

# Local Currency Lending by Multilateral Development Banks\*

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## Abstract

This paper explores the prospects of local currency-denominated loans by Multilateral Development Banks (MDBs), focusing on mitigating foreign exchange and convertibility risks. It theoretically analyzes three financing strategies: (1) MDBs borrowing in hard currency and onlending through a diversified portfolio of local currencies and host countries or engaging in hedged local currency onlending; (2) issuing local currency bonds for local currency onlending; and (3) recapitalizing MDBs with hard currency to establish Local Currency Funds. Each strategy has distinct advantages and drawbacks, emphasizing the need for a case-by-case approach tailored to the macroeconomic conditions of host developing countries.

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# 1 Introduction

Since the global financial crisis of 2007–2008 and the subsequent credit crunch revealed challenges in reigniting sustained economic growth, the role of development banks and state-owned commercial banks has gained prominence in policy discussions. Initially, their countercyclical credit provision attracted attention for its capacity to mitigate business cycle fluctuations and prevent deeper crises (Brei and Schclarek, 2013, 2015, 2018; Bertay et al., 2015). Over time, additional roles have been recognized, including their ability to extend loan maturities (Schclarek and Xu, 2022; Schclarek et al., 2023), act as market makers for bonds and other financial assets (Schclarek et al., 2022), scale up sustainable finance initiatives (Mazzucato, 2023), and drive innovation, structural transformation, infrastructure investment, and the provision of public goods (Griffith-Jones et al., 2018; Mazzucato and Penna, 2018). More recently, there has been a growing focus on local currency lending by multilateral development banks (MDBs), as highlighted in the 2023 Finance in Common Summit, where the final communiqué identified foreign exchange risks as a critical barrier to scaling cross-border capital flows from developed to low- and middle-income countries.<sup>1</sup>

One of the primary challenges for MDBs in providing local currency loans to real investment projects lies in their reliance on funding through the issuance of hard currency-denominated bonds in international markets.<sup>2</sup> This creates a currency mismatch in their balance sheets when local currency loans are granted, significantly increasing their exposure to foreign exchange (FX) and convertibility risks.<sup>3</sup> Such risks not only threaten the financial stability of MDBs but could also result in credit rating downgrades. A lower credit rating would escalate MDBs’ funding costs by requiring them to pay higher interest rates on international bond issuances while reducing the size and maturity of the funds they can raise. Consequently, the terms of local currency loans, including size, maturity, and interest rates, would also be adversely impacted. These currency mismatches and the associated risk of credit rating downgrades represent substantial challenges not only for MDBs but also for other stakeholders involved in the financial ecosystem.<sup>4</sup>

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<sup>1</sup>At this summit, TCX et al. (2023) presented survey findings on public development banks (PDBs), revealing that nearly two-thirds of these institutions identify foreign exchange (FX) risks as a significant threat to their profitability. Furthermore, over 50% of the foreign-denominated liabilities held by the surveyed PDBs were unhedged, with only 20% reporting access to a diverse range of hedging instruments.

<sup>2</sup>A hard currency is defined as any currency widely accepted for international transactions and payments, such as the US Dollar (USD), the Euro, or the Renminbi.

<sup>3</sup>FX risks refer to uncertainties arising from exchange rate fluctuations within a “normal” range of market variability. In contrast, convertibility risks arise during a balance of payments crisis when limited foreign currency availability hinders currency exchange. Such crises often cause severe local currency depreciation, not just “normal” fluctuations, significant liquidity loss in the foreign exchange market, especially for large transactions, and may even trigger a spike in inflation.

<sup>4</sup>For a detailed discussion on the relationship between credit rating agencies and Multilateral Development Banks (MDBs), see, among others, Humphrey (2018); Independent Expert Panel G20 (2022); Munir and Gallagher (2020) Additionally, studies such as Bonizzi et al. (2024); Griffith-Jones et al. (2022) suggest that MDBs may have some capacity to take on

From a macroeconomic perspective, addressing the challenges of currency mismatch requires distinguishing between two types of real investment projects financed by MDBs: 'export-enhancing' (EXIPs) and 'domestic-oriented' (DOIPs), as analyzed in Schclarek and Xu (2022). EXIPs, such as port construction or export-oriented agriculture, generate hard currency for the host country, improving its current account balance. This reduces FX and convertibility risks for both MDBs and the host country, making the currency denomination of MDB loans less critical for them. Conversely, DOIPs, such as sewage systems or solar farms serving non-exporting sectors, do not increase future hard currency supply in the host country. When financed with hard currency loans, for these projects to repay those loans, they require external actors—other than the MDBs and the projects themselves—to supply hard currency to the local foreign exchange market, enabling the exchange of their local currency. This often necessitates a current account or capital account surplus, or central bank intervention using foreign reserves.<sup>5</sup> Consequently, MDBs can enhance financial and macroeconomic stability in host countries by prioritizing local currency financing for DOIPs and directing hard currency financing predominantly towards EXIPs (Schclarek and Xu, 2022).

The financing of the green transformation in less developed countries by MDBs brings the macroeconomic challenges of currency mismatch and the risk of MDB credit rating downgrades to the forefront. Most green investment projects are DOIPs, and financing these projects with hard currency loans amplifies FX and convertibility risks for all involved actors, particularly the host countries (see also Bortz and Toftum (2020)). Furthermore, the scale of financing required for the green transition is substantial for less-developed countries. For instance, Attridge and Engen (2019); Songwe et al. (2022); Prasad et al. (2022) estimate that emerging markets and developing countries need to mobilize between USD 600 billion and USD 3 trillion annually in external financing to address the climate crisis. This underscores the urgent need for innovative financing mechanisms that enable MDBs to sustainably provide local currency loans for green projects in less developed countries, particularly in countries with current account or capital account deficits, or those with low foreign reserves.

This paper aims to explore the prospects of local currency-denominated loans provided by MDBs, focusing on strategies to mitigate FX and convertibility risks. Specifically, it theoretically analyzes and compares three alternative financing strategies that enable MDBs to extend local currency loans to DOIPs without incurring substantial risks. These financing strategies are: 1) MDBs borrow in hard currency but extend onlending to a well-diversified portfolio denominated in various local currencies or engage in hedged local currency onlending (Eichengreen and Hausmann, 2003; Perry, 2009; Persaud, 2023; Cingolani and Toporowski, 2024); 2) MDBs issue local currency bonds, and onlend in local

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additional FX risks. This potential creates opportunities for MDBs to expand their local currency lending, enhancing their developmental impact while maintaining financial stability.

<sup>5</sup>The macroeconomic effects become significant only if hard currency loans to DOIPs are substantial relative to the size of the local financial and foreign exchange markets. Smaller lending volumes reduce the relevance of these macroeconomic challenges.

currencies (Bresser-Pereira and Bechelaine, 2019; Hoschka, 2005; Levy-Yeyati, 2007; Perry, 2009); and 3) MDBs are recapitalized with hard currency that they exchange for local currencies to establish Local Currency Funds for local currency lending. While the use of MDB recapitalization to enhance onlending is a common argument in the literature and policy discussions,<sup>6</sup> to the best of our knowledge, this is the first paper to apply this concept specifically to the context of local currency loans, including the creation of Local Currency Funds. Consequently, the analysis of this financing strategy represents a key contribution of this paper to the literature. Furthermore, while the first and second financial strategies have been explored in previous research, this paper is the first to provide a comprehensive theoretical analysis and comparison of all three financial strategies. This also represents a key contribution to the literature, offering novel insights into sustainable and effective MDB financing mechanisms.

Regarding the methodology of this article, it is a theoretical analysis of the above-mentioned issues, following the “money view” theory of Mehrling (2011, 2012, 2022), which has also been used in Schclarek and Xu (2022) and Schclarek et al. (2023). This theory allows a better understanding of the different payments and settlements, in particular interbank payments, that arise when the involved agents interact financially. The analysis examines the payment mechanisms involved and the changes in the balance sheets of the involved actors, the implications for the supply and demand of hard currency in the local foreign exchange market, the FX and convertibility risks, MDB leverage and size of onlending, and the maturity and interest rates of the loans and bonds issued. Importantly, this study not only addresses the risks faced by MDBs but also evaluates how these risks impact other stakeholders, including the host country, from a macroeconomic perspective.

The remainder of this paper is organized as follows. In section 2, we analyze the first financing strategy, where the MDBs fund themselves through USD bonds, but mitigate FX and convertibility risks through FX hedging or a well-diversified portfolio of loans in different local currencies. Section 3 analyzes the second financial strategy, in which the MDBs issue local currency-denominated bonds in the local bond market. The third financial strategy that analyzes the recapitalization of the MDB and the establishment of a Local Currency Fund is presented in section 4. Finally, in section 5, we conclude with key findings and policy recommendations.

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<sup>6</sup>To enhance the recapitalization of MDBs, in addition to traditional recapitalization by their owners, several innovative proposals have been put forward. IMF (2024) propose recapitalizing MDBs using Special Drawing Rights (SDRs) issued by the IMF, channeled through hybrid capital instruments issued by the MDBs. Similarly, Zucker-Marques and Gallagher (2023) advocate for hybrid capital instruments in the form of Sustainable Future Bonds. Also, there are several papers, such as Andrews (2021); ECA-ECLAC (2022); Lazard (2022); Plant (2021); Ryder et al. (2023); Vinokurov et al. (2024) that argue for the recapitalization of MDBs with SDRs.

## 2 First financing strategy: Mitigating FX risks through a well-diversified portfolio of loans in different local currencies or FX hedging

In this section, we examine the first financing strategy for MDBs to provide local currency loans to investment projects while addressing the challenges of currency mismatches between their assets and liabilities, which can adversely affect their credit ratings. This strategy assumes that MDBs fund their activities by issuing USD-denominated bonds in international markets and subsequently onlend in local currency to "domestic-oriented" investment projects (DOIPs), such as solar farms or sewage systems, which do not generate hard currency. While this approach initially creates a currency mismatch—assets in local currency (loans) and liabilities in USD (bonds)—FX risks are strategically mitigated through different financing strategies.

