

Financial Regulation and Risk Management in Development Banks

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This article attempts to answer four questions: 1) from a theoretical point of view, should Development Banks (hereinafter, DBs) be controlled by prudential regulation; 2) is the Basel Accord a suitable framework for DBs; 3) with regard to risk management, do DBs have different characteristics from private banks; and 4) what are the challenges brought by Basel III and “Basel IV”.

A few habitual answers to those questions include: 1) DBs should not be regulated, because, as they do not receive cash deposits, they do not constitute sources of systemic risk; 2) Basel is an inadequate framework for DB regulation, because its enforcement conflicts with the objectives of funding development; 3) DBs bear greater risks than private institutions, precisely because they operate in areas avoided by the private sector, due to their greater risk and/or longer term; 4) Basel III (or IV) aggravates the situation for DBs due to its tougher requirements. This article intends to investigate these responses in greater depth, sometimes questioning, other times qualifying, them.

Discussing the regulation of DBs is no simple task, given their institutional diversity. This article recognizes that there is no single comprehensive definition that will encompass the multiplicity of existing institutional designs. For this reason, the review is restricted to national public DBs which are non-specialized in specific credit segments, do not accept cash deposits, and are comprehensively defined as “...financial Institutions set up to foster economic development, often taking into account objectives of social development and regional integration, mainly by providing long-term financing to, or facilitating the financing of, projects generating positive externalities” (UN-DESA, 2005: 10-11). Each section of this article discusses one of the above questions.

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2. Financial Regulation – The Theoretical Justification: Should Development Banks be Regulated?

There are at least two very distinct groups of arguments in favor of financial regulation: 1) the theoretical framework on *market failures*; and 2) the view that brings together Keynesian, Schumpeterian and Minskyan contributions. While the former emphasizes the defense of regulations under a microeconomic perspective, the latter does so from a macroeconomic perspective.

Intuitively, the framework on market failures departs from the overall assumption that, under certain conditions, the free market will always arrive at a Pareto optimal result, where an economic outcome is said to be optimal if it is impossible to make any individual better off without making other worse off (First Welfare Theorem). In that perspective, only in very specific situations will the market “fail” and government intervention can raise economic welfare.² These failures occur in situations with the presence of: *i)* public goods; *ii)* externalities; *iii)* asymmetric information; and *iv)* market power. The existence of DBs is justified, therefore, to the extent that these institutions are able to reduce such failures and, so, (probably) enhance overall welfare.³

Literature on failures agrees, for example, that the government providing financing or producing public goods may bring about improvements in welfare. With regard to externalities, DBs can reduce social and regional disparities, generate positive environmental impact, promote technological spillover, provide signals to the market (eg. that some companies are eligible for credit support, creating “crowding in” effects), provide public information, develop capital markets (helping them to become larger and liquid and so reduce the likelihood of contagion between the credit and stock markets) etc.

² Some authors claim that “government failures” can be higher than market failures and that, theoretically, there is the possibility that a situation is “pareto constrained”. That means, it cannot be improved by any intervention, even if it is not optimal. Stiglitz (1994) argues that in financial markets market, failure is far more pervasive than “government failures”, making a powerful case for both financial regulation and development banks. I thank Prof. Stephany Griffith-Jones for this observation.

³ In microeconomic theory, the validity of the First Welfare Theorem is conditioned by the existence of: (i) local non-satiation; (ii) complete markets; and (iii) price taker behavior. Market failures arise, precisely, by a relaxation of the last two hypotheses. See Mas-Colel, Whinston and Green, 1995.

Financial regulation, on the other hand, has three purposes: 1) avoid systemic crisis (prudential regulation), 2) increase the allocative efficiency of capital, by allowing sectors or regions in surplus to fund those in deficit (allocative regulation); 3) guarantee consumer and investment protection.

Financing public goods is simply not related to financial regulation. Concerning public goods, someone could argue that DBs should be supervised in order to verify the effectiveness of the credit provided – but not regulated. In the externalities case mentioned above, the situation is the same. Instead of regulation, DBs could be evaluated by cost benefit analysis (oversight of fiscal costs x the benefits to society).⁴ However, the failure literature includes one case that *does* justify financial regulation: banking runs, considered as negative externalities, although it is also remarked that there is always the risk of regulatory action encouraging moral hazard (“too big to fail” argument). Traditionally, bank runs are only possible among institutions which accept cash deposits⁵; thus, prudential regulation would only be justified for DBs that took them - but not for the others. Consumer Protection Regulation, also, should apply only to DBs which, once more, serve the public cash depositors directly.⁶

Asymmetric information is precisely the *raison d'être* for the existence of DBs, according to the market failure approach. Here the regulation in focus is allocative (support for small businesses, underdeveloped regions, urban development etc.). DBs are, in this case, a mechanism against failures, therefore a solution, and not a source of failure. They do not require regulation (in the restricted concept of capital requirements, limits on interest rates and others), but rather, supervision (again) to verify whether they are actually fulfilling their goals.

⁴ It is worth noting that externalities are by definition non pecuniary (as so, hard to measure) and many of the benefits generated by the DBs only materialize in the long term. In this analysis, it should be also considered how much would be lost in the absence of the investment promoted.

⁵ Someone can argue that an investment bank could have a sort of a banking run (a wave of withdrawals on term deposits). It will face liquidity risk by selling assets with discount. If the investment bank is a big debtor of a commercial bank, its crisis could (at the limit) affect the payment system, but only indirectly. I thank Professor Eduardo Ichikava for that observation.

⁶ Luna Martinez and Vicente (2012) note that from a sample of 90 Development Banks, 41% take deposits from the general public (p.10). However the survey does not make it clear if these are cash or term deposits.

Finally, the market failures associated with market power (monopolies) must be analyzed, carefully. For some authors, DBs, upon becoming monopolists in certain credit markets, “crowd out” private banks. The low interest provided by DBs works as a “barrier to entry”, precluding competition, and resulting in smaller amounts supplied in the market – an argument in some sense similar to the old financial repression theory (Gurley and Shaw, 1960, and McKinnon, 1973). Even if so, this case is different from traditional monopolies analysis.

First, the possibility of DBs becoming monopolist in a given credit segment is associated (unlike in the classic case) to the possibility that DBs offer a lower interest rate than the market - and not a higher price, as is usually the case in monopoly practices. As such, the theoretical issue of “dead loss” is not quite clear. Second, assuming that there are niche markets where DBs and private institutions compete, it makes no sense to regulate (Consumer Protection Regulation) the (very) party that contributes to the reduction of the average prices.⁷ Finally, and more relevant, there are no guarantees whatsoever that a reduction on credit resources by DBs would lead to an increase in supply by the private sector in the same credit segments (long-term projects, small businesses enterprises, innovation, environmental projects, inclusive endeavors, and so forth), precisely because here one faces a situation in which the market fails. In short, the discussion about the monopolist’s power of DBs is not the traditional one. It is not a case of avoiding supernormal profits and enlarging supply, by regulation.

