



**Is There a Case for National Development
Banks in Africa?
Conceptual Rationale and Empirical Evidence**

Léonce Ndikumana, Karmen Naidoo,
and Francisco Perez

May 2021

WORKINGPAPER SERIES

Number 542

**POLITICAL ECONOMY
RESEARCH INSTITUTE**

Is there a Case for National Development Banks in Africa?
Conceptual Rationale and Empirical Evidence^{1, 2, 3}

Léonce Ndikumana⁴
Karmen Naidoo⁵
Francisco Perez⁶

May 20, 2021

Abstract

National development banks remain an important part of modern financial systems in developed as well as developing countries. The attention to the role of national development banks was reinvigorated in the aftermath of the 2008 global financial crisis, and their potential role in promoting access to finance and providing counter-cyclical financing is better appreciated today than in the structural adjustment era of the 1980s and 1990s. In this context, this study examines the landscape of national development banks in Africa and provides empirical evidence of their role in complementing commercial banks to meet the financing needs of the real sector using bank-level data from selected countries and the BankFocus database. The empirical results show that while national development banks do not lend more relative to commercial banks, they tend to focus more on medium-term and long-term lending as prescribed by their mandate. Interestingly, medium-term and long-term lending is associated with lower non-performing loan ratios as well as higher returns on assets. The results are similar for public banks. The evidence suggests that empowering national development banks with enhanced lending capacity and operational autonomy would significantly help alleviate the shortage of medium-term and long-term credit in African economies. The paper includes suggested avenues for further research.

¹ This paper is part of the research project on “Delivering Inclusive Finance for Development and Growth”, ESRC Ref N013344/2, led by Professor Victor Murinde, University of London, SOAS. Léonce Ndikumana (Principal Investigator) greatly appreciates a grant received from the project in support of this research and thanks Athina Petropoulou for assistance with access to BankFocus data.

² The authors are grateful for the generosity of the leadership of the Industrial Development Cooperation (IDC) in South Africa, the Uganda Development Bank, and Banque Nationale de Développement (BNDE) in Burundi who granted access to bank data and other useful qualitative information. They appreciate the outstanding assistance by Dr. Chengete Chakamera on the case of the IDC.

³ Funding from the Political Economy Research Institute (PERI) through research assistantships is very much appreciated.

⁴ Distinguished Professor of Economics, and Director of the African Development Policy Program at the Political Economy Research Institute (PERI), University of Massachusetts Amherst; corresponding author; Email: ndiku@umass.edu

⁵ Ph.D. candidate, Department of Economics, University of Massachusetts, Amherst; Email: knaidoo@umass.edu

⁶ Ph.D. candidate, Department of Economics, University of Massachusetts, Amherst; Email: fdperez@umass.edu

1. Introduction

National development banks remain an important part of modern financial systems in developed and developing countries, and their relevance has been reinvigorated in the aftermath of the 2008 global financial crisis (Epstein and Dutt 2018; Epstein et al. 2009; Griffith-Jones and Ocampo 2018a; World Bank 2018), and more recently in the context of the economic crisis caused by the Covid-19 pandemic (McDonald, Marois, and Barrowclough 2020). The crisis has prompted fresh debates on the role of national development banks, and public banks in general, as instruments for counter-cyclical financing and inclusive finance, and as tools for addressing various economic, social, and environmental challenges faced by countries in contemporary times (see Uğurlu and Epstein (2021) for the case of the United States).

In developing countries, the interest in national development banks is especially motivated by the need to finance industrialization and structural transformation which requires long-term and more risk-tolerant financing that commercial banks are either unwilling or ill-equipped to provide. In Africa, national development banks were part of the policy apparatus in the state-led growth models of the 1960s and 1970s. Moreover, many of them failed or were privatized during the liberalization era of the 1980s and 1990s. But many survived and are still successful to varying degrees; and new ones have been created since the turn of the 21st century (Ndikumana 2009).

The evidence in the empirical literature has showed that national development banks increase their lending to firms during recessions relative to normal times, while lending by commercial banks moves in the opposite direction (Brei and Schclarek 2013; 2018). The evidence also shows that lending by national development banks is associated with speedy recovery from economic crises, a finding that holds in cross-country studies (Chen et al. 2016) as well as in single country studies, as in the case of Brazil (Coleman and Feler 2015) and Turkey (Önder and Özyıldırım 2013). Moreover, micro level evidence suggests that lending by national development banks is efficient in the sense that funding is channeled to productive uses in firms, sectors and industries (Lazzarini et al. 2015), and that it benefits small and medium enterprises as well as large firms that are otherwise not credit constrained (Oliveira 2019).

A major gap in the existing literature is the lack of evidence on Africa as most of the studies are on developed countries, Latin America, and Asia. This is an important concern given that national development banks constitute an important part of the financial sector landscape in Africa. This study aims to inspire new research that can contribute to filling this gap. The study discusses why national development banks have a role to play in African financial systems and illustrates this using data from selected national development banks. We present stylized facts that show how national development banks contribute to national development goals, notably by financing industry, supporting employment creation, and mitigating financing constraints faced by small and medium enterprises and other traditionally credit rationed sectors. The statistics presented are for

national development banks for which we were able to access data electronically from their websites. In the case of the Industrial Development Corporation (IDC) in South Africa, more detailed data was collected through direct visits to the bank and discussions with bank officials, as well as through reports and databases available online.⁷

Following the presentation of stylized facts from bank data, we undertake econometric analysis along the lines of existing studies on Latin America and other regions (Micco and Panizza 2006; Micco, Panizza, and Yanez 2007; Chen et al. 2016). The analysis is based on data from BankFocus, supplemented by data from national development banks to fill gaps in the BankFocus database.

The econometric analysis pursues three questions. The first is whether lending is influenced by bank characteristics; that is, whether it is a national development banks or a commercial bank. Specifically, the question is: do national development banks lend more or less than commercial banks given bank characteristics and specific conditions in the host economy? The second question is whether national development banks manage resources effectively in general and compared to commercial banks. The analysis specifically focuses on the efficiency in loan recovery as measured by non-performing loans. The third question is whether bank characteristics influence bank performance. More specifically, do national development banks perform better or worse than commercial banks?

The results from econometric analysis indicate that while national development banks do not lend more relative to commercial banks, they do focus more on medium-term and long-term lending in line with their mandate. Moreover, medium-term and long-term lending is associated with lower non-performing loan ratios as well as higher return on assets. The results are similar for public banks.

The findings from this research shed light on the merit of national development banks through their role in complementing commercial banks in resource mobilization and financing private sector development. The objective of this line of research is to provide insights into the *raison d'être* of national development banks in African economies. In addition, this study aims to inspire research that can help to distil lessons on the conditions that enable the efficient functioning of national development banks and public banks, which include those that keep them financially viable, while contributing to alleviating market imperfections and serving as instruments for achieving national development goals.

Following this introduction, the next section presents a brief theoretical motivation of national development banks. This is followed by a review of the empirical literature in Section 3, and a presentation of stylized facts on the landscape of national development banks in Africa in Section 4. Section 5 describes the methodology used in the econometric analysis and discusses the

⁷ The authors appreciate excellent assistance from Dr. Chengete Chakamera.

empirical results. Section 6 concludes with a summary of the findings, some policy implications, and suggested issues that deserve further investigation.

2. Theoretical perspectives: Why national development banks?

Before discussing why national development banks exist, it is useful to clarify what a national development bank is. In the World Bank's 2017 survey, the term development bank refers to "any type of financial institution that a national government fully or partially owns or controls and has been given an explicit legal mandate to reach socioeconomic goals in a region, sector, or market segment" (World Bank 2018). De Aghion (1999, 83) gives an even simpler definition: "Development banks are government-sponsored financial institutions concerned primarily with the provision of long-term capital." There are two fundamental elements of the definition of a national development bank. First, it is a financial institution established by a government and operated with substantial influence of the government serving as majority shareholder. Second, the purpose of a national development bank is to channel long-term capital to support industrialization. The first question raised by this definition is the necessity and justification of government intervention in a modern decentralized market-oriented financial system, which, in principle is supposed to operate efficiently in mobilizing and allocating resources in the economy. In other words, what do development banks provide to the financial system and the economy that cannot be provided by private commercial banks? Additionally, what can the government do better than free markets in ensuring that the resources are allocated efficiently? These questions call for a theory of national development banks.

A number of theoretical perspectives have been proposed to motivate the existence of national development banks. These theories draw primarily on the existence of financial market failures arising from asymmetric information, moral hazard, missing or insufficient collateral, high transactions costs, and term structure mismatch between funds available in the system and the needs of investors and consumers (Stiglitz 1993; Stiglitz and Weis 1981). These issues of market failure affect both the demand side and the supply side of credit markets (Eslava and Freixas 2018; Smallridge and de Olloqui 2011). On the supply side, credit markets are characterized by a shortage of long-term investment capital. On the demand side, the financial markets face moral hazard associated with the behavior of borrowers (Holmstrom and Tirole 1997), and the lack of private operationalizable collateral. Private collateral is critical for the functioning of credit markets as it serves as a signaling device, facilitating screening of potential borrowers. It also plays the role of credit risk mitigation. The lack of collateral therefore leads to under-provision of credit due to credit rationing.

Financial market failures arise from the fact that credit markets rely heavily on information generation and transmission. The issue is that information is, to a large extent, a public good (Stiglitz and Greenwald 2014), implying that there will be sub-optimal production of this public good if left to the will of free markets. Because information generates social value (by optimizing

credit allocation) that is greater than the costs of information generation, the government has a role to bridge this gap. National development banks can play this ‘intelligence role’ (Fernández-Arias, Hausmann, and Panizza 2019), therefore improving the overall performance of the financial system in resource allocation.

Financial market imperfections also arise from differential levels of uncertainty across sectors where some are viewed by banks as more uncertain and riskier than others. The riskier sectors are often those that are less developed, but which are important for structural transformation, such as infrastructure, industry, technology and innovation. While investing in these sectors may be seen as risky and generating low return by private banks, the gains to the economy and society as a whole may be large in the medium and long-term. In this case, national development banks can serve as a tool for industrial policy and economic transformation (Mazzucato 2013).

Financial market imperfections are particularly illustrated in the shortage of long-term financing. From a theoretical perspective, this is due to two factors: risk aversion by banks vis-à-vis new enterprises, and the specialized skills and expertise required in assessing credit worthiness of new investments. Based on these two factors, it is possible to develop a model for the role of national development banks in a decentralized banking system that model has two key elements (De Aghion 1999). First, the decision by a bank to finance a new enterprise or sector requires expertise to analyze the credit worthiness of projects, and monitor the implementation of projects and the management of firms so as to ensure that the expected returns needed to pay the loan are materialized. The specialized knowledge makes it possible for new profitable projects to be initiated. But while the knowledge is costly, the bank that has invested in generating it can only appropriate a fraction of the benefits from funded projects. This is because the specialized expertise is transmitted to other banks, including through co-financing, and thus becomes a public good. As a result, there is no sufficient incentives for commercial banks to invest in developing the specialized expertise required to ameliorate information in credit markets.

Secondly, the success of funded projects depends on adequate monitoring, which is also costly. The monitoring of projects and firm management generates further information and expertise, which will improve the screening of future projects. The issue is the ‘free rider’ problem whereby an individual bank can avoid investing in expertise and knowledge but still benefit from other banks’ investments. This theoretical framework is further elaborated by Eslava and Freixas (2018) who emphasize three points. First, there are bad and good firms and projects, but the type of firm and project are not directly observable by banks or the government. Second, screening is costly, and the benefits of screening are not excludable: other banks may benefit from the fruits of one bank’s investment in screening. Third, banks are not able to appropriate the full benefits of projects that they finance.

As a result of these credit market imperfections in the banking system, an individual bank will underinvest in expertise and knowledge generation, and it will under-transmit newly acquired

expertise. In equilibrium, total investment in expertise and knowledge falls below the socially optimal level, leading to sub-optimal levels of credit supply and project funding. National development banks can alleviate these effects of market imperfections by funding not only weak projects (risky sectors, small and medium enterprises, etc.), but also high-value projects that are rationed out due to market imperfections. Therefore, interventions by national development banks can improve upon the competitive financial market outcomes in terms of resource allocation.

One possible strategy that national development banks can use to mitigate the problem of underinvestment due to credit imperfect information is co-financing of projects and joint ownership of client firms. This reduces the risks faced by individual banks, while also providing a mechanism of disciplining the management of debtor firms. National development banks can serve this function by mobilizing private funders, leveraging their catalytic role as well as taking advantage of government guarantees associated with their nature as state-owned institutions. As a result, both the volume of lending and the sectoral distribution of credit would improve relative to the free market equilibrium, thanks to interventions by national development banks.

From a macroeconomic perspective, the role of national development banks has been justified on the basis of the inherent procyclical nature of financial markets, which historically exhibit booms and busts (Keynes 1936; Minsky 1977). Due to the combination of information imperfections, risk aversion and profit-seeking by banks, bank lending tends to increase during economic expansions, and decrease during economic downturns. This procyclical nature of bank lending exacerbates the direct impact of shocks to the real sector, magnifying the level of uncertainty and macroeconomic instability. National development banks can help mitigate this instability and minimize macroeconomic consequences of exogenous shocks by providing countercyclical lending. To be effective in that role, national development banks, referred to as ‘sleeping beauty’, need to be adequately capitalized and properly governed so that they are ready to step in and shore up credit supply during bad times (Smallridge and de Olloqui 2011). The Conference Board of Canada puts it more explicitly as follows: “Once a financial crisis hits, it is too late for governments to create institutional capacity to provide fallback credit support. The institutions must already exist, with a clear operating mandate, experienced professional staff, and the financial capacity to respond to the financial needs and ramp-up their operations when the private market fails” (Conference Board of Canada 2010).⁸

Overall, the theoretical views on national development banks can be classified into four interlinked categories: the development view, the social view, the macroeconomic view, the political view, and the life-cycle view. Under the ‘development view’ (Gerschenkron 1962), national development banks fill the need to fund sectors and industries that are not likely to be funded by private commercial banks, mainly for two reasons: as a matter of ‘preference’ because they find the sectors too risky; and as a matter of lack of capacity, because they lack the long-term capital

⁸ Quote cited in (Gutierrez et al. 2011).

needed by the industries. Under this view, national development banks are an instrument of economic transformation in the growth process (Mazzucato 2013).