Eichengreen and Hausmann (2003); Perry (2009) advocate for a diversification financing strategy that involves distributing local currency loans across multiple currencies and host countries. By building a well-diversified loan portfolio, MDBs can effectively mitigate FX risks.<sup>7</sup> Further advancing this approach, Persaud (2023) propose an FX hedging financing strategy that involves establishing an FX Guarantee Agency. This agency, jointly owned by MDBs and the IMF, would pool risks and provide partial FX guarantees during specific periods, thereby mitigating currency-related vulnerabilities.<sup>8</sup> This analysis underscores that the strategy of hedged local currency onlending is conceptually aligned with leveraging a diversified portfolio of local currency loans, as both approaches aim to mitigate FX risks for MDBs through diversification.

From a different angle, Cingolani and Toporowski (2024) argue for a swap-based financing strategy, where MDBs enter into foreign exchange (FX) swap agreements with the central banks of the developing countries. These agreements include a repurchase (repo) clause, allowing the MDBs to sell USD to the central banks in exchange for local currency while securing the right to repurchase the USD later at the same exchange rate. In this sense, this swap-based financing strategy is similar to the FX hedging financing strategy, as both enable MDBs to eliminate FX risks effectively. However, in the FX hedging financing strategy, the financial entity providing the FX hedge takes on the FX risks, whereas in the swap-based financing strategy, it is the central banks of

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<sup>7</sup>Perry (2009) argue that MDBs, particularly those with global reach like the World Bank, are well-positioned to assume currency risks in their balance sheets by financing themselves in hard currency and onlending in local currency. However, this requires careful diversification through global lending pools to various developing countries in multiple currencies. Similarly, Eichengreen and Hausmann (2003) propose that MDBs issue bonds denominated in an emerging market (EM) index, reflecting the exchange rates of several EM currencies. Such an index would reduce FX risks for international investors while providing MDBs with a mechanism to lend in local currencies, matching the currency composition of their liabilities.

<sup>8</sup>Other studies, including Bonizzi et al. (2024); CPI (2024); Fink et al. (2023), support similar proposals for mitigating FX risks through FX hedging and diversification financing strategies.

the developing countries that bear the FX risks.

In subsection 2.1, we begin by examining how the MDB issues USD bonds in international markets and subsequently exchanges the USD for various local currencies. This discussion includes the implications of the international bond issuance on the maturity and interest rates of these bonds. Next, in subsection 2.2, we analyze the process by which the MDB provides local currency loans to investment projects across different host countries. Here, we also evaluate the maturity and interest rates associated with these loans. Subsection 2.3 focuses on the development of investment projects requiring imported inputs and supplies, emphasizing the critical role of MDB-supplied USD in local foreign exchange markets to facilitate these imports. Finally, subsection 2.4 addresses the repayment of local currency loans by DOIPs and highlights a key limitation of this financing strategy: while MDBs are repaid in local currencies, they must settle their USD bonds in the international market, necessitating the conversion of local currencies into USD. This poses significant challenges for host countries with low foreign reserves or current account deficits, as they face heightened FX and convertibility risks. Although this financing strategy shields the MDB from FX risks during the lending phase, these risks reemerge during repayment of loans and bonds. Importantly, investment projects themselves are protected from FX risks, as they can always repay their loans in local currency, provided they remain profitable.

We explicitly model the above-mentioned financial transactions by analyzing, at each point in time, the balance sheets of the involved agents using T-accounts, that is, assets on the left-hand side and liabilities on the right-hand side, following the “money view” monetary theory, presented in Mehrling (2011, 2012, 2022), which has also been used in Schclarek and Xu (2022), and Schclarek et al. (2023). Every entry in an account has a subscript which refers to the agent for which that entry represents an asset, and a superscript which refers to the agent for which that entry represents a liability. Furthermore, the currency denomination of each entry is explicitly indicated. For example,  $USDBonds_{ICB}^{MDB}$  is a USD denominated bond that is an asset for an international commercial bank (ICB) and a liability for the MDB. It is worth noting that this theory and methodology are consistently applied throughout the subsequent sections and subsections of the article.

## 2.1 The MDB issues USD bonds and exchanges the obtained USD for different local currencies

In this subsection, we analyze how the MDB issues USD bonds in the international market and then exchanges the obtained USD for different local currencies. We assume that the MDB exchanges the USD with local commercial banks and obtains local currency deposits from them.

Figure 1 presents the balance sheets, at each moment of time, of the MDB, a local commercial bank from host country 1 (Country1 Commercial Bank) and a local commercial bank from host country N (CountryN Commercial Bank). Note that in this figure, we present the balance sheet of these two local commercial

banks, but we should consider that a similar analysis can be made for the other  $N-2$  local commercial banks from the other host countries. In the initial period ( $T = 0$ ), none of the agents have assets nor liabilities. In the first period ( $T = 1$ ), the MDB issues USD bonds in the international market ( $+USD Bonds_{ICB}^{MDB}$ ) and gets paid USD deposits in an international commercial bank, for example a commercial bank in New York ( $+USDDep_{MDB}^{ICB}$ ). For simplicity reasons we do not show the balance sheet of this International Commercial Bank (ICB), but it has on the asset side the USD bonds issued by the MDB ( $+USD Bonds_{ICB}^{MDB}$ ) and it has in the liability side the USD deposits of the MDB ( $+USDDep_{MDB}^{ICB}$ ). In the second period ( $T = 2$ ), the MDB exchanges the USD ( $-USDDep_{MDB}^{ICB}$ ) for different local currencies from different local commercial banks, receiving local currency deposits from these local commercial banks ( $+\$C1Dep_{MDB}^{C1CB}$  and  $+\$CNDep_{MDB}^{CNCB}$ ). Note that local commercial banks receive the USD deposits from the MDB in the International Commercial Bank ( $+USDDep_{C1CB}^{ICB}$ , ..., and  $+USDDep_{CNCB}^{ICB}$ ) in exchange for creating local currency bank deposits ( $+\$C1Dep_{MDB}^{C1CB}$ , ..., and  $+\$CNDep_{MDB}^{CNCB}$ ).

In the final situation and comparing with the initial situation, we can observe that the balance sheets of the involved actors have expanded. The MDB has in the asset side local currency deposits in different local currencies ( $\$C1Dep_{MDB}^{C1CB}$ , ..., and  $\$CNDep_{MDB}^{CNCB}$ ), with which the MDB will grant local currency denominated loans to investment projects, as is studied in the next subsection. The liability side of the MDB is composed of USD bonds issued on the international market ( $USD Bonds_{ICB}^{MDB}$ ). The currency mismatch of the assets and liabilities of the MDB is clear, it has assets in local currencies and liabilities in USD. However, the point of using the USD proceeds from the international bond issuance to exchange for different local currencies in different host countries is to diversify the asset side so that the FX risks are mitigated through a well-diversified portfolio of different local currencies. We will discuss more about this result in the next subsection 2.2 when analyzing how the MDB can now provide local currency loans with the local currency it obtained from exchanging the USD. Note also that the size of the USD bond issuance in the international bond market is probably the biggest bond issuance that the MDB can make, especially if compared to issuing local currency bonds in the local bond market. Also, usually, the maturity and the interest rate of USD bonds that are issued in the international bond market have the longest maturities and lowest interest rates, especially when compared to local currency bonds issued in local bond markets. The larger amount of USD proceeds from the USD bond issuance, the longer maturity and the lower interest rate have consequences, in turn, on the size, maturity and interest rates of the local currency loans granted by the MDB to the local investment projects, which will be discussed below in subsection 2.2. In addition, regarding the balance sheet of the local commercial banks, it is clear that they have also seen their balance sheets expand by increasing their asset side with USD deposits in the International Commercial Bank ( $USDDep_{C1CB}^{ICB}$ , ..., and  $USDDep_{CNCB}^{ICB}$ ) and their liability side with local currency denominated bank deposits of the MDB ( $\$C1Dep_{MDB}^{C1CB}$ , ..., and  $\$CNDep_{MDB}^{CNCB}$ ).

$T$	MDB		Country1 Commercial Bank		CountryN Commercial Bank	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
0						
1	$+USDDep_{MDB}^{ICB}$	$+USDBonds_{ICB}^{MDB}$				
2	$-USDDep_{MDB}^{ICB}$		$+USDDep_{C1CB}^{ICB}$		$+USDDep_{CNCB}^{ICB}$	
	$+\$C1Dep_{MDB}^{C1CB}$			$+\$C1Dep_{MDB}^{C1CB}$		
	....					
	$+\$CNDep_{MDB}^{CNCB}$					$+\$CNDep_{MDB}^{CNCB}$
	$\$C1Dep_{MDB}^{ICB}$	$USDBonds_{ICB}^{MDB}$	$USDDep_{C1CB}^{ICB}$	$\$C1Dep_{MDB}^{C1CB}$	$USDDep_{CNCB}^{ICB}$	$\$CNDep_{MDB}^{CNCB}$
<i>Final Situation</i>	....					
	$\$CNDep_{MDB}^{CNCB}$					

Figure 1: The MDB issues USD bonds in the international market and then exchanges those USD for different local currencies

## 2.2 MDB loan in local currency to the different local investment projects

In this subsection, we analyze how the MDB grants local currency denominated loans to the different local investment projects with the local currencies that it obtained from exchanging the USD for the different local currencies, which was analyzed in subsection 2.1.

