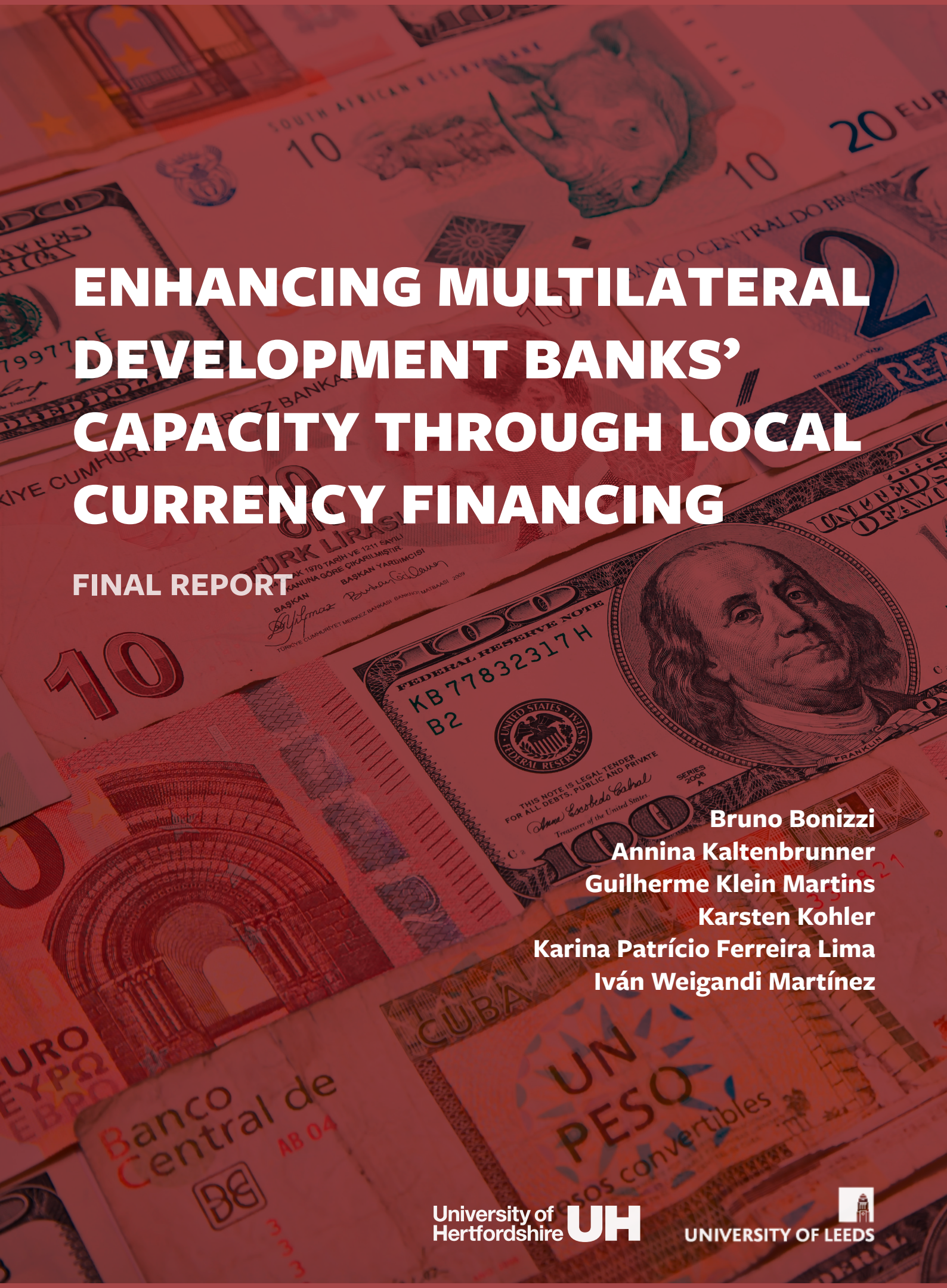

ENHANCING MULTILATERAL DEVELOPMENT BANKS' CAPACITY THROUGH LOCAL CURRENCY FINANCING

FINAL REPORT

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Executive Summary

Scaling up financing for development is crucial to achieving the 2030 Agenda for Sustainable Development.[1] However, while scaling up finance is essential, it is not sufficient to ensure debt sustainability. Currently, 60% of low-income countries are at high risk of—or already in—debt distress.[2] More broadly, low and middle-income countries' (LMICs) capacity to service external debt has worsened, with external public debt to exports rising from 71% in 2010 to 112% in 2021.[3] A key factor contributing to these vulnerabilities is the currency denomination of debt, with roughly half of public debt in LMICs denominated in foreign currency (FC).[4] This renders LMICs vulnerable to currency depreciation, which can significantly increase debt servicing costs. Despite these risks, Multilateral Development Banks (MDBs) continue to predominantly lend in FC, exposing LMICs to exchange rate risk and further heightening default risks.

Local currency (LC) financing could mitigate these vulnerabilities by reducing currency mismatches on LMIC balance sheets and lowering the need for FC repayments in countries often grappling with balance of payments constraints. This has become particularly important in the context of expenditures for climate mitigation and adaptation, which frequently do not generate foreign exchange revenues. For LMICs with access to LC financing, MDB participation would provide countercyclical sources of financing in the context of increasingly volatile global financial markets. However, despite increased awareness of the importance of LC lending,[5] systematic analysis and concrete solutions to enhance MDB LC financing remain limited.

This report seeks to address this gap by providing a comprehensive overview of MDBs' existing LC financing practices, the challenges they face, and the associated risks. It offers an in-depth examination of legal and regulatory constraints, as well as the financial risks—such as exchange rate and credit risks—that affect MDBs' capacity to lend in LC. The report concludes with a set of policy recommendations aimed at enhancing MDBs' capacity to engage in LC financing.