According to the ‘social view’, national development banks serve the need to finance investments that have positive externalities but without attractive financial returns, and thus not of interest for commercial banks (Atkinson and Stiglitz 1980; Stiglitz 1993). This is the case for investments geared to the provision of social services such as education, health, low-income housing and others. Under this view, national development banks serve as a policy instrument for poverty reduction and social development in general.

Under the ‘macroeconomic view’, national development banks provide counter-cyclical lending, in line with the notion of ‘sleeping beauty’ (Bonomo, Brito, and Martins 2014; Smallridge and de Olloqui 2011). This view draws on the understanding that financial markets are inherently unstable and subject to booms and busts that can be destabilizing for the real economy. The countercyclical role of national development banks also arises from their social welfare mandate as assigned by the government. By this mandate, they are expected to increase lending during bad times, irrespective of the profitability of the funded activities.

The three views of the theory of national development banks described above advance a positive and productive role of these institutions whereby they contribute to achieving better economic and social outcomes relative to financial markets with only private commercial banks. There is, however, a contrarian view, the ‘political view’ that sees national development banks as efficiency reducing and even outright counterproductive. Under the political view, national development banks are an instrument of state intervention that can undermine financial development, thereby retarding economic growth (La Porta, Lopez-De-Silanes, and Shleifer 2002; World Bank 2012).⁹ In particular, it is argued that under weak governance, national development banks may suffer from mission creep, mismanagement and inefficiency that lead to misallocation of financial resources. This view has gained substantial following in mainstream economics literature and it has offered a theoretical backing for privatization or outright dismantlement of national development banks. As the evidence reviewed in the next section will show, however, the empirical evidence on the political view is limited and not robust. In contrast, the empirical literature contains solid and varied evidence on the positive role played by national development

⁹ The World Bank’s *Global Financial Development Report 2013 - Rethinking the Role of the State in Finance* (p. 116) includes excerpts of opposing views in academia about the role of national development banks. For example, Charles Calomiris argues that state-owned banks lack competitive incentives and expertise, and engage in politically motivated allocation of funds. He says: “State-controlled banks are a breeding ground for corruption of elected and appointed government officials, the financial regulatory authorities, and the courts. Not only do they stunt the growth of the economy, they also weaken the core political and bureaucratic institutions on which democracy and adherence to the rule of law depend. State-controlled banks are *loss-making machines*.” (emphasis in the original). In contrast, Franklin Allen argues that “despite being outperformed by their private counterparts in terms of long-term resource allocation, public banks may enjoy an advantage over private banks in times of crisis.”

banks, and public banks in general, in increasing access to credit by firms, and in providing counter-cyclical lending, thus contributing to economic growth and employment creation.

The theories of national development described thus far imply that these institutions evolve out of an environment in an economy that gives rise to market imperfections, generating sub-optimal allocation of financial resources. Naturally, these imperfections are economy-specific and their nature and severity are expected to evolve with the sophistication of financial markets and the overall level of economic development. This implies that the need for market-augmenting interventions by the government would also evolve over time along the economic development path. This is the motivation for the ‘life cycle hypothesis’ of national development banks (Torres and Zeidan 2016).

Under the life cycle hypothesis, national development banks “emerge in countries with some solid institutions but incomplete and inefficient financial markets; grow up alongside industrialization and the development of financial markets; and wither and die as countries fully develop” (Torres and Zeidan 2016, 98–99). Thus, national development banks are expected to develop in three phases. The first is the establishment phase where they put together the infrastructure to facilitate project identification and to provide direct credit to execute the projects. The second phase is the development phase where they roll out the direct credit provision program. In phase three – the ‘engine of growth’ phase, development banks evolve gradually from direct credit to indirect mechanisms of allocating financial resources to support industry. In the developed financial markets phase the volume of direct lending is minimal, focusing on indirect mechanisms, eventually becoming eclipsed thanks to increased capacity and efficiency of a mature market-based financial system. In reality, however, national development banks have remained an integral part of modern financial markets regardless of the degree of financial sophistication and economic development. In fact, the largest and most active national development banks today are found in advanced economies such as the German state-owned development bank, Kreditanstalt für Wiederaufbau (Credit Institute for Reconstruction, abbreviated as KfW) and emerging economies such as the Brazilian National Bank for Economic and Social Development (in Portuguese: Banco Nacional de Desenvolvimento Econômico e Social, abbreviated as BNDES) (Naqvi, Henow, and Chang 2018; 2018; Griffith-Jones and Ocampo 2018b; World Bank 2018). In other words, national development banks are here to stay.

Limitations of existing theories of national development banking

The theories of national development banking described above have important limitations from a conceptual perspective and from a practical and empirical standpoint. The empirical side will be discussed in the next section when we review the evidence from the empirical literature.

The most important pillar of theories of national development banks is the existence of failures in financial markets and externalities associated with funded activities, which these public special-

purpose institutions are created to address so as to achieve improved social outcomes in terms of resource allocation and economic development. The ability of national development banks to accomplish this mission depends on three conditions (Fernández-Arias, Hausmann, and Panizza 2019). First, there must be well-defined market failures, and financing by national development banks must be the most effective way to correct and overcome these identified failures. Second, the intervention by national development banks must not displace or crowd out private banks. Third, national development banks must be financially sustainable so that they do not become a burden on the state; otherwise the market efficiency-enhancing argument would not be valid.

These theoretical conditions for the justification of national development banks are difficult to meet at once at any satisfactory level. In fact, it may be argued that they amount to an “impossible trinity” (Fernández-Arias, Hausmann, and Panizza 2019). To start with, the theory requires that national development banks or the government are able to identify specific market failures and distortions. It is then assumed that they are able to devise appropriate instruments to address the failures in a way that leads to an improvement in resource allocation. If this market diagnostic capacity does not exist, then there is a risk that the wrong problem may be identified, or the wrong solution applied, and possibly both.

The second problem is how to ensure that national development banks do not crowd out the activities and growth of commercial banks. It is possible that national development banks may displace commercial banks due to their privileged position that helps them outcompete commercial banks. Some important advantages that the development banks enjoy include government guarantees that minimize credit risk, and access to government funding that minimizes liquidity risk. It is also possible that by the very fact of providing long-term lending to industry, national development banks may in fact suffocate opportunities for the creation of a private long-term credit market. In other words, national development banks may constrain the supply of private long-term credit. Moreover, for national development banks to not crowd out private banks, they would have to set appropriate lending terms (especially interest rates) that preserve competition in the financial market. The question is, how would national development banks know the appropriate competitive interest rate so as to facilitate access to credit without undercutting private banks?

In addition to these limitations, other structural and institutional constraints may prevent national development banks from accomplishing the expected role of improving market efficiency. Here we highlight some of the key issues illustrated in the literature. The first involves identification of projects to be funded by national development banks. If the diagnostics of the market failures and the identification of the projects worthy of funding are not done appropriately, then resources may be misallocated. This raises the fundamental problem of ‘picking winners.’ In fact, non-economic considerations may lead national development banks and the government to make exactly the wrong choice where they pick losers. A classic example is the case of funding ‘white elephants’, which are ‘projects with a negative social surplus’ (Robinson and Torvik 2005, 198). Another case

is crony capitalism, whereby funding by public banks is influenced by political considerations and channeled to firms with close ties with politicians (Carvalho 2014).

For national development banks to have a substantive effect on credit allocation and private sector activity, their lending must be of significant magnitude relative to the size of the sector. Indeed, historical evidence shows that success stories in development financing involve large national development banks in developed and emerging countries, notably Germany, Japan and Brazil (Griffith-Jones and Ocampo 2018b; World Bank 2018). In most developing countries, such large-scale funding may not be feasible due to the small size of national development banks.

As indicated earlier, the life cycle theory of national development banks has not been borne out by historical evidence. On the one hand national development banks remain relevant and play an effective role even at high levels of financial development. So, development has not made national development banks wither away as predicted by theory. On the other hand, there may be factors that prevent both good and bad public banks from fading away, and also prevent a shift in focus in lending over time to leave space for private banks. Because of this inertia, as Torres and Zeidan (2016, 100) point out, “it is very hard for public institutions to disappear.” Obviously, when national development banks outlive their relevance, they may cause misallocation of resources and slow down the development of the private banking sector.

In the next section, we review empirical evidence on the role of national development banks around the world.

3. Empirical evidence on the role of national development banks

The literature offers robust historical accounts of the important role that development banks and public banks in general have played in financing industrial development in advanced and emerging economies (Cameron 1953; Diamond 1957; Gerschenkron 1962; Griffith-Jones and Ocampo 2018b). Results from surveys of national development banks show that they continue to be a major player in developing, emerging, and advance economies (De Luna-Martínez and Vicente 2012; Thorne and du Toit 2009; De Ollouqui 2013; World Bank 2018).¹⁰

Besides the historical accounts, and to support them, there is a growing body of rigorous empirical evidence on the lending behavior of national development banks and their impact at the firm, sector, and economy-wide level. The evidence helps to test the various hypotheses and predictions of the theories reviewed in the previous section. We organize the evidence in two categories: aggregate or macro level evidence; and evidence at the bank and firm level.

¹⁰ See (Kashuliza 1992) for review of the performance of development banking in Tanzania with an illustration with the case of the Cooperative and Rural Development Bank (CRDB). Also see (Rezende 2015) for a discussion of the case of BNDES in Brazil.

Empirical evidence at the macro level

At the macro level, well-functioning national development banks are expected to stimulate domestic investment, which boosts output growth and employment. Most importantly, national development banks are supposed to help cushion the impact of negative shocks to the economy and speed up recovery after a crisis. This role of national banks, and public banks in general re-emerged in the aftermath of the 2008 global economic crisis (Griffith-Jones and Ocampo 2018a; Epstein and Dutt 2018; Epstein et al. 2009; World Bank 2018), and more recently in the context of the economic crisis caused by the Covid-19 pandemic (McDonald, Marois, and Barrowclough 2020; Uğurlu and Epstein 2021). The IMF's Fiscal Affairs department noted: "Public banks—if financially sound and sufficiently well resourced—can be used to complement these efforts especially in cases where private banks are reluctant to lend, even with government guarantees, given risks or operational costs" (IMF 2020).

Results from global surveys of national development banks indicate that national development banks generally increase their lending during downturns while commercial banks reduced lending. The 2012 Global Survey of Development Banks reported that lending by development banks in the 61 countries surveyed increased by 36% during the recession from 2007 to 2009, compared to only 10% for commercial banks (De Luna-Martínez and Vicente 2012). The 2017 edition of the survey reported that 56 percent of development banks experienced loan growth higher than national averages over 2010-2015; and interestingly, of these, 70% were in developing countries (World Bank 2018). The increased lending by development banks could have contributed to cushioning the impact of the crisis.

The empirical literature has attempted to formally establish evidence on the countercyclical lending by development banks and the effects on the overall economy. This strand of the literature can be categorized in two camps: a negative-effect camp and a positive-effect camp. In the negative-effect camp, it is argued that state ownership of banks is associated with overall worse macroeconomic performance. The most referenced study in this camp is that of La Porta, Lopez-De-Silanes, and Shleifer (2002) which argues that state-ownership leads to slower financial development (i.e., reduced growth in bank credit) and slower economic growth. This study has been influential and it has inspired privatization of national development banks and government-owned banks in general (see World Bank 2012).

However, subsequent empirical investigations have cast doubts on the robustness of the evidence from the cross-country study by La Porta *et al.* (2002). In their investigations using more rigorous econometric tests, Yeyati, Micco, and Panizza (2007) find that the La Porta *et al.* (2002) results vanish when the sample period is extended and when countries are classified by income. They point out that the La Porta *et al.* (2002) sample included socialist countries where government ownership of banks was the norm, which means that in these countries there is no benchmark against which to assess the relative performance of national development banks. Moreover, the La

Porta *et al* (2002) results suffer from endogeneity, which they did not control for. Once these issues are properly taken care of, Yayeti *et al.* (2007) find no evidence of state-ownership of banks on financial development and growth. They conclude as follows (p. 245): “Although we found some support for the idea that public banks do not allocate credit optimally, we also showed that the results demonstrating that state ownership inhibits financial development and growth are far less robust than previously thought. We further reported new evidence indicating that public banks may play a useful role in reducing credit procyclicality.”

Other studies have documented positive benefits of national development banks especially during economic downturns. Using data on 56 countries including 2547 private banks and 108 government banks, Chen *et al.* (2016) investigate whether increased government banks’ lending is associated with faster recovery from the 2008 global financial crisis. Their results show that government banks exhibited significantly higher loan growth than private banks during the crisis, and that higher government bank lending was accompanied by increased output growth, employment and new business formation. They note, however, that the results are observed only in countries with low corruption.

The positive impact of public lending is also observable at the regional level within countries. A study of the relationship between bank ownership and lending before and after the 2008 global financial crisis in Brazil at the locality and sectoral level finds that government banks increased lending by 28.5% relative to private banks in the 12 months following the collapse of the Lehman Brothers that triggered the crisis (Coleman and Feler 2015). Moreover, localities with a greater share of government branches received about 15% more credit during and following the crisis. The authors conclude that “While the financial crisis led to a sharp decline in lending, production, and employment in many countries around the world, this decline was fairly minimal in Brazil. In part, the reason for only a mild economic downturn in Brazil can be attributed to the country’s government banks. The onset of the financial crisis caused private-sector banks to alter their behavior and operate more conservatively, while government banks increased their lending” (Coleman and Feler 2015, 65).

Similar results are found in a study of lending by state-owned banks at the regional level in Turkey over 1992-2010 (Önder and Özyıldırım 2013). The study finds that the share of government banks in credit supply is higher during crisis years, and during election years in all provinces. The increased lending by government banks during crisis years is associated with higher growth in all regions, and the effect is stronger in relatively more developed provinces. Interestingly, the study finds that while credit supply by government banks also increases during election years, it has no significant effect on economic growth during those years. Overall, the study concludes that “although state-owned banks might issue loans for political reasons during election periods, they might also play an important role in offsetting the adverse effects of economic shocks” (Önder and Özyıldırım 2013, p. 14).

