking and non-banking institutions. The funds can be granted in local currency or in dollars, with a maximum amount of 3.26 million IDUs (Investment Units, which are adjusted daily per the variation of the consumer price index). The financing term is between 30 and 120 days. It operates with an interest rate determined in relation to the interbank interest rate (TIIE, in Spanish), and with no extra commissions being charged.

NAFINSA's Productive Chains program had a market share of only 2% in 2001, which climbed to 60% by 2004. In 2009, the Production Chains program comprised about 700 large buyers—36% of which were public sector entities and the remaining 64% private firms—and a gamut of financial agents including: banks, factoring companies and non-bank intermediaries. By then, a daily average of 10,000 transactions were made, providing financial support to approximately 27,000 SMEs in the year. The number of operations accumulated since its launch in the early 2000s until 2013 stands at 24 billion, mostly concentrated in the commercial sector, followed by industry and services (with shares of 41%, 35%, and 14% of the total respectively). The Productive Chains program has somewhat lost in presence in recent years. The main reason behind this is that an important number of so-called First Order Companies (large private firms) – with very high frequency of daily operations—have left the program. According to various analysts, a key reason for their withdrawal has been the surge of similar programs for microfinance

from commercial banks, also based on electronic factoring. This negative effect was partly offset by an increased outlay of resources to providers of public agencies and entities within the Federal Procurement Program of Government, specifically created for SMEs. In recent years, 40% of the Production Chains funds operated in this way.

In addition to second-tier credit, NAFINSA provides financial support through the Guarantees program, which, jointly with the Productive Chains program, constitutes the hallmark of NAFINSA's operations. This program was established in 1997 as a countercyclical instrument to offset the credit contraction that the Mexican economy suffered following the 1995 "Tequila Crisis", and the adjustment policies designed to confront it. Thereafter the Guarantees program focused mainly on financial inclusion though still maintaining, to a certain extent, a counter cyclical role as shown for example by its response to the Global Financial Crisis (2008-2009).¹¹

The current objectives of the Guarantees program are to expand access to credit, improve the conditions under which loans are granted (lower rates and principals) and increase the overall supply of credit. In this regard, by offering guarantees, it is a tool that aims to overcome some of the problems of asymmetric information and moral hazard that bring about credit rationing in Mexico. In other words, Guarantees are a form of financial coverage through which NAFINSA shares the credit risk with commercial banks, with the aim of facilitating access to financial resources to private firms. Its beneficiaries include micro, small or medium-sized firms in the industrial, commercial and services sectors. The resources thus channeled serve multiple purposes, among them to finance investment in fixed capital, complement working capital, fund projects of technological development, or even improvement of the environment (NAFINSA, 2000). The

¹¹ The importance of financial inclusion is reflected in NAFINSA's 2013-2018 institutional program where its states that its number one objective is to widen financial access under better conditions (more credit and lower interest rates) and other entrepreneurial services to MSMEs with a focus to improving their productivity.

program also seeks to boost the commercial financial sector's capacity or willingness to grant credit to firms or micro-entrepreneurs, which, for a number of reasons, are credit constrained by the formal financial system. It also serves to put in place an institutional mechanism to diversify risk and thus provide support for some federal entities, SOEs or public agencies as well.

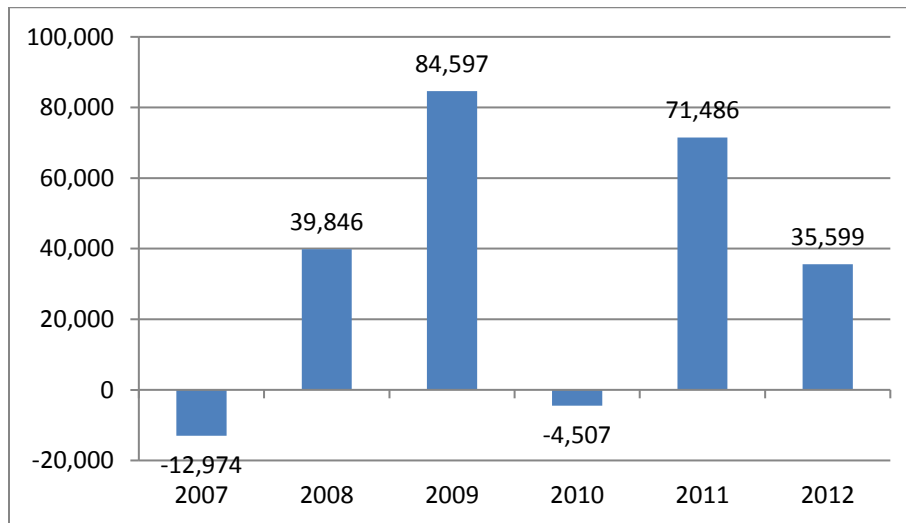
The Guarantees program works through the creation of trust funds by the government, through the Ministry of Economic Affairs (*Secretaría de Economía*) of the Federal Government, managed and administered by NAFINSA with autonomy and independence in the management of its financial operations. These trust funds work with a selected group of financial intermediaries through legal contracts, so that the fiduciary guarantee is granted on a virtually automatic basis once the financial intermediary has approved the request for a loan from a given firm.¹² In order to participate in the Guarantees program, a financial intermediary must have or design credit products specifically tailored to small and medium-sized firms. In addition, NAFINSA has the responsibility to evaluate, approve and authorize the loan products so designed by banks, in accordance with the regulations of the *Secretaría de Economía*. The guarantees scheme has two modalities: *pari passu* and first loss. The *pari passu* modality means that, in case of a loan default, NAFINSA and the financial institution must respond simultaneously and in equal measure (or in the proportions convened). The portfolio coverage is 50% for working capital, 70% for fixed assets, 80% for sectors and 100% for emergencies (ALIDE, 2016). NAFINSA fixes the price of the *pari passu* guarantees and these contain an implicit subsidy (Peña and Ríos, 2013).

¹² A financial guarantee is defined as “a contract under which a guarantor agrees to become responsible for the obligations of a principal debtor to a third-party creditor.” In this case the guarantor is NAFINSA, the principal debtor is the firm and the third-party creditor is the financial institution. Guarantees create a legally enforceable obligation on the part of the guarantor to pay the debt. See, DBRS, 2010.

The first loss modality establishes that NAFINSA covers the first portfolio losses up to an amount not exceeding 10% of its losses. Accordingly, through this modality, if a bank acquires a guarantee it covers 10% of its first losses. The first loss modality is implemented through an auction process convened by NAFINSA where banks make offers by credit batches with given characteristics and compete for a pre-defined guarantee coverage.

It is interesting to note that, given the way the program is designed, participant firms do not directly apply for a guarantee and neither are they aware of the benefit of having such guarantees by NAFINSA. Commercial banks do not inform firms that their credits are covered by a guarantee, in order to avoid a moral hazard problem (Peña and Ríos, 2013). Credit granted by NAFINSA through the Guarantees program shows a steady increase until 2007. The impact of the Global Financial Crisis, felt in 2008 but especially in 2009, gave additional impetus to the program and it expanded significantly. Indeed, during 2000-07, the volume of credit channeled through guarantees rose from three to 55 billion constant pesos representing 7.7% and 17.4% of the institution's total credit to the private sector. In 2008 and 2009, guarantees rose to reach 128.7 and 265.2 billion constant pesos (29% and 39% of the total). The countercyclical role played by the Guarantees program these two years can be illustrated by the difference between the programmed finance and the actual finance provided by it. Figure 2 plots the difference between both for the year 2007 to 2012. The difference between program finance and actual finance was negative for 2007 (12,974 million constant pesos) and increased significantly in 2008 to 39,846 million constant pesos to reach a maximum of 84,597 constant million pesos in 2009. In 2010, the difference went the opposite way, then rose in 2011 and declined thereafter.

Figure 2: Mexico. Difference between the programmed and actual financial support provided by the guarantees program for 2007-2012 (In million constant 2010 pesos)



Source: Authors' own calculations on the basis of NAFINSA's annual reports 2007-2012

As the Productive Chains' credit stalled in 2010-2012 and eventually began to decline in 2013-2015, guarantees became the most important instrument of NAFINSA to grant credit to MSEMs. Subsequently the credit granted through guarantees represented more than 50% of its total financing to the private sector.

Besides the Productive Chains and the Guarantees program, NAFINSA has taken additional initiatives to further develop and strengthen Mexico's financial markets through the provision of venture capital. The first risk capital fund was established in 2004, and it was an important basis for the creation of 43 companies with technological projects. Furthermore, NAFINSA, in collaboration with other local development banks, created another promotion fund

in 2006. In 2010, with the Ministry of Economic Affairs, they created the fund called *Mexico Ventures*, whose main purpose is to invest in projects of Mexican entrepreneurs. In 2012, again both institutions launched the “*Fondo de Capital Semilla*” (Seed Capital Fund) and in 2013 they considerably augmented its capital. That same year, the Mexican Government inaugurated the Entrepreneur Institute (*Instituto del Emprendedor*). As a partial result of these initiatives, capital financing to SMEs almost doubled between 2007 and 2012, but its share is tiny compared to similar capital available to large companies.

NAFINSA’s “Programa Nacional de Franquicias” (National Franchise Program) allows larger SMEs to participate in a franchise with an interest-free loan through a financial institution that covers up to 50% of the costs, to be reimbursed in 36 months. Between 2007 and 2011, the program supported 1,627 franchise outlets (CNBV, 2015). For its part, the *Red Mexicana de Inversionistas Ángeles* (Mexican Network of “Angel” Investors), which are associations of investors looking for potential projects to invest their capital) expanded to 13 in 2011, thanks to government support. An additional investment guarantee was established, over a period of 3 to 5 years, specifically directed to innovation-oriented SMEs or to exporters of products with high value-added. In 2011, the Ministry of Economic Affairs launched the “Programa de deuda” (Debt program) in partnership with the Stock Exchange of Mexico and AMEXCAP, a financial intermediary, to help companies issue bonds.

However, despite all these very successful initiatives, in Mexico, funds for venture capital are far from achieving a significant scale. In practice, this channel of finance is at best irrelevant and at worst non-existent for most MSMEs and even large firms in Mexico. Many obstacles remain, including Mexico’s particular corporate culture, the relative absence of truly competitive

practices in many markets, the inadequacy of legal frameworks coupled with the absence of a culture of long-term planning for structural change within the Federal Government.¹³

5. NAFINSA: strengths, weaknesses and future challenges

From a strictly and acutely microeconomic perspective, NAFINSA has been a successful story of institutional transformation in the face of drastic changes in the nation's development agenda. As an individual bank, NAFINSA positively adapted to the changing situation. It has become a profitable entity, in particular creating innovative Factoring and Guarantees schemes. From systematically relying on fiscal resources—sometimes in an urgent way—it is now a self-sustained, solvent financial institution capable of regularly transferring part of its profits to strengthen fiscal revenues. A fundamental constraint has been that until the recent financial reform of 2014-16, capital preservation and sustainability were set as NAFINSA's key priorities in order to avoid putting pressure on the Federal Budget. NAFINSA has been able to preserve and even augment its capital. Within the narrow perspective set decades ago by the market reforms and still in vogue with the current administration of Peña Nieto, the challenges for NAFINSA to meet its additional key objective—of strengthening the financial inclusion of MSMEs—are far from overwhelming. Essentially, they boil down to having larger capital, much more independence or leeway in hiring and selecting its body of human resources at the top level. Some of its intermediation programs should be revised, perhaps eliminated, given the scant number of their beneficiaries or even duplication with other schemes.

¹³ NAFINSA has also been a key financial agent in securing funds from international financial organizations and donors in the external capital markets. Recently it floated a Green Bond signaling its return to the world markets, for the first time in 18 years.

However, from a macroeconomic perspective, the conclusion on NAFINSA's role in helping to overcome key obstacles on financing Mexico's development points in a very different direction. In its current operations as a second-tier intermediary focusing on SMEs, NAFINSA's direct and indirect contribution—and for that matter virtually that of all development banks in Mexico—to alleviate credit restrictions is very limited. Moreover, it is highly questionable whether its stellar financial instrument of Guarantees significantly expands the commercial banks' credit supply (See IBD, 2016) or merely helps such private institutions manage more profitably and in a less risky way essentially the same portfolio of clients and activities, with virtually no additional exploration of new, innovative ventures put forward by traditionally tightly credit-constrained private firms. Given its design, the major beneficiaries of the Factoring program are large, well consolidated corporations—many of them in the service and retail sectors—which thus avoid paying their suppliers in time. In addition, in its operations to support commercial banks' loans to private SMEs, scant or no consideration is paid to the beneficiary firm's activity, the strength of its forward and backward linkages, its innovation or export potential, or even its prospects for employment creation.

For decades, the Mexican economy has been stuck in a trap of scant growth, aggravated by an increasing incidence of poverty that now affects more than 50% of the population. Its productive structure is marked by an acute dualism, with on the one hand a few very dynamic, large manufacturing firms, which are extremely, dynamic, successful global players and, on the other hand, the vast majority of firms, which are excluded from the international, modern circuits of technical innovation, export markets and financial flows. Moreover, for decades Mexico's extraordinarily dynamic manufacturing export sector has failed to generate enough local value added and, therefore, has been unable to be the much-promised engine of growth for the rest of

the economy. Experts concur that finance has been and continues to be a constraint on the Mexican economy's long-term growth potential. As we mentioned above, in Mexico, bank lending to the private sector is extremely low in any relevant international comparison. Moreover, the gap between financial saving and banks' lending to the non-financial private sector is also very wide in Mexico.

Most important, in Mexico, the provision of long-term finance for private fixed capital formation is more an exception than a norm. Indeed, Mexico is the country in Latin America with one of the lowest ratios, as a proportion of GDP, of banking loans to private activities. The small magnitude of the ratio is even more worrying if the focus is placed instead on formal finance for private investment. Its domestic financial market is very shallow, highly concentrated and characterized by an acute exclusion of micro, small and medium-sized firms, struck by informality, and with an urgent need to modernize capital equipment, machinery and update its technology. According to survey data, more than 90% of private firms in Mexico have no access to loans from the commercial banking system, including the development banks sector. Without access to finance, there is simply no way to have sufficient investment and, ultimately, to move away from the trap of scant economic growth and underdevelopment for a vast majority of the Mexican population.

The context has darkened since the election of Trump in the United States, given his promise to cancel NAFTA, impose large tariffs, adopt a border tax system, cut down imports and reverse American FDI to Mexico. Thus, fascinating and daunting challenges are open for NAFINSA to become a relevant instrument, a policy bank to channel financial intermediation for fixed capital formation with a developmental vision to promote a structural transformation of the Mexican economy. This means, the goal for NAFINSA must be to recover some of its functions,

prerogatives and responsibilities as a policy bank, but without the alleged excesses of the past, some of them true and others exaggerated due to its association with the black legend of import substitution and state-led industrialization (Suárez Dávila, 2017).

The Financial Reform of 2014-16 opened the door, in principle, for NAFINSA to become once again a major policy instrument for such structural transformation. In particular, it eliminated the preservation of capital as a key priority in development banks' operations. It is too soon to give a final assessment of its impact. But there is consensus that it has yet to make an impact in significantly increasing credit access among the population and reducing its cost (See IBD, 2016). Whether it will do so in the future is uncertain, but the possibility for change is open.

NAFINSA's challenge is to have a new role not limited to compensating for market failures and the absence of markets, and to act as a significant financial agent of the Federal Government. This means that its practices must still be adjusted to favor open markets but also, and this is a huge assumption given the current views of the Mexican government, that there should be a significant return of the State's intervention in economic matters. Not on the same scale as in the 1970s, by any means, but it can't remain as absent as it was in the 1990s, until the years before the 2008-09 international financial crisis and even today. Expanding its mandate to authorize it again to engage significantly in first-tier, direct credit operations is necessary to alleviate the credit constraint faced by the non-financial private sector, especially in certain less developed regions, as well as in long-term, capital intensive ventures in innovative areas. In addition, the prevailing imposition of full compliance of development banks—NAFINSA, in particular—with Basel III norms and regulations significantly hinders their intervention in sectors like infrastructure and heavy capital equipment, which tend to be heavily concentrated (See Staudinger, 2017). Given development banks' distinctive mandate to fund the creation of markets, to promote innovation

and discovery of new ways and activities to push forward structural transformation, they can't be subject to the same regulation and supervision criteria as commercial banks. Standard methods based on profit lines, capital requirements and exposure should not be the only or main guideline for the assessment of their contribution to, in one word, development. Alternative criteria should be explored.

Sensible State intervention in the Mexican case has been and continues to be badly needed. It has now become urgent particularly in two main areas. The first one is in building and modernizing Mexico's infrastructure. For the last seven years, public investment has been declining in real terms to a point where today, its ratio as a proportion of GDP is less than 4%, the lowest in Mexico's history since the 1950s, and one of the lowest in the region. This decline in public investment runs very much against improving Mexico's infrastructure, and undermines its economic growth potential. The second one is in the implementation of a modern industrial policy. On January 2013, President Peña Nieto in his inaugural speech said: "... the effort of the government through the implementation of an industrial policy will lead the Mexican economy to higher rates of expansion" (Peña Nieto, 2013). Moreover, the National Development Plan 2013–2018, which the government unveiled in June 2013, explicitly considered industrial policy as a tool for development. It argued for the implementation of a set of policies in which the State's role in promoting strategic sectors—among which it specifically includes the industrial one—also aims at creating stronger forward and backward linkages between exports and the rest of productive activities to boost Mexico's economic growth and its internal market, in addition to removing obstacles and correcting market failures. Most important, in those arguments, the President gave room to the option of using industrial policies to go beyond consolidating static comparative advantages and advance to creating or discovering new advantages by fostering nascent industries

and innovation. Unfortunately, this discourse has not been put into practice; thus an active industrial policy is yet to be designed and implemented.

Frankly, for the above to happen, a key condition—way beyond NAFINSA’s sphere of action—is that the Mexican government should seriously adopt a new development agenda, different from the current one centered on maintaining so-called “macroeconomic fundamentals”—i.e. low and stable inflation and moderate fiscal deficits and minimal intervention of the State in the economy—as necessary and sufficient conditions for economic growth. Whether the Mexican government will finally be lucid and bold enough do so is uncertain. But this road is more and more likely to be travelled soon, given the long-time failure of the current market-reform agenda and the major challenges that the Trump administration has brought on Mexico’s financial and fiscal stability as well as on the possibility of export-led growth as a viable option. Very soon, time must and will tell.

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The experience of development banking in Peru: 1990-2015

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Abstract

This paper analyzes the experience with the state financial entities in Peru and argues that their development banking activities have decreased in importance as instruments of public policy since the structural reforms implemented in the early 1990s. Like all other state enterprises, they have since been subject to discriminatory legal regulation. The four state financial companies analyzed have objectives and goals that are not integrated with one other, duplicate their efforts, and do not take advantage of the possible synergies to be obtained; therefore, none of these institutions constitutes an effective state development bank such as exists in other countries.

JEL Classification: D80, E50, G20, H60, N26, Q14

Key words: bank lending, state banks, developments banks, financial analysis, financial intermediation

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1. Introduction

At the start of the 1980s, the overall lending of the state financial entities, which exercised the functions of a development bank,¹ amounted to 15% of GDP. By 1993, following Alberto Fujimori's neoliberal reforms, which entailed the liquidation and privatization of almost all of Peru's state-owned enterprises, whether productive or financial, the overall lending of the state-owned financial institutions had fallen drastically to 3% of GDP.

However, the Peruvian economy grew at an average annual rate (GDP) of 5.7%, with very low inflation (CPI) of 2.8% per year, during the period 2002-2015. The country's notable performance over this 14-year period, which was based on the commodities supercycle; minimal state intervention in the economy besides effective monetary and fiscal policies, except for 2014-2016; negligible productive diversification; and maximum commercial and financial openness to globalization, seems to have had no connection whatsoever with the role of these state-owned financial institutions. Peru's commodities export economy did not require a state development bank.

In 2014-15, the external context deteriorated markedly. In tandem with the slump in international metal prices, GDP growth slowed significantly to an annual average of 2.8%. The question is whether the Peruvian economy will survive the acid test of all commodity-exporting economies: extending growth beyond a long cycle of favorable prices for its export products. Is it, then, time to rethink the role that development banking could play in diversifying the Peruvian economy's production and in closing the infrastructure gap?

Diversification of the Peruvian economy's production structure remains incipient.² The administration of Pedro Pablo Kuczynski inherited in 2016 a less-than promising mining-exporting economy, integrated into an urbanized society.³ The external forces - high commodity prices and capital inflows - that drove economic growth over the past 15 years will lie dormant for the foreseeable future.⁴ Sooner or later, the new administration will be compelled to try to diversify the Peruvian economy in some shape or form. Without the

¹ According to Ferraz, Além and Madeira (2013), development banks are "a non-monetary financial intermediary providing long-term loans, which often are government-controlled institutions and operate in segmented markets aiming at promoting the capital development of the economy."

² See Hausmann and Klinger (2008).

³ Direct employment in the mining industry does not even account for 1% of the workforce.

⁴ See IMF World Economic Outlook (2015) and (2016).

expansion of industries besides mining or the components of aggregate demand other than investment in the extractive sectors, there will be no economic growth in the cities as well as insufficient urban job creation. This process of diversifying the productive apparatus requires a master plan underpinned by public investment, a higher exchange rate, and a genuine state development bank.

This international context has revived interest in the relevance of credit for economic development as highlighted by Schumpeter (1967[1934]), and on the conditioning effect of the financial system in the short term as signaled by Keynes (2003[1943]). From there comes the importance of the development banking activities of state financial institutions as a policy instrument to help mitigate those market failures that could hinder a sufficient and adequate credit supply, especially in countries such as Peru where the stock markets are underdeveloped⁵. While several state-owned financial entities exist, to date the Peruvian government does not have an effective development bank as a long-term public policy instrument.

In Peru, the preponderant view of the state's role in the economy is marked by the radical experience of privatization of state-owned companies and financial deregulation accomplished during the dictatorial regime of Fujimori (1991-2000). The 1993 Constitution established that the state can subsidiarily undertake business activities only where expressly authorized by law. This peculiar political-legal context accounts for the performance of development banking in Peru since the 1990s. It is often said that state-owned enterprises can only engage in that which is expressly and specifically provided for by law, unlike private enterprises, which can engage in whatever the law does not expressly prohibit.

On the basis of this controversial "subsidiary role of the state", state-owned companies are not allowed to compete with private firms on an equal footing, unlike in the OECD countries.⁶ In the case of the financial companies, this means that their sources of funding in local currency are not competitive and, on the contrary, oftentimes have ended up adding to the external debt while contributing to the extensive dollarization of the financial system and the underdevelopment of the securities market.⁷

⁵ For an analysis of financial restrictions on economic development, see Hermann (2014).

⁶ See Ferraz, Além and Madeira (2016).

⁷ See Jiménez (2009).

This paper has ten sections, including this introduction. The second and third sections provide a brief overview of the privatization and dollarization of the financial system, as well as the circumstances regarding the three main market failures in the Peruvian financial system. The fourth reviews the political and legal framework in which the state-run financial enterprises have operated since the 1990s. The fifth, sixth, seventh, and eighth sections describe, in broad terms, the legal framework and the economic situation of the four state-owned financial entities currently in existence in Peru. The ninth section outlines the possible strategy and vision of the future to build a true development bank in Peru. The final section contains the conclusions.

2. Privatization and dollarization of the financial system.

At the start of the 1970s, the ECLAC-inspired structural reforms implemented by the military regime of Velasco (1968-75) created a strong sector of public enterprises, productive and financial, which came to control more than 30% of GDP and endured without major changes until the 1990s. This process entailed the nationalization of a considerable proportion of foreign investment and much of the real assets owned by the oligarchy of the day.⁸

The neoliberal structural reforms applied by Fujimori's authoritarian regime in the 1990s can be understood⁹ as a near-perfect antithesis to Velasco's reforms. An essential component of these reforms was the privatization of the strong public-enterprise sector,¹⁰ as well as the liquidation of almost all state development banking, which accounted for a sizable share of the loans and deposits market.¹¹ Foreign capital, oriented toward the extractive export sector and public services, recovered its standout role in the economy upon acquiring much of the privatized state companies.

The relative size of the state-owned financial entities varied substantially with these radical yet diametrically opposed changes to the state's intervention in the economy, as shown in Graph 1. By the start of the 1980s, the credit channeled to the economy (public and private

⁸ According to Fitzgerald (1985), "the state assumed responsibility for three-quarters of the exports, half of the imports, over half of the fixed investment, two-thirds of the bank credit, and a third of all employment in the corporate sector." Translation by authors.

⁹ See Dancourt (1999).

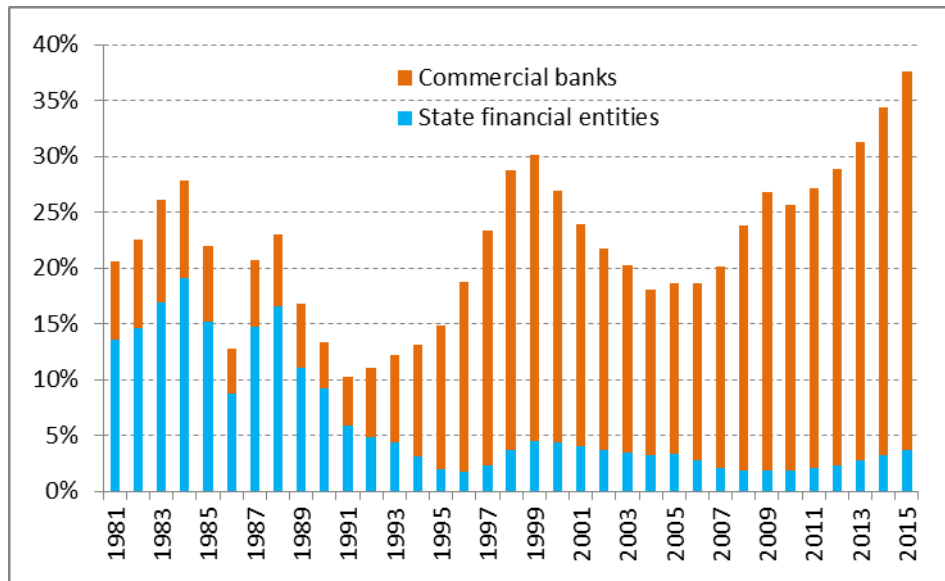
¹⁰ See Ruiz (2002).

¹¹ In 1992 the five state development banks created prior to the Velasco administration were liquidated; see Castillo (2005).

sectors) by state-owned financial companies accounted for, on average, 15% of annual GDP, while the credit granted by commercial banks amounted to only 7% of annual GDP. From the 1990s, lending by state-owned financial entities plunged to less than 3% of annual GDP and remained at that level for the next two decades.

Graph 1

Peru: Overall average lending by state-owned financial entities, out of GDP



Source: SBS, INEI, and BCRP

Compiled by authors

Lending by state-owned financial entities was subject to only a temporary increase during the banking crisis of 1998-99, which ushered in a steep decline in the loans granted by commercial banks that continued until 2004, as well as a series of bankruptcies and bailouts¹² that included the second- and fifth-largest banks in terms of deposits. In the end, the number of commercial banks went down from 25 to 12. From 2005-06, as can be seen in Graph 1, commercial banking grew continuously to the point where the loans granted by the sector exceeded 35% of GDP in 2015.

Graph 2 shows the trajectory of the credit-to-GDP ratio for the different state-owned financial entities over the period 1980-2015. The five state-owned development banks (bancos de fomento) liquidated in 1992¹³ granted loans worth the equivalent of 6-8% of GDP

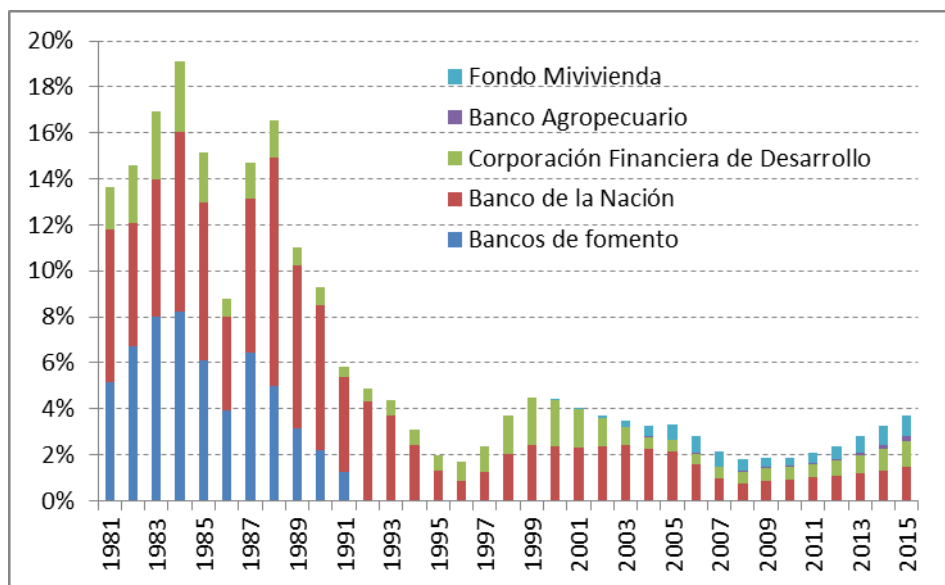
¹² See Rojas and Costa (2002), and Jiménez (2010a).

¹³ The agricultural, industrial, mining, and housing development banks were wound up by Decree Law N° 25478, leaving the Superintendence of Banking and Insurance (SBS), whose function was to control, oversee,

at the start of the 1980s. Corporación Financiera de Desarrollo and the Banco de la Nación, which account for the lion's share, went from lending 10% of GDP at the start of the 1980s to just 2-4% of GDP from the 1990s; during the banking crisis of 1998-99, they temporarily increased their joint lending when they participated in the state bail-out of private commercial banking.¹⁴ The other two state-owned financial companies, Banco Agropecuario and especially the Fondo MiVivienda, took on a degree of importance starting from 2004-05.

Graph 2

Peru: Overall average lending by state-owned financial entities, out of GDP



Source: INEI and SBS

Compiled by authors

The basic processes that transformed the Peruvian financial system in the 1990s were twofold: first, the privatization process that has been succinctly described; and second, the credit dollarization process, which qualifies as another of the main structural reforms of the Fujimori administration.

The level of dollarization of the total credit granted by the financial entities climbed to a peak of 80%, as shown in Graph 3. The hyperinflation that emerged in the late 1980s had sparked a brutal contraction in the credit system and its rapid dollarization. The credit

or liquidate both private or state-owned banks. The mortgage bank, for its part, was declared a private legal entity under Decree Law N° 25479 and wound up three months later under Resolution N° 766-92-SBS.

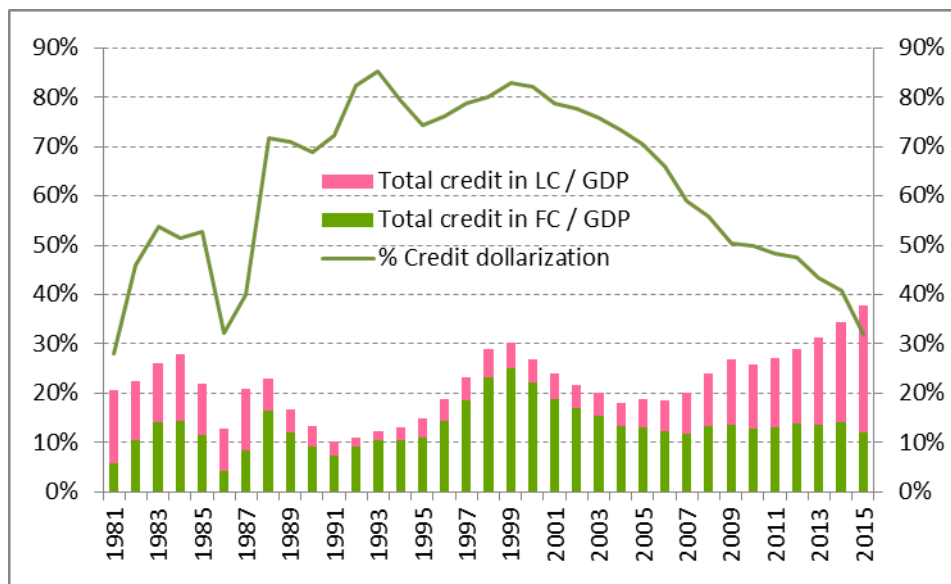
¹⁴ According to Castillo (2005), COFIDE “had to include commercial loans of [the] liquidated [private financial] intermediaries in its assets.” Translation by authors.

expansion of the 1990s, which occurred in a context of macroeconomic stabilization in which economic activity recovered and inflation dropped to below 10% per year, was basically an expansion of credit in foreign currency, which reached a pinnacle of somewhere above 20% of GDP right before the banking crisis of 1998-99.