In contrast to the previous framework, the Keynesian, Schumpeterian and Minskyan approach emphasizes (KSM, hereafter), as a structural condition, the **inability** of markets to self-regulate.⁸ There is some skepticism as to the capability of regulatory activities to completely prevent the outbreak of crises - but it is possible to make them less

⁷ Someone could argue that the marginal cost curve of DBs would be structurally lower, as they access sources not available to others. Potentially, this would open up space for the practice of interest/spreads above their marginal cost - which would also be an exercise of monopoly power. However, considering that spreads are usually quite low in these institutions, the problem is, in our view, immaterial.

⁸ The KSM approach is not, in our view, necessarily incompatible with the recognition that “market failures” might exist. However, it is considered that: a) the concept of allocative efficiency, adopted in failures, is poorly suited to address the problem of development financing; b) uncertainty goes far beyond the traditional scope of failures; and c) funding long term investments and innovation is crucial for economic growth.

frequent and mitigate their effects. Unlike the “failure” approach, public intervention of financial markets is called for, as a rule and not as an exception, in order to: 1) contain systemic risk; 2) act anti-cyclically, when necessary (through monetary and fiscal policies); 3) foster development.

In the KSM approach, DBs can reduce financial fragility by: creating effective demand; offering a stable source of long-term funding in national currency (so reducing exchange and interest rate risks); making investments feasible by reducing uncertainty; mitigating external vulnerability in primary exporting countries (since they often promote the diversification of production, by funding industrial development), among others (Castro, 2009).⁹

The role of DBs on innovation funding is also crucial (Burlamaqui and Kregel, 2005) – and this role is seen as one that does much more than “fixing static market failures” (Stiglitz, 1989, quoted in Mazzucato and Wray, 2015). DBs have advantages in financing innovation because they can be “patient and mission oriented”. Besides, DBs have the technical capacity to analyze innovative projects – since it is a core business. They can provide non-reimbursable funds, in limited amounts, or manage funds (which are not supposed to have returns in the short-term) where the success of one project will make the others financially viable. They can also promote crowding-in on private resources, by joining private equity funds.

In the KSM approach, prudential regulation is made necessary by the recognition of the cyclical nature of capitalism. The phenomenon of “contagion” is emphasized here, on two levels. First, the very perception of a fragility in a bank can affect others (even if they were *ex ante* healthy). This happens either because of crossed liabilities among banking institutions, or merely due to a “panic” and “herd behavior” in a fractional reserve system. The second level is related to the fact that banks operate the payment system, directly influencing liquidity, which makes the crisis irradiate from the financial sector to the rest of the economy – this is ultimately the reason for regulating the financial system (Carvalho, 2009). The payment system being the critical point, financial regulation focuses

⁹ According to Kregel (2014) and Rezende (2015) DBs can, by reducing financial fragility, help solve the “two masters” dilemma on regulation: assuring a safe and secure payment system versus fostering development (Minsky, 1994). I thank Professor Felipe Rezende for that observation.

necessarily on the banks. But, as financial markets are interconnected, the need for regulation of other financial institutions is recognized.¹⁰

Let's apply this discussion on DBs. In the case of DBs that act (exclusively or not) as second-tier banks, fund transfers comprise part of the DBs' assets. Traditionally, the problem of systemic risk occurs, conversely, when a bank is a large debtor (having commercial banks among their liabilities), so that its default spreads to successive breaks. Most likely, only small banks that were fundamentally dependent on the funds transferred by the DB, and had simultaneously assumed short-term liabilities, would not be able to honor their commitments to customers, and thus contaminate the payment system. It is unlikely, however, that the breaking of these small institutions would engender a wave of withdrawals from other banks, thus spawning a systemic crisis.

If a DB only operates through direct operations, its breaking may potentially generate a credit crunch. Companies that receive funds directly from the DB, but also obtain funds from the commercial banking system, could face difficulties in paying back commercial banks, leading to problems for the latter – and this way a DB break could, indirectly, generate systemic risk. So, the habitual answer to the first question mention in the introduction is not precise. However, if it is not impossible for DBs (which do not hold cash deposits, but are significant lenders of funds to other banks) to be a source of systemic risk – this could happen only indirectly and that possibility is remote.

Finally, an afterthought on allocative regulation can also be regarded as a KSM concern, but (again) DBs are a solution, and not a source, of problems. At most, supervision rather than regulation is applicable. Consumer Protection Regulation is also hardly befitting (as in the case of failures) as this is advocated solely to protect customers from the effects of bank runs, or from selling of products that can lead to individuals' losses.

Realistically one may expect that, if the DB is large, in order to avoid a major credit crunch or economic recession, it will receive additional public funds, so that the question becomes fiscal (budgetary space or the ability of the Government to raise additional debt

¹⁰ The 1990s-2000s movement to strengthen bank regulation and simultaneously deregulate other financial institutions is seen, in this approach, as a major source of instability. It opens opportunities for regulatory arbitrage, increasing leverage in unregulated areas, which was a key element in the subprime crisis (shadow system).

in the market, at spreads that are not excessive) or, ultimately, inflationary.¹¹ In other words, there would be a need for the Government to provide additional resources (capital injection or loans – both will enlarge gross public debt) in order to avoid systemic risk. Here another doubt arises: is prudential regulation justified by the fiscal risk? The literature simply does not answer this question.

3. The Evolution of Basel Agreements – Is Basel a Suitable Framework for DBs?

The first Basel Accord was established in 1988 and was limited to credit risk, subsequently including market risk, in 1996. The second agreement (Basel II) was launched in 2001 (reviewed in BIS 2004 and 2006), adding operational risk in the minimum required capital.¹² In 2009, BIS, Bank for International Settlements, launched an amendment focused on trade portfolio improvements (trading book) and the treatment of market risk—which became known as “Basel 2.5”. Finally, Basel III was released in December 2010 (reviewed in June 2011). Complementarily, in January 2013, BIS announced the rules for dealing with short-term liquidity risk (1 month), and in 2014 long-term liquidity requirements (1 year), aside from requirements for the exposure of banks to central counterparts.

Quite synthetically, the concepts underlying Basel II involved three pillars: *i*) minimum capital requirements; *ii*) supervision; and *iii*) transparency—and those remain in Basel III. The minimum requirements comprehend: credit risk, market and operational risk (defined as the risk of losses resulting from failures in: processes; people; and systems, including legal risk). Different approaches to deal with each risk were allowed—from standard methods to advanced models. Supervision (Pillar II) oversaw other risks: interest rate risk at the banking book, concentration (BIS, 1991), liquidity, reputational, etc. that did not require *a priori* regulatory capital. Strictly speaking, supervision could require additional capital (the first Pillar is about minimum requirements), changes in the ways of

¹¹ In the KSM approach, it is argued that countries with sovereign currencies have no default risk. In fact, ultimately, the risk is inflationary.

