Financial Sustainability and Infrastructure Finance: the role of developing banks

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1. Introduction

The creation of new sources of financing and funding are at the center of discussions to promote real capital development. It has been suggested that access to capital markets and long-term investors are a possible solution to the dilemma faced by countries’ increasing financing requirements (such as infrastructure investment and mortgage lending needs) and limited access to long-term funding. This argument is based on the assumption that traditional banks and existing financial structures are unable, due to funding constraints, to meet the growing financing needs of modern economies. In spite of the introduction of several initiatives to mobilize private capital to fund long-term projects and assets, private finance schemes have fallen short of their targets. Notwithstanding the great potential among institutional investors to fund long-term assets such as infrastructure—due to the longer-term nature of their liabilities—and the availability of private financing mechanisms and instruments, their fund allocation has remained below their target allocations to infrastructure (OECD 2015).

Though there was a consensus over the past decades in favor of the development of the debt securities and securitization markets to foster local capital markets and long-term funding, since the onset of the 2007-2008 global financial crisis, there is a renewed interest in development banks (DBs). That is, investigating their roles promoting and financing

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investment, dampening the effects of financial instability and creating benchmark assessments on national DBs performance (DBC 2009; World Bank 2012). In this regard, there is a growing consensus on the value of DBs and the role they play promoting the capital development of the economy during non-crisis and crisis periods while dampening the effects of financial fragility, both domestically and internationally. Moreover, development banks have enhanced policy makers macroeconomic toolkit acting as a countercyclical policy tool\(^2\), extending their traditional roles providing financing aimed at enhancing productivity growth, supporting socioeconomic infrastructure and knowledge-specific activities; and promoting the development of organized liquid capital markets (Rezende 2015).

Even though development banks play an active and strategic role promoting economic development in advanced and developing economies at different stages of their development process (Chandrasekhar 2015), there is little discussion about their macroeconomic role. To be sure, much of the discussion focuses on the role of financial markets for economic growth and economic development\(^3\). This is in part the result of the conventional view, in which, as Robert Lucas put it, finance does not matter much\(^4\). This approach, in turn, leads to different perspectives on policy for development banks.

Development banks (DBs) are widespread across the world and “have served as an institutional substitute for crucial “prerequisites” such as prior accumulation of capital or the availability of adequate entrepreneurial skills or technological expertise.” (Chandrasekhar, 2015, p. 22) They “are also involved in early stage decisions such as

\(^2\) A recent IMF study concludes that “[f]irms in sectors that are more financially dependent cut investment more sharply than other firms, particularly early in the crisis. Firms in sectors that are more sensitive to policy uncertainty also reduced investment by more than other firms.” IMF WEO 2015, p. fig. 4.12. This result reinforces the macroeconomic role played by development banks offsetting swings in lending by private financial institutions, especially during times of stress.

\(^3\) See for instance, Fisher 2013.

\(^4\) He then said: “I will… be abstracting from all monetary matters, treating all exchange as though it involved goods-for-goods. In general, I believe that the importance of financial matters is very badly overstressed in popular and even much more professional discussion and so am not inclined to be apologetic for going to the other extreme.” (Lucas 1988, p. 6)
choice of technology, scale and location, requiring the acquisition of technical, financial and managerial expertise” (op. cit., p. 23). It is well known that development financial institutions play a strategically role at various stages of economic development. For instance,

the capitalisation of income earning assets was also the basis for Crédit Mobilier and Société Générale formed in France and Belgium at the middle of the 19th century. These banks served as the pattern for the German Effektenbanken or Kredit banks and the Italian industrial banks. The French proposals in fact went beyond simple industrial financing, and proposed a sort of central bank for Industry which would oversee the industrialisation of the country by arranging associations and mergers, rather than by wasteful competition. (Kregel 1998, p.7)

Moreover, “historically it has been public banks that have led the way in financing the long-term investment necessary for the economic industrialization of developing countries. Second, that financial innovation in the “essential function” of the “creation of money” has had a major impact on the evolution of financial structure and in particular the evolution of the mix of private and public finance for investment and innovation. Third…the recent dominance of private financial institutions and the presumption of their efficiency advantage have reduced the availability of long-term finance for development.” (Kregel 2015, p.1)

From this perspective, as Chandrasekhar (2015) put it,

finding the capital to finance the industrial take-off represents a major challenge…Gerschenkron believed that they served as institutional substitutes for crucial “prerequisites” for the industrial take-off, such as the prior accumulation of capital or the availability of adequate entrepreneurial skills and technological expertise.
As Gerschenkron (1962: 13) argued: “The difference between banks of the crédit mobilier type and commercial banks in the advanced industrial country of the time (England) was absolute. Between the English bank essentially designed to serve as a source of short-term capital and a bank designed to finance the long-run investment needs of the economy there was a complete gulf. (Chandrasekhar, 2015, p. 22)

Despite the widespread presence of development banks their evolution has been different, adapting their role to different stages of economic development. Advanced and developing economies continue to rely on DBs, including Germany’s KfW and Japan Finance Corporation (JFC) Development Bank of Japan\(^5\) (DBJ), China Development Bank (CDB), and Brazil’s BNDES to name a few (Chandrasekhar, 2015; Ferraz, Além, Madeira, 2016). The availability of patient credit allows for industrial take-off, catching-up and leapfrogging\(^6\) (Burlamaqui and Kattel, 2014).

In spite of the historical importance of development banks promoting capitalist development, they have often received harsh criticism “fuelled by the neoliberal economic policies of the Washington Consensus…a more critical view on DBs emerged in the 1980s and 90s. Particularly national DBs were regarded by many as an instrument of unacceptable state interventionism… The popularity of DBs gained ground again when the Millennium Development Goals (MDGs) were adopted by the United Nations in 2001” (UN-DESA 2015, p.7).

For instance, the chapter “Mobilizing domestic financial resources for development” of the Monterrey Consensus noted that “[d]evelopment banks…can be effective instruments for

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\(^5\) The DBJ still works as DB, but is being privatized (Ferraz, Além, Madeira, 2016, ft. 14, p.17).