This dollarization of credit¹⁵ during the 1990s is explained by the characteristics of a monetary regime based on control of the quantity of money, which impeded an expansion of credit in local currency on the initiative of commercial banking; by the authorization given to commercial banks to extend credit and receive deposits in foreign currency without any limits whatsoever; and by a regulatory system that did not impose reserve requirements on the foreign funding of banks via external debts.¹⁶

Graph 3

Peru: Dollarization of credit from financial entities



Source: SBS

Compiled by authors

Following the banking crisis of 1998-1999, the level of credit dollarization dwindled slowly from 78% in 2002 to 32% in 2015, thus returning to the levels seen at the start of the 1980s. It is also clear, as shown in Graph 3, that this gradual de-dollarization of credit reflects an expansion of credit in local currency, which rose from 3% of GDP in 2002 to 25% of GDP

¹⁵ García-Escribano (2010) shows that the level of credit dollarization is greater for loans with longer maturities and for loans to large companies, in comparison with those for small companies or for individuals.

¹⁶ See Dancourt (2014) and Jiménez (2010a).

in 2015, rather than a contraction of credit in foreign currency, which fluctuated around 12% of GDP over the last decade.

This gradual de-dollarization of credit is associated, first, with the implementation in 2002 of an inflation-targeting monetary regime, whereby a short-term interest rate became the main monetary-policy instrument, replacing the control of various monetary aggregates that had prevailed during the 1990s and enabling the expansion of bank credit in local currency at the initiative of commercial banking; second, with the banking crisis of 1998-1999, which temporarily reduced local banks' funding capacity via external debt; third, with the development of a domestic public debt market in local currency from the 2000s, with bonds of increasingly long maturities; and fourth, with an active de-dollarization policy on the part of the central bank, which operated, primarily, by imposing reserve requirements on the foreign funding of commercial banks, to a greater or lesser degree depending upon the specific period.¹⁷

The dollarization of credit not only severely curtails the power of monetary policy, but also increases both the economy's external vulnerability and the likelihood of banking crises. A rise in the real exchange rate prompted by an adverse external shock (a fall in the prices of export commodities or a rise in the international interest rate) increases the debt burden for foreign-currency debtors who receive their income in local currency, which causes a decrease in consumption and investment. This balance sheet effect can impact both the private and public sectors. Typically, delinquency and defaults on foreign-currency loans increase, and runs on local banks by foreign creditors or by depositors may be triggered, as occurred in 1998-99.

3. Main financial market failures.

Development banking has its origins in the need to mitigate market failures in the financial sector. According to Rezende (2017), "most development banks were created to promote social and/or economic development". Of these development banks, "almost half of them (49 per cent) were established during the import-substitution years between 1946 and 1989, nearly two-fifths (39 per cent) came into existence during the globalization years between 1990 and 2011. One implication is that irrespective of policy orientation, the failure of

¹⁷ See Armas and Grippa (2005), Jiménez (2010a), García-Escribano (2010), and Dancourt (2014).

private financial markets to deliver adequate long-term finance forces governments to rely on development banking institutions”, according to Chadrsekhar (2016), quoted by Rezende (2017).

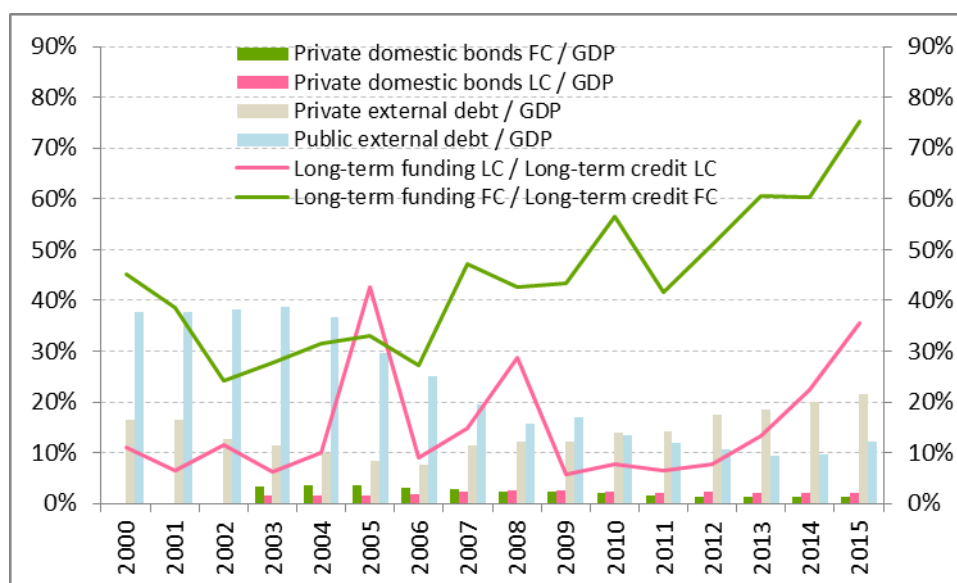
In the current Peruvian economy, the main market failures of the financial system are still related to long-term financing, agricultural financing, and the financing of small businesses. Other market failures, such as those related to financing the necessary diversification of production in the Peruvian economy as well as climate change mitigation, are somewhat more convoluted and should be considered in their own right, as the state apparatus does not today encompass a structured plan¹⁸ concerning these objectives or a national development strategy that differs from the commodities export economy promoted in the 1990s.

The first failure of the financial system in the current Peruvian economy is related to long-term financing. The dollarization of credit and dependence on the external debt are primarily a result of insufficient long-term financing in local currency. According to BCRP, the level of dollarization of the extended financing (internal and external debt) of the private sector was 48.6% at the end of 2015. As shown in Graph 4, although the external public debt fell from more than 30% of GDP at the start of the 2000s to 10% of GDP in 2013-15 - a decrease explained in part by the development of a local public bond market denominated in local currency - at the same time, the external debt of the private sector increased over the last decade, exceeding 20% of GDP by 2015. Therefore, the overall external debt, both public and private, went up toward the end of this period. In 2014-15 alone, the external debt increased from 31.8% to 35.5% of GDP (Moody’s 2016). Most of the state-owned financial companies contributed to this result, since their long-term external debt grew by 42.9% in 2015 (MEF 2016); this is despite one of their general mandates being to develop the domestic securities market.

¹⁸ For instance, the China Development Bank participates in the nationwide Five-Year Plan, according to Xu (2017).

Graph 4

Peru: Domestic bonds, foreign debt, and credit funding mismatches



Source: INEI and SBS

Compiled by authors

Graph 4 also shows the underdevelopment of the private domestic bonds market in relation to the scale of private external debt. And as recent experience of Peruvian public sector proves, further developing this bonds market and reducing the dollarization of credit are two sides of the same coin (MEF 2014 and 2015).

However, the problem of long-term financing in local currency for the financial entities themselves is still ongoing. In 2015, as shown in Graph 4, almost two-thirds of all long-term credit in local currency (considering mortgages, financial leasing, and loans) granted by commercial banks did not have long-term funding in the same currency (considering due to banks and other entities and unsubordinated bonds and notes issued), while only a quarter of the credit in foreign currency did not have long-term funding in the same currency. The local-currency mismatch ratio has fallen since 2013, primarily due to the increased supply of longer-term funds granted by the central bank to commercial banking through repurchase agreements guaranteed with deposits in dollars.

A clear area for improvement is associated with the supply of housing loans. State intervention through subsidized withdrawals and guarantees has enabled the expansion of mortgages, albeit in foreign currency through to 2006, as we will see later.

The second failure of the financial system in the current Peruvian economy is related to agricultural financing. According to the SBS, only 4.1% of all business loans granted in 2015 by commercial banks were towards agriculture, livestock, hunting, and forestry, despite the fact that in this economic sector, there is a quarter of the country's occupied work force. This failure is exacerbated by the absence of mass agricultural insurance in the country, a key factor that hampers better management of biological and weather risks, which cannot be controlled by either the bank or the farmer (Jiménez 2001: p. 3). Indeed, as “agricultural activity is exposed to adverse climatic conditions that cause production losses and affect the income of farmers and agro-enterprises [their occurrence ends up impacting] public finances, as it is habitual for governments to contribute financial resources or to waive the [collection] of certain taxes in order to assist the affected population” (Hatch et al. 2012: p. 4)¹⁹. In 2006, the Countryside and Agricultural Insurance Guarantee Fund (Fondo de Garantía para el Campo y del Seguro Agropecuario, FOGASA), under the auspices of the Ministry of Agriculture and Irrigation (MAR), was created to cover farmers in the poorest and most vulnerable parts of the country; the state participated by co-sponsoring the financing of all premiums alongside two nationwide insurance companies. However, its weak performance was reflected in a volatile claims rate (cost of claims/premium net of general sales tax), which between 2009 and 2015 fluctuated between 28.9% and 71.4%, with an average of 42.7% (Bartra 2015).

To improve this situation, it would be necessary to design agricultural insurance policies suitable for as wide a variety of crops and microclimates as those of Peru, but in the country there are neither the required actuarial studies, nor universities that train professionals versed in actuarial sciences.²⁰ According to the Peruvian Association of Insurance Companies (Asociación Peruana de Empresas de Seguros, APESEG), there were some 90 professionals engaged in miscellaneous actuarial activities in Peru, but less than 20% were formally trained in the area, and of this proportion, only 40% were Peruvian, despite the considerable demand for labor (Morris 2014). According to representatives of the International Actuarial Association (IAA), Peru requires 1,500 actuaries (Corzo 2015).

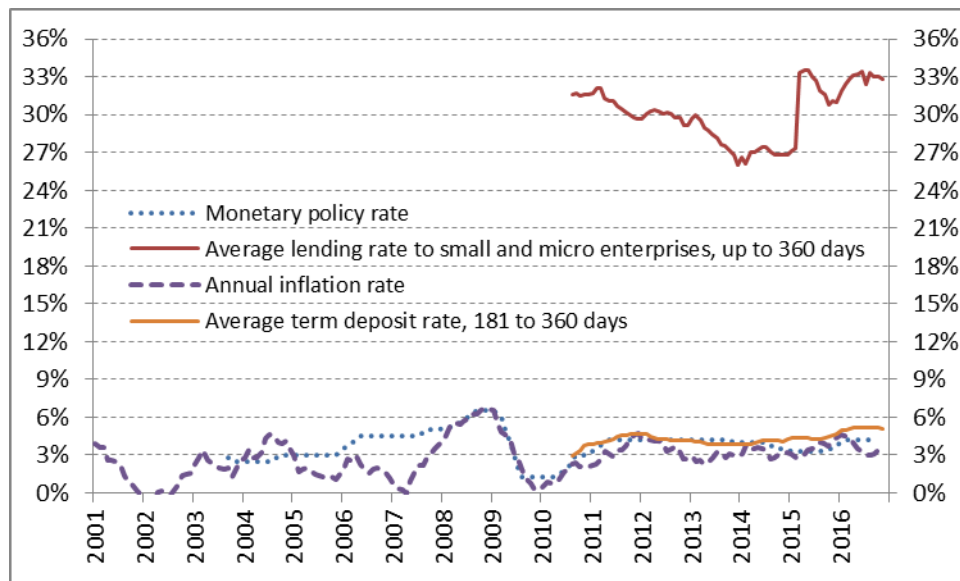
¹⁹ Translation by authors.

²⁰ An actuary is a “person versed in mathematical calculation and statistical, juridical, and financial knowledge concerning insurance and the insurance system, who advises insurance companies and acts as an expert in the operations thereof” (DRAE 2015). Translation by authors.

Finally, it is worth recalling that much of agricultural financing requires lengthy grace periods, oftentimes not only for the principal but for the interest as well, which is not usually true of commercial credit. For example, as they grow and reach their full production stage, the investment process in fruit tree cultivation requires credit with average grace periods of four to seven years (Jiménez 2001: p. 19).

Graph 5

Peru: Commercial banks, monetary policy and inflation rates



Source: BCRP

Compiled by authors

The third failure of the financial system in the current Peruvian economy is related to the financing of small companies. The supply of credit to small and micro enterprises²¹ is limited; according to the SBS, it accounted for only 7.6% of all direct credit granted by commercial banks in 2015, despite companies with between two and 10 employees making up 22.0% of Peru’s workforce, according to the INEI.

This credit rationing is reflected in the high interest rates paid by smaller companies. As shown in Graph 5, the average interest rate that commercial banks charged small enterprises for loans of less than 360 days fluctuated between 27% and 34% per annum during 2010-16, while the monetary policy interest rate or the borrowing rate paid by banks on deposits of 180 to 360 days did not exceed 6% per annum over the same period. It should be noted

²¹ The SBS classifies credit to micro-enterprises as loans of less than PEN 20,000, and credit to small enterprises as loans below PEN 300,000 (1 USD = PEN 3.41).

that the effective or expected inflation rate likewise did not surpass 5% per annum during this period, which implies that the real interest rates paid by small companies are indeed extremely high.

The credit rationing for small and micro-enterprises has been mitigated by the so-called micro-financing institutions, especially by Municipal Savings and Credit Unions (Cajas Municipales de Ahorro y Crédito) established at the start of the 1980s, whose activities were not affected by the banking crisis of 1998-99. However, the interest rates that these institutions charge small and micro-enterprises are equal to or greater than the rates set by commercial banks, which have concentrated on the relatively large ones.

According to international experience, “small companies have greater ease in obtaining financing when: public banks predominate, private banks are domestically owned, smaller and more flexible institutions exist, and there is a national development bank” (Ferraro and Goldstein 2011: p. 11).²² As regards the level of concentration of the Peruvian financial system, of 63 supervised credit entities, the largest four commercial banks cornered 72.6% of the lending market in 2015.

4. Political and legal framework

Over the last 25 years, the Peruvian governments did not give state-run financial entities a major role in tackling the market failures in the financial system cited in the previous section, or in participating in strategic tasks such as diversifying the economy’s productive apparatus or closing the infrastructure gap. As we have seen, the size of these state-run financial institutions in relation to GDP has been minimal since the 1990s.

As was mentioned in the introduction, the neoliberal view of the state’s role in the Peruvian economy is marked by the radical experience of privatization and financial deregulation accomplished during the Fujimori administration.²³ The diminished role of development banking in Peru after the 1990s cannot be explained without referring to this political and

²² Translation by authors.

²³ For example, a textbook recently prepared by MEF (2016b: p. 5) states that in “the decade of the nineties, the Peruvian state undertook a process of promoting private investment, in order to transfer to the private sector the leadership of economic sectors that were in the hands of the state for more than 20 years. This process was carried out within the framework of the policy of economic stability and market liberalization. The central axes of this promotion process were channeled through the privatization of public companies and concessions for the provision of public services, previously delivered by the state.” Translation by authors.

legal context or to the controversial subsidiary role of state-owned companies²⁴ in the 1993 Constitution.

The legal bases of the change of development model were established in 1991, before the change in the Constitution, through four legislative decrees²⁵ whose objective was to: (i) remove obstacles and restrictions to public investment and create a legally stable regime thereto; (ii) grant private investors the guarantees to acquire shares and assets of state-owned companies; (iii) consolidate the program of structural reforms by guaranteeing free initiative and private investment; and (iv) recognize the system of concessions for the construction, conservation, and exploitation of public service infrastructure works.²⁶

In this context, the so-called “public-private associations” appear as a sequel to the 1990s structural reforms that, including a new legal framework approved in recent years encompass all those agreements in which the state delegates a series of typically public activities, especially those concerning public investment. In these operations, the state ultimately retains the bulk of the risks by assuming a series of firm and contingent liabilities or commitments that go beyond traditional concessions. In perspective, these risks gradually put pressure on the sovereign risk rating by reducing capacity to pay the public debt (Graph 6) in the absence of a state-run development bank to act as a counterbalance in keeping the private participation incentives aligned - especially as regards the processes of financial structuring and designing bankable feasibility, supervision of economic-financial balance, or advising in the rescue of the concession - as in other countries.

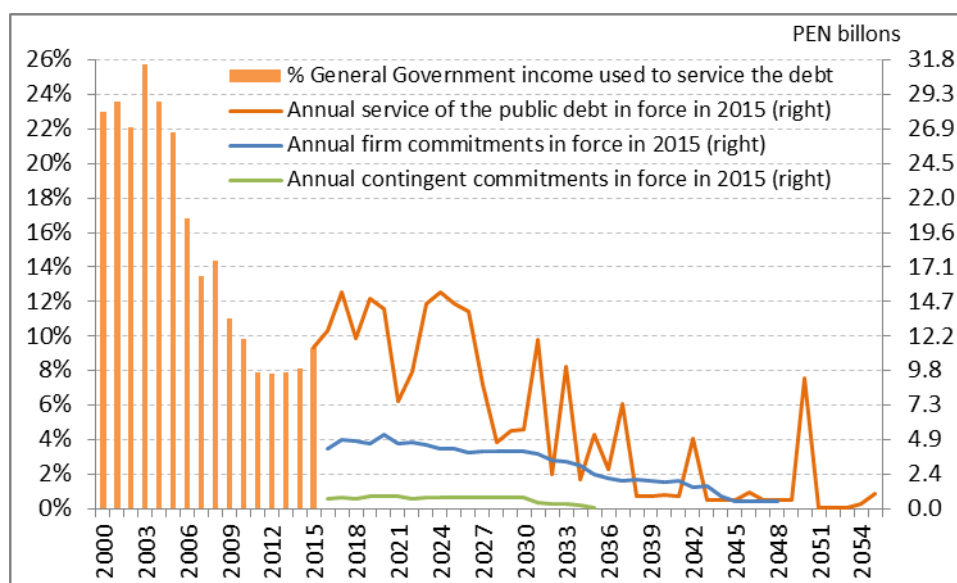
²⁴ Article 60 of the 1993 Constitution establishes that only where expressly authorized by law can the state undertake subsidiary business activities, directly or indirectly, for reasons of high public interest or manifest national convenience.

²⁵ Decretos Legislativos N° 662, N° 674, N° 757 and N°758.

²⁶ See MEF (2016b).

Graph 6

Peru: Servicing of the public debt and firm and contingent payment commitments



Source: MEF and BCRP

Compiled by authors

The structural reforms of the 1990s also had dire consequences for the national strategic planning system. During the 1970s and 1980s operated a national planning system for economic and social development that had been created in 1962²⁷. The National Institute of Planning (Instituto Nacional de Planificación), which drew on a team of able and experienced technicians, was an important factor in the debate and in the construction of economic policies for the Peruvian state apparatus. However, it was wound up and deactivated in 1992,²⁸ its staff transferred or made available as surplus to requirements. The Ministry of Economy and Finances (MEF) assumed its functions in theory; but, in practice, no specialized area with responsibility for these matters was created inside it.

After the fall of the Fujimori dictatorship, the Governance Forum for the National Agreement (Foro de Gobernabilidad del Acuerdo Nacional) revisited the idea of national strategic planning as a state policy agreed between political parties, civil society, religious institutions, and the government, as a basis for democratic transition and consolidation. Although a new national strategic planning system was devised in 2005,²⁹ it was not

²⁷ Decreto Ley N° 14220.

²⁸ Decreto Ley N° 25548.

²⁹ Ley N° 28522.

implemented and was substituted in 2008³⁰ by another system, for which a three-year time frame was given for the initial implementation of its technical agency, CEPLAN (Centro Nacional de Planeamiento Estratégico), to be attached to the Presidency of the Council of Ministers. It was not until 2014 that CEPLAN approved a directive³¹ to commence a real strategic planning process across the public sector.

In consequence, for two decades the Peruvian state acted without planning or calculating the long-term consequences of its actions. This radical neoliberal vision, applied in a specific political and legal context, is a factor that explains both the liquidation in the 1990s of development banks per se (bancos de fomento), and the minimization of development banking activities undertaken by state-owned financial entities that survived or were created subsequently. This vision has not only influenced the financial system but has also had, for example, a negative impact on the development of the country's system of cities, according to World Bank (2016).³²

Finally, it is worth noting that in the Peruvian case no special regulations exist for development banks, unlike, for instance, the case of Mexico. As shown in Table 1, the four state-owned financial companies engage in development banking activities with different forms of intermediation.

³⁰ *Decreto Legislativo N° 1088.*

³¹ Resolución N° 026-2014-CEPLAN/PCD.

³² World Bank (2016) states that “on a national level, there is a need for an articulated strategy around the development of a system of cities that fosters economic activity.” Translation by authors. In 2015, 31.8% of the Peruvian population lived in the city of Lima, and 81.5% of the credit granted by commercial banks was concentrated there. The near-900,000 inhabitants of the second largest city, Arequipa, amounted to only 9% the population of Lima. On the infrastructure gap, see Perroti and Sánchez (2011); Bonifaz, Urrunaga, Aguirre and Urquiza (2015); World Economic Forum (2015); and Instituto Peruano de Economía (2009).

Table 1

Peru: Forms of intermediation of the state-owned financial entities

Principal characteristics by financial entity	Banco de la Nación	Corporación Financiera de Desarrollo	Banco Agropecuario	Fondo MiVivienda
Current target market	Public sector plus exceptions	Public and private sectors 6/	Only agricultural sector	Only real estate sector
Authorization of fund-raising (deposits)	Direct and indirect 1/	Only indirect 7/	Direct 10/ and indirect 11/	Only indirect
Authorization of fund placement (credit)	Direct 2/, indirect 3/, and synthetic 4/	Only indirect and synthetic 8/	Direct 12/, indirect, and synthetic	Only indirect and synthetic
Authorization of acquisition of securities (investment)	Direct, indirect, and synthetic	Direct, indirect, and synthetic	Direct 13/	Direct and synthetic 14/
Authorization of placement of securities (issuances)	Direct 5/	Direct 9/	Direct	Direct
Supplementary regulation	General banking	General banking	General banking	Special banking
Current legal regime	Public law	Private law	Private law	Private law
Subsidies from the budget	No	No	Yes	Yes
Trustor and trustee	No	No	No	Yes

1/ As of 2000, it can accept savings deposits from private-sector suppliers, in places where there are no commercial banking branches.

2/ As of 1994, it cannot grant loans to state-owned enterprises governed by private law, but as of 2001 it may grant credit to private-sector employees and pension-holders.

3/ As of 2006, it can undertake direct placements with small and micro enterprises, setting final interest rates.

4/ As of 2012, it can carry out synthetic placements for micro and small enterprises that participate in the financial education programs promoted by public-sector entities.

5/ As of 1994, it requires an annual program to be approved by the MEF.

6/ As of 1991, the financing of investment and infrastructure projects, including underdeveloped areas with limited private-sector coverage, was added as an objective, and in 1992 the financing of small business-owners and farmers, preferably in deprived areas, was added.

7/ As of 1992, it can only raise funds from other intermediaries, and cannot receive deposits from the public.

8/ Through to 1991 it enjoyed exclusive rights to carry out direct, indirect, and synthetic long-term credit intermediation of state companies, but as of 1992 it cannot lend to the public on its own account.

9/ Through to 1991 the securities it issued were exempt from all taxes for 20 years.

10/ Fundraising through deposits subject to SBS authorization, with the favorable opinion of the MEF.

11/ Fundraising through credit from other intermediaries and multilateral agencies, subject to agreement with the MEF.

12/ Placement of credit with limits per person (maximum of 15 tax units, UIT, in the case of small producers, 300 UIT in the case of medium-sized producers and, in areas of extreme poverty, preferential up to two tax units) and per company (3% of the bank's effective equity).

13/ Only acquisition of public debt securities, BCRP securities, and securities from shares of agricultural investment funds.

14/ As of 2001, and ratified in 2005.

Direct intermediation is carried out through the acquisition and placement of funds or securities involving the general public, and indirect intermediation is triangulated through the acquisition and placement of funds or securities involving other financial entities. In some cases, the indirect intermediation of funds (through deposits and loans) is carried out from the origination through to the maturity of the operation, but in other cases it only applies from their distribution, undertaken by the financial institution that originated it. In some circumstances, indirect intermediation is used due to existing legal restrictions and in other circumstances to take advantage of the wide network of agencies of retail financial institutions. Synthetic intermediation is carried out by assuming the risk only, at different levels, through the procurement of bonds, sureties, guarantees, trusts, derivatives and other contracts with equivalent effects, without the need to place funds or acquire securities. Thus, through synthetic intermediation it is possible to assume the same or even greater risk than in the case of simple direct intermediation.

5. The case of Banco de la Nación (BN)

BN is the oldest state-owned financial institution currently in existence, having been established in 1966³³ as a public law company to provide the banking services required by the public sector. Despite having been created as a credit entity, in 1972³⁴ it was granted powers corresponding to an insurance entity to hedge the risks to which individuals, goods, capital, transactions, and operations are exposed and in which the state has a direct or indirect interest. It could, therefore, utilize the operating mechanisms of such entities, directly or through insurance companies. Subsequently, the banking law passed in 1993,³⁵ later superseded by the current banking law passed in 1996,³⁶ established that the activities of the BN would be regulated by its statute, to be enacted by supreme decree approved by the MEF.

Since 2000, the financial operations that can be carried out by BN have been gradually expanded. In 2000,³⁷ the BN was given authorization to receive demand deposits from individuals and private companies that acted as suppliers to the public sector, and to receive savings deposits from the same entities in places where commercial banks had no branches. In 2001,³⁸ the bank was authorized to issue money orders and transfers on behalf of individuals and private companies in places where private commercial banks did not have branches, and to grant credit to public sector employees and pension-holders.

In 2006,³⁹ BN was empowered to execute operations and services with entities that lend to small and micro enterprises, and to enter into agreements with these institutions to facilitate access to financial resources; that is, they were authorized to carry out indirect credit intermediation, setting the final interest rate to be charged by each participating credit entity by way of tender. Moreover, in 2012⁴⁰ it was authorized to guarantee operations involving credit granted by these institutions to small and micro enterprises participating in financial education programs promoted by public sector entities, which also enabled synthetic

³³ Ley N° 16000.

³⁴ Decreto Ley N° 19569.

³⁵ Decreto Legislativo N° 770.

³⁶ Ley N° 26702.

³⁷ Decreto de Urgencia N° 073-2000.

³⁸ Decretos de Urgencia N° 045-2001 and N° 120-2001, superseded by Decreto de Urgencia N° 014-2004 and recovered and extended by Decreto Supremo N° 207-2004-EF.

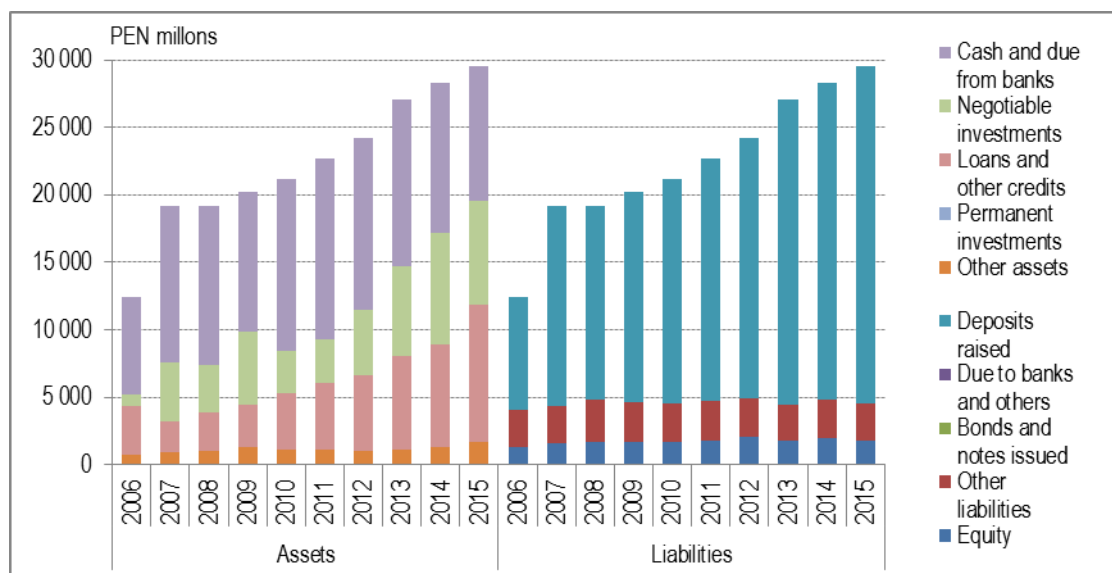
³⁹ Decreto Supremo N° 134-2006-EF.

⁴⁰ Decreto Supremo N° 099-2012-EF.

intermediation of these credits after their origination.

Graph 7

Peru: Financial structure of BN 2006-2015



Source: SBS and audited FSs of BN

Compiled by authors

As to its financial structure, between 2006 and 2015 BN's balance of assets and liabilities grew by an average of 9% per year, as shown in Graph 7 - a slower rate than that of the commercial banks, which increased by 16% per year. As regards sources of financing, there has been a sustained increase in the relative share of deposits raised, almost all of them from the public, without resorting to debts due to banks and other entities. In the case of resource usage, it maintains very high liquidity surpluses, both in cash and due from banks and other entities and negotiable investments, despite the slight decline in the relative share since 2013. The bank also held negotiable investments of a value that exceeded its loans and other credits for nine out of ten years, which has diminished the potential aggregate yield on its assets⁴¹.

⁴¹ The commercial banks have historically held available funds totaling less than half of their credit, not to mention the fact that their investments have also been considerably less than those of BN.

Table 2

Financial Entities: Differentials between returns and costs, 2006-2015

Returns and costs by financial entity			2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Return on interest-bearing assets	All financial revenues	BN	6.5 %	6.7 %	6.8 %	5.5 %	4.7 %	5.2 %	5.2 %	5.0 %	4.9 %	5.2 %
		CFD	5.9 %	5.7 %	5.6 %	5.0 %	5.0 %	5.4 %	7.0 %	6.3 %	5.6 %	6.5 %
		BA	8.7 %	8.0 %	9.3 %	11.3 %	12.7 %	15.7 %	16.7 %	16.8 %	14.4 %	11.6 %
		FMV	3.0 %	7.3 %	8.3 %	7.0 %	6.5 %	7.5 %	6.9 %	6.0 %	5.4 %	8.7 %
	Only interest and commissions	BN	6.5 %	6.6 %	6.6 %	4.9 %	4.1 %	4.7 %	4.8 %	4.6 %	4.6 %	4.9 %
		CFD	4.9 %	4.1 %	3.8 %	4.1 %	4.4 %	5.2 %	5.4 %	5.3 %	5.1 %	5.0 %
		BA	8.7 %	8.0 %	9.3 %	11.2 %	12.7 %	15.7 %	16.7 %	16.7 %	14.4 %	11.6 %
		FMV	2.7 %	5.9 %	6.5 %	6.3 %	5.8 %	6.2 %	6.1 %	5.7 %	5.1 %	5.0 %
Cost of interest-bearing liabilities	All financial expenses	BN	0.7 %	1.1 %	1.2 %	0.9 %	0.6 %	0.5 %	0.4 %	0.4 %	0.2 %	0.6 %
		CFD	6.5 %	7.8 %	8.6 %	5.6 %	4.1 %	5.0 %	7.8 %	6.3 %	5.5 %	6.4 %
		BA	18.6 %	10.5 %	8.4 %	10.4 %	7.0 %	9.9 %	8.5 %	6.6 %	7.6 %	5.9 %
		FMV	-	-	-	-	-	-	-	13.0 %	6.4 %	12.1 %

Differentials between returns and costs (in basis points)	Only interests and commissions	BN	0.5%	0.9%	1.1%	0.8%	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	
		CFD	3.9%	4.5%	3.8%	3.9%	2.6%	3.9%	4.7%	4.0%	4.1%	4.1%	
		BA	13.0%	7.5%	8.1%	10.1%	5.6%	8.7%	7.6%	6.6%	7.6%	5.9%	
		FMV	-	-	-	-	-	-	-	4.8%	3.5%	3.0%	
	All financial revenues and expense	BN	585	564	559	454	417	479	487	456	469	458	
		CFD	-62	-208	-301	-62	91	48	-77	-2	17	11	
		BA	-991	-257	86	87	569	587	824	1020	679	571	
		FMV	300	728	832	700	651	750	690	-698	-98	-331	
		Only interests and commissions	BN	602	562	548	419	383	441	451	437	438	461
			CFD	103	-39	-6	24	177	132	67	136	105	83
			BA	-423	50	115	107	706	700	907	1010	677	572
			FMV	274	590	648	633	579	622	605	87	168	200

Source: SBS and audited FSs of BN, CFD, BA and FMV

Compiled by authors

Regardless, since 2009, BN has succeeded in maintaining a favorable average differential of +460 basis points between the aggregate return on interest-bearing assets and the aggregate cost of interest-bearing liabilities. The differential from interest and commission alone - not including the effect of exchange rate, market, and derivative risks - was also favorable, at an average of +433 basis points, as shown in Table 2.