Figure 2 presents the balance sheets at each moment of time of the MDB, the Country1 Commercial Bank from country 1 and the Country1 Investment Project from country 1. Note that, due to space considerations, we are not showing the balance sheets of the other  $N - 1$  countries' local commercial banks and local investment projects, as the financial and monetary transactions are identical to those made with the Country1 Commercial Bank and Country1 Investment Project, respectively. In the initial period ( $T = 0$ ), which corresponds to the *Final Situation* in figure 1, the MDB holds, in its asset side, local currency deposits in the different local commercial banks ( $\$C1Dep_{MDB}^{C1CB}$ , ..., and  $\$CNDep_{MDB}^{CNCB}$ ) and it has, in the liability side, the USD denominated bonds it issued in the international bond market ( $USDBonds_{ICB}^{MDB}$ ). The Country1 Commercial Bank has, in its asset side, the USD denominated bank deposits in the international commercial bank ( $USDDep_{C1CB}^{ICB}$ ), which it got from the MDB by exchanging them for local currency bank deposits ( $\$C1Dep_{MDB}^{C1CB}$ ). Note that these local currency bank deposits ( $\$C1Dep_{MDB}^{C1CB}$ ) are in the liability side of the balance sheet of the Country1 Commercial Bank. The Country1 Investment Project has no assets nor liabilities, but needs a loan to develop a domestic oriented investment project that will produce local currency proceeds in the future. For example, a solar farm that will sell electricity in the domestic market, or a sewage system that will benefit a local village or city, which will use local tax proceeds to pay back the loan. In the first period ( $T = 1$ ), the MDB



grants a local currency denominated loan to the Country1 Investment Project ( $+\$C1Loan_{MDB}^{C1IP}$ ) by transferring its deposits at the Country1 Commercial Bank to the Country1 Investment Project ( $-\$C1Dep_{MDB}^{C1CB}$ ). Accordingly, the Country1 Investment Project receives the local currency deposits ( $+\$C1Dep_{IP}^{C1CB}$ ), with which it will pay all the inputs and supplies that are needed to develop its investment project, which is presented in the next subsection 2.3. Note, however, that now the Country1 Investment Project owes the MDB a local currency loan ( $+\$C1Loan_{MDB}^{C1IP}$ ). In the Country1 Commercial Bank's balance sheet we can see the change in the property of the local currency deposits by having debited the bank account of the MDB ( $-\$C1Dep_{MDB}^{C1CB}$ ) and having credited the bank account of the Country1 Investment Project ( $+\$C1Dep_{C1IP}^{C1CB}$ ). In addition, in this first period ( $T = 1$ ), the MDB also grants a local currency denominated loan to the CountryN Investment Project ( $+\$CNLoan_{MDB}^{CNIP}$ ) by transferring its deposits at the CountryN Commercial Bank to the CountryN Investment Project ( $-\$CNDep_{MDB}^{CNCB}$ ), as well as granting local currency loans to the other local investment projects in the other countries.

In the final situation, and comparing with the initial situation, we can observe that the asset composition of the MDB has changed from holding local currency deposits ( $\$C1Dep_{MDB}^{C1CB}$ , ..., and  $\$CNDep_{MDB}^{CNCB}$ ) to holding local currency denominated loans owed by the different local investment projects in the different host countries ( $\$C1Loan_{MDB}^{C1IP}$ , ..., and  $\$CNLoan_{MDB}^{CNIP}$ ). The liability side of the balance sheet of the MDB has not changed and it still owes the USD denominated bonds it issued in the international bond market ( $USDBonds_{ICB}^{MDB}$ ). Thus, there is clearly a currency mismatch between the assets and the liabilities of the MDB. Below we analyze more thoroughly this result, which is one of the main results of this section. In turn, the Country1 Investment Project's balance sheet has been expanded by both increasing the assets with the local denominated deposits ( $\$C1Dep_{C1IP}^{C1CB}$ ) and the liabilities with the local currency loan owed to the MDB ( $\$C1Loan_{MDB}^{C1IP}$ ). Note that the Country1 Investment Project has no currency mismatch between assets and liabilities, which was one of the objectives of this funding strategy. Thus, when the Country1 Investment Project matures and start generating local currency proceeds, it will be able to pay back the loan from the MDB, without suffering any FX and convertibility risks. Note also that if the size, the maturity and the interest rate of the local currency loans granted by the MDB to local investment projects are related to the size, maturity and interest rate of the USD bonds issued by the MDB in the international bond market, it is probable that this financing strategy will allow for the largest size, longest maturity and lowest interest rates for the local currency loans granted by the MDB to local investment projects, especially compared to the situation when the MDB issues local currency bonds in the local bond market. Regarding the Country1 Commercial Bank, it has not seen its balance sheet expand but the owner of the local currency deposits has changed.

Turning back to the currency mismatch of the MDB, although there is a currency mismatch between the assets and liabilities of the MDB, the point of this firsts financing strategy is that the MDB can mitigate FX risks through making sure it has an asset side composed of a well-diversified portfolio of loans

in different local currencies. This diversified portfolio implies that the FX risks are lowered because while some local currencies may depreciate against the USD, some other local currencies may appreciate against the USD. For example, Eichengreen and Hausmann (2003) claim that a real exchange rate index built for 22 emerging market countries is less volatile than the yen-dollar and Deutsche mark-dollar real exchange rates. Note that if the MDB had lent in only one local currency, there would be no possibility of diversifying away the FX risks, and the currency mismatch would be a bigger problem than when following the strategy of pursuing a well diversified portfolio of local currency loans.

In addition, it is important to point out that this first financing strategy of diversifying the currencies of the local currency loans provided by an MDB to diversify away the average exchange rate risk is similar to the alternative strategy of setting up an FX hedge fund in charge of diversifying away the FX risks and selling hedging solutions to MDBs and other banks. In this set up, it is not individual MDBs that are in charge of diversifying away FX risks, but the FX hedging fund that makes sure to provide hedging solutions to a well diversified base of local currencies in order to diversify away the FX risk. Thus, although an individual MDB has a currency mismatch, the FX risk is hedged by the FX hedging fund. Two examples of these FX hedging funds are the TCX fund and the MFX Currency Risk Solutions. Moreover, the important role of these types of FX hedging funds is stressed by Persaud (2023). He argues that the average ex post "overpayment" for FX risks for a sample of 5 industrialized emerging markets (Brazil, India, Indonesia, Mexico, and South Africa) has been around +2,2% per year between 1999 and 2022.<sup>9</sup> This positive average "overpayment" for hedging FX risks means, according to Persaud (2023), that there is scope for a joint "FX Guarantee Agency" put forward by the MDBs and the IMF that could lower the FX hedging costs for investment projects in developing countries, and allow international private investors to finance green projects, even if these projects are domestic oriented (produce local currency proceeds).

### **2.3 The buying of imported inputs and supplies to develop the investment projects**

In this subsection, we analyze how the local investment projects are developed by analyzing the case when the Country1 Investment Project has to buy imported inputs and supplies from the Producer Imported Inputs, which is a foreign firm that produces inputs and supplies needed for the development of the investment project to be paid with hard currency, such as the USD, the Euro or the Renminbi. For example, developing a solar farm which requires buying the solar panels from USA, the EU, or China, or a sewage system that requires buying imported pumps and machinery. Recall that in the previous subsection 2.2, the Country1 Investment Project had received local currency, which implies that for it to buy imported inputs there has to be an agent that have access

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<sup>9</sup>Persaud (2023) measures the "overpayment" as the annualized percentage difference between today's spot exchange rate and the rate implied five years ago by the five-year forward market.

$T$	MDB		Country1 Commercial Bank		Country1 Investment Project	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
0	$\$C1Dep_{MDB}^{C1CB}$	$USDBonds_{ICB}^{MDB}$	$USDDep_{C1CB}^{ICB}$	$\$C1Dep_{MDB}^{C1CB}$		
	....					
	$\$CNDep_{MDB}^{CNCB}$					
1	$-\$C1Dep_{MDB}^{C1CB}$			$-\$C1Dep_{MDB}^{C1CB}$		
	$+\$C1Loan_{MDB}^{C1IP}$			$+\$C1Dep_{C1IP}^{C1CB}$	$+\$C1Dep_{C1IP}^{C1CB}$	$+\$C1Loan_{MDB}^{C1IP}$
	....					
	$-\$CNDep_{MDB}^{CNCB}$					
	$+\$CNLoan_{MDB}^{CNIP}$					
<i>Final Situation</i>	$\$C1Loan_{MDB}^{C1IP}$	$USDBonds_{ICB}^{MDB}$	$USDDep_{C1CB}^{ICB}$	$\$C1Dep_{C1IP}^{C1CB}$	$\$C1Dep_{C1IP}^{C1CB}$	$\$C1Loan_{MDB}^{C1IP}$
	....					
	$\$CNLoan_{MDB}^{CNIP}$					

Figure 2: The MDB grants local currency loans to different local investment projects in different countries

to foreign exchange and is willing to exchange them for local currency. In this subsection we will assume that this agent is the Country1 Commercial Bank, which obtained USD when it sold local currency to the MDB (see subsection 2.1). However, it could also be any other agent with access to USD and demand for local currency. Furthermore, it could even be, and usually is, the central bank of the host country, which may need to intervene in the foreign exchange market to avoid an excessive depreciation of the local currency.<sup>10</sup>

Figure 3 presents the balance sheets at each moment of time of the Producer Imported Inputs, the Country1 Commercial Bank and the Country1 Investment Project. In the initial period ( $T = 0$ ), which corresponds to the *Final Situation* of figure 2, the Producer Imported Inputs, which is a foreign company, has assets in the form of produced inputs and supplies needed for the development of the investment project, which could be goods and/or services ( $ImpInp_{PII}$ ), and it is ready to sell those inputs and supplies for USD. Note that the Producer Imported Inputs is not interested in selling its inputs and supplies for local currency because it is based in a foreign country and has no use of the local currency. In addition, the Country1 Commercial Bank holds, in its asset side, USD deposits

<sup>10</sup>Note that we could also have assumed that the Country1 Investment Project requires domestic produced inputs and supplies, instead of imported inputs and supplies. In this case, the Country1 Investment Project would just use the local currency funds obtained to pay for the inputs and supplies and would not need to exchange them for foreign exchange. Although this is a very plausible case, we decided to analyze the case of imported inputs and supplies to highlight the importance of the Country1 Commercial Bank receiving foreign exchange from the MDB in order to increase the availability of foreign exchange in the local financial market. If the MDB did not provide the foreign exchange, the risk of there not being sufficient access to foreign exchange to buy the imported inputs and supplies would increase, which would reduce the probability of a successful development of the local investment project.

in the international commercial bank ( $USDDep_{C1CB}^{ICB}$ ) and has local currency denominated deposits by the Country1 Investment Project ( $\$C1Dep_{C1IP}^{C1CB}$ ) as liabilities. Also, the Country1 Investment Project holds local currency denominated deposits in the Country1 Commercial Bank ( $\$C1Dep_{C1IP}^{C1CB}$ ) as assets and has, in the liability side, the local currency denominated loan from the MDB ( $\$C1Loan_{MDB}^{C1IP}$ ). In the first period ( $T = 1$ ), the Country1 Investment Project exchanges its local currency holdings for USD with the Country1 Commercial Bank to pay for the imported inputs and supplies from the Producer Imported Inputs. This foreign exchange takes place by Country1 Investment Project paying with its local currency deposits ( $-\$C1Dep_{C1IP}^{C1CB}$ ) and receiving USD deposits at the International Commercial Bank ( $+USDDep_{C1IP}^{ICB}$ ). In turn, the Country1 Commercial Bank debits the local currency bank deposits of the Country1 Investment Project ( $-\$C1Dep_{C1IP}^{C1CB}$ ) and transfers its USD deposits at the International Commercial Bank to the Country1 Investment Project ( $-USDDep_{C1CB}^{ICB}$ ). In the second period ( $T = 2$ ), the Country1 Investment Project pays with its USD denominated deposits in the International Commercial Bank ( $-USDDep_{C1IP}^{ICB}$ ) and receives the imported inputs and supplies ( $+ImpInp_{C1IP}$ ) with which it can develop the local investment project. In turn, the Producer Imported Inputs delivers the imported inputs and supplies ( $-ImpInp_{PII}$ ) and receives the USD denominated deposits in the International Commercial Bank ( $+USDDep_{PII}^{ICB}$ ).