Chapter 1 provides a review of the existing literature on MDBs' LC financing and establishes the foundation for this study by detailing its justification, methodology, and scope. Our research employs a mixed-method approach, combining secondary data analysis, legal analysis, and primary data collection via semi-structured interviews and a survey of MDB representatives. Our sample comprises 29 MDBs, collectively holding over USD 2.2 trillion in assets and

[1] UN General Assembly, 'Transforming Our World: The 2030 Agenda for Sustainable Development' (21 October 2015) UN Doc A/RES/70/1.
[2] World Bank, International Debt Report 2023 (World Bank Group, 2023) xvii.
[3] ibid 8.
[4] S Arslanalp and T Tsuda, 'Tracking Global Demand for Emerging Market Sovereign Debt' (2014) IMF Working Paper No 14/39.
[5] See, eg, United Nations, Financing for Sustainable Development Report 2024 (UN 2024); World Bank Group and International Monetary Fund Development Committee, 'From Vision to Impact: Implementing the World Bank Group Evolution' (March 2024) 7.

USD 620 billion in capital, representing approximately 10% of the asset size of Public Development Banks globally.[6]

Chapter 2 offers a comprehensive overview of the various LC financing instruments currently utilised by MDBs, including grants, loans, guarantees, and equity investments. It shows that while many MDBs have established frameworks for LC financing, the scale of these operations remains limited relative to FC lending and is primarily concentrated in the private sector (e.g. infrastructure and energy) in middle-income countries with more developed financial markets. Based on the interviews and survey with MDBs, the chapter further highlights that the main barriers to offering more LC loans are the limited availability and high cost of tools to hedge currency risk, as well as a lack of familiarity or expertise with LC financing.

To prevent currency exposure, MDBs typically enforce strict risk management frameworks that require full hedging. This is often achieved through back-to-back arrangements, where LC lending is matched with equivalent liabilities in both currency and maturity, commonly using derivatives or issuing LC liabilities. Where hedging instruments are available, their high cost—largely reflecting the existing differential between MDBs' funding currency, predominantly the US dollar, and LC rates—makes LC loans unattractive to borrowers. This pricing problem is a major deterrent for LMIC borrowers, especially sovereign borrowers who often opt for cheaper concessional FC loans despite their significant currency risks. The chapter concludes by exploring cases where MDBs have sought to address this pricing issue by assuming a measured degree of currency risk, thus improving the affordability of LC loans for borrowers.

Chapter 3 examines the legal and regulatory challenges that constrain MDBs' ability to expand LC financing. It shows that statutory and non-statutory provisions within MDBs often limit LC financing by imposing strict hedging requirements to mitigate foreign exchange risk. At the domestic level in LMICs, challenges such as cumbersome or uncertain capital markets laws, underdeveloped settlement systems, and regulatory misalignments with MDB operations increase the cost and complexity of LC financing. Additional barriers include the lack of repo eligibility for MDB-issued bonds, which reduces their appeal to local banks, and adverse tax treatment in comparison to government securities. The chapter underscores the need for targeted reforms to both MDB policies and domestic legal frameworks to enhance LC financing.

Chapter 4 delves into the exchange rate risks associated with LC financing. It demonstrates that, while unhedged LC lending across LMICs may yield positive excess returns, these loans are vulnerable to periods of sharp depreciation, especially during global economic instability. The chapter identifies global commodity prices as a crucial predictor of these depreciation events, with the effects being particularly pronounced in LMICs that have a high presence of non-bank financial investors in domestic bond markets. This analysis underscores the need for patient, long-term LC financing by MDBs even in LMICs with relatively developed domestic markets.

Chapter 5 examines the role of credit risk in LC lending and its interaction with exchange rate

[6] DFI Database, 'Development Finance Institutions Database', Peking University.

dynamics, with implications for MDBs' capital adequacy. Using data from credit rating agencies and sovereign default databases, the chapter demonstrates that LC debt generally carries a lower credit risk than FC debt due to the elimination of currency mismatches for domestic borrowers, which reduces default risk in the event of currency depreciation. However, the chapter also addresses how credit rating agencies often overlook this distinction, frequently assigning similar risk profiles to both LC and FC debt, thereby underestimating the lower risk profile of LC lending. Based on a detailed analysis of existing credit rating agencies' methodologies to assess MDBs, the chapter shows that the evaluation of capital adequacy ratios currently pays little attention to the currency denomination of MDBs' lending. It argues that, at least in the short-term, increased LC lending would have little impact on MDBs' credit rating.

The chapter further analyses the interdependence between currency and credit risk, illustrating how LC lending can support MDBs' capital adequacy by minimising exposure to currency risk. In cases of credit downgrades accompanied by currency depreciation, the dollar value of MDBs' exposure to LC assets decreases, thereby reducing the required risk capital. This dynamic provides MDBs with a potential buffer in managing balance sheet risks more sustainably. The chapter concludes by underscoring the need for more granular data on MDB loans to better assess the benefits of LC lending on credit risk, thereby enabling a more comprehensive evaluation of how LC financing could positively influence MDBs' capital adequacy.

Finally, **Chapter 6** builds on the preceding chapters to propose a set of policy recommendations aimed at strengthening MDBs' capacity to offer LC financing in LMICs. Rather than advocating a one-size-fits-all solution, it offers a wide range of initiatives—some scalable and others more specific—that together could create an ecosystem for increasing LC lending to LMICs. The recommendations are structured into four key areas:

Bring local currency lending to the core of the developmental mandate of MDBs: MDBs should embed LC financing more centrally in their development mandates, recognising its vital role in reducing debt vulnerabilities for LMICs. This includes building capacity within individual MDBs, fostering collaboration across MDBs, and supporting capacity development in the debt management offices of borrowing countries. Increased information on MDBs' current LC financing, such as making the GEM database publicly accessible with detailed currency information and publishing information and evaluation of existing LC initiatives, is also recommended. Finally, there is a need to move beyond current back-to-back risk management approaches and strict counterparty rules to more flexible portfolio approaches to risk management.

Scale up and enhance means of hedging currency risk: To mitigate currency risk affordably expanding hedging options and scaling up existing hedging solutions will be essential. Expanding multilateral agencies like the Currency Exchange Fund TCX, ideally with added donor capital to absorb part of the currency risk, could be a critical step. Scaling TCX's operations would not only enhance diversification and reach but could also support its evolution into a treaty-based organisation with preferred creditor status. Additionally, exploring country-specific hedging mechanisms, such as those proposed by the Climate Policy Initiative and the India Innovation Lab, could provide targeted solutions

that harness positive exchange rate returns during stable periods while drawing on extra capital to absorb tail risks.