Overall, the empirical analysis at the macro level, whether at national level or sub-national level, supports the view that national development banks and government-owned banks in general tend to lend countercyclically, and that this helps minimize the negative impact of the shocks during crises and speed up post-crisis recovery.

Empirical evidence at the bank and firm level

There is a growing body of micro level empirical evidence that, along with the aggregate evidence, helps to test theoretical predictions of the impact of national development banks on the financial system and the economy. One important question pursued by this strand of the literature is whether lending by national development banks is efficient in the sense that funding is channeled to productive uses in firms, sectors and industries. One concern is that, because of their public nature, national development banks may be used to bail out bad firms and finance activities that have low economic value. Lazzarini *et al.* (2015) test this prediction in the case of Brazil by asking whether the national development bank BNDES bailed out bad banks, and whether companies funded by BNDES exhibited increased performance. Using data on 286 publicly listed companies on the Sao Paulo Stock Exchange over 2002-2009, they find that firms that received BNDES loans exhibited higher performance, and they find no evidence that BNDES loans were targeted to rescuing failing firms. The authors note that the results do not exclude other possibilities of misallocation of resources. In particular, it is possible that BNDES loans could be channeled to firms with strong performance that could have been able to raise funds from private sources, implying possible crowding out. The authors point out that (p. 250): “While confirming that political connections matter, our study instead shows that loans are not systematically being channeled to underperformers. In our context, the most apparent problem is that BNDES is lending to firms that are not changing their performance and investment conditional on the new loans, probably because they could fund their projects with other sources of capital. Even these firms will have incentives to get BNDES loans and to profit from the associated subsidies. By targeting those firms, development banks may be cherry picking borrowers, leaving mostly high-risk firms to private lenders, hence inhibiting the emergence of a private market for long-term lending.”

Evidence from some empirical studies suggests that, in addition to enhancing performance of borrowing firms, access to national development bank credit enhances the resilience of firms to adverse shocks to cash flow. A study by Oliveira (2019) finds that credit from BNDES credit has helped to mitigate credit market imperfections by providing lending to small and medium enterprises as well as large and unconstrained firms at a cost below market interest rates.

The results on countercyclical lending by national development banks reviewed above are confirmed by studies at the micro level. Using data from BankScope (maintained by Fitch and Bureau van Dijk) on 336 banks from 31 Latin American and Caribbean countries over 1995-2014, Brei and Schclarek (2018) examined changes in lending by national development banks and public commercial banks compared to domestic and foreign private commercial banks during banking

and currency crises. They found that national development banks and public banks increased lending growth in crisis times by 3 times and 2.5 times, respectively, relative to normal times. In contrast, lending by private domestic and foreign banks during crisis times was 80 percent of the level observed in normal times. On average, for national development banks, lending growth increased from 3.4% to 10.3% from normal times to bad times, while that of domestic private banks declined from 14% to 12.3%.¹¹ These results extend those obtained in an earlier study by the same authors using BankScope data on 50 countries from Europe and Latin America and Caribbean over 1994-2009 (Brei and Schclarek 2013).

By lending countercyclically, national development banks may indirectly play a useful role in monetary policy transmission. This proposition is supported by empirical evidence from a study by Micco and Panizza (2006) using bank level data from BankScope over 1995-2002 and a subsequent study by Micco *et al.* (2007). The studies find that lending by public banks in developing countries is less procyclical than in industrialized countries, suggesting that the impact of national development banks on monetary policy transmission would be weaker in developing countries. This is not surprising given the limited breadth and depth of financial markets in developing countries.

The observed differential behavior of national development banks relative to private commercial banks may be explained by a number of distinctive characteristics of national development banks. First, national development banks and public banks value social and development objectives, leading them to tolerate higher credit risk and willing to lend in unstable environments. Second, these public institutions are able to increase capital during crises thanks to government funding and access to cheaper debt markets by taking advantage of government guarantees. Third, public banks face less liquidity problems given that their funds do not depend on customer deposits – and thus do not face the risk of a run on banks. Finally, the funding structure of national development banks is more tilted towards the long-term relative to commercial banks, which enables better maturity matching between their cash flow and the loans they finance. These features may also explain the longevity of national development banks over time and their continued presence even in countries with developed financial systems.

4. National development banks in Africa: Stylized facts

This section presents some stylized facts on the landscape of national development banks in Africa. The discussion is organized around the main functions of national development banks with illustration from selected cases across the continent.

¹¹ The study defined crisis times to include episodes of banking crisis, currency crisis, and the 2008-12 period (the global financial crisis and its aftermath).

4.1 Data sources

The data used in this study are obtained from four sources. The first set of data is from individual national development banks extracted from banks' online databases or directly with permission from bank management in the cases of Banque Nationale de Développement (BNDE, Burundi), the Industrial Development Corporation (IDC, South Africa), the Uganda Development Bank (UDB).¹² The second source is BankFocus, which contains bank-level data over the period 2013-2019. The third and fourth sources are the World Bank's World Development Indicators and the Worldwide Governance Indicators where we obtained country level data.

The list of countries included in BankFocus along with the number of banks by type (national development banks, public banks, commercial banks) is provided in Table A1 in the appendix. Summary statistics for the regression variables are presented in Table A2 in the appendix.

4.2 Government mandated institutions

National development banks have been part of the financial system in African countries for a long time.¹³ One of the oldest institutions is the Industrial Development Cooperation (IDC) in South Africa, which will be prominently illustrated in this section,¹⁴ was created in 1940.¹⁵ More generally, national development banks became a part of the institutional building and development planning tools of the post-independent African state starting in the 1960s.

Initial mandate: industrialization

The key and common mandate of national development banks in Africa was and remains even today to serve as an instrument of public policy, specifically a tool for building a domestic industrial base as an engine of economic growth. This mandate is typically enshrined in the founding act of the institution. In the case of the IDC, the 1940 founding bill formulates its mission as follows (IDC 2005, 3):

¹² The authors very much appreciate the support by Senior Management of these three banks in granting access to the data.

¹³ See UNDESA (2006) for proceedings of a multi-stakeholder consultation on the role of national development banks in Africa covering issues including: evolution of development banking; financing development and supporting regional economic integration; role of national development banks in sustainable development; financial sustainability; support for SMEs and microfinance; mobilization of resources; enhancing national development banks delivery for development; and corporate governance and regulation.

¹⁴ The information on IDC used in this paper was obtained from the Bank's reports available on its website as well as data and qualitative information collected through interviews and consultations with Bank officials. The author is grateful for the kind cooperation of IDC Management and research assistance provided by Dr. Chengete Chakarama who conducted these interviews and data search in 2018.

¹⁵ The Development Bank of Ethiopia was initially created in the Menelik II era in 1909 under the name of Société Nationale d'Ethiopie Pour le Développement de l'Agriculture et de Commerce (The Society for the promotion of Agriculture and Trade). <https://www.dbe.com.et/index.php/about/history>

“... to facilitate, promote, guide and assist in the financing of new industries and industrial undertakings and schemes for the expansion, better organization and modernization of, and the more efficient carrying out of, operations in existing industries and industrial undertakings, to the end that the economic requirements of the Union (South Africa) may be met, and industrial development within the Union may be planned, expedited and conducted on sound principles.”

It is important to note, however, during the Apartheid regime, like any other government institution in that era, the IDC served primarily the interests of the dominant White minority and the economic sectors that they controlled. In particular, the bank showed no interest for the development of African homelands. In that sense, inclusive development was not part of the IDC’s mission under the Apartheid regime.

The mandate of national development banks is typically implemented through funding industries in specific sectors. These sectors are selected on the basis of natural endowment and comparative advantage (e.g., natural resource exploitation), or strategic goals of the moment, such as the promotion of local production to reduce the dependence on imported goods, or the promotion of agriculture and rural development.¹⁶ Thus, national development banks featured prominently in the toolbox of import-substitution industrialization and economic emancipation during the post-independence era.

In the case of the IDC in South Africa, the initial sectoral focus was on petrochemicals and minerals which were seen as key drivers of employment and exports. The industrialization strategy also included beneficiation and value chain development as well as downstream industries, such as fabricated metals, agro-processing, clothing and textiles. While in the case of IDC, the focus was and remains clearly on the development of the manufacturing sector, other national development banks had missions to develop other sectors such as agriculture and rural development as in the case of Land Bank in South Africa and Cooperative and Rural Development Bank (CRDB) in Tanzania (Kashuliza 1992).

An evolving mandate

A review of national development banks in each country shows that their mandate has evolved over time in response to a range of phenomena and innovations pertaining to both the domestic economy and the global environment. The case of the IDC can help illustrate this evolution over its seven-decade history using a few key landmarks.

From its founding and throughout the apartheid era, the IDC was focused on funding industrialization in light of the country’s need to overcome the challenges arising from international isolation through building a strong domestic economy and reduction of the

¹⁶ See the case of the Cooperative and Rural Development Bank in Tanzania (Kashuliza 1992).

dependence on foreign markets. When the apartheid regime ended, while still focused on industrial promotion, the IDC expanded its scope to take on new strategic interests. The 2015 report to the Board states the following (IDC 2005, 5): “As a state-owned entity, the IDC was quick to adapt swiftly to the new developmental imperatives during the early years of democracy. With South Africa’s international isolation at an end, the IDC’s new strategic direction was to enhance the competitiveness of domestic industries and their ability to penetrate external markets, while also withstanding competition from foreign producers in local markets due to substantially reduced import tariff protection. This included the provision of customized financial solutions such as low-interest rate schemes and export financing assistance to counter the threat of de-industrialization and grow the export sector.”

In the context of strategies to respond and adapt to globalization, in 1995 the IDC introduced its Whole Player Scheme aimed at helping local industries to enhance their international competitiveness through modernization. The targeted sectors were those most affected by international competition as a result of phasing out of tariff protection notably textiles, clothing, footwear and automotive (IDC 2005, 63). In 1999, the adoption of the IDC’s Strategy for Growth was an opportunity to restructure its lending in response to sectoral dynamics and emerging growth poles in the economy. This strategy ushered in “a shift from capital and energy intensive upstream projects to higher emphasis on developing downstream industries and supporting emerging entrepreneurs through broadened sectoral support” (IDC 2005, 5).

4.3 Responding to emerging challenges not addressed by private banks

The lending strategies of national development banks are also influenced by, and tend to shift in response to, emerging national challenges that require new tools and approaches. National development banks are the appropriate instrument given that their objectives go beyond pursuing returns to investment and integrate social development priorities as determined by the national development strategy. They have been called to play a role in addressing key national development challenges including unemployment, equity, redistribution and inclusion, and climate change.

Role of national development banks in addressing the problem of unemployment

In the early post-independence era in Africa, the emphasis of national development strategies was on achieving high growth with the view that this would result in increasing living standards. Starting from the 1990s, however, it became clear that growth was not sufficient to achieve that goal. In particular, the failure of economic growth to generate meaningful employment became a major challenge to the national development agenda. In the case of South Africa, the post-Apartheid era has been marked by structural unemployment associated with what has been characterized as ‘jobless growth’ (Bhorat 2004; Bhorat and Oosthuizen 2008; Temitope 2013). In an attempt to respond to this challenge, the IDC rolled out its Leadership in Development Strategy, with job creation as the primary development targets (IDC 2005, 5). In doing so, the IDC

intentionally sought to allocate its lending in a way that maximizes the number of jobs created for each rand invested.

Redistribution, equity and inclusion

Another important challenge faced by African economies that is a byproduct of the failure to sustain high growth and high growth-employment elasticities is increasing inequality. In response to these challenges, governments have sought to use national development banks to provide selective lending targeted to promote marginalized (credit rationed) segments of the economy and the populations that are ‘left behind’ in the mainstream economy. One example is the IDC’s program on Black Economic Empowerment financing, which is one way the bank had to re-orient itself in the post-apartheid period to support a more inclusive growth and industrialization agenda in South Africa. The IDC engaged in black empowerment transactions in the early 1990s. An excerpt of the 2005 report to the Board states the following (IDC 2005, 49): “The IDC started considering empowerment transactions in the early 1990s, although at this time the deals were not referred to as black economic empowerment (BEE) transactions. One of the first documented BEE transactions occurred in October 1990 between a group of black businessmen called Kilimanjaro Investments, who purchased the beverage company Suncrush for R15 million. This deal and the many that followed highlight the IDC’s commitment towards inclusivity and the transformation of the South African economy.” The main focus of IDC’s BEE promotion was primarily on funding acquisitions to help black investors buy stakes in existing companies.¹⁷

Another strategy utilized by IDC to promote inclusion has been through funding small and medium enterprises (SMEs), which is an important mechanism to increase access to finance and enhance job creation from private investment and economic growth. In its 2015 report, the IDC reported that SMEs accounted for more than 70% of the number of its funding approvals and 18% of the value of its approvals over the past 20 years. The report added that “While transactions involving larger corporations were appealing from a funding perspective, it was recognized that the real job creation impact lay somewhere in between – that is, in an all-inclusive approach such as funding smaller and medium-sized enterprises” (IDC 2005, 45). The IDC focused on alleviating challenges faced by new entrepreneurs, especially the historically disadvantaged groups. In addition to lack of access to credit, SME entrepreneurs, and black investors in particular tend to also lack the required management skills and experience to initiate and run viable enterprises. To help alleviate these challenges, the IDC created the Whole and Bridging Finance Strategic Business Unit (SBU) in 2000. It made funding available through the Franchising BSU Program that targeted historically disadvantaged entrepreneurs. From 2003 to 2006, the IDC facilitated the creation of up to 5,250 jobs from 223 franchising transactions with R338 million in loans (IDC 2005, 46).

¹⁷ See (IDC 2005, 5) for examples of BEE transactions undertaken by IDC.