\(^6\) It is worth noting that “the Republic of Korea was also a late industrializer in which development finance (supported by the State through the budget and the central bank) played an extremely important role and contributed in no small measure to the success of its late industrialization. However, the DB’s role here included support for borrowing from abroad to acquire foreign technology, which was subsequently leveraged to launch a successful export-oriented strategy.” (Chandrasekhar, 2016, p. 28)
facilitating access to finance, including equity financing, for such enterprises, as well as an adequate supply of medium- and long-term credit” (United Nations 2003, p.7).

However, much of the discussion involving DBs is usually framed in different theoretical frameworks. The conventional view about the existence of DBs relies on market failures, in which they play a complementary role (Torres and Zeidan 2016; Wruuck 2015; UN 2005). This association of DBs with the concept of market failure leads to the view that with the development of financial markets, DBs are no longer needed. For instance, Torres and Zeidan (2016) have suggested that “as countries develop their financial markets, NDBs should share this role with other local banks and specialize their focus, eventually disappearing altogether.” (Torres and Zeidan, 2016, emphasis added)

From this perspective, it is essential that the theoretical discussion about the role of DBs be grounded on a solid framework beyond market failures. Among the lessons that can be drawn from the global financial crisis is that in spite of a rapid increase in financialization, the dominance of private financial institutions failed to promote the capital development of the economy (Levy Institute 2011; Mazzucato and Wray 2015). The global crisis has shown once again that there is no guarantee that developed financial markets promote the capital development of the economy. This has important implications for policy making, that is, “during the pre-crisis period, developed countries’ regulatory systems had been considered as ‘best practice’ and formed the basis for recommendations to developing countries seeking to liberalize and expand their domestic financial markets”. (Rezende 2015, p. 241). However, “the financial structure that emerged in the USA in the past 30 years failed to provide support for the development of the economy and to improve living standards, an alternative design of the financial structure that meets the needs of developing nations needs to be developed.” (Rezende 2015, p. 242).

In what follows (section 2), building on the insights of Jan Kregel (2015), I will briefly discuss Hyman Minsky’s work on financial regulation and what he labeled as the ‘dilemma of financial regulation’ as a theoretical framework to analyze the macroeconomic role
played by development banks—not only in providing long-term funding necessary to promoting economic development—but also to prevent fragility.

In section III, this broader theoretical framework will provide the basis for the need for public financial institutions to provide support for infrastructure and sustainable development projects. I will then discuss in section IV the main challenges faced by the private sector in providing long-term finance in the emerging and developed world to meet some of the infrastructure requirements—and the strategic role national development banks and government policy should play, given the inherent risks of infrastructure projects. Section V concludes with lessons for enhancing the role of development banks as catalysts for mitigating risks associated with infrastructure projects.

2. What is the appropriate financial structure for emerging market economies promoting capital development?

Hyman Minsky wrote extensively about the nature of money and banking. In his model, “[e]veryone can create money; the problem is to get it accepted” (Minsky 1986). As he put it: “Banking is not money lending; to lend, a money lender must have money. The fundamental banking activity is accepting, that is, guaranteeing that some party is creditworthy” (Minsky 1986, 256). In general, those IOUs are denominated in the state unit of account, but they can also be denominated in foreign currency. That is, banking is liquidity creation. Though traditional banks are liquidity creators—that is, they buy assets through the issuance of liabilities—not all liquidity is created by them.

However, one of the main challenges, in terms of increasing traditional banks’ exposure to long-term assets, is related to interest rate and liquidity risks and the returns required to induce investors to be exposed to infrastructure assets. This is because interest risk is significantly increased by the lengthening of the portfolio’s duration. The expansion of long-term loans as a share of total assets tends to increase the maturity mismatch between assets and liabilities. A prudent banker might not undertake increasing risks of maturity
mismatches such as financing long-term assets by issuing long-term liabilities in a volatile interest rate environment. Bankers are unwilling to be exposed to increasing maturity mismatch particularly when the current macroeconomic policy brings about high interest volatility to fight inflation. That is, bankers are unwilling to increase the duration of assets relative to liabilities and carry this risk on their balance sheets.

Even though maturity matching by bankers is a source of banking stability, it limits financing of investments in long-term capital assets and infrastructure-type products. That is, a volatile interest rate environment limits financing of investments in long-term capital assets and infrastructure-type products. Though traditional banks are the most important source of long-term financing (see for instance Peria and Schmukler, 2017), the concentration on shorter maturities in financial instruments is typically the outcome of information asymmetries (Stiglitz and Weiss, 1981), coordination problems—which may trigger a dynamic toward short maturities known as “maturity rat race” (see for instance Brunnermeier and Oehmke, 2013)—incentive problems and short-termism incentives (Lazonick and O’Sullivan, 2000), macroeconomic risks and lack of an adequate legal framework (such as weak institutions and poor contract enforcement) contribute to excessive reliance on short-term financing.

This means that policy should focus on those issues to adjust the need of users of long-term finance and their providers. From this perspective, development banks play a strategic role focusing on long-term goals, providing long-term patient finance and contributing to address the fundamental institutional weaknesses that prevent the mobilization of funding for private investment.

Second, the “use of long-term finance can be best understood as a risk-sharing problem between providers and users of finance.” (World Bank 2015, p. 24). From this perspective, regulations can be introduced to better manage and transfer risks to parties more able to bear them. The important question is related to the costs of carrying a mismatch between the duration of assets and liabilities on the bank balance sheet, that is, if interest and funding
risks are carried on banks’ balance sheets. As Kregel (1993) pointed out, different financial structures are created to provide a reduction in price risks such as the risks associated with financing investments in long-term capital assets. The German banking regulatory experience imposes matching between assets and liabilities on banks’ balance sheets (Kregel 1993). For instance,

banks issued long-term bonds, which were held within the financial sector, and then slowly started to be held by the public. In this way fixed interest liabilities matched the term lending of the banks to firms and the reliance on bond finance may be seen as a structural result of the way in which price risks are hedged in the German system and as a substitute for the pre-war use of the equity market. The German mixed bank system is thus no less dependent on capital markets to reduce risk than segmented bank systems, both require them to provide a reduction in price risks. (Burlamaqui and Kregel 2005, p. 45)

So, the question is how to design a financial structure for emerging market economies that promotes capital development and mitigates financial fragility. From this perspective, it has already been suggested that financial regulation should serve two conflicting objectives (Kregel 2015). One master requires leverage and taking risks, since financing capital development and innovation are inherently risky activities—in an environment in which crises are systemic—while the second requires a safe and sound payments system. The question then becomes how to design a financial structure that serves the two contradictory masters within a conceptual framework in which financial crises are systemic.