Promote onshore local currency operations: Reducing hedging costs can be achieved by partnering with onshore entities, including central banks. We support proposals for an onshore liquidity facility, such as the Delta Initiative, which would manage liquidity for MDBs. This platform could engage with local institutions to hedge and source funding. This engagement could include the local central banks, for example through the purchase of LC bonds issued by the platform. LMIC policymakers should prioritise reforms to remove barriers to onshore MDB operations, addressing both internal constraints within MDBs and obstacles to local capital market development. Efforts should focus on harmonising transnational legal and regulatory frameworks for MDB operations, particularly regarding disclosure rules, prospectus requirements, and related standards for marketing documentation to streamline the issuance of MDB LC bonds.

Address the pricing problem directly: MDBs should actively pursue strategies to reduce the cost of LC lending. Reflecting the lower credit risk of LC loans in more competitive lending rates would be a significant improvement. Where concessional financing is offered, MDBs could extend this option to LC loans as well. Additionally, to address the pricing problem directly, MDBs could consider assuming limited currency risk on specific loans and guarantees, either through an off-balance sheet fund dedicated to unhedged LC financing or supported by a risk-sharing partial guarantee on currency risk. Such a guarantee would shield MDBs from extreme currency volatility while leaving them exposed to moderate exchange rate shifts, reducing the need for perfect hedging and allowing MDBs to provide LC loans at more attractive rates. Capitalisation of the guarantee fund could come from different sources, including donor capital, a rechannelling of SDRs, or the MDB community itself.

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List of Abbreviations and Acronyms

ADB	Asian Development Bank
ADF	Asian Development Fund
AfDB	African Development Bank
AIIB	Asian Infrastructure Investment Bank
ALM	Asset-liability management
BIS	Bank for International Settlements
BITs	Bilateral Investment Treaties
CAF	Development Bank of Latin America
CEB	Council of Europe Development Bank
CRAs	Credit Rating Agencies
CSDs	Central Securities Depositories
CTA	Common Terms Agreement
DFIs	Development finance institutions
DVP	Delivery versus payment
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
ERCF	Clean Energy Exchange Rate Coverage Facility
EU	European Union
FC	Foreign currency
FX	Foreign exchange
GEMs	Global Emerging Markets
GMRA	Global Master Repurchase Agreement
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IDB	Inter-American Development Bank
IsDB	Islamic Development Bank
KPIs	Key performance indicators
KYC	Know-your-customer
LC	Local currency
LCF	Local Currency Facility
LCS	Local Currency Solution
LICs	Low-income countries
LMICs	Low- and middle-income countries
MDBs	Multilateral development banks
MFP	Microfinance Risk Participation and Guarantee Programme
MRA	Master Repurchase Agreement
NDB	New Development Bank
NDFs	Non-deliverable forwards

OLS	Ordinary Least Squares
PCS	Preferred Creditor Status
PFIs	Partner Financial Institutions
PQR	Panel quantile regression
PRGT	Poverty Reduction and Growth Trust
PSW	Private Sector Window
Repo	Repurchase agreement
RST	Resilience and Sustainability Trust
RTGS	Real-time gross settlement
S&P	Standard & Poor's
SDGs	Sustainable Development Goals
SDRs	Special Drawing Rights
SEC	Securities and Exchange Commission
SMEs	Small and medium-sized enterprises
TCX	Currency Exchange Fund
USD	US dollar
VAR	Vector Autoregressive
VAT	Value-added tax
WB or WBG	World Bank or World Bank Group

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Chapter 1

Introduction: Motivation and Scope

1. Research justification

Scaling up financing for development is crucial to achieving the 2030 Agenda for Sustainable Development.[1] The financing gap to meet the Sustainable Development Goals (SDGs) in low- and middle-income countries (LMICs) is estimated at USD 4 trillion annually.[2] Bridging this gap requires a concerted effort to mobilise both public and private financial resources, with multilateral development banks (MDBs) playing a pivotal role.[3] Recently, policy discussions have explored strategies to strengthen MDBs' financing capacity, including blended finance,[4] reforms to capital adequacy frameworks,[5] and the rechanneling of Special Drawing Rights (SDRs) to MDBs for use as hybrid capital.[6]

While scaling up finance is essential, these initiatives alone are insufficient to ensure the long-term sustainability and resilience of the international financial system. According to the United Nations, the number of countries facing high debt levels surged from 22 in 2011 to 59 in 2022.[7] Currently, 60% of low-income countries (LICs) are at high risk of—or already in—debt distress.[8] More broadly, LMICs' capacity to service external debt has worsened, with external public debt to exports rising from 71% in 2010 to 112% in 2021.[9] As a result, interest payments in many LMICs have outpaced public spending on health, education, and investment, with 3.3 billion people now living in countries that spend more on interest than on health or education.[10]

As the Bridgetown Initiative highlights, it is crucial that additional financing does not exacerbate existing debt vulnerabilities.[11] A key

[1] UN General Assembly, 'Transforming Our World: The 2030 Agenda for Sustainable Development' (21 October 2015) UN Doc A/RES/70/1.
[2] United Nations Conference on Trade and Development (UNCTAD), *World Investment Report 2023* (United Nations, 2023) xv.
[3] United Nations Inter-Agency Task Force on Financing for Development, *Financing for Sustainable Development Report 2022* (United Nations, 2022).
[4] World Bank, *From Billions to Trillions: MDB Contributions to Financing for Development* (World Bank Group 2015) http://documents.worldbank.org/curated/en/602761467999349576/From-billions-to-trillions-MDB-contributions-to-financing-for-development accessed 10 October 2024.
[5] Capital Adequacy Frameworks Panel, *Boosting MDBs' Investing Capacity: An Independent Review of Multilateral Development Banks' Capital Adequacy Frameworks* (2022).
[6] International Monetary Fund, 'Use of SDRs in the Acquisition of Hybrid Capital Instruments of the Prescribed Holders' (IMF Policy Paper No 2024/026, 15 May 2024) https://www.imf.org/en/Publications/Policy-Papers/Issues/2024/05/15/Use-of-SDRs-in-the-Acquisition-of-Hybrid-Capital-Instruments-of-the-Prescribed-Holders-549003 accessed 10 October 2024.
[7] United Nations Global Crisis Response Group and Regional Commissions (ECA, ECE, ECLAC, ESCAP, ESCWA), *A World of Debt: A Growing Burden to Global Prosperity* (UN July 2023) 6.
[8] World Bank, *International Debt Report 2023* (World Bank Group, 2023) xvii.
[9] ibid 8.
[10] ibid 14.
[11] Bridgetown Initiative, *Urgent and Decisive Action Required for an Unprecedented Combination of Crises: The 2022 Bridgetown Initiative for the Reform of the Global Financial Architecture* (30 July 2022).