¹² It lies beyond the scope of this work to discuss the Basel I and II. For this, see Carvalho (2005), Griffith-Jones and Segoviano (2002).

controlling risks, internal limits, provisions and reserves, improvements in internal controls, and other measures. Complementarily, the third pillar was intended to encourage market discipline by developing a set of disclosure requirements in order to provide public information about risk management and capital adequacy.

When Basel II was launched, critics mentioned: a) its procyclicality; b) the fact that the agreement hampered access to credit for companies with low ratings, including small businesses; c) its bias against long-term credit; d) its bias against smaller banks, since they are probably less able to develop internal models that could (potentially) save capital; e) the difficulties in measuring operational risk; f) its indiscriminate use of Value at Risk (VaR)¹³; g) the absence of liquidity risk¹⁴ management enforcement, among others. In particular, Basel II was accused of leaving aside a macroprudential view, focusing exclusively on micro-prudential issues. Besides, Basel Accords were applied only to banks, thus creating opportunities for regulatory arbitrage.

The changes made in 2004, still under the scope of Basel II, sought to respond to several of these faults. For example, adjustments were made in: credit risk models (to ease the problems of cyclicality and short-term bias), VaR models, some calibration by firm size in the case of internal rating models (credit risk) were added, and other minor adjustments (see Castro, 2006). The more structural criticism regarding the fact that Basel II does not address macroprudential issues and the inadequacy of operational risk models, however, were not dealt with.¹⁵

What is being called attention to is, in first place, that several of the criticisms made regarding Basel II were not ignored (even before the subprime crisis), but acknowledged and, to a point, addressed. This, however, was not able to prevent one of the biggest financial crises experienced in the recent history of capitalism. Secondly, even though the

¹³ VaR calculates the maximum expected loss in equity due to changes in risk factors, considering volatilities, correlations and sensitivity measures. For a critique of the use of VaR, see Dowd (2006).

¹⁴ Liquidity risk is: a consequential risk (derived from credit, market and operational). It varies according to the severity and duration of events, has no single indicator, capital cannot be used for counterbalances, it is difficult to hedge against, requires contingency plans, and is highly correlated with systemic risk and the other aforementioned risks.

¹⁵ The review of 2006 added new capital requirements for counterparty risk for some portfolio positions (Trading Activities) and the treatment of Double Default for credit risk (risk of both the borrower and the guarantor entering into default).

ultimate goal of the framework continued to be avoiding systemic risk, Basel II evolved into a set of risk management usual practices. In third place, we can remark that, in Basel II and in spite of changes made, the focus continued to be on micro-prudential regulation. The assumption remained that, by good (preventive) risk management practices (market, operational, credit, etc.), the probability of a systemic crisis could be reduced – the argument of leveling the playing field (equal conditions among countries) also remained.

However, from 2008, in face of the severity of the international financial crisis, BIS started to release many documents. Initially the changes seemed (again) to follow the same strategy as Basel II: to include more and more requirements, adjust models, without any major conceptual change (BIS, 2008). The attentive reader, however, would start to notice a few novelties. The new framework (Basel 2.5), for example, sought to address activities performed by banks such as JPMorgan (JPM), Citibank Morgan Stanley (MS) and Goldman Sachs (GS), which had investment banking branches, and it was suggested that the framework could be extended to pure investment banks. It was recognized, albeit not explicitly, that regulatory arbitration and the need for more comprehensive regulation might be a possibility. Basel III forded well beyond; not only was a large amount of measures introduced (see Box 3, section IV), as usual, but a new framework was laid down. Also, BIS (2009) introduced the “Supplemental Pillar 2 Guidance” and “Revisions to the Pillar III (Market Discipline)”.

As explained by William Coen, Secretary General of the Basel Committee: “The global financial crisis highlighted a number of weaknesses in the financial system and the global regulatory framework, including: ... a high degree of systemic risk; interconnectedness among financial Institutions and common exposures to similar shocks; inadequate capital buffers for banks to mitigate the inherent procyclicality of financial markets and to maintain lending to the real economy in times of stress; and insufficient liquidity buffers and excessive exposure to liquidity risk, both direct and indirect (e.g. through the shadow banking system). ... The weaknesses in the banking sector were transmitted to the rest of the financial system and the real economy, resulting in substantial

costs.” (BIS, 2016b).¹⁶ Coen also announced that the current Basel agenda sought a better balance between “risk sensitivity, simplicity and comparability”. It was admitted that the regulatory framework became too complex, rendering not only supervision but also the very perception of risk by senior management (board) even more difficult. In addition, the Committee recognized that there were great discrepancies between asset valuations and risk calculations by different banks, which reduces comparability (and possibly reveals low accuracy) among metrics. In this regard, the Committee intends to: increase the sensitivity and robustness of the simplest approaches, standardizing them. In particular, changes are underway regarding models of operational risk and interest rate risks at the banking book, and in “... the design and calibration of the leverage ratio and the potential capital floor based on standardized approaches.” In all of these revisions, the sought path seems to be the same: reducing the flexibility of using in-house models—which seems to bear consequences for the DBs, as will be discussed below.

Since there are already so many changes in perspective, the Bank industry has started talking about a “Basel IV” approach, instead of mentioning all the new papers. Basel IV is not yet an official name. However, generally speaking, Basel III focuses on higher and more qualified capital requirements (although there are some other changes concerning, for example, liquidity risk). “Basel IV” is about revisions on the risk assets measures. In other words, Basel III is about the “numerator” of the Basel index (capital requirements), and Basel IV focuses on the “denominator” (requirements on the modeling of risks) – both results, in general, in more need for capital. The discussion under “Basel IV” is at different degrees of maturation. Some of the revisions proposed, like the revision on Trading Book, are almost finished, while others are still in the form of consultative papers, and we can expect many future changes. The impact of Basel IV on the banking industry is also very diverse, depending on the different banks. Some of the banks can even profit from small

¹⁶ In 2009, it was already recognized that: a) the boundary between trading book and banking book was susceptible to regulatory arbitrage; b) the models do not consider extreme events (tail risk – so an additional requirement for losses in extreme situations - Stressed Value At Risk – SVAR was added), among others. An additional amount of capital was also added, the Incremental Risk Charge (IRC) to estimate default and credit migration risk and another one to better treat correlations (comprehensive risk measure). The treatment of securitization and re-securitization was enlarged and reinforced. It was proposed (albeit vaguely) that calculation be improved for: 1) the concentration risk, 2) off balance-sheet exposures and 3) reputation risk (thus far, outside the scope of Basel II).

reductions on capital requirements, for example, on credit risk, estimated at about 10% by PricewaterhouseCoopers (PWC). Others can have costs highly increased (PWC mentions that they performed tests on different clients and some of them would face a 190% increase in their capital costs for credit risk). On average (an average that does not say much), specialists are considering an increase of total cost of 25 to 30% (PWC, 2017). Before dealing with Basel III and Basel IV (Section V), a glance may be cast upon the matter of Basel's applicability to DBs.

