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Financial Regulation of National Development Banks

Ricardo GOTTSCHALK, Lavinia B. CASTRO, Jiajun XU

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- Business Models
- Governance
- Financial regulation
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Financial regulation of national development banks – NDBs

Ricardo Gottschalk

United Nations, RCO, South Africa

Lavinia B. Castro

The Brazilian Development Bank, Rio de Janeiro, Brazil

Jiajun Xu, Dean

Institute of New Structural Economics at Peking University, Pequin, China

Abstract

History shows that financial crises have been a significant driver of banking regulation evolution, since the 1930s. Although Basel III made much progress in building a safer and less leveraged system, the SDGs, the climate crisis and the COVID crisis require bold action. Financial regulation on Development Banks should be discussed, considering not only a secure payment system but also a system that meets sustainable development goals. As the paper argues, these are not contradictory objectives. Development banks have unique characteristics to manage risk and can contribute to a more sustained growth path, which actually helps reducing overall financial instability.

This paper is policy oriented and intends to promote a dialogue among governments, development banks and regulators. It aims to discuss the potential trade-offs of Basel III capital framework for National Development Banks regarding their ability to fulfil their developmental mandate. Do these banks deserve special treatment? What can

regulators do to adapt Basel rules in order to reduce possible impacts? In particular, it discusses Basel III higher capital requirements, capital buffers, as well as the changes made on the treatment of market risk, concentration, liquidity risk and operational risks.

The paper starts with a brief history of banking regulation and a summary of the main theoretical approaches that justifies it. It provides an analytical discussion of Basel III standards, considering NDBs' characteristics and discusses how specific Basel III standards affect the ability of NDBs to fulfil their missions. The paper presents and compares three large non-retail-deposit-taking NDBs experience on Basel II implementation: BNDES of Brazil, CDB of China and KfW of Germany, drawing on both secondary information and interviews.

The paper concludes that some of Basel III rules do not affect NDBs' roles. However, some specific rules can constrain them in straightforward ways. The biggest constraint seems to come less from the levels of comprehensiveness and complexity of the framework, and more from tightening the levels of capital requirements and demanding better capital quality. Although in the three cases, capital has not been a binding constraint for them in regular times; it can become so in times of crises. The second area of contention for these big banks is the disincentive to the use of internal models, which, again, may imply more capital requirements and less risk adequacy. A third area is the new large exposure rule, which is problematic for all three banks, given their focus on large, infrastructure projects.

A fourth area refers to the high-risk weights required for exposures to project finance and equity. These are financing modality and tools NDBs use extensively to support large and complex projects, and activities that involve innovation financing. A final area concerns changes in the method used for the calculation of operational risks

Keywords

Financial Regulation, Basel III, National Development Banks, KfW, BNDES, CDB

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Résumé

L'histoire nous apprend que les crises financières ont été un moteur important de l'évolution de la réglementation financière, depuis les années 1930. Bien que Bâle III ait fait beaucoup de progrès pour la construction d'un système plus efficient et sûr, les ODD, la crise climatique et la crise liée au Covid-19 demande une action plus audacieuse. La réglementation financière des banques de développement devrait être discutée, en tenant compte non seulement d'un système financier efficient, mais également d'un système qui répond aux objectifs de développement durable. Comme le soutient ce papier, ce ne sont pas des objectifs contradictoires. Les banques de développement ont des caractéristiques uniques pour gérer ces risques, et peuvent contribuer à une croissance plus soutenue de l'économie, ce qui contribue de fait à réduire l'instabilité financière globale.

Ce document est orienté vers les politiques économiques à adopter, et vise à commencer un dialogue entre les gouvernements, les banques de développement et les régulateurs. Il vise à discuter des compromis potentiels du cadre de fonds propres de Bâle III pour les banques nationales de développement, en ce qui concerne leur capacité à remplir leur mandat de développement. Ces banques méritent-elles un traitement spécial? Que peuvent faire les

régulateurs pour adapter les règles de Bâle afin de réduire les impacts potentiels? En particulier, il traite des exigences de fonds propres plus élevées de Bâle III, des coussins de fonds propres, ainsi que des modifications apportées au traitement du risque de marché, de la concentration, du risque de liquidité et des risques opérationnels.

Le texte commence par une brève histoire de la réglementation bancaire et un résumé des principales approches théoriques qui la justifient. Il présente une analyse des normes de Bâle III, en tenant compte des caractéristiques des NDB et explore comment les normes spécifiques de Bâle III affectent la capacité des NDB à remplir leurs missions. Le document présente et compare trois grandes expériences de banques de développement sur la mise en œuvre de Bâle III: la BNDES du Brésil, la CDB de Chine et la KfW d'Allemagne, en s'appuyant à la fois sur des informations secondaires et des entretiens.

Le papier conclut que certaines règles de Bâle III n'affectent pas les rôles des NDB. Cependant, certaines règles spécifiques peuvent les contraindre de manière importante. La plus grande restriction semble venir moins de la complexité du cadre, que du resserrement des montants de capital requis et de l'exigibilité d'une meilleure qualité du capital. Bien que dans les trois cas étudiés, le

capital n'était pas une contrainte en temps normal; il peut le devenir en temps de crise. Le deuxième sujet de discordance pour ces grandes banques est l'abandon du recours à des modèles internes, qui, là encore, peuvent impliquer davantage d'exigences de fonds propres et une moindre adéquation des risques. Un troisième domaine est la nouvelle règle relative aux grands risques, qui pose un problème aux trois banques, étant donné leur concentration sur les grands projets d'infrastructure. Un quatrième domaine concerne les pondérations de risque élevées requises pour le financement de projets et les expositions sur actions. Il s'agit de modalités et d'outils de financement que les banques utilisent largement pour soutenir des projets importants et complexes, et des activités qui impliquent le financement de l'innovation. Un dernier domaine concerne les évolutions de la méthode de calcul des risques opérationnels.

Mots-clés

Réglementation financière, Bâle III, Banques nationales de développement, KfW, BNDES, CDB

Introduction¹

The literature and policy analysis have addressed, in the field of development finance, possible impacts of the Basel Capital Accords on banks and their ability to provide development finance, especially in developing countries. However, few systematic works has been undertaken on the potential impacts of Basel standards on National Development Banks (NDBs). This paper aims to fill in this research gap. It examines, specifically, possible impacts of Basel III, which congregates within the Basel framework key regulatory reforms in response to the global financial crisis, on large non-household-deposit taking NDBs. These banks have a clear mandate to support development-oriented projects and often have a funding base predominately of long-term resources that permits them to finance long-term and riskier projects. In addition, these banks typically count on in-house expertise and track record on identification, development, risk assessment and management of complex projects. These characteristics place them in a strong position to support the Sustainable Development Goals (SDGs) and provide climate finance – while setting them clearly apart from other banks and financial institutions, which may take household deposits and operate as universal banks.