In the final situation, and comparing with the initial situation, we can observe that the asset side of the balance sheet of the Producer Imported Inputs has changed its composition from holding imported inputs and supplies ( $ImpInp_{PII}$ ) to holding USD deposits in the International Commercial Bank ( $USDDep_{PII}^{ICB}$ ). In addition, the balance sheet of the Country1 Commercial Bank has shrunk from having assets ( $USDDep_{C1CB}^{ICB}$ ) and liabilities ( $\$C1Dep_{C1IP}^{C1CB}$ ) to having no assets nor liabilities. In the case of the Country1 Investment Project, the asset side of its balance sheet has changed its composition from holding local currency deposits ( $\$C1Dep_{C1IP}^{C1CB}$ ) to holding imported inputs and supplies ( $ImpInp_{C1IP}$ ). It is with these imported inputs and supplies that it will develop its investment project. The liability side of the balance sheet of the Country1 Investment Project has not changed, and it still has the local currency denominated loan from the MDB ( $\$C1Loan_{MDB}^{C1IP}$ ). Note that the point of this subsection is to underscore that the Country1 Investment Project is able to buy the imported inputs and supplies, and, thus, develop its investment project, because there was an economic agent in this local economy that had access to USD and wanted to buy local currency (in this case, the Country1 Commercial Bank, but it could also have been the local central bank or any other economic agent with access to USD willing to exchange USD for local currency). If there had been no economic agent with access to USD and the willingness to exchange them for local currency, the Country1 Investment Project would not have been able to buy the imported inputs and supplies.<sup>11</sup> In addition, the

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<sup>11</sup>An alternative solution would have been if the Producer Imported Inputs was willing to provide a USD loan to the Country1 Investment Project to buy the imported inputs and

$T$	Producer Imported Inputs		Country1 Commercial Bank		Country1 Investment Project	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
0	$ImpInp_{PI}$		$USDDep_{C1CB}^{ICB}$	$\$C1Dep_{C1IP}^{C1CB}$	$\$C1Dep_{C1IP}^{C1CB}$	$\$C1Loan_{MDB}^{C1IP}$
1			$-USDDep_{C1CB}^{ICB}$	$-\$C1Dep_{C1IP}^{C1CB}$	$-\$C1Dep_{C1IP}^{C1CB}$	$+USDDep_{C1IP}^{ICB}$
2	$+USDDep_{PI}^{ICB}$				$-USDDep_{C1IP}^{ICB}$	
	$-ImpInp_{PI}$				$+ImpInp_{C1IP}$	
<i>Final Situation</i>	$USDDep_{PI}^{ICB}$				$ImpInp_{C1IP}$	$\$C1Loan_{MDB}^{C1IP}$

Figure 3: The Local Commercial Bank provides the foreign exchange to buy imported inputs and supplies

Country1 Commercial Bank had access to USD, precisely, because the MDB had had access to USD and it had been willing to exchange those USD for local currency to provide local currency loans. Thus, the provision of USD to the local economy by the MDB is a central advantage of this first financing strategy analyzed in this section 2. Without the provision of these USD to the local foreign exchange market, there would had been no possibility of developing the local investment project, given that it requires imported inputs and supplies. Note that if the local investment project demands domestically produced inputs and supplies payable in local currency, the development of the local investment project is independent of the availability, or not, of USD.

## 2.4 The development of the investment project and the repayment of loans and bonds by the investment project and the MDB

In this subsection we analyze how the Country1 Investment Project develops the investment project and with the local currency proceeds pays back the local currency loan from the MDB. Further, we analyze how the MDB, in turn, pays back its maturing USD bonds, which is problematic given that no new USD have been produced by the development of the investment project. This lack of new USD funds and the need that another economic agent be willing to provide those USD to the local foreign exchange market is a key disadvantage of this first financing strategy, analyzed in section 2.

Figure 4 presents the balance sheets at each moment of time of the MDB, the Country1 Commercial Bank, the Country1 Investment Project and the Country1 Buying Firm, which is the local economic agent that demands the goods and

supplies. Although in this case there would be no need for an economic agent to be willing to exchange USD for local currency to allow for the trade to happen, it still would require the extension of a USD loan to the Country1 Investment Project. Note that in this case, as the Country1 Investment Project doesn't produce proceeds in USD, but in local currency, there would still be a need in the future of an economic agent willing to exchange those local currency proceeds for USD for repayment of the USD loan.

services produced by the local investment project and pays with local currency as the local investment project is domestically oriented (DOIPs). Note that had we assumed that the local investment project is export-enhancing (EXIPs), instead of DOIPs, this economic agent would not be local but foreign and would pay with USD, instead of local currency.<sup>12</sup> In the initial period ( $T = 0$ ), which corresponds to the *Final Situation* of figure 3, the MDB has in its asset side the different local currency loans provided to the different local investment projects in the different host countries ( $\$C1Loan_{MDB}^{C1IP}$ , ..., and  $\$CNLoan_{MDB}^{CNIP}$ ) and in its liability side the USD denominated bonds it issued in the international bond market ( $USDBonds_{ICB}^{MDB}$ ). Further, the Country1 Investment Project has in its asset side of its balance sheet the imported inputs and supplies ( $ImpInp_{C1IP}$ ) and in its liability side the local currency denominated loan from the MDB ( $\$C1Loan_{MDB}^{C1IP}$ ). In addition, we assume that the Country1 Buying Firm has local currency denominated bank deposits in the Country1 Commercial Bank ( $\$C1Dep_{Firm}^{C1CB}$ ), which is a liability for the Country1 Commercial Bank. With the local currency denominated bank deposits the Country1 Buying Firm will buy the goods and services from the Country1 Investment Project. In the first period ( $T = 1$ ), the Country1 Investment Project uses the imported inputs and supplies ( $-ImpInp_{C1IP}$ ) to develop and produce the non-tradable goods or services of the local investment project ( $+NTradGood_{C1IP}$ ). Further, in the second period ( $T = 2$ ), the Country1 Investment Project sells to the Country1 Buying Firm the non-tradable goods or services ( $-NTradGood_{C1IP}$ ) and receives a local currency deposit in the Country1 Commercial Bank ( $+\$C1Dep_{C1IP}^{C1CB}$ ). For the Country1 Buying Firm to receive the non-tradable goods or services ( $+NTradGood_{Firm}$ ), it has paid with its local currency deposits in the Country1 Commercial Bank ( $-\$C1Dep_{Firm}^{C1CB}$ ). In the third period ( $T = 3$ ), the Country1 Investment Project uses its local currency deposits received from the selling of the non-tradable goods or services ( $-\$C1Dep_{C1IP}^{C1CB}$ ) to pay back the local currency loan obtained from the MDB ( $-\$C1Loan_{MDB}^{C1IP}$ ). In turn, the MDB receives local currency deposits from the Country1 Investment Project at the Country1 Commercial Bank ( $+\$C1Dep_{MDB}^{C1CB}$ ). Note that in figure 4, we also represent that in this period the MDB receives the pay back of the other local investment projects in the other host countries, and thus, it sees its local currency loans reduced ( $-\$C1Loan_{MDB}^{C1IP}$ , ..., and  $-\$CNLoan_{MDB}^{CNIP}$ ) and its local currency deposits increase ( $+\$C1Dep_{MDB}^{C1CB}$ , ..., and  $+\$CNDep_{MDB}^{CNCB}$ ).

In the final situation, and comparing with the initial situation, we can observe that the balance sheet of the Country1 Investment Project has been reduced from initially having imported inputs and supplies in its asset side ( $ImpInp_{C1IP}$ ) and having a local currency loan owed to the MDB in its liability side ( $\$C1Loan_{MDB}^{C1IP}$ ), to having no assets or liabilities. Clearly, the financing strategy to grant a local currency loan to the Country1 Investment Project,

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<sup>12</sup>As discussed in the introduction, when local investment projects are EXIPs, USD loans don't pose FX risks for the involved agents, and thus, local currency loans are not as crucial as in the case studied in this paper, where we assume that local investment projects are DOIPs. Recall that we do this assumption because we are interested in studying FX and convertibility risks in the global development finance architecture.

analyzed in this section 2, has been successful in that, despite it being a DOIPs, it has been able to develop the local investment project and repay its loan to the MDB using the local currency proceeds from the local investment project. Also, the local investment projects have not suffered any FX and convertibility risks, which is one of the main objectives of this financing strategy, besides avoiding that the MDBs face currency mismatches in their balance sheets. Regarding the Country1 Buying Firm, it has changed the composition of its asset side from having local currency bank deposits ( $\$C1Dep_{Firm}^{C1CB}$ ) to obtaining the demanded non-tradable goods or services ( $NTradGood_{Firm}$ ), meaning that the demands from the domestic markets have been met by the local investment projects. Regarding the MDB, it has seen the composition of the asset side of its balance sheet change from holding local currency loans in different local currencies ( $\$C1Loan_{MDB}^{C1IP}$ , ..., and  $\$CNLoan_{MDB}^{CNIP}$ ) to having local currency bank deposits in different local currencies ( $\$C1Dep_{MDB}^{C1CB}$ , ..., and  $\$CNDep_{MDB}^{CNCB}$ ). In addition, its liability side has not changed and it still owes the USD denominated bonds it issued in the international bond market ( $USDBonds_{ICB}^{MDB}$ ). Thus, there is a currency mismatch between assets and liabilities, but due to the well-diversified portfolio of different local currencies, the FX risk has supposedly been mitigated. This was one of the main arguments in favor of this first financing strategy analyzed in this section 2. However, for the MDB to repay the USD bonds, it has to exchange its local currency deposits in different local currencies for USD. Below we deepen this analysis, which is one of the most important discussions of this section. Regarding the Country1 Commercial Bank, its balance sheet has not changed and it has just seen a change in the ownership of its liabilities, from the local currency bank deposits owned by the Country1 Buying Firm ( $\$C1Dep_{Firm}^{C1CB}$ ) to the local currency bank deposit owned by the MDB ( $\$C1Dep_{MDB}^{C1CB}$ ).