National public DBs are subject, in general, to specific national rules, and may or may not operate under the aegis of a Central Bank. Thus, during Basel I, several DBs were not covered by the international framework; to name a few: KfW (the German DB), JBIC (the Japanese DB), and Korea-Exim. BNDES (the Brazilian DB), on the other hand, was under Basel regulations as soon as the rules were laid down in the country, in 1994. The adhesion of DBs to Basel II, however, was much higher, whether imposed or voluntary. The China Development Bank, the KfW and the Korean Development Bank, for example, voluntarily joined the framework¹⁷, as did Latin American institutions (Zendron and Sobreira, 2007). Why did this happen?

First, because prudential regulation in Basel stopped addressing only the problem of systemic risk (here understood in the classical sense of bank runs), and focused more directly on the individual risks of financial institutions. This design, as has been seen, is derived from the argument (which would later be belied by the subprime financial crisis) that avoiding individual risks regularly would eliminate the roots of systemic risk. By presenting the rules as a set of risk management best practices, (although they always faced some criticism), these became potentially applicable to any organization, including DBs. When imposed, as in the Brazilian case, the justification was the banks' size and the relevance of DBs in the economy (in the broadest sense of the concept of systemic risk: capable of affecting the GDP due to its size).

¹⁷ Since 2016, bank supervisory laws and regulations are officially applied to KfW – and the Bank has shown concerns about the new requirements proposed by Basel III and IV (KfW, 2016).

The second reason for adherence to Basel II was, in fact, an increase in the risks undertaken by the DBs – which needed to be managed to ensure financial sustainability. In a context of reduced public resources available for promoting development, it had become necessary (for some DBs) to supplement public resources, until then abundant, and capture market funds (however, some DBs already had that practice before, like, for example, KfW). This, however, resulted in structural changes in liability conditions, introducing risks that did not exist before - but now needed to be properly managed. At the same time, the payback terms of DBs loans also widened (changes in asset conditions), since the market, in some countries, assumed funding medium terms projects (5 to 6 years or even longer, in some developed countries), for example.

As a result of this double process (changes in asset and liability conditions), the potential risks to DBs increased: credit, market and even operational risks associated with assessment of long-term projects. Finally, the assumption of shorter-term liabilities, in order to complement the funding structure (hitherto nonexistent or irrelevant), increased the DBs' cash flow risks. Also, the loans for large projects sometimes entailed grace periods that could comprise “valleys” of cash flows, which also needed to be managed.

Moreover, the financial deregulation process, which gained momentum in the 1990s, inserted an element of competition (national and international). On the one hand, this increased opportunities for raising funds abroad, but on the other, it also boosted the risk of mismatches on currencies and terms, and on interest rate, among these institutions and decreased financial returns. In addition, support for share subscriptions increased the risk of price fluctuations in DBs' balances. Strictly speaking, when a DB (in order to develop capital market) supports a firm that has already been awarded loans, through an acquisition of shareholding participation, the institution assumes double exposure on behalf of this company. Furthermore, unlike in the case of loans, there are no longer guarantees to protect it, at least in part, from losses in case of default.¹⁸

¹⁸ From the risk management point of view (exclusively), thus, support through fixed income only, characteristic of the historical role of DBs, was preferable. On the other hand, there are benefits to society in the development of the capital market. It is interesting to note that in Brazil, Law 11.101 states that, independently of the size of debt, if the creditor gives loans and has stocks from the same enterprise above 10% of the share capital, the creditor loses the right to vote. I thank Professor Patricia Barros for that observation.

To the extent that DBs' priorities came to emphasize areas such as: 1) innovation funding; 2) micro and small businesses; 3) large-scale projects in new industries, the challenges have widened once more for managing credit risk (innovation and small businesses) and legal risk (regulatory framework for large-scale projects). The greater funding requirements to meet the demand for investment, in turn, required, in some cases, that some DBs create financial products such as a supply of securitized papers or convertible debentures (see BDC, 2009). Again, this introduced potential additional market risks for institutions that, historically, did not exist.

The third argument in favor of adhesion of DBs to Basel is that in this same context of financial globalization, not only is better risk management necessary, but also the importance of certifying this management has increased. In many ways (third argument), Basel II became a "quality seal", used even to attract market resources. This seems to be the reason why some DBs have chosen to adhere to Basel II, even in countries where the rules are not mandatory for them.

According to (informal) reports by risk managers in DBs, adherence to the Basel II framework led, *per se*, to some improvements in risk management (see Castro, 2014). The most relevant gain was the creation of integrated risk management systems, which enabled improvements in management and, above all, improvements in the quality of databases. Other gains included improvements in the corporate governance of risk management, given the imposition of formulating risk management policies, setting limits, segregating functions, greater accountability, etc.

Finally, as Basel II was a relatively flexible framework, allowing internal models, it became difficult to justify to the market why a DB should not join the framework. The DBs saw potential opportunities in saving regulatory capital through the development of internal models, particularly credit risk models, given the low historical default rates and the high recovery rates (low Loss Given Default - LGD) due to the existence of good quality guarantees, frequently sovereign or banking.

The voluntary acceptance of Basel II reveals something more important: the Basel requirements were not perceived by these DBs as a hindrance for the exercise of their mission. Why was that? In part, because several of their measures were simply good practices, bringing some important advances. Also, contrary to what is generally thought,

in spite of acting in higher-risk credit segments, DBs also rely on risk management instruments that the market does not have access to. If, on the one hand, there are more risks, there are also tools to manage them. Managing risk is not avoiding risk.¹⁹

4. Do DBs Benefit from Distinctive Risk Management Features?

While generalizations concerning DBs are very difficult, it could be argued that DBs do enjoy a few advantages regarding risk management capability:

- 1) Lower liquidity risks, as a consequence of their own funding structure;
- 2) The longer terms of DB loans are not imperatively related to higher credit risks for DBs, as will be argued;
- 3) There are advantages in supporting exports to high-risk countries, because sovereign payments are easier and more easily enforceable among governments and they benefit from specific support mechanisms such as public funds and guarantees;
- 4) In principle, there is a smaller exposure to market risk in the trading portfolio, vis-à-vis the private sector, since it is not their core business. Also, DBs have, in general, less complex instruments, such as derivatives. The same cannot be said, however, regarding mismatches on indexes (different inflation indices on assets and liabilities, different interest rates or currencies), which remain a major source of potential market risk;
- 5) DBs can renegotiate terms of debt more easily. The existence of crossed assets and liabilities between the Treasury and DBs allows a range of tools for risk management, not available to private institutions;
- 6) The fact that they interact with higher-risk sectors (small businesses - SME, Innovations etc.), once more, does not necessarily imply greater losses. If SME operations are performed as second-tier operations, the risk is assumed by the financial agent. If it is first tier, large portfolios tend to offset losses. As for funding innovation, if done with non-reimbursable funds, risk does not even enter the equation. If done through a fund, capital

¹⁹ From a Minskyan point of view, but also from other perspectives (see Corden, 1990), it would be more important to focus on mechanism that could guarantee the asset quality and the potential of the investments supported to generate growth, rather than fixing very rigid rules for risk management. Some of the assets must carry risk (especially on DBs). A 100% safe bank would be one that has 100% of capital – it would not foster development. I thank Professor Felipe Rezende for that observation.

requirements will look at the sustainability of the fund - not of each individual operation – thus enabling activity.