Based on the assumption that NDBs are indeed different, in terms of funding, mandates and operational modalities, this paper focuses on the potential impacts of Basel III capital framework for large non-deposit taking NDBs regarding their ability

to fulfil their developmental mandates. Typically, large NDBs seeking to meet developmental mandates undertake concerted action that includes financing of large and complex projects, which are often long term, and supporting innovation, which, by its nature, involves above-average risks but also potentially very large developmental payoffs. In addition, they undertake countercyclical actions during downturns and crises to protect incomes, jobs and the productive capacity for the next phase of economic expansion. Thus, Under Basel III, key standards to be considered for analysis are those that may constrain banks' ability to provide long-term finance, promote sustainability and operate countercyclically.

The questions the paper raises are directed towards national financial regulators. If compliance with certain Basel III standards can have an adverse impact on NDBs, the questions then are: do these banks deserve special treatment? What can national regulators do to adapt Basel rules in order to reduce possible impacts? There is a substantial strand of the Basel literature that focuses on the political economy of the implementation of Basel standards, both in developed and developing countries. This literature takes as a backdrop the fact that Basel standards have been designed by the Basel Committee on Banking Supervision, whose membership is dominated by developed countries and therefore with a focus on the characteristics of their own financial sectors, and not of those from developing countries. With this in mind, it argues that

¹ This is a preliminary version of the paper for discussion purposes. It is subject to change.

the decision-making process concerning their adoption across countries is both complex and political, with outcomes that can be quite varied. Indeed, recent empirical research covering over a hundred developing countries provides evidence that there is wide variation in how these countries are adopting Basel standards. That is, both regulatory convergence and divergence are found among these countries (Hohl et al., 2018). Several factors have been identified as driving countries towards regulatory convergence. These include desire to attract foreign capital, reputational concerns and peer pressure. Meanwhile, many other factors stand in the way of convergence, driving countries towards divergence instead. These latter include complexity of standards, constrained resources for effective implementation and desirability to develop a domestic financial sector that supports rapid development (Jones, 2020).

The arguments around possible pros and cons of adoption of Basel standards among NDBs are not exactly the same. This is because NDBs are a particular subset category of banks with characteristics that set them apart, as just mentioned. In principle, this does not make them natural candidates for Basel compliance, since they are not the typical sort of bank Basel aims to target. In addition, for NDBs, the discussion that is relevant is not regulatory convergence or divergence in relation to standards designed internationally. Rather, what matters for these banks is compliance, or not, with the set of rules adopted by country regulators at the national level. That is, once international standards are incorporated in one form or another into a national financial regulatory framework, the fact is that national regulators enjoy discretion to decide whether, or not, NDBs should comply with

Basel standards and to what extent. However, it is beyond the scope of this paper to examine why some national regulators decide to demand their NDBs to comply with Basel III.

The paper focus is, rather, on mapping possible Basel III impacts. This topic choice is not necessarily a position against financial regulation for this category of banks. Like commercial and investment banks, large NDBs have the potential to create systemic risks (directly if they collect cash deposits and indirectly, if they do not) and generate credit crises, with significant economic and social impacts. The point is under what conditions NDBs deserve special treatment and how to grant such special treatment – through ad hoc waivers, or a tailored regulatory framework for NDBs? Mapping possible impacts is important to inform regulators on how best to tailor regulation for this category of banks. Although Basel is not compulsory and national decision-makers have ample discretion, a hypothetical case of its wholesale adoption could have sizeable real social and economic costs. These costs could take the form of less rapid growth and structural transformation, in case NDBs do not invest as much as they potentially could in transformative inducing projects. The social impacts would be particularly large if the result is less investments in social infrastructures, which are so much needed to address so many SDGs and targets. In addition, there are the environmental and sustainability costs, if NDBs are deterred in their expected role in the coming years as major financing vehicles for innovation and the fostering of the green economy. The paper acknowledges that Basel III standards may be complex, but it also hopes that the analysis it pro-

vides can help decision makers or national regulators to better understand how to tailor Basel III standards to NDBs.

The paper has 5 sections, besides this introduction. Section 1 traces the historical and theoretical underpinnings of banking regulation, which culminated in Basel III standards. Section 2 examines what key characteristics make NDBs different, warranting regulatory divergence. Section 3 provides an analytical discussion on how

specific Basel III standards affect the ability of NDBs to fulfil their missions. Section 4 explores variation of Basel adoption across selected NDBs, drawing on in-depth case studies. Three case studies are conducted for the following NDBs: The Brazilian Development Bank- BNDES, China's CDB and Germany's KfW.² This selection implies that the paper focuses on large non-retail-deposit taking general purpose NDBs. Section 5 concludes.

² BNDES stands for Banco Nacional de Desenvolvimento Econômico e Social (The Brazilian Development Bank); CDB for 国家开发银行 (China Development Bank); and KfW for Kreditanstalt für Wiederaufbau (Credit Institute for Reconstruction)

I – The need for regulating financial institutions

From a historical perspective, banking regulation was born as a response to the severity reached by the 1929 financial crisis, in which the lack of a lender of last resort (or the sluggishness and inefficiency in responding to the crisis) had dramatic consequences for income, jobs and growth.³ It became clear that, unlike other sectors of the economy, the collapse of a banking institution could spread to others through contagion, transforming a local problem into national economic depression, and even a global crisis. The crisis also made evident asset deflation processes and the existence of channels that could link the capital market to the banking system, and these to the real economy. Such recognition, as is well known, engendered many financial reforms, including the Glass-Steagall Act, in 1933 in United States, which was replicated in several other countries. Since then, in order to avoid bank runs, Central Banks have expanded their scope of action. In addition to imposing compulsory reserves and punitive fees for rediscounting securities, deposit insurance was created in several countries. Historically, therefore, prudential financial regulation was born as a protective measure with a focus on banks aimed at avoiding crises, with national supervision rules and special attention to liquidity risk (Carvalho, 2003).

The reforms of the 1930s in the US began to be gradually reversed in the 1970s, a process that gained momentum from the 1980s onwards. It was in this context that the so-called Basel Capital Accords emerged and whose first milestone dates from 1988, to address issues caused by increasingly deregulated financial markets.⁴ Due to lack of harmonized financial regulation across national jurisdictions, many internationally active banks were practicing regulatory arbitrage to gain competitive advantage over other banks. The Basel framework aimed at creating a level playing field for these banks.⁵

³ For a discussion of the role of the Central Bank in the 1929 crisis, see Galbraith (1972 and 2007) and Friedman and Schwartz (1963). For a perspective on the historical context and the meaning of the crisis, see Hobsbawm (2007).

⁴ In December 1987, the Basel Committee (Basel Committee on Banking Supervision) issued a consultative paper proposing international capital requirements: "Committee on Banking Regulation and Supervisory Practices". In July 1988, the Committee released the final version known as the Basel Accord (BCBS), 1988.