In 2015, BN's overall assets equated to 4.8% of GDP, of which 1.8% was comprised of credits; 1.6% of available funds, almost 90% of which was deposited in the central bank with remuneration below the interbank rate; and 1.3% of negotiable investments, more than 80% of them in central bank securities. Its credits were distributed as follows: 54% in the public sector; 8% across other financial entities; and 36% among individuals. Of this total, 33% had maturities of up to one year, 63% from one to five years, and 4% of more than five years.

In 2015, 90% of all its liabilities corresponded to deposits raised, 97% of which were from the public (53% in current accounts and 25% in savings accounts). The bulk of its assets (93%) and of its liabilities (92%) were denominated in local currency, and it has made a greater contribution than any other state-run financial entity to driving the credit de-dollarization process - more than 50% of its loans have been denominated in domestic currency since 2009. Its return on assets ratio was 2.4%, 0.1 times greater than the commercial banks collectively, but the differential between the return on its interest-bearing assets and the cost of its interest-bearing liabilities was +458 basis points, 0.3 times less than that of the commercial banks, or +461 basis points if the effects of exchange rate, market, and derivative risks are not taken into account.

6. The case of Corporacion Financiera de Desarrollo (CFD)

CFD was created in 1971⁴² during the military regime of Velasco as a public enterprise charged with coordinating the financial and entrepreneurial actions of the state, capturing and channeling savings for priority investments, creating or strengthening companies, and contributing to the expansion of the stock market. That is, it was created primarily as a securities entity to promote business investment. According to Castillo (2005), CFD financed large manufacturing and infrastructure investments in the 1970s.

⁴² Decreto Ley N° 18807.

However, in 1981,⁴³ during the Belaunde administration, CFD's paid-up capital was reduced and it was ruled that its business promotion and investment activities along with the investments it held until then would be transferred to another public entity, and it would be turned into a state-owned enterprise governed by private law, as a public limited company. Converted into a credit entity, CFD was given the purpose of contributing to Peru's integral development by attracting savings and financial intermediation to assign it to the financing new or existing companies, and promoting projects, in accordance with governmental plans and policies.

In 1991,⁴⁴ during the Fujimori administration, it was ruled that the institution would also assume the role of executing long-term financing operations in infrastructure and investment projects, including in underdeveloped areas where private-sector coverage was limited; that foreign funding attracted by CFD and intended for purposes other than financing studies or executing nationwide public infrastructure projects should be channeled preferentially through the national financial system; and that CFD's security issuances would lose the tax exemption to which they were entitled. However, in 1992⁴⁵ CFD was prevented from gathering deposits from the public and lending on its own account to individuals or companies that were not classified as financial intermediaries or institutes for the development of rural activities and small business-owners.

As to its financial structure, between 2006 and 2015, CFD's balance of assets and liabilities grew by an average of 14% per year, and at an annual rate that was 20% per year greater than that of commercial banks in 2011-15, as shown in Graph 8. As to sources of financing, CFD has had a volatile funding structure with a high proportion of external debts due to banks and other entities; in the last three years, an explosive growth was recorded in the long-term securities issued abroad. As to the use of its resources, the CFD has had increasing liquidity surpluses since 2012, both in cash and due from banks and other entities and in negotiable investments. Its credit has also been on the increase, but its returns are very low due to the legal obligation to use another financial entity as intermediary,⁴⁶ which leaves it

⁴³ Decreto Legislativo N° 206.

⁴⁴ Ley N° 25382.

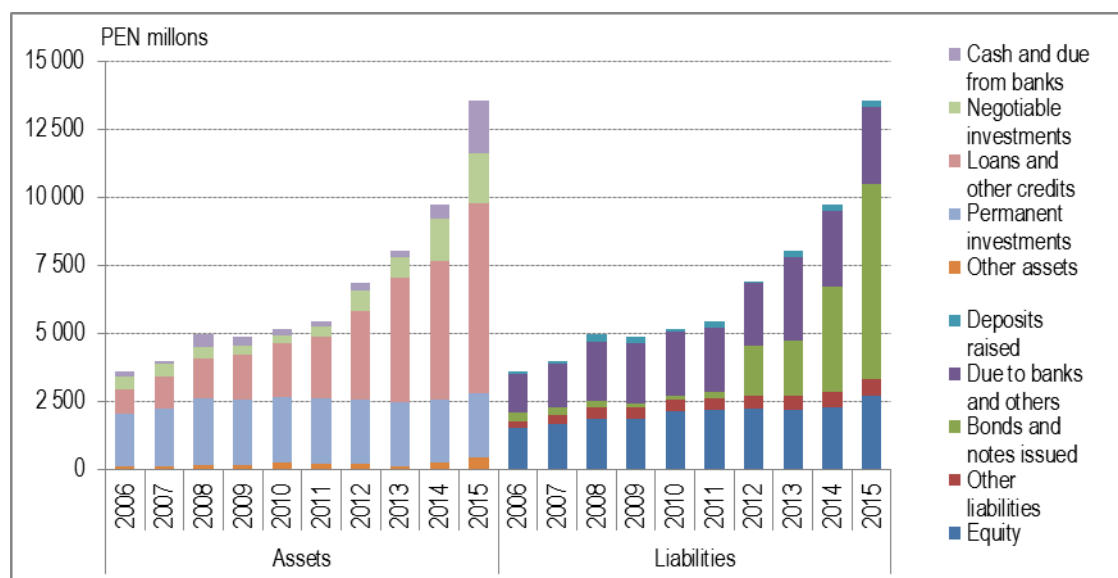
⁴⁵ Ley 25382 and Decreto Ley 25694.

⁴⁶ It should be noted that most of its assets are committed to the permanent investments it holds in CAF, which neither generate cash dividends nor possess a liquid market.

without any bargaining power over the target market or the final financial conditions involved.

Graph 8

Peru: Financial structure of CFD, 2006-2015



Source: SBS and audited FSs of CFD

Compiled by authors

Since 2009, CFD has maintained a favorable average differential of just +4 basis points between the aggregate return on interest-bearing assets and the aggregate cost of interest-bearing liabilities. If the effect of foreign exchange differences, variations of market prices and the derivatives acquired were to be excluded, the differential would be +103 basis points on average, as shown in Table 2.

In 2015, its total assets equated to 2.2% of GDP, of which credits accounted for 1.2%, cash and due from banks and other entities for 0.3%, and negotiable investments for 0.3%. Of its credits, 97% are granted to other financial entities, (85% to banks, 8% to financiers, and 5% to municipal unions); however, in recent years it has increased its synthetic intermediation, assuming the greatest risk associated with operations and the final debtors involved, rather than only assuming the intermediary risk as in the case of traditional indirect intermediation.

Of this total credits, 40% had maturities of up to one year, 28% from one to five years, and 29% of more than five years. Of all the liabilities, 92% correspond to debts due to banks and other entities and financial obligations (57% to unsubordinated bonds and notes issued, 17% to foreign debts due to banks and other entities, and 10% to subordinated bonds and notes

issued), which gives it an uncompetitive funding base. Only 39% of its assets and 23% of its liabilities are denominated in local currency, with CFD's level of credit dollarization having increased to 66% in 2015 from the 30% posted in 2009. In 2015, the return on assets ratio was 0.7% and the differential between the return on its assets and the cost of its liabilities was +11 basis points, +83 if the effects of exchange rate, market and derivative risks are not taken into account.

7. The case of Banco Agropecuario (BA)

BA was created in 2001⁴⁷ to grant credit to the agricultural sector,⁴⁸ directly or through other financial entities, using public and private resources. For the financial and technical support of small-scale agriculture and livestock it draws on the budgetary resources assigned to it by the MEF and the MAR, while it must raise private funds locally and abroad in order to lend to medium-scale agriculture and livestock. In 2006,⁴⁹ it was established that the resources assigned to BA by the MEF and the MAR would constitute part of its equity, and that the Guarantee Fund for Small-Scale Agriculture (Fondo de Garantía para la Pequeña Agricultura, FOGAPA) would be transformed into autonomous equity, intended to hedge the risks associated with the credit granted to small-scale producers in the agricultural sector by all financial institutions and transferred in trust for 30 years into the Guarantee Fund for Loans to Small-Scale industry (Fondo de Garantía para Préstamos a la Pequeña Industria) - a state foundation tasked with strengthening small and micro-enterprises.

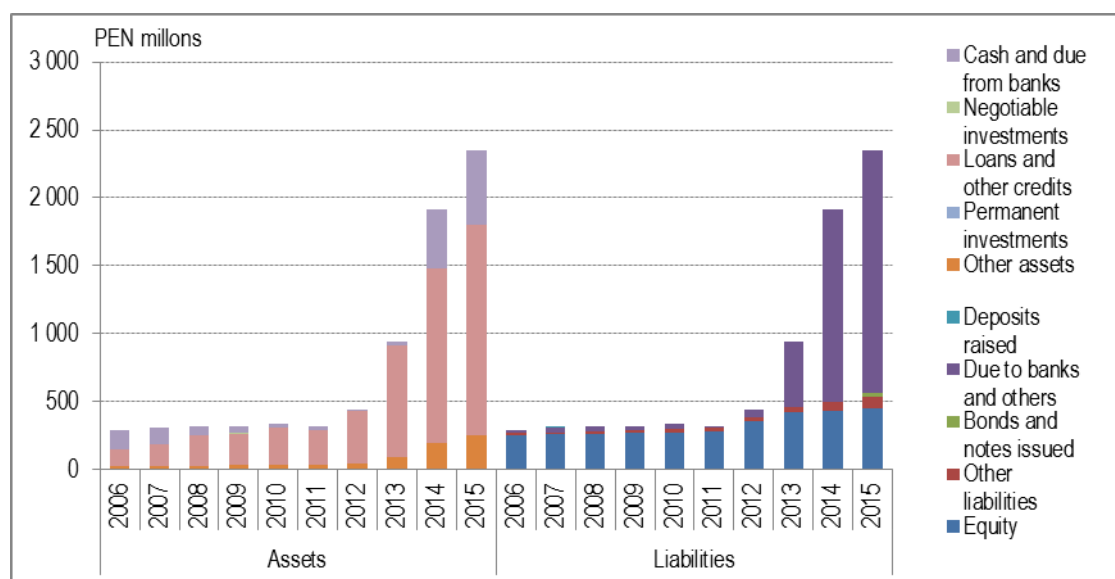
⁴⁷ By Ley N° 27603, as a company under private law.

⁴⁸ This sector includes agriculture, livestock, aquaculture, and the associated transformation and commercialization activities.

⁴⁹ Ley N° 28818.

Graph 9

Peru: Financial structure of BA, 2006-2015



Source: SBS and audited FSs of BA

Compiled by authors

In 2007,⁵⁰ the relaunch of BA was approved as the primary state instrument of financial support for the development of the agricultural sector, and its role was defined as undertaking all activities associated with a banking entity. In 2008⁵¹, following two successive legal amendments - one to reduce the paid-up capital and the other to increase the authorized capital - it was stipulated that the institution should promote private-sector participation, both domestic and foreign, without retaining the previous limit of 49%. Moreover, it was established that the FOGAPA was an autonomous fund administered by the BA, intended to hedge the risks associated with the credit granted by that institution to small-scale agricultural producers.

Between 2006 and 2015, the BA's assets and liabilities balance grew by an average of 23% per year, although it remains a very small institution. As to the sources of its resources, starting from 2012, the BA embarked upon a drastic change in its funding structure, concentrating both internal and external debts due to banks and other entities but without gathering deposits, whereas in previous years its funding was almost 80% equity-based, as shown in Graph 9. With respect to the use of its resources, the increase in the relative share of credits has been sustained since 2012, but still with a very high proportion of new credits.

⁵⁰ Ley N° 29064.

⁵¹ Decreto de Urgencia N° 007-2008, Decreto Legislativo N° 995 and Decreto Legislativo N° 1037.

However, since 2009, BA has succeeded in maintaining a favorable average differential of +619 basis points between the aggregate return on its interest-bearing assets and the aggregate cost of its interest-bearing liabilities. The differential - not including the effect of exchange rate, market, and derivative risks - was also favorable, at an average of +668 basis points, as shown in Table 2.

8. The case of Fondo MiVivienda (FMV)

FMV was created in 1998⁵² with the purpose of facilitating the acquisition of housing, especially social housing, and its resources are to be used to compliment the financing offered by the private banking system. In 2000,⁵³ it was authorized to finance housing constructed as a consequence of the partitioning of residential units, subdivision of land, or the completion of urban renewal projects underway. In 2001,⁵⁴ it was established that it could guarantee the credit or securities of private financial intermediaries, including securitization firms, associated with housing programs. En 2002,⁵⁵ it was granted the power to administrate and concede the family housing payment (maximum of US\$ 12,000), a subsidy for the acquisition, construction, or improvement of social housing drawn from the budget of the Ministry of Housing, Construction, and Sanitation.

In 2005,⁵⁶ the purposes and means of the FMV were extended and it was converted into a state-owned enterprise governed by private law. It was able to engage in the promotion and financing of the acquisition, improvement, and construction of housing, especially social housing, activities related to promoting the flow of capital to the housing financing market, participation in the primary and secondary mortgage lending market, and contributing to the development of the capital market. It was authorized to implement products and services to stimulate supply and demand for housing; encourage the timely payment of housing credit; disburse funds to financial entities; promote savings or private-sector investment; act simultaneously as trustor and trustee for the financing of housing, as well as improver and beneficiary; issue liabilities and other instruments; participate as structuring agent,

⁵² Ley N° 26912.

⁵³ Decreto de Urgencia N° 091-2000.

⁵⁴ Ley N° 27511.

⁵⁵ Ley N° 27829.

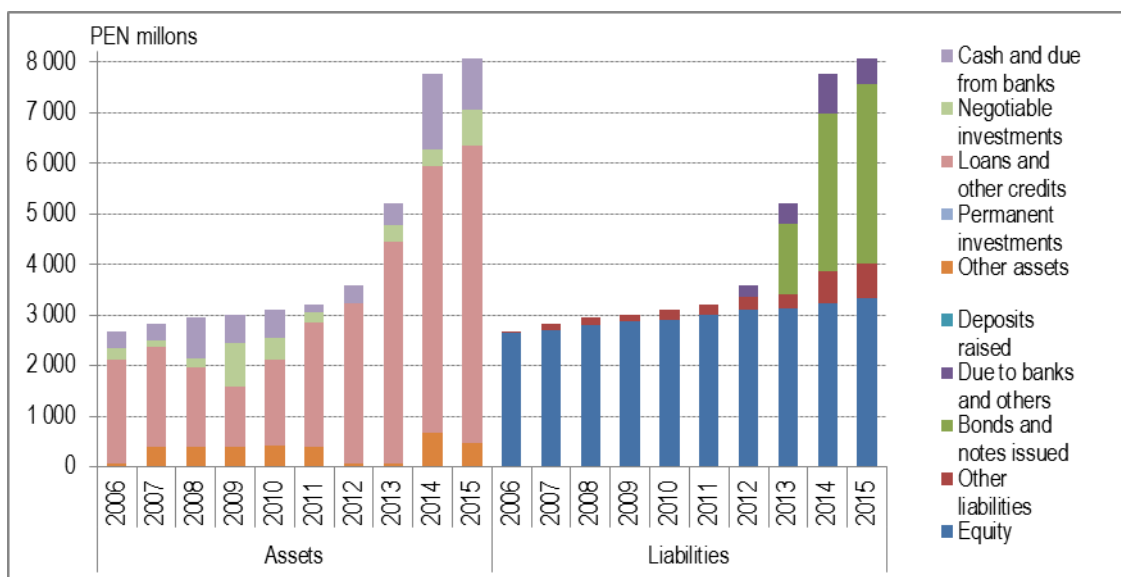
⁵⁶ Ley N° 28579.

underwriter, shareholder, and advisor; and other responsibilities associated with housing-financing structures.

As to its financial structure, between 2006 and 2015 the FMV's balance of assets and liabilities grew by an average of 12% per year, although from 2011-15 it expanded at a rate in excess of 20% per year. As to the sources of its resources, from 2012 the FMV's funding structure has changed drastically, increasing its share of bonds and notes issued, primarily abroad, as shown in Graph 10; this is in contrast to what was observed through to 2011, when its funding was largely equity-based. As to the uses of its resources, credit picked back up after the decline recorded during the recession of 2008-09; however, during the economic downturn of 2014-15, credit increased more slowly than bonds and notes emissions, generating an increase in liquidity, in cash and due from banks and other entities.

Graph 10

Peru: Financial structure of FMV, 2006-2015



Source: SBS and audited FSs of FMV

Compiled by authors

Thus, since 2013, when it started to incur debts due to banks and other entities and issuances of bonds and notes, FMV has faced an unfavorable and volatile differential, greater than -376 basis points, between the aggregate return on its interest-bearing assets and the aggregate cost of its interest-bearing liabilities. If the effect of foreign exchange rate differences and variations in market prices and the derivatives acquired were to be excluded, the differential

from interest and commissions alone would be favorable, +152 basis points on average, as shown in Table 2.

In 2015, its total assets equated to 1.3% of GDP, of which its credits accounted for 1.0%, 93% of which corresponded to housing credit through a trust with CFD; available funds were 0.2%, and negotiable investments, 0.1%. Of these total credits, 9% had maturities of up to one year, 23% from one to three years, and 69% of more than three years. Of all the liabilities, 86% correspond to debts due to banks and other entities and financial obligations (75% to unsubordinated bonds and notes issued, 7% to domestic debt due to banks and other entities, and 3% to foreign debt due to banks and other entities), which gives it an uncompetitive funding base that is further deteriorated by derivative arrangements vis-a-vis the currency mismatch to which it is subject. In 2015, 80% of its assets and 20% of its liabilities were denominated in local currency, although it reached a credit dollarization level of 90% in 2006; thereafter, the dollarization of its loans dropped to 10% in 2013. The return on assets ratio was 1.2% but the differential between the return on its assets and the cost of its liabilities was -331 basis points, but it would have attained +200 basis points without the effect of exchange rate, market and derivative risks.

9. Strategy and vision of future

The economic development of Peru requires a diversified productive structure that reduces dependence on the export of raw materials; but the change will not occur spontaneously. In order to change this, Peru needs to build public institutions that are capable of researching, formulating and implementing public policies and strategies with a vision of the future. In this sense, the state financial institutions dedicated to development banking remain key players to mitigate market failures. The “type of finance that innovators receive is not neutral and can affect both the rate and direction of innovation” (Mazzucato and Semieniuk 2017: p. 25).

However, in the case of the four state financial institutions evaluated here, it is verified that they maintain objectives and goals that are not integrated with each other. On the contrary, in some cases their objectives overlap and their efforts are duplicated, while in other cases they do not take advantage of all possible synergies to obtain economies of scale and economies of scope, not only for administrative efficiency but also for financial economies.

For example, the BN could help make the concentrated Peruvian banking system more competitive, but it is allowed to operate only in places that are not covered by any commercial bank. By different legal norms, the CFD as of 1992 and the BN as of 2006 are required to meet the financing needs of small enterprises, but they are not authorized to carry out the direct intermediation of such credit, which means having no bargaining power to alter the prevailing market supply conditions. In fact, the share of microfinance institutions in the balance of credits granted to financial entities by CFD at the close of 2015 was just 5.8%, down on the 6.7% share held by such institutions in overall banking system credit; this is to say nothing of the fact that CFD has assumed synthetically the final credit risk of bigger enterprises in much of the remainder of its loans to other financial entities, without this being explicitly shown in their balance sheets.

As of 1992, CFD must also attend small business-owners and farmers in depressed regions (where there are no commercial banks and which are only covered by the BN, which cannot grant credit to state-owned enterprises governed by private law), but is not authorized to attract deposits from the public or to lend to individuals or companies that are not qualified as intermediaries or financial entities for the development of rural activity or small businesses. Thus, in practice, CFD cannot advance this aim, given the low differential between yields and costs, and it has not opened up so much as a single office of its own in the Peruvian interior. Indeed, the high costs of external liabilities and derivatives incurred from 2010-15 could have been reduced by almost 100 basis points in the case of the CFD if it had been funded directly by the BN using local currency; at the same time, this would have allowed the BN to improve the yield on its assets by utilizing the liquid resources deposited in the central bank.

Given that the rural sector went unattended by CFD and the private insurers, BA was created following prolonged political and electoral negotiations; the institution's funding was primarily equity-based, drawn from the public purse during the first 12 years of its existence. Since 2014, this institution has posted an increase in credit dollarization due to the higher foreign currency debts due to banks and other entities that it has incurred. The BA extends credit in foreign currency to medium-sized, small, and micro enterprises pertaining to the sector at much lower interest rates (from 360 to 720 basis points) than the local-currency

rates, whereby defaults can increase abruptly with a rising exchange rate.⁵⁷

Finally, the FMV increased and de-dollarized its credits from 2013-15, but also using funding in foreign currency. In response to this currency mismatch, FMV began to incur a strong negative differential due to exchange rate, market, and derivative risks, which are currently sustainable due to the still-low level of leveraging, albeit without including the part of the final credit risk that was assumed synthetically in its operations with the financial entities.

Therefore, it could be more efficient and effective to bring about a merger between these four state financial entities to accelerate the economic development of the country, and to take advantage of it to match the conditions of public companies with those of private companies (OECD 2011 and 2016). In this way, it would ensure a permanent coordination and integration of its objectives and goals, it could take advantage of the synergies of its operations at national level and it could constitute a true state development bank. While for the management of loans and investments, practically every entity would become a specialized business unit with differentiated centers of costs and benefits (for example, infrastructure, micro and small business, real estate and agricultural sectors), for the management of cash and due from banks, and deposits raised and other liabilities, a single unit of treasury and balance sheet structure would be formed in a manner similar to what would occur with the formation of a single strategic risk management unit, a single unit of trusts and a single unit of operations. The most viable operational integration would be based on the BN, which not only has the largest network of agencies at the national level, but also has a new headquarters of 30 floors, to which the other three state entities could quickly be relocated.

In any case, the mission of this new entity, even if it can retain the trademark of the other three as well, must be firmly linked to its new strategic vision of the future and to the actions necessary to build it.

⁵⁷ See Jiménez (2010).

10. Conclusions

The state-owned financial entities in Peru have not been far-removed from the controversial ideological debate on the role the state has played in the economy over the last 50 years. Since the structural reforms of the 1990s, these institutions have not had much significance as instruments of public policy used to mitigate the market failures of the Peruvian financial system (long-term financing, financing for the agricultural and small-business sectors). On the contrary, as with other state-owned companies, they have been subject to discriminatory treatment in comparison with private companies, going against best international practices such as those recommended by the OECD.

Because of the absence of a system of strategic planning in the public sector for more than 20 years, some state-owned financial entities have ended up promoting greater financial dollarization and greater external debt, thereby hampering the development of the domestic securities market despite the lack of investment opportunities for the considerable domestic savings accumulated over the last decade.

Thus, each of the four state-run financial companies analyzed has objectives and goals in place that are not aligned with those of the others, but which respond to the regulations that have been implemented over more than 50 years and to the political emergencies that have arisen across the different governments of the day. In some cases, their objectives overlap and their efforts are duplicated, while in others possible synergies borne of administrative efficiencies and economies of scale and scope go unutilized. Therefore, none of these institutions constitutes an effective state development bank such as exists in other countries.

Given this context, the likelihood of the state-owned financial entities displaying procyclical behavior in the economy is high, since their lack of market bargaining power and of long-term vision often sees them trailing the bigger commercial banks through direct, indirect, or synthetic intermediation of their credits or their preferred or subordinated debt instruments. With the exception of the BN, all of the other institutions have ended up as followers of international investment banks through the local intermediation of the greater external debt that these entities offered them and increasing financial dollarization even against the backdrop of efforts by the public treasury reduce these macroeconomic vulnerabilities. Moreover, their capacity to support counter-cyclical policy measures is limited, because they



are dependent on express approval in the public budget for those funds for specific ends and with a limited life that they manage as trusts, since in the money market too they are usually treated in an unequal and disadvantageous manner in the central bank's operations.⁵⁸

⁵⁸ See Jiménez (2009).

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Financial Regulation and Risk Management in Development Banks

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This article attempts to answer four questions: 1) from a theoretical point of view, should Development Banks (hereinafter, DBs) be controlled by prudential regulation; 2) is the Basel Accord a suitable framework for DBs; 3) with regard to risk management, do DBs have different characteristics from private banks; and 4) what are the challenges brought by Basel III and “Basel IV”.

A few habitual answers to those questions include: 1) DBs should not be regulated, because, as they do not receive cash deposits, they do not constitute sources of systemic risk; 2) Basel is an inadequate framework for DB regulation, because its enforcement conflicts with the objectives of funding development; 3) DBs bear greater risks than private institutions, precisely because they operate in areas avoided by the private sector, due to their greater risk and/or longer term; 4) Basel III (or IV) aggravates the situation for DBs due to its tougher requirements. This article intends to investigate these responses in greater depth, sometimes questioning, other times qualifying, them.

Discussing the regulation of DBs is no simple task, given their institutional diversity. This article recognizes that there is no single comprehensive definition that will encompass the multiplicity of existing institutional designs. For this reason, the review is restricted to national public DBs which are non-specialized in specific credit segments, do not accept cash deposits, and are comprehensively defined as “...financial Institutions set up to foster economic development, often taking into account objectives of social development and regional integration, mainly by providing long-term financing to, or facilitating the financing of, projects generating positive externalities” (UN-DESA, 2005: 10-11). Each section of this article discusses one of the above questions.

¹ Economist at BNDES and Adjunct Professor at IBMEC. This article is an abridged and much updated version of Castro (2007). The opinions expressed in this paper do not necessarily represent the views of the Bank. The author thanks Stephany Griffith-Jones, Patricia Barros, Felipe Rezende, Eduardo Ichikava, Leonardo Brazão, Rogerio Studart, Paulo Franco, José Ocampo, Mariana Mazzucato, Juan-Carlos Moreno-Brid and Shari Spiegel. The responsibility for any errors is solely the author’s.

2. Financial Regulation – The Theoretical Justification: Should Development Banks be Regulated?

There are at least two very distinct groups of arguments in favor of financial regulation: 1) the theoretical framework on *market failures*; and 2) the view that brings together Keynesian, Schumpeterian and Minskyan contributions. While the former emphasizes the defense of regulations under a microeconomic perspective, the latter does so from a macroeconomic perspective.

Intuitively, the framework on market failures departs from the overall assumption that, under certain conditions, the free market will always arrive at a Pareto optimal result, where an economic outcome is said to be optimal if it is impossible to make any individual better off without making other worse off (First Welfare Theorem). In that perspective, only in very specific situations will the market “fail” and government intervention can raise economic welfare.² These failures occur in situations with the presence of: *i)* public goods; *ii)* externalities; *iii)* asymmetric information; and *iv)* market power. The existence of DBs is justified, therefore, to the extent that these institutions are able to reduce such failures and, so, (probably) enhance overall welfare.³

Literature on failures agrees, for example, that the government providing financing or producing public goods may bring about improvements in welfare. With regard to externalities, DBs can reduce social and regional disparities, generate positive environmental impact, promote technological spillover, provide signals to the market (eg. that some companies are eligible for credit support, creating “crowding in” effects), provide public information, develop capital markets (helping them to become larger and liquid and so reduce the likelihood of contagion between the credit and stock markets) etc.

² Some authors claim that “government failures” can be higher than market failures and that, theoretically, there is the possibility that a situation is “pareto constrained”. That means, it cannot be improved by any intervention, even if it is not optimal. Stiglitz (1994) argues that in financial markets market, failure is far more pervasive than “government failures”, making a powerful case for both financial regulation and development banks. I thank Prof. Stephany Griffith-Jones for this observation.

³ In microeconomic theory, the validity of the First Welfare Theorem is conditioned by the existence of: (i) local non-satiation; (ii) complete markets; and (iii) price taker behavior. Market failures arise, precisely, by a relaxation of the last two hypotheses. See Mas-Colel, Whinston and Green, 1995.

Financial regulation, on the other hand, has three purposes: 1) avoid systemic crisis (prudential regulation), 2) increase the allocative efficiency of capital, by allowing sectors or regions in surplus to fund those in deficit (allocative regulation); 3) guarantee consumer and investment protection.

Financing public goods is simply not related to financial regulation. Concerning public goods, someone could argue that DBs should be supervised in order to verify the effectiveness of the credit provided – but not regulated. In the externalities case mentioned above, the situation is the same. Instead of regulation, DBs could be evaluated by cost benefit analysis (oversight of fiscal costs x the benefits to society).⁴ However, the failure literature includes one case that *does* justify financial regulation: banking runs, considered as negative externalities, although it is also remarked that there is always the risk of regulatory action encouraging moral hazard (“too big to fail” argument). Traditionally, bank runs are only possible among institutions which accept cash deposits⁵; thus, prudential regulation would only be justified for DBs that took them - but not for the others. Consumer Protection Regulation, also, should apply only to DBs which, once more, serve the public cash depositors directly.⁶

Asymmetric information is precisely the *raison d'être* for the existence of DBs, according to the market failure approach. Here the regulation in focus is allocative (support for small businesses, underdeveloped regions, urban development etc.). DBs are, in this case, a mechanism against failures, therefore a solution, and not a source of failure. They do not require regulation (in the restricted concept of capital requirements, limits on interest rates and others), but rather, supervision (again) to verify whether they are actually fulfilling their goals.

⁴ It is worth noting that externalities are by definition non pecuniary (as so, hard to measure) and many of the benefits generated by the DBs only materialize in the long term. In this analysis, it should be also considered how much would be lost in the absence of the investment promoted.

⁵ Someone can argue that an investment bank could have a sort of a banking run (a wave of withdrawals on term deposits). It will face liquidity risk by selling assets with discount. If the investment bank is a big debtor of a commercial bank, its crisis could (at the limit) affect the payment system, but only indirectly. I thank Professor Eduardo Ichikava for that observation.

⁶ Luna Martinez and Vicente (2012) note that from a sample of 90 Development Banks, 41% take deposits from the general public (p.10). However the survey does not make it clear if these are cash or term deposits.

Finally, the market failures associated with market power (monopolies) must be analyzed, carefully. For some authors, DBs, upon becoming monopolists in certain credit markets, “crowd out” private banks. The low interest provided by DBs works as a “barrier to entry”, precluding competition, and resulting in smaller amounts supplied in the market – an argument in some sense similar to the old financial repression theory (Gurley and Shaw, 1960, and McKinnon, 1973). Even if so, this case is different from traditional monopolies analysis.