Lending to traditionally credit-rationed borrowers and segments of the economy requires approaches that are adapted to the specific conditions and constraints faced by these entities. This is the case for SMEs and SMMEs. Therefore, lending to these segments of the economy requires not only adapted financial instruments, but also appropriate institutional arrangements, such as dedicated subsidiaries of the development bank established for that purpose. This is the approach that was taken by the IDC through the creation of the Small Enterprise Finance Agency (Sefa) in 2012, with a mandate to “foster the establishment, survival and growth of SMMEs and Co-operatives, and thereby contributing towards poverty alleviation and job creation” (Sefa 2017, 6). In addition to supporting SMMEs, Sefa’s mission includes supporting economic transformation and inclusive growth through funding black entrepreneurs, businesses operating in rural areas, and those run by youth, women and people with disabilities. This approach to access to finance is critical for alleviating credit market failures and fostering economic inclusion.

Role of national development banks in funding the green economy

More recently, the challenges associated with climate change and environmental degradation have emerged prominently in national, regional and global policy debates. Current national development plans include commitments to gradually transition to a green growth path. A key element of this strategy is promoting investment in renewable energy, increasing energy efficiency in existing and new power generation facilities, reducing emissions and mitigating pollution, recycling and waste reduction, and increasing the share of energy from environment-friendly energy sources.

National development banks can be an important tool of government strategies for promoting the green economy. They can contribute to the agenda through direct lending as well as by playing a catalytic role in attracting participation by private banks and non-bank institutions. In the case of South Africa, the IDC plays a key role in financing projects under the government’s Renewable Energy Independent Power Producers Procurement Programme (REIPPPP), a program based on the Integrated Resource Plan (IRP 2010) for electricity generation in South Africa, which was promulgated in May 2011. In 2015, the IDC reported that it had provided funding of up to R6.6 billion, representing 9% of the country’s total investment in renewable energy (IDC 2005, 37). IDC’s interventions in the renewable energy sector target investments in the installation of equipment that enables increased energy efficiency (e.g., solar energy) as well as in environmental protection by funding recycling and waste management activities. Going forward, renewable energy is likely to constitute an increasing share of the loan portfolio of national development banks.

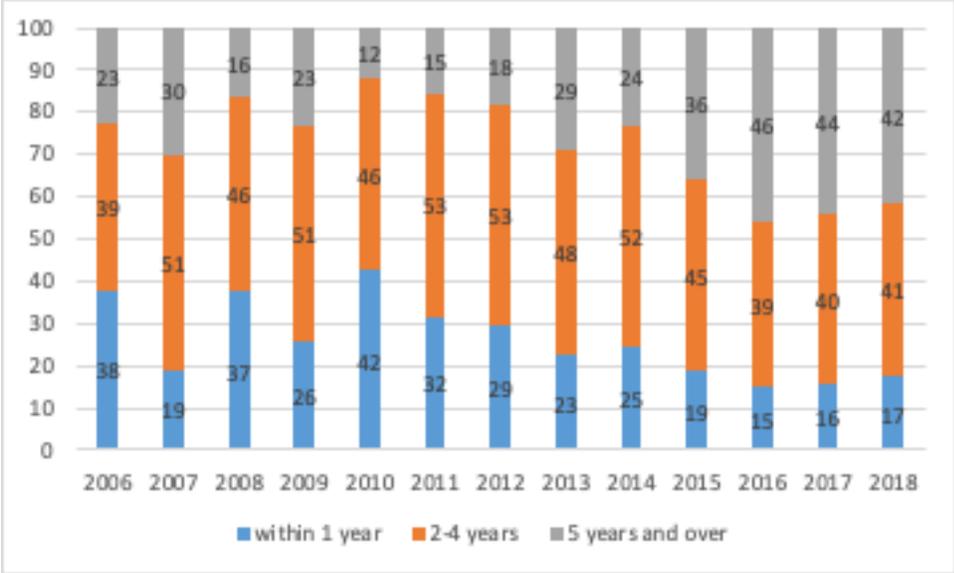
4.4 Alleviating market imperfections through medium-term and long-term lending

A key feature of credit market imperfections in African financial sectors is the concentration of lending on the short side of the term structure of credit. This constitutes a handicap to investment

in industry and infrastructure which require long-term capital. For this reason, one of the important elements of the mandate of national development banks is to mobilize and allocate long-term resources to support long-term investment. National development banks have a privileged position in this respect due to their access to long-term funding from national governments and donors, as well as low-cost resources in the financial markets through leveraging the guarantees they enjoy, whether implicit (by their nature as public institutions) or explicit.

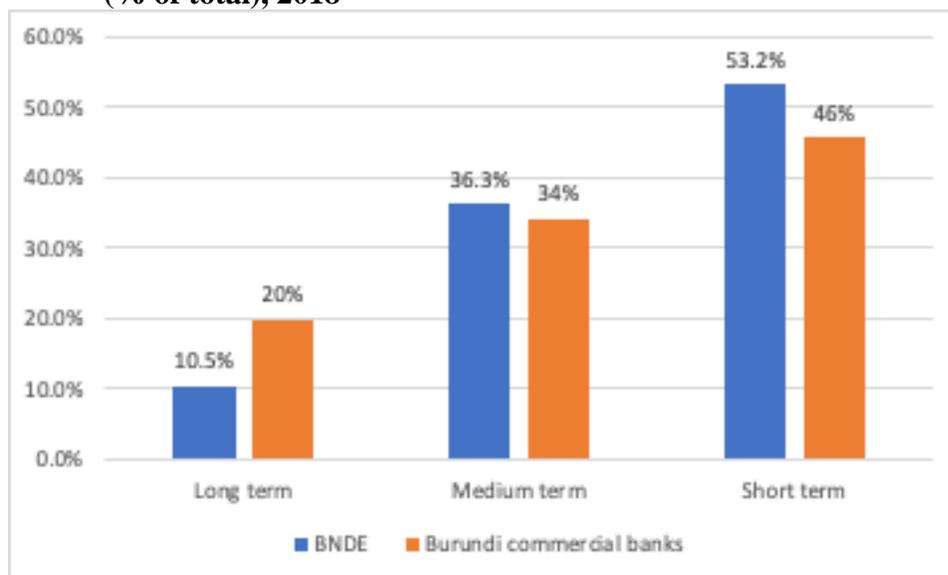
Country level data illustrate the dominance of medium-term and long-term loans in the portfolio of national development banks, contrary to the predominance of short-term credit in the portfolio of private banks. Figure 1 presents the term structure of loans by the Industrial Development Corporation (IDC), showing that longer-term loans represent a large share of total loans and that this share has been increasing over time. In 2018, long-term loans represented 42% of total loans, up from 12% in 2010. However, the situation varies significantly across countries and banks. For example, in the case of the National Development Bank (Banque Nationale de Développement, BNDE) in Burundi, short-term loans represented 53% of total loans in 2018. This is higher than the share of short-term loans in total commercial bank credit (Figure 2). This is due to lack of access to long-term resources and the predominance of loans for small household equipment and small farming equipment in its portfolio. In other words, the term structure of credit is the outcome of factors from both the demand side and the supply side of the credit market.

Figure 1: Term structure of loans by IDC South Africa (percent of total loans)



Source: IDC database

Figure 2: Term structure of loans by BNDE and commercial banks in Burundi (% of total), 2018



Source: BNDE database and Central Bank of Burundi database.

Note: BNDE = Banque Nationale de Développement Economique (Burundi)

4.5 Providing counter-cyclical financing

Like in other developing regions, there is some evidence that national development banks in African countries have played an important role in providing counter-cyclical and ‘distressed’ funding during bad times such as financial crises. Such funding tends to be targeted to the sectors that are most hit by a crisis. The case of the IDC in South Africa can help illustrate this phenomenon.

During the 2008 global financial crisis, private banks in South Africa tightened credit criteria and reduced lending due to heightened risk in the context of economic downturn. As demand for goods and services declined, firms experienced balance sheet and cash flow pressures. In 2009, the IDC intervened by injecting R6.1 billion in loans to assist distressed businesses and protect jobs and production capacity in the private sector (IDC 2005, 63). The loans were allocated to selected sectors, notably mining and primary metals, industries which were severely hit by the drop in commodity prices; fabricated metals, machinery and motor vehicle industries; and textile industry, which had been experiencing a decline over the years and where the IDC funding supported modernization and enhancement of competitiveness. It is in the context of this engagement in distressed lending that the IDC took charge of managing the Clothing, Textile, Leather and Footwear Competitiveness Scheme established by the Department of Trade and Industry. Further research is needed to uncover more evidence on the role of national development banks in providing counter-cyclical financing in Africa.

4.6 Do national development banks in Africa allocate resources effectively and efficiently?

In examining the role of national development banks, one important question is whether they allocate resources effectively (notably not keeping idle resources) and efficiently (minimizing waste and maximizing value addition) independently and compared to commercial banks. This is an important question given the shortage of investment capital and the need to ensure that national development banks' interventions are additional and complementary to those of commercial banks. The existing evidence shows that national development banks tend to deploy their maximum capacity to finance loans. This follows from the fact that their primary goal is to contribute to economic development and not profit maximization.

In the case of Senegal, for example, while national development banks account for only 12% of total assets in the financial system, they finance 15% of total loans in the sector. Moreover, as can be seen in Table 1, national development banks record higher loan/asset ratios than average in the banking system. This suggests that national development banks are punching above their weight in financing economic activity relative to commercial banks. At the same time, in Senegal, national development banks generate comparable rates of returns on assets as commercial banks, implying that they are utilizing their resources at least as efficiently as commercial banks.

Table 1: Selected indicators on national development banks in Senegal

	NDBs' share in the financial system		Loans/assets (%)		Return on Assets (%)	
	Assets (%)	Loans (%)	NDBs	Private banks	NDBs	Private banks
2014	11.2	16.6	75.9	48.2	1.0	-0.2
2015	11.1	15.8	77.8	51.5	-1.2	0.9
2016	10.4	14.2	72.3	50.5	1.1	1.0
2017	11.2	14.6	78.4	57.8	1.4	1.6
2018	11.7	15.1	80.1	59.6	1.1	1.3

Source: Data from online databases of individual NDB's and BCEAO

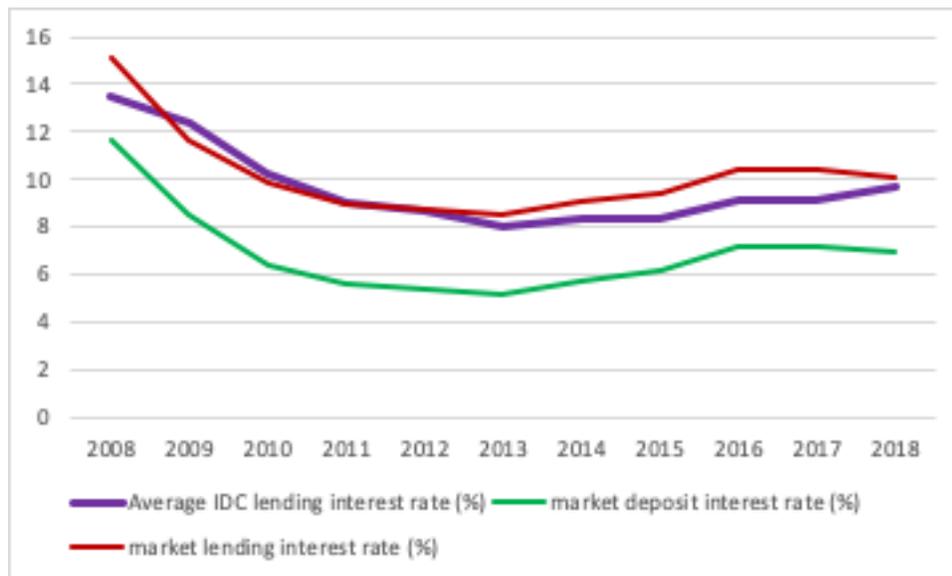
Do national development banks crowd out commercial banks?

One concern about national development banks is that they may crowd out commercial banks, notably by lending at below market rates. This may arise from the fact that national development banks are able to obtain subsidized funding from the government¹⁸ and donors as well as mobilize funds from financial markets at lower costs due to their lower risk rating (thanks to government guarantees). In the case of the IDC in South Africa, the interest rates charged on its loans track and

¹⁸ An example is the case of the Development Bank of Ethiopia that obtains funding from the central bank to finance loans to state-owned enterprises (Chauffour and Gobezie 2019).

are lower than market rates (Figure 3). Crowding out may also arise through other mechanisms including priority lending by development banks to the public sector and strategic sectors. This issue is worth investigating through country studies and cross-country comparative analysis.

Figure 3: Lending interest rates at IDC compared to market rates in South Africa



Source: IDC database and SARB database

Are national development banks efficient in loan allocation and recovery?

One measure of efficiency is performance in the allocation and recovery of loans as indicated by low non-performing loan ratios. A number of stylized facts emerge from the data on national development banks in Africa in this regard. The first set of evidence is from bank data from BankFocus. Table 2 presents average non-performing loan (NPL) ratios for national development banks, public banks and commercial banks over 2013-2019. The NPL ratios are significantly higher for national development banks than commercial banks, with the exceptions of Angola, Burundi, Morocco, and Senegal where national development banks perform better on this metric. The fact that national development banks record higher NPL ratios is not surprising given that their mandate involves providing loans to segments of the economy that tend to be riskier and therefore rationed out by commercial banks. But sector or project specific risk is only one factor that drives the default risk. The other important factor is the efficiency of loan monitoring and collection by the bank. This calls for detailed analysis of determinants of bank performance in resource management.

The second set of evidence is from data collected directly from individual national banks in selected countries. This data also confirms that NPL ratios vary across sectors, types of borrowers and countries (Table 3). Moreover, in some countries, NPL ratios for national development banks are quite high and even rising in some cases. In the case of Côte d'Ivoire, the average non-performing loan ratio was 28% in 2017, up from 15% in 2015. Surprisingly the ratio is higher for larger firms where it stood at a staggering 82% in 2017, up from 22% in 2014. In the case of DBSA in South Africa,¹⁹ in 2018, the NPL ratio was 30% for commercial loans compared to 17% for roads and drainage loans, and 5% for energy sector loans.