Coming back to the analysis of the MDB and how it can cancel its USD liabilities (the USD bonds issued in the international bond market), it is clear that the MDB needs to exchange all the local currency bank deposits in the different host countries for USD. However, the development of the different local investment projects, due to them all being DOIPs, have not produced any USD in these different host countries. Thus, for the MDB to be able to exchange all the local currencies for USD, it requires that some external actors, different from the local investment projects, be willing to exchange local currencies for USD. These external actors can be the local commercial banks or the local central banks if they have access to USD. However, this should not be taken for granted because in the whole process of developing the local investment projects and selling the goods and services produced by them, local commercial banks and local central banks have not received any fresh USD. Note that this analysis would be completely different had the local investment projects been EXIPs, and supplied USD to the local foreign exchange markets. Thus, the development of DOIPs in the different host countries, instead of EXIPs, put a limit to this first financing strategy analyzed in this section 2.<sup>13</sup> Evidently,

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<sup>13</sup>Probably, if the local investment projects are small relative to the overall local foreign

despite the MDB having a well diversified portfolio of local currencies, it is not enough to avoid FX and convertibility risks when there is a currency mismatch between assets and liabilities and a need to exchange local currencies for USD to repay loans or bonds. This difficulty in avoiding the FX and convertibility risks is the main drawback of this first financing strategy analyzed in this section 2. Also, it is not only MDBs that face FX problems, but also the governments of host countries because it is, ultimately, the central banks of these host countries that will have to arrange for the availability of USD if they want to avoid a large depreciation, and possible inflationary pressures. In addition, these inevitable FX and convertibility risks probably affect the size, the maturity and the interest rate of the USD bond issuance by the MDB in the international bond market, and, thus, also affect the size, the maturity and the interest rate of the local currency loans granted by the MDB to the local investment projects. Note, finally, that Schclarek and Xu (2022) theoretically discuss these issues but in a set up where MDBs finance both DOIPs and EXIPs.

This analysis of the drawback of this financing strategy related to the inevitable FX and convertibility risks is important for the discussion about the strategy of financing the green transformation. The green transformation needs investments that are very large, even for middle income countries. For example, several studies, such as Attridge and Engen (2019); Songwe et al. (2022); Prasad et al. (2022), put forward that emerging markets and developing countries need to mobilise between USD 600 billion and USD 3 trillion per year in external financing to tackle the climate crisis. Further, these green projects are usually DOIPs. For example, wind and solar farms are usually not built for directly exporting the electricity but to increase the supply of electricity to sectors that are domestic oriented and not necessarily export enhancing. Thus, the big question is how emerging market or MDBs will be able to repay all those USD maturing bonds without suffering FX and convertibility risks. Moreover, although the financing of the green transformation seeks to improve or solve a very important human and global problem, it is perfectly possible that if not financing this green transformation through a really sustainable local currency strategy, which includes taking into consideration the FX and convertibility risks, it is creating macroeconomic problems and instability in these less developed countries, which goes against the fulfilment of the SDGs.

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exchange markets, this demand for USD will not have a big impact on the exchange rates in the local foreign exchange markets. However, the larger the relative size of the local investment projects with respect to the size of the local exchange markets, there are higher probabilities that the foreign exchange rates end up being affected by the MDB's demand for foreign exchange, and implies an increase in the FX and convertibility risks for the MDB. Moreover, it is not clear if the empirical results put forward by Eichengreen and Hausmann (2003) and Persaud (2023) take into consideration that the FX and convertibility risks for the MDB cannot be independent of the size of the local investment projects, and the subsequent future demand for USD.



$T$	MDB		Country1 Commercial Bank		Country1 Investment Project		Country1 Buying Firm	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
0	$\$C1Loan_{MDB}^{C1F}$ ..... $\$CNLoan_{MDB}^{CNIP}$	$USDBonds_{1CB}^{MDB}$		$\$C1Dep_{Firm}^{C1CB}$	$ImpImp_{C1IP}$	$\$C1Loan_{MDB}^{C1IP}$	$\$C1Dep_{Firm}^{C1CB}$	
1					$-ImpImp_{C1IP}$ $+NTGood_{C1IP}$			
2				$-\$C1Dep_{Firm}^{C1CB}$ $+\$C1Dep_{C1IP}^{C1CB}$	$-NTGood_{C1IP}$ $+\$C1Dep_{C1IP}^{C1CB}$		$-\$C1Dep_{Firm}^{C1CB}$ $+NTGood_{Firm}$	
3	$-\$C1Loan_{MDB}^{C1IP}$ $+\$C1Dep_{MDB}^{C1CB}$ ..... $-\$CNLoan_{MDB}^{CNIP}$ $+\$CNDep_{MDB}^{C1CB}$			$-\$C1Dep_{C1IP}^{C1CB}$ $+\$C1Dep_{MDB}^{C1CB}$	$-\$C1Dep_{C1IP}^{C1CB}$	$-\$C1Loan_{MDB}^{C1IP}$		
Final Situation	$\$C1Dep_{C1CB}^{MDB}$ ..... $\$CNDep_{C1CB}^{MDB}$	$USDBonds_{1CB}^{MDB}$		$\$C1Dep_{C1CB}^{MDB}$			$NTGood_{Firm}$	

Figure 4: The development of the investment project and the pay back of loans and bonds by the investment project and the MDB

### 3 Second financing strategy: issuing local currency denominated bonds in the local bond market

In this section, we analyze a second financing strategy for MDBs that involves them issuing local currency denominated bonds in the local financial market to finance the local currency onlending to local investment projects. As MDBs issues local currency bonds and onlends in local currency, the MDBs can, thus, avoid a currency mismatch between assets and liabilities, and eliminate FX and convertibility risks for itself and for the local investment projects.<sup>14</sup> This idea builds on the proposals put forward by Bresser-Pereira and Bechelaine (2019); Hoschka (2005); Levy-Yeyati (2007); Perry (2009).<sup>15</sup>

Levy-Yeyati (2007) argues that to hedge the instability of inflation, the local currency bonds issued by MDBs could be CPI-linked bonds. Further, he argues that the advantage that MDBs have over the local government, or local NDBs, is

<sup>14</sup>Note that we are not analyzing the case when the local currency bonds are issued in the international bond market and are being bought by foreign residents. As Beirne et al. (2024); Hofmann et al. (2022) discuss, when creditors are foreigners, there is always the risk that when these creditors are repaid, they use those local currency proceeds to buy foreign currency, and thus, put pressure on the foreign exchange market. Thus, the financing strategy that involves issuing local currency bonds in the international market is better than the financing strategy of issuing USD bonds in the international market, but it doesn't completely guarantee that the FX and convertibility risks have disappeared.

<sup>15</sup>Studies that also provide an analyzes of this proposal is, among others, Bonizzi et al. (2024).

that local currency bonds issued by MDBs would not suffer from sovereign risk.<sup>16</sup> In addition, Hoschka (2005) expands the analysis by discussing some treasury management issues for MDBs issuing local currency bonds, such as funding, financial policy, investment and risk management issues. Note that this second financing strategy emphasizes that local currency bonds be issued in the local bond market instead of the international bond market. This emphasis is made due to the assumption that local residents, once been repaid, have a significantly lower probability of demanding hard currency in comparison to foreign residents (Beirne et al., 2024; Hofmann et al., 2022).

Accordingly, we analyze the local currency bond issuance and the onlending, and from there on we discuss the different results and conclusions. Figure 5 presents the balance sheets at each moment of time of the MDB, the Local Commercial Bank and the Local Investment Project. In the initial period ( $T = 0$ ), all the three agents have no assets nor liabilities. In the first period ( $T = 1$ ), the MDB opens a bank account in the Local Commercial Bank and issues the local currency denominated bonds in the local financial market ( $+\$LocBonds_{LCB}^{MDB}$ ). The buyer of these bonds could either be a financial agent that already has local currency bank deposits or a financial agent that can create local currency bank deposits, such as the Local Commercial Bank (Mehrling, 2022). For simplicity, and without changing our conclusions, we assume that it is the Local Commercial Bank that buys those local currency bonds ( $+\$LocBonds_{LCB}^{MDB}$ ). Thus, the MDB receives a local currency deposits in the Local Commercial Bank ( $+\$LocDep_{MDB}^{LCB}$ ). In the second period ( $T = 2$ ), the MDB uses the local currency deposits in the Local Commercial Bank ( $-\$LocDep_{MDB}^{LCB}$ ) to provide a local currency loan to the Local Investment Project ( $+\$LocLoan_{MDB}^{IP}$ ). The Local Investment Project receives the local currency deposits ( $+\$LocDep_{IP}^{LCB}$ ) and, now, owes the MDB the local currency loan ( $+\$LocLoan_{MDB}^{IP}$ ). As in the last section, the Local Investment Project uses those local currency deposits to develop the investment project, buy the required inputs and supplies and produce the non-tradable goods and services.