First, the possibility of DBs becoming monopolist in a given credit segment is associated (unlike in the classic case) to the possibility that DBs offer a lower interest rate than the market - and not a higher price, as is usually the case in monopoly practices. As such, the theoretical issue of “dead loss” is not quite clear. Second, assuming that there are niche markets where DBs and private institutions compete, it makes no sense to regulate (Consumer Protection Regulation) the (very) party that contributes to the reduction of the average prices.⁷ Finally, and more relevant, there are no guarantees whatsoever that a reduction on credit resources by DBs would lead to an increase in supply by the private sector in the same credit segments (long-term projects, small businesses enterprises, innovation, environmental projects, inclusive endeavors, and so forth), precisely because here one faces a situation in which the market fails. In short, the discussion about the monopolist’s power of DBs is not the traditional one. It is not a case of avoiding supernormal profits and enlarging supply, by regulation.

In contrast to the previous framework, the Keynesian, Schumpeterian and Minskyan approach emphasizes (KSM, hereafter), as a structural condition, the **inability** of markets to self-regulate.⁸ There is some skepticism as to the capability of regulatory activities to completely prevent the outbreak of crises - but it is possible to make them less

⁷ Someone could argue that the marginal cost curve of DBs would be structurally lower, as they access sources not available to others. Potentially, this would open up space for the practice of interest/spreads above their marginal cost - which would also be an exercise of monopoly power. However, considering that spreads are usually quite low in these institutions, the problem is, in our view, immaterial.

⁸ The KSM approach is not, in our view, necessarily incompatible with the recognition that “market failures” might exist. However, it is considered that: a) the concept of allocative efficiency, adopted in failures, is poorly suited to address the problem of development financing; b) uncertainty goes far beyond the traditional scope of failures; and c) funding long term investments and innovation is crucial for economic growth.

frequent and mitigate their effects. Unlike the “failure” approach, public intervention of financial markets is called for, as a rule and not as an exception, in order to: 1) contain systemic risk; 2) act anti-cyclically, when necessary (through monetary and fiscal policies); 3) foster development.

In the KSM approach, DBs can reduce financial fragility by: creating effective demand; offering a stable source of long-term funding in national currency (so reducing exchange and interest rate risks); making investments feasible by reducing uncertainty; mitigating external vulnerability in primary exporting countries (since they often promote the diversification of production, by funding industrial development), among others (Castro, 2009).⁹

The role of DBs on innovation funding is also crucial (Burlamaqui and Kregel, 2005) – and this role is seen as one that does much more than “fixing static market failures” (Stiglitz, 1989, quoted in Mazzucato and Wray, 2015). DBs have advantages in financing innovation because they can be “patient and mission oriented”. Besides, DBs have the technical capacity to analyze innovative projects – since it is a core business. They can provide non-reimbursable funds, in limited amounts, or manage funds (which are not supposed to have returns in the short-term) where the success of one project will make the others financially viable. They can also promote crowding-in on private resources, by joining private equity funds.

In the KSM approach, prudential regulation is made necessary by the recognition of the cyclical nature of capitalism. The phenomenon of “contagion” is emphasized here, on two levels. First, the very perception of a fragility in a bank can affect others (even if they were *ex ante* healthy). This happens either because of crossed liabilities among banking institutions, or merely due to a “panic” and “herd behavior” in a fractional reserve system. The second level is related to the fact that banks operate the payment system, directly influencing liquidity, which makes the crisis irradiate from the financial sector to the rest of the economy – this is ultimately the reason for regulating the financial system (Carvalho, 2009). The payment system being the critical point, financial regulation focuses

⁹ According to Kregel (2014) and Rezende (2015) DBs can, by reducing financial fragility, help solve the “two masters” dilemma on regulation: assuring a safe and secure payment system versus fostering development (Minsky, 1994). I thank Professor Felipe Rezende for that observation.

necessarily on the banks. But, as financial markets are interconnected, the need for regulation of other financial institutions is recognized.¹⁰

Let's apply this discussion on DBs. In the case of DBs that act (exclusively or not) as second-tier banks, fund transfers comprise part of the DBs' assets. Traditionally, the problem of systemic risk occurs, conversely, when a bank is a large debtor (having commercial banks among their liabilities), so that its default spreads to successive breaks. Most likely, only small banks that were fundamentally dependent on the funds transferred by the DB, and had simultaneously assumed short-term liabilities, would not be able to honor their commitments to customers, and thus contaminate the payment system. It is unlikely, however, that the breaking of these small institutions would engender a wave of withdrawals from other banks, thus spawning a systemic crisis.

If a DB only operates through direct operations, its breaking may potentially generate a credit crunch. Companies that receive funds directly from the DB, but also obtain funds from the commercial banking system, could face difficulties in paying back commercial banks, leading to problems for the latter – and this way a DB break could, indirectly, generate systemic risk. So, the habitual answer to the first question mention in the introduction is not precise. However, if it is not impossible for DBs (which do not hold cash deposits, but are significant lenders of funds to other banks) to be a source of systemic risk – this could happen only indirectly and that possibility is remote.

Finally, an afterthought on allocative regulation can also be regarded as a KSM concern, but (again) DBs are a solution, and not a source, of problems. At most, supervision rather than regulation is applicable. Consumer Protection Regulation is also hardly befitting (as in the case of failures) as this is advocated solely to protect customers from the effects of bank runs, or from selling of products that can lead to individuals' losses.

Realistically one may expect that, if the DB is large, in order to avoid a major credit crunch or economic recession, it will receive additional public funds, so that the question becomes fiscal (budgetary space or the ability of the Government to raise additional debt

¹⁰ The 1990s-2000s movement to strengthen bank regulation and simultaneously deregulate other financial institutions is seen, in this approach, as a major source of instability. It opens opportunities for regulatory arbitrage, increasing leverage in unregulated areas, which was a key element in the subprime crisis (shadow system).

in the market, at spreads that are not excessive) or, ultimately, inflationary.¹¹ In other words, there would be a need for the Government to provide additional resources (capital injection or loans – both will enlarge gross public debt) in order to avoid systemic risk. Here another doubt arises: is prudential regulation justified by the fiscal risk? The literature simply does not answer this question.

3. The Evolution of Basel Agreements – Is Basel a Suitable Framework for DBs?

The first Basel Accord was established in 1988 and was limited to credit risk, subsequently including market risk, in 1996. The second agreement (Basel II) was launched in 2001 (reviewed in BIS 2004 and 2006), adding operational risk in the minimum required capital.¹² In 2009, BIS, Bank for International Settlements, launched an amendment focused on trade portfolio improvements (trading book) and the treatment of market risk—which became known as “Basel 2.5”. Finally, Basel III was released in December 2010 (reviewed in June 2011). Complementarily, in January 2013, BIS announced the rules for dealing with short-term liquidity risk (1 month), and in 2014 long-term liquidity requirements (1 year), aside from requirements for the exposure of banks to central counterparts.

Quite synthetically, the concepts underlying Basel II involved three pillars: *i*) minimum capital requirements; *ii*) supervision; and *iii*) transparency—and those remain in Basel III. The minimum requirements comprehend: credit risk, market and operational risk (defined as the risk of losses resulting from failures in: processes; people; and systems, including legal risk). Different approaches to deal with each risk were allowed—from standard methods to advanced models. Supervision (Pillar II) oversaw other risks: interest rate risk at the banking book, concentration (BIS, 1991), liquidity, reputational, etc. that did not require *a priori* regulatory capital. Strictly speaking, supervision could require additional capital (the first Pillar is about minimum requirements), changes in the ways of

¹¹ In the KSM approach, it is argued that countries with sovereign currencies have no default risk. In fact, ultimately, the risk is inflationary.

¹² It lies beyond the scope of this work to discuss the Basel I and II. For this, see Carvalho (2005), Griffith-Jones and Segoviano (2002).

controlling risks, internal limits, provisions and reserves, improvements in internal controls, and other measures. Complementarily, the third pillar was intended to encourage market discipline by developing a set of disclosure requirements in order to provide public information about risk management and capital adequacy.

When Basel II was launched, critics mentioned: a) its procyclicality; b) the fact that the agreement hampered access to credit for companies with low ratings, including small businesses; c) its bias against long-term credit; d) its bias against smaller banks, since they are probably less able to develop internal models that could (potentially) save capital; e) the difficulties in measuring operational risk; f) its indiscriminate use of Value at Risk (VaR)¹³; g) the absence of liquidity risk¹⁴ management enforcement, among others. In particular, Basel II was accused of leaving aside a macroprudential view, focusing exclusively on micro-prudential issues. Besides, Basel Accords were applied only to banks, thus creating opportunities for regulatory arbitrage.

The changes made in 2004, still under the scope of Basel II, sought to respond to several of these faults. For example, adjustments were made in: credit risk models (to ease the problems of cyclicality and short-term bias), VaR models, some calibration by firm size in the case of internal rating models (credit risk) were added, and other minor adjustments (see Castro, 2006). The more structural criticism regarding the fact that Basel II does not address macroprudential issues and the inadequacy of operational risk models, however, were not dealt with.¹⁵

What is being called attention to is, in first place, that several of the criticisms made regarding Basel II were not ignored (even before the subprime crisis), but acknowledged and, to a point, addressed. This, however, was not able to prevent one of the biggest financial crises experienced in the recent history of capitalism. Secondly, even though the

¹³ VaR calculates the maximum expected loss in equity due to changes in risk factors, considering volatilities, correlations and sensitivity measures. For a critique of the use of VaR, see Dowd (2006).

¹⁴ Liquidity risk is: a consequential risk (derived from credit, market and operational). It varies according to the severity and duration of events, has no single indicator, capital cannot be used for counterbalances, it is difficult to hedge against, requires contingency plans, and is highly correlated with systemic risk and the other aforementioned risks.

¹⁵ The review of 2006 added new capital requirements for counterparty risk for some portfolio positions (Trading Activities) and the treatment of Double Default for credit risk (risk of both the borrower and the guarantor entering into default).

ultimate goal of the framework continued to be avoiding systemic risk, Basel II evolved into a set of risk management usual practices. In third place, we can remark that, in Basel II and in spite of changes made, the focus continued to be on micro-prudential regulation. The assumption remained that, by good (preventive) risk management practices (market, operational, credit, etc.), the probability of a systemic crisis could be reduced – the argument of leveling the playing field (equal conditions among countries) also remained.

However, from 2008, in face of the severity of the international financial crisis, BIS started to release many documents. Initially the changes seemed (again) to follow the same strategy as Basel II: to include more and more requirements, adjust models, without any major conceptual change (BIS, 2008). The attentive reader, however, would start to notice a few novelties. The new framework (Basel 2.5), for example, sought to address activities performed by banks such as JPMorgan (JPM), Citibank Morgan Stanley (MS) and Goldman Sachs (GS), which had investment banking branches, and it was suggested that the framework could be extended to pure investment banks. It was recognized, albeit not explicitly, that regulatory arbitration and the need for more comprehensive regulation might be a possibility. Basel III forded well beyond; not only was a large amount of measures introduced (see Box 3, section IV), as usual, but a new framework was laid down. Also, BIS (2009) introduced the “Supplemental Pillar 2 Guidance” and “Revisions to the Pillar III (Market Discipline)”.

As explained by William Coen, Secretary General of the Basel Committee: “The global financial crisis highlighted a number of weaknesses in the financial system and the global regulatory framework, including: ... a high degree of systemic risk; interconnectedness among financial Institutions and common exposures to similar shocks; inadequate capital buffers for banks to mitigate the inherent procyclicality of financial markets and to maintain lending to the real economy in times of stress; and insufficient liquidity buffers and excessive exposure to liquidity risk, both direct and indirect (e.g. through the shadow banking system). ... The weaknesses in the banking sector were transmitted to the rest of the financial system and the real economy, resulting in substantial

costs.” (BIS, 2016b).¹⁶ Coen also announced that the current Basel agenda sought a better balance between “risk sensitivity, simplicity and comparability”. It was admitted that the regulatory framework became too complex, rendering not only supervision but also the very perception of risk by senior management (board) even more difficult. In addition, the Committee recognized that there were great discrepancies between asset valuations and risk calculations by different banks, which reduces comparability (and possibly reveals low accuracy) among metrics. In this regard, the Committee intends to: increase the sensitivity and robustness of the simplest approaches, standardizing them. In particular, changes are underway regarding models of operational risk and interest rate risks at the banking book, and in “... the design and calibration of the leverage ratio and the potential capital floor based on standardized approaches.” In all of these revisions, the sought path seems to be the same: reducing the flexibility of using in-house models—which seems to bear consequences for the DBs, as will be discussed below.

Since there are already so many changes in perspective, the Bank industry has started talking about a “Basel IV” approach, instead of mentioning all the new papers. Basel IV is not yet an official name. However, generally speaking, Basel III focuses on higher and more qualified capital requirements (although there are some other changes concerning, for example, liquidity risk). “Basel IV” is about revisions on the risk assets measures. In other words, Basel III is about the “numerator” of the Basel index (capital requirements), and Basel IV focuses on the “denominator” (requirements on the modeling of risks) – both results, in general, in more need for capital. The discussion under “Basel IV” is at different degrees of maturation. Some of the revisions proposed, like the revision on Trading Book, are almost finished, while others are still in the form of consultative papers, and we can expect many future changes. The impact of Basel IV on the banking industry is also very diverse, depending on the different banks. Some of the banks can even profit from small

¹⁶ In 2009, it was already recognized that: a) the boundary between trading book and banking book was susceptible to regulatory arbitrage; b) the models do not consider extreme events (tail risk – so an additional requirement for losses in extreme situations - Stressed Value At Risk – SVAR was added), among others. An additional amount of capital was also added, the Incremental Risk Charge (IRC) to estimate default and credit migration risk and another one to better treat correlations (comprehensive risk measure). The treatment of securitization and re-securitization was enlarged and reinforced. It was proposed (albeit vaguely) that calculation be improved for: 1) the concentration risk, 2) off balance-sheet exposures and 3) reputation risk (thus far, outside the scope of Basel II).

reductions on capital requirements, for example, on credit risk, estimated at about 10% by PricewaterhouseCoopers (PWC). Others can have costs highly increased (PWC mentions that they performed tests on different clients and some of them would face a 190% increase in their capital costs for credit risk). On average (an average that does not say much), specialists are considering an increase of total cost of 25 to 30% (PWC, 2017). Before dealing with Basel III and Basel IV (Section V), a glance may be cast upon the matter of Basel's applicability to DBs.

National public DBs are subject, in general, to specific national rules, and may or may not operate under the aegis of a Central Bank. Thus, during Basel I, several DBs were not covered by the international framework; to name a few: KfW (the German DB), JBIC (the Japanese DB), and Korea-Exim. BNDES (the Brazilian DB), on the other hand, was under Basel regulations as soon as the rules were laid down in the country, in 1994. The adhesion of DBs to Basel II, however, was much higher, whether imposed or voluntary. The China Development Bank, the KfW and the Korean Development Bank, for example, voluntarily joined the framework¹⁷, as did Latin American institutions (Zendron and Sobreira, 2007). Why did this happen?

First, because prudential regulation in Basel stopped addressing only the problem of systemic risk (here understood in the classical sense of bank runs), and focused more directly on the individual risks of financial institutions. This design, as has been seen, is derived from the argument (which would later be belied by the subprime financial crisis) that avoiding individual risks regularly would eliminate the roots of systemic risk. By presenting the rules as a set of risk management best practices, (although they always faced some criticism), these became potentially applicable to any organization, including DBs. When imposed, as in the Brazilian case, the justification was the banks' size and the relevance of DBs in the economy (in the broadest sense of the concept of systemic risk: capable of affecting the GDP due to its size).

¹⁷ Since 2016, bank supervisory laws and regulations are officially applied to KfW – and the Bank has shown concerns about the new requirements proposed by Basel III and IV (KfW, 2016).

The second reason for adherence to Basel II was, in fact, an increase in the risks undertaken by the DBs – which needed to be managed to ensure financial sustainability. In a context of reduced public resources available for promoting development, it had become necessary (for some DBs) to supplement public resources, until then abundant, and capture market funds (however, some DBs already had that practice before, like, for example, KfW). This, however, resulted in structural changes in liability conditions, introducing risks that did not exist before - but now needed to be properly managed. At the same time, the payback terms of DBs loans also widened (changes in asset conditions), since the market, in some countries, assumed funding medium terms projects (5 to 6 years or even longer, in some developed countries), for example.

As a result of this double process (changes in asset and liability conditions), the potential risks to DBs increased: credit, market and even operational risks associated with assessment of long-term projects. Finally, the assumption of shorter-term liabilities, in order to complement the funding structure (hitherto nonexistent or irrelevant), increased the DBs' cash flow risks. Also, the loans for large projects sometimes entailed grace periods that could comprise “valleys” of cash flows, which also needed to be managed.

Moreover, the financial deregulation process, which gained momentum in the 1990s, inserted an element of competition (national and international). On the one hand, this increased opportunities for raising funds abroad, but on the other, it also boosted the risk of mismatches on currencies and terms, and on interest rate, among these institutions and decreased financial returns. In addition, support for share subscriptions increased the risk of price fluctuations in DBs' balances. Strictly speaking, when a DB (in order to develop capital market) supports a firm that has already been awarded loans, through an acquisition of shareholding participation, the institution assumes double exposure on behalf of this company. Furthermore, unlike in the case of loans, there are no longer guarantees to protect it, at least in part, from losses in case of default.¹⁸

¹⁸ From the risk management point of view (exclusively), thus, support through fixed income only, characteristic of the historical role of DBs, was preferable. On the other hand, there are benefits to society in the development of the capital market. It is interesting to note that in Brazil, Law 11.101 states that, independently of the size of debt, if the creditor gives loans and has stocks from the same enterprise above 10% of the share capital, the creditor loses the right to vote. I thank Professor Patricia Barros for that observation.

To the extent that DBs' priorities came to emphasize areas such as: 1) innovation funding; 2) micro and small businesses; 3) large-scale projects in new industries, the challenges have widened once more for managing credit risk (innovation and small businesses) and legal risk (regulatory framework for large-scale projects). The greater funding requirements to meet the demand for investment, in turn, required, in some cases, that some DBs create financial products such as a supply of securitized papers or convertible debentures (see BDC, 2009). Again, this introduced potential additional market risks for institutions that, historically, did not exist.

The third argument in favor of adhesion of DBs to Basel is that in this same context of financial globalization, not only is better risk management necessary, but also the importance of certifying this management has increased. In many ways (third argument), Basel II became a "quality seal", used even to attract market resources. This seems to be the reason why some DBs have chosen to adhere to Basel II, even in countries where the rules are not mandatory for them.

According to (informal) reports by risk managers in DBs, adherence to the Basel II framework led, *per se*, to some improvements in risk management (see Castro, 2014). The most relevant gain was the creation of integrated risk management systems, which enabled improvements in management and, above all, improvements in the quality of databases. Other gains included improvements in the corporate governance of risk management, given the imposition of formulating risk management policies, setting limits, segregating functions, greater accountability, etc.

Finally, as Basel II was a relatively flexible framework, allowing internal models, it became difficult to justify to the market why a DB should not join the framework. The DBs saw potential opportunities in saving regulatory capital through the development of internal models, particularly credit risk models, given the low historical default rates and the high recovery rates (low Loss Given Default - LGD) due to the existence of good quality guarantees, frequently sovereign or banking.

The voluntary acceptance of Basel II reveals something more important: the Basel requirements were not perceived by these DBs as a hindrance for the exercise of their mission. Why was that? In part, because several of their measures were simply good practices, bringing some important advances. Also, contrary to what is generally thought,

in spite of acting in higher-risk credit segments, DBs also rely on risk management instruments that the market does not have access to. If, on the one hand, there are more risks, there are also tools to manage them. Managing risk is not avoiding risk.¹⁹

4. Do DBs Benefit from Distinctive Risk Management Features?

While generalizations concerning DBs are very difficult, it could be argued that DBs do enjoy a few advantages regarding risk management capability:

- 1) Lower liquidity risks, as a consequence of their own funding structure;
- 2) The longer terms of DB loans are not imperatively related to higher credit risks for DBs, as will be argued;
- 3) There are advantages in supporting exports to high-risk countries, because sovereign payments are easier and more easily enforceable among governments and they benefit from specific support mechanisms such as public funds and guarantees;
- 4) In principle, there is a smaller exposure to market risk in the trading portfolio, vis-à-vis the private sector, since it is not their core business. Also, DBs have, in general, less complex instruments, such as derivatives. The same cannot be said, however, regarding mismatches on indexes (different inflation indices on assets and liabilities, different interest rates or currencies), which remain a major source of potential market risk;
- 5) DBs can renegotiate terms of debt more easily. The existence of crossed assets and liabilities between the Treasury and DBs allows a range of tools for risk management, not available to private institutions;
- 6) The fact that they interact with higher-risk sectors (small businesses - SME, Innovations etc.), once more, does not necessarily imply greater losses. If SME operations are performed as second-tier operations, the risk is assumed by the financial agent. If it is first tier, large portfolios tend to offset losses. As for funding innovation, if done with non-reimbursable funds, risk does not even enter the equation. If done through a fund, capital

¹⁹ From a Minskyan point of view, but also from other perspectives (see Corden, 1990), it would be more important to focus on mechanism that could guarantee the asset quality and the potential of the investments supported to generate growth, rather than fixing very rigid rules for risk management. Some of the assets must carry risk (especially on DBs). A 100% safe bank would be one that has 100% of capital – it would not foster development. I thank Professor Felipe Rezende for that observation.

requirements will look at the sustainability of the fund - not of each individual operation – thus enabling activity.

It should be added here that the vast majority of Basel requirements for market risks are in the trading portfolio, using VaR or maturity ladder methods.²⁰ The most significant market risks tend to be: currency risk (in case they support exports or fundraising in the international market), interest rate risk on banking book; and, if the DB acts to foster capital markets, risk on dividend flow fluctuations in the banking book. However, the latter does not require capital buffers. In relation to mismatched terms on balance sheets, also, DBs are likely to have risk management advantages since the duration of the liability (in spite of the broader loan terms) is greater than that of the asset.

Do all these arguments mean that there are no problems in directly applying Basel rules to DBs? No, it does not. In our opinion, Basel II contained three points of great concern for developmental objectives: *a)* maturity adjustment in credit risk models; *b)* the treatment of concentration risk; *c)* the treatment of operational risk. These points remained, or were even worse, in Basel III - as will be discussed.

As usually occurs in financing, Basel credit risk models consider that the longer the term, the greater the risk.²¹ The required capital is calculated (either in standard or in internal models), exclusively appraising the asset's analysis. However, the greater lending periods do not imperatively bring higher risks for DBs in the same proportion as they do to private banks, because their funding is also held in longer term. Upon raising longer-term funding, DBs are capable of **renegotiating** credit on better terms, reducing default losses without hurting the financial health of the institution. In other words, portfolio management (Asset Liability Management) is more flexible, contributing to financing productive investment, and so reducing the vulnerability of the financial system.²²

²⁰ Maturity ladder may no longer be accepted in the near future.

²¹ The maturity adjustment is to anticipate possible downgrades and/or changes in mark to market values. It is considered that the chances of downgrading and loss of market value are greater when the probability of initial default is lower. Therefore, when repayment terms are extended the capital requirement increases - albeit less than proportionally for higher risk companies (because it is assumed that their quality will improve over time), compared with those with better credit rating (since the latter are more likely to worsen rather than improving in rating, over the years by Basel models). See BIS, 2005.

²² On the other hand, non performing loans can stay for a longer time in a public bank balance sheet (or DB) than would in a private bank.

Additionally, it can be argued that the existence of long credit relations between banks and clients, as is common in DBs, ultimately reduces default and delinquency, as ties of interdependence grow and flows of information between borrowers and lenders are improved. In addition, as the long-term credit is vital for some sectors, companies often prioritize payments to these institutions. This probably stems from the behavior of companies in that they prefer (obviously assuming the crisis is not long-lasting) to honor their debt commitments to partners critical to their long-term strategy (even though renegotiation capacity is possibly the most important factor).

Even if we admit that the longer terms somehow involve higher risks, will the risks grow for DBs in the same way as they do for private institutions (exponentially for example, as several managerial models assume, or linearly as in the Basel format, adjusted to a concave shape by the Probability of Default - PD)? The reality is that the parameter calibration in Basel agreements is based on the experiences of a number of commercial or universal banks located in developed countries - whose characteristics are very different from those dealt with by DBs. The term defined as “standard” is only 2.5 years, so any longer timeframes are penalized with higher capital charges in Internal Rating Models (IRB) with a cap of five years (higher maturity will be charged as if it was five years anyway – Barros, 2016). It is exceedingly likely that this calibration is inadequate for DBs. In addition, there is the problem of adapting the “M” (maturity adjustment for capital requirement) to the characteristics of different countries. The reduced average period of credit operations is a feature common to many developing countries, where DBs are the main - or only - alternative for long-term fundraising.

Given that DBs are very different institutions among each other, it is important that the framework be flexible in relation to maturity adjustment, so that it indeed reflects potential higher risk, but nevertheless without creating a bias against long-term operations, which are essential for economic development and intrinsic to the DBs’ mission. It seems to us that the only way to solve this dilemma is to establish a dialogue with the regulator in order to render some points more flexible. The rules should be consistent with the risk profile (which in the case of DBs involves particular characteristics) and also consider the benefits to economic development.

Regarding concentration risk, Basel credit risk models are based on KMV Portfolio Manager type models, where it is assumed that the only significant risk factor is systemic risk, since individual risks are cancelled out due to the law of large numbers (BIS, 2005). The Basel models assume, therefore, a granular portfolio. If there is concentration (by borrower, guarantor, industry, or regional/geographic), an adjustment must be made to Pillar II supervision.

The problem is that portfolio concentration in groups, sectors, regionally, or by lender is something almost inherent to DBs. Due to their natural form of action, it is common that their portfolios are concentrated, in certain periods, on industry sectors or regions - following government policies and guidelines. There are funding “seasons” focusing on certain industries or sectors in large “National Economic Development Plans”. There is here, therefore, a dilemma between the risks of holding a concentrated portfolio and the social damage that the absence of these investments - which need to be large (and often very concentrated, at certain times) - could represent in terms of economic and social development.

In particular, when the infrastructure sector is addressed, the problem is not restricted to industry concentration and the longer terms in the DBs portfolio. Major infrastructure projects are provided typically by oligopolistic industries, for example the construction sector. In other words, aside from concentration in an economic sector and region, it will often also involve concentration on a few clients or an economic group or guarantors. The problem is that managing risk concentration (particularly with large exposure) is not a simple matter. Developing forms of mitigation and management of these risks is a clear and present challenge - but *not* treating it in a flexible manner could work against development.

Finally, regarding operational risk, in Basel II three methodologies were established: 1) Basic Indicator Approach; 2) Alternative Standardized Approach - ASA; and 3) Advanced Measurement Approach (AMA), which provided some modeling

flexibility. Much criticism targeted the difficulties in estimating this risk, particularly in relation to databases and statistical processing.²³

With regard to the operational risk for DBs, there is no clarity as regards its magnitude. Wyman (2016) states that for DB managers, risk management continues to focus on credit and market risks. Several banks identified reputational risk (a demand strengthened in Basel III) as critical, yet few institutions actually manage it.²⁴ Operational risk, though admittedly relevant, is considered less important in magnitude, and furthermore difficult to measure and treat.

Although from an empirical point of view, there is no clarity regarding operational risk magnitude, one could assume that having a smaller number of operations and not being subject (at least with the same intensity) to typically operational risk events such as, for example, card frauds, DBs would (potentially) face lower operational risk. However, DBs (always remembering that, for the purposes of this article, institutions specializing exclusively in small businesses are excluded) tend to have large exposures in less homogeneous, more complex, and longer-termed products. Thus, their operational risk events, even though less likely (lower frequency), tend to be more severe. Moreover, DBs, given their public nature, may have more difficulties in renewing their IT park (because of the public bidding process requirements), thus raising the risk of system failures and computer system crashes. In short, operational risk management in DBs is particularly challenging - and the proposed models do not seem adequate.

5. Basel III – What are the New Challenges for DBs?

²³ Operational risk data is, in general, of low frequency, and has very different magnitudes between each loss event, making it difficult to use approximations to standard distributions. Besides, some controls are managerial and the items defined by the Committee are not always relevant to the Bank. There are also problems of double counting (operational and credit or market risk); some expenses are estimated from provisions, not always materialized in payments; some events (e.g. labor claims) take much more time to solve than Basel data series allows (the observation period is only 5 years); other events (e.g. mergers and acquisitions) are unique, etc. It is possible to supplement the analysis with external data, but a careful evaluation of whether the data is suitable for use and applicable to the institution concerned is necessary.

²⁴ Reputational risk is defined as the risk arising from negative perception on the part of customers, counterparties, shareholders and other stakeholders, which can adversely affect a bank's ability to maintain normal business practice.

Box 1 summarizes the key measures and metrics introduced by Basel III - in boldface those that appear to be, in our point of view, the most relevant for DBs.

Box 1 - Basel III

1. Short-term Liquidity Risk - Liquidity Coverage Ratio (LCR)
- 2. Treatment of Long-Term Liquidity Risk - Net Stable Funding Ratio (NSFR)**
3. Leverage Ratio (not risk-weighted)
4. Incremental Charge Risk (ICR) - captures default and migration risk for unsecured credit products held in the Trading Book.
5. Comprehensive Risk Measure - captures price risks as well as incremental default and migration risks in a single measure for correlation of trading portfolio
6. Higher requirements for Resecuritization
7. Credit Valuation Adjustment (CVA - adjusts to take into account the possibility of a counterparty's default)
8. Greater control of credit derivatives - ABS, CDO and off – balance sheet vehicles.
9. Disincentive to OTC derivatives
10. Search for greater integration between market risk and credit risk (Wrong-Way Risk)
11. Back-testing of internal models
12. Greater robustness in stress tests
13. Changes in executive compensation rules
14. Addition of reputation risk control
15. Pillar II: new requirements to ensure strict guidance and monitoring of banks
16. Pillar III: Larger set of information requirements.
17. Higher capital requirements for internationally active banks.
- 18. Higher capital requirements for nationally active banks**
- 19. Increased requirements of core capital and Tier 1**
- 20. Two additional capital cushions - Absorption and Countercyclical**
- 21. Greater control over Concentration Risk**
- 22. Disincentive to the use of monoline insurers**

Let us start by the reasons why we defend that (generally speaking) some of the new requirements in Basel III **are not (or are less)** relevant to DBs than for other banks. First, the short-term liquidity risk indicator (LCR) seeks to assess whether banks maintain an adequate level of liquid assets in a scenario of severe stress. This indicator tends to be

irrelevant to DBs, as it is determined with a one-month horizon, for institutions that have few short-term liabilities. The long-term indicator (NSFR) aims to ensure that banks avoid severe term mismatches under normal conditions considering the one-year horizon. The core business in DBs risk management is, precisely, managing the mismatch between assets and liabilities. It is expected, therefore, that DBs would have no difficulty in meeting these new requirements. However, the NSFR may increase the short-term bias of the market. Thus, potentially, the need for medium/long-term assets from DBs may increase due to the reduction of their supply on the market (Barros, 2016) - which is why the item is in boldface in Box 1.

The leverage ratio does not seem to be equally problematic for many DBs, although some institutions could have problems.²⁵ Regarding the use of derivatives (items 4 to 10), they tend to have smaller consequences relatively, for DBs, due to their lower use. This impression is reinforced by recent research (Wyman, 2016), which showed that several DBs indeed use derivatives but, as expected, these are often used for hedging purposes (which is not punished with higher capital requirements, but instead encouraged). The most common products used in DBs are interest rates, credit derivatives, and foreign currencies. Of course, for DBs that deals with securitization, an increase in capital may be more significant. Moreover, the disincentive for the use of OTC derivatives may also have some effect. This is because DBs have incentives to create optionalities and OTC derivatives, since tailor-made operations tend to be more common for institutions that deal with projects with non-standard features.