3. Massive need for infrastructure in the emerging and developed world

Insufficient or inadequate infrastructure in both developing and developed economies has sparked a debate about whether financing is sufficient to sustain infrastructure investment to at least keep pace with projected global GDP growth. The task of keeping the minimum investment required to maintain current levels and fostering incremental spending to close the infrastructure gap has revived the debate over the role played by each actor in closing the gap and how to finance this process (see for instance G-20, OECD, 2013a, FSB 2013,
World Bank, 2015). One of the major post-crisis challenges is that in spite of an ultra-low interest rate environment or even negative nominal and real rates, investment has been anemic in developed and developing economies (IMF, 2015). This is particular important because since the crisis investment has collapsed across all sectors (public, business, and household sectors) in Europe (McKinsey 2016, p. 2). And, in the United States, “the trajectory of net fixed capital formation, which decreased from 12 percent of GDP in 1950 to 8 percent in 2007, then fell to only 4 percent in 2014. Average depreciation rates accelerated by about 20 percent during the 1980s as companies invested in shorter-lived assets such as ICT equipment but did not compensate in terms of higher gross investment rates. This amplified the decline in net investment.” (op. cit. 2016, p. 2). To make things worse, most governments in developed nations and developing nations (with the exception of a few cases) are cutting back on infrastructure spending due to fiscal consolidation (figure 1) generating a public-funding shortfall in infrastructure investment.

Figure 1. General government gross fixed capital formation (% of GDP)

![Figure 1](source: Mckinsey 2016, p.11)

Moreover, insufficient private investment and declining real public investment have contributed to reduce the stock of public capital as a share of output over the past three decades (figure 2).
Furthermore, the economic collapse in the wake of the global financial crisis has contributed to permanent effects on potential output level across advanced and emerging market economies (IMF 2015; Ollivaud and Turner, 2014). Required equity requirements and the cost of capital have increased for many infrastructure investments (McKinsey 2013, p.23). This, in turn, combined with the decline in public investment as policy makers opted for austerity measures, has contributed to lower potential output (IMF 2014; Mckinsey 2016). This decline in government investment has been exacerbated by the short-termism of financial markets and corporations. Additionally, an IMF report pointed out that “the initial hopes that the privatization wave of the 1980s would fuel a private-sector funded greenfield infrastructure investment boom have fallen well short of expectations” (Samama 2016 et al, p.3).
The perverse combination between inadequate direct public investment, increasing cost and availability of long-term financing, higher proportion of higher-risk projects (i.e., greenfield projects in developing countries) that are in the investment pipeline contribute to widen the infrastructure gap (McKinsey 2013, p.19). That is, though “infrastructure development has been found to have a positive and significant impact on long-run growth and a negative impact on income inequality” (Calderon and Serven, 2014), the combination between growing investment needs, low investment and the imperative to channel investments for sustainable development goals has caused massive infrastructure gaps (UNSDSN 2015; UNTT, 2013; McKinsey 2016).

Against this background, there are several estimates—using different approaches—that indicate massive global infrastructure needs (Schmidt-Traub 2015). For instance, the McKinsey report estimates that $57 trillion in investments will be required until 2030—which is more than the estimated value of today’s infrastructure—to just keep pace with projected global GDP growth (see McKinsey 2016, p.1). The McKinsey report suggests that the world will need “to invest about 3.8 percent of global GDP in infrastructure over the period from 2016 to 2030—or an average of $3.3 trillion a year—just to support expected economic growth. Emerging economies account for some 60 percent of that need.” (McKinsey 2016, p.9) The report concludes that “[i]f they maintain their current trajectories, a number of countries will continue to underinvest to such a degree that the world could fall about 11 percent short of the necessary infrastructure investment. The shortfall could amount to some $350 billion a year…This size of the gap roughly triples, however, when we take into account the additional investment required to meet the UN’s new Sustainable Development Goals.” (op. cit. 2016, p.10).

According to estimates from the Organization for Economic Co-operation and Development (OECD) the investment required is equivalent to US$70 trillion by 2030 (OECD, 2015c). The World Bank (2016) estimates that approximately US$1 trillion per year is needed in emerging markets and developing economies (EMDEs), while the G20
(2013) suggests that developing countries will need to invest an additional $1 trillion a year through 2020 (G20, 2013).

McKinsey points out that the current annual investment on infrastructure is at US$2.0 trillion to US$3 trillion and it estimates that required investments could reach the equivalent to US$6 trillion a year, based on demand of ~$93 trillion over 15 years. This means that the government sector, national development banks, and the private sector will have to substantially increase current rates of investments to meet the global demand for infrastructure services. In particular, governments and development banks could be responsible for US$ 1-1.5 trillion in annual incremental spending while the private sector could contribute with equivalent amounts (figure 3).