factor contributing to these vulnerabilities is the currency denomination of debt, with roughly half of public debt in LMICs denominated in foreign currency (FC).[12] This leaves LMICs highly exposed to currency depreciation, potentially multiplying debt servicing in the face of factors that may lie completely beyond their control, such as the monetary policies of core foreign central banks, commodity price shocks, or natural disasters. Despite these risks, MDBs continue to predominantly lend in hard currency, exposing LMICs to currency risk and contributing to the risk of default.

The principle that development finance should not exacerbate debt vulnerabilities is grounded in key international soft law frameworks, such as the Addis Ababa Action Agenda on Financing for Development. This agenda emphasises that while borrowing countries must manage debt prudently, lenders must also ensure that their practices do not undermine debt sustainability.[13] Similarly, Principle 4 of the UNCTAD Principles on Promoting Responsible Sovereign Lending and Borrowing asserts that lenders must realistically assess a sovereign borrower's debt servicing capacity.[14]

These principles become even more significant when considering the limited capacity of national debt management offices (DMOs) to design and implement appropriate currency risk management strategies. A recent IMF survey revealed that approximately half of the responding DMOs—80% of which were in LICs—do not conduct stress tests and lack the expertise to assess the risks of FC borrowing. Moreover, fewer than half have developed a currency risk management strategy.[15] This puts additional onus on development finance institutions to consider the sustainability of their lending practices.

This responsibility and urgency of reducing reliance on FC-denominated debt is amplified in the context of the climate crisis. Climate-vulnerable countries face a higher risk of default, particularly when their debt is denominated in FC. Investments in sustainability, such as renewable energy, typically generate revenue in local currency (LC), making FC debt especially risky. A depreciation of the LC can undermine both the viability of these investments and the sustainability of the debt, exacerbating financial instability.[16]

LC financing should therefore be considered as a key component of a sustainable financing agenda. LC financing would help eliminate destabilising currency mismatches on the balance sheets of LMICs and reduce the need for FC repayments in countries often constrained by balance of payments issues. For LMICs with access to LC financing, MDB participation could extend borrowing maturities and provide collateral benefits, such as fostering the development of

[12] S Arslanalp and T Tsuda, 'Tracking Global Demand for Emerging Market Sovereign Debt', IMF Working Paper No 39' (2014) IMF Working Paper No 14/39 https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Tracking-Global-Demand-for-Emerging-Market-Sovereign-Debt-41399 accessed 10 October 2024.

[13] United Nations, *Addis Ababa Action Agenda of the Third International Conference on Financing for Development* (United Nations, 2015) endorsed by the General Assembly in its resolution 69/313 of 27 July 2015, para 97.

[14] United Nations Conference on Trade and Development (UNCTAD), *Principles on Promoting Responsible Sovereign Lending and Borrowing* UNCTAD/GDS/DDF/2012/Misc.1 (United Nations, 2015).

[15] T Jonasson, S Malik, K Chung, and MG Papaioannou, 'Managing Foreign Exchange Rate Risk: Capacity Development for Public Debt Managers in Emerging Market and Low-Income Countries' (2024) IMF Working Paper 2024/167.

[16] S Cevik and JT Jalles, 'Why Climate Change Vulnerability Is Bad for Sovereign Credit Ratings' (IMF Blog, 17 February 2021) https://www.imf.org/en/Blogs/Articles/2021/02/17/blog-why-climate-change-vulnerability-is-bad-for-sovereign-credit-ratings accessed 10 October 2024.

local capital markets. Furthermore, it would align naturally with projects generating LC revenue, such as renewable energy initiatives.

In recognition of these benefits, the UN has recently called for improvements in MDB lending terms, including the provision of longer-term and LC loans, to provide LMICs with greater fiscal space.[17] The World Bank has also acknowledged the importance of expanding LC financing as part of its *Evolution Roadmap* implementation process.[18] However, despite these policy developments over the last months, systematic analysis of MDB LC financing remains limited.[19] Concrete policy solutions to enhance MDBs' capacity to provide LC financing are still underdeveloped.

This report aims to address this gap by offering a comprehensive overview of MDBs' current LC financing practices, along with the associated barriers and risks. It examines the legal and regulatory issues—both internal and external—that affect MDBs' capacity to provide financing in LC, as well as the key financial risk considerations, credit and exchange rate risk. Lastly, the report presents a set of recommendations to enhance MDB LC financing.

The remainder of this chapter is organised into three sections. Section 2 presents an overview of existing analyses of the benefits and barriers to MDB LC lending. Section 3 outlines the methodology employed in the report. Finally, Section 4 provides an overview of the report's structure.

2. Existing analyses of MDB local currency financing

Existing analyses of the benefits and barriers to LC lending by MDBs are very limited. Some authors and reports have examined the need for, and barriers to, LC lending by development finance institutions (DFIs) in general.[20] Certain analyses focus on the structural characteristics of emerging economies, which have more mature domestic financial markets,[21] while others emphasise the specific characteristics of less developed economies, which face additional challenges in scaling up LC lending.[22] More recent publications have paid particular attention to LC financing needs related to the climate crisis.[23] This review will discuss these analyses collectively, highlighting country- and region-specific nuances where appropriate.

[17] United Nations, *Financing for Sustainable Development Report 2024* (UN 2024) https://movendi.ngo/wp-content/uploads/2024/04/2024_FSDR.pdf accessed 10 October 2024.

[18] World Bank Group and International Monetary Fund Development Committee, 'From Vision to Impact: Implementing the World Bank Group Evolution' (March 2024) 7 https://www.devcommittee.org/content/dam/sites/devcommittee/doc/documents/2024/Final_DC2024-0002.pdf accessed 10 October 2024.