The use of back-testing and more robust stress testing (items 11 and 12), as well as further integration of market and credit risk correlations are, in principle, salutary for risk management—thus are not, a priori, problematic. The addition of Stress-VaR requirements raises capital requirements for all institutions, including DBs. The *Incentives Agenda* in Basel III also does not seem to be of great impact, once these institutions no longer have

²⁵KfW, for example, registered that: “By nature, a state-owned development bank is bearing a lot of low-default sovereign exposure ... The question is whether it is expected from development banks to practice a search-for-yield. If so, it is contradictory to the long-term business model of a development bank. If not, it limits business volume and thereby the development bank’s ability to perform its major task.” (KfW, 2016, p.7)

the objective of profit maximization. As for reputational risk, it is still unclear how its treatment will proceed.

As regards the new capital requirements in Basel III, particularly of Core Capital, this may indeed be a source of concern. Some DBs may face difficulties, depending on each individual case. Compliance with new requirements will depend on the existence of prior capital clearances and fiscal constraints specific to each country. The addition of countercyclical cushions, in contrast, should in our view be assessed carefully for their relevance to DBs. If it is accepted that DBs act anti-cyclically (Brei and Schclarek, 2017, Griffith-Jones, Ocampo and Rezende, 2017, and Luna Martinez and Vicente, 2012), does it make sense to apply the cushions to these institutions? It may simply be dysfunctional for the economy as a whole - and work against macroprudential regulation goals. DBs should have enough capacity to act quick and hard in crisis times. In that sense, countercyclical buffers could become a part of an agenda applying some rules of Basel III in a more flexible manner for DBs.²⁶

Finally, the major requirements for systemically important global banks, meanwhile, focus more on banks that operate as commercial banks, because of their global systemic implications. This does not mean that DBs intending to carry out international operations will not be included in the framework in the future. The new rules seem to be, however, more relevant for DBs which are domestically systemic banks (BIS, 2012). To determine whether an institution is domestically systemic, the criteria are: size, interconnectedness, the existence of substitutes, and complexity. Thus the concept of being systemic was used in its broadest sense, considering their size relative to the GDP. So, larger DBs may carry additional requirements under Basel III, depending on the judgment of the national monetary authority - which may prove to be problematic in the future.

An important point is that Basel IV diminishes the incentives for the development of internal models (and is moving towards the defense of adjusted standard models), which reduces the flexibility of the framework. In other words, it decreases the possibility that an

²⁶ It should be recognized, however, that DBs may sometimes act pro-cyclically, responding to demands for funding the economy. In fact, when the economy is booming, there is increasing demand for investments, so DBs disbursements (or other forms of credit supports) are higher – the opposite occurs in economic downturns. The DBs countercyclical behavior is common, but it is a government or institutional decision.

institution (which has idiosyncratic risk management characteristics, and furthermore, contributes to development and, it must be emphasized, reduces financial fragility) develop more suitable metrics. It is worth adding that the treatment of the interest rate risk in the banking portfolio (which tends to be relevant for DBs), where the BIS allowed flexibility under Basel II, is also being reformulated (BIS, 2016) into a standard method of treatment, which can be adopted as a requirement by the national regulator or placed as an option.

With regard to concentration risk, the problem is far more serious, because its treatment has been systematically revised in the direction of greater severity (BIS 2011, 2012b and 2014). For the purpose of dealing with concentration risk (BIS, 2014), the use of several metrics (sensitivity analyses, use of scenarios, economic capital models, stress tests) are suggested, setting internal limits and observing the concentrations of counterparties, for both assets and funding sources, currencies, derivatives, etc. As of 2019, there will be a default limit for large exposures, of 25% of Tier 1 - and, for “global systemically important banks (G-SIBs)”, of 15% of Tier 1 capital.²⁷

The issue becomes more serious when one considers that there is a large gap in global infrastructure, with DBs seen as a key instrument to overcome it. This means that Basel III, by demanding higher capital requirements, will be working against the global infrastructure agenda – especially considering Greenfield projects, where the risks are higher (and the market does not show appetite without government support). It is worth noting that if Project Finance structures, on the one hand, allow sharing guarantees and they facilitate investment by reducing performance risks, on the other hand, they also introduces new risk management challenges. This is because the guarantee is the project in itself - which is far more difficult to liquidate. In relation to the concentration risk, when a Project Finance begins its operations, they can be considered as segregated risk – so the 25% limit proposed by Basel III will probably be not binding. (Barros, 2016) – but, for the pre-operational phase, it probably will be. This may be another important point where a dialogue should be maintained with the regulator to enable DBs (and other banks involved in infrastructure financing) some flexibility.

²⁷ In Brazil, there was already a similar limit of exposure to a single economic group (financial conglomerate) to 25% of the Regulatory Capital (Tier 1 + Tier 2). BNDES, however, had a (temporary) flexible application of this setting. With the new international rules, the limits are even tighter, because they refer only to Tier 1.

Finally, there are also ongoing changes in the treatment of operational risk (2011, 2014 and 2016b). The Standardized Measurement Approach (SMA) aims to replace the three methods aforementioned. Again, simplicity, comparability and sensitivity to risk are sought, eliminating the possibility of using internal models. The most relevant issue is that the new DBs' agendas emphasize funding for infrastructure, and financing sustainability - segments where the risk of regulatory changes is high.²⁸ That is, it is possible that in the future, operational risks will grow, once this includes legal risk. In this sense, again, the tendency to use standard metrics could prove not appropriate

6. Conclusions – Answering the Four Questions

Should DBs be regulated? It was seen throughout section 2 that, under the aegis of market failures, the rationale for financial regulation was traditionally justified for institutions that collect cash deposits from the public in order to avoid a negative externality. In all other cases, as discussed, DBs pose a solution for such failures and, therefore, do not properly require regulation, but rather, supervision, in the sense used in this article. In the KSM approach, financial regulation is justified by systemic risk. Even though there is some theoretical possibility that the illiquidity or, ultimately, the bankruptcy of a DB (that does not collect cash deposits) can indirectly generate systemic risk, this possibility seems remote, from a practical point of view.

However, the negligent or reckless behavior of a DB (through excessive leverage or poor risk management) could cause potential fiscal damage (ultimately, an inflationary risk), or, more importantly, a risk of a credit crunch. In the latter case, it would cost a loss of investment, probably an increase in unemployment, but the crisis would be concentrated in a few economic sectors. That is, it would not be “systemic” since the means of payment would not be affected, at least at first. The economic impact that DBs can have is a

²⁸ If these projects involve funds in other currencies (co-funding between DBs or DBs and private entities), this will raise market risk (fluctuation of currencies) and add greater risks of interest rate fluctuation in the banking book (associated with the longer-term operations and the interest fluctuations in different currencies).

justification for DBs to be regulated/supervised by the monetary authorities (regardless of the fact that the literature does not consider these issues).

In addition to the macroeconomic costs, it is a fact that DBs that recurrently require additional capital injections due to losses are often questioned by society. DBs are supposed to be self-sustainable. Here lies a political issue that must be considered: any consistently financially unsustainable DBs will hardly have the ability to perpetuate themselves over time, as demonstrated by the 1980s experience, when several DBs became extinct. Moreover, even for DBs that receive fiscal budgetary flows and work with some non-reimbursable projects (besides loans), the return on operations is also an important source of resources. Regulation, however, should not hinder DBs in the fulfillment of their mission. The question, therefore, becomes whether it makes sense to regulate them, in the way prudential regulation is conceived today?

Is Basel regulation a suitable framework for DBs? We sought to clarify and defend, throughout section 3, that Basel II aimed to correct several of the problems raised in Basel I, many of them related to issues with development funding. These adjustments, however, were insufficient – they did not even manage to avoid one of the gravest financial crises in history. However, the fact that many DBs adhered voluntarily to the framework strongly suggests that, contrary to what is generally assumed, Basel II was not seen as incompatible by DBs themselves, since many voluntarily adhered to the framework.

This is so because, in first place, Basel II evolved into a set of good risk management practices, therefore, also applicable to DBs. In second place, because the risks that DBs have to deal with, in fact, have increased as times went by, which in turn requires more sophisticated management tools for the financial sustainability of the institution. Third, because Basel represented a “quality seal” relevant for banks seeking to raise funds in the market, and Basel II was also considered a relatively flexible framework. In fourth place, because in spite of working with riskier segments, DBs have different instruments for risk management, which could lead (or so at least it was supposed) to capital savings through the development of internal models. Does this mean that Basel II was an ideal framework for DBs management? Far from it! But it also does not seem wholly incompatible with DBs, in the sense of hindering the fulfillment of their mission.

With regard to risk management, do DBs entail different characteristics from private banks? In Section 4, we sought to demonstrate in Section 4 that if, on one hand, DBs operate in higher-risk segments, on the other they benefit from instruments to deal with those risks that are not available to the private sector. This enables them to operate in these segments, contributing to funding development, without this threatening their financial health or even jeopardizing their performance. To illustrate the risk management advantages that DBs enjoy, it is worth noting that even in 2009, at the height of the severe subprime crisis, the performance of DBs was not bad - often better than that of the private sector.²⁹ Evidently, some development projects may have been hurt by risk aversion on the part of DBs - which is proved, incidentally, by the low default rates recorded by many DBs. This aversion to risk, however, would probably also exist without adherence to Basel. It was also pointed out in Section IV that, on a few points, Basel regulations need to be more flexible for DBs, in order not to hinder their mission. We discussed three of these points in more detail: maturity adjustment, concentration and operational risk.

What are the challenges posed by Basel III and IV? In Section 5, it was argued that some of the new requirements in Basel III do not seem (in principle) problematic for DBs, such as the treatment of liquidity risk, of derivatives, amongst others. Some new requirements, however, appear particularly worrisome. This is certainly the case with the new requirements regarding concentration risk, especially in view of the infrastructure agenda that many DBs pursue. The second point is the tendency to abandon internal models and move towards more standardized approaches, which reduces the flexibility in the framework (this is especially relevant in the case of credit risk). With regard to operational risk, in the same vein, the adoption of a single standardized rule may turn out to be quite problematic, especially in the case of legal risk associated with changes in the regulatory structure, which may grow as environmental and infrastructure agendas increase in relevance.

²⁹ Martinez and Vicente (2012) survey found that in 2009, 14% of the surveyed DBs reported losses. The remaining 86% were profitable or broke even. “The percentage of DBs reporting losses in 2006, 2007 and 2008 was 15%, 8%, and 9%, respectively ... In 2009, 53% of the surveyed DBs had a Return on Assets (ROA) exceeding the average of their banking systems. This was up from 42% in 2006 and 2007, and 46% in 2008. In terms of the Return on Equity (ROE), 19% of DBs exceeded the national average in 2009 (up from 15% in 2006, 13% in 2007, and 18% in 2008).” (p.18)



With these analytical considerations, we hope this article has contributed to exploring beyond the usual answers given to the four questions above.

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The Countercyclical Behavior of National Development Banks in Latin America and the Caribbean

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This version: 31 January 2017

Abstract

This paper investigates empirically the cyclical lending patterns of national development banks. To this purpose, we compare the lending activity of national development banks, across crisis and normal times, with that of public, foreign and domestic private banks, using information on the annual financial statements of 336 major banks from 31 Latin American and Caribbean countries over the period of 1995-2014. Using dynamic panel regressions that allow controlling for loan demand and other factors, we find robust evidence that national development and public retail-oriented banks have counteracted the slowdown in the lending activity of private banks during crises by significantly increasing their provision of loans. Our results are particularly important when considering productive lending to the corporate sector. The findings suggest that governments have played an active countercyclical role in their banking systems directly through both national development and retail-oriented public banks. Certainly, national development banks' size, governance structure and financial condition play a key role in determining that the countercyclical response is effective in mitigating the macroeconomic effects of financial turmoil. In addition, it is important that special and innovative credit lines are designed in line with the



specific needs of companies in times of crisis. Moreover, credit lines for infrastructure projects that increase the countries' productive and export capabilities are also advisable.

Keywords: Bank lending, National development banks, countercyclical behavior.

JEL codes: G01, G21, G28.

1. Introduction

Since the onset of the global financial crisis, the subsequent credit crunch, and the failure to reignite sustained economic growth, the role of national development and public commercial banks has come to the forefront of the policy agenda. Especially their role in providing credit countercyclically has attracted attention given that such lending can mitigate amplifications in business cycles and prevent a crisis from deepening (UN-DESA, 2005; Griffith-Jones and Ocampo, 2008; Gutierrez et al., 2011; de Olloqui, 2013; Rudolph, 2010; Griffith-Jones and Gottschalk, 2012; World Bank, 2012).

On top of this policy focus, there is also a growing body of detailed empirical evidence that state-owned development and retail-oriented banks have played an active role during crisis resolutions in both advanced and emerging market economies (Brei and Schclarek, 2013, 2015; Bertay et al., 2015). As will be discussed in more detail below, a number of governments have actively counteracted the crisis-related economic slowdown with increased lending intermediated through national public banks. The government responses have particularly been focused on the provision of working capital for productive purposes and long-term loans for investment in the corporate sector and other key areas such as infrastructure. Privately owned banks, on the other hand, tended to lend pro-cyclically, fueling booms and exacerbating busts.

Evidently, a certain degree of government involvement in the banking sector appears to be important, particularly in volatile environments where countercyclical policies can help smoothing the business cycle. In this context, however, it has to be noted that government interventions in the banking sector are most efficient in countries with sound governance structures and institutional quality (Andrianova et al., 2009; de Olloqui, 2013). In countries where institutional quality is low, distortions in governments' allocation of resources are likely to be prevalent, as banks might be used to favor companies with political connections, soften the public sector budget constraint, or to finance electoral campaigns (Krueger, 1974; Shleifer and Vishny, 1994; Khwaja and Mian, 2005; Carvalho, 2014). Clearly, in such environments it is unlikely that national development banks are able to act countercyclically, when facing a crisis episode, as they are plagued with non-

performing loans due to distorted risk assessments or politically connected lending. Thus, countries have to foster the development of sound institutions that build the ground for well-managed development banks, which can step in and expand lending when the economy is slowing down.

Against this backdrop, the present paper investigates the lending behavior of different types of banks, including national development, public, domestic, and foreign banks from 31 Latin American and Caribbean countries over the period of 1995-2014.¹ A special focus is hereby set on their lending responses to systemic financial crises. To shed light on this issue, we use the annual financial statements of 336 major banking institutions, of which 14 are national development banks, 31 public banks, and 291 private banks (134 foreign and 157 domestic). Together these banks account for 3.9 trillion USD of assets at end-2014, corresponding to 95 percent of the assets reported in the Top 200 Latin American Banks Ranking. National development banks accounted hereby for 0.4 trillion USD of assets at end-2014 (or 11 percent of the sample's assets).

Using dynamic panel regressions that allow for parameter shifts across banks of different ownership during normal times and crises in the bank lending equation, we find robust evidence that national development and public banks have played a countercyclical role in their banking systems. While private banks behaved procyclically, i.e. lending more during booms and less during busts, we observe the opposite for national development and public banks. The different crisis responses are not only statistically but also economically significant. Most responsive to the crises has been the lending activity of national development banks. Their real growth rate of lending increased on average by more than 6 percentage points relative to normal times, whereas private foreign and domestic banks reduced their lending activity by more than 3 percentage points. Moreover, the econometric evidence suggests that the increase in public bank lending during times of crisis came in the form of commercial and corporate credits. Thus, according to our results, state-owned banks have counteracted the potential adverse economic effects of the slowdown in lending by private banks during crises. To our knowledge, this is the first econometric study that compares

¹ In the following, the term “public banks” refers to commercial, corporate or savings banks that are owned by a local government, “domestic (foreign) banks” to commercial, corporate or savings banks that are owned by local (foreign) institutions from the private sector, and “national development banks” refers to non-deposit-taking development banks that are owned by a local government.

the countercyclical behavior of national development banks and other types of banks during crisis periods.

The remainder of the paper is organized as follows. A literature overview is presented in the next section. In section 3, we present the data and descriptive statistics. The econometric methodology is discussed in section 4, while the empirical results are discussed in sections 5 and 6. The final section offers a number of policy conclusions.

2. Literature overview

There is a growing consensus that national development banks should provide countercyclical financing to mitigate amplifications in the business cycle and to prevent a crisis from deepening (UN-DESA, 2005; Griffith-Jones and Ocampo, 2008; Gutierrez et al., 2011; Rudolph, 2010; Griffith-Jones and Gottschalk, 2012; World Bank, 2012; de Olloqui, 2013). The empirical evidence based on a number of surveys and case studies seems to be in line with this view. For example, based on a survey of 90 national development banks from 61 countries, de Luna-Martinez and Vicente (2012) find that their lending volume increased from 1.16 to 1.58 trillion US dollars during 2007-09. This increase of 36 percent in lending was much higher compared to the 10 percent increase in private bank credit in these countries. The authors also find that development banks have extended both short- and long-term credits to existing and new customers who were facing difficulties in debt refinancing and in receiving new lines of credit.

An important Latin American national development bank that operated countercyclically in response to the global financial crisis is Banco Nacional do Desenvolvimento Economico e Social (BNDES) from Brazil. For example, BNDES implemented the PSI investment program (Programa de Sustentação do Investimento) in July 2009 to complement the existing FINAME program (financiamento de máquinas e equipamentos) on financing the acquisition of machinery and equipment produced in Brazil. The PSI program involved, on top of a recapitalization of BNDES, a reduction of interest rates charged on these loans, justified by the positive externalities of the program. Between 2009-10, the disbursements of the FINAME program increased from 20.7 to

46.8 billion Real, an increase of more than 100 percent (Machado and Roitman, 2015; Ferraz et al., 2012).

Focusing on the European experience, Griffith-Jones et al. (2011) provide evidence that the multilateral European Investment Bank (EIB) increased the signatures for lending to small- and medium-sized enterprises (SMEs) by 128 percent during 2007-09, with a growth in loan disbursements of 57 percent over the same period. In addition, the number of EU countries with private banks that intermediated EIB lending to SMEs increased from 16 to 24 percent over the considered period. Such intermediated lending through private banks can hereby avoid the duplication of screening efforts and reduce the costs of acquiring information on individual borrowers (Hainz and Hakenes, 2012). As Griffith-Jones et al. (2011) suggest, the increase in lending to SMEs was feasible, because EIB's capitalization had increased significantly in the years prior to the crisis, which implied that the bank had sufficient internal resources and no capital constraints to increase lending once the crisis hit.

In parallel to the recent literature on the lending behavior of national and multilateral development banks, there exists econometric evidence on the countercyclical behavior of bank lending when broadening the scope to state-owned commercial and savings banks. The literature finds robust evidence that these banks have played an important countercyclical role in their banking systems, helping the economies to recover from the financial turmoil (see, amongst others, Allen et al., 2013; Brei and Schclarek, 2013; Cull and Martínez Pería, 2013; Bertay et al., 2015; Behr et al., 2017).

The theoretical literature that compares the crisis responses of private and state-owned banks suggests a number of explanations for the distinctive lending behavior of these two types of banks. As Brei and Schclarek (2015) argue, the objective of state-owned banks is not only to maximize profits given risks, but also to stabilize and promote the recovery of the economy. Thus, given that their objective functions differ, public banks are more willing to take on more risks and expand lending during a crisis period than private banks. A similar argument has been made by Rudolph (2010), who argues that state-owned financial institutions have less volatile risk aversion and therefore provide a more stable source of funding. It is also similar to the argument of Eslava and Freixas (2016), who suggest that a private bank's choice takes into account only the loan

repayment, while the other benefits and externalities an investment project may have are not internalized.

Another argument, also put in place by Brei and Schclarek (2015), is that public banks are more likely to be capitalized than their private counterparts during a crisis. Thus, public banks will be in a better position to increase lending during the crisis. The reason for the higher chances of being recapitalized is that the government, which is the owner of the public bank, due to its higher credibility and financial strength during a crisis, is better able to get fresh funds than the private banker. In addition, Brei and Schclarek (2015) also argue that the higher credibility and financial strength of the government, in contrast to that of private bankers, help public banks suffer less deposit withdrawals and/or have fewer problems in rolling over short-term debt. Having less liquidity problems during a crisis allows public banks to lend more than private banks. Note that the increased credibility may be due to an actual recapitalization but could also be due to a credible promise or higher expectation of a future recapitalization.

In line with this literature, Mazzucato and Penna (2016) argue that the procyclical behavior of private banks is explained by realizing that private banks have become increasingly speculative over the past decades, targeting short-term gains through securities trading and brokerage rather than providing loans to long-term productive and innovative projects. Finally, focusing on public development banks, Eslava and Freixas (2016) study the mechanisms that should be implemented in order to efficiently support the targeted firms. They argue that when national development banks lend indirectly through commercial banks, national development banks should provide funds to commercial banks in the form of lending when commercial banks face a liquidity shortage and in the form of credit guarantees when commercial banks are undercapitalized.

3. Data description

The bank-level data on the annual financial statements are taken from the BankScope database compiled by Fitch and Bureau van Dijk. Our data covers banks from 31 countries in Latin America and the Caribbean from 1995 to 2014, spanning over periods of economic booms and downturns.

Where possible, we gather consolidated financial statements of banks, making the assumption that banks manage their entire set of banking activities on a consolidated basis. If no consolidated statement exists, we use the unconsolidated financial statement reported for the bank instead. To avoid double counting, we exclude subsidiaries that have been majority-owned by other banks in our sample.

Our study focuses on the lending activity of national development banks and other deposit-taking institutions. National development banks are hereby identified as banking institutions that are state-owned, non-deposit taking, and not foreign- or multilaterally-owned. Public, foreign and domestic banks are deposit-taking banks that are majority-owned by a local government, a foreign or domestic holding company, respectively. We use BankScope information on the global ultimate owner as the principle source, but we complement the information with Claessens and Van Horen (2015) and publicly available information from the web pages of each of these banks. Non-bank entities are excluded from the sample.² When a bank switched accounting standards, we reconstructed historically the IFRS statements using the previously reported local GAAP statements.³ Finally, whether or not a bank is included in the regressions depends as well on the availability of the information on the control variables (macroeconomic and bank-level information). After applying our filters, our initial sample of 618 financial institutions reduces to our final sample of 336 banks, of which there are 14 national development banks, 31 public banks,

² We cross-reference the list of financial institutions obtained from BankScope with the registry of licensed banking entities reported on the websites of the various central banks in the region in order to distinguish deposit-taking entities from other types of financial firms. The manual selection of banks is important as BankScope classifies many non-bank financial entities as commercial banks.

³ In certain cases, the difference between IFRS and local GAAP can be large, especially for banks with a large trading book. The main reason for this is the different treatment of the derivatives netting on the asset and liability side. However, this mainly affects the value of total assets, whereas loan values (the focus of our study) are much less affected. We have tested whether our results are affected when including an IFRS dummy variable and found that our results are unaffected. Because the IFRS dummy was insignificant, we do not include it in our estimations.

and 291 private banks.⁴ Out of the 291 private banks, 157 are domestically owned and 134 are subsidiaries of foreign banks. In total, we have 2835 bank-year observations for our regressions.⁵

As can be seen in Table 1, the sample of banks is representative for the region, given that the present banks account for 3.9 trillion USD of assets at end-2014, corresponding to 95 percent of the assets reported in the Top 200 Latin American Banks Ranking of The Banker magazine. Most of these assets (83 percent) are controlled by 172 South American banks that operated in 9 countries, followed by 99 banks (with 626 billion USD of assets) from 4 Central American countries and Mexico, and 66 banks from 17 Caribbean countries with a total of 27 billion USD of assets. In terms of different bank types, national development banks accounted for 0.4 trillion USD of assets at end-2014, corresponding to 11 percent of the total of the sample's assets, while public banks accounted for 1.0, domestic banks for 1.4, and foreign banks for 1.1 trillion USD of assets, see Table 2.

⁴ The national development banks included are: Banco Nacional de Fomento de la Vivienda y la Produccion –BNV (Dominican Republic); Banco de Desenvolvimento do Espirito Santo SA – BANDES (Brazil); Financiera de Desarrollo Territorial S.A. Findeter (Colombia); Banco Nacional de Comercio Exterior SNC – BANCOMEXT (Mexico); Nacional Financiera S.N.C. (Mexico); National Export-Import Bank of Jamaica Ltd - EXIM Bank (Jamaica); Banco de Comercio Exterior de Colombia SA – BANCOLDEX (Colombia); Banco Nacional de Desenvolvimento Economico e Social – BNDES (Brazil); Banco de Inversion Y Comercio Exterior SA – BICE (Argentina); Banco Nacional de Obras y Servicios Publicos, SNC – BANOBRAS (Mexico); Corporacion Financiera de Desarrollo S.A. – COFIDE (Peru); Financiera Energetica Nacional (Colombia); Development Finance Limited (Trinidad and Tobago); and Banco de Fomento Agropecuario (El Salvador).

⁵ It should be noted that this sample of banks differs from the sample used for the calculation of the summary statistics in the first chapter of this book. The reason for this is that not all banks report the required information on the control variables, which implies that those banks had to be dropped in the regressions.

Table 1: Composition and characteristics of the database, by region

Region	No. of banks	No. of dev. banks	No. of foreign banks	No. of public banks	Total assets, 2014 (bil. USD)	Growth of lending (%) ¹	Real GDP growth (%)	Real interest rate (%) ²	CPI inflation (%)	Ex. rate growth, per USD (%) ³	Return on equity (%)	Capital ratio (%) ⁴	NPL ratio (%) ⁵	Liquidity ratio (%) ⁶
Caribbean	65	4	27	4	26.9	8.0	2.5	3.4	6.0	2.4	13.5	13.4	6.6	19.8
Central America	99	3	51	4	626.5	11.4	4.2	4.7	5.7	1.9	12.2	11.7	3.5	15.7
South America	172	7	56	23	3270.5	12.9	4.3	1.4	9.2	5.3	14.4	11.4	5.8	17.4
Average/sum*	336*	14*	134*	31*	3923.9*	10.8	3.7	3.2	7.0	3.2	13.4	12.1	5.3	17.6

Note : The sample per region is over the period 1995-2014. Caribbean includes AG, AI, AW, BB, BS, BZ, DO, GD, GY, HT, JM, KN, LC, SR, SV, TT, and VC; South America includes AR, BO, BR, CL, CO, EC, PE, UY, and VE; and Central America is CR, GT, HN, PA, and MX. Average/sum indicates unweighted averages or sums over countries.

¹ In national currency and deflated by the consumer price index (CPI). ² Money market interest rate minus CPI inflation (if not available lending rate minus CPI inflation). ³ National currency per USD. ⁴ Equity and reserves divided by total assets. ⁵ NPL ratio denotes non-performing loans divided by total loans. ⁶ Cash and due from banks plus loans and advances to banks divided by total assets.

Sources: BankScope, IMF-IFS, World Bank WDI, Claessens and Van Horen (2015), authors' calculations

The crisis periods are identified with the banking and currency crisis indicators of Leaven and Valencia (2013).⁶ Further, we assigned a crisis period to all countries during the period 2008-12. The reason is that we would like to capture national development banks' lending in response to the recent global financial crisis as well, even though it did not materialize in every country in the form of a financial crisis. In total, our sample covers 14 banking crises and 13 currency crises that occurred in the 31 countries over the period of 1995-2014.

⁶ Under their definition, a systemic banking crisis occurs when a country's corporate and financial sectors experience a large number of defaults, and financial institutions and corporations face difficulties in repaying debt on time. The authors combine quantitative data with some subjective assessments by country experts. A currency crisis is defined as an episode during which there was a nominal depreciation of the currency vis-à-vis the US dollar of at least 30 percent that is also at least 10 percentage points higher than the rate of depreciation in the year before.

Table 2: Bank-specific characteristics across bank types

Bank type	National development banks	Foreign banks	Domestic private banks	Local public banks	All banks
Number of banks	14	134	157	31	336
Total assets (bil. USD), 2014	424	994	1448	1058	3924
Interest income on loans/loans	11.34	20.56	15.95	15.41	17.55
Non-interest income/income	13.04	20.31	21.42	29.45	21.60
Return on equity	5.21	12.59	14.28	16.13	13.49
Liquidity ratio	8.17	18.76	16.18	18.02	17.16
Government securities/assets	16.56	12.30	13.47	22.14	14.22
Lending growth, normal times	3.42	11.72	14.42	6.06	11.93
Lending growth, crisis	10.33	9.42	12.31	15.36	11.46
Loans/assets	58.76	55.37	53.85	43.51	53.44
Mortgages/loans	8.58	11.98	14.69	17.10	13.82
Commercial loans/loans	60.49	51.93	53.21	45.64	51.90
Other consumer loans/loans	8.10	25.96	26.57	29.08	25.98
Non-performing loans/loans	3.99	4.56	4.88	8.03	5.08
Deposits/assets	30.03	66.82	62.05	56.45	62.21
Long-term funding/assets	26.78	6.81	7.10	5.48	7.75
Capital ratio	15.28	11.72	11.98	10.22	11.79

Note: In percentages. The sample includes annual data of 336 banks operating in 31 countries from Latin America and the Caribbean over the period 1995-2014. The crisis dummy takes a value of 1 if there was either a banking crisis, currency crisis or during 2008-12, and zero otherwise. Development banks are state-owned and neither multilaterally-owned, nor foreign-owned, nor retail deposit-taking banks. Foreign and public banks are banks that are majority-owned by a foreign holding company or by a local government, respectively.

Sources: BankScope, IMF-IFS, World Bank WDI, Claessens and Van Horen (2015), Leaven and Valencia (2013), authors' calculations.

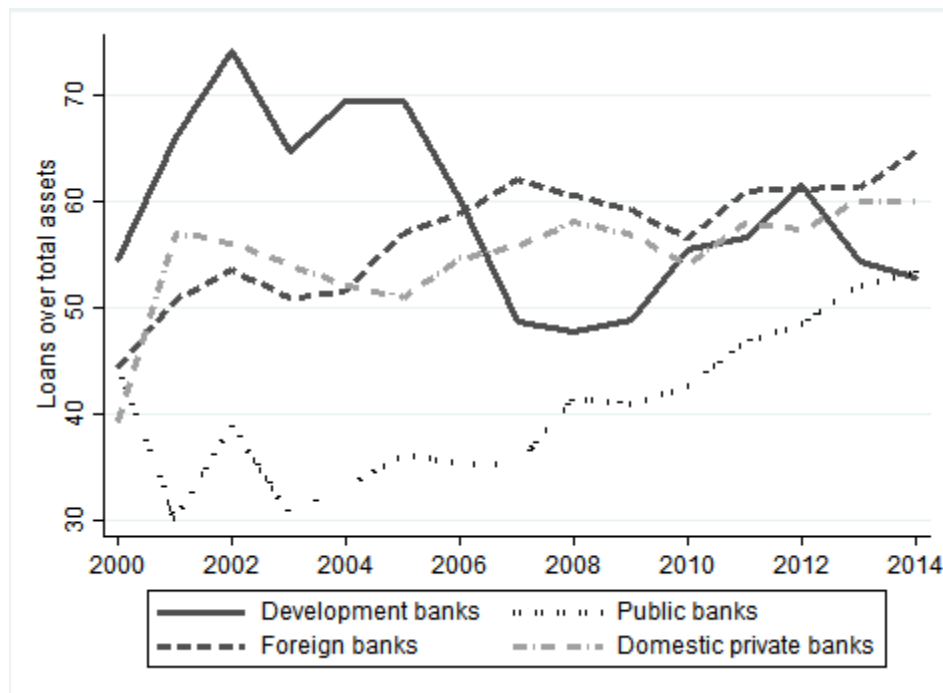
Our dependent variable, the real growth rate of bank lending, which comprises retail lending (residential mortgages and other consumer loans), corporate loans, and commercial loans, is measured by the BankScope item net loans. To avoid exchange rate valuation effects, we convert loans measured in US dollars into local currency units using the end-of-period exchange rate. Moreover, to avoid inflation effects, we deflate loans in local currency by the consumer price index or the GDP deflator, if the former is not available. We exclude observations with extremely low and high growth rates (below the 1st and above the 99th percentile) to avoid the impact of mergers and acquisitions on the growth rate of lending and other noise in the data.