Figure 3. Proposed annual incremental spending to close the infrastructure debt ($ trillion, constant 2010 $)

Source: Bhattacharya et al, 2015, p. 26

Banks, capital markets, and institutional investors as providers of long-term finance

From 1990 to 2012, the stock of global financial assets increased from $56 to trillion to $225 trillion. In 2012, it included a $50 trillion stock market, $47 trillion public debt securities market, $42 trillion in financial institutions bonds outstanding, $11 trillion in nonfinancial corporate bonds, and $62 trillion in nonsecuritized loans and $13 trillion in securitized loans outstanding (Figure 4).
From 2007 to 2012, government debt securities increased by 47% (figure 3) while financial depth rose to 355% of global GDP in 2007 from 120% in 1980 (Lund et al 2013, p.2). In spite of a massive increase in the stock of global financial assets—equivalent to 302% between 1990 and 2012—“[m]ost of the increase in financial depth prior to the crisis was due to financial system leverage and equity valuations” (Lund et al, 2013 p 2.). Yet, the world needs more and better infrastructure and redirecting finance towards sustainable infrastructure will require a major shift in policy coordination with various stakeholders. For instance, Standard & Poor’s estimated that “institutional investors could provide as much as $200 billion per year—or $3.2 trillion by 2030—for infrastructure financing” (Standard & Poor’s 2014, p.2). But, “if the right levers are pulled, there is potential to increase investment from private institutional investors by ~$1.2 trillion per year.” (Bielenberg et al, 2016, p.28). Thus, the problem is not necessarily one of funding but how to direct the finance created by the financial system towards productivity-enhancing investments.
In this regard, a number of mechanisms are available to finance long-term investments and yield-seeking potential investors could contribute to close the financing gap (figure 5). The OECD estimated that institutional investors held over US$70 trillion in assets as of December 2011 (Della Croce 2013, p.8).

**Figure 5. Total Assets by Type of Institutional Investor in the OECD, 2001-13**

![Graph showing total assets by type of institutional investor](image)

Source: OCDE 2015a, p.10

Many of these investors are moving towards socially and environmentally responsible investment strategies. Also growing rapidly are Sovereign Wealth Funds (SWFs), with assets under management in January 2014 exceeding US$6 trillion (Della Croce 2014, p.9). From this perspective, in the past few years, infrastructure has been more widely accepted as a distinct asset class (BlackRock 2015, Robert et al. 2015, Russ et al. 2010). Infrastructure investments are diverse as they offer a broad universe of investments ranging from mature assets to opportunistic investment strategies offering a variety of risk/return profiles (figure 6).
A study by Russ et al. (2010) concludes that “the asset class’s risk/return characteristics could help pensions mitigate duration risk, due to the long-term nature of many of the sub-asset classes, as well as the return streams associated with certain types of infrastructure. The asset class’s potential to mitigate the impact of inflation on portfolios has also been a driver of investor interest.” (Russ et al. 2010, p.8).

However, inadequate allocation and assessment of risks of large infrastructure projects are one of the key factors holding back private finance throughout the project’s life cycle. From this perspective, a true understanding of investor’s risk appetite and the proper identification of risks and returns over the lifecycle of infrastructure assets are essential to design risk-mitigation mechanisms and incentives to attract institutional investors. For instance, the asset class can be classified by risk buckets, such as core, core plus, value-added and opportunistic infrastructure (figure 7).
Mature infrastructure (such as large brownfield assets) has core and value-added investment strategies, that is, it typically has income return and capital growth potential. For core assets, most of their returns come from cash yield generating stable cash flow streams. Investors who seek this option look for stable and income-oriented returns with comparatively low risk. Higher risk growth-oriented infrastructure is often associated with value-added investment strategies. This option, however, has substantially more risks relative to low-risk core infrastructure assets and requires expansionary capex to unlock growth potential.

Investors who are looking for potentially higher risk-adjusted returns—or private equity type returns that are more common to greenfield infrastructure assets—tend to invest in opportunistic investment strategies to take advantage of greater total return. However, development infrastructure exposes investors to higher risk-return and capital appreciation potential. This classification is particularly useful to compare infrastructure assets with other asset classes (figure 8) and different possible investment strategies.
Figure 8. Unlisted Infrastructure: comparison with other asset classes

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Source: Roberts et al 2015, p.8

Figure 8 displays for illustrative purposes the various types of infrastructure investments that usually fall under those risk categories. By identifying these risks, they can be properly managed and allocated between the public and private sectors in a way that unlocks the provision of funding necessary at different phases over the lifecycle of the project. This is particularly important because infrastructure investments are capable of providing relatively stable returns, portfolio diversification, and liability management for institutional investors. As investors gain exposure to this asset class, their target returns remain optimistic given its risks. For instance, “Prequin reports a net IRR target of 15.8 percent on average (12 percent for developed markets and 19.3 percent for emerging markets). Forty-three percent of funds fit into the target IRR band of 10.1–15 percent and 32 percent into the 15.1–20 percent band. Essential to the achievement of such high IRRs are the substantial levels of leverage in underlying infrastructure projects…Nonetheless, target gearing levels are still predominantly in the 60–70 percent and 70–80 percent ranges.” (Inderst, 2010, p.79)

In spite of the huge potential in infrastructure investment—such as portfolio diversification, liability-matching, inflation-hedging characteristics, ability to generate consistent long-term cash flows, and potentially high risk-adjusted returns—several factors, which will be discussed later, prevent institutional investors from increasing their
exposure to infrastructure assets (Mackenzie 2016). Despite the growing importance of institutional investors, the question is whether there is risk appetite for new infrastructure allocations among them. Even though investors are targeting an allocation of 3% to 9% of their assets under management to infrastructure assets, the Prequin (2016) survey pointed out that institutional investors have current allocations well below their targets for infrastructure projects as the challenges facing the sector have increased including regulatory, political, and macroeconomic risks. For instance, as of 2015, public pension funds were on average targeting a 5.1% allocation, but had only a 3.2% actual allocation while for insurance companies the allocations were a 3.9% target, but only 2.9% actual. For private pension funds, their target was 4.3% against 2.5% actual allocation (figure 9).