It should be added here that the vast majority of Basel requirements for market risks are in the trading portfolio, using VaR or maturity ladder methods.²⁰ The most significant market risks tend to be: currency risk (in case they support exports or fundraising in the international market), interest rate risk on banking book; and, if the DB acts to foster capital markets, risk on dividend flow fluctuations in the banking book. However, the latter does not require capital buffers. In relation to mismatched terms on balance sheets, also, DBs are likely to have risk management advantages since the duration of the liability (in spite of the broader loan terms) is greater than that of the asset.

Do all these arguments mean that there are no problems in directly applying Basel rules to DBs? No, it does not. In our opinion, Basel II contained three points of great concern for developmental objectives: *a)* maturity adjustment in credit risk models; *b)* the treatment of concentration risk; *c)* the treatment of operational risk. These points remained, or were even worse, in Basel III - as will be discussed.

As usually occurs in financing, Basel credit risk models consider that the longer the term, the greater the risk.²¹ The required capital is calculated (either in standard or in internal models), exclusively appraising the asset's analysis. However, the greater lending periods do not imperatively bring higher risks for DBs in the same proportion as they do to private banks, because their funding is also held in longer term. Upon raising longer-term funding, DBs are capable of **renegotiating** credit on better terms, reducing default losses without hurting the financial health of the institution. In other words, portfolio management (Asset Liability Management) is more flexible, contributing to financing productive investment, and so reducing the vulnerability of the financial system.²²

²⁰ Maturity ladder may no longer be accepted in the near future.

²¹ The maturity adjustment is to anticipate possible downgrades and/or changes in mark to market values. It is considered that the chances of downgrading and loss of market value are greater when the probability of initial default is lower. Therefore, when repayment terms are extended the capital requirement increases - albeit less than proportionally for higher risk companies (because it is assumed that their quality will improve over time), compared with those with better credit rating (since the latter are more likely to worsen rather than improving in rating, over the years by Basel models). See BIS, 2005.

²² On the other hand, non performing loans can stay for a longer time in a public bank balance sheet (or DB) than would in a private bank.

Additionally, it can be argued that the existence of long credit relations between banks and clients, as is common in DBs, ultimately reduces default and delinquency, as ties of interdependence grow and flows of information between borrowers and lenders are improved. In addition, as the long-term credit is vital for some sectors, companies often prioritize payments to these institutions. This probably stems from the behavior of companies in that they prefer (obviously assuming the crisis is not long-lasting) to honor their debt commitments to partners critical to their long-term strategy (even though renegotiation capacity is possibly the most important factor).

Even if we admit that the longer terms somehow involve higher risks, will the risks grow for DBs in the same way as they do for private institutions (exponentially for example, as several managerial models assume, or linearly as in the Basel format, adjusted to a concave shape by the Probability of Default - PD)? The reality is that the parameter calibration in Basel agreements is based on the experiences of a number of commercial or universal banks located in developed countries - whose characteristics are very different from those dealt with by DBs. The term defined as “standard” is only 2.5 years, so any longer timeframes are penalized with higher capital charges in Internal Rating Models (IRB) with a cap of five years (higher maturity will be charged as if it was five years anyway – Barros, 2016). It is exceedingly likely that this calibration is inadequate for DBs. In addition, there is the problem of adapting the “M” (maturity adjustment for capital requirement) to the characteristics of different countries. The reduced average period of credit operations is a feature common to many developing countries, where DBs are the main - or only - alternative for long-term fundraising.

Given that DBs are very different institutions among each other, it is important that the framework be flexible in relation to maturity adjustment, so that it indeed reflects potential higher risk, but nevertheless without creating a bias against long-term operations, which are essential for economic development and intrinsic to the DBs’ mission. It seems to us that the only way to solve this dilemma is to establish a dialogue with the regulator in order to render some points more flexible. The rules should be consistent with the risk profile (which in the case of DBs involves particular characteristics) and also consider the benefits to economic development.

Regarding concentration risk, Basel credit risk models are based on KMV Portfolio Manager type models, where it is assumed that the only significant risk factor is systemic risk, since individual risks are cancelled out due to the law of large numbers (BIS, 2005). The Basel models assume, therefore, a granular portfolio. If there is concentration (by borrower, guarantor, industry, or regional/geographic), an adjustment must be made to Pillar II supervision.

The problem is that portfolio concentration in groups, sectors, regionally, or by lender is something almost inherent to DBs. Due to their natural form of action, it is common that their portfolios are concentrated, in certain periods, on industry sectors or regions - following government policies and guidelines. There are funding “seasons” focusing on certain industries or sectors in large “National Economic Development Plans”. There is here, therefore, a dilemma between the risks of holding a concentrated portfolio and the social damage that the absence of these investments - which need to be large (and often very concentrated, at certain times) - could represent in terms of economic and social development.

In particular, when the infrastructure sector is addressed, the problem is not restricted to industry concentration and the longer terms in the DBs portfolio. Major infrastructure projects are provided typically by oligopolistic industries, for example the construction sector. In other words, aside from concentration in an economic sector and region, it will often also involve concentration on a few clients or an economic group or guarantors. The problem is that managing risk concentration (particularly with large exposure) is not a simple matter. Developing forms of mitigation and management of these risks is a clear and present challenge - but *not* treating it in a flexible manner could work against development.

Finally, regarding operational risk, in Basel II three methodologies were established: 1) Basic Indicator Approach; 2) Alternative Standardized Approach - ASA; and 3) Advanced Measurement Approach (AMA), which provided some modeling

flexibility. Much criticism targeted the difficulties in estimating this risk, particularly in relation to databases and statistical processing.²³

With regard to the operational risk for DBs, there is no clarity as regards its magnitude. Wyman (2016) states that for DB managers, risk management continues to focus on credit and market risks. Several banks identified reputational risk (a demand strengthened in Basel III) as critical, yet few institutions actually manage it.²⁴ Operational risk, though admittedly relevant, is considered less important in magnitude, and furthermore difficult to measure and treat.

Although from an empirical point of view, there is no clarity regarding operational risk magnitude, one could assume that having a smaller number of operations and not being subject (at least with the same intensity) to typically operational risk events such as, for example, card frauds, DBs would (potentially) face lower operational risk. However, DBs (always remembering that, for the purposes of this article, institutions specializing exclusively in small businesses are excluded) tend to have large exposures in less homogeneous, more complex, and longer-termed products. Thus, their operational risk events, even though less likely (lower frequency), tend to be more severe. Moreover, DBs, given their public nature, may have more difficulties in renewing their IT park (because of the public bidding process requirements), thus raising the risk of system failures and computer system crashes. In short, operational risk management in DBs is particularly challenging - and the proposed models do not seem adequate.