⁵ For a discussion of the reasons for the creation of the Basel capital framework see, inter alia, King and Tarbert (2011).

Basel I proposed very simple capital requirement rules to deal with credit risk and was supposed to apply only to internationally active banks. Like the previous regulatory framework, Basel I, therefore, focused on banks and maintained the prudential and tutelary nature of traditional financial regulation. Unlike the previous framework, however, liquidity risk controls, that were at the core of the 1930s reforms, were considered less important, since the view was that best risk management practices could avoid it (Kobrak and Troege, 2015).

The development of the Basel rules since then reflects the incorporation of both internal and external criticisms. As a result, the regulatory framework added capital requirements to face other risks: market risk and operational risk. In addition to the minimum capital requirement for these three risks (Pillar I), Basel II also established supervisory principles (Pillar II, whereby monetary national authorities can ask for complementary capital requirements) and on market discipline (Pillar III).

Since Basel III, in addition to micro-prudential requirements, elements of macroprudential regulation have been incorporated into the regulatory framework. The attention to liquidity risk returned to the core of regulation and there was a recognition of the pro-cyclical nature of credit markets. To address this type of procyclicality, additional capital cushions have been incorporated. Higher capital requirements for active national and international banks were also introduced. Finally, greater control over derivatives, back-testing, greater robustness in stress tests, as well as new capital requirements for counterparty risk and incremental risk, have been proposed in response to the crisis.

From a theoretical perspective, prudential financial regulation is justified, ultimately, to address systemic risk.⁶ In its traditional form, systemic risk is related to three characteristics of the banking system: 1) the existence of fractional reserves, b) the existence of interconnections between banks, leading to the problem of contagion and c) the fact that banks are part of the national system of payments, which causes the financial crisis to spread throughout the economy. However, the concept of systemic risk, as well as financial regulation itself, has also evolved over time. Any event whose magnitude is significant is now considered “systemic” – for example, if defaulted loans reach at least 10 per cent of total assets, or the cost of saving institutions reaches at least 2 per cent of GDP (Barth et al, 2006: 213, cited in Carvalho, 2003: 10).

⁶ Whilst financial regulation aims at the safety and stability of a financial system, which is a clear benefit to society, there is a debate that also calls attention to potential costs. The latter may take the form of restricted credit availability to credit-starved sectors and regulatory action to curb sustainable economic growth by confusing it with overheating, with the end result of reduced economic growth. See, for example, Elliott et al. (2012), who provide empirical estimates of Basel III costs.

There are two main lines of justification for financial regulation: the approach to market failures and the Keynes-Schumpeter-Minsky approach.

According to the market failure approach⁷, information on the solvency of financial institutions is a “public good”. As such, the government must ensure its provision, imposing the disclosure of information by financial institutions. Stiglitz (1993) argues that financial markets are especially susceptible to sub-optimal results as a result of information asymmetry. By monitoring banks, and requiring transparency on the data of financial institutions, governments can reduce the probability of insolvency of these institutions. But monitoring is not enough. Besides transparency, the government can contribute by imposing more efficient management of risks (risk-bearing) by banks, limiting opportunistic behavior.⁸

A very different alternative for giving support to financial regulation is the one that emerges from a Keynesian/Schumpeterian/Minskyan approach, KSM hereafter. According to this theoretical perspective, “market failures” may exist, but they are not the most important problem to address. Unlike the market failure approach, public intervention in financial markets is called for as a rule and not as an exception. The concept of allocative efficiency, adopted in addressing market failures, is seen as poorly suited to address the problem of development finance and of financial fragility. According to the KSM approach⁹, government intervention in financial markets is crucial, because they recognize financial markets’ structural problems – and not only “failures”. In short, the objectives of the intervention are: 1) to contain systemic risk; 2) to act in an anti-cyclical manner; and 3) to foster growth/development.

The first objective demands prudential regulation of the banking system, although systemic risk is not necessarily entirely addressed by regulation of banks, due to the channels that link these institutions to others in the financial system. The second, counter-cyclical related, objective corresponds to the traditional defense of Keynesian intervention, which should be pursued in times of crises, not only through monetary and fiscal policies by governments and central banks, but also by regulation. The third objective is to incentivize banks to provide long-term financing for development purposes. For that purpose, they may create public financial institutions (or, alternatively, foster the development of capital markets) since often long-term finance is not offered spontaneously by the markets due to greater risk. Development finance also involves the promotion of projects that reduce disparities (on income, among industries, or between different regions in the same country) and that support social inclusion, innovation and sustainable development. In these respects, development banks are seen as key financial institutions to meet such developmental objectives and contribute to the reduction of the fragility of the financial system.

⁷ For the formal concept of market failures, see Mas-Colel et al. (1995). For a discussion of market failures in financial markets, see Stiglitz (1993 and 1998).

⁸ In the literature of market failures, however, there is always a concern with the possibility of “government failures”, resulting from the costs of intervention surpassing those of the market.

⁹ This approach combines many ideas presented in the seminal books of Keynes 1964 [1936], Schumpeter 1982 [1912/1934] and Minsky (1982).

At the same time, there might be a conflict between the first and the third objectives of the KSM approach. This is because prudential regulation (first objective) is general, thereby covering both commercial and development banks and thus potentially inhibiting the role the latter is expected to play (third objective). In practice, however, adoption of financial regulation for NDBs implies not just possible costs (see footnote 5 above) but may also have its own reasoning as well – a main one being that it may guard NDBs against political intervention. This objective is not written in regulators’ rulebook, and, indeed, may not be part of their concerns. However, this concern clearly in the minds of development bankers (see empirical section) and the society at large. Thus, the point is not just to exclude NDBs from the financial regulatory framework, given that the latter may help them be more sharply focused on their core mandates. Rather, it is to acknowledge that NDBs are different and may therefore require differentiated treatment.

The next section examines the broad set of characteristics that make NDBs different from other banks and that, therefore, warrant tailored regulation so that they are able to meet their developmental mandates.

II – Key NDB characteristics that make them different from other banks

The key characteristics that set a typical NDB apart from other banks are as follows: First, instead of maximizing profits, NDBs are mandated to pursue public policy objectives. Second, rather than taking household deposits, typical NDBs generally are state-backed with more secure, long-term funding. Third, these banks are holders of accumulated technical expertise, especially in large, complex projects, and in assessing and monitoring risks that private banks do not. For large, general purpose NDBs, these characteristics give them the capacity to lend at scale, provide long-term finance, and support a large variety of projects and activities. Examples include infrastructure projects in the areas of health, education, water and sanitation, logistics, urban mobility and energy; and activities to promote more and better jobs, to reduce regional inequalities and poverty, and for preparedness and adaptation to climate-related hazards, which are greatly needed for the achievement of the SDGs.