**Figure. 9. Institutional investors, infrastructure asset allocations and targets as of December 2015**

![Figure 9](image)

Source: (Prequin 2016, p. 36)

In spite of growing interest of pension funds in infrastructure investments as strategic asset allocation, “all funds that reported a separate target allocation to infrastructure were below targets at the end of 2014.” (OECD 2016, p. 19-20). Notwithstanding several attempts to create all forms of private finance mechanisms, instruments and incentives to attract private investors, private infrastructure investment has remained low to meet targeted needs—especially during the development stage (Croce, 2014; OECD 2015, 2015a). The OECD survey of pension funds show that they “prefer the more stable investment profile of
operational (brownfield) assets and remain opportunistic in their emerging market interest in infrastructure. Prospective risk and return are perceived as higher in new greenfield assets and may require more due diligence on the part of the investor” (OECD 2015b, p.20)

Attracting investors to bridge the financing gap is no panacea. For instance, after “attempts by the UK government to use private funding to pay for infrastructure upgrades… show it is easier said than done. Six years after the UK’s then chancellor, George Osborne, announced a flagship scheme to persuade pension funds to invest billions of pounds in hundreds of new transport and energy projects, there has been little take-up.” (Primmer 2017). In this regard, Mike Weston, chief executive of the Pensions Infrastructure Platform (PIP) in the UK concluded that “[m]ost pension funds believe their obligations are best matched by investing in assets that are already delivering predictable cash flow. This means projects that have an operating track record, or at least predictable payment streams.” (Primmer 2017). Moreover, a BlackRock report notes that “[t]he infrastructure story is tantalizing—trillions of dollars needed in infrastructure upgrades and a global wall of money seeking yield. Yet the investable universe is small and funds take a long time to invest. Infrastructure debt is long-duration (up to 25 years or more) with limited liquidity. This is fine, as long as you are in for the long haul and get paid for your patience. We typically avoid riskier greenfield projects.” (BlackRock 2014, p.7)

In a nutshell, even in advanced economies where there exist deep and sophisticated financial markets and regulatory, macroeconomic, and political risks are relatively low compared to other economies, institutional investors shied away from infrastructure development. For instance, “UK pension funds investing in UK infrastructure projects has been touted by politicians for years as an obvious win-win but actual deals are almost non-existent.” (Primmer 2017)

To sum up, despite attempts to develop mechanisms and incentives to attract institutional investors for greenfield projects (see for instance World Bank, 2015), studies suggest that investors prefer to invest in the lower end of the risk spectrum such as brownfield (or
established) projects or in existing infrastructure such as airports and toll roads—to avoid completion and usage risks—and not to invest in the construction phases. Instead, they prefer to invest in built assets, which generate more stable income streams thus reducing the uncertainty of the cash flows, cost overruns and delays associated with the early stages of an infrastructure project. This is partially due to its inherently risks and negative cash flows during the construction phase (BlackRock, 2015; Bhattacharya, Romani and Stern, 2012, p.14; S&P 2013, 2014). That is, investors focus on investments with attractive risk-adjusted returns such as brownfield projects and already-built and operating assets, which offer predictable revenue streams and lower risks (BlackRock 2016, Bitsch et al 2010; Primmer 2017). From this perspective, private infrastructure investment is constrained by the inherent risks associated with investing in infrastructure projects\(^7\) (Bitsch, et al 2010).

It is interesting to note that “around 70 percent of the current pipeline available to equity investors consists of greenfield projects, which they view as much riskier than brownfield projects that have demonstrated returns” (Mckinsey 2016, p.23). This, in turn, erodes investor interest and prevents the provision of long-term finance by the private sector. Moreover, “[c]onstrained lending capacity has had a negative impact on infrastructure financing across the board, while wider interest-rate spreads have an adverse effect on the ability to finance greenfield projects” (Mckinsey 2016, p.21).

This is particular important for developing economies. The support of private investments for infrastructure in developing countries through the development of local capital markets and efforts to entice private investors are often presented as a solution to the large financing gap for infrastructure (OECD 2013). To be sure, EMDEs need to address major barriers to infrastructure development such as weak pipeline of viable projects, high-risk perception,  

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\(^7\) Note that “Banks, the most important source of long-term financing, lend at significantly shorter maturities in developing economies relative to advanced ones. Moreover, capital markets in developing economies are less developed and are accessible only to a small proportion of total firms. Domestic institutional investors not only have a small participation in developing economies, but also the incentives they face can lead them to invest short-term. However, access to international mutual funds can help developing economies to obtain not only more funds, but also more long-term financing, as these investors hold longer maturities compared to domestic mutual funds.” (Peria and Schmukler, 2017, p.7)
and EMDE infrastructure not being well defined as an asset class (Croce and Yermo, 2013; Inderst and Stewart, 2014). Moreover, public-private partnerships are often discussed “as the solution for closing infrastructure gaps during periods of tight public funding. However, even in economies that make strong use of them, PPPs typically make up only about 5 to 10 percent of overall investment in economic infrastructure.” (Mckinsey 2016, p.19)

The scarcity of long-term finance in developing economies is well known and well documented. A recent IMF report concluded: “Although banks are the most important providers of credit, they do not seem to offer long-term financing. Capital markets have grown since the 1990s and can provide financing at fairly long terms. But few firms use these markets. Only some institutional investors provide funding at long-term maturities. Governments might help to expand long-term financing, although with limited policy tools.” (Peria and Schmukler, 2017, p.2)

For EMDEs there are additional challenges to bridge the gap between demand and supply of funds through financial markets. For instance, the Global Infrastructure Facility (2016) identified critical barriers to private investment (illustrated on figure 10) including: weak pipeline of viable projects; high risks and high perception of risks; significant regulatory, legal, political, economic, and financial risks; existence of information asymmetries preventing the supply of finance and infrastructure not well-defined as an asset class, which contributes to persistent information asymmetries and prevents the supply of finance. (GIF, 2016 p.15)
The same problems faced by advanced economies are also existent in EMDEs, that is, “private investors are often unwilling or unable to take project development risk for infrastructure in EMDEs. They are, however, still interested in the returns that the investments can provide once the projects are operational and demand is proven.” (GIF 2016, p.27) From investors’ standpoint infrastructure development assets’ risk characteristics should be compared to that of private equity. Given the uncertainty and high risks associated with those projects, economic viability of the project being financed would make the returns needed to attract private investors too high.