From Table 2, which provides summary statistics for our sample of 336 banks across different types, it appears that national development banks recorded on average an annual real growth rate of lending of 3.42 percent in normal times, while during crisis periods they expanded lending at an average growth rate of 10.33 percent. The results for public banks indicate a similar countercyclical pattern with a real growth rate of lending of 6.06 percent in normal times and 15.36 percent during crises. Domestic and foreign banks, on the other hand, appear to lend procyclically, recording higher growth rates in normal times than in times of crisis. To be more precise, domestic and foreign banks recorded an average annual real growth rate of lending of 14.42 and 11.72 percent in normal times, whereas during crises they were lending at a growth rate of 12.31 and 9.42 percent, respectively. Clearly, from these summary statistics, national development banks and public banks showed a countercyclical behavior, while private banks tended to lend procyclically. While national development banks showed the highest degree of countercyclical behavior, foreign banks showed the highest degree of procyclical behavior. These results, however, do not allow to infer causal relationships and to control for loan demand and other factors. In the next section, we will therefore investigate whether these first, tentative results still hold in our regressions on the bank-lending channel.

Table 2 also shows that there is some homogeneity in the average loan-to-asset ratio, with national development banks having the highest ratio of 58.76%. Note, however, that public banks are an exception to this homogeneity, having a clearly lower ratio of 43.51%. When considering the evolution of this ratio through time in Figure 1, we see more heterogeneity. While private banks were increasing their lending ratio between 2005-07 prior to the financial crisis, national

development banks reduced their lending ratio. This is presumably a sign that national development banks were acting countercyclically in the boom period. Then in 2009, national development banks started to increase lending, counteracting the fall in the lending activity of private banks that occurred during 2007-09. Again, this finding suggests that national development banks acted countercyclically in the crisis period.⁷

Figure 1: Lending activity across bank types



Note : Unweighted averages across banks and years. The sample includes annual data of 336 banks operating in 31 countries from Latin America and the Caribbean over the period 2000-2014. There are 157 domestic, 134 foreign, 31 public, and 14 development banks.

Another interesting difference among these types of banks is the heterogeneity in the types of loans they grant. From Table 2, it is clear that national development banks have been focused on

⁷ The use of the loan-to-asset ratio as an indicator of loan availability should be taken with caution. For example, the increase in the ratio for private banks post-2009 may not reflect an increase in lending but a reduction of total assets (the denominator) due to a desire of reducing leverage. Moreover, private banks' lending might have increased because they were intermediating funds from development banks or benefiting from other positive externalities.

corporate and commercial lending, with a corporate and commercial loans-to-total loans ratio of 60.49 percent, and have concentrated much less on mortgage and consumer loans, with ratios of 8.58 and 8.1 percent, respectively. Instead, the other three types of banks concentrated less on corporate and commercial loans, with ratios of 51.93, 53.21 and 45.64 percent for foreign, domestic and public banks, respectively, and much more on consumer loans, with ratios of 25.96, 26.57 and 29.08 percent, respectively. With respect to mortgages, there is more heterogeneity, with public commercial banks having the highest ratio (17.1 percent). In addition, we observe that national development banks and public banks have the highest ratios of government securities-to-total assets, ranging between 16.56% and 22.14%, respectively.

In terms of the funding structure, it becomes apparent that national development banks are less dependent on deposits, with a ratio of 30.03 percent, and more dependent on long-term funding and capital, with ratios of 26.78 and 15.28 percent, respectively. This more stable long-term funding structure is an important difference with respect to the other types of banks, which makes national development banks less dependent on short-term developments, such as sudden swings in the sentiments of depositors and short-term bond investors. The lower liquidity ratio of national development banks may also be a result of this longer-term funding structure if we consider that they do not need to have as many liquid assets in order to respond to sudden freezes in money markets. Certainly, the more stable long-term funding structure of national development banks has positive consequences for their long-term lending possibilities, as well as the countercyclical properties of their lending, as will be discussed further below.

Finally, interest earnings are lower for national development banks, with a ratio over total loans of 11.34 percent. This lower ratio is probably an indication that they charge lower interests on their loans. As mentioned before, this is not a surprise given that development banks do not only take into account the loan repayment, but also the potential externalities and socio-economic impact of the projects. Further, their non-interest income is also lower, with a ratio over total income of 13.04 percent, which might be an indication that they charge lower service fees, being more dependent on their interest income activities. These lower interest and non-interest incomes show up in their lower return on equity ratio, which is equal to 5.21 percent. Partly, this lower return on equity can be attributed to their higher capital ratio. Interestingly, the lower return on equity ratio does not

appear to be an indication of higher losses on bad loans, given that their non-performing loan ratio (3.99%) is the lowest among the different types of banks.

4. Econometric methodology

To take into account other bank-specific characteristics that determine individual bank lending and macroeconomic factors that affect loan demand, we utilize a specification that has been used before in the bank lending channel literature (Ehrmann et al., 2003). Given that we are interested in the lending behavior of the different types of banks during normal and crisis periods, we interact a crisis dummy with the bank-specific indicators on bank type. This allows us to account for potential parameter shifts in the estimated relation between lending and bank type, when the state of the economy moves from normal times to a crisis period. National development, public, foreign and domestic banks are hereby distinguished by three dummy variables, DB_{ijt} , PB_{ijt} , and FB_{ijt} , which are equal to one when bank j operating in country i in year t is a national development, public or foreign bank, respectively, and zero otherwise. The dummy for domestic banks is not included due to collinearity, which means that the coefficients associated with the other bank types are interpreted in terms relative to domestic banks.

The approach can be summarized using the following regression model:

$$\Delta L_{ijt} = \alpha_1 \Delta L_{ijt-1} + \alpha + \alpha^* C_{jt} + (\alpha_{DB} + \alpha_{DB}^* C_{jt}) DB_{ijt} + (\alpha_{PB} + \alpha_{PB}^* C_{jt}) PB_{ijt} + (\alpha_{FB} + \alpha_{FB}^* C_{jt}) FB_{ijt} + \beta X_{ijt} + \gamma M_{jt} + u_i + \varepsilon_{ijt}$$

where ΔL_{ijt} denotes bank i 's annual real growth rate of lending that operates in country j in year t . C_{jt} is the crisis dummy, X_{ijt} the vector of bank-specific characteristics, and M_{jt} is the vector of macroeconomic control variables specific to each country. One lag of the dependent variable is introduced to limit the omitted variable bias. The error term includes bank-level fixed effects to control for unobserved time-invariant differences across banks and countries. Note that we estimate the model in growth rates, because lending in levels is non-stationary, as confirmed by the Im-

Pesaran-Shin test.⁸ The model is estimated using the system GMM estimator introduced by Arellano and Bond (1991), ensuring efficiency and consistency under the assumption that the residuals are not subject to serial correlation of order two and that the instruments used are valid (tested using the Hansen test). The system version of the estimator is employed, because it tends to outperform the difference GMM estimator by the use of both the difference and levels equation (Blundell and Bond, 1998).

The vector X_{ijt} includes a parsimonious set of bank-specific variables that have been highlighted in the empirical literature as important determinants of loan supply, notably *bank size*, *return on equity (ROE)*, *capitalization*, *non-performing loans*, and *liquid assets*. We lag bank-specific characteristics by one year ($t-1$) in order to mitigate possible endogeneity problems among the bank-specific variables. Finally, we demean the bank-specific regressors for estimation purposes, which implies that the results can be interpreted in terms of the average bank (for which the bank-specific characteristics are equal to zero).

Bank size is measured by the logarithm of total assets, ROE by net income divided by total equity, capitalization by the total equity-to-asset ratio, non-performing loans by the ratio of non-performing loans over total loans, and liquid assets are measured by the share of liquid assets (cash and due from banks, available-for-sale securities, and trading securities) in total assets. The coefficient associated with bank size is ambiguous, given that larger banks might have more resources than smaller banks to expand lending and to absorb country-specific disturbances. It might however also be that smaller banks engage more in relationship lending to faster-growing SMEs (Ehrmann and Worms, 2004; Gambacorta, 2005; Brei et al., 2013). More profitable banks should be more likely to expand lending if profits are not distributed and retained. The bank lending literature also tends to find that well-capitalized banks are more likely to expand lending compared to capital-constrained banks, which tend to restore capital ratios by investing in assets with lower risk-weights or by leveraging (Brei and Gambacorta, 2016). Banks with a higher non-performing loan ratio are more likely to face asset write-downs and financial difficulties, and as such they are

⁸ In principle one could also work with the loan-to-asset ratio as a dependent variable. We prefer, however, working with the growth rate of lending and thus follow the literature on the bank-lending channel (Kashyap and Stein, 1995; Kishan and Opiela, 2000; Gambacorta and Marques-Ibanez, 2011; Brei et al., 2013; Brei and Schclarek, 2013).

expected to lend at lower growth rates compared to banks with sounder loan books. Finally, the literature tends to find a positive relationship between liquidity holdings and lending (Kashyap and Stein, 1995; Kishan and Opiela, 2000; Brei et al., 2013), although high liquid asset holdings might as well be an indication for a higher involvement in trading and other investment banking activities.

In terms of the macroeconomic variables, we include the annual real GDP growth rate, the real interest rate (measured by the money market rate minus inflation), annual inflation, and the lagged exchange rate depreciation (measured by the annual growth rate of the exchange rate of the local currency vis-à-vis the US dollar). In Table 3, we present summary statistics for both the macroeconomic and the bank-specific variables.

Table 3: Summary statistics of the regression variables

Variable	Description	Obs.	Mean	Std. dev	Min	Max
Lending growth	Annual, domestic currency, deflated	2733	11.7	24.5	-90.7	223.8
Real GDP growth	Annual, real GDP index	2733	4.0	3.3	-18.4	20.3
Interest rate	Annual, real (money market and lending rate minus CPI inflation)	2733	1.8	8.5	-38.9	50.4
Inflation	Annual CPI inflation	2733	7.5	6.7	-2.4	40.6
Depreciation	Annual growth, domestic currency per USD	2733	4.5	23.3	-25.5	232.2
Development banks, α_{DB}	Dummy=1, if development bank	2733	0.0	0.2	0	1
Foreign banks, α_{FB}	Dummy=1, if foreign-owned	2733	0.4	0.5	0	1
Public banks, α_{PB}	Dummy=1, if government-owned	2733	0.1	0.3	0	1
Crisis, α^*	Dummy=1, if banking, currency and fin. crisis	2733	0.4	0.5	0	1
Development banks*crisis, α^*_{DB}	Crisis interaction	2733	0.0	0.1	0	1
Foreign banks*crisis, α^*_{FB}	Crisis interaction	2733	0.2	0.4	0	1
Public banks*crisis, α^*_{PB}	Crisis interaction	2733	0.0	0.2	0	1
Bank size (t-1)	Logarithm of total assets	2733	14.1	1.9	9.2	20.1
ROE (t-1)	Return on equity	2733	13.0	12.8	-77.1	50.1
Capital ratio (t-1)	Equity/total assets	2733	11.8	7.3	1.7	98.8
NPL ratio (t-1)	Non-performing loans/loans	2733	5.6	7.3	0.0	75.3
Liquidity ratio (t-1)	Liquid assets/total assets	2733	17.3	11.3	0.0	75.7

Note: In percentages. The sample includes annual data of 336 banks operating in 31 countries from Latin America and the Caribbean over the period 1995-2014 (see Table 1 for further information). The crisis dummy takes a value of 1 if there was either a banking crisis, currency crisis or during 2008-12, and zero otherwise. Development banks are state-owned and neither multilaterally-owned, nor foreign-owned, nor retail deposit-taking banks. Foreign and public banks are banks that are majority-owned by a foreign holding company or by a local government, respectively.

Sources: BankScope, IMF-IFS, World Bank WDI, Claessens and Van Horen (2015), Leaven and Valencia (2013), authors' calculations.

Regarding our regression model, the key coefficients are α , α^* , α_{DB} , α^*_{DB} , α_{FB} , α^*_{FB} , α_{PB} , and α^*_{PB} . The short-run coefficient α measures the lending growth rate of the average domestic bank in normal times (see Table 4 below). The coefficient α^* , which is associated with the crisis dummy, measures the change in the lending response of the average domestic bank during a crisis relative to its lending standard in normal times. If it is significantly negative, this means that the average domestic bank's growth rate of lending during a crisis, $\alpha + \alpha^*$, is lower compared to normal times. The coefficient α_{DB} measures the difference in lending across national development and domestic banks in normal times. If this coefficient is significantly negative, it implies that the average development bank's growth rate of lending during normal times, $\alpha + \alpha_{DB}$, is lower than that of the average domestic bank. During crises, the loan growth of the average national development bank is equal to $\alpha + \alpha^* + \alpha_{DB} + \alpha^*_{DB}$. If $\alpha^* + \alpha^*_{DB}$ is significant and positive, this is evidence that the average development bank lends more during a crisis than in normal times. Whether the average development bank lends more during a crisis compared to the average domestic bank is determined by the sum of the coefficients, $\alpha_{DB} + \alpha^*_{DB}$. If this sum is significantly positive, then it follows that the average development bank lends at a higher growth rate compared to the average domestic bank during a crisis. Similar interpretations apply to the coefficients associated with foreign banks and public banks, respectively.

Table 4: Lending responses among different types of banks and states of nature

	<i>Domestic banks, DB_{ijt} = 0</i>	<i>National development banks, DB_{ijt} = 1</i>
<i>No crisis, C_{jt} = 0</i>	$\Delta L_{ijt} = \alpha_1 \Delta L_{ijt-1} + \alpha$	$\Delta L_{ijt} = \alpha_1 \Delta L_{ijt-1} + \alpha + \alpha_{DB}$
<i>Crisis, C_{jt} = 1</i>	$\Delta L_{ijt} = \alpha_1 \Delta L_{ijt-1} + \alpha + \alpha^*$	$\Delta L_{ijt} = \alpha_1 \Delta L_{ijt-1} + \alpha + \alpha^* + \alpha_{DB} + \alpha^*_{DB}$

Note: For sake of clarity, the table focuses only on the key coefficients associated with domestic and national development banks. Similar relationships apply to differences in lending of domestic banks relative to foreign and public banks

5. Econometric results

The bank lending equation above is estimated for three specifications: (I) a macro model, which only includes macroeconomic variables; (II) a bank type model that includes macroeconomic variables and the dummy variables distinguishing the different types of banks; and (III) the full bank-specific model, which includes macroeconomic variables, bank-specific variables, and the dummy variables for bank types. Our discussion in what follows will be focused on the full specification (III), given that any omitted variable bias is minimized. For comparison, we show in addition to the system GMM estimation results, the results obtained by pooled OLS for the full model specification in column (IV).

The estimation results are shown in Table 5. Across all specifications and estimators, we find that the real growth rate of lending is significantly and positively autocorrelated confirming our dynamic specification. The estimation results indicate that banks increase lending when economic conditions improve, i.e. when real GDP growth increases. Higher real interest rates and exchange rate depreciation are, on the other hand, associated with significant decreases in bank lending. The only non-significant macroeconomic variable is inflation, indicating that the other macroeconomic indicators capture most of the impact of aggregate economic conditions on individual bank lending.

Table 5: Regression results – total loans

	Dependent variable: Growth rate of lending							
	Macro model		Bank type model		Bank-specific model		Pooled OLS	
	(I)		(II)		(III)		(IV)	
	Coeff.	Std. error	Coeff.	Std. error	Coeff.	Std. error	Coeff.	Std. error
Lending growth (t-1)	0.160***	0.0315	0.158***	0.030	0.142***	0.030	0.148***	0.027
Real GDP growth	1.061***	0.188	1.026***	0.186	1.362***	0.165	1.300***	0.156
Interest rate	-0.325***	0.109	-0.324***	0.109	-0.269**	0.106	-0.196**	0.083
Inflation	0.031	0.111	0.030	0.106	-0.148	0.107	-0.002	0.090
Depreciation (t-1)	-0.317***	0.0422	-0.314***	0.042	-0.240***	0.0374	-0.217***	0.039
α	6.704***	1.330	9.362***	1.634	9.359***	1.561	7.903***	1.432
α_{DB}			-10.31**	4.157	-6.153*	3.586	-7.636**	3.218
α_{FB}			-3.398**	1.406	-2.962**	1.291	-1.920	1.256
α_{PB}			-5.456***	2.033	-3.377*	1.952	-4.513***	1.653
α^*			-3.259**	1.407	-3.190**	1.364	-2.324*	1.398
α^*_{DB}			13.10***	4.215	10.60**	4.212	8.716**	4.127
α^*_{FB}			2.818	2.157	2.090	1.996	-0.005	1.891
α^*_{PB}			10.29***	2.662	6.663***	2.324	6.909***	2.215
Bank size (t-1)					-0.659*	0.347	-0.253	0.264
ROE (t-1)					0.216***	0.055	0.240***	0.046
Capital ratio (t-1)					0.172	0.161	0.023	0.096
NPL ratio (t-1)					-0.060	0.086	-0.068	0.095
Liquidity ratio (t-1)					-0.002	0.065	-0.062	0.044
Observations	2733		2733		2733		2733	
Banks	336		336		336		336	
Hansen	0.155		0.146		0.205		R ² = 0.138	
AR2	0.730		0.701		0.591			

Note : The sample includes annual data of 336 banks operating in 31 countries from Latin America and the Caribbean over the period 1995-2014. There are 157 domestic, 134 foreign, 31 public, and 14 development banks. Robust standard errors are reported. Specifications (I)-(III) are estimated with the System GMM panel methodology, while specification (IV) is estimated with pooled OLS. (***,**,*) denote significance on the 1, and 10 percent level, respectively.

Regarding the bank-specific control variables, we find that bank size and profitability affect bank lending significantly, while the other variables are not significant. Larger banks tend to have lower growth rates in lending, which is in line with the literature (Gambacorta, 2005; Brei et al., 2013). Moreover, as expected, more profitable banks increase their lending activity by more than less profitable banks.

Turning the discussion to our main question of interest, namely, whether the lending behavior across national development banks and the other types of banks has been different in normal times and crisis periods, we observe significant heterogeneous lending behavior, particularly during crises. During normal times, development banks expanded their loan portfolio at significantly lower growth rates compared to the other banks. To be more precise, while the average domestic bank expanded lending at growth rates of $\alpha = 9.36$ percent per year, the real growth rate of lending of the average national development bank was lower and equal to $\alpha + \alpha_{DB} = 9.36 - 6.15 = 3.21$ percent. Similar results are found for foreign and public banks during normal times, after controlling for macroeconomic conditions and bank-specific determinants of lending. More specifically, foreign banks expanded lending by $\alpha + \alpha_{FB} = 9.36 - 2.96 = 6.40$ percent and public banks by $\alpha + \alpha_{PB} = 9.36 - 3.38 = 5.98$ percent.

During crises, however, the lending pattern of banks changes. To be more precise, the average domestic bank reduces lending by $\alpha^* = -3.19$ percent per year to a level of $\alpha + \alpha^* = 9.36 - 3.19 = 6.17$ percent. The average national development bank, on the contrary, counteracts the slowdown in the lending activity of domestic banks by expanding lending at a growth rate of $\alpha + \alpha^* + \alpha_{DB} + \alpha^*_{DB} = 9.36 - 3.19 - 6.15 + 10.60 = 10.62$ percent per year. The lending behavior of the average foreign bank does not differ significantly from that of domestic banks during crises, and its lending activity decreases significantly to a level of $\alpha + \alpha^* + \alpha_{FB} = 9.36 - 3.19 - 2.96 = 3.21$ percent, given that α^*_{FB} is not significantly different from zero. In line with the findings of Brei and Schclarek (2013), public banks increase lending relative to domestic private banks. To be more precise, the average public bank increased its lending activity during times of crisis by $\alpha + \alpha^* + \alpha_{PB} + \alpha^*_{PB} = 9.36 - 3.19 - 3.38 + 6.66 = 9.45$ percent per year. The results are summarized in Table 6 below.

Table 6: Real growth rate of lending across normal and crisis periods

Type of bank	Lending in normal times	Lending during crisis	Δ (Crisis – normal)
Private domestic bank	9.36	6.17	-3.19
National development bank	3.21	10.62	+7.41
Foreign bank	6.40	3.21	-3.19
Public bank	5.98	9.45	+3.47

Note: This table summarizes the regression results of Table 5 (column III), focusing on the different lending responses of the different types of banks during normal and crisis periods, after controlling for bank-fixed effects, bank-specific and macroeconomic factors.

The estimation results corroborate the tentative results of Table 2, suggesting that both domestic and foreign private banks have been lending at higher rates in tranquil times, while cutting down on lending in times of crisis. National development and public banks, on the other hand, had lower lending growth in normal times, but they expanded credit once a crisis hit their economies. In other words, foreign and domestic private banks have been lending procyclically, whereas national development and public banks behaved countercyclically.

The differential lending pattern between these types of banks, as was discussed in section 2, might be explained by a combination of several factors. In the first place, national development banks and public banks have a higher willingness (or risk tolerance) to provide lending in an unstable crisis environment (Brei and Schclarek, 2015). Such behavior may reflect that their objective is not only to maximize profits given risks, but also to mitigate the ensuing credit crunch and the negative spillovers to the real sector. Secondly, it might also be that national development and public banks increase their capital by more than private banks during crises, given that they may find it easier to access additional capital during a financial turmoil or the government may issue debt on financial markets at lower costs compared to private bank owners. Thirdly, it might be that national development and public banks suffer less liquidity problems in times of crisis because they face

less deposit withdrawals and/or have fewer problems in rolling over short-term debt. The lower liquidity problems would be explained by the higher credibility these state-owned banks have, given that an actual and/or future recapitalization is more likely due to the higher credibility and financial strength of the government, in comparison to private bankers.

Finally, the distinct funding structure of development banks, which, as can be seen in Table 2, is more dependent on long-term financing (long-term bonds and equity), may also explain why they face less liquidity problems and can lend more during a crisis than other types of banks. A long-term funding structure probably implies a more extended and evenly distributed cash outflow structure that is less dependent on short- and medium-term developments. Thus, it implies that they have less maturity mismatches between their assets and liabilities, meaning that when payments for issued long-term bonds are due, a similar amount is received by the repayment of extended loans. This means that at any point in time, if a crisis hits and there is a run on deposits or an unwillingness to refinance expiring bonds, development banks have less liquidity problems than other types of banks that rely more on short-term funding. Moreover, the short-term liquidity problems due to a sudden run on banks have medium- and long-term effects on affected banks, not only implying medium- and long-term liquidity problems but also implying a decapitalization due to losses incurred by fire sales. Thus, development banks are not only better able to lend countercyclically during a crisis but also in the aftermath of it, becoming a key player to reignite growth.

6. Commercial lending

In this section, we investigate the cyclical pattern of lending to businesses across bank types. In doing so, we re-estimate our econometric model using the real growth rate of corporate and commercial loans, measured by the corresponding BankScope item. Due to reporting limitations on this variable, our sample is reduced to 132 banks covering 11 countries from Latin America and the Caribbean over the period 2001-2014. There are 52 domestic private banks, 50 foreign banks, 20 public banks, and 10 national development banks. The total number of bank-year observations reduces to 1294.

The estimation results are shown in Table 7. Focusing on the full specification (III), we observe important heterogeneity in the provision of corporate loans across banks. The average domestic bank was lending at a real growth rate of $\alpha = 12.91$ percent per year, both in normal times and crisis periods (given that α^* is not significant). Similar results are reached for the average foreign bank in the region (α_{FB} and α^*_{FB} are not statistically different from zero). National development banks, on the other hand, increased corporate lending once the state of the economy moved to a crisis period. More precisely, during normal times the average development bank expanded business lending at $\alpha = 12.91$ percent (α_{DB} is not significant). However, once a crisis hit, they expanded lending to the real sector at a rate of $\alpha + \alpha^*_{FB} = 12.91 + 21.05 = 33.96$ percent per year. Finally, the average public bank's lending to the real sector has been shrinking during normal times at a growth rate of $\alpha + \alpha_{PB} = 12.91 - 13.88 = -0.97$ percent. During crises, on the other hand, public banks expanded lending to the real sector at a rate of $\alpha + \alpha_{PB} + \alpha^*_{PB} = 12.91 - 13.88 + 24.43 = 23.46$ percent.

Our estimation results thus suggest that both domestic and foreign bank lending to the corporate and commercial sector was a-cyclical, whereas national development and public banks reacted countercyclically. The countercyclical response of national development and public banks has been more pronounced than when considering total lending, which includes residential mortgages loans and other consumer loans, suggesting that development and public banks have been especially active in the corporate and commercial lending segments during times of crisis.

Table 7: Regression results – corporate and commercial loans

	Dependent variable: Growth rate of commercial lending							
	Macro model		Bank type model		Bank-specific model		Pooled OLS	
	(I)		(II)		(III)		(IV)	
	Coeff.	Std. error	Coeff.	Std. error	Coeff.	Std. error	Coeff.	Std. error
Com. loan growth (t-1)	-0.048	0.049	-0.053	0.050	-0.049	0.048	0.024	0.041
Real GDP growth	0.715*	0.366	0.854**	0.394	0.808**	0.383	0.737*	0.408
Interest rate	0.425	0.401	0.432	0.382	0.167	0.422	-0.230	0.284
Inflation	0.381	0.360	0.336	0.357	0.211	0.355	0.023	0.247
Depreciation (t-1)	-0.235***	0.0599	-0.228***	0.0582	-0.236***	0.0559	-0.257***	0.057
α	10.07***	3.111	11.79***	4.135	12.91***	3.984	17.02***	4.172
α_{DB}			-11.08	7.240	-10.04	8.051	-12.47**	5.623
α_{FB}			-2.056	4.019	-1.574	3.546	-2.787	3.645
α_{PB}			-13.33**	5.433	-13.88***	5.179	-12.97**	5.251
α^*			-1.415	3.230	-1.607	3.230	-3.923	3.343
α^*_{DB}			23.80**	11.15	21.05*	12.33	24.93**	12.04
α^*_{FB}			0.328	3.887	-0.606	3.925	1.474	4.647
α^*_{PB}			23.13**	9.264	24.43**	9.547	19.09***	6.620
Bank size (t-1)					0.177	0.891	0.148	0.654
ROE (t-1)					0.232**	0.117	0.198*	0.116
Capital ratio (t-1)					0.290	0.301	0.337	0.353
NPL ratio (t-1)					0.119	0.285	0.346	0.316
Liquidity ratio (t-1)					-0.180	0.197	-0.208	0.192
Observations	1294		1294		1294		1294	
banks	132		132		132		132	
Hansen	0.334		0.173		0.164		R ² = 0.057	
AR2	0.354		0.395		0.210			

Note : The sample includes annual data of 132 banks operating in 11 countries from Latin America and the Caribbean over the period 2001-2014. There are 52 domestic, 50 foreign, 20 public, and 10 development banks. Robust standard errors are reported. Specifications (I)-(III) are estimated with the System GMM panel methodology, while specification (IV) is estimated with pooled OLS. (***, **, *) denote significance on the 1, and 10 percent level, respectively.

7. Conclusion

The present paper investigated empirically the lending responses during normal times and crisis periods across national development, public commercial, domestic private, and foreign private banks. To this purpose, we employed dynamic panel regressions that allow controlling for loan demand and other factors using an extensive dataset on the financial statements of 336 banks from 31 Latin American and Caribbean countries over the period of 1995-2014.

Our main findings are the following. We find robust evidence that national development and public banks increased total lending in response to crisis periods relative to normal times, while domestic and foreign banks decreased their lending relative to their normal lending pattern. It is interesting to observe that the average national development bank lends at a lower lending growth rate than the average domestic bank in normal times (3.21 percent per annum compared to 9.36 percent). However, once a crisis hits, national development banks expanded lending at a higher rate (10.62 percent per annum compared to 6.17 percent for private banks). This countercyclical behavior of national development banks is even stronger when considering corporate and commercial lending rather than total lending. While foreign bank lending did not differ much from domestic bank lending, we observe that public banks have played a similar countercyclical role during times of crisis, as did national development banks.

The differential lending pattern is to a certain extent related to the different objectives banks have and the fact that national development and public banks presumably have a higher willingness (or risk tolerance) to provide lending in an unstable crisis environment. The higher risk tolerance of state-owned banks may reflect that their objective is not only to maximize profits given risks, but also to mitigate a private bank credit crunch and the negative spillovers to the real sector. It might also be that national development and public banks have been able to increase their capital base by more than private banks during crises, given that they may find it easier to access new capital during a financial turmoil or that governments issued debt on financial markets at a lower cost than private bank owners. Further, it might be that national development and public banks have suffered less liquidity problems in times of crisis because they are less likely to be subject to deposit

withdrawals and/or problems in rolling over debt. The higher trust in state-owned banks and their stronger credibility derive, in turn, from a more likely current and/or future recapitalization due to the higher financial strength of the government, in comparison to private bankers. Finally, development banks may also have faced less liquidity problems owing to their particular funding structure, which is more dependent on long-term financing (long-term bonds and equity). A more extended and evenly distributed cash outflow structure implies a better maturity match with extended loans. Thus, development banks are better at coping with the liquidity problems that arise when there is a sudden bank run on deposits and/or difficulties in rolling over debt due to a crisis. As these liquidity problems not only have short-term consequences but also medium- and long-term consequences, development banks are not only better suited for carrying out countercyclical lending during a crisis but are also particularly suited to reignite growth after a crisis. Most likely, the observed difference in the lending responses between the different bank types is explained by a combination of all these four factors.

From a policy perspective, our results suggest that governments can play an active countercyclical role in their banking systems directly through national development and public banks. However, the relative size of these banks with respect to the rest of the financial system is an important determinant of the success of this countercyclical policy. Clearly, a sufficiently large state-owned banking sector will have higher chances of contributing to the stability of the economy. Moreover, as many national development banks lend to companies indirectly through private commercial banks, they may also help private banks to act more countercyclically. Another important determinant of the success of the countercyclical policy is the governance structure and institutional quality of these banks. Clearly, well managed national development banks that keep out narrow private and political vested interests are more likely to be in a better financial shape in times of crisis, which would allow them to react strongly when needed. Further, it is important that national development banks design specific credit lines that are in coherence with the special needs that companies face when a crisis hits. For example, it is unlikely that companies demand long-term loans for capital investments at times when production capacity is not fully utilized due to lower demand. Instead, it seems more important for companies to access credit lines for working capital or new innovative credit lines that reflect the special needs of the companies during recessions. In



addition, the countercyclical lending could be concentrated on public infrastructure projects that foster production and export capabilities.

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Financial Sustainability and Infrastructure Finance: the role of developing banks

Felipe Carvalho de Rezende¹

1. Introduction

The creation of new sources of financing and funding are at the center of discussions to promote real capital development. It has been suggested that access to capital markets and long-term investors are a possible solution to the dilemma faced by countries' increasing financing requirements (such as infrastructure investment and mortgage lending needs) and limited access to long-term funding. This argument is based on the assumption that traditional banks and existing financial structures are unable, due to funding constraints, to meet the growing financing needs of modern economies. In spite of the introduction of several initiatives to mobilize private capital to fund long-term projects and assets, private finance schemes have fallen short of their targets. Notwithstanding the great potential among institutional investors to fund long-term assets such as infrastructure—due to the longer-term nature of their liabilities—and the availability of private financing mechanisms and instruments, their fund allocation has remained below their target allocations to infrastructure (OECD 2015).

Though there was a consensus over the past decades in favor of the development of the debt securities and securitization markets to foster local capital markets and long-term funding, since the onset of the 2007-2008 global financial crisis, there is a renewed interest in development banks (DBs). That is, investigating their roles promoting and financing

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investment, dampening the effects of financial instability and creating benchmark assessments on national DBs performance (DBC 2009; World Bank 2012). In this regard, there is a growing consensus on the value of DBs and the role they play promoting the capital development of the economy during non-crisis and crisis periods while dampening the effects of financial fragility, both domestically and internationally. Moreover, development banks have enhanced policy makers macroeconomic toolkit acting as a countercyclical policy tool², extending their traditional roles providing financing aimed at enhancing productivity growth, supporting socioeconomic infrastructure and knowledge-specific activities; and promoting the development of organized liquid capital markets (Rezende 2015).