5. Basel III – What are the New Challenges for DBs?

²³ Operational risk data is, in general, of low frequency, and has very different magnitudes between each loss event, making it difficult to use approximations to standard distributions. Besides, some controls are managerial and the items defined by the Committee are not always relevant to the Bank. There are also problems of double counting (operational and credit or market risk); some expenses are estimated from provisions, not always materialized in payments; some events (e.g. labor claims) take much more time to solve than Basel data series allows (the observation period is only 5 years); other events (e.g. mergers and acquisitions) are unique, etc. It is possible to supplement the analysis with external data, but a careful evaluation of whether the data is suitable for use and applicable to the institution concerned is necessary.

²⁴ Reputational risk is defined as the risk arising from negative perception on the part of customers, counterparties, shareholders and other stakeholders, which can adversely affect a bank's ability to maintain normal business practice.

Box 1 summarizes the key measures and metrics introduced by Basel III - in boldface those that appear to be, in our point of view, the most relevant for DBs.

Box 1 - Basel III

1. Short-term Liquidity Risk - Liquidity Coverage Ratio (LCR)
- 2. Treatment of Long-Term Liquidity Risk - Net Stable Funding Ratio (NSFR)**
3. Leverage Ratio (not risk-weighted)
4. Incremental Charge Risk (ICR) - captures default and migration risk for unsecured credit products held in the Trading Book.
5. Comprehensive Risk Measure - captures price risks as well as incremental default and migration risks in a single measure for correlation of trading portfolio
6. Higher requirements for Resecuritization
7. Credit Valuation Adjustment (CVA - adjusts to take into account the possibility of a counterparty's default)
8. Greater control of credit derivatives - ABS, CDO and off – balance sheet vehicles.
9. Disincentive to OTC derivatives
10. Search for greater integration between market risk and credit risk (Wrong-Way Risk)
11. Back-testing of internal models
12. Greater robustness in stress tests
13. Changes in executive compensation rules
14. Addition of reputation risk control
15. Pillar II: new requirements to ensure strict guidance and monitoring of banks
16. Pillar III: Larger set of information requirements.
17. Higher capital requirements for internationally active banks.
- 18. Higher capital requirements for nationally active banks**
- 19. Increased requirements of core capital and Tier 1**
- 20. Two additional capital cushions - Absorption and Countercyclical**
- 21. Greater control over Concentration Risk**
- 22. Disincentive to the use of monoline insurers**

Let us start by the reasons why we defend that (generally speaking) some of the new requirements in Basel III **are not (or are less)** relevant to DBs than for other banks. First, the short-term liquidity risk indicator (LCR) seeks to assess whether banks maintain an adequate level of liquid assets in a scenario of severe stress. This indicator tends to be

irrelevant to DBs, as it is determined with a one-month horizon, for institutions that have few short-term liabilities. The long-term indicator (NSFR) aims to ensure that banks avoid severe term mismatches under normal conditions considering the one-year horizon. The core business in DBs risk management is, precisely, managing the mismatch between assets and liabilities. It is expected, therefore, that DBs would have no difficulty in meeting these new requirements. However, the NSFR may increase the short-term bias of the market. Thus, potentially, the need for medium/long-term assets from DBs may increase due to the reduction of their supply on the market (Barros, 2016) - which is why the item is in boldface in Box 1.

The leverage ratio does not seem to be equally problematic for many DBs, although some institutions could have problems.²⁵ Regarding the use of derivatives (items 4 to 10), they tend to have smaller consequences relatively, for DBs, due to their lower use. This impression is reinforced by recent research (Wyman, 2016), which showed that several DBs indeed use derivatives but, as expected, these are often used for hedging purposes (which is not punished with higher capital requirements, but instead encouraged). The most common products used in DBs are interest rates, credit derivatives, and foreign currencies. Of course, for DBs that deals with securitization, an increase in capital may be more significant. Moreover, the disincentive for the use of OTC derivatives may also have some effect. This is because DBs have incentives to create optionalities and OTC derivatives, since tailor-made operations tend to be more common for institutions that deal with projects with non-standard features.

The use of back-testing and more robust stress testing (items 11 and 12), as well as further integration of market and credit risk correlations are, in principle, salutary for risk management—thus are not, a priori, problematic. The addition of Stress-VaR requirements raises capital requirements for all institutions, including DBs. The *Incentives Agenda* in Basel III also does not seem to be of great impact, once these institutions no longer have

²⁵KfW, for example, registered that: “By nature, a state-owned development bank is bearing a lot of low-default sovereign exposure ... The question is whether it is expected from development banks to practice a search-for-yield. If so, it is contradictory to the long-term business model of a development bank. If not, it limits business volume and thereby the development bank’s ability to perform its major task.” (KfW, 2016, p.7)

the objective of profit maximization. As for reputational risk, it is still unclear how its treatment will proceed.

As regards the new capital requirements in Basel III, particularly of Core Capital, this may indeed be a source of concern. Some DBs may face difficulties, depending on each individual case. Compliance with new requirements will depend on the existence of prior capital clearances and fiscal constraints specific to each country. The addition of countercyclical cushions, in contrast, should in our view be assessed carefully for their relevance to DBs. If it is accepted that DBs act anti-cyclically (Brei and Schclarek, 2017, Griffith-Jones, Ocampo and Rezende, 2017, and Luna Martinez and Vicente, 2012), does it make sense to apply the cushions to these institutions? It may simply be dysfunctional for the economy as a whole - and work against macroprudential regulation goals. DBs should have enough capacity to act quick and hard in crisis times. In that sense, countercyclical buffers could become a part of an agenda applying some rules of Basel III in a more flexible manner for DBs.²⁶

Finally, the major requirements for systemically important global banks, meanwhile, focus more on banks that operate as commercial banks, because of their global systemic implications. This does not mean that DBs intending to carry out international operations will not be included in the framework in the future. The new rules seem to be, however, more relevant for DBs which are domestically systemic banks (BIS, 2012). To determine whether an institution is domestically systemic, the criteria are: size, interconnectedness, the existence of substitutes, and complexity. Thus the concept of being systemic was used in its broadest sense, considering their size relative to the GDP. So, larger DBs may carry additional requirements under Basel III, depending on the judgment of the national monetary authority - which may prove to be problematic in the future.

An important point is that Basel IV diminishes the incentives for the development of internal models (and is moving towards the defense of adjusted standard models), which reduces the flexibility of the framework. In other words, it decreases the possibility that an

²⁶ It should be recognized, however, that DBs may sometimes act pro-cyclically, responding to demands for funding the economy. In fact, when the economy is booming, there is increasing demand for investments, so DBs disbursements (or other forms of credit supports) are higher – the opposite occurs in economic downturns. The DBs countercyclical behavior is common, but it is a government or institutional decision.

institution (which has idiosyncratic risk management characteristics, and furthermore, contributes to development and, it must be emphasized, reduces financial fragility) develop more suitable metrics. It is worth adding that the treatment of the interest rate risk in the banking portfolio (which tends to be relevant for DBs), where the BIS allowed flexibility under Basel II, is also being reformulated (BIS, 2016) into a standard method of treatment, which can be adopted as a requirement by the national regulator or placed as an option.