This distribution of non-performing loans suggests inefficiency in resource allocation across sectors. To assess the efficiency of loan allocation, we compare sectoral shares in the volume of non-performing loans to shares in the volume of loans. For a given sector, a ratio of NPL share to loans share that is greater than unity suggests that resources are inefficiently allocated and managed in that sector. Using the case of DBSA, the results in Table 3 show that loans to the commercial sector have a ratio much higher than unity. On the basis of this metric, the results would call for a reorientation of bank loans away from commercial activities towards other sectors, notably infrastructure and residential construction. More detailed analysis could shed light on strategies to improve allocation of resources by national development banks.

¹⁹ DBSA operates throughout the Southern Africa region, but the bulk of its lending is in South Africa.

Table 2: Non-performing loans for development banks vs. commercial banks (percentage of total loans and advances), average 2013-2019*

country	Development banks	Commercial banks	Country average
Angola	16.7	31.7	27.0
Botswana	53.5	4.6	6.4
Burundi	15.4	18.6	16.2
Congo, Rep.	28.5	9.3	10.3
Côte d'Ivoire	29.1	6.2	7.5
Egypt	12.5	5.1	5.6
Ethiopia	29.0	5.2	5.7
Ghana	24.3	17.9	16.6
Kenya**	203.2	9.2	9.3
Malawi	12.5	7.1	11.1
Mali	16.1	11.1	13.0
Mauritius	14.0	7.2	7.2
Morocco	5.1	8.3	8.1
Mozambique	11.5	8.4	8.4
Namibia	9.8	1.9	2.4
Nigeria	25.5	8.1	8.5
Rwanda	12.6	7.0	7.6
Senegal	9.2	18.6	18.3
Seychelles	9.3	5.2	5.9
South Africa	5.5	4.1	4.0
Swaziland	17.0	2.9	5.2
Tanzania	21.6	8.9	9.8
Tunisia***	96.2	13.7	13.2
Uganda	23.3	8.4	7.5
Zambia	27.6	7.1	8.9
Zimbabwe	16.2	7.5	8.6

Source: Authors' computation from BankFocus database.

Notes: * Averages are weighted by total loans.

** Kenya: non-performing loans are systematically higher than total loans for the Industrial and Commercial Development Corporation (ICDC).

*** Tunisia: Non-performing loans exceed total loans in 2016-2018 for Caisse de Prêts et de Soutien des Collectivités Locales (CPSCL).

Table 3: DBSA: Ratio of sector's share in non-performing loans to sector's share of total loans

Sector	2010	2011	2012	2013	2014	2015	2016	2017	2018
Commercial - manufacturing				2.16	3.28	5.65	12.20	11.97	19.65
Commercial - mining				5.49	6.76	8.33	13.87	19.35	17.35
Commercial - tourism				5.70	11.52	9.58	9.71	27.97	17.94
Commercial - other				4.01	4.18	8.43	16.73	22.93	15.83
Communication and transport infrastructure	0.79	0.61	1.48	3.83	3.14	4.84	2.71	3.80	1.77
Energy	1.14	1.20	0.80	0.32	0.20	0.16	0.20	0.12	0.08
Human resources development	0.47	0.26	0.35	0.52	0.55	0.40	0.75	0.82	0.06
Institution building	11.36			1.46	0.98	1.73		7.50	
Residential facilities	0.39	1.05	0.98	1.59	1.67	1.19	3.49	5.05	1.35
Roads and drainage	0.14	0.15	0.11	0.08	0.07	0.17	0.14	0.14	1.12
Sanitation	1.91	1.94	1.24	0.91	1.29	1.31	0.49	0.63	2.71
Social infrastructure	0.55	0.82	0.77	0.74	1.28	1.23	0.88	1.26	3.26
Water	0.62	0.45	0.47	0.37	0.52	0.81	1.81	1.94	1.68

Source: DBSA database.

Efficient allocation of loans to a given sector requires that the sector's ratio of the share in NPL/loans to the sector's share in total loan equals to one. If the ratio is greater than one for a given sector, then allocation of resources to that sector is inefficient.

Empty cells indicate unavailable data.

Are national banks profitable?

Another measure of efficiency of resource utilization by banks is the rate of return on these resources. One would expect that commercial banks would record higher returns on investments, given that they are by nature profit maximizing enterprises. In contrast, national development banks have a mandate that prioritizes social and economic development through lending to sectors and activities that, while deemed too risky by commercial banks, have high social returns in terms of contribution to economic growth and social development. The category of public banks is more complex because it includes commercial banks and development banks. Public banks include financial institutions classified by BankFocus as national development banks or whose main shareholder is a public authority. In some cases, commercial banks are dominant players in the sector and they can leverage the privilege of being a profit-making enterprise with a high market share, while also benefiting from being the priority lender to the public sector. Such institutions can in fact serve as an instrument of financial repression and indirect financing of fiscal deficits. An example is the Commercial Bank of Ethiopia, which controls over 70 percent of lending in the banking sector and serves as a vehicle for financing the central government and state-owned enterprises (Chauffour and Gobezie 2019).

Overall, bank-level data from BankFocus does not support the prediction that private commercial banks are universally more profitable than national development banks and publicly owned commercial banks (Table 4). There is variation across institutions and across countries in comparative rates of returns between these categories of institutions. This calls for more in-depth examination of bank-level characteristics as well as country specific circumstances that drive the level and variation of rates of returns in the banking sector in general and for development banks and public banks in particular.

Table 4: Rates of return on assets: national development banks and public banks vs. commercial banks, average over 2013-2019

country	National development banks	Commercial banks	Public banks non-commercial banks	All public banks	Public commercial banks
Algeria	0.1	1.8	0.1	1.1	1.2
Angola	3	1.4	3	3	
Botswana	-6.9	1.1	-1.6	-1.6	
Congo, Rep.	0.7	0.6	0.7	0.7	
Côte d'Ivoire	-0.1	0.4	-0.1	-0.1	
Egypt	1.8	2	1.8	1.5	1.1
Ethiopia	-2.6	2.8	-2.6	1.8	2.4
Ghana	1.5	2.5	1.5	1.5	
Kenya	2.4	1.3	2.4	2.8	3.5
Libya	-0.2	0.7	-0.2	-0.2	
Malawi	-1	2.5	-1	-1	
Mali	1.9	1.2	1.9	1.9	
Mauritius	6.2	0	6.2	6.2	
Morocco	0.8	0.7	0.9	0.8	0.5
Mozambique	3.2	-1.8	3.2	3.2	-16.3
Namibia	2.9	0.1	2.9	0.3	
Nigeria	2.6	1.2	1.6	1.6	
Rwanda	-0.2	1.2	-0.2	-0.2	
Senegal	0.6	0.4	0.6	0.6	
Seychelles	1.7	2.2	1.4	1.9	
South Africa	2.9	-1.8	2.7	2.7	2.8
Sudan	-1.2	2.2	-1.2	-1.2	
Swaziland	1.5	3	2.1	2.1	
Tanzania	-0.1	-0.2	-0.1	1	2.6
Togo	0.6	-0.3	0.6	0.6	
Tunisia	3.4	1	3	0.8	0.2
Uganda	3.1	1.1	3.1	3.1	
Zambia	2	1.8	2	2	
Zimbabwe	-1.3	1.5	0.9	0.9	

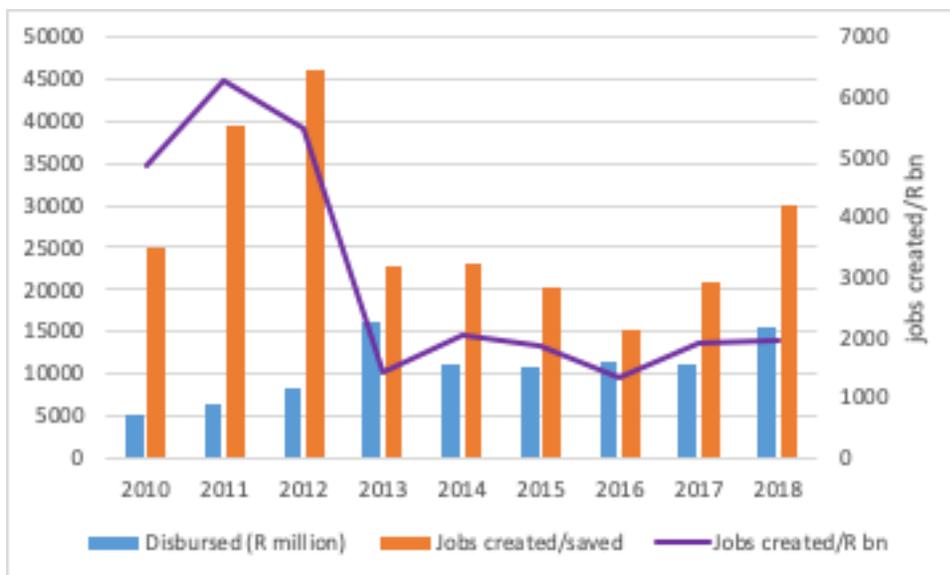
Source: Authors' computation from BankFocus database.

*Note: National development banks are banks classified as "Specialized governmental credit institutions" and public banks are institutions whose shareholder type is identified as "Public authority, state, government" in BankFocus database.

How high are social returns to loans by national development banks?

By their nature as public institutions, national development banks have a mandate to contribute to national development through financing of priority activities in line with national development objectives. One such objective is job creation. It is therefore appropriate to gauge the effectiveness of national development banks in resource allocation in terms of social returns measured by the number of jobs created directly and indirectly (jobs saved or created through spillover effects and forward and backward sectoral linkages) through lending. In the case of the IDC in South Africa, in 2018, every R1bn of loans resulted in about 1,940 jobs created or saved (Figure 4). The ratio has stabilized since 2015 following a steep decline from 5,480 jobs/R1bn in 2011 to 1,427 jobs/R1bn in 2013.

Figure 4: Loans disbursed by the IDC (South Africa) and jobs created, 2010-2018

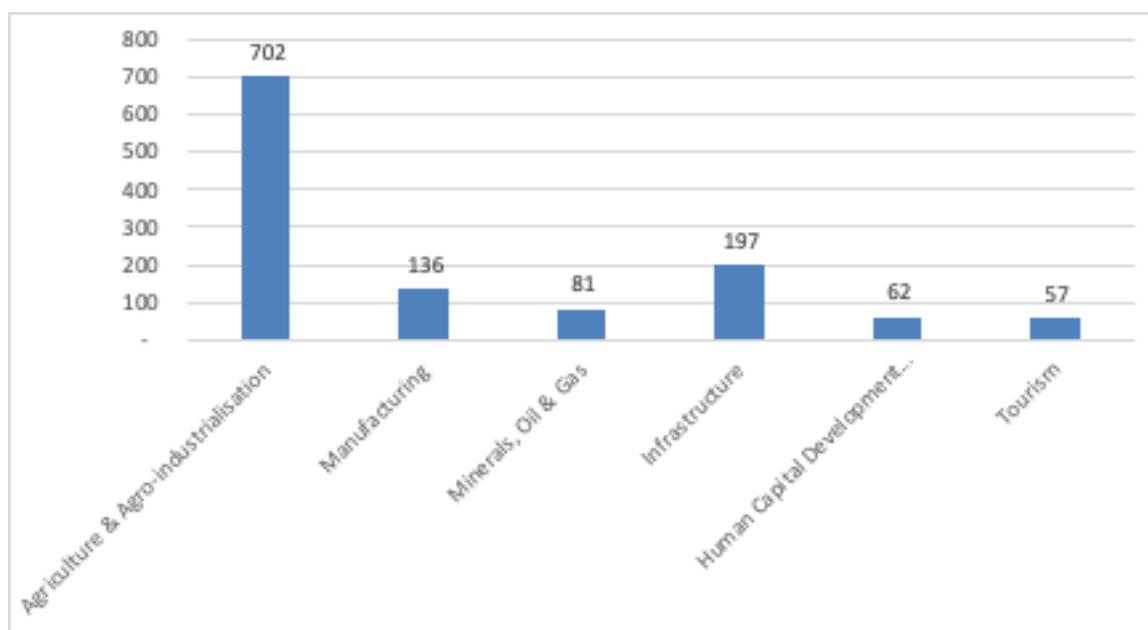


Source: IDC database

The data from the Uganda Development Bank (UDB) shows striking differences in job creation outcomes across sectors. In particular, the agriculture sector clearly dominates other sectors in terms of jobs created by activities funded by UDB loans. The agricultural sector generated more than 5 times as many jobs as the manufacturing sector for each Ugandan shilling disbursed in loans. On average, a loan of one billion Ugandan shillings helped create 702 jobs in agriculture, compared to 136 jobs in the manufacturing sector (Figure 5). To further examine the returns to UDB's lending, we compare UDB's share in total loans to the share in total jobs created by sector (Table 5). The results clearly show that the goal of job creation would be better served by allocating

more UDB resources to agriculture. Yet, in 2018, agriculture received 37% of total loans, compared to 52% for the manufacturing sector. This suggests that channeling a higher share of loans towards agriculture would substantially contribute to boosting the employment gains from economic growth in the country.

Figure 5: Number of jobs created per 1bn Ugandan shillings of loan by the Uganda Development Bank, 2018



Source: UDB database

Table 5: Job creation impact of loans by the Ugandan Development Bank in agriculture and manufacturing sectors

	2015	2016	2017	2018
<i>Share of UDB in total loans</i>				
Agriculture & Agro-industrialization	14.1	14.1	19.9	37.0
Manufacturing	17.7	42.3	39.1	52.3
<i>Jobs generated per 1mn loan</i>				
Agriculture & Agro-industrialization	1.8	1.9	0.9	0.7
Manufacturing	0.1	0.0	0.0	0.1
<i>Ratio of the share in jobs created to the share in loans</i>				
Agriculture employment share/loan share	6.1	5.8	4.1	2.0
Manufacturing employment share/loan share	0.3	0.1	0.2	0.4

Source: Authors' computations using data from UDB database

5. Econometric analysis

5.1 Motivation, model specification and estimation methodology

This section provides empirical evidence that contributes to the empirical literature reviewed in Section 3 and compares the role of national development banks across Africa in comparison to private financial institutions. The analysis advances the existing literature in two important ways. First, as indicated in Section 3, the African continent has, to a large extent, been left out of the scope of existing empirical studies on the role of development banks based on bank level data. Yet, national development banks remain an important part of financial systems in Africa and they have an important mandate to contribute to mobilizing and allocating financial resources to the private sector. Second, the analysis in this paper takes into account the host country specific factors in explaining bank lending behavior. This is motivated by the high heterogeneity across countries along various dimensions, notably the structure of the economy and the institutional environment. Thus, in addition to bank characteristics, the empirical model specifically incorporates indicators of the macroeconomic environment (economic growth and inflation), as well as structure of the economy (endowment in oil and minerals). The empirical model also accounts for the institutional environment by incorporating indicators of governance, which play an important role in influencing credit risk, demand and supply of credit. Finally, the empirical model controls for the level of financial development to capture the efficiency in the mobilization and allocation of financial resources across borrowers and sectors.