[19] A key exception to this gap is provided by C Fink, HP Lankes, and C Sacchetto, *Mitigating Foreign Exchange Risk in Local Currency Lending in Fragile States: Review and Options* (International Growth Centre, June 2023).

[20] Fink, Lankes, and Sacchetto (n 19).

[21] See, eg, A Persaud, *Unblocking the Green Transformation in Developing Countries with a Partial Foreign Exchange Guarantee* (2023) https://www.climatepolicyinitiative.org/wp-content/uploads/2023/06/An-FX-Guarantee-Mechanism-for-the-Green-Transformation-in-Developing-Countries.pdf accessed 11 October 2024.

[22] Fink, Lankes, and Sacchetto (n 19).

[23] ZB Yahmed, C Grant, and N Pinko, *Managing Currency Risk to Catalyze Climate Finance* (Climate Policy Initiative, August 2024); Fink, Lankes, and Sacchetto (n 19).

2.1. Benefits of local currency financing

There is a general agreement in the literature that, at least in certain circumstances, LC lending by international DFIs is beneficial and that there is far too little of it. This is especially true in cases where DFIs extend financing to borrowers that are least able to bear the risks such as small and medium-sized enterprises (SMEs) and micro-enterprises in LMICs with underdeveloped financial markets. However, even in LMICs with more mature financial markets, borrowing in local currencies remains highly constrained, particularly in the private sector (a phenomenon often referred to as these economies' 'original sin').[24]

As discussed above, increased LC lending would reduce destabilising currency mismatches and the exposure of debt repayments to the exchange rate. In cases of FC lending, exchange rate depreciations can increase the nominal debt burden, potentially leading to insolvency and default. As will be discussed in more detail in Chapter 5, LC debt can, in principle, improve the creditworthiness of borrowers and reduce credit risk, especially for those generating LC revenues. Though these risks are lower for entities with foreign exchange revenues, liquidity problems may still arise in the context of FC debt if cash flow mismatches exist between debt servicing obligations and foreign exchange receipts.

The risks of FC debt are further exacerbated when currency mismatches also exist within the financial (banking) sector, which is often the case in LMICs. In such cases, currency depreciations may result in full-blown financial and banking crises if private sector defaults trigger wider disruptions in domestic banking systems. As highlighted by Fink, Lankes, and Sacchetto,[25] as well as Okot, Kaltenbrunner, and Pérez Ruiz,[26] these risks are unevenly distributed within LMICs. In many countries, particularly lower-income ones, FC is often concentrated in the hands of a few export-oriented businesses, leaving more vulnerable borrowers—such as SMEs and local entrepreneurs—exposed to currency risks.

Secondly, LC lending can reduce the pressure to allocate FC inflows towards debt servicing, allowing these inflows to be used for other pressing needs. FC debt obliges borrowers to generate foreign exchange for repayment, or at least to convert domestic currency into FC when required. This is not always possible, or only possible at unfavourable exchange rates and at high costs, creating convertibility risk. Thus, FC debt exacerbates the demand for foreign exchange, which is often scarce in balance-of-payments-constrained economies with low trust in LCs.

Thirdly, a less discussed benefit of stable and counter-cyclical LC lending by MDBs is its potential to mitigate the volatility and pro-cyclicality of private financial markets. Even when LMICs manage to borrow in LC from private markets, such lending has been highly volatile and pro-cyclical to global financial market

[24] The 'original sin' hypothesis refers to the inability of LMIC governments and private sectors to borrow in their own domestic currency, particularly from external lenders. See further B Eichengreen and R Hausmann, 'Exchange Rates and Financial Fragility' (1999) Federal Reserve Bank of Kansas City, Economic Policy Symposium Proceedings, 329-368; B Eichengreen, R Hausmann, and U Panizza, 'The Pain of Original Sin' (2003) https://eml.berkeley.edu/~eichengr/research/ospainaug21-03.pdf accessed 11 October 2024.

[25] Fink, Lankes, and Sacchetto (n 19).

[26] A Okot, A Kaltenbrunner, and D Pérez Ruiz, *Determinants of the Exchange Rate, Its Volatility and Currency Crash Risk in Africa's Low and Lower Middle-Income Countries* (European Investment Bank, 2022) <http://www.jstor.org/stable/resrep52242> accessed 11 October 2024.

conditions.[27] This phenomenon—known as new forms of external vulnerability or 'original sin redux' and discussed in more detail in Chapter 4—occurs because private non-resident investors are often unwilling to bear currency mismatches arising from LC lending funded on international financial markets in foreign currencies.[28] As a result, private financial flows become more sensitive to expected exchange rate changes in both LMICs' currencies and the US dollar, as well as to international funding conditions. Moreover, the increased significance of exchange rate changes for international returns can create endogenous and self-reinforcing bubble dynamics, particularly in thin and concentrated financial markets.[29]

Fourthly, the literature suggests that LC lending by DFIs can contribute to the development of local financial markets.[30] These contributions include the provision of technical assistance and the creation of demand for complementary financial assets, such as derivatives for hedging or longer-maturity instruments. Additionally, LC lending supports the development of essential infrastructure, such as benchmarks and indices, and helps diversify the domestic investor base. Where LC lending is available, it can also extend the maturity of financing options. If MDBs issue bonds in the domestic market—as further discussed in Chapter 2—they can help to build or extend the domestic yield curve and provide safe assets to institutional investors, such as pension funds and insurance companies. As Hoschka notes, MDBs are often innovative issuers that play a key role in opening new markets, introducing new financial instruments, and filling gaps in investment landscapes.[31] They achieve this by following best-practice issuance standards, setting new benchmarks, providing role-model transactions in terms of documentation and execution, and introducing innovations in financial instruments within local capital markets.

However, whilst generally considered positive, existing analyses also highlight that LC lending by MDBs might not be universally appropriate or possible. Certain recipients and projects have a greater need for it than others. For example, as noted by Fink, Lankes, and Sacchetto, SMEs, farmers, housing projects, and capital-intensive infrastructure projects—such as renewable energy—are especially vulnerable to currency

[27] S Miranda-Agrippino and H Rey, 'The Global Financial Cycle' in G Gopinath, E Helpman, and K Rogoff (eds), *Handbook of International Economics* (Vol 6, Elsevier 2022) 1-43.