In the final situation, and comparing with the initial situation, we can observe that the balance sheet of the MDB has expanded from holding no assets or liabilities to holding in the asset side local currency denominated loans to the Local Investment Project ( $\$LocLoan_{MDB}^{IP}$ ) and having in the liability side local currency bonds owed to the Local Commercial Bank ( $\$LocBonds_{LCB}^{MDB}$ ). Clearly, there is no currency mismatch in the balance sheet of the MDB, so the objective of avoiding currency mismatch has been successful with this second financing strategy. This is one of the main advantages of this second financing strategy. The Local Commercial Bank has also seen its balance sheet expand by increasing its assets with the local currency bonds issued by the MDB ( $\$LocBonds_{LCB}^{MDB}$ )

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<sup>16</sup>Although this is a very relevant idea, and even plausible, usually sovereign risk is related to macroeconomic volatility in general, and, thus, it is not clear that this argument holds for most countries. Probably, this argument holds better for those countries where the sovereign risk is very high. In countries where the sovereign risk is not that high, it is not clear that MDBs would have an advantage over the government and/or national development banks (NDBs).

and its liabilities with the local currency denominated bank deposits owned by the Local Investment Project ( $\$LocDep_{IP}^{LCB}$ ). Regarding the Local Investment Project, it has also seen its balance sheet expand, and it now has local currency bank deposits in the Local Commercial Bank in its assets side ( $\$LocDep_{IP}^{LCB}$ ) and a local currency loan by the MDB in its liability side ( $\$LocLoan_{MDB}^{IP}$ ). Thus, the Local Investment Project has no currency mismatch in its balance sheet, which was also one of the main objectives to be achieved with this second financing strategy.

Focusing the analysis on the Local Investment Project, it is clear that if it requires locally-produced inputs and supplies to develop the investment project there is no problem because it can pay with its local currency bank deposits. However, if it requires imported inputs and supplies, it will require exchanging the local currency deposits for USD from an agent that has USD and is willing to exchange them for local currency. Note that in the last subsection 2.3, we had assumed that it was the Local Commercial Bank that supplied the USD, which it had received from the MDB, which, in turn, had obtained them from the international bond issuance. On the contrary, in this second financing strategy, the MDB has not supplied any USD to the Local Commercial Bank, so the agent supplying the USD must have obtained them in a different circumstance than the financing and development of the local investment project. Thus, the supply of USD from this external agent cannot be taken for granted. Moreover, the larger the local investment projects, the larger the demand for USD, and, thus, the less probable that there will be an external agent supplying USD. Therefore, this aspect, the need for USD to buy the imported inputs and supplies for the local development project, is the major drawback of this second financing strategy.

In addition, if we now concentrate on the repayment of the loan from the MDB to the Local Investment Project, it is clear that, even when the investment project is DOIP, there would be no problem in obtaining the local currency to repay the MDB, as long as the local investment project is profitable. The MDB, in turn, has no problem in repaying the local currency bonds that it issued in the local bond market. Thus, this lack of currency mismatches and FX and convertibility risks is a major advantage of this second financing strategy, especially when compared to the first financing strategy, analyzed in section 2.

Regarding the size, the maturity and the interest rate of the local currency loans granted by the MDB to the Local Investment Project, if they are related to the size, maturity and interest rate of the local currency bonds issued by the MDB in the local bond market, it is probable that this second financing strategy will have a smaller size, shorter maturity and higher interest rate for the local currency loans granted by the MDB to the local investment projects when compared to the first financing strategy, analyzed in section 2, where the MDB issues USD bonds in the international bond market. The reason could be due to the difference in currency of the bond issuance in USD and local currency. Further, another reason could be that the international bond market is much larger and deeper than any local bond market, and, thus, this larger size and depth of the market affect positively the possibility of a bond issuance of larger size, longer maturity and at a lower interest rate. For example, Marois

$T$	MDB		Local Commercial Bank		Local Investment Project	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
0						
1	$+\$LocDep_{MDB}^{LCB}$	$+\$LocBond_{LCB}^{MDB}$	$+\$LocBond_{LCB}^{MDB}$	$+\$LocDep_{MDB}^{LCB}$		
2	$+\$LocLoan_{MDB}^{IP}$			$-\$LocDep_{MDB}^{LCB}$		$+\$LocLoan_{MDB}^{IP}$
	$-\$LocDep_{MDB}^{LCB}$			$+\$LocDep_{IP}^{LCB}$	$+\$LocDep_{IP}^{LCB}$	
<i>Final Situation</i>	$\$LocLoan_{MDB}^{IP}$	$\$LocBond_{LCB}^{MDB}$	$\$LocBond_{LCB}^{MDB}$	$\$LocDep_{IP}^{LCB}$	$\$LocDep_{IP}^{LCB}$	$\$LocLoan_{MDB}^{IP}$

Figure 5: The MDB issues local currency denominated bonds in the local financial market and onlends in local currency to the IP

et al. (2023) present survey evidence where the multilateral development banks CAF and IDB claim that one barrier for broader cooperation with national development banks (NDBs) is access to local currency at competitive interest rates.

In addition, for this second financing strategy, it is not clear if the MDBs have any advantage over other local financial actors, such as national development banks (NDBs), in terms of the size, the maturity and the interest rate of the local currency loans granted to local investment projects. For example, Levy-Yeyati (2007) claims that an MDB may have a higher creditworthiness than other local financial agents, such as an NDB, and thus, could issue more local currency bonds at longer maturity and lower interest rate than an NDB. This argument, however, is not completely convincing because usually it is the state, or state-owned financial institutions, such as NDBs and state-owned commercial banks, that have the highest creditworthiness, especially if they have access to the lender of last resort services by the local central bank (Schclarek et al., 2023). Moreover, usually, the financial services of MDBs are especially valued in developing countries because they can provide relatively cheap and abundant USD financing, which wouldn't happen in this second financing strategy.

## 4 Third financing strategy: USD recapitalization of MDBs and establishment of a Local Currency Fund

In this section, we analyze the third and last financing strategy for MDBs that involves them being recapitalized and using those USD, or any other hard currency, to buy local currency and then provide local currency loans to local investment projects. In this case, as MDBs have not issued USD liabilities, despite them having local currency denominated assets, there is no currency mismatch and no risk of being downgraded by the credit rating agencies. Moreover, because the financing strategy implies that the MDBs supply USD to the local foreign exchange market to buy local currency, the MDBs also provide

USD that can be used to buy imported inputs and supplies for the development of local investment projects. Also, because the MDBs don't need to pay back any issued bonds, when the local investment projects repay the local currency denominated loans, the MDBs can use the local currency proceeds to establish a Local Currency Fund, which can be used to continue providing local currency loans in the host country even in the future.

This third financing strategy would also work if the recapitalization of the MDBs were made with the Special Drawing Rights (SDRs) issued by the IMF to its member countries. In this case, the MDBs would need to exchange the SDRs for USD because the SDR is a reserve asset that is not used to make international commercial payments. Thus, it would require that a central bank, probably from a developed country, be willing to receive those SDRs and exchange them for hard currency, in this case USD. Note that this idea has attracted more attention after the IMF issued SDRs in 2021, and many developed countries found themselves with excess foreign reserves. For articles discussing the usage of SDRs to recapitalize MDBs, see, among other articles, Andrews (2021); ECA-ECLAC (2022); Lazard (2022); Plant (2021); Ryder et al. (2023); Vinokurov et al. (2024).

Furthermore, this third financing strategy can be enhanced by the IMF's recent authorization allowing the use of SDRs to recapitalize multilateral development banks (MDBs) through hybrid capital instruments IMF (2024). These hybrid instruments provide accounting and rating benefits by incorporating both debt and equity features. They are typically structured to be subordinate to other debt, but are still recorded as equity, which helps them absorb losses and strengthen the MDBs' financial resilience. Designed to be non-voting and perpetual, hybrid capital instruments do not confer ownership rights or influence over governance decisions, and they lack a fixed maturity date. In addition, they generally pay interest instead of dividends, but in times of significant financial distress or portfolio losses, MDBs may cancel interest payments, and the instrument itself could be written down, either at their discretion or as required by financial conditions, to support institutional stability. A similar proposal was advocated by Zucker-Marques and Gallagher (2023), who analyzed hybrid capital in the form of Sustainable Future Bonds.

In the next subsection 4.1, we start by analyzing how an MDB is recapitalized, buys local currency from a local commercial bank, and onlends to a local investment project. In the following subsection 4.2, we analyze the process by which the MDB can establish a local currency fund to continue onlending to local investment projects in local currency. The Local Currency Fund is funded by the MDB with the local currency proceeds from the repayment of the local currency loans by the local investment projects.

#### **4.1 The MDB is recapitalized, buys local currency from the local commercial bank and onlends to the IP**

In this subsection, we analyze how the MDB is recapitalized by its owners and buys local currency from a local commercial bank using the USD that it received

when being recapitalized. Then, the MDB can grant a local currency loan to the local investment project, without risking any currency mismatch and credit rating downgrading. We assume that this recapitalization is performed using USD. However, there would be no difference in our analysis and conclusions if recapitalization was made in any other hard currency, such as the Euro or the Renminbi, or in SDRs through hybrid capital instruments.

Figure 6 presents the balance sheets, at each moment of time, of the MDB, the Local Commercial Bank, and the Local Investment Project. In the initial period ( $T = 0$ ), neither of the agents have assets nor liabilities. In the first period ( $T = 1$ ), the MDB gets recapitalized by its owners ( $+CapMDB$ ), which we assume implies that it gets USD bank deposits at the International Commercial Bank ( $+USDDep_{MDB}^{ICB}$ ). In the second period ( $T = 2$ ), the MDB transfers the USD that it holds ( $-USDDep_{MDB}^{ICB}$ ) to the Local Commercial Bank ( $+USDDep_{LCB}^{ICB}$ ), and opens a bank account at the Local Commercial Bank, where it receives deposits in the local currency in exchange for the USD ( $+\$LocDep_{MDB}^{LCB}$ ). In the third period ( $T = 3$ ), the MDB provides the local currency loan to the Local Investment Project ( $+\$LocLoan_{MDB}^{IP}$ ), and transfers its local currency deposits in the Local Commercial bank ( $-\$LocDep_{MDB}^{LCB}$ ) to the Local Investment Project, which receives it ( $+\$LocDep_{IP}^{LCB}$ ).