Even though development banks play an active and strategic role promoting economic development in advanced and developing economies at different stages of their development process (Chandrasekhar 2015), there is little discussion about their macroeconomic role. To be sure, much of the discussion focuses on the role of financial markets for economic growth and economic development³. This is in part the result of the conventional view, in which, as Robert Lucas put it, finance does not matter much⁴. This approach, in turn, leads to different perspectives on policy for development banks.

Development banks (DBs) are widespread across the world and “have served as an institutional substitute for crucial “prerequisites” such as prior accumulation of capital or the availability of adequate entrepreneurial skills or technological expertise.” (Chandrasekhar, 2015, p. 22) They “are also involved in early stage decisions such as

² A recent IMF study concludes that “[f]irms in sectors that are more financially dependent cut investment more sharply than other firms, particularly early in the crisis. Firms in sectors that are more sensitive to policy uncertainty also reduced investment by more than other firms.” IMF WEO 2015, p. fig. 4.12. This result reinforces the macroeconomic role played by development banks offsetting swings in lending by private financial institutions, especially during times of stress.

³ See for instance, Fisher 2013.

⁴ He then said: “I will... be abstracting from all monetary matters, treating all exchange as though it involved goods-for-goods. In general, I believe that the importance of financial matters is very badly overstressed in popular and even much more professional discussion and so am not inclined to be apologetic for going to the other extreme.” (Lucas 1988, p. 6)

choice of technology, scale and location, requiring the acquisition of technical, financial and managerial expertise” (op. cit., p. 23). It is well known that development financial institutions play a strategically role at various stages of economic development. For instance,

the capitalisation of income earning assets was also the basis for Crédit Mobilier and Société Générale formed in France and Belgium at the middle of the 19th century. These banks served as the pattern for the German Effektenbanken or Kredit banks and the Italian industrial banks. The French proposals in fact went beyond simple industrial financing, and proposed a sort of central bank for Industry which would oversee the industrialisation of the country by arranging associations and mergers, rather than by wasteful competition. (Kregel 1998, p.7)

Moreover, “historically it has been public banks that have led the way in financing the long-term investment necessary for the economic industrialization of developing countries. Second, that financial innovation in the “essential function” of the “creation of money” has had a major impact on the evolution of financial structure and in particular the evolution of the mix of private and public finance for investment and innovation. Third...the recent dominance of private financial institutions and the presumption of their efficiency advantage have reduced the availability of long-term finance for development.” (Kregel 2015, p.1)

From this perspective, as Chandrasekhar (2015) put it,

finding the capital to finance the industrial take-off represents a major challenge...Gerschenkron believed that they served as institutional substitutes for crucial “prerequisites” for the industrial take-off, such as the prior accumulation of capital or the availability of adequate entrepreneurial skills and technological expertise.

As Gerschenkron (1962: 13) argued: “The difference between banks of the *crédit mobilier* type and commercial banks in the advanced industrial country of the time (England) was absolute. Between the English bank essentially designed to serve as a source of short-term capital and a bank designed to finance the long-run investment needs of the economy there was a complete gulf. (Chandrasekhar, 2015, p. 22)

Despite the widespread presence of development banks their evolution has been different, adapting their role to different stages of economic development. Advanced and developing economies continue to rely on DBs, including Germany’s KfW and Japan Finance Corporation (JFC) Development Bank of Japan⁵ (DBJ), China Development Bank (CDB), and Brazil’s BNDES to name a few (Chandrasekhar, 2015; Ferraz, Além, Madeira, 2016). The availability of patient credit allows for industrial take-off, catching-up and leapfrogging⁶ (Burlamaqui and Kattel, 2014).

In spite of the historical importance of development banks promoting capitalist development, they have often received harsh criticism “fuelled by the neoliberal economic policies of the Washington Consensus... a more critical view on DBs emerged in the 1980s and 90s. Particularly national DBs were regarded by many as an instrument of unacceptable state interventionism... The popularity of DBs gained ground again when the Millennium Development Goals (MDGs) were adopted by the United Nations in 2001” (UN-DESA 2015, p.7).

For instance, the chapter “Mobilizing domestic financial resources for development” of the Monterrey Consensus noted that “[d]evelopment banks...can be effective instruments for

⁵ The DBJ still works as DB, but is being privatized (Ferraz, Além, Madeira, 2016, ft. 14, p.17).

⁶ It is worth noting that “the Republic of Korea was also a late industrializer in which development finance (supported by the State through the budget and the central bank) played an extremely important role and contributed in no small measure to the success of its late industrialization. However, the DB’s role here included support for borrowing from abroad to acquire foreign technology, which was subsequently leveraged to launch a successful export-oriented strategy.” (Chandrasekhar, 2016, p. 28)

facilitating access to finance, including equity financing, for such enterprises, as well as an adequate supply of medium- and long- term credit” (United Nations 2003, p.7).

However, much of the discussion involving DBs is usually framed in different theoretical frameworks. The conventional view about the existence of DBs relies on market failures, in which they play a complementary role (Torres and Zeidan 2016; Wruuck 2015; UN 2005). This association of DBs with the concept of market failure leads to the view that with the development of financial markets, DBs are no longer needed. For instance, Torres and Zeidan (2016) have suggested that “as countries develop their financial markets, NDBs should share this role with other local banks and specialize their focus, *eventually disappearing altogether.*” (Torres and Zeidan, 2016, emphasis added)

From this perspective, it is essential that the theoretical discussion about the role of DBs be grounded on a solid framework beyond market failures. Among the lessons that can be drawn from the global financial crisis is that in spite of a rapid increase in financialization, the dominance of private financial institutions failed to promote the capital development of the economy (Levy Institute 2011; Mazzucato and Wray 2015). The global crisis has shown once again that there is no guarantee that developed financial markets promote the capital development of the economy. This has important implications for policy making, that is, “during the pre-crisis period, developed countries’ regulatory systems had been considered as ‘best practice’ and formed the basis for recommendations to developing countries seeking to liberalize and expand their domestic financial markets”. (Rezende 2015, p. 241). However, “the financial structure that emerged in the USA in the past 30 years failed to provide support for the development of the economy and to improve living standards, an alternative design of the financial structure that meets the needs of developing nations needs to be developed.” (Rezende 2015, p. 242).

In what follows (section 2), building on the insights of Jan Kregel (2015), I will briefly discuss Hyman Minsky’s work on financial regulation and what he labeled as the ‘dilemma of financial regulation’ as a theoretical framework to analyze the macroeconomic role

played by development banks—not only in providing long-term funding necessary to promoting economic development—but also to prevent fragility.

In section III, this broader theoretical framework will provide the basis for the need for public financial institutions to provide support for infrastructure and sustainable development projects. I will then discuss in section IV the main challenges faced by the private sector in providing long-term finance in the emerging and developed world to meet some of the infrastructure requirements—and the strategic role national development banks and government policy should play, given the inherent risks of infrastructure projects. Section V concludes with lessons for enhancing the role of development banks as catalysts for mitigating risks associated with infrastructure projects.

2. What is the appropriate financial structure for emerging market economies promoting capital development?

Hyman Minsky wrote extensively about the nature of money and banking. In his model, “[e]veryone can create money; the problem is to get it accepted” (Minsky 1986). As he put it: “Banking is not money lending; to lend, a money lender must have money. The fundamental banking activity is accepting, that is, guaranteeing that some party is creditworthy” (Minsky 1986, 256). In general, those IOUs are denominated in the state unit of account, but they can also be denominated in foreign currency. That is, banking is liquidity creation. Though traditional banks are liquidity creators—that is, they buy assets through the issuance of liabilities—not all liquidity is created by them.

However, one of the main challenges, in terms of increasing traditional banks’ exposure to long-term assets, is related to interest rate and liquidity risks and the returns required to induce investors to be exposed to infrastructure assets. This is because interest risk is significantly increased by the lengthening of the portfolio’s duration. The expansion of long-term loans as a share of total assets tends to increase the maturity mismatch between assets and liabilities. A prudent banker might not undertake increasing risks of maturity

mismatches such as financing long-term assets by issuing long-term liabilities in a volatile interest rate environment. Bankers are unwilling to be exposed to increasing maturity mismatch particularly when the current macroeconomic policy brings about high interest volatility to fight inflation. That is, bankers are unwilling to increase the duration of assets relative to liabilities and carry this risk on their balance sheets.

Even though maturity matching by bankers is a source of banking stability, it limits financing of investments in long-term capital assets and infrastructure-type products. That is, a volatile interest rate environment limits financing of investments in long-term capital assets and infrastructure-type products. Though traditional banks are the most important source of long-term financing (see for instance Peria and Schmukler, 2017), the concentration on shorter maturities in financial instruments is typically the outcome of information asymmetries (Stiglitz and Weiss, 1981), coordination problems—which may trigger a dynamic toward short maturities known as “maturity rat race” (see for instance Brunnermeier and Oehmke, 2013)—incentive problems and short-termism incentives (Lazonick and O’Sullivan, 2000), macroeconomic risks and lack of an adequate legal framework (such as weak institutions and poor contract enforcement) contribute to excessive reliance on short-term financing.

This means that policy should focus on those issues to adjust the need of users of long-term finance and their providers. From this perspective, development banks play a strategic role focusing on long-term goals, providing long-term patient finance and contributing to address the fundamental institutional weaknesses that prevent the mobilization of funding for private investment.

Second, the “use of long-term finance can be best understood as a risk-sharing problem between providers and users of finance.” (World Bank 2015, p. 24). From this perspective, regulations can be introduced to better manage and transfer risks to parties more able to bear them. The important question is related to the costs of carrying a mismatch between the duration of assets and liabilities on the bank balance sheet, that is, if interest and funding

risks are carried on banks' balance sheets. As Kregel (1993) pointed out, different financial structures are created to provide a reduction in price risks such as the risks associated with financing investments in long-term capital assets. The German banking regulatory experience imposes matching between assets and liabilities on banks' balance sheets (Kregel 1993). For instance,

banks issued long-term bonds, which were held within the financial sector, and then slowly started to be held by the public. In this way fixed interest liabilities matched the term lending of the banks to firms and the reliance on bond finance may be seen as a structural result of the way in which price risks are hedged in the German system and as a substitute for the pre-war use of the equity market. The German mixed bank system is thus no less dependent on capital markets to reduce risk than segmented bank systems, both require them to provide a reduction in price risks. (Burlamaqui and Kregel 2005, p. 45)

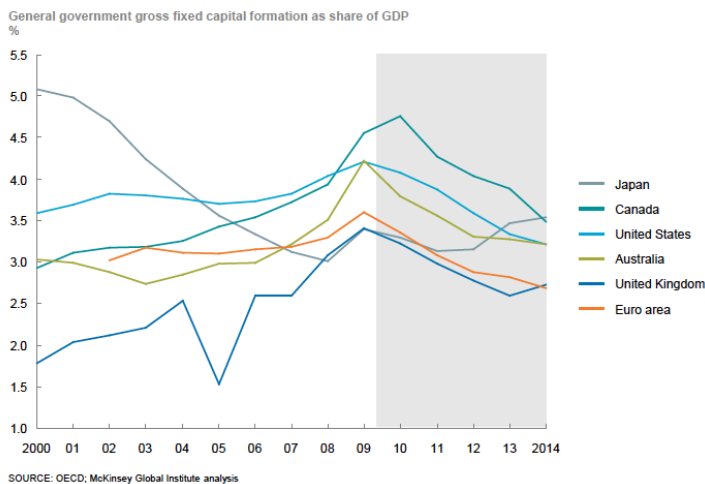
So, the question is how to design a financial structure for emerging market economies that promotes capital development and mitigates financial fragility. From this perspective, it has already been suggested that financial regulation should serve two conflicting objectives (Kregel 2015). One master requires leverage and taking risks, since financing capital development and innovation are inherently risky activities—in an environment in which crises are systemic—while the second requires a safe and sound payments system. The question then becomes how to design a financial structure that serves the two contradictory masters within a conceptual framework in which financial crises are systemic.

3. Massive need for infrastructure in the emerging and developed world

Insufficient or inadequate infrastructure in both developing and developed economies has sparked a debate about whether financing is sufficient to sustain infrastructure investment to at least keep pace with projected global GDP growth. The task of keeping the minimum investment required to maintain current levels and fostering incremental spending to close the infrastructure gap has revived the debate over the role played by each actor in closing the gap and how to finance this process (see for instance G-20, OECD, 2013a, FSB 2013,

World Bank, 2015). One of the major post-crisis challenges is that in spite of an ultra-low interest rate environment or even negative nominal and real rates, investment has been anemic in developed and developing economies (IMF, 2015). This is particular important because since the crisis investment has collapsed across all sectors (public, business, and household sectors) in Europe (McKinsey 2016, p. 2). And, in the United States, “the trajectory of net fixed capital formation, which decreased from 12 percent of GDP in 1950 to 8 percent in 2007, then fell to only 4 percent in 2014. Average depreciation rates accelerated by about 20 percent during the 1980s as companies invested in shorter-lived assets such as ICT equipment but did not compensate in terms of higher gross investment rates. This amplified the decline in net investment.” (op. cit. 2016, p. 2). To make things worse, most governments in developed nations and developing nations (with the exception of a few cases) are cutting back on infrastructure spending due to fiscal consolidation (figure 1) generating a public-funding shortfall in infrastructure investment.

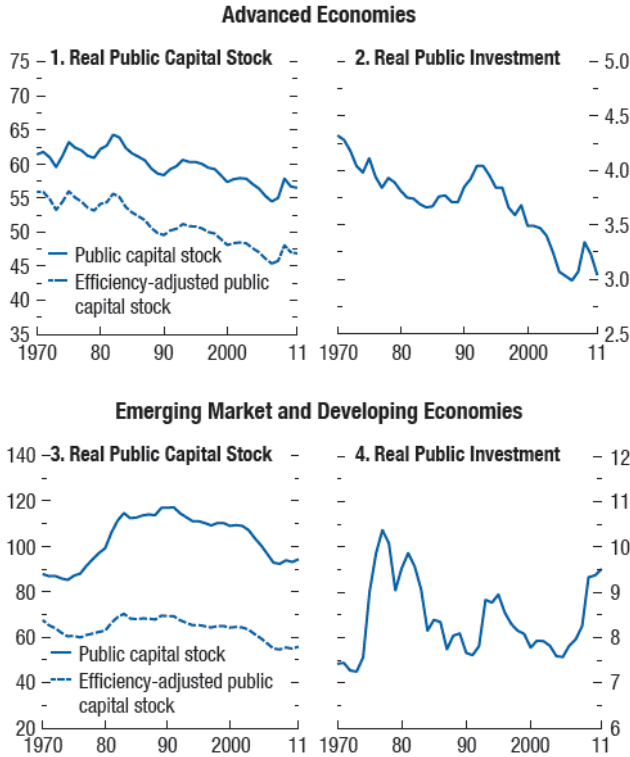
Figure 1. General government gross fixed capital formation (% of GDP)



Source: Mckinsey 2016, p.11

Moreover, insufficient private investment and declining real public investment have contributed to reduce the stock of public capital as a share of output over the past three decades (figure 2).

Figure 2. Evolution of Public Capital Stock and Public Investment (Percent of GDP, PPP weighted)



Source: IMF WEO, 2014, p. 80

Furthermore, the economic collapse in the wake of the global financial crisis has contributed to permanent effects on potential output level across advanced and emerging market economies (IMF 2015; Ollivaud and Turner, 2014). Required equity requirements and the cost of capital have increased for many infrastructure investments (McKinsey 2013, p.23). This, in turn, combined with the decline in public investment as policy makers opted for austerity measures, has contributed to lower potential output (IMF 2014; McKinsey 2016). This decline in government investment has been exacerbated by the short-termism of financial markets and corporations. Additionally, an IMF report pointed out that “the initial hopes that the privatization wave of the 1980s would fuel a private-sector funded greenfield infrastructure investment boom have fallen well short of expectations” (Samama 2016 et al, p.3).

The perverse combination between inadequate direct public investment, increasing cost and availability of long-term financing, higher proportion of higher-risk projects (i.e., greenfield projects in developing countries) that are in the investment pipeline contribute to widen the infrastructure gap (McKinsey 2013, p.19). That is, though “infrastructure development has been found to have a positive and significant impact on long-run growth and a negative impact on income inequality” (Calderon and Serven, 2014), the combination between growing investment needs, low investment and the imperative to channel investments for sustainable development goals has caused massive infrastructure gaps (UNSDSN 2015; UNTT, 2013; McKinsey 2016).

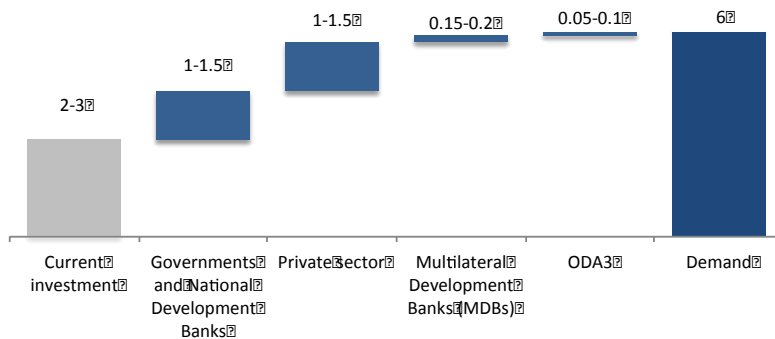
Against this background, there are several estimates—using different approaches—that indicate massive global infrastructure needs (Schmidt-Traub 2015). For instance, the McKinsey report estimates that \$57 trillion in investments will be required until 2030—which is more than the estimated value of today’s infrastructure—to just keep pace with projected global GDP growth (see McKinsey 2016, p.1). The McKinsey report suggests that the world will need “to invest about 3.8 percent of global GDP in infrastructure over the period from 2016 to 2030—or an average of \$3.3 trillion a year—just to support expected economic growth. Emerging economies account for some 60 percent of that need.” (McKinsey 2016, p.9) The report concludes that “[i]f they maintain their current trajectories, a number of countries will continue to underinvest to such a degree that the world could fall about 11 percent short of the necessary infrastructure investment. The shortfall could amount to some \$350 billion a year... This size of the gap roughly triples, however, when we take into account the additional investment required to meet the UN’s new Sustainable Development Goals.” (op. cit. 2016, p.10).

According to estimates from the Organization for Economic Co-operation and Development (OECD) the investment required is equivalent to US\$70 trillion by 2030 (OECD, 2015c). The World Bank (2016) estimates that approximately US\$1 trillion per year is needed in emerging markets and developing economies (EMDEs), while the G20

(2013) suggests that developing countries will need to invest an additional \$1 trillion a year through 2020 (G20, 2013).

McKinsey points out that the current annual investment on infrastructure is at US\$2.0 trillion to US\$3 trillion and it estimates that required investments could reach the equivalent to US\$6 trillion a year, based on demand of ~\$93 trillion over 15 years. This means that the government sector, national development banks, and the private sector will have to substantially increase current rates of investments to meet the global demand for infrastructure services. In particular, governments and development banks could be responsible for US\$ 1-1.5 trillion in annual incremental spending while the private sector could contribute with equivalent amounts (figure 3).

Figure 3. Proposed annual incremental spending to close the infrastructure debt (\$ trillion, constant 2010 \$)

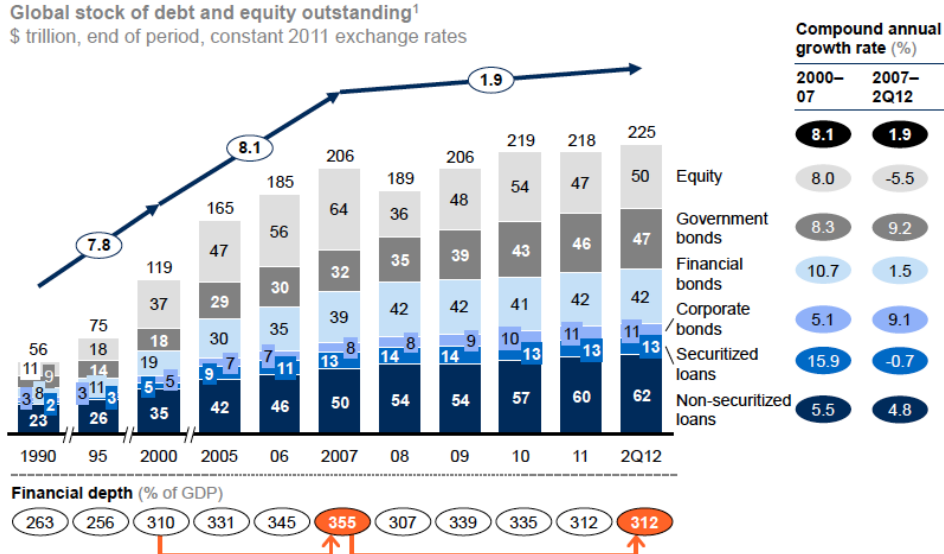


Source: Bhattacharya et al, 2015, p. 26

Banks, capital markets, and institutional investors as providers of long-term finance

From 1990 to 2012, the stock of global financial assets increased from \$56 to trillion to \$225 trillion. In 2012, it included a \$50 trillion stock market, \$47 trillion public debt securities market, \$42 trillion in financial institutions bonds outstanding, \$11 trillion in nonfinancial corporate bonds, and \$62 trillion in nonsecuritized loans and \$13 trillion in securitized loans outstanding (Figure 4).

Figure 4. Stock of Global Financial Assets (USD trillion)

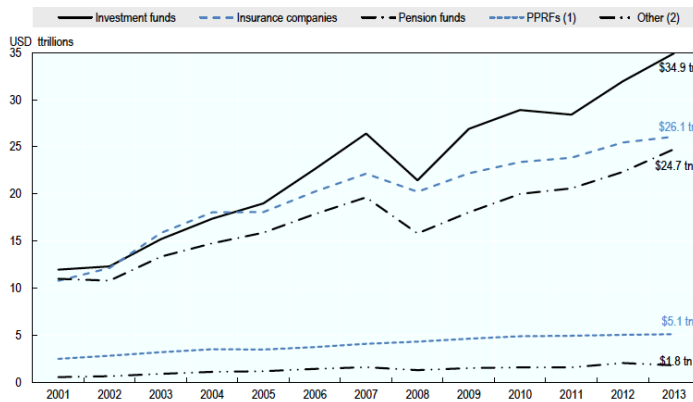


Source: Lund et al 2013, p.2

From 2007 to 2012, government debt securities increased by 47% (figure 3) while financial depth rose to 355% of global GDP in 2007 from 120% in 1980 (Lund et al 2013, p.2). In spite of a massive increase in the stock of global financial assets— equivalent to 302% between 1990 and 2012—“[m]ost of the increase in financial depth prior to the crisis was due to financial system leverage and equity valuations” (Lund et al, 2013 p 2.). Yet, the world needs more and better infrastructure and redirecting finance towards sustainable infrastructure will require a major shift in policy coordination with various stakeholders. For instance, Standard & Poor’s estimated that “institutional investors could provide as much as \$200 billion per year—or \$3.2 trillion by 2030—for infrastructure financing” (Standard & Poor’s 2014, p.2). But, “if the right levers are pulled, there is potential to increase investment from private institutional investors by ~\$1.2 trillion per year.” (Bielenberg et al, 2016, p.28). Thus, the problem is not necessarily one of funding but how to direct the finance created by the financial system towards productivity-enhancing investments.

In this regard, a number of mechanisms are available to finance long-term investments and yield-seeking potential investors could contribute to close the financing gap (figure 5). The OECD estimated that institutional investors held over US\$70 trillion in assets as of December 2011 (Della Croce 2013, p.8).

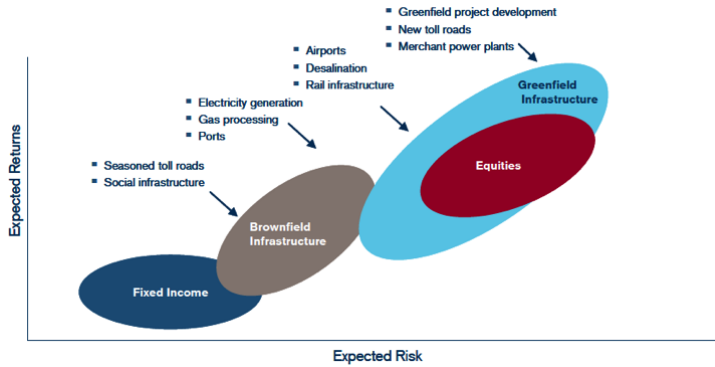
Figure 5. Total Assets by Type of Institutional Investor in the OECD, 2001-13



Source: OCDE 2015a, p.10

Many of these investors are moving towards socially and environmentally responsible investment strategies. Also growing rapidly are Sovereign Wealth Funds (SWFs), with assets under management in January 2014 exceeding US\$6 trillion (Della Croce 2014, p.9). From this perspective, in the past few years, infrastructure has been more widely accepted as a distinct asset class (BlackRock 2015, Robert et al. 2015, Russ et al. 2010). Infrastructure investments are diverse as they offer a broad universe of investments ranging from mature assets to opportunistic investment strategies offering a variety of risk/return profiles (figure 6).

Figure 6. Risk/Return Profiles of Infrastructure Investments In Relation to Traditional Asset Classes

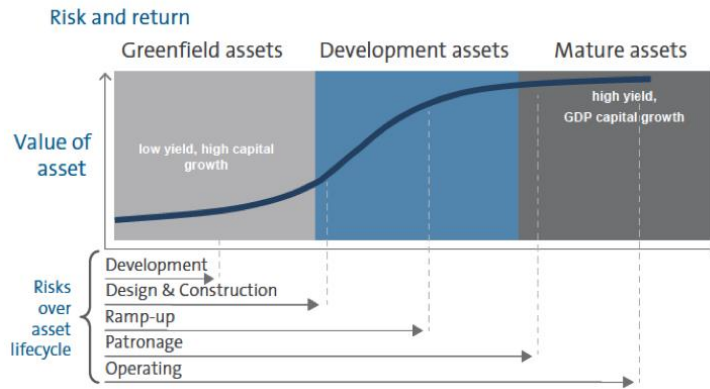


Source: Russ et al, 2010, p.3

A study by Russ et al. (2010) concludes that “the asset class’s risk/return characteristics could help pensions mitigate duration risk, due to the long-term nature of many of the sub-asset classes, as well as the return streams associated with certain types of infrastructure. The asset class’s potential to mitigate the impact of inflation on portfolios has also been a driver of investor interest.” (Russ et al. 2010, p.8).

However, inadequate allocation and assessment of risks of large infrastructure projects are one of the key factors holding back private finance throughout the project’s life cycle. From this perspective, a true understanding of investor’s risk appetite and the proper identification of risks and returns over the lifecycle of infrastructure assets are essential to design risk-mitigation mechanisms and incentives to attract institutional investors. For instance, the asset class can be classified by risk buckets, such as core, core plus, value-added and opportunistic infrastructure (figure 7).

Figure 7. Risk return profile of infrastructure assets



Source: AMP Capital, 2013, p.5

Mature infrastructure (such as large brownfield assets) has core and value-added investment strategies, that is, it typically has income return and capital growth potential. For core assets, most of their returns come from cash yield generating stable cash flow streams. Investors who seek this option look for stable and income-oriented returns with comparatively low risk. Higher risk growth-oriented infrastructure is often associated with value-added investment strategies. This option, however, has substantially more risks relative to low-risk core infrastructure assets and requires expansionary capex to unlock growth potential.

Investors who are looking for potentially higher risk-adjusted returns—or private equity type returns that are more common to greenfield infrastructure assets—tend to invest in opportunistic investment strategies to take advantage of greater total return. However, development infrastructure exposes investors to higher risk-return and capital appreciation potential. This classification is particularly useful to compare infrastructure assets with other asset classes (figure 8) and different possible investment strategies.

Figure 8. Unlisted Infrastructure: comparison with other asset classes

Unlisted infrastructure: comparison with other asset classes		
Asset class	Analogies with unlisted infrastructure	Comparative strengths of unlisted infrastructure
Real estate	Real asset class	Higher barriers to entry
	Cash-flow indexation potential	Exposure to economic cycle more limited
	Cash yield as key return component	-
Fixed income	Long-term cash flow predictability	Asset control
	Inflation hedging potential (e.g. inflation-linked bonds)	Potential for more limited interest rate risk exposure (depending upon sector and leverage)
	-	-
Private equity	Asset control	Long-term investment horizon
	Scope for management improvements	Higher barriers to entry and exposure to market risk
	-	Potential for ongoing distributions
Listed equities	Asset ownership/control	Long-term cash flow predictability
	Capital appreciation potential	Higher barriers to entry and exposure to market risk
	-	Lower liquidity, but lower volatility potential

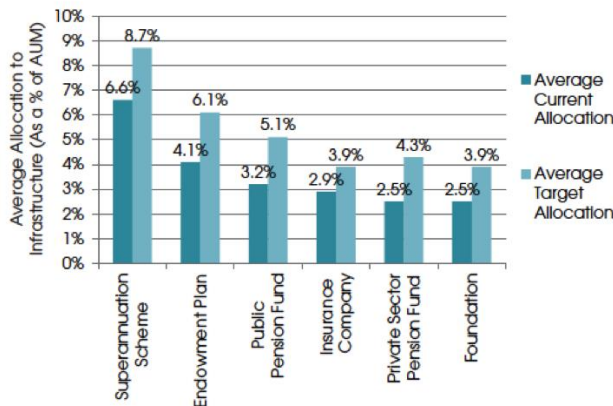
Source: Roberts et al 2015, p.8

Figure 8 displays for illustrative purposes the various types of infrastructure investments that usually fall under those risk categories. By identifying these risks, they can be properly managed and allocated between the public and private sectors in a way that unlocks the provision of funding necessary at different phases over the lifecycle of the project. This is particularly important because infrastructure investments are capable of providing relatively stable returns, portfolio diversification, and liability management for institutional investors. As investors gain exposure to this asset class, their target returns remain optimistic given its risks. For instance, “Preqin reports a net IRR target of 15.8 percent on average (12 percent for developed markets and 19.3 percent for emerging markets). Forty-three percent of funds fit into the target IRR band of 10.1–15 percent and 32 percent into the 15.1–20 percent band. Essential to the achievement of such high IRRs are the substantial levels of leverage in underlying infrastructure projects...Nonetheless, target gearing levels are still predominantly in the 60–70 percent and 70–80 percent ranges.” (Inderst, 2010, p.79)

In spite of the huge potential in infrastructure investment—such as portfolio diversification, liability-matching, inflation-hedging characteristics, ability to generate consistent long-term cash flows, and potentially high risk-adjusted returns—several factors, which will be discussed later, prevent institutional investors from increasing their

exposure to infrastructure assets (Mackenzie 2016). Despite the growing importance of institutional investors, the question is whether there is risk appetite for new infrastructure allocations among them. Even though investors are targeting an allocation of 3% to 9% of their assets under management to infrastructure assets, the Preqin (2016) survey pointed out that institutional investors have current allocations well below their targets for infrastructure projects as the challenges facing the sector have increased including regulatory, political, and macroeconomic risks. For instance, as of 2015, public pension funds were on average targeting a 5.1% allocation, but had only a 3.2% actual allocation while for insurance companies the allocations were a 3.9% target, but only 2.9% actual. For private pension funds, their target was 4.3% against 2.5% actual allocation (figure 9).