[28] See, eg, A Kaltenbrunner and JP Painceira, 'Developing Countries' Changing Nature of Financial Integration and New Forms of External Vulnerability: The Brazilian Experience' (2015) 39(5) Cambridge Journal of Economics 1281; M Onen, HS Shin, and G von Peter, 'Macroprudential Policy in Developing Economies' (BIS Working Papers No 1075, 21 February 2023) <https://www.bis.org/publ/work1075.htm> accessed 11 October 2024; LF de Paula, B Fritz, and D Prates, 'The Metamorphosis of External Vulnerability from "Original Sin" to "Original Sin Redux": Currency Hierarchy and Financial Globalization in Emerging Economies' (2024) 15(2) Review of International Political Economy 1-28; K Kohler, B Bonizzi, and A Kaltenbrunner, 'Global Financial Uncertainty Shocks and External Monetary Vulnerability: The Role of Dominance, Exposure, and History' (2023) 88 Journal of International Financial Markets, Institutions & Money 101818; E Cerutti, S Claessens, and D Puy, 'Push Factors and Capital Flows to Emerging Markets: Why Knowing Your Lender Matters More Than Fundamentals' (2019) 119 Journal of International Economics 133-49.

[29] K Kohler and E Stockhammer, 'Flexible Exchange Rates in Emerging Markets: Shock Absorbers or Drivers of Endogenous Cycles?' (2023) 32(2) Industrial and Corporate Change 551-72; A Kaltenbrunner, 'Financial Integration and Exchange Rate Determination: A Brazilian Case Study' (2015) 29(2) International Review of Applied Economics 129-49.

[30] European Bank for Reconstruction and Development (EBRD), *Local Currency Financing* (Treasury, August 2023) https://www.ebrd.com/downloads/capital/local.pdf accessed 12 October 2024.

[31] TC Hoschka, *Local Currency Financing – The Next Frontier for MDBs?* (Asian Development Bank, ERD Working Paper Series No 68, April 2005) 12.

mismatches due to their LC-denominated cash flows, long-term maturities, and limited risk management skills.[32] Recent literature on climate financing also highlights the exposure of climate-related projects to currency mismatches.[33] On the other hand, there remains some scepticism regarding the extent to which LC borrowing can play a role for sovereigns in LMICs. As Horschka points out, it is challenging for MDBs to fund themselves cheaper than the sovereign in LC, which makes their lending uncompetitive, a key barrier to LC financing which we will discuss in detail in Chapter 2 (especially section 4.3).[34] However, there may be opportunities for LC public sector lending at the local government level, including for municipalities and government-linked companies. If funded directly, rather than through the central government, these entities could benefit from LC lending due to the absence of FC revenues. [35]

2.2. Barriers to local currency financing

Analyses which address explicitly the barriers to LC lending by DFIs are very sparse. As discussed in much more detail in this report, the primary issue is the presence of currency or exchange rate risk, meaning that in the context of LC lending, the risk of exchange rate fluctuations against the funding currency is borne by the DFI. As the literature suggests, few MDBs are willing to take on this risk, due to a traditional mindset rooted in the fixed exchange rate regime of the Bretton Woods era,[36] conservative risk management frameworks and practices,[37] and the prohibitive costs or lack of appropriate hedging and risk management instruments.[38] As Fink and others note, FC-based lending has been the default strategy in DFI investment approaches.[39] This is partly due to path dependencies, but also because LC lending is more complex and time-consuming. In addition, since DFI incentives often favour the volume and number of transactions, investment officers generally prefer FC operations, as they tend to be larger and are typically easier to complete.[40]

One reflection of this conservative mindset is found in MDBs' existing risk management frameworks, which require back-to-back funding of individual transactions. As further discussed in Chapter 2 and Chapter 3, this means that LC lending must be perfectly matched by LC liabilities or hedges. However, the perfectly matched risk management practices that DFIs apply in advanced markets are often unfeasible in systems characterised by short-term maturities,

[32] Fink, Lankes, and Sacchetto (n 19) 12.
[33] Benoit and others (n 18); Yahmed, Grant, and Pinko (n 23).
[34] Hoschka (n 31).
[35] ibid.
[36] S Kapoor and others, 'A Multilateral Solution to Hedging Currency Risk in Developing Country Finance' (Nordic Institute for Finance, Technology and Sustainability, 2021).
[37] Yahmed, Grant, and Pinko (n 23); Fink, Lankes, and Sacchetto (n 19).
[38] Persaud (n 21); TCX, *Scaling Up Currency Risk Hedging for Low and Lower Middle-Income Countries: A Proposal to Mitigate Currency Risk at Scale and Mobilize Private Finance for Sustainable Development* (September 2023).
[39] Fink, Lankes, and Sacchetto (n 19).
[40] ibid 18. See also S Andreasen, W Bartz, C Clubb, J Durland, A Efiong, Y Ehlert, P Horrocks, J Sedemund, H Hirschhofer, and K Parplies, 'The Need to Reduce FX Risk in Development Countries by Scaling Blended Finance Solutions' (FX Risk in Development Workshop, Convergence, EDFI, European Commission, OECD, TCX, 2017) https://assets.ctfassets.net/4cgqlwde6qyo/3UYrVVpyqckCsw802wWoOi/7abfe71c3b60ff521635f713865cad16/FX_Risk_in_Development_Primer.pdf accessed 11 October 2024.

risk aversion, liquidity hoarding, and the scarcity of financial transactions and counterparts.[41] Existing risk management frameworks also impose stringent counterparty requirements, which frequently exclude LMIC counterparts and limit MDBs' risk management options to institutions in advanced financial markets—often at higher costs, as discussed in Chapter 2.