With regard to concentration risk, the problem is far more serious, because its treatment has been systematically revised in the direction of greater severity (BIS 2011, 2012b and 2014). For the purpose of dealing with concentration risk (BIS, 2014), the use of several metrics (sensitivity analyses, use of scenarios, economic capital models, stress tests) are suggested, setting internal limits and observing the concentrations of counterparties, for both assets and funding sources, currencies, derivatives, etc. As of 2019, there will be a default limit for large exposures, of 25% of Tier 1 - and, for “global systemically important banks (G-SIBs)”, of 15% of Tier 1 capital.²⁷

The issue becomes more serious when one considers that there is a large gap in global infrastructure, with DBs seen as a key instrument to overcome it. This means that Basel III, by demanding higher capital requirements, will be working against the global infrastructure agenda – especially considering Greenfield projects, where the risks are higher (and the market does not show appetite without government support). It is worth noting that if Project Finance structures, on the one hand, allow sharing guarantees and they facilitate investment by reducing performance risks, on the other hand, they also introduces new risk management challenges. This is because the guarantee is the project in itself - which is far more difficult to liquidate. In relation to the concentration risk, when a Project Finance begins its operations, they can be considered as segregated risk – so the 25% limit proposed by Basel III will probably be not binding. (Barros, 2016) – but, for the pre-operational phase, it probably will be. This may be another important point where a dialogue should be maintained with the regulator to enable DBs (and other banks involved in infrastructure financing) some flexibility.

²⁷ In Brazil, there was already a similar limit of exposure to a single economic group (financial conglomerate) to 25% of the Regulatory Capital (Tier 1 + Tier 2). BNDES, however, had a (temporary) flexible application of this setting. With the new international rules, the limits are even tighter, because they refer only to Tier 1.

Finally, there are also ongoing changes in the treatment of operational risk (2011, 2014 and 2016b). The Standardized Measurement Approach (SMA) aims to replace the three methods aforementioned. Again, simplicity, comparability and sensitivity to risk are sought, eliminating the possibility of using internal models. The most relevant issue is that the new DBs' agendas emphasize funding for infrastructure, and financing sustainability - segments where the risk of regulatory changes is high.²⁸ That is, it is possible that in the future, operational risks will grow, once this includes legal risk. In this sense, again, the tendency to use standard metrics could prove not appropriate

6. Conclusions – Answering the Four Questions

Should DBs be regulated? It was seen throughout section 2 that, under the aegis of market failures, the rationale for financial regulation was traditionally justified for institutions that collect cash deposits from the public in order to avoid a negative externality. In all other cases, as discussed, DBs pose a solution for such failures and, therefore, do not properly require regulation, but rather, supervision, in the sense used in this article. In the KSM approach, financial regulation is justified by systemic risk. Even though there is some theoretical possibility that the illiquidity or, ultimately, the bankruptcy of a DB (that does not collect cash deposits) can indirectly generate systemic risk, this possibility seems remote, from a practical point of view.

However, the negligent or reckless behavior of a DB (through excessive leverage or poor risk management) could cause potential fiscal damage (ultimately, an inflationary risk), or, more importantly, a risk of a credit crunch. In the latter case, it would cost a loss of investment, probably an increase in unemployment, but the crisis would be concentrated in a few economic sectors. That is, it would not be “systemic” since the means of payment would not be affected, at least at first. The economic impact that DBs can have is a

²⁸ If these projects involve funds in other currencies (co-funding between DBs or DBs and private entities), this will raise market risk (fluctuation of currencies) and add greater risks of interest rate fluctuation in the banking book (associated with the longer-term operations and the interest fluctuations in different currencies).

justification for DBs to be regulated/supervised by the monetary authorities (regardless of the fact that the literature does not consider these issues).

In addition to the macroeconomic costs, it is a fact that DBs that recurrently require additional capital injections due to losses are often questioned by society. DBs are supposed to be self-sustainable. Here lies a political issue that must be considered: any consistently financially unsustainable DBs will hardly have the ability to perpetuate themselves over time, as demonstrated by the 1980s experience, when several DBs became extinct. Moreover, even for DBs that receive fiscal budgetary flows and work with some non-reimbursable projects (besides loans), the return on operations is also an important source of resources. Regulation, however, should not hinder DBs in the fulfillment of their mission. The question, therefore, becomes whether it makes sense to regulate them, in the way prudential regulation is conceived today?

Is Basel regulation a suitable framework for DBs? We sought to clarify and defend, throughout section 3, that Basel II aimed to correct several of the problems raised in Basel I, many of them related to issues with development funding. These adjustments, however, were insufficient – they did not even manage to avoid one of the gravest financial crises in history. However, the fact that many DBs adhered voluntarily to the framework strongly suggests that, contrary to what is generally assumed, Basel II was not seen as incompatible by DBs themselves, since many voluntarily adhered to the framework.

This is so because, in first place, Basel II evolved into a set of good risk management practices, therefore, also applicable to DBs. In second place, because the risks that DBs have to deal with, in fact, have increased as times went by, which in turn requires more sophisticated management tools for the financial sustainability of the institution. Third, because Basel represented a “quality seal” relevant for banks seeking to raise funds in the market, and Basel II was also considered a relatively flexible framework. In fourth place, because in spite of working with riskier segments, DBs have different instruments for risk management, which could lead (or so at least it was supposed) to capital savings through the development of internal models. Does this mean that Basel II was an ideal framework for DBs management? Far from it! But it also does not seem wholly incompatible with DBs, in the sense of hindering the fulfillment of their mission.

With regard to risk management, do DBs entail different characteristics from private banks? In Section 4, we sought to demonstrate in Section 4 that if, on one hand, DBs operate in higher-risk segments, on the other they benefit from instruments to deal with those risks that are not available to the private sector. This enables them to operate in these segments, contributing to funding development, without this threatening their financial health or even jeopardizing their performance. To illustrate the risk management advantages that DBs enjoy, it is worth noting that even in 2009, at the height of the severe subprime crisis, the performance of DBs was not bad - often better than that of the private sector.²⁹ Evidently, some development projects may have been hurt by risk aversion on the part of DBs - which is proved, incidentally, by the low default rates recorded by many DBs. This aversion to risk, however, would probably also exist without adherence to Basel. It was also pointed out in Section IV that, on a few points, Basel regulations need to be more flexible for DBs, in order not to hinder their mission. We discussed three of these points in more detail: maturity adjustment, concentration and operational risk.