In this regard, the combination of “the regulatory, macroeconomic, and political risks present in many EMDE countries result in a hurdle rate of return that is too high, resulting in limited bankable projects for private investment additionally. Private lenders may be unwilling to lend to projects with high levels of risk unless sufficient credit enhancements or de-risking mechanisms are in place.” (GIF, 2016 p.15) Both national development banks and multilateral organizations are well placed to strategically provide de-risking
mechanisms to foster investment by the private sector. However, a recent assessment of institutions that provide risk mitigation instruments show that national development institutions and multilateral organizations can enhance their de-risking instruments (figure 11)—including technical capacity and processes—to better fit investor’s needs.

**Figure 11. Assessment of institutions that provide risk mitigation instruments**

![Assessment of institutions that provide risk mitigation instruments](image)

Source: WEF 2016, p.34

Even though different complementary mechanisms to finance infrastructure deals aim to entice institutional investors to finance infrastructure projects (see for instance OECD, 2013a; World Bank, 2015), Ehlers (2014) notes that “development banks bring vast expertise and in many cases insurance against political risks to the table and their loan commitments are in some cases a pre-condition for private lenders to make their funding available. In some emerging markets, development banks also serve a key role as the credible auditor of projects.” (Ehlers, 2014, p.16). In fact, “Many OECD countries have DFIs to promote the expansion of businesses abroad” (BDC 2009, p.62).

It becomes important to “incentivize institutional investors to work with development banks at earlier stages of the preparation of bankable projects” (Areski et al 2016 p.33) and “undertake more comprehensive planning of infrastructure investments and how each
individual project may fit into a broader infrastructure network development plan.” (Areski et al 2016 p.36)

4. Looking ahead: Enhancing the role of development banks and government support to foster investments in long-term assets

Even though much of the conventional discussion about the role of development banks relies on market failures to provide a theoretical basis for their existence, there is little discussion about how development banks operate, their different intervention models, products and markets targeted, and regulatory issues (Griffith-Jones et al 2017).

One of the distinguished features of DBs is that their lending products are mainly concentrated in “long-term loans (90%) followed by working capital loans (85%), whereas syndicated loans consisted of 52% of all DBs, and unsecured loans 25%” (Luna-Martinez and Vicente, 2012, p.15). Furthermore, and not surprisingly, most loans (84%) offered by DBs have maturity dates greater than 5 years (Luna-Martinez and Vicente, 2012, p.16). Comparisons across country groupings show that this is in sharp contrast with the maturity structure of traditional bank long-term loans—that is, over 5 years maturity. It averages only 22.5 percent in upper-middle-income countries and 12 percent in lower-middle- and low-income countries (Figure 12). Though the figures are substantially higher in high-income countries (32.8% of total bank loans) relative to upper-middle income countries (22.5%) it is still substantially lower than the share of development bank loans (84%) over 5 years maturity (Luna-Martinez and Vicente, 2012, p.16).
It is worth noting that “DBs are generally mandated to provide credit at terms that render industrial and infrastructure investment viable” (Chandrasekhar 2016, p. 23, emphasis added). Though development banks operating policies has raised criticisms, the World Bank report notes that “credit at subsidized interest rates is a practice adopted by 50% of DBs covered in the survey. In this category, 66% of DBs fund these subsidies using transfers from their respective governments.” (Luna-Martinez and Vicente, 2012, p.16) In an environment in which investment returns have declined, credit provisions below market interest rates have an additional impact to stimulate new investments. “Accordingly, a subsidy or subvention of some kind would be needed to keep interest rates reasonable.” (Chandrasekhar 2016, p. 23) Finally, “73% of all DBs offer loan guarantee products to
partially offset the losses faced by a private financial intermediary when a customer defaults.” (Luna-Martinez and Vicente, 2012, p.16)

In addition to long-term loans, development banks also provide credit for working capital purposes and financing long-term investment, including in the form of equity. Among the best practices used by DBs, Chandrasekhar notes that “[t]o safeguard their investments, they closely monitor the activities of the firms they lend to, often nominating directors on the boards of companies. This allows for corrective action as soon as any deficiencies are detected.” (Chandrasekhar, 2016, p. 23)

Among the funding features of DBs, 40% answered that they receive direct budget transfers from the government and 64% reported that the government guarantees their debt, this guarantee is implicitly equivalent to DBs obligations—guaranteed by the government—having a status of Treasury securities. “It should be noted that receiving direct transfers from the government does not necessarily mean dependence on government funds. Sometimes, DBs—such as KfW in Germany—receive transfers from the government to fund interest rate subsidies to a particular type of borrower.” (Luna-Martinez and Vicente, 2012, p.10-11) So, not only DBs offer credit at subsidized—below market—rates using transfers from their respective governments to make long-term investment viable but they also rely on direct budget transfers from their government to expand their balance sheets.

In spite of initiatives to encourage the provision of long-term funds by private finance, development banks continue to play an important role providing long-term funding in traditional sectors and activities in developing and advancing economies. Moreover, precautionary measures imposed on traditional banks such as new capital and liquidity rules under Basel III requirements translate into regulatory and balance sheet constraints, which contribute to reduce the provision of funds by traditional banks (Castro 2017; FSB, 2013; Roberts et al 2015).

8 It has already been suggested that BDs have an additional exposure to companies by investing in equity in firms they have extended credit (see for instance Castro (2011) for a discussion on risks faces by DBs.
The operation of development banks is linked together with uncertainties associated with financing long-lived and expensive capital projects such as infrastructure investments and providing funding for innovative enterprises (Hermann 2010, 2010a). Risks associated with such initiatives are usually assumed by government policies through development institutions both directly and indirectly (BDC 2009, WB 2012).