In addition, NDBs can be the financing arm of national governments taking strategic developmental choices that may include investments in innovation that, while implying risks, can yield formidable pay offs in the very long term. In the macroeconomic area, they can act countercyclically protecting the economy from shocks and downturns, therefore reducing harmful deviations from the road towards sustainable development.

Besides these key characteristics and functions, NDBs do not play a major role in national payments systems, do not take profit-driven excessive risks, leverage less, do not engage in more complex forms of securitization that can imply financial and reputational risks, use derivatives not to speculate but to hedge their operations, and operate markedly less procyclically than other banks. NDBs, therefore, do not engage in the sorts of activities or create the many risks Basel III seeks to address. The result is that an indiscriminate adoption of Basel III may have unnecessary and yet detrimental impacts on NDBs, especially the small ones due to the increased capital quality and new quantitative requirements.

Indeed, Basel III, through its wide-ranging measures, can affect significantly NDBs and the tasks they normally undertake to fulfil their missions. Summarizing the above, these tasks include: a) lending at scale and long term; b) lending counter-cyclically; c) financing complex infrastructure projects; and d) supporting innovation, including in climate finance.

It is worth noting that NDBs may support projects and activities that embed all these tasks simultaneously and that involve sizeable risks. Long-term finance by NDBs is, in many instances, geared towards large-scale projects; large projects typically are infrastructure related and in most cases capital intensive, requiring substantial sums of frontloaded finance. Financing infrastructure and large projects can often require accepting temporarily concentration of exposures: on economic groups, economic sectors and concentration on

guarantors. Also, infrastructure projects are closely interdependent. If a national government goes for a big push, this may imply simultaneous execution of projects, which requires availability of finance on a large scale. Moreover, some modalities of financing (e.g., project finance) can have higher risks in the pre-operational phase with high uncertainty and involve different types of risks. In the area of climate finance, many projects involve new technologies with little or no track records, making the task of risk assessment by banks harder. Thus, long-term finance may be provided for a development project that, at once, embeds all the traits and risks just mentioned.

III – How can Basel III affect the ability of NDBs to fulfil their missions? An analytical discussion¹⁰

This section examines how Basel III standards may affect NDBs, focusing on those that may constrain their ability to support long-term finance and activities that involve risk; and provide finance at different points of the business cycle. The section does not discuss or highlight Basel III standards that, although important for addressing some of the risks raised in the paper, are not central or pertinent to NDBs, such as those designed to address market risks arising from banks' trading books or the use of derivatives.

3.1 Solvency and liquidity problems

3.1.1 Higher (and of better-quality) capital requirements

Basel III demands banks to hold higher minimum capital requirements to reduce the risk of insolvency in situations of stress.¹¹ It has maintained the Basel II minimum capital requirements at 8 per cent of risk-weighted assets, but, to that, it has added the requirement of capital conservation buffers at 2.5 per cent of risk-weighted assets, to help banks withstand financial distress. When capital is drawn down, banks are expected to rebuild buffers by reducing discretionary distribution of earnings. Basel III has also created counter-cyclical capital buffers (see below). In addition, domestic systemically important banks (D-SIBs) and global systemically important banks (G-SIBs) are required to build additional capital buffers.¹² These are usually large institutions that can create systemic risk, not just due to their size but also because of high levels of interconnectedness with other financial institutions. Moreover, capital under Basel III should be of higher quality, with emphasis on Common Equity Tier 1 capital.¹³ These rules work as a deterrent for banks that are willing to leverage to be able to lend more. Finally, Basel III has adopted a 3 per cent leverage ratio – that is, a minimum level of capital against banks' unweighted assets – as a non-risk backstop measure to reduce excessive leverage by banks – a problem that occurred during the 2007/2008 financial crisis, when capital proved to be not only insufficient but of low quality as well.

¹⁰ This section starts from the analysis carried out in Castro (2018) and expands on it.

¹¹ For Basel rules discussed in this section, see BCBS (2011, 2017a and 2017b), unless otherwise indicated.

¹² D-SIBs are identified as such by national jurisdictions while G-SIBs are so by the Financial Stability Board (FSB) in consultation with the Basel Committee on Banking Supervision (BCBS, 2012 and BIS, 2018a).

¹³ Common shares and retained earnings should be the predominant forms of Tier 1 capital. In addition, common equity Tier 1 was raised from 2 per cent in Basel II to 4.5 per cent of risk-weighted assets. Moreover, the 2.5 per cent conservation buffers should be in the form of common equity Tier 1 capital.

For NDBs under Basel III, such rules could also affect disproportionately the availability of credit to those exposures that require more capital (i.e., large projects), when capital for banks is a binding constraint. If permission is granted by the national regulator, NDBs with more technical resources and data availability may try to mitigate the quest for higher capital requirements by adopting internal models for risk assessment. These models permit banks to assign their own risk weights to their portfolio of assets and thereby save capital. However, to avoid banks holding too little capital due to the use of their own risk-assessment models, the Basel Committee has adopted measures that inhibit banks saving capital in this way. The first is the leverage ratio itself, the second is the prohibition of the use of internal models for certain exposures (see below) and the third is the adoption of an output floor. The purpose of the output floor is to ensure that banks using internal models hold at least 72.5 per cent of capital compared with what the bank would if it used instead the standardized approach for capital determination. Therefore, Basel III not only took away the advantage of NDBs to use their own probability of default (PD), more suited to their own portfolio idiosyncrasies, and usually lower than the market due to long credit relations with clients, but it also made the whole system more susceptible to the pro-cyclical behavior of market ratings.

3.1.2. Liquidity (and funding) requirements

These are the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR). The purpose of the LCR is to ensure banks have enough high-quality liquid assets to cover net cash outflows over a 30-day time horizon in a stress scenario. The LCR adoption is aimed at avoiding severe liquidity shortages as those that banks experienced during the global financial crisis. The NSFR adoption is to ensure banks have enough funding with maturities that match those of their balance sheet assets and off-balance sheet commitments over a one-year horizon. The aim is to avoid major maturity mismatches.

The introduction of internal models for credit risk by Basel II, and maintained (although discouraged), under Basel III, has in-built features that already require higher levels of capital for longer-term credit. The main concern is that the LCR and the NSFR may further inhibit long-term lending. The extent to which NDBs may be affected by these ratios depends on the structure of their liabilities – whether these are mainly short- or long term. These requirements are less binding for the NDBs under analysis in this paper, since these are non-household deposit taking institutions that rely predominantly on sources of funding such as national treasury transfers, compulsory savings, bank loans and capital markets.

3.2 Systemic risks

3.2.1. The large exposures framework

This framework has been established to minimize bank failure events due to exposures to single large counterparties. The large exposure risk was already addressed by the Basel Core Principles, and what the framework does is to clarify issues of definition and measurement – and set upper limits. A large exposure is 10 per cent or more of a bank's Tier 1 capital. The limit set by Basel III is that banks' single exposures should not surpass 25 per cent of Tier 1 capital. If the exposure is from a G-SIB to another G-SIB, the upper limit is 15 per cent. A single large exposure is the sum of exposures to counterparties that are inter-connected, implying that the failure of one counterparty can lead to the failure of the other counterparties. Inter-connected counterparties can be both in terms of ownership and economic relations.