In the final situation and comparing to the initial situation, we can observe that the MDB balance sheet has expanded from no assets nor liabilities to holding local currency loans to the Local Investment Project on its asset side ( $\$LocLoan_{MDB}^{IP}$ ) and capital belonging to the owners of the MDB on its liability side ( $CapMDB$ ). Thus, there is no currency mismatch in the balance sheet of the MDB, and it faces no FX and convertibility risks. Consequently, this financing strategy has achieved one of its main objectives. In terms of the Local Commercial Bank, it has also seen its balance sheet expand by increasing its asset side with USD bank deposits at the International Commercial Bank ( $USDDep_{LCB}^{ICB}$ ) and its liability side with local currency-denominated bank deposits ( $\$LocDep_{IP}^{LCB}$ ). Regarding the Local Investment Project, it has also seen its balance sheet expand by increasing its asset side with local currency bank deposits ( $\$LocDep_{IP}^{LCB}$ ) and its liability side with the local currency denominated loan from the MDB ( $\$LocLoan_{MDB}^{IP}$ ). With the local currency bank deposits, the Local Investment Project can develop its investment project, and, if the inputs and supplies necessary to develop the investment projects are imported, the Local Commercial Bank has USD, which it could exchange with the Local Investment Project. Thus, a second main objective has been achieved by this financing strategy. Note that if the inputs and supplies were domestically produced, the Local Commercial Bank would keep the USD and it could increase the supply of USD in the local foreign exchange market.

Regarding the size of the local currency loans granted by the MDB to the Local Investment Project, since the loans are financed with the proceeds from the recapitalization in this third financing strategy, the size of the loans will be determined by the size of the recapitalization. If we compare the size of the local currency lending of this third financing strategy with that of the first and second financing strategies, analyzed in sections 2 and 3, it is clear that the size

$T$	MDB		Local Commercial Bank		Local Investment Project	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
0						
1	$+USDDep_{MDB}^{LCB}$	$+CapMDB$				
2	$-USDDep_{MDB}^{LCB}$		$+USDDep_{LCB}^{LCB}$			
3	$+\$LocDep_{MDB}^{LCB}$			$+\$LocDep_{MDB}^{LCB}$		
	$+\$LocLoan_{MDB}^{IP}$			$-\$LocDep_{MDB}^{LCB}$		$+\$LocLoan_{MDB}^{IP}$
	$-\$LocDep_{MDB}^{LCB}$			$+\$LocDep_{IP}^{LCB}$	$+\$LocDep_{IP}^{LCB}$	
<i>Final Situation</i>	$\$LocLoan_{MDB}^{IP}$	$CapMDB$	$USDDep_{LCB}^{LCB}$	$\$LocDep_{IP}^{LCB}$	$\$LocDep_{IP}^{LCB}$	$\$LocLoan_{MDB}^{IP}$

Figure 6: The MDB is recapitalized, buys local currency from the local commercial banks and onlends to the IP

of the lending of this third financing strategy will be lower than the size of the first and second strategies. The reason is that for the first and second strategy, the MDB can leverage itself so that the size of the local currency lending will not only be determined by the size of its capital, but also by the amounts obtained by issuing bonds.<sup>17</sup> This lower size of the lending by MDBs for this third financing strategy is a major drawback for this strategy in comparison to the other two financing strategies. Note also that when considering this leverage argument and comparing the first and second financing strategies, the size of the local currency lending will be larger for the financing strategy that allows the largest leverage, which is not clear a priori. However, if we consider that the first financing strategy implies issuing USD bonds in the international bond market, it is probable that the size of the bond issuance may be larger than the case of the second financing strategy, which implies issue of local currency bonds in the local bond market.

Regarding the maturity and interest rate of the local currency loans by MDBs, it is probable that this third financing strategy will have a longer maturity and a lower interest rate compared to the other two financing strategies. The reason is that, while the maturity and interest rate is determined by the maturity and interest rate of the issued bonds by the MDBs in the first and second financing strategies, for this third financing strategy the liability side of the balance sheet of the MDBs does not condition the maturity and interest rate of the local currency lending by the MDB. Probably, in this third financing strategy, because the MDBs do not need to repay any issued bonds, they can provide longer maturity loans to local investment projects. Furthermore, because they do not need to pay any interest rate on issued bonds, MDBs can lower the interest rate charged to local investment projects, without having to worry about their funding costs.<sup>18</sup>

<sup>17</sup>Note that a bank's leverage ratio is calculated by dividing its capital by its total assets.

<sup>18</sup>If the recapitalization was made with SDRs through hybrid capital, there might be some interest payments IMF (2024).

## 4.2 The repayment of the loan to the MDB and the creation of a Local Currency Fund

In this subsection, we analyze the repayment of the loan to the MDB by the local investment project and the creation of a Local Currency Fund by the MDB with the proceeds from this repayment. Here we assume that the investment project develops and produces a non-tradable good or service ( $NTradGood$ ) that is sold in the domestic market and generates local currency proceeds, i.e. it is a domestic oriented investment project (DOIP). It is with these local currency proceeds that the investment project can repay the loan to the MDB. Evidently, as the loan granted by the MDB has to be repaid in local currency, there are no FX and convertibility risks to be worried about. Clearly, the situation would be very different if the MDB loan had been denominated in USD (see Schclarek and Xu (2022) for a discussion of exchange rate and convertibility risks when there are USD denominated loans granted to DOIPs). In addition, when the MDB receives the local currency, it can create a Local Currency Fund with which it can continue to finance local investment projects. Note that as the MDB used the proceeds from its recapitalization to finance its loans to the local investment project, the MDB owes nobody and does not need to repay any loan, as was the case when the MDB financed its lending operations by borrowing funds.

Figure 7 presents the balance sheets, at each moment of time, of the MDB, the Local Commercial Bank, the Local Investment Project, and a Local Buying Firm. In the initial period ( $T = 0$ ), the Local Investment Project holds non-tradable goods or services ( $NTradGood_{IP}$ ), which it has developed and produced using the local currency borrowed from the MDB, and it has the loan owed to the MDB as a liability ( $\$LocLoan_{MDB}^{IP}$ ). This local currency denominated loan is an asset for the MDB, which also has its own capital on the liability side ( $Cap_{MDB}$ ). Also, there is the Local Buying Firm that has local currency deposits in the Local Commercial Bank ( $\$LocDep_{Firm}^{LCB}$ ), which is a liability for the Local Commercial Bank. We haven't modeled how this firm has obtained those funds, but one can assume that it got them from its business activities and/or through a local currency loan from the Local Commercial Bank. In the first period ( $T = 1$ ), the Local Buying Firm buys the non-tradable goods or services developed by the Local Investment Project ( $+NTradGood_{Firm}$ ), and pays with its local currency bank deposits at the Local Commercial Bank ( $-\$LocDep_{Firm}^{LCB}$ ). In turn, the Local Investment Project delivers the non-tradable good or service ( $-NTradGood_{IP}$ ) to the Local Buying Firm and gets paid with local currency deposits in the Local Commercial Bank ( $+\$LocDep_{IP}^{ComB}$ ). In the second period ( $T = 2$ ), the Local Investment Project repays the loan granted by the MDB ( $-\$LocLoan_{MDB}^{IP}$ ) with its local currency bank deposits at the Local Commercial Bank ( $-\$LocDep_{IP}^{LCB}$ ). In turn, the MDB receives local currency deposits in the Local Commercial Bank ( $+\$LocDep_{MDB}^{LCB}$ ).

In the final situation, and comparing with the initial situation, we can observe that the Local Investment Project's balance sheet has shrank from having the non-tradable goods or services in its asset side ( $NTradGood_{IP}$ ) and the local currency loan owed to the MDB in its liability side ( $\$LocLoan_{MDB}^{IP}$ ) to



having no assets or liabilities. Thus, the Local Investment Project has achieved its purpose of repaying the local currency loan by the MDB with the local currency proceeds from the investment project. Regarding the Local Buying Firm, it has seen a change in asset composition from holding bank deposits ( $\$LocDep_{Firm}^{ComB}$ ) to holding the non-tradable goods or services ( $NTradGood$ ). The Local Commercial Bank has not seen its balance sheet expand or contract, but the owner of the local currency deposits has changed from the Local Buying Firm to the MDB. Finally, the asset composition of the MDB has changed from holding a local currency denominated loan owed by the Local Investment Project ( $\$LocLoan_{MDB}^{IP}$ ) to holding local currency deposits in the Local Commercial Bank ( $\$LocDep_{MDB}^{LCB}$ ). The liability side of the MDB balance sheet has not changed and still has capital ( $CapMDB$ ). Thus, the MDB does not need to use the received local currency deposits to repay any loans and/or bonds, and can use those deposits to establish and finance a Local Currency Fund. This Local Currency Fund implies that the MDB can continue providing local currency loans to local investment projects even in the future, without needing a new recapitalization, or even a new bond issuance.

Clearly, the creation of the Local Currency Fund is a source of long-term local currency financing for investment projects, especially DOIPs. The reason is that this third financing strategy has the advantage that the MDB can continue lending over time, even after the repayment of the initial loan, due to the establishment of the Local Currency Fund. In contrast, for the first and second financing strategies, when the local currency loans are repaid, the MDBs will use those proceeds to repay the issued bonds, and thus the MDBs cannot continue lending over time, unless they make a new bond issuance. In this sense, the *initial* size of local currency lending to investment projects is greater for the second and third financing strategies due to the possibility of leverage when issuing bonds, which was discussed in the last subsection 4.1. However, if we also consider that the third financing strategy permits local currency lending even in the future, the *total size* of the lending, which not only considers the initial size of the lending but also the future size of the lending, it is probable that the third financing strategy allows for a higher total size of lending than the first and second financing strategies. The establishment of the Local Currency Fund, which allows for future lending and that the total size of the lending is larger than the other two financing strategies, is the most important advantage of this third financing strategy. However, note that only the initial buying of local currency by the MDBs provides hard currency to the local foreign exchange market. If USD is needed to buy imported inputs and supplies, the MDBs are required to exchange additional hard currency for local currency.