Though there is a growing consensus towards infrastructure investment, in particular by development banks, the focus on infrastructure has a significant impact of the size of DBs balance sheet. For instance, “National development banks in China, Germany, Brazil, India and South Africa all either have strong policies to prioritize infrastructure, significant sustainable infrastructure policies, or both. Significantly, these banks comprise a major portion of the total amount of assets held by NDBs…[the top]ten banks have upwards of $2.8 trillion in assets, or roughly three-fifths of all NDB assets in the world economy.” (Studart, Gallagher, Bhattacharya, 2016, p. 22)

Infrastructure projects are complex due to their nature: “in many economies, but particularly in developing economies, resources to do project planning and elaboration are scarce.” (Studart, Gallagher, Bhattacharya, 2016, p. 25) The literature suggests that successful DBs promoting infrastructure investment are also responsible for taking advantage of their experience in monitoring risks and financing infrastructure projects, which is usually accompanied by high standards when it comes to monitoring environmental risks and classifying its projects according to internationally accepted methodologies (Studart, Gallagher, Bhattacharya, 2016, p. 25; Ehlers, 2014; OECD 2015).

A study by Mckinsey (2013a) suggests that “[p]oorly designed and planned projects lead to significantly higher financing costs and too often even to the inability to mobilize private-sector financing and risk allocation completely. In the absence of private financing and risk sharing, budget-financed public-procurement structures continue to undermanage risk throughout the entire life cycle of the project, leading to even higher rates of project
failure and poor results.” (McKinsey, 2013a, p.12) In this regard, a recent initiative—‘Sustainable Infrastructure Working Group’—studies the matter and shares best practices (IDFC, 2014). “Not surprisingly, those NDBs who have most success in promoting infrastructure projects seem also to be those that get most involved in identifying and supporting project elaboration. This is the case of the German development bank, KfW, and China Development Bank. In the latter case, the involvement is quite significant, as indicated by Yang (2016: 23).” (Studart, Gallagher, Bhattacharya, 2016, p. 25) That is, “There is growing recognition globally that development banks can play an important role in facilitating the preparation and financing of infrastructure projects by private long-term investors.” (Areski et al 2016 p.24) Development banks need to continue to work hand-in-hand with the private sector to contribute with project planning and elaboration and to address poor risk assessment and risk allocation—in particular during the concept and design phase of infrastructure projects.

It is worth highlighting a recent initiative Task Force on Development Banks and Sustainable Development set up “to examine the extent to which development banks are becoming catalysts for achieving a climate friendly and more socially inclusive world economy.” (IDFC, 2014) “Through the IDFC over 100 banks have developed a common criteria for measuring and monitoring green finance, and have made a commitment of provide significant amounts of green finance moving forward.” (Studart, Gallagher, Bhattacharya, 2016, p. 39) In this regard, several BDs are financing “green” businesses in an attempt to deal with issues related to climate change and energy efficiency (Studart, Gallagher, Bhattacharya, 2016). In the UK, a new “Green Bank” was established in 2012 to finance environmental projects. However, “[o]n 3 March 2016 the UK Government launched the process to move the Green Investment Bank into the private sector.” (Green Investment Bank 2016) They have also fostered investments in activities such as clean energy, biotechnology, and environmental projects. However, one of the challenges DBs faced throughout their history was the latent pressure to let private financial institutions to overtake their role. For instance, the “liberalization led to a decline in development banking and the demise of the major DFIs in India.” (Chandrasekhar, 2016, p. 26)
A major enhancement of policy coordination between central banks and development institutions is to encourage monetary authorities to adapt their asset-purchase policy to fund development banks. This could be accomplished in the same way that major central banks introduced quantitative easing policies, but instead of targeting sovereign bonds, the monetary authority would buy debt issued by development banks, especially those financing infrastructure and other corporate activities. That is, as I have argued elsewhere (Rezende 2015), the central bank should act both as the liquidity provider using the discount window as the main tool to satisfy liquidity needs of both depository and non-depository institutions and provide the funding necessary to allow development banks to finance development. This would effectively eliminate funding constraints on development bank’s balance sheet. This proposal has also been embraced by one of the world’s most powerful bond managers, which advocated that “[t]he European Central Bank should retool its asset purchase programme to fund a wave of new infrastructure spending across the continent.” (Foley and Jones, 2016). This means “the central bank has the opportunity to unleash hundreds of billions of dollars in new economic activity by shifting more of its purchases towards bonds issued by the various national and supranational organisations, such as the European Investment Bank, that fund infrastructure and provide trade finance.” (Foley and Jones, 2016)

This proposal is not new. Hyman Minsky favored the use of the discount window as secure source of funds for financial institutions. As he put it, “Rediscounting was not a lender-of-last-resort activity reserved for a crisis, it was the mechanism by which part of the normal reserve base of banks was brought into being…The use of the discount window as a normal source of financing by member banks legitimated the regulation, supervision, and examination of member banks by the Federal Reserve.” (Minsky 1994: 11-12)

To sum up, in spite of deepening capital markets and the greater participation of institutional investors, private investment in infrastructure has not worked in the way it was expected, which has contributed to a growing mismatch between investment expenditures
(and available financing) and investment needs. Thus, the question then becomes how to reconcile the growing mismatch between investment expenditures (and available financing) and investment needs.

Enhancing government support to fund infrastructure investments

In EMDEs, public funding of infrastructure accounts for about 70% of total infrastructure expenditure (Indrest, 2016, p.9). Moreover, “investor appetite for EMDE infrastructure projects has declined significantly since the 2008 financial crisis. This trend can be attributed, in part, to the tightening of financial regulations. More importantly, the unconducive investment environments in many EMDEs leads investors to associate infrastructure projects in EMDEs with higher credit risk” (GIF 2016 p.6) This effect is compounded by the behavior of private investors, who typically avoid exposure to early stages of infrastructure assets—such as during development and construction phases when the risk exposure is higher (OECD 2015a). As discussed earlier, this is part due to the following factors: high project costs; low-cost recovery; limited public financing; barriers to private investment. As noted earlier the key factors in the infrastructure financing gap in EMDEs are: projects poorly executed and not well maintained; lack of adequate project planning; weak pipeline of viable projects; high political and economic risks; legal barriers and lack of protection on investments (OECD 2015a, p.11-12). For EMDEs, in particular, capital market funding (figure 13) to close the financing gap is limited and issuers either find it difficult or cannot raise affordable capital at scale (World Bank, 2004).
The debate over the appropriate level of government spending has sparked considerable controversy – including pressures to promote fiscal consolidation and to reduce public debt – partially due to the conventional narrative about public-sector financing capacity. However, there has been a recent shift away from austerity in favor of public investment. For example, a recent IMF report recommends a substantial increase in public infrastructure investment (IMF 2014).