What are the challenges posed by Basel III and IV? In Section 5, it was argued that some of the new requirements in Basel III do not seem (in principle) problematic for DBs, such as the treatment of liquidity risk, of derivatives, amongst others. Some new requirements, however, appear particularly worrisome. This is certainly the case with the new requirements regarding concentration risk, especially in view of the infrastructure agenda that many DBs pursue. The second point is the tendency to abandon internal models and move towards more standardized approaches, which reduces the flexibility in the framework (this is especially relevant in the case of credit risk). With regard to operational risk, in the same vein, the adoption of a single standardized rule may turn out to be quite problematic, especially in the case of legal risk associated with changes in the regulatory structure, which may grow as environmental and infrastructure agendas increase in relevance.

²⁹ Martinez and Vicente (2012) survey found that in 2009, 14% of the surveyed DBs reported losses. The remaining 86% were profitable or broke even. “The percentage of DBs reporting losses in 2006, 2007 and 2008 was 15%, 8%, and 9%, respectively ... In 2009, 53% of the surveyed DBs had a Return on Assets (ROA) exceeding the average of their banking systems. This was up from 42% in 2006 and 2007, and 46% in 2008. In terms of the Return on Equity (ROE), 19% of DBs exceeded the national average in 2009 (up from 15% in 2006, 13% in 2007, and 18% in 2008).” (p.18)



With these analytical considerations, we hope this article has contributed to exploring beyond the usual answers given to the four questions above.

Bibliography

BDC: International Benchmark Study on Development Institutions, 2009.

BIS: Measuring and controlling large credit exposures, 1991.

___: “An Explanatory Note on the Basel II IRB Risk Weight Functions”, July 2005

___: “International Convergence of Capital Measurement and Capital Standards. A Revised Framework Comprehensive Version”, 2006.

___ : Liquidity risk: management and supervisory challenges, press release, 21 February, 2008.

___: “Enhancements to the Basel II framework”, 2009

___: “Operational Risk: Supervisory Guidelines for the Advanced Measurement Approaches”, 2011.

___: “A framework for dealing with domestic systemically important banks - final document”, 2012.

___: “Core Principles for Effective Banking Supervision” 2012b.

___: “Supervisory framework for measuring and controlling large exposures”, 2014.

___: “Standards for interest rate risk in the banking book issued by the Basel Committee”, 2016.

___: Finalizing Basel III – remarks by Willian Coen, Secretary General of the Basel Committee, at the meeting with the European Parliament's Committee on Economic and Monetary Affairs (ECON Committee), Brussels, Wednesday 12 October 2016b.

BARROS, P, interview conducted on October, 30th, 2016.

BREI, M. and A. Schclarek, 2017. “The countercyclical behavior of National Development Banks” in current book.

BURLAMAQUI, Leonardo and KREGEL, Jan. “Banking and the Financing of Development: A Shumpeterian and Minskyian Perspective”. In: PAULA, Silvana and

DYMSKI, Gary A., (Org). *Reimagining Growth: Towards a Renewal of Development Theory*, 1ed New York: Zed Books, 2005, p. 141-168.

CARVALHO, F. C.: “Basel II: A Critical Assessment”, in http://www.ie.ufrj.br/eventos/seminarios/pesquisa/basel_ii_a_critical_assessment.pdf. Rio de Janeiro: UFRJ, 2005

_____ : “Systemic Crisis, Systemic Risk and Financial Instability Hypothesis” in *Macroeconomic Policies on Shaky Foundation – Whither Mainstream Economics*. Eds: Hein, Eckhard et alli, Series of Studies of the Research Network Macroeconomics a Macroeconomic Policies (FMM), Vol.12, 2009.

CASTRO, L. B.: “Regulação Financeira: Teoria, Acordos da Basileia e a Experiência Recente do BNDES”. *Tese de Doutorado*. Rio de Janeiro: UFRJ, 2006.

_____ : “Discutindo os Acordos da Basileia”. *Revista do BNDES*, vol. 14, n.28, pp.277-304, dezembro, 2007.

_____ : “A Experiência da Área de Gestão de Riscos do BNDES”, em *Prêmio ABDE – Melhores práticas do Sistema Nacional de Fomento*, Rio de Janeiro: ABDE, 2014.

CORDEN, M: “Macroeconomic Policy and Growth: Some Lessons on Experience”. In *World Bank, Proceedings of the World Bank Annual Conference on Development Economics*. Washington D.C: World Bank, 1990.

DOWD, K.: *Measuring Market Risk*. London: John Wiley & Sons, Ltd. Second Edition, 2006.

GRIFITH-JONES, S., SPRATT, Stephen e SEGOVIANO, Miguel: “The Onward March of Basel II: Can the Interest of Developing Countries be Protected?”. Institute of Development Studies, University of Sussex, July, 2002.

GRIFFITH-JONES, S., OCAMPO, J.A., REZENDE, F.,: “Future of development banks”, 2007, in current book.

GURLEY, J. G and SHAW, E.S. *Money in a Theory of Finance*. Washington: Brookings Institution, 1960.

KfW: “Regulation of Promotional Banks and potential impacts”, KfW Research, nov.2016 <https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF->

[Dokumente-Studien-und-Materialien/PDF-Dateien-Paper-and-Proceedings-\(EN\)/Regulation-of-promotional-banks-November-2016.pdf](#). Seen in May, 18, 2017

KREGEL, J., “Minsky and dynamic macroprudential regulation,” *PSL Quarterly Review*, vol. 67(269), pages 217-238, 2014.

LUNA-MARTINEZ, J. and VICENTE, C.L.: “Global Survey on Development Banks”, *Policy Research Working Paper*, n.5969, World Bank, 2012

MAS-COLEL, A., WHINSTON, M. and GREEN, J. R.: *Microeconomic Theory*. New York: Oxford University Press, 1995.

MAZZUCATO, M. AND WRAY, R.: “Financing the Capital Development of the Economy: A Keynes-Schumpeter-Minsky Synthesis”. *Levy Institute of Bard College Working Paper*, n. 837, New York: Levy Institute, 2015.

MCKINNON, R.I. *Money and Capital in Economic Development*, Washington, D.C: Brookings Institutions, 1973.

PWC, 2017: <https://www.youtube.com/watch?v=ISs0vIVfAXM>. Seen on May, 18, 2017.

REZENDE, F.: “Why does Brazil’s banking sector need public banks? What should the BNDES do?” *Quarterly Review*, vol. 68, n.274, September 2015.

SHAW, E.S. *Financial Deepening in Economic Development*, New York: Oxford University Press, 1973.

STIGLITZ, J.: *Whiter Socialism?* Cambridge, Massachusetts: Mit Press, 1994.

UN-DESA: United Nations, Department of Economic and Social Affairs: “Rethinking the Role of National Development Banks”. New York: Un-Desa, December, 2005.

ZENDRON, P. and SOBREIRA, R.: “Implications of Basel II for the Development Banks”, em *Quem Controla o Sistema Financeiro?* Rio de Janeiro: Ibase, 2007.

Wyman, O.: “Development Finance Best Practices”, *Oliver Wyman Financial Services*, January, 2016.