According to BCBS (2019: 15), all national supervisors adopt some sort of large exposure limit; and, in case such limits are breached, some of them suggest corrective measures or require additional capital. For NDBs, this rule restrains their ability to finance large projects, which usually are of infrastructure nature, but also some industrial projects. This new rule could affect particularly badly the smaller NDBs. That said, since national jurisdictions already adopt prudent limits to single exposures, the extent to which a bank is truly affected depends on how much national regulation is further tightened by adjusting to this new Basel rule. It is important to note that a few exposures, relevant to NDBs that are active internationally, as well NDBs operating domestically, are exempted from the single large exposure rule. These are exposures to sovereigns and their central banks, and public sector entities (in the latter case, according to the same rules that apply to them under credit risk for capital requirements) (BCBS, 2014 and BIS, 2018b). The fact is that large exposures by NDBs, be to public entities or, specifically to single large projects, should be guaranteed by their governments if such exposures are in the national interest – say, the undertaking of a large energy power project needed to eliminate bottlenecks to economic growth.

The large exposure rule addresses one type of concentration risk; other types of concentration risk such as those of sectoral and geographical nature, are addressed next.

3.2.2. Other concentration risks

The Basel capital framework does not include concentration risk in the methods it proposes for assessment of credit risk under Pillar 1. Concentration risk is dealt with under Pillar 2 of the Basel framework. Unlike Pillar 1, which is prescriptive, Pillar 2 is based on a set of principles that guide supervisors in their supervisory review tasks. This qualitative-based approach gives more leeway for national jurisdictions to decide what strategies and procedures to adopt to the successful fulfillment of Pillar 2 objectives (BCBS, 2019). Consequently, the impacts of Basel III on NDBs depend, to an important extent, on what specific treatment NDBs' jurisdictions give to concentration risks. NDBs have, by design, a propensity to have concentrated portfolios in sectoral terms, since their activities target growth-related sectors, such as construction and manufacturing; and in geographical terms as well, if, say, a country's main commodity the bank supports is geographically concentrated. It is important, then, that national regulators do take this reality into account, if they decide to target such risks, so that such banks do not face major restrictions to play their developmental role.

3.3 The pro-cyclical nature of bank credit

3.3.1. Lending countercyclically

Basel acknowledges that bank credit operates pro-cyclically. Moreover, under Basel II, risk weights assigned to banks' exposures can vary over the business cycle, which accentuates the pro-cyclicality of bank credit.¹⁴ To remedy this, the Basel Committee has introduced more rigorous stress tests, as these may help reduce excessive risk taking in the upside of the cycle; and, above all, capital buffers that should vary between 0 and 2.5 per cent of risk weighted assets. These buffers are expected to go up in good times and down in economic slowdowns (BCBS, 2011).

Whilst these counter-cyclical buffers are welcome as they apply to commercial and investment banks, for NDBs their usefulness might be debatable. This is because NDB behavior as regards cyclical lending is less clear. If their lending operations are mainly long term, this makes loan disbursements less variable over the business cycle, at least compared with other banks (see, for example, Schclarek et al., 2018). In the downturn, such buffers may help, as NDBs do seem to scale up finance to help fight recession and unemployment. During phases of economic expansion, however, it is unlikely NDBs will slow down credit.

¹⁴ At the same time, it should be acknowledged that, between 2001 when Basel II was first proposed, and 2004, the Basel Committee made several efforts to correct this bias – but the 2007/8 crisis proved them insufficient.

3.4 Market and operational risks (some also systemic), and those in connection with innovation

3.4.1. Market risks

Basel addresses market risks with a focus on risks in trading books, which are treated under Pillar I. Unlike private banks, NDBs do not usually have large trading books. The most important sorts of market risks NDBs face are interest rate and currency risks they have in their banking books. Basel also addresses these risks but treat them differently. As regards interest rate risks in the banking books (IRRBB), Basel groups them all under Pillar II. If in supervisors' assessment, a bank IRRBB exposure reveals excessive risk (or inadequate management practices), regulatory capital may apply (BCBS, 2016). As regards currency risks, Basel addresses these under Pillar I, including trading and banking book exposures. Each currency exposure should consider the sum of the net spot and forward positions, guarantees that are certain to be called and are likely to be irrecoverable, net future income/expenses and foreign currency options. Currency risks can be quite relevant for NDBs that borrow from abroad in foreign currency, which may cause a currency mismatch if their loans are extended to national borrowers in domestic currency. Also, some internationally active NDBs act as the financial arms of their countries' development agencies, and their operations may involve loans in currencies other than those in which they are funded. Moreover, a few other NDBs also engage in international operations, and lend in foreign currency to support the expansion of national corporates and other interests abroad.

3.4.2. Operational risks

Under Basel III, the use of internal models for operational risk – the advanced measurement approach (AMA) – has been removed. The purpose is to adjust the Basel framework to the reality that it can be quite daunting to model operational risks, partly due to data availability, but also to the inherent complexity of the AMA and the lack of comparability of methodologies adopted among banks. The consequence is that NDBs that intended to use such models to save capital will no longer be able to do so, although they can use their information to meet new Pillar III information requirements. A broader issue, which comes from Basel II and is maintained under Basel III, is the broad definition of operational risk, encompassing losses arising from failures and deficiencies from internal process, systems or external events. This definition includes legal risk but excludes strategic and reputational risk. Operational risks are hard to measure and may lead to double counting with other types of risks, such as credit and market risks. Moreover, NDBs often are more exposed to large, complex projects, which may involve legal and regulatory risks which, if materialized, can be quite severe. Project finance, which is a finance modality NDBs often deploy in large, complex projects, and which Basel already penalizes due to various risks, has the additional regulatory/legal risk to contend with. This is an area in which the regulatory framework for NDBs may devote more attention.

3.4.3. Risks in connection with innovation, including in climate finance

NDBs are keen to support innovation and do so with different instruments and practices. In this regard, two Basel III rules are discussed here: those that impinge on equity finance, an instrument NDBs use to support innovation, and climate finance, which, in many instances, involves betting on yet untested clean technologies.

Equity exposures (shares) classified in the trading book are submitted to market risk capital requirements; and the ones where there is no intention to frequently negotiate them (classified in the banking book) should be considered into credit risk capital requirements. The reason is that, if the stock price drops too much, it is like a default event, without guarantees to offset the losses.