As Larry Summers (2014) stated: “Public infrastructure investments can pay for themselves.” An IMF (2014) study “finds that increased public infrastructure investment raises output in the short term by boosting demand and in the long term by raising the economy’s productive capacity.” It also notes that “[p]ublic capital and infrastructure capital are closely related: a significant component of the public capital stock in most
countries consists of infrastructure, and the public sector was and continues to be its main provider.” (IMF 2014, p.76)

From this perspective, public investment shocks have “a significant and long-lasting effect on output. They also typically reduce the debt-to-GDP ratio…The level of private investment rises in tandem with GDP.” (Op. cit. p. 83) That is, “[t]he effects of public investment on output and debt tend to be stronger when there is economic slack, when public investment efficiency is high, and when public investment is debt financed.” (Op. cit. p. 84) It notes that “[p]ublic investment booms in emerging market and developing economies are associated with higher output” (Op. cit. p. 85) Moreover, there is a growing consensus to increase public financing and close the investment gap; this is because “debt-financed projects could have large output effects without increasing the debt-to-GDP ratio if clearly identified infrastructure needs are met through efficient investment.” (op. cit. p. 75)

Another IMF report concluded that “increased public investment raises output, both in the short term and in the long term, crowds in private investment, and reduces unemployment. Several factors shape the macroeconomic effects of public investment. When there is economic slack and monetary accommodation, demand effects are stronger, and the public-debt-to-GDP ratio may actually decline. Public investment is also more effective in boosting output in countries with higher public investment efficiency and when it is financed by issuing debt.” (Abiad, Furceri and Topalova 2015, p.2) In a nutshell, public investment is both growth- and productivity-enhancing.

China seems to be following this playbook (figure 14), as it invests more in infrastructure than the other five largest G-20 nations put together (Mohsin 2016). This increase in the share of public investment relative to their economies is particularly important to deal with declining private investment.
In the past, a high share of infrastructure was financed by public budgets. However, the shift towards increasing public investment requires monetary sovereignty. The notion that nations with monetary sovereignty have more fiscal space to promote development—such as increasing public investment—is not new. That is, sovereign countries—those that issue their own currency and adopt flexible exchange rates—have more fiscal space than non-sovereign countries—such as countries that have adopted the Euro—to increase public investment. The then Treasury Secretary Jacob J. Lew speaking at the G20 summit in Hangzhou in 2016 declared that “the G-20 is no longer debating growth versus austerity, but rather how to best employ fiscal policy to support our economies.” (U.S. Treasury Secretary Jacob J. Lew G-20 speech 2016)

5. Concluding Remarks

There is a renewed interest in development banks and the growing commitment to use all policy tools to generate sustainable full employment, including coordination between fiscal, monetary, and development policies to promote capital development and stability.
Both developed and developing economies need to effectively make the transition to a development strategy based on domestic demand and reduce the dependence policies designed to attract external capital and foreign demand.

In spite of the introduction of mechanisms to attract institutional investors to engage in development finance, results fell short of expectations. Yet, most countries are still struggling to shift their development strategy to foster domestic demand growth. That is, federal public investment is unusually low given countries’ infrastructure bottlenecks and investment needs.

The adequate provision of long-term funds will require policy coordination from governments, national and multilateral development banks, to mobilize private sector banks and institutional investors to unlock the their finance potential. In this regard, it is imperative to rethink and reprioritize global and national development agendas in which development banks play a strategic role not only providing long-term finance but also contributing to identifying major barriers to investment. DBs can foster capacity-building activities to help deal with barriers to infrastructure development, which contribute to persistent information asymmetries and prevents the supply of finance, in particular in EMDEs.

Meeting the infrastructure challenge goes beyond the lack of funding. The expectation that institutional investors’ interest in infrastructure assets would increase has been disappointed by private investors’ lack of interest in development infrastructure assets. Bridging the investment gap requires the involvement of DBs and a broad government policy to support economic growth.

In this regard, there is ample policy space to promote private and public infrastructure investment, in which public banks – and in particular national development banks – and private domestic capital markets should play a major and strategic role financing the supply side of this program. Moreover, macroeconomic support is essential for development banks
to be successful. This means that development banks cannot be seen in isolation, instead policy coordination is required so countries can shift their policies to mobilize domestic resources and adopt an investment-oriented growth strategy by increasing government-sponsored infrastructure investment projects. Though the provision of long-term finance for longer-term assets and projects contributes to economic development, financial leverage is a double-edged sword, that is, rising financial leverage and declining “cushion” of safety lead to increasing financial fragility. Financial fragility arises as a consequence of the way that corporate funding is structured and financed. In this regard, finance and financial fragility are directly linked. While providing long-term finance, DBs also contribute to mitigate financial fragility by providing funds in the domestic currency and segmenting the financial system, thus serving one of the masters—which requires leverage and taking risks—financing capital development and innovation. This segmentation of the risky activities imparts greater stability to the financial system.

It is noteworthy that despite much controversy, public finance is still the primary source of funding. More broadly, there is a growing consensus towards the use of fiscal policy to support growth and to increase public financing to close the investment gap. In the aftermath of the global financial crisis, unconventional monetary policy – including ZIRP, NIRP, QE – and fiscal austerity failed to support investment growth, that is, even though major central banks moved interest rates into negative territory, this policy failed to reach its goals, such as sparking investment.

Finally, rather than an obsessive concern over budget deficits, the narrative has to center around the idea of monetary sovereignty. That is, sovereign nations cannot be forced by markets to default on their domestic debt. It should use their fiscal powers of the federal government to increase federal government investment in infrastructure, thus contributing to raising productivity and lowering private sector costs through investment in key areas such as infrastructure, health and education, and research and development.
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