The empirical analysis pursues three questions. The first is whether lending is influenced by the characteristics of the bank, particularly whether it is a national development banks or a commercial bank. Specifically, the question is: do national development banks lend more or less than commercial banks given bank characteristics and host country conditions? The second question is whether national development banks manage resources effectively in general and compared to commercial banks. The analysis specifically focuses on the efficiency in loan recovery as measured by non-performing loans. The third question is: do bank characteristic influence the bank's performance regarding return on assets? More specifically, do national development banks perform better or worse than commercial banks? The empirical analysis draws from and expand the existing work in the literature, notably Micco and Panizza (2006), Micco, Panizza, and Yanez (2007), and Chen et al. (2016).

Model specification

To answer the first question, we estimate an empirical model where the volume of bank's lending depends on the legal status of the bank (national development bank, public bank, or not), the bank's time-varying characteristics, and host country specific factors. For bank i in country j and year t , the model is specified as follows:

$$Loan_{ijt} = \alpha + \mathbf{Z}_{it}\Gamma + (\gamma_1 + \mathbf{X}_{jt}\Phi)D_i + \varepsilon_{ijt} \quad (1)$$

Loan is the volume of lending, distinguishing between total lending and medium-term and long-term lending. \mathbf{Z} is a vector of time-varying bank characteristics, \mathbf{X} is a vector of host country specific factors, D is a dummy that equals 1 if it's a national development bank and zero otherwise, and ε is a random error term. In alternative specifications the dummy for national development bank is replaced by a dummy for public banks, which includes national development banks as well as other banks that are majority-owned by the government.

The question about efficiency in resource management is explored by estimating a model with non-performing loans as the dependent variable. In this case, the model is designed to explicitly examine whether the term structure of loans matters for the prevalence of non-performing loans, given that longer-term loans tend to be relatively riskier than short-term loans. This is especially important given that national development banks are expected to specialize in providing medium-term and long-term loans, which tend to be poorly supplied by commercial banks especially in a developing country context, while they are important for promoting investment, industrialization and economic transformation. The model is specified as follows:

$$NPL_{ijt} = \alpha + \mathbf{Z}_{it}\Gamma + (\gamma_1 + \mathbf{X}_{jt}\Phi)D_i + \delta MLTLoans_{ijt} + \varepsilon_{ijt} \quad (2)$$

NPL stands for non-performing loans as a percentage of total loans, *MLTLoans* denotes the share of medium-term and long-term loans in total loans. In this case, bank characteristics also include the term structure of loans, specifically the share of short-term vs medium-term and long-term loans in total loans, and indicators of the quality of the bank's portfolio.

To answer the third question, we estimate a model of bank performance, which like in equation (1) also depends on bank characteristics and host country specific factors, while distinguishing between national development banks and public banks from other institutions. The model is specified as follows:

$$Return_{ijt} = \alpha + \mathbf{Z}_{it}\Gamma + (\gamma_1 + \mathbf{X}_{jt}\Phi)D_i + \varepsilon_{ijt} \quad (3)$$

Return is measured by the return on assets (ROA); the other variables are defined as in equation (2).

5.2 Discussion of regression results

In this section we present and discuss three sets of regression results. In Table 6, we report results for the role of national development banks in lending, distinguishing between total loans and medium- and long-term loans. These results help us answer the question of whether national development banks lend more than other banks given other individual characteristics and the host

country context. In Tables 7A and 7B, we report results for non-performing loans, which help us answer the question of whether national development banks incur higher credit risk and are efficient in loan recovery relative to other banks. Tables 8A and 8B present results on profitability as measured by the return on assets. These results enable us to address the question about the profitability of national development banks relative to other banks. For each set of results, similar tests are conducted by replacing national development banks with public banks in the regression models.

Do national development banks lend more than other banks?

The first two columns of Table 6 present results for total loans by national development banks and public banks, whereas the last two columns show results for medium-term and long-term loans as dependent variables. According to these results, it does not appear that national development banks and public banks lend more than other banks given bank and host country characteristics. The coefficients on the dummy for national development bank and public bank are statistically insignificant. However, the results suggest that national development banks and public banks located in countries with developed financial systems lend less than other banks controlling for other determinants of lending. In such countries, lending by national development banks is 25% lower and that of public banks is 15% lower than their non-public bank counterparts. This could be due to the fact that on average national development banks have an overall smaller resource envelope than commercial banks.

However, the regression results are quite different for medium-term and long-term loans. Recall that the mandate of national development banks is primarily to focus on supplying medium-term and long-term lending, which tends to be rationed by commercial banks because it is riskier. The regression results are consistent with this expected specialization. They show that the share of medium-term and long-term loans in total loans is 22% and 27% higher for national development banks and public banks, respectively, relative to their private counterparts. These results suggest that national development banks and public banks are indeed fulfilling their mandate of bridging the financing gap through medium-term and long-term lending. This implies that increasing the lending capacity of national development banks and public banks would help in alleviating the shortage of medium-term and long-term credit in African economies.

The results in Table 6 show that bank characteristics as well as the host country context matter for bank lending. In particular, bank size is positively correlated with total lending as well as medium-term and long-term lending, as illustrated by the positive and significant coefficients on total assets. The volume of lending is also positively influenced by the bank's capacity as measured by savings and time deposits as shown by the positive and significant coefficients on these indicators. Moreover, high liquid assets are associated with lower lending. This suggests that hoarding excess liquidity exacerbates the shortage of credit in African economies.

With regard to the host country context, the regression results show that high inflation discourages lending as exhibited by the negative and significant coefficient on the lagged inflation rate. This is because inflation raises investment uncertainty while reducing real returns on investment. For total lending, there is a quadratic relationship between the volume of loans and per capita GDP, which is a proxy for the demand for credit as well as the borrowers' capacity to repay loans. The positive relationship materializes at higher levels of per capita GDP, suggesting that the relationship is stronger in middle-income countries than in low-income countries.

Are national development banks efficient in managing loans?

Given that national development banks have a mandate of supplying medium- and long-term loans while targeting sectors and activities that are regarded as risky but with high social returns, we expect that they would face higher non-performing loans than their commercial bank counterparts. The empirical results presented in Table 7A support this premise. The coefficient on the national development bank dummy is positive and significant. The results suggest that national development banks record between 19% and 52% higher non-performing loan ratios than commercial banks.

In line with the mandate of national development banks, we test the impact of the term structure of loans. The results show that overall higher lending is in fact associated with lower non-performing loan ratios (column 1 in Table 7A). In addition, there is no evidence that a high share of medium-term and long-term loans in total loans increases the risk of the loan portfolio as exhibited by the insignificant coefficient on medium and long-term loans (column 3). In contrast, a higher share of short-term loans in total loans is associated with a higher non-performing loan ratio (column 2). This suggests that short-term lending is in fact riskier than medium-term and long-term lending. It seems therefore that rationing of medium-term and long-term loans by commercial banks is not justified by the evidence on the risk implications in terms of non-performing loans.

With regard to the role of bank characteristics, the regression results show that larger banks record less non-performing loans as exhibited by the negative and significant coefficient on total assets. As for the country context, higher GDP growth is associated with lower non-performing loan ratios in the banking sector. This suggests that higher GDP growth indicates higher average returns to investment as well as rising incomes, which enhance debt payment capacity for borrowers. These growth effects imply higher solvency and consequently lower non-performing loan ratios. In addition, the results show no significant effect of institutional quality as measured by the government effectiveness index.

In Table 7B, the results show a similar pattern for public banks. On average public banks record higher non-performing loan ratios than their private counterparts. The coefficients on the public bank dummy suggest between 8.6% and 27.2% higher ratios for public banks relative to private

banks, which is about half the estimated effects for national development banks shown in Table 7A. This suggests that public commercial banks incur less non-performing loans than national development banks. Moreover, the term structure of loans also matters, with short-term loans associated with higher non-performing loans while medium and long-term lending has no impact on the prevalence of non-performing loans.

Are national development banks profitable?

National development banks are, by mandate, not profit-maximizing enterprises. The results in Table 8A indeed show that being a national development banks is not associated with higher returns on assets as illustrated by the fact that the coefficient on the national development bank dummy is statistically insignificant. But this also means that national development banks are not necessarily less profitable than commercial banks. However, the results show that national development banks located in countries with developed financial systems record 3.5 – 4 times higher return on assets ratios than their commercial counterparts. This could be due to the fact that in addition to access to relatively more stable sources of funding (rather than depending on customer deposits), national development banks located in financially developed economies have access to better technology and higher managerial know-how that enable them to manage resources and conduct their businesses efficiently. Another factor could be that in financially developed economies, which are also more developed overall, national development banks receive a better mix of bankable projects. Furthermore, banks in these countries may enjoy more operational autonomy from the government, which gives them more space to channel resources to productive investments and manage them efficiently. Detailed case studies would be useful to investigate this result.

A higher volume of lending is associated with higher profitability as exhibited by the positive and significant coefficient on the net lending to assets ratio (column 1). However, the term structure of loans matters significantly. Specifically, short-term lending is associated with a lower return on assets. One unit increase in the share of short-term loans in total loans leads to 33% decrease in return on assets. In contrast, medium-term and long-term lending generates higher returns on assets. One unit increase in the share of medium-term and long-term loans leads to a 30% increase in the return on assets ratio. For national development banks, the results suggest that fulfilling their mandate of promoting access to longer-term credit is in fact a good business strategy, as it results in higher rates of return on assets.

In terms of the role of bank characteristics, bank size is found to be positively correlated with profitability as exhibited by the positive and significant coefficient on total assets. One unit increase in bank size is associated with 52% to 69% increase in return to assets. A key source of profitability is interest income as shown by the large positive and significant coefficient on the interest income to assets ratio. In addition, the prevalence of non-performing loans hinders profitability as shown by the negative and significant coefficient on the non-performing loan ratio.

The regression results are similar for public banks as shown in Table 8B. Public banks are not a priori more or less profitable than other banks, as shown by the insignificant coefficient on the public bank dummy. However, public banks located in financially developed economies are 2 to 2.8 times more profitable than private financial institutions. Moreover, the concentration of lending on the short-term diminishes profitability, while focusing on medium-term and long-term lending increases it. One unit increase in the share of short-term loans reduces the return on assets by 27%, whereas one unit increase in the share of medium-term and long-term loans increases the return on assets by 29%.

The results for public banks are also similar to those for national development banks in terms of the role of bank characteristics. In particular, larger public banks are more profitable, interest income is a key source of profitability, and non-performing loans depress the return on assets.

6. Conclusions, policy implications and suggestions for further research

This study sought to investigate the rationale and the role of national development banks in African economies. The study provided stylized facts showing that national development banks play an important role in supplying medium-term and long-term credit in line with their mandate. In particular, evidence from selected countries such as Burundi, Senegal, South Africa and Uganda illustrates important contributions of national development banks in lending to industry and agriculture with a focus on medium-term and long-term loans. However, evidence varies substantially across countries, calling for in-depth investigation through case studies.

Using econometric analysis based on data from BankFocus supplemented by data from individual national development banks, the study found evidence that sheds light on the role of national development banks and public banks in African economies. The regression results indicate that while national development banks do not lend more relative to commercial banks, they outperform the latter in supplying medium-term and long-term loans, which is consistent with their mandate. The results further confirm that national development banks incur more risk, resulting in relatively higher non-performing loan ratios. As expected, national development banks are not more profitable than commercial banks in general; but they do perform better when they are located in countries with relatively more developed financial systems. The empirical evidence also shows that lending and performance by national development banks are influenced by bank characteristics, such as size and lending capacity as measured by deposits, as well as host country environment such as GDP growth and inflation. The empirical results are broadly similar for public banks.

The key message from these findings is that national development banks generally allocate lending with a focus on medium-term and long-term credit. This implies that African governments can alleviate the shortage of credit by strengthening the lending capacity of national development banks and public banks. The evidence suggests that this strategy is not only good for the national

economy, but it is also good business practice for national development banks as it is associated with a better credit portfolio (less non-performing loans) and higher profitability.

A number of caveats are in order to put these results in context. The first concerns the measurement of bank performance. In this study, because of data limitations, bank performance is assessed using non-performing loans and the rate of return on assets. Ideally, given the mandate of national banks, other indicators would be needed to have a full picture of their performance. In particular, it would be insightful to examine the contribution of national development banks to employment creation and funding for infrastructure, industry, and agriculture. Case studies would be the best approach to answer these questions. A second caveat is that the BankFocus database we used only covers seven years from 2013 to 2019. This data does not allow us to explore the role of national development banks in counter-cyclical lending as it does not include a recession period. A third limitation of the study is the lack of data on firms and consumers that are recipients of bank loans, making it impossible to analyze the targeting of loans as well as the impact of credit on the borrowers' side.

Despite these caveats and drawing on the findings herein, this study can serve as a basis for exploring important issues related to the role of African development banks in African economies. Here we list some of these topics as suggested avenues for further research.

(i) How to measure the performance of national development banks?

A proper assessment of national development banks needs to be guided by each bank's specific statutory mandate. While such mandates vary by institution, across countries, and over time, they typically revolve around providing medium-term and long-term lending to promote industrialization and economic growth. Case studies are the most appropriate avenue for in-depth analysis that can shed light on whether national development banks have fulfilled their mandate, what constraints they have encountered, and what strategies can be deployed to address those constraints in order to improve their performance going forward.