For equity exposures not held in the trading book, investments are risk weighted at 100% in the standardized approach for credit risk. In the IRB framework there are two methods for calculating risk-weighted assets for equity exposures: 1) the market based approach (which is further subdivided into: (a) a simple risk weight method, and (b) an internal models method); and 2) the PDG/LDG approach. . Under the market based approach , in the simple risk weight method, banks' exposures to equity are assigned 300 per cent risk weight (for equity holdings that are publicly traded), and a 400 per cent risk weight is to be applied to all other equity holdings. If the bank is using the second market based approach (internal models method – letter “b”) banks must hold capital using internal VaR models. Capital charges calculated under this approach may be no less than the capital charges that would be calculated under the simple risk weight method using a 200 percent risk weight for publicly traded equity holdings and 300 per cent risk weight for all other equity holdings. Finally, with the PDG/LDG approach the weights can vary from a minimum of 100% to a maximum of 1250 percent. Again, capital charges calculated under the PD/LGD approach may be no less than the capital charges that would be calculated under a simple risk weight method as just mentioned. These risk weights penalize NDBs with a large share of equities in their total portfolio of assets. Above all, the very high-risk weights disincentivizes NDB exposures to blue sky projects, which may fall under the category of speculative unlisted equity. Also, when shares are classified in the banking book, their counterparty is necessarily done on net equity, so total capital can go down or up significantly, according to market movements and the Basel Index can be severely impacted, sometimes without any substantial credit event.

On climate finance, as economies transition to a low- or at least neutral-carbon growth model, NDBs will become increasingly engaged in climate finance to support such a transition. In terms of risks, this engagement can be beneficial to the extent that it will shift their portfolios away from high-emission sectors and thereby reduce their vulnerability to them. At the same time, supervisors are incorporating climate-related risks in their supervisory work, as they are concerned with banks' vulnerability to such sectors and with the ever more frequent weather events, which can cause losses to banks. Accordingly, they are asking banks to report their risk assessment and management practices in this area. According to BCBS (2019), climate risk assessment by supervisors has not translated yet into additional capital requirements. What needs further discussion is the overlooked fact that NDBs becoming increasingly engaged in low-carbon growth projects may be penalized if such projects are deemed as of higher risk by their supervisors, due to the fact that they often incorporate new – and thus hard to assess – green technologies. Furthermore, in trying to find ways to support low-carbon growth, NDBs may feel impelled to create new lending practices and tools that supervisors may judge as idiosyncratic and thus require additional capital.

Thus, this section has summarized Basel III standards that are intended to address what economic theory, discussed in section 2, identifies as main potential sources of financial instability and crises: solvency and liquidity risks; systemic risks; pro-cyclicality of bank credit; market and operational risks, and those in connection with innovation.

IV – The challenges Basel III pose for NDBs: An empirical discussion

This section compares three large non-retail-deposit-taking NDBs: BNDES of Brazil, CDB of China and KfW of Germany. The purpose is to identify, among these banks, what constraints as well as possible benefits Basel III creates to their developmental role. The section pursues this task by 1) identifying through secondary information key common and specific characteristics these banks hold. This helps us narrow down what areas of Basel III are relevant for discussion; and 2) discussing Basel III adoption by the banks, drawing both on secondary information and interviews. The interviews were conducted with senior bank managers from BNDES and KfW departments of regulation and compliance and CDB's operational departments, and a senior regulator from China's national financial regulatory body in their personal capacity.¹⁵

4.1 Banks' key characteristics

Both BNDES and KfW are NDBs created in the post-war II period. KfW was created in 1948 as part of the Marshall plan to help in the reconstruction of the German economy, following the destruction it suffered during the war. BNDES was established in 1952 to support Brazil's drive towards industrialization. To accomplish their missions, both banks had an initial focus on infrastructure investments. Unlike BNDES and KfW, CDB was established later, in 1994, but also as a policy bank to support the then on-going process of economic transformation in China. Thus, all three banks have a clear developmental mandate. In addition, these three banks share other important characteristics. All three are the largest NDBs in their respective countries and are fully owned by the state. None of them seeks profit maximization but all of them aim at reasonable levels of profitability, so that they can channel their profits to expand their capital base to be able to accomplish their developmental roles. All three banks have changed their main focus and expanded their roles over time.

KfW and CDB are fully backed by the State, in terms of guarantees. BNDES receives State guarantees in few operations. In terms of funding structure, all banks tap into long-term funding sources. This is what they need to be able to support large-scale infrastructure projects. BNDES's main source of funding is FAT¹⁶, a workers' compulsory savings fund; and, also, loans from the national treasury. In addition, BNDES has a small part of its funding coming from multilateral financial institutions, and national and international capital markets. For KfW, capital markets represent the near totality of its sources of funding. The bank taps such a source at low costs since it benefits from full German government

¹⁵ Indeed, it should be noted that the views expressed do not necessarily represent the institutional views of the banks or China's regulatory body. The same applies for BNDES and KfW.

¹⁶ FAT stands for *Fundo de Amparo ao Trabalhador*.

guarantees. In addition, the bank counts on federal government transfers for DEG, the bank's arm specialized in development activities overseas.¹⁷ CDB, in turn, raises resources by issuing long-term bonds, mainly in China's capital markets. The bank's bonds have large acceptance by local financial institutions, as the Chinese bank regulator grants CDB bonds as free-risk assets carrying zero-risk weight for capital allocation purposes. KfW bonds shares the same privilege, but not BNDES.

In terms of modality of operation and financing instruments, BNDES acts both directly and as a second-tier bank. Support to different projects and activities is given through direct loans and on-lending operations, equity, securities underwriting, and, in a small proportion, by private equity funds and provision of seed capital. KfW operates mainly through on-lending operations, equity participation, supporting venture capital, providing subsidized loans and engaging in equity acquisition abroad. CDB operates mainly through loans, extended both domestically and abroad, and acquisition and underwriting of corporate-issued bonds.

All three banks have comfortable levels of capital, which is reflected in their high total capital ratios (see table 1).

Table 1: Banks' Capital Adequacy Ratios (CARs)

Sources: BNDES website at:

https://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/Institucional/investor_Relations/Financial_Information/historical_data.html; KfW Financial Reports, various years; CDB Financial Reports, various years.

Years	2014	2015	2016	2017	2018	2019
BNDES	15.9	14.7	21.7	27.5	29.0	36.8
CDB	11.9	10.1	11.6	11.6	11.8	
KfW¹	14.1	18.3	22.3	20.6	20.1	21.3

¹KfW: Tier 1 Capital over risk-weighted assets

4.2 Basel III adoption and challenges going forward

In a recent paper, Torres Filho and Xu (2020) propose four possible categories under which NDBs may fall, regarding bank standards. These are: (a) self-regulation, which means that NDBs are not subject to the supervision of national banks; (b) full compliance with Basel standards; (c) compliance with Basel standards, but with waivers and exemptions; and (d) the bank has a special and tailored regulatory framework.