Beyond traditional mindsets and conservative frameworks, a key barrier to LC lending in LMICs is the significant exchange rate risk and the absence or high cost of hedging instruments.[42] In some countries with shallow financial markets, hedging instruments may simply be unavailable or limited to short maturities, making it impossible for MDBs to hedge their long-term assets. In other cases, the cost of accessing hedging instruments is so high that the LC loans provided by MDBs carry nominal interest rates that are uncompetitive, unsustainable, and unattractive to borrowers focused on the short end of the yield curve. According to Kapoor and others, only around 20 LMICs have private market pricing for 3-year swaps, with this number nearly halving at the 10-year maturity mark.[43]

Persaud argues that these excessive hedging costs—which fundamentally reflect the interest rate differential between borrower units and global dollar funding rates—are due to a structural 'macroeconomic risk premium' in LMICs.[44] While project risks in LMICs are often similar or even lower, the high-interest rate spread results from expected macroeconomic risks, including currency, political, and sovereign credit risks. Moreover, as Persaud shows, and as discussed in Chapter 4, this risk premium is excessive, with the interest rate differential charged to cover expected exchange rate changes being substantially higher than realised exchange rate depreciation.[45] If financial markets were efficient, the cost of an FX hedge should on average reflect the actual exchange rate depreciation. However, as Persaud demonstrates, on average, agents seeking to hedge exchange rate risk in LMIC currencies overpay by 2.2%, calculated as the difference between the current spot exchange rate and the rate implied five years earlier by a five-year forward.[46] According to Persaud, overpayments are also more likely and larger when hedging costs are high, particularly during periods of global financial uncertainty. Several factors may explain this persistent overpayment, including the uncertainty associated with lesser-known markets, the risk aversion of investors, and the challenges of maintaining a counter-cyclical investment approach when exchange rate volatility is expected to be temporary.[47] As we discuss in Chapter 4, this last point offers MDBs an opportunity to assume some of the exchange

[41] ibid 15.
[42] For a detailed discussion of the potential determinants of exchange rate risk, see Chapter 4.
[43] Kapoor and others (n 36).
[44] Persaud (n 21).
[45] ibid.
[46] The fact that uncovered interest parity does not hold, and that high interest rate currencies tend to appreciate rather than depreciate, has been extensively discussed in the academic literature under the concept of the forward premium or forward bias puzzle. See G Valente, GL Leon, and L Sarno, 'Nonlinearity in Deviations From Uncovered Interest Parity: An Explanation of the Forward Bias Puzzle' (IMF Working Paper No 2006/136, International Monetary Fund 2006). This discussion has been revisited in recent years in the context of very low interest rates in advanced economies and the carry trade phenomenon, where investors have taken advantage of both high interest rate differentials and appreciating exchange rates. See, eg, Francis Breedon, Dagfinn Rime, and Paolo Vitale, 'Carry Trades, Order Flow, and the Forward Bias Puzzle' (2016) 48(6) Journal of Money, Credit and Banking 1113-34.
[47] Persaud (n 21) 14.

rate risk, given that private financial markets are unlikely to do so.

While high hedging costs due to perceived macroeconomic risks affect most LMICs, domestic financial markets in many of these countries remain so thin and underdeveloped that MDBs are reliant on international financial markets for hedging or may not find private hedging solutions at all. As the EBRD highlights, several constraints limit operations in domestic financial markets, including poorly regulated banking systems, inadequate infrastructure, weak legal and regulatory frameworks, and the absence of key financial instruments such as credible market indices and risk-free assets. Additionally, high domestic costs, the lack of institutional investors, bureaucratic processes, and poor governance hinder domestic market development. Underdeveloped financial markets, combined with FC scarcity and hoarding, also mean that onshore operations may continue to face significant convertibility (the inability to convert LC into FC) and transfer risks (the inability to transfer funds abroad). Even when operating as domestic agents, MDBs may lack access to central bank liquidity as lenders of last resort.[48]

As discussed in more detail in this report, one way to reduce hedging costs for MDBs—and thereby lower the cost of LC lending—would be for MDBs to assume some foreign exchange risk beyond the confines of more flexible risk management frameworks. As Fink, Lankes, and Sacchetto point out, while MDBs and DFIs collectively have over 420 billion USD in balance sheet capital, they do not take open currency positions on their senior loans.[49] In most cases, this is an operational choice rather than a requirement dictated by foundational documents or credit rating agencies.

Finally, although not the primary focus of this report, it is important to note that the extent of LC lending is also constrained by demand-side factors—that is, by the borrowers themselves.[50] As discussed above, lacking the capacity to assess medium- to long-term risks of FC borrowing, and often biased towards the lower interest rates associated with the shorter end of the yield curve, many borrowers in low- to lower-income countries do not opt for LC issuance. Addressing these capacity constraints is crucial for scaling up LC financing in LMICs.

3. Research design

Our report employs a mixed-method approach, which combines secondary data analysis and econometrics, legal analysis, and primary data collection in the form of semi-structured expert interviews and a survey with MDB representatives in a complementary way,[51] to provide a comprehensive and multi-faceted analysis of the barriers to MDB LC lending.

3.1. Methodology

3.1.1. Secondary data analysis and visualisation

We utilise several existing datasets to explore, illustrate, and analyse various aspects of MDBs' LC lending. In Chapter 2, we use the WRDS-Reuters' DealScan Database to present an

[48] EBRD (n 30).

[49] Fink, Lankes, and Sacchetto (n 19) 46. As noted by the authors and discussed on Chapter 3, this is unlike their equity portfolio, which generally does not need to be hedged.

[50] Hoschka (n 31); Jonasson, Malik, Chung, and Papaioannou (n 15).

[51] VL Plano Clark and JW Creswell, *The Mixed Methods Reader* (Sage 2008).

overview of MDBs' LC loans in the syndicated loan market.

Chapter 4 incorporates data from various sources (see Table A-1 in the Appendix) to calculate LC returns in excess of exchange rate depreciation and the determinants of these large depreciations. For the latter, we use quantile regressions to assess the impact of several factors on large exchange rate depreciations in LMICs. While Ordinary Least Squares (OLS) regressions estimate the mean of a dependent variable conditional on a set of regressors, quantile regressions estimate any quantile of interest of the dependent variable, conditional on the same set of regressors.[52] This method, therefore, allows us to estimate the coefficients for extreme (rather than average) depreciations. Our model uses data from a panel of up to 90 countries, covering the period from 1990 to 2022.

In Chapter 5, we draw on data from credit rating agencies and sovereign default datasets[53] to analyse the relative credit risk of LC debt compared to FC debt, as well as the relationship between downgrades and exchange rate depreciation.

3.1.2. Legal analysis

We conducted a detailed legal analysis of the statutory provisions (founding charters) and non-statutory frameworks (including board decisions and policy papers) of all several global and regional MDBs. In addition, we examined domestic legal and regulatory frameworks, drawing on primary sources (e.g., regulations), secondary sources (e.g., academic publications), and expert interviews with staff from the legal departments of MDBs.