(ii) How can national development banks catalyze private lending?

National development banks do not have adequate resources to meet growing needs in medium-term and long-term credit in African economies. Private lenders, in turn, tend to shy away from long-duration lending due to high risk aversion. To bridge financing gaps, national development banks can leverage their capital and privileged position as government-guaranteed institutions to catalyze private financing while minimizing the risk faced by private lenders. While this approach is standard practice in major regional and international development financing institutions, it remains largely unexplored in the case of national development banks. Research in this area can draw lessons from the experiences of regional and multinational development banks to explore the modalities that national development banks can use to incentivize co-financing partnerships with private lenders to better leverage all the resources available in the economy.

(iii) How to build an effective pipeline of bankable projects?

The shortage of credit is not only the outcome of a shortage of capital on the bank side, it is also often exacerbated by the lack of a pipeline of bankable projects that can be rolled out as soon as resources become available. This requires national development banks to build the appropriate human capital and technological capacity to originate and screen projects, and to assist prospective borrowers in designing fundable projects. Research in this area would be valuable to distill lessons from best practices in Africa and around the world so as to inspire innovations and reforms aimed at enhancing the role of national development banks in meeting development financing needs in the continent.

(iv) Does regulation matter for the performance of national development banks?

The existing literature offers little information on the nature of regulation that applies to national development banks in Africa. One question worth investigating is how the regulation of national development banks varies across countries and how it compares with that of commercial banks. Another question is how regulation affects the performance of national development banks. Addressing those and related questions requires in-depth investigation through case studies.

(v) What is the contribution of national development banks to development of domestic financial systems?

While fulfilling their mandate of supporting economic development through medium-term and long-term lending, national development banks can also potentially contribute to financial development in various ways. Through efficient balance sheet management and synergies with other financial institutions, national development banks can contribute to maturity transformation notably by leveraging their comparative advantage in long-term lending. They can also contribute to deepening domestic financial systems as players in domestic bond markets. They can also contribute to financial inclusion, notably by directly and indirectly channeling resources to credit-rated sectors, especially small and medium enterprises and youth and women-owned enterprises. This can be accomplished, among others, through opening lines of credit to commercial banks and micro-finance institutions that have the capacity to operate retail lending.

Research along these themes through in-depth bank and country case studies would shed light on the full potential of national development banks to contribute to economic growth, industrialization, financial inclusion, and financial sector development in Africa.

Table 6: Regression results for bank lending

Variables	Total loans (NDBs)	Total loans (Public banks)	MT< loans (NDBs)	MT< loans (Public banks)
<i>Bank type</i>				
NDB	0.020 (0.64)		0.222** (0.04)	
Public bank		-0.022 (0.63)		0.272*** (0.00)
Financial Dev. dummy	0.005 (0.86)	0.004 (0.90)	0.128** (0.02)	0.151** (0.01)
Fin. Dev. x NDB dummy	-0.252*** (0.01)		0.021 (0.85)	
Fin. Dev. x Public bank		-0.159** (0.03)		0.024 (0.80)
<i>Bank characteristics</i>				
Total assets	0.035*** (0.00)	0.036*** (0.00)	0.047*** (0.00)	0.048*** (0.00)
Savings deposits/assets	-0.001 (0.14)	-0.001 (0.14)	0.007*** (0.00)	0.006*** (0.00)
Time deposits/assets	0.002*** (0.00)	0.002*** (0.00)	-0.002 (0.19)	-0.001 (0.28)
Liquid assets/assets	-0.018*** (0.00)	-0.018*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)
<i>Host country environment</i>				
Inflation	-0.020*** (0.00)	-0.020*** (0.00)	-0.018*** (0.00)	-0.018*** (0.00)
GDP per capita	-0.652*** (0.00)	-0.622*** (0.00)	-0.310 (0.56)	-0.228 (0.67)
GDP per capita square	0.040*** (0.00)	0.038*** (0.00)	0.022 (0.52)	0.016 (0.64)
Control of corruption	0.051*** (0.01)	0.053*** (0.01)	0.084** (0.04)	0.088** (0.03)
Mineral rich dummy	0.064*** (0.00)	0.066*** (0.00)	0.107** (0.01)	0.116** (0.01)
Oil dummy	0.080* (0.06)	0.092** (0.03)	0.104 (0.22)	0.122 (0.16)
NDB x Mineral rich	0.038 (0.63)		-0.193 (0.17)	
NDB x Oil rich	-0.072 (0.47)		-0.275 (0.35)	
Public bank x Mineral rich		0.022 (0.74)		-0.195* (0.06)
Public bank x Oil rich		-0.101 (0.21)		-0.267 (0.23)
Constant	6.671*** (0.00)	6.548*** (0.00)	4.664** (0.03)	4.350** (0.04)
Observations	2,252	2,252	1,175	1,175
R-squared	0.447	0.447	0.227	0.230

Robust p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

The dependent variable is alternatively net loans as a percentage of assets (1st and 2nd columns) and the sum of medium- and long-term loans as a percentage of total loans (MT< loans, 3rd and 4th columns). Variables are in logarithm as appropriate (e.g., except for inflation and dummies)

Table 7A: Regression results for non-performing loans: case of national development banks

Variables	(1)	(2)	(3)
<i>Bank type</i>			
NDB dummy	0.194*** (0.002)	0.305*** (0.000)	0.520*** (0.001)
Financial development dummy	0.008 (0.691)	-0.014 (0.517)	-0.025 (0.336)
NDB x Financial development	0.208 (0.120)	0.323** (0.021)	0.249* (0.058)
<i>Term structure of loans and bank characteristics</i>			
Net loans / assets	-0.175*** (0.000)		
Short-term loans (%)		0.024** (0.021)	
Medium & long-term loans (%)			-0.002 (0.894)
Total assets	-0.013*** (0.000)	-0.023*** (0.000)	-0.019*** (0.000)
Demand deposits / assets	-0.001*** (0.001)	-0.001*** (0.007)	-0.001*** (0.000)
Savings deposits / assets	-0.001* (0.077)	0.000 (0.801)	
Liquid assets / assets	-0.003*** (0.000)		
<i>Host country environment</i>			
GDP growth	-0.008** (0.021)	-0.004* (0.081)	-0.010** (0.040)
Government effectiveness	-0.012 (0.440)	0.003 (0.872)	-0.013 (0.541)
New businesses	-0.016*** (0.000)		-0.012*** (0.001)
Mineral rich dummy	-0.008 (0.425)	-0.023** (0.049)	-0.019 (0.252)
NDB x Mineral dummy	-0.257** (0.030)	-0.346*** (0.004)	-0.527*** (0.003)
Oil rich dummy		0.038 (0.162)	0.028 (0.381)
NDB x Oil dummy		-0.236** (0.017)	-0.449*** (0.007)
Constant	1.242*** (0.000)	0.217*** (0.001)	0.491*** (0.000)
Observations	1,198	1,012	876
R-squared	0.208	0.202	0.249

Robust p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is the ratio of non-performing loans to total loans and advances. Variables are in logarithms except for dummies and variables that take negative values (e.g., GDP growth). The indicator for governance and institutional quality (government effectiveness) is transformed so that a higher value represents higher quality.

Table 7B: Regression results for non-performing loans: case of public banks

Variables	(1)	(2)	(3)
<i>Bank type</i>			
Public bank dummy	0.086** (0.035)	0.211*** (0.000)	0.272*** (0.004)
Financial development dummy	0.005 (0.797)	-0.006 (0.782)	-0.009 (0.727)
Public bank x Fin. dev. dummy	0.144 (0.135)	0.318** (0.015)	0.325** (0.010)
<i>Term structure of loans and bank characteristics</i>			
Net loans / assets	-0.181*** (0.000)		
Short-term loans (%)		0.035*** (0.003)	
Medium & long-term loans (%)			-0.003 (0.861)
Total assets	-0.013*** (0.000)	-0.023*** (0.000)	-0.022*** (0.000)
Demand deposits / assets	-0.002*** (0.000)	-0.001*** (0.001)	-0.002*** (0.000)
Savings deposits / assets	-0.001*** (0.006)	-0.001 (0.160)	
Liquid assets / assets	-0.003*** (0.000)		
<i>Host country environment</i>			
GDP growth	-0.008** (0.034)	-0.003 (0.160)	-0.009* (0.052)
Government effectiveness	-0.010 (0.565)	-0.004 (0.835)	-0.028 (0.163)
New businesses	-0.018*** (0.000)		-0.010*** (0.008)
Mineral rich dummy	-0.008 (0.444)	-0.024** (0.046)	-0.022 (0.184)
Public bank x Mineral dummy	-0.160* (0.061)	-0.274*** (0.006)	-0.335*** (0.006)
Oil rich dummy		0.033 (0.234)	0.018 (0.579)
Public bank x Oil dummy		-0.225*** (0.006)	-0.335** (0.014)
Constant	1.298*** (0.000)	0.213*** (0.003)	0.550*** (0.000)
Observations	1,198	1,012	876
R-squared	0.184	0.176	0.206

Robust p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is the ratio of non-performing loans to total loans and advances. Variables are in logarithms except for dummies and variables that take negative values (e.g., GDP growth). The indicator for governance and institutional quality (government effectiveness) is transformed so that a higher value represents higher quality.

Table 8A: Regression results for profitability: case of national development banks

Variables	(1)	(2)	(3)
National development bank dummy	0.265 (0.49)	0.518 (0.34)	0.712 (0.19)
Financial development dummy	-0.486** (0.01)	-0.571** (0.02)	-0.757*** (0.00)
NDB x Fin. dev. dummy	3.514*** (0.00)	3.958*** (0.00)	3.965*** (0.00)
<i>Term structure of loans and bank characteristics</i>			
Net loans / assets	1.581*** (0.00)		
Short-term loans (%)		-0.333** (0.03)	
Medium & long-term loans (%)			0.305* (0.08)
Total assets	0.525*** (0.00)	0.654*** (0.00)	0.690*** (0.00)
Interest income / loans	1.506*** (0.00)	1.095*** (0.00)	0.885*** (0.00)
Liquid assets / assets	0.017*** (0.01)	0.000 (0.96)	0.007 (0.19)
Savings deposits / assets	0.011** (0.01)	0.023*** (0.00)	0.017** (0.01)
Time deposits / assets	-0.026*** (0.00)	-0.019*** (0.00)	-0.017*** (0.01)
Non-performing loans (% total)	-0.217 (0.23)	-2.480* (0.05)	-2.416** (0.04)
<i>Host country environment</i>			
GDP per capita	-2.228** (0.04)	2.932 (0.15)	1.812 (0.33)
GDP per capita squared	0.168** (0.02)	-0.166 (0.21)	-0.095 (0.44)
Government effectiveness	-0.322 (0.21)	-0.396 (0.24)	-0.383 (0.25)
Oil rich dummy	-1.530*** (0.00)	-2.884*** (0.00)	-3.291*** (0.00)
NDB x Oil rich dummy	0.439 (0.61)	2.485 (0.27)	2.844 (0.25)
Minerals rich dummy	-0.483*** (0.00)	-0.679*** (0.00)	-0.756*** (0.00)
NDB x Minerals rich dummy	-3.008*** (0.00)	-2.880*** (0.00)	-2.861*** (0.00)
Constant	-3.713 (0.38)	-14.866** (0.05)	-12.679* (0.07)
Observations	2,125	1,300	1,290
R-squared	0.135	0.192	0.209

Robust p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

The dependent variable is return on assets (ROA). Variables are in logarithms except for dummies and variables that take negative values (e.g., ROA). The indicator for governance and institutional quality (government effectiveness) is transformed so that a higher value represents higher quality.

Table 8B: Regression results for profitability: case of public banks

Variables	(1)	(2)	(3)
<i>Bank type</i>			
Public bank dummy	0.266 (0.39)	0.318 (0.49)	0.454 (0.31)
Financial development dummy	-0.490** (0.02)	-0.650** (0.02)	-0.867*** (0.00)
Public bank x Fin. dev. dummy	2.137*** (0.00)	3.519*** (0.00)	3.814*** (0.00)
<i>Term structure of loans and bank characteristics</i>			
Net loans / assets	1.584*** (0.00)		
Short-term loans (%)		-0.273* (0.08)	
Medium & long-term loans (%)			0.293* (0.09)
Total assets	0.523*** (0.00)	0.671*** (0.00)	0.708*** (0.00)
Interest income / loans	1.509*** (0.00)	1.065*** (0.00)	0.853*** (0.00)
Liquid assets / assets	0.019*** (0.00)	0.001 (0.91)	0.007 (0.19)
Savings deposits / assets	0.013*** (0.00)	0.027*** (0.00)	0.020*** (0.00)
Time deposits / assets	-0.024*** (0.00)	-0.015** (0.03)	-0.013** (0.04)
Non-performing loans (% total)	-0.104 (0.54)	-2.385* (0.07)	-2.331* (0.05)
<i>Host country environment</i>			
GDP per capita	-2.557** (0.02)	2.888 (0.16)	1.889 (0.32)
GDP per capita squared	0.189*** (0.01)	-0.162 (0.23)	-0.100 (0.42)
Government effectiveness	-0.321 (0.22)	-0.419 (0.22)	-0.391 (0.25)
Oil rich dummy	-1.488*** (0.00)	-2.994*** (0.00)	-3.405*** (0.00)
NDB x Oil rich dummy	-0.290 (0.63)	1.890 (0.25)	2.351 (0.20)
Minerals rich dummy	-0.541*** (0.00)	-0.778*** (0.00)	-0.823*** (0.00)
NDB x Minerals rich dummy	-1.413** (0.03)	-1.372* (0.08)	-1.726** (0.02)
Constant	-2.643 (0.54)	-15.038** (0.05)	-12.993* (0.07)
Observations	2,125	1,300	1,290
R-squared	0.123	0.184	0.205

Robust p-values in parentheses; *** p<0.01, ** p<0.05, * p<0.1

The dependent variable is return on assets (ROA). Variables are in logarithms except for dummies and variables that take negative values (e.g., ROA). The indicator for governance and institutional quality (government effectiveness) is transformed so that a higher value represents higher quality.