¹⁷ DEG stands for *Deutsche Investitions – und Entwicklungsgesellschaft*, a subsidiary of KfW.

All three NDBs are under the purview of national regulators,¹⁸ so this excludes category (a). Both BNDES and KfW comply with Basel III standards, but with waivers and exemptions, thus falling under category (b). BNDES is exempted from Basel III compliance with liquidity ratios, although it uses them for internal risk management and reports them to the Board. KfW is exempted from Basel III liquidity ratios as well. In addition, the bank is exempted from disclosure requirements (Pillar 3) and recovery resolution.¹⁹ Unlike BNDES and KfW, CDB has been subject to a tailored regulatory framework.²⁰ In practice, however, the level of alignment with the Basel III framework seems high, at least regarding capital requirements. CDB's regulator requires the bank to establish financial discipline mechanisms with capital adequacy ratio (CAR) at its core. China's regulator has shown a more flexible approach to liquidity risk, as it recognizes that CDB is a bond-based bank and does not take household deposits.

The following is organized around 1) the pros and cons of the Basel framework and Basel III and 2) the challenges going forward, according to bank interviewees' views.

4.2.1. What are the pros and cons regarding the Basel framework and Basel III adoption?

These banks do not directly create systemic risks – they are not household deposit-taking institutions and are not a major part of their country's payments system. Adherence to Basel, therefore, is perceived, although this vision is not unanimous within some of them, as a framework with excessive control systems, given their specific characteristics and modus operandi. Moreover, the framework can affect their ability to play their future developmental role, especially in fostering the SDGs.

Within BNDES, there has been also a view that that Basel could provide an opportunity for the development of a culture of risk control, improve the quality of risk data and facilitate the adoption of integrated risk systems. A further potential advantage is that Basel compliance could help as BNDES turns to the capital markets. Moreover, as the Bank embarked on a continuous growth trajectory and portfolio diversification, new types of risk, such as market and operational risks, would gain a new dimension, requiring more sophisticated forms of risk management.

¹⁸ BNDES is under the purview of Brazil's Central Bank, the National Monetary Commission and the Securities Commission, and under the Basel framework since 1994. For the KfW, until 2013, the Basel capital framework applied for certain bank standards on a voluntary basis. From 2013, the bank became officially subject to supervision by the German Federal Financial Supervisory Authority (BaFin) in collaboration with the Bundesbank.

¹⁹ Interview material.

²⁰ CDB is regulated by China Banking and Insurance Regulatory Commission (CBIRC), which is the same regulator for commercial banks. However, CBIRC has a so-called Policy Bank Supervision Department, which is responsible for the financial regulation of CDB.

KfW, in turn, acknowledges that adherence to a supervisory authority and being subject to external audits help the bank become safer. The generation of data and data flows as a derivative of Basel compliance is also noted as positive. A further positive aspect is one raised not by KfW itself, but, rather, in the literature discussing the specific case of KfW. It is that, as a policy bank acting on behalf of the German State to implement government policies, KfW can use the Basel compliance to have some degree of autonomy and shield itself from government pressure (see Moslener et al., 2018). However, as KfW cautions, compliance efforts require more human resources, which is a cost to the bank, and which may drive critical resources away from their primary role, which is that of a promotional bank.

KfW reticence has also to do with the more strategic position the bank holds within the German banking system. This is the case particularly regarding the historical pivoting role it has played over the years by channeling resources to the country's SMEs, a mainstay of the economy, through Germany's commercial and regional banks. Thus, back in 2001, the bank was already expressing, in its Annual Report, concerns that the then under discussion Basel II could be a contributory factor to a deterioration in finance to SMEs. Since then, KfW has maintained its reticence in relation to the Basel framework, both in general terms and in what the framework affects it directly. For the bank, under Basel III, its type of business model – of a promotional bank – is not represented. Two areas have been particularly highlighted as of concern for the bank.

The first concerns KfW on-lending business model. KfW is a large bank – the third largest bank in Germany – with a big portfolio, but in most cases it can no longer (or will not be able to) use the A-IRB approach for credit risk, which could help mitigate the need for capital. Under the alternative approach, which is the foundation IRB approach, loss given default (LGD) is determined by the regulator. For KfW, calculating its own LGD was good as it could be of low value due to collateral.²¹ The second concerns bank's equity exposures. Under Basel III, in the case of such exposures, risk weights vary between 300 and 400 per cent.²² This change penalizes KfW significantly, as equity business (which includes venture capital) is a very important financing instrument for the bank. The DEG Unit of the bank, moreover, uses equity a great deal to support businesses in transition economies.

BNDES expresses similar concerns regarding the disincentive, or even outright prohibition, of the use of internal models for capital determination, although the use of internal models will not necessarily always save capital. In practice, internal models for credit risk under Basel III have their use restricted to a small number of operations, such as project finance. In the case of market risks, banks authorized to use internal models should also report the results

²¹ This concern had already been expressed in an analogous way in Lob et al. (2016). According to these authors, KfW will be at disadvantage if the IRB approach is replaced by the standardized approach as the latter “does not allow for any recognition of collaterals”, despite the fact the latter is an inherent feature of the bank's on-lending business (Lob et al., 2016:8).

²² Unless the project is part of a national government program, in which case risk weight will be 100 per cent.

from the use of the standard model, with the stipulation that capital gains with the use of the former should be limited to 20 per cent. Yet, despite these disincentives, BNDES does and will continue to use internal models, not to calculate risk for capital determination as before, but in order to provide information requested by the national regulatory authorities, which are inputs to such models and for managerial purposes.

Basel III's higher and stricter capital requirements with emphasis on tier 1 capital, and additional backstops, such as the 2.5 per cent conservation cushion and the new leverage ratio, also affect all three banks. However, to date, these banks are doing well in terms of capital adequacy ratios (see above) and leverage ratio. The concern is that, when need arises for a counter-cyclical action, capital positions may erode quickly. Even without a crisis, Basel III new capital requirements may constrain their role in stepping up their development plans.

In terms of concentration risks, BNDES responded to the new large-scale exposures rule by selling shares. Other concentration issues for the bank include guarantor concentration and sectoral expositions, such as infrastructure sectors, State Governments and municipalities. Unlike BNDES, KfW does not have large exposures. In the case of CDB, given that the total assets are as large as \$2 trillion, the concentration risks are less of a concern for the bank.

As discussed earlier, market risks in the trading books are not relevant for NDBs. IRRBB, treated under Pillar II, is considered a significant drawback for BNDES since it has a substantial banking portfolio. The method used is the standard model and may be subjected to new parameters by the Central Bank and thereby imply higher capital requirements. On operational risks, the proposed change, to be adopted from the year 2022, and which is based on banks' operational risk losses over the past ten years, may result in a substantial increase in required capital. However, both BNDES and KfW do not consider capital requirements for operational risk a major concern.