3.1.3. Expert interviews with MDBs staff and experts

We conducted 18 semi-structured interviews with staff from MDBs and related DFIs (see Table 1.1 for a list of interviews). Interviewees were selected purposively to ensure representation across Global and Regional MDBs (a full list of institutions included in our sample can be found in Table 1.2). Access to interviewees was obtained through publicly available contact details and snowball sampling. The semi-structured format allowed for flexibility to explore specific areas of interviewees' expertise. Except for one, all interviews were conducted virtually. The interviews were recorded, transcribed, and thematically coded by the research team. The interviews received ethical approval by the University of Leeds, and confidentiality and anonymity requirements are upheld. These interviews inform the analyses in Chapter 2 and Chapter 3.

3.1.4. Survey with MDB staff

To generalise the interview results across a larger set of MDBs and representatives of different areas within MDBs we conducted an online survey using the Qualtrics platform to gather insights from current MDB staff. The survey was distributed to staff across all MDBs in our sample (Table 1.1) and sought their views on the state of LC financing, its barriers, and associated risk management, as well as their opinions on various

[52] R Koenker and G Bassett, 'Regression Quantiles' (1978) 46(1) Econometrica 33.

[53] A Erce, E Mallucci, and MO Picarelli, 'A Journey in the History of Sovereign Defaults on Domestic-Law Public Debt' (2022) European Stability Mechanism Working Paper; S Horn, CM Reinhart and C Trebesch, 'Hidden Defaults' (2022) 112 AEA Papers and Proceedings 531; D Beers, V Bhullar, and D Nystrand, 'BoC–BoE Sovereign Default Database: What's New in 2023?' (2023) Bank of Canada Staff Analytical Notes No 2023–10.

policy proposals. Sampling was based on existing contacts, snowballing, and the existence of publicly available contact information. Due to the specific nature of the subject, many respondents did not feel able to respond, resulting in a sample of 25 responses. Respondents provided answers anonymously and in their personal capacity, rather than representing the views of their institutions. Eighty-eight percent of respondents work for organisations that provide LC financing, suggesting that our sample is likely selective among those actively involved in or interested in LC financing. Therefore, our survey results should not be interpreted as statistically representative of MDB staff views but rather as indicative and descriptive of attitudes towards LC financing.

Table 1.1 Interview list

Interview #	Type of Institution and Department	Date and Modality
1	MDB, Treasury	28/02/2024 - Virtual
2	MDB, Treasury	14/03/2024 - Virtual
3	Development Finance Institution	15/03/2024 - Virtual
4	MDB, Treasury	15/03/2024 - Virtual
5	MDB, Lending	20/03/2024 - Virtual
6	MDB, Legal	25/03/2024 - In Person
7	MDB, Legal	03/04/2024 - Virtual
8	MDB, Treasury	23/04/2024 - Virtual
9	MDB, Treasury	24/04/2024 - Virtual
10	MDB, Legal	25/04/2024 - Virtual
11	MDB, Legal	01/05/2024 - Virtual
12	MDB, Risk	08/05/2024 - Virtual
13	MDB, Legal	10/05/2024 - Virtual
14	MDB, Legal	03/06/2024 - Virtual
15	MDB, Risk	21/06/2024 - Virtual
16	MDB, Treasury	03/07/2024 - Virtual
17	MDB, other	28/08/2024 - Virtual
18	DFI	12/09/2024 - Virtual

3.2. Sample

Our report focuses on 29 MDBs, which collectively account for over USD 2.2 trillion in assets and USD 620 billion in capital. This represents approximately 10% of the $23 trillion total asset size reported by the Public Development Banks and Development Finance Institutions Database for Public Development Banks globally.[54] Based on Ray's classification,[55] we categorise these MDBs into global, regional, and sub-regional institutions (Table 1.2).

Table 1.2 Descriptive statistics of MDBs

Name	Type	Syndicated base	Assets (th USD)	Capital (th USD)	Operating profit	HQ	# Member countries
African Development Bank (AfDB)	Regional	No	53,075,662	14,542,332	543,913	Côte d'Ivoire	54
Arab Bank for Economic Development Africa (ABED)	Sub-Regional	Yes	5,650,300	5,476,600	168,400	Sudan	18
Asian Development Bank (ADB)	Regional	Yes	301,411,000	55,294,000	938,000	Philippines	68
Asian Infrastructure Investment Bank (AIIB)	Regional	Yes	53,792,973	21,448,857	1,030,646	China	109
Banque d'investissement et de developpement de la CEDEAO (BIDC)	Sub-Regional	No	1,040,453	305,105	4,247	Togo	15
Banque Ouest Africaine de Developpement	Sub-Regional	Yes	5,865,681	1,982,170	61,407	Togo	8
BDEAC	Sub-Regional	No	1,242,840	251,027	9,893	Republic of Congo	6
Black Sea Trade and Development Bank	Sub-Regional	Yes	2,396,619	949,347	22,350	Greece	11
Caribbean Development Bank	Sub-Regional	No	2,031,879	877,906	12,000	Barbados	28
Central American Bank for Economic Integration (CABEI)	Sub-Regional	Yes	17,186,219	4,692,642	227,000	Honduras	15
Corporación Andina de Fomento (CAF)	Regional	Yes	53,814,263	14,729,720	930,000	Venezuela	21
Council of Europe Development Bank (CEB)	Regional	Yes	38,032,376	3,888,627	119,640	France	43
East African Development Bank (EADB)	Sub-Regional	Yes	454,382	322,302	6,600	Uganda	4

[54] DFI Database, 'Development Finance Institutions Database' Peking University https://www.dfidatabase.pku.edu.cn/ accessed 11 October 2024.

[55] R Ray, 'Who Controls Multilateral Development Finance?' (2019) GEGI Working Paper 026, Global Development Policy Center, Boston University https://www.bu.edu/gdp/files/2019/04/GEGI-WP-R-Ray-2019-Power-Weights.pdf accessed 14 October 2024.

Eastern and Southern African Trade and Development Bank (TDB)	Sub-Regional	Yes	10,106,234	2,208,490	209,700	Burundi	25
ECO Trade and