References

- Atkinson, A.B., and Joseph Stiglitz. 1980. *Lectures on Public Economics*. London: McGraw-Hill.
- Bhorat, Haroon. 2004. "The Development Challenge in Post-Apartheid South African Education." In *Changing Class: Education and Social Change in Post-Apartheid South Africa*, edited by Lynda Chisholm, 31–56. Cape Town, South Africa: HSRC.
- Bhorat, Haroon, and Morné Oosthuizen. 2008. "Employment Shifts and the 'Jobless Growth' Debate." In *Human Resource Development Review 2008: Education, Employment and Skills in South Africa*, edited by Andre Kraak and Karen Press, 50–68. Cape Town, South Africa: HSRC.
- Bonomo, Marco, Ricardo Brito, and Bruno Martins. 2014. "Macroeconomic and Financial Consequences of the After Crisis Government-Driven Credit Expansion in Brazil." Working Paper 378. Banco Central Do Brasil Working Papers. Brazilia: Banco Central do Brasil.
- Brei, Michael, and Alfredo Schclarek. 2013. "Public Bank Lending in Times of Crisis." *Journal of Financial Stability* 9 (4): 820–30.
- . 2018. "The Countercyclical Behavior of National Development Banks in Latin America and the Caribbean." In *The Future of National Development Banks*, edited by Stephany Griffith-Jones and José Antonio Ocampo, 278–301. Oxford, United Kingdom: Oxford University Press.
- Cameron, Rondo E. 1953. "The Crédit Mobilier and the Economic Development of Europe." *Journal of Political Economy* 61 (6): 461–88.
- Carvalho, Daniel. 2014. "The Real Effects of Government-Owned Banks: Evidence from an Emerging Market: The Real Effects of Government-Owned Banks." *The Journal of Finance* 69 (2): 577–609. <https://doi.org/10.1111/jofi.12130>.
- Chauffour, Jean-Pierre, and Muluneh Ayalew Gobezie. 2019. *Exiting Financial Repression: The Case of Ethiopia*. World Bank, Washington, DC.
- Chen, Yan-Shing, Yehning Chen, Chih-Yung Lin, and Zenu Sharma. 2016. "Is There a Bright Side to Government Banks? Evidence from the Global Financial Crisis." *Journal of Financial Stability* 26 (October): 128–43.
- Coleman, Nicholas, and Leo Feler. 2015. "Bank Ownership, Lending, and Local Economic Performance during the 2008–2009 Financial Crisis." *Journal of Monetary Economics* 71 (April): 50–66.
- Conference Board of Canada. 2010. "Lessons from the Recession and Financial Crisis. Lesson 2: Public Sector Financial Institutions Prove Their Worth." Ottawa, Canada: Conference Board of Canada.
- De Aghion, Beatriz Armendáriz. 1999. "Development Banking." *Journal of Development Economics* 58 (1): 83–100.
- De Luna-Martínez, José, and Carlos Leonardo Vicente. 2012. *Global Survey of Development Banks*. Policy Research Working Papers. The World Bank.
- De Ollouqui, Fernando. 2013. *Public Development Banks: Toward A New Paradigm?* Washington, DC: Inter-American Development Bank.
- Diamond, William. 1957. *Development Banks*. Baltimore, MD: Johns Hopkins University Press.

- Epstein, Gerald, and Devika Dutt. 2018. "Public Banks, Public Orientation and the Great Financial Crisis of 2007–2008." In *Financial Innovation and Resilience*, edited by L Costabile and L Neal, 327–43. New York: Palgrave.
- Epstein, Gerald, D Plihon, A Giamnola, and Christian Weller. 2009. "Finance without Financiers." *Papeles de Europa* 19: 140–78.
- Eslava, Marcela, and Xavier Freixas. 2018. "Public Development Banks and Credit Market Imperfections." LACEA Working Paper 0013. Universidad de los Andes and CEDE.
- Fernández-Arias, Eduardo, Ricardo Hausmann, and Ugo Panizza. 2019. "Smart Development Banks." Working Paper HEIDWP06-2019. Geneva, Switzerland: Graduate Institute of International and Development Studies.
- Gerschenkron, A. 1962. *Economic Backwardness in Historical Perspective*. Cambridge, Massachusetts: University of Chicago Press.
- Griffith-Jones, Stephany, and José Antonio Ocampo. 2018a. *The Future of National Development Banks*. Oxford, United Kingdom: Oxford University Press.
- . 2018b. *The Future of National Development Banks*. Oxford, United Kingdom: Oxford University Press.
- Gutierrez, Eva, Heinz P. Rudolph, Theodore Homa, and Enrique Blanco Beneit. 2011. "Development Banks Role and Mechanisms to Increase Their Efficiency." 5729. Policy Research Working Paper. Washington, DC: World Bank.
- Holmstrom, B, and J Tirole. 1997. "Financial Intermediation, Loanable Funds, and the Real Sector." *The Quarterly Journal of Economics*, 112 (3): 663–91.
- IDC. 2005. "The IDC's Development Finance Journey in a Democratic South Africa." Publication for distribution to the Board. Johannesburg, South Africa.
- IMF. 2020. "Public Banks' Support to Households and Firms." IMF Special Series on COVID-19. Washington, DC: International Monetary Fund. <https://www.imf.org/-/media/Files/Publications/covid19-special-notes/special-series-on-covid-19-public-banks-support-to-households-and-firms.ashx>.
- Kashuliza, Anacleti. 1992. "Agricultural Credit in Tanzania: The Policy and Operational Problems of the Cooperative and Rural Development Bank." *Savings and Development* 16 (4): 327–52.
- Keynes, John Maynard. 1936. *The General Theory of Employment, Interest and Money*. London: MacMillan.
- La Porta, Rafael, Florencio Lopez-De-Silanes, and Andrei Shleifer. 2002. "Government Ownership of Banks." *The Journal of Finance* 57 (1): 265–301.
- Lazzarini, Sergio G., Aldo Musacchio, Rodrigo Bandeira-de-Mello, and Rosilene Marcon. 2015. "What Do State-Owned Development Banks Do? Evidence from BNDES, 2002–09." *World Development* 66: 237–53.
- Mazzucato, Mariana. 2013. *The Entrepreneurial State: Debunking Public vs. Public Sector Myths*. London: Anthem Press.
- McDonald, D.A., T Marois, and D. Barrowclough. 2020. *Public Banks and Covid-19: Combatting the Pandemic with Public Finance*. Geneva, Switzerland: UNECA.
- Micco, Alejandro, and Ugo Panizza. 2006. "Bank Ownership and Lending Behavior." *Economics Letters* 93 (2): 248–54.

- Micco, Alejandro, Ugo Panizza, and Monica Yanez. 2007. "Bank Ownership and Performance. Does Politics Matter? Q," 23.
- Minsky, Hyman P. 1977. *A Theory of Systemic Fragility*. Archive Papers: https://digitalcommons.bard.edu/cgi/viewcontent.cgi?article=1230&context=hm_archive.
- Naqvi, Natalya, Anne Henow, and Ha-Joon Chang. 2018. "Kicking Away the Financial Ladder? German Development Banking under Economic Globalisation." *Review of International Political Economy* 25 (5): 672–98.
- Ndikumana, Léonce. 2009. "Revisiting Development Finance Institutions for the Purpose of Accelerating African Economic Development." In *Proceedings of the 2006 African Economic Conference*. Tunisia: African Development Bank.
- Oliveira, Fernando Nascimento. 2019. "Investment of Firms in Brazil: Do Financial Restrictions, Unexpected Monetary Shocks and BNDES Play Important Roles?" *Revista Brasileira de Economia* 73 (2).
- Önder, Zeynep, and Süheyla Özyıldırım. 2013. "Role of Bank Credit on Local Growth: Do Politics and Crisis Matter?" *Journal of Financial Stability* 9 (1): 13–25.
- Rezende, Filipe. 2015. "Why Does Brazil's Banking Sector Need Public Banks? What Should the BNDES Do?" *PSL Quarterly Review* 68 (274): 239–75.
- Robinson, James A., and Ragnar Torvik. 2005. "White Elephants." *Journal of Public Economics* 89 (2–3): 197–210.
- Sefa. 2017. "5 Years of Growing Small Enterprises. Sefa Annual Report 2017." Johannesburg, South Africa: IDC, Small Enterprise Finance Agency (Sefa).
- Smallridge, Diana, and Fernando de Ollouqui. 2011. "A Health Diagnostic Tool for Public Development Banks." Technical Notes IDB-TN-225. Inter-American Development Bank.
- Stiglitz, Joseph. 1993. "The Role of the State in Financial Markets." *World Bank Economic Review* 7 (1): 19–52.
- Stiglitz, Joseph, and Bruce Greenwald. 2014. *Creating a Learning Society: A New Approach to Growth, Development, and Social Progress*. New York: Columbia University Press.
- Stiglitz, Joseph, and Andrew Weis. 1981. "Credit Rationing in Markets with Imperfect Information." *American Economic Review* 73 (3): 393–410.
- Temitope, Leshoro LA. 2013. "Does Economic Growth Lead Employment in South Africa?" *Journal of Economics and Behavioral Studies* 5 (6): 336–45.
- Thorne, Janine, and Charlotte du Toit. 2009. "A Macro-Framework for Successful Development Banks." *Development Southern Africa* 26 (5): 677–94.
- Torres, Ernani, and Rodrigo Zeidan. 2016. "The Life-Cycle of National Development Banks: The Experience of Brazil's BNDES." *The Quarterly Review of Economics and Finance* 62 (November): 97–104.
- Uğurlu, Esra Nur, and Gerald Epstein. 2021. "The Public Banking Movement in the United States: Networks, Agenda, Initiatives, and Challenges." Working Paper 538. PERI Working Paper 538. Amherst, Massachusetts: Political Economy Research Institute. <https://www.peri.umass.edu/publication/item/1413-the-public-banking-movement-in-the-united-states-networks-agenda-initiatives-and-challenges>.

- UNDESA. 2006. "Rethinking the Role of National Development Banks." Report on the Third Regional Consultation on "Rethinking the Role of National Development Banks in Africa." New York: United Nations Department of Economic and Social Affairs.
- World Bank. 2012. *Global Financial Development Report 2013 - Rethinking the Role of the State in Finance*. Washington, DC: World Bank.
- . 2018. *2017 Survey of National Development Banks*. Washington, DC: World Bank.
- Yeyati, Eduardo Levy, Alejandro Micco, and Ugo Panizza. 2007. "A Reappraisal of State-Owned Banks." *Economica* 7 (2): 209–59.

Table A1: Number of banks in the BankFocus dataset by type

Country	Commercial banks			
	NDBs	Public banks	Private	All commercial banks
Algeria	1	7	10	16
Angola	1	1	20	20
Benin	0	0	8	8
Botswana	1	3	10	10
Burkina Faso	0	0	12	12
Burundi	1	1	5	5
Cameroon	0	0	11	11
Cape Verde	0	0	7	7
Central African Rep.	0	0	2	2
Chad	0	0	5	5
Congo	1	1	2	2
Côte d'Ivoire	1	1	19	19
Congo, Dem. Rep.	0	0	12	12
Djibouti	0	0	5	5
Egypt	4	10	20	24
Equatorial Guinea	0	0	2	2
Ethiopia	1	2	13	14
Gabon	0	0	6	6
Gambia	0	0	3	3
Ghana	2	2	24	24
Guinea	0	0	8	8
Guinea Bissau	0	0	1	1
Kenya	2	3	32	33
Lesotho	0	1	3	4
Liberia	0	0	3	3
Libya	2	3	11	11
Madagascar	0	0	6	6
Malawi	1	1	6	6
Mali	2	2	10	10
Mauritania	0	0	10	10
Mauritius	2	2	18	18
Morocco	2	4	11	12
Mozambique	1	1	14	14
Namibia	2	3	6	7
Niger	0	0	7	7

Nigeria	3	4	23	23
Rwanda	1	1	10	10
Sao Tome & Principe	0	0	1	1
Senegal	1	1	21	21
Seychelles	1	3	2	3
Sierra leone	0	0	7	7
Somalia	0	0	1	1
South Africa	3	5	16	16
South Sudan	0	0	4	4
Sudan	2	2	1	1
Swaziland	1	3	3	3
Tanzania	3	4	30	31
Togo	1	1	7	7
Tunisia	1	6	12	16
Uganda	2	2	18	18
Zambia	1	1	15	15
Zimbabwe	2	5	9	9
Total	49	86	522	543

Source: BankFocus

Table A2: Summary statistics for regression variables

Variables	Observations	Mean	Std. dev.	Min	Max
<i>Dependent variables</i>					
Net loans/assets	4,716	47.9	21.4	0	99.5
Short-term loans/assets	2,270	52.3	26.3	0	101.0
Medium and long term loans/assets	6,104	17.8	28.1	-1.0	100
NPL/loans	3,252	0.8	20.1	0	791.6
ROA	4,839	1.3	5.3	-117.5	45.6
<i>Bank specific indicators</i>					
Total assets (million \$)	4,852	3017.5	12156.8	0.003	252664.9
Demand deposits/assets	3,570	32.0	19.1	0	92.5
savings deposits/assets	2,800	13.0	14.1	0	93.6
Time deposits/assets	3,279	20.6	15.6	0	85.2
Liquid assets/assets	4,834	31.8	20.5	0	99.9
NDB dummy	6,104	0.1	0.2	0	1
Public bank dummy	6,104	0.1	0.3	0	1
<i>Country level indicators</i>					
Fin dev dummy	6,104	0.3	0.4	0	1
Inflation (%)	5,934	7.7	13.6	-3.2	379.8
GDP per capita (US \$)	6,081	2942.2	2789.5	208.1	16764.4
GDP growth	6,076	3.8	3.8	-36.4	26.7
Control of corruption	6,104	2.9	0.6	1.7	4.5
Government effectiveness	6,104	3.0	0.6	1.0	4.6
New businesses	3,219	39568	80171	20	376727
Oil-rich dummy	6,104	0.2	0.4	0	1
Minerals-rich dummy	6,104	0.4	0.5	0	1

Source: BankFocus; World Bank: World Development Indicators; Worldwide Governance Indicators.

NPL = non-performing loans; ROA = return on assets