4.2.2. Going forward: What are challenging areas?

In the banks' views, development banks are expected to play a counter-cyclical role in times of recession/crises. This role implies a step change in their amount of lending and speed of disbursements. They do need to do so to save the economy, as other banks retreat in such times. Although all three banks are doing well in terms of total capital ratios, this is the case in normal times. In crisis times, when banks are expected to expand lending very rapidly, capital ratios can be eroded quickly. Moreover, development banks are expected to play not just a countercyclical but a strategic role as well. A regulatory framework can be limiting and thus should allow for more flexibility, including in order to enable them to support investments for a green future.

Concentration exposures remains as a concern for BNDES, due to Brazil's needs for infrastructure investments, although it has declined in the last years due to divestment strategies (sale of shares). Another significant challenge is how to treat environmental and climate risks. The bank has made progress in the creation of a policy for the management of socio-environmental responsibility and for an implementation plan that highlights the

importance of managing associated risks. This is under an implementation phase. The quantitative assessment of environmental risk and, above all, climate risk, is still a challenging task for the bank. Besides environmental risks, important progress has been made with the definition of risk appetite of the institution and of its limits. In contrast, little progress has been achieved on reputational risks, though a lot more on the treatment of strategic risk has been accomplished. All these risks fall under Pillar II.

For CDB, the key challenge is that the regulator and supervisor increasingly use the benchmark indicators similar to commercial banks to regulate and evaluate CDB. This tendency culminated in the adaptation of Regulation of China Development Bank by China Banking Regulatory Commission (CBRC) – the predecessor of CBIRC formally unveiled in April 2018 – in 2017. Previously, CDB enjoyed much discretion and leeway in setting up the internal risk management system, which had enabled it to play a pivotal role in speeding up the industrialization and urbanization process in China.

Conclusions

Our paper explores the potential impact of certain Basel III rules on the fulfillment of development functionalities of large NDBs. The empirical section, based on a combination of secondary information and interviews, brings together important elements and insights that support the view that Basel III may further constrain the ability of NDBs to fulfil their developmental missions, especially concerning the role they may play in the future for supporting the SDGs. The biggest constraint seems to come less from the levels of comprehensiveness and complexity of the framework, and more from the rather simple change, in Basel III, towards tightening the levels of capital requirements and demanding better quality of capital. This is a concern shared not by small NDBs starved of capital, but by three large and well capitalized banks. This apparent paradox has to do with the fact that, although these large NDBs acknowledge that capital has not been a binding constraint for them in normal times, it can become so in times of crises, such as the one the world is facing now. Consequently, their countercyclical role is considered an important casualty of Basel III. The counter-cyclical buffers the new framework has created do not seem to sufficiently address the problem.

A second area of contention for these big banks is the disincentive to the use of internal models, best suited to their own characteristics and which, again, may imply more capital requirements. A third area is the new large exposure rule, which is problematic for all three banks, given their focus on large, infrastructure projects. A fourth area refers to the high-risk weights required for exposures to project finance and equity. These are financing modality and tools NDBs use extensively, again, to support large and complex projects, and activities that involve innovation and risks. Essentially, these projects and activities require long-term finance. A final area which may have some impacts concerns changes in the method used for the calculation of operational risks. Liquidity and market risks, which are two areas Basel III targeted strongly in the aftermath of the global crisis, seem less relevant for the NDBs under analysis, given their funding structure based on longer-term liabilities, and the fact that they seldom engage in speculative activities.

Under Basel III, both BNDES and KfW benefit from wavers and exemptions, whereas CDB has a tailored and separate regulatory framework. The adoption of such rules, designed having commercial and investment banks in mind, are not exactly suited to their own risk characteristics and can potentially have an impact on their future roles. What might be a better alternative are the possible adoption of separate rules, to be designed taking due account of their special forms of ownership, funding structure, business model and the strategic role they play on behalf of their national governments. Thus, what this paper recommends is that, in the case of BNDES and KfW, regulators move from the wavers' and exemptions approach adopted at present, towards a more tailored regulation for these banks, in order to ensure they are not constrained in their future role to support rapid and transformative growth, specially concerning SDG goals. Ultimately, this is a political decision, of whether their governments really want these institutions to be key financing tools for supporting change and are prepared to underwrite their actions. As for CDB, although

tailored regulation already exists, what it seems is that this is the case in formal terms but less so in practice.

Considering that having an international regulation can act as a protection or insurance against bad policies and decisions from administrations and governments, an alternative approach to tailored regulation for each NDB would be to recommend a concerted regulatory framework at the international level for NDBs, as the counterpart of Basel for commercial banks. A possible advantage of this latter approach might be that it would mitigate the downside or pitfall of a tailored approach, in terms of not sufficiently protecting NDBs against undue political intervention, if there are no hard regulatory rules to follow. This approach, of course, would still face the question of to what extent the diversity of NDBs would pose challenges for these concerted efforts.

Compliance with the Basel framework may also bring other palpable benefits, including better and integrated risk management systems, higher levels of bank safety, and ability to tap capital markets at lower costs, although in the case of both CDB and KfW, low borrowing cost in capital markets has little to do with Basel compliance and more with government support. Despite possible benefits alongside costs, and the fact that some benefits are identified internally by the banks' themselves, what transpires is that Basel adoption by these three banks were not the result of a dialogue or compromise between national regulators and banks. Rather, in each case decision on adoption was undertaken by national regulators, and only little consultation by regulators took place, though this has not been the case of CDB, which has a tailored regulatory framework. For all these banks, therefore, if an international alternative approach for development banks will not be possible, what seems needed is that more structured dialogue takes place between national policy makers, regulators and banks' senior management on how to build a regulatory framework that is more suitable to them and in line with national development priorities. To understand why this has not been the case to date, further research could throw light into decision-making process of Basel adoption for NDBs. This research could explore not only why Basel III was adopted in Brazil, China and Germany for their NDBs in the way it was, but also why, according to some research, some other countries exempted their NDBs from Basel standards (Castro Carvalho et al., 2017; Hohl et al., 2018).

An area of clear concern relates to climate risks and climate finance. Despite the climate crisis, Basel III, a framework for capital determination based on a risk-based approach, still needs to appropriately factor in climate risks, remove the indirect forms in which it currently disincentivizes climate finance and go further by creating clear incentives instead, necessary both for bank stability and for the future of the world.

Finally, notwithstanding the insights the paper might provide by focusing on three large NDBs, the fact is that NDBs form a quite diverse group of banks. Many NDBs are just too small, are capital starved, lend too little, and lack the political support that banks such as BNDES, CDB and KfW have had over the years. In addition, many NDBs lack reliable funding sources and may be facing serious liquidity problems in their day-to-day operations. Therefore, future research is needed for an assessment of how the Basel framework affects these various other NDBs, as the policy recommendations might differ, possibly quite significantly, about what might be needed from the regulatory side to make these banks more effective tools to support the SDGs and the fight against climate change.

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