The establishment of the Local Currency Fund may also foster the development of the local currency bond market in the host country. When there is an increase in local currency lending, there is also an increase in the future demand for the local currency by the borrowers who need local currency to repay their loans. Thus, the establishment of the Local Currency Fund may increase the long-term demand for the local currency, which is an important determinant of the stability in foreign exchange market of that host country and, thus, foster

$T$	MDB		Local Commercial Bank		Local Investment Project		Local Buying Firm	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
0	$\$LocLoan_{MDB}^{IP}$	$CapMDB$		$\$LocDep_{Firm}^{LCB}$	$NTGood_{IP}$	$\$LocLoan_{MDB}^{IP}$	$\$LocDep_{Firm}^{LCB}$	
1				$-\$LocDep_{Firm}^{LCB}$	$-NTGood_{IP}$		$-\$LocDep_{Firm}^{LCB}$	
				$+\$LocDep_{Firm}^{LCB}$	$+\$LocDep_{Firm}^{LCB}$		$+NTGood_{Firm}$	
2	$-\$LocLoan_{MDB}^{IP}$			$-\$LocDep_{IP}^{LCB}$	$-\$LocDep_{IP}^{LCB}$			
	$+\$LocDep_{MDB}^{LCB}$			$+\$LocDep_{MDB}^{LCB}$		$-\$LocLoan_{MDB}^{IP}$		
<i>Final Situation</i>	$\$LocDep_{MDB}^{LCB}$	$CapMDB$		$\$LocDep_{MDB}^{LCB}$			$NTGood_{Firm}$	

Figure 7: The IP repays the local currency loan granted by the MDB and the MDB establishes a local currency fund

the development of the local currency bond market. In addition, the creation of the Local Currency Fund may imply that the MDBs are more active in the local bond market if, for example, some of the local currency financing by the MDBs is directed towards buying local currency bonds issued by local investment projects and firms, instead of providing local currency bank loans.

## 5 Conclusions

In this paper, we have analyzed the provision of local currency loans by Multilateral Development Banks (MDBs). Specifically, we have explored theoretical strategies that enable MDBs to offer local currency-denominated loans to “domestic-oriented” investment projects (DOIPs)—those that do not generate hard currency—while avoiding currency mismatches in their balance sheets and mitigating FX and convertibility risks. Such mismatches and risks pose significant challenges, as they can lead to MDBs suffering credit rating downgrades, which in turn increase MDBs’ funding costs and reduce the maturity and size of the bonds they issue and the local currency onlending.

Three alternative financing strategies to mitigate FX and convertibility risks have been analyzed, focusing on the payment mechanisms involved, the balance sheet implications for key actors, the impact on hard currency supply and demand in local foreign exchange markets, the FX and convertibility risks, MDB leverage and size of onlending, and the maturity and interest rates of loans and bonds issued. The first financing strategy involves MDBs borrowing in USD from international bond markets and onlending in local currency but mitigating FX risks through different financing strategies. One approach is the diversification financing strategy, which involves onlending to a well-diversified portfolio of loans in various local currencies to mitigate FX risks. The other approaches are the FX hedging financing strategy and the swap-based financing strategy. The second strategy entails MDBs issuing local currency bonds in domestic bond markets and using the proceeds for local currency onlending. The third strategy involves MDBs being recapitalized with USD or through hybrid capital instruments with SDRs, which are exchanged for local currencies to provide loans and establish Local Currency Funds dedicated to sustainable local currency lending.

When considering the supply of USD by MDBs to the local foreign exchange market, the third financing strategy emerges as the most favorable option, followed by the first strategy. The key advantage of the third strategy is that MDBs supply USD by exchanging them for local currency to onlend to investment projects, while they do not create additional demand for USD upon repayment, as the projects repay in local currency. In the first financing strategy, MDBs similarly supply USD by exchanging them for local currency during the onlending process. However, a notable drawback is that MDBs subsequently demand USD to repay the bonds they issued in international markets, which are denominated in USD. In contrast, the second financing strategy does not involve MDBs supplying USD when lending to local investment projects. Consequently, if imported inputs or supplies are needed for project development (e.g., solar panels or pumps for a sewage system), it will result in a net increase in the demand for USD in the local foreign exchange market. On the positive side, MDBs in this strategy do not create demand for USD upon repayment, as they are repaid in local currency and have issued local currency bonds in the domestic bond market.

Regarding the FX and convertibility risks, the third financing strategy is the one that faces the lowest risks, followed by the second financing strategy. The key advantage of the third financing strategy is that it eliminates currency mismatches on MDBs' balance sheets, ensuring that neither the MDBs, the host country nor other involved actors face FX and convertibility risks. In the second strategy, while MDBs also avoid currency mismatches in their balance sheets, potential FX and convertibility risks may arise if the financed local investment projects require imported inputs and supplies. This situation increases the demand for USD in the local foreign exchange market without a corresponding increase in the supply of USD from MDBs, potentially amplifying these risks. The first strategy, however, faces the greatest FX and convertibility risks, especially for the host country. After local investment projects repay their loans in local currency, MDBs must convert these repayments into USD to settle their USD-denominated bonds issued in international markets. This process significantly increases demand for USD in the local foreign exchange market, heightening FX and convertibility risks for the host country. In the case that the MDBs engage in hedged local currency onlending, the FX and convertibility risks are also assumed by the FX hedging provider. It is important to note that these macroeconomic effects on the local foreign exchange market become significant only if the MDBs' lending to local investment projects is substantial relative to the size of the local financial and foreign exchange markets. When lending activities are relatively small, these effects are considerably less relevant. Unfortunately, the scale of financing required for the green transition is substantial for less-developed countries.

In terms of the size of local currency loans granted by MDBs, the first financing strategy is the most advantageous, followed by the second. This is because, under both strategies, MDBs can leverage their capital by issuing bonds, allowing the size of local currency lending to exceed the size of their capital base. The extent of this leverage depends on the size and depth of the bond market, with

the international bond market being significantly larger and deeper than most local bond markets. Furthermore, the currency of the bond issuance may also play a role, as USD-denominated bonds generally have the highest potential for large-scale issuance compared to local currency bonds. Thus, the first financing strategy, which involves issuing USD bonds in the international bond market, is likely to support larger lending volumes than the second strategy, which relies on issuing local currency bonds in local markets. In contrast, the third financing strategy is limited by the size of the initial recapitalization and the absence of leverage, resulting in smaller initial lending volumes compared to the first and second strategies. However, this approach supports the establishment of a Local Currency Fund, enabling sustained local currency lending over time using the proceeds from loan repayments. Since MDBs in this strategy do not have to service any debt obligations, the repayments can be reinvested into new loans, creating a self-sustaining cycle of lending. Consequently, when evaluating total lending capacity—including both initial and future lending—the third strategy may ultimately achieve a greater cumulative lending volume than the first and second strategies.

Regarding the maturity and interest rate charged for local currency loans granted by MDBs to local investment projects, the third financing strategy stands out as the most advantageous, followed by the first strategy. The key advantage of the third strategy lies in the fact that MDBs use recapitalization proceeds to fund onlending to local projects. Since this approach does not involve liabilities tied to bond issuance, it allows MDBs greater flexibility in determining both the maturity and interest rate of their local currency loans. In contrast, the first and second strategies require MDBs to finance their onlending by issuing bonds with specific maturities and interest rates, which subsequently influence the terms of the loans they provide. Among these, USD bonds issued in the international bond market (first financing strategy) typically offer longer maturities and lower interest rates compared to local currency bonds issued in domestic markets (second financing strategy). This difference arises from the currency denomination and the relative size and depth of the international bond market compared to local bond markets.

In terms of the Local Currency Fund, established under the third financing strategy, it enables MDBs to continue providing local currency loans to real investment projects even after the initial loans are repaid, as discussed above. This strategy supports the creation of a long-term local currency lending facility. However, it is important to note that the initial purchase of local currency by MDBs using the USD proceeds from recapitalization is the only point at which hard currency is directly supplied to the local foreign exchange market. In the future, if USD is needed for imported inputs and supplies, MDBs or investment projects may need to exchange additional hard currency for local currency. Moreover, if an MDB operates at a sufficiently large scale across multiple countries and regions, it could establish multiple Local Currency Funds in different currencies. This diversification would help mitigate FX risks on its asset side, aligning with the principles of the first financing strategy. Additionally, the establishment of a Local Currency Fund could foster the development of the

local currency bond market in host countries by increasing the demand for local currency as lending activities expand. Furthermore, the creation of the Local Currency Fund might also lead MDBs to play a more active role in the local bond market. For instance, some of the MDBs' local currency financing could be allocated toward purchasing local currency bonds issued by investment projects and firms, rather than exclusively providing local currency bank loans. This dual approach could further strengthen local financial markets while expanding the reach of MDB financing.

Our primary policy recommendation is that MDBs must carefully account for currency mismatches as well as FX and convertibility risks when deciding which types of investment projects to finance, in what currency, and how to structure their funding. For export-enhancing investment projects (EXIPs), USD lending generally does not pose significant FX or convertibility risks. However, for domestic-oriented investment projects (DOIPs), MDBs should prioritize providing local currency loans to minimize currency mismatches and mitigate substantial FX and convertibility risks. Regarding the financing strategies for local currency loans, there is no one-size-fits-all solution, as each strategy has distinct advantages and limitations. This underscores the need for a nuanced, case-by-case approach that considers the specific macroeconomic context of each host developing country. Currency mismatches and FX and convertibility risks are particularly critical for countries with current account deficits and low foreign reserves, whereas these concerns are less pressing for countries with current account surpluses and substantial reserves.

Another key policy recommendation is that MDBs should be recapitalized by their owners, using the hard currency proceeds to either leverage additional funds through borrowing (as in the first and second financing strategies) or directly purchase local currencies to establish Local Currency Funds (as in the third financing strategy). This recapitalization can be carried out using hard currencies such as the USD, Euro, or Renminbi, or through Special Drawing Rights (SDRs) issued by the IMF to its member countries. Additionally, recapitalization with SDRs could be facilitated by increasing the hybrid capital instruments issued by MDBs, further enhancing their financial capacity.

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