Figure. 9. Institutional investors, infrastructure asset allocations and targets as of December 2015



Source: (Preqin 2016, p. 36)

In spite of growing interest of pension funds in infrastructure investments as strategic asset allocation, “all funds that reported a separate target allocation to infrastructure were below targets at the end of 2014.” (OECD 2016, p. 19-20). Notwithstanding several attempts to create all forms of private finance mechanisms, instruments and incentives to attract private investors, private infrastructure investment has remained low to meet targeted needs—especially during the development stage (Croce, 2014; OECD 2015, 2015a). The OECD survey of pension funds show that they “prefer the more stable investment profile of

operational (brownfield) assets and remain opportunistic in their emerging market interest in infrastructure. Prospective risk and return are perceived as higher in new greenfield assets and may require more due diligence on the part of the investor” (OECD 2015b, p.20)

Attracting investors to bridge the financing gap is no panacea. For instance, after “attempts by the UK government to use private funding to pay for infrastructure upgrades... show it is easier said than done. Six years after the UK’s then chancellor, George Osborne, announced a flagship scheme to persuade pension funds to invest billions of pounds in hundreds of new transport and energy projects, there has been little take-up.” (Primmer 2017). In this regard, Mike Weston, chief executive of the Pensions Infrastructure Platform (PIP) in the UK concluded that “[m]ost pension funds believe their obligations are best matched by investing in assets that are already delivering predictable cash flow. This means projects that have an operating track record, or at least predictable payment streams.” (Primmer 2017). Moreover, a BlackRock report notes that “[t]he infrastructure story is tantalizing—trillions of dollars needed in infrastructure upgrades and a global wall of money seeking yield. Yet the investable universe is small and funds take a long time to invest. Infrastructure debt is long-duration (up to 25 years or more) with limited liquidity. This is fine, as long as you are in for the long haul and get paid for your patience. We typically avoid riskier greenfield projects.” (BlackRock 2014, p.7)

In a nutshell, even in advanced economies where there exist deep and sophisticated financial markets and regulatory, macroeconomic, and political risks are relatively low compared to other economies, institutional investors shied away from infrastructure development. For instance, “UK pension funds investing in UK infrastructure projects has been touted by politicians for years as an obvious win-win but actual deals are almost non-existent.” (Primmer 2017)

To sum up, despite attempts to develop mechanisms and incentives to attract institutional investors for greenfield projects (see for instance World Bank, 2015), studies suggest that investors prefer to invest in the lower end of the risk spectrum such as brownfield (or

established) projects or in existing infrastructure such as airports and toll roads—to avoid completion and usage risks—and not to invest in the construction phases. Instead, they prefer to invest in built assets, which generate more stable income streams thus reducing the uncertainty of the cash flows, cost overruns and delays associated with the early stages of an infrastructure project. This is partially due to its inherently risks and negative cash flows during the construction phase (BlackRock, 2015; Bhattacharya, Romani and Stern, 2012, p .14; S&P 2013, 2014). That is, investors focus on investments with attractive risk-adjusted returns such as brownfield projects and already-built and operating assets, which offer predictable revenue streams and lower risks (BlackRock2016, Bitsch et al 2010; Primmer 2017). From this perspective, private infrastructure investment is constrained by the inherent risks associated with investing in infrastructure projects⁷ (Bitsch, et al 2010).

It is interesting to note that “around 70 percent of the current pipeline available to equity investors consists of greenfield projects, which they view as much riskier than brownfield projects that have demonstrated returns” (Mckinsey 2016, p.23). This, in turn, erodes investor interest and prevents the provision of long-term finance by the private sector. Moreover, “[c]onstrained lending capacity has had a negative impact on infrastructure financing across the board, while wider interest-rate spreads have an adverse effect on the ability to finance greenfield projects” (Mckinsey 2016, p.21).

This is particular important for developing economies. The support of private investments for infrastructure in developing countries through the development of local capital markets and efforts to entice private investors are often presented as a solution to the large financing gap for infrastructure (OECD 2013). To be sure, EMDEs need to address major barriers to infrastructure development such as weak pipeline of viable projects, high-risk perception,

⁷ Note that “Banks, the most important source of long-term financing, lend at significantly shorter maturities in developing economies relative to advanced ones. Moreover, capital markets in developing economies are less developed and are accessible only to a small proportion of total firms. Domestic institutional investors not only have a small participation in developing economies, but also the incentives they face can lead them to invest short-term. However, access to international mutual funds can help developing economies to obtain not only more funds, but also more long-term financing, as these investors hold longer maturities compared to domestic mutual funds.” (Peria and Schmukler, 2017, p.7)

and EMDE infrastructure not being well defined as an asset class (Croce and Yermo, 2013; Inderst and Stewart, 2014). Moreover, public-private partnerships are often discussed “as the solution for closing infrastructure gaps during periods of tight public funding. However, even in economies that make strong use of them, PPPs typically make up only about 5 to 10 percent of overall investment in economic infrastructure.” (Mckinsey 2016, p.19)

The scarcity of long-term finance in developing economies is well known and well documented. A recent IMF report concluded: “Although banks are the most important providers of credit, they do not seem to offer long-term financing. Capital markets have grown since the 1990s and can provide financing at fairly long terms. But few firms use these markets. Only some institutional investors provide funding at long-term maturities. Governments might help to expand long-term financing, although with limited policy tools.” (Peria and Schmukler, 2017, p.2)

For EMDEs there are additional challenges to bridge the gap between demand and supply of funds through financial markets. For instance, the Global Infrastructure Facility (2016) identified critical barriers to private investment (illustrated on figure 10) including: weak pipeline of viable projects; high risks and high perception of risks; significant regulatory, legal, political, economic, and financial risks; existence of information asymmetries preventing the supply of finance and infrastructure not well-defined as an asset class, which contributes to persistent information asymmetries and prevents the supply of finance. (GIF, 2016 p.15)

Figure 10. Barriers and World Bank Group Initiatives to Address Them

Barrier to Private Investment	Instruments and Initiatives	Rationale
Weak pipeline of viable projects	Upstream Project Preparation Window (operational)	Improve project pipeline by increasing the number of structurally sound and bankable projects
	Project Assessment Tool (proposed)	Improve the quality and completeness of project preparation
Risks are perceived to be high	Downstream Finance Window (proposed)	Mobilize private capital through de-risking critical infrastructure projects
	Asset Recycling Program (proposed)	Encourage private sector involvement in brownfield projects, when risks are lower
EMDE infrastructure not well defined as an asset class	Emerging Markets Infrastructure Debt Index (proposed)	Position EMDE infrastructure as a recognized asset class

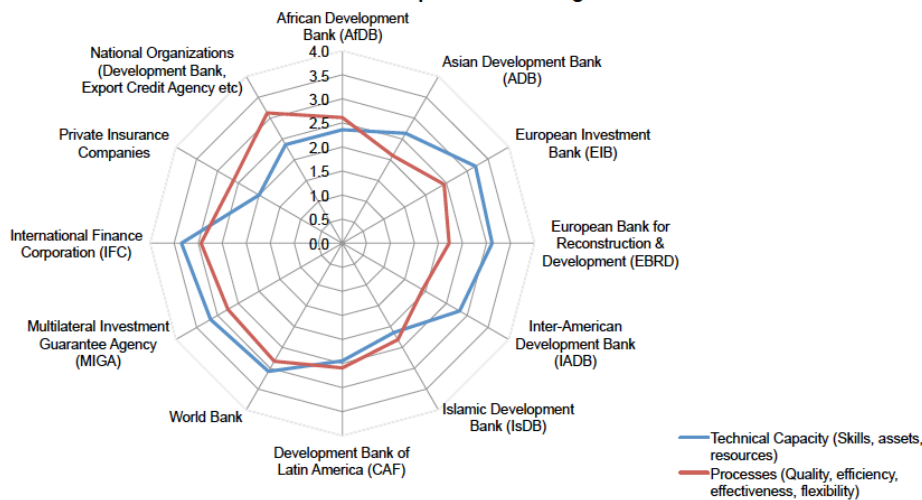
Source: GIF 2016, p.5

The same problems faced by advanced economies are also existent in EMDEs, that is, “private investors are often unwilling or unable to take project development risk for infrastructure in EMDEs. They are, however, still interested in the returns that the investments can provide once the projects are operational and demand is proven.” (GIF 2016, p.27) From investors’ standpoint infrastructure development assets’ risk characteristics should be compared to that of private equity. Given the uncertainty and high risks associated with those projects, economic viability of the project being financed would make the returns needed to attract private investors too high.

In this regard, the combination of “the regulatory, macroeconomic, and political risks present in many EMDE countries result in a hurdle rate of return that is too high, resulting in limited bankable projects for private investment additionally. Private lenders may be unwilling to lend to projects with high levels of risk unless sufficient credit enhancements or de-risking mechanisms are in place.” (GIF, 2016 p.15) Both national development banks and multilateral organizations are well placed to strategically provide de-risking

mechanisms to foster investment by the private sector. However, a recent assessment of institutions that provide risk mitigation instruments show that national development institutions and multilateral organizations can enhance their de-risking instruments (figure 11)—including technical capacity and processes—to better fit investor’s needs.

Figure 11. Assessment of institutions that provide risk mitigation instruments



Source: WEF 2016, p.34

Even though different complementary mechanisms to finance infrastructure deals aim to entice institutional investors to finance infrastructure projects (see for instance OECD, 2013a; World Bank, 2015), Ehlers (2014) notes that “development banks bring vast expertise and in many cases insurance against political risks to the table and their loan commitments are in some cases a pre-condition for private lenders to make their funding available. In some emerging markets, development banks also serve a key role as the credible auditor of projects.” (Ehlers, 2014, p.16). In fact, “Many OECD countries have DFIs to promote the expansion of businesses abroad” (BDC 2009, p.62).

It becomes important to “incentivize institutional investors to work with development banks at earlier stages of the preparation of bankable projects” (Areski et al 2016 p.33) and “undertake more comprehensive planning of infrastructure investments and how each

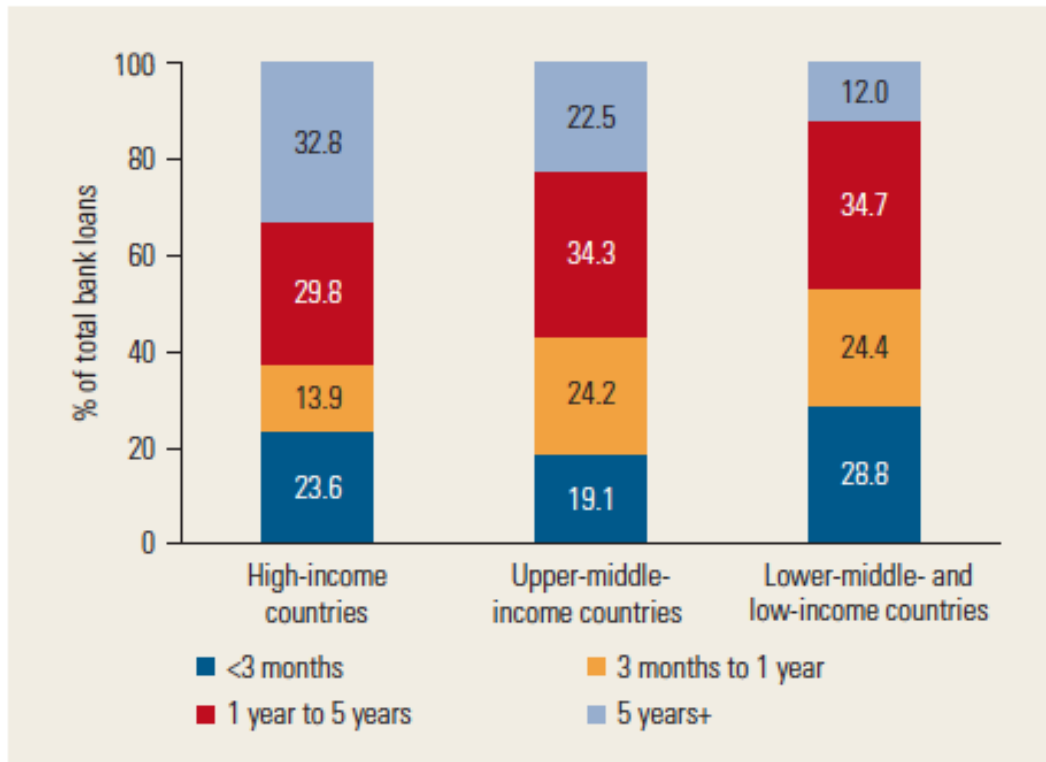
individual project may fit into a broader infrastructure network development plan.” (Areski et al 2016 p.36)

4. Looking ahead: Enhancing the role of development banks and government support to foster investments in long-term assets

Even though much of the conventional discussion about the role of development banks relies on market failures to provide a theoretical basis for their existence, there is little discussion about how development banks operate, their different intervention models, products and markets targeted, and regulatory issues (Griffith-Jones et al 2017).

One of the distinguished features of DBs is that their lending products are mainly concentrated in “long-term loans (90%) followed by working capital loans (85%), whereas syndicated loans consisted of 52% of all DBs, and unsecured loans 25%” (Luna-Martinez and Vicente, 2012, p.15). Furthermore, and not surprisingly, most loans (84%) offered by DBs have maturity dates greater than 5 years (Luna-Martinez and Vicente, 2012, p.16). Comparisons across country groupings show that this is in sharp contrast with the maturity structure of traditional bank long-term loans—that is, over 5 years maturity. It averages only 22.5 percent in upper-middle-income countries and 12 percent in lower-middle- and low-income countries (Figure 12). Though the figures are substantially higher in high-income countries (32.8% of total bank loans) relative to upper-middle income countries (22.5%) it is still substantially lower than the share of development bank loans (84%) over 5 years maturity (Luna-Martinez and Vicente, 2012, p.16).

Figure 12. Maturity structure of bank loans by country income group, 2000-2013



Source: Bankscope (database), Bureau van Dijk, Brussels, <http://www.bvdinfo.com/en-gb/products/company-information/international/bankscope>.

Source: World Bank 2015, p.30

It is worth noting that “DBs are generally mandated to *provide credit at terms that render industrial and infrastructure investment viable*” (Chandrasekhar 2016, p. 23, emphasis added). Though development banks operating policies has raised criticisms, the World Bank report notes that “credit at subsidized interest rates is a practice adopted by 50% of DBs covered in the survey. In this category, 66% of DBs fund these subsidies using transfers from their respective governments.” (Luna-Martinez and Vicente, 2012, p.16) In an environment in which investment returns have declined, credit provisions below market interest rates have an additional impact to stimulate new investments. “Accordingly, a subsidy or subvention of some kind would be needed to keep interest rates reasonable.” (Chandrasekhar 2016, p. 23) Finally, “73% of all DBs offer loan guarantee products to

partially offset the losses faced by a private financial intermediary when a customer defaults.” (Luna-Martinez and Vicente, 2012, p.16)

In addition to long-term loans, development banks also provide credit for working capital purposes and financing long-term investment, including in the form of equity⁸. Among the best practices used by DBs, Chandrasekhar notes that “[t]o safeguard their investments, they closely monitor the activities of the firms they lend to, often nominating directors on the boards of companies. This allows for corrective action as soon as any deficiencies are detected.” (Chandrasekhar, 2016, p. 23)

Among the funding features of DBs, 40% answered that they receive direct budget transfers from the government and 64% reported that the government guarantee their debt, this guarantee is implicitly equivalent to DBs obligations—guaranteed by the government—having a status of Treasury securities. “It should be noted that receiving direct transfers from the government does not necessarily mean dependence on government funds. Sometimes, DBs—such as KfW in Germany—receive transfers from the government to fund interest rate subsidies to a particular type of borrower.” (Luna-Martinez and Vicente, 2012, p.10-11) So, not only DBs offer credit at subsidized— below market—rates using transfers from their respective governments to make long-term investment viable but they also rely on direct budget transfers from their government to expand their balance sheets.

In spite of initiatives to encourage the provision of long-term funds by private finance, development banks continue to play an important role providing long-term funding in traditional sectors and activities in developing and advancing economies. Moreover, precautionary measures imposed on traditional banks such as new capital and liquidity rules under Basel III requirements translate into regulatory and balance sheet constraints, which contribute to reduce the provision of funds by traditional banks (Castro 2017; FSB, 2013; Roberts et al 2015).

⁸ It has already been suggested that BDs have an additional exposure to companies by investing in equity in firms they have extended credit (see for instance Castro (2011) for a discussion on risks faces by DBs.

The operation of development banks is linked together with uncertainties associated with financing long-lived and expensive capital projects such as infrastructure investments and providing funding for innovative enterprises (Hermann 2010, 2010a). Risks associated with such initiatives are usually assumed by government policies through development institutions both directly and indirectly (BDC 2009, WB 2012).

Though there is a growing consensus towards infrastructure investment, in particular by development banks, the focus on infrastructure has a significant impact of the size of DBs balance sheet. For instance, “National development banks in China, Germany, Brazil, India and South Africa all either have strong policies to prioritize infrastructure, significant sustainable infrastructure policies, or both. Significantly, these banks comprise a major portion of the total amount of assets held by NDBs...[the top]ten banks have upwards of \$2.8 trillion in assets, or roughly three-fifths of all NDB assets in the world economy.” (Studart, Gallagher, Bhattacharya, 2016, p. 22)

Infrastructure projects are complex due to their nature: “in many economies, but particularly in developing economies, resources to do project planning and elaboration are scarce.” (Studart, Gallagher, Bhattacharya, 2016, p. 25) The literature suggests that successful DBs promoting infrastructure investment are also responsible for taking advantage of their experience in monitoring risks and financing infrastructure projects, which is usually accompanied by high standards when it comes to monitoring environmental risks and classifying its projects according to internationally accepted methodologies (Studart, Gallagher, Bhattacharya, 2016, p. 25; Ehlers, 2014; OECD 2015).

A study by Mckinsey (2013a) suggests that “[p]oorly designed and planned projects lead to significantly higher financing costs and too often even to the inability to mobilize private-sector financing and risk allocation completely. In the absence of private financing and risk sharing, budget-financed public-procurement structures continue to undermanage risk throughout the entire life cycle of the project, leading to even higher rates of project

failure and poor results.” (Mckinsey, 2013a, p.12) In this regard, a recent initiative—‘Sustainable Infrastructure Working Group’—studies the matter and shares best practices (IDFC, 2014). “Not surprisingly, those NDBs who have most success in promoting infrastructure projects seem also to be those that get most involved in identifying and supporting project elaboration. This is the case of the German development bank, KfW, and China Development Bank. In the latter case, the involvement is quite significant, as indicated by Yang (2016: 23).” (Studart, Gallagher, Bhattacharya, 2016, p. 25) That is, “There is growing recognition globally that development banks can play an important role in facilitating the preparation and financing of infrastructure projects by private long-term investors.” (Areski et al 2016 p.24) Development banks need to continue to work hand-in-hand with the private sector to contribute with project planning and elaboration and to address poor risk assessment and risk allocation—in particular during the concept and design phase of infrastructure projects.

It is worth highlighting a recent initiative Task Force on Development Banks and Sustainable Development set up “to examine the extent to which development banks are becoming catalysts for achieving a climate friendly and more socially inclusive world economy.” (IDFC, 2014) “Through the IDFC over 100 banks have developed a common criteria for measuring and monitoring green finance, and have made a commitment of provide significant amounts of green finance moving forward.” (Studart, Gallagher, Bhattacharya, 2016, p. 39) In this regard, several BDs are financing “green” businesses in an attempt to deal with issues related to climate change and energy efficiency (Studart, Gallagher, Bhattacharya, 2016). In the UK, a new “Green Bank” was established in 2012 to finance environmental projects. However, “[o]n 3 March 2016 the UK Government launched the process to move the Green Investment Bank into the private sector.” (Green Investment Bank 2016) They have also fostered investments in activities such as clean energy, biotechnology, and environmental projects. However, one of the challenges DBs faced throughout their history was the latent pressure to let private financial institutions to overtake their role. For instance, the “liberalization led to a decline in development banking and the demise of the major DFIs in India.” (Chandrasekhar, 2016, p. 26)

A major enhancement of policy coordination between central banks and development institutions is to encourage monetary authorities to adapt their asset-purchase policy to fund development banks. This could be accomplished in the same way that major central banks introduced quantitative easing policies, but instead of targeting sovereign bonds, the monetary authority would buy debt issued by development banks, especially those financing infrastructure and other corporate activities. That is, as I have argued elsewhere (Rezende 2015), the central bank should act both as the liquidity provider using the discount window as the main tool to satisfy liquidity needs of both depository and non-depository institutions and provide the funding necessary to allow development banks to finance development. This would effectively eliminate funding constraints on development bank's balance sheet. This proposal has also been embraced by one of the world's most powerful bond managers, which advocated that "[t]he European Central Bank should retool its asset purchase programme to fund a wave of new infrastructure spending across the continent." (Foley and Jones, 2016). This means "the central bank has the opportunity to unleash hundreds of billions of dollars in new economic activity by shifting more of its purchases towards bonds issued by the various national and supranational organisations, such as the European Investment Bank, that fund infrastructure and provide trade finance." (Foley and Jones, 2016)

This proposal is not new. Hyman Minsky favored the use of the discount window as secure source of funds for financial institutions. As he put it, "Rediscounting was not a lender-of-last-resort activity reserved for a crisis, it was the mechanism by which part of the normal reserve base of banks was brought into being... The use of the discount window as a normal source of financing by member banks legitimated the regulation, supervision, and examination of member banks by the Federal Reserve." (Minsky 1994: 11-12)

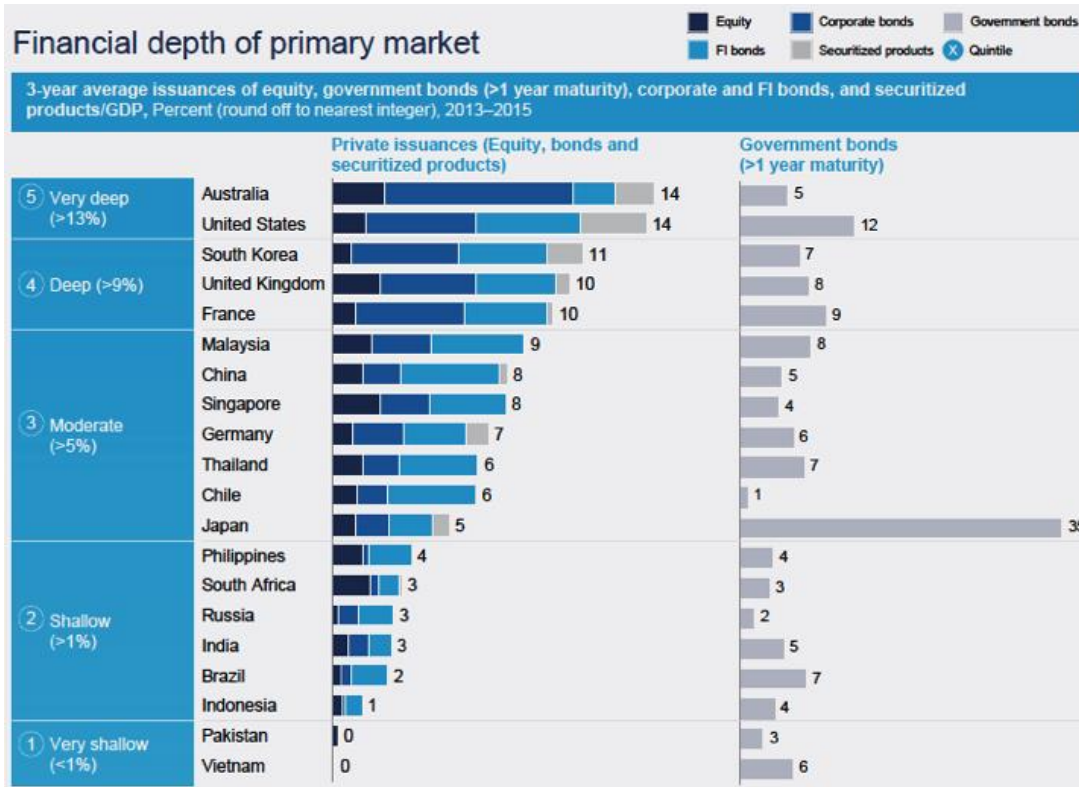
To sum up, in spite of deepening capital markets and the greater participation of institutional investors, private investment in infrastructure has not worked in the way it was expected, which has contributed to a growing mismatch between investment expenditures

(and available financing) and investment needs. Thus, the question then becomes how to reconcile the growing mismatch between investment expenditures (and available financing) and investment needs.

Enhancing government support to fund infrastructure investments

In EMDEs, public funding of infrastructure accounts for about 70% of total infrastructure expenditure (Indrest, 2016, p.9). Moreover, “investor appetite for EMDE infrastructure projects has declined significantly since the 2008 financial crisis. This trend can be attributed, in part, to the tightening of financial regulations. More importantly, the uncondusive investment environments in many EMDEs leads investors to associate infrastructure projects in EMDEs with higher credit risk” (GIF 2016 p.6) This effect is compounded by the behavior of private investors, who typically avoid exposure to early stages of infrastructure assets—such as during development and construction phases when the risk exposure is higher (OECD 2015a). As discussed earlier, this is part due to the following factors: high project costs; low-cost recovery; limited public financing; barriers to private investment. As noted earlier the key factors in the infrastructure financing gap in EMDEs are: projects poorly executed and not well maintained; lack of adequate project planning; weak pipeline of viable projects; high political and economic risks; legal barriers and lack of protection on investments (OECD 2015a, p.11-12). For EMDEs, in particular, capital market funding (figure 13) to close the financing gap is limited and issuers either find it difficult or cannot raise affordable capital at scale (World Bank, 2004).

Figure 13. Financial depth of primary market



Source: McKinsey, 2017, p.24

The debate over the appropriate level of government spending has sparked considerable controversy – including pressures to promote fiscal consolidation and to reduce public debt – partially due to the conventional narrative about public-sector financing capacity. However, there has been a recent shift away from austerity in favor of public investment. For example, a recent IMF report recommends a substantial increase in public infrastructure investment (IMF 2014).

As Larry Summers (2014) stated: “Public infrastructure investments can pay for themselves.” An IMF (2014) study “finds that increased public infrastructure investment raises output in the short term by boosting demand and in the long term by raising the economy’s productive capacity.” It also notes that “[p]ublic capital and infrastructure capital are closely related: a significant component of the public capital stock in most

countries consists of infrastructure, and the public sector was and continues to be its main provider.” (IMF 2014, p.76)

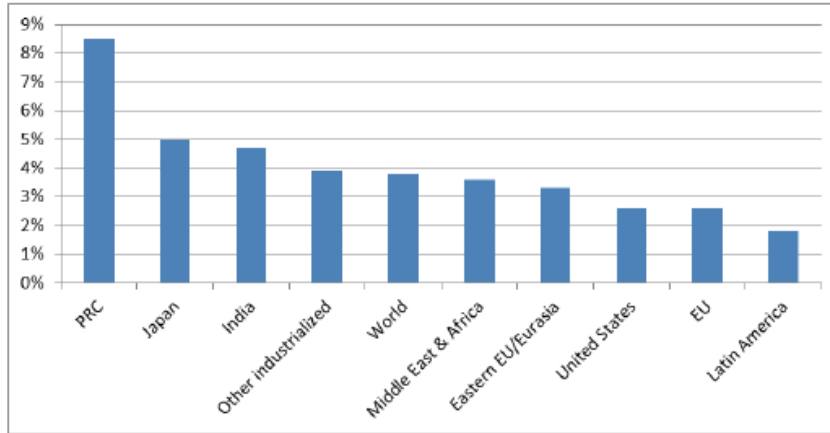
From this perspective, public investment shocks have “a significant and long-lasting effect on output. They also typically reduce the debt-to-GDP ratio...The level of private investment rises in tandem with GDP.” (Op. cit. p. 83) That is, “[t]he effects of public investment on output and debt tend to be stronger when there is economic slack, when public investment efficiency is high, and when public investment is debt financed.” (Op. cit. p. 84) It notes that “[p]ublic investment booms in emerging market and developing economies are associated with higher output” (Op. cit. p. 85) Moreover, there is a growing consensus to increase public financing and close the investment gap; this is because “debt-financed projects could have large output effects without increasing the debt-to-GDP ratio if clearly identified infrastructure needs are met through efficient investment.” (op. cit. p. 75)

Another IMF report concluded that “increased public investment raises output, both in the short term and in the long term, crowds in private investment, and reduces unemployment. Several factors shape the macroeconomic effects of public investment. When there is economic slack and monetary accommodation, demand effects are stronger, and the public-debt-to-GDP ratio may actually decline. Public investment is also more effective in boosting output in countries with higher public investment efficiency and when it is financed by issuing debt.” (Abiad, Furceri and Topalova 2015, p.2) In a nutshell, public investment is both growth- and productivity-enhancing.

China seems to be following this playbook (figure 14), as it invests more in infrastructure than the other five largest G-20 nations put together (Mohsin 2016). This increase in the share of public investment relative to their economies is particularly important to deal with declining private investment.

Figure 14. Infrastructure spending, percent of GDP, 1992-2011

(% of GDP)



EU = European Union, GDP = gross domestic product, PRC = People's Republic of China.

Source: McKinsey (2013).

Source: Indrest, G 2016

In the past, a high share of infrastructure was financed by public budgets. However, the shift towards increasing public investment requires monetary sovereignty. The notion that nations with monetary sovereignty have more fiscal space to promote development—such as increasing public investment—is not new. That is, sovereign countries—those that issue their own currency and adopt flexible exchange rates—have more fiscal space than non-sovereign countries—such as countries that have adopted the Euro—to increase public investment. The then Treasury Secretary Jacob J. Lew speaking at the G20 summit in Hangzhou in 2016 declared that “the G-20 is no longer debating growth versus austerity, but rather how to best employ fiscal policy to support our economies.” (U.S. Treasury Secretary Jacob J. Lew G-20 speech 2016)

5. Concluding Remarks

There is a renewed interest in development banks and the growing commitment to use all policy tools to generate sustainable full employment, including coordination between fiscal, monetary, and development policies to promote capital development and stability.

Both developed and developing economies need to effectively make the transition to a development strategy based on domestic demand and reduce the dependence policies designed to attract external capital and foreign demand.

In spite of the introduction of mechanisms to attract institutional investors to engage in development finance, results fell short of expectations. Yet, most countries are still struggling to shift their development strategy to foster domestic demand growth. That is, federal public investment is unusually low given countries' infrastructure bottlenecks and investment needs.

The adequate provision of long-term funds will require policy coordination from governments, national and multilateral development banks, to mobilize private sector banks and institutional investors to unlock their finance potential. In this regard, it is imperative to rethink and reprioritize global and national development agendas in which development banks play a strategic role not only providing long-term finance but also contributing to identifying major barriers to investment. DBs can foster capacity-building activities to help deal with barriers to infrastructure development, which contribute to persistent information asymmetries and prevents the supply of finance, in particular in EMDEs.

Meeting the infrastructure challenge goes beyond the lack of funding. The expectation that institutional investors' interest in infrastructure assets would increase has been disappointed by private investors' lack of interest in development infrastructure assets. Bridging the investment gap requires the involvement of DBs and a broad government policy to support economic growth.

In this regard, there is ample policy space to promote private and public infrastructure investment, in which public banks – and in particular national development banks – and private domestic capital markets should play a major and strategic role financing the supply side of this program. Moreover, macroeconomic support is essential for development banks

to be successful. This means that development banks cannot be seen in isolation, instead policy coordination is required so countries can shift their policies to mobilize domestic resources and adopt an investment-oriented growth strategy by increasing government-sponsored infrastructure investment projects. Though the provision of long-term finance for longer-term assets and projects contributes to economic development, financial leverage is a double-edged sword, that is, rising financial leverage and declining “cushion” of safety lead to increasing financial fragility. Financial fragility arises as a consequence of the way that corporate funding is structured and financed. In this regard, finance and financial fragility are directly linked. While providing long-term finance, DBs also contribute to mitigate financial fragility by providing funds in the domestic currency and segmenting the financial system, thus serving one of the masters—which requires leverage and taking risks—financing capital development and innovation. This segmentation of the risky activities imparts greater stability to the financial system.

It is noteworthy that despite much controversy, public finance is still the primary source of funding. More broadly, there is a growing consensus towards the use of fiscal policy to support growth and to increase public financing to close the investment gap. In the aftermath of the global financial crisis, unconventional monetary policy – including ZIRP, NIRP, QE – and fiscal austerity failed to support investment growth, that is, even though major central banks moved interest rates into negative territory, this policy failed to reach its goals, such as sparking investment.

Finally, rather than an obsessive concern over budget deficits, the narrative has to center around the idea of monetary sovereignty. That is, sovereign nations cannot be forced by markets to default on their domestic debt. It should use their fiscal powers of the federal government to increase federal government investment in infrastructure, thus contributing to raising productivity and lowering private sector costs through investment in key areas such as infrastructure, health and education, and research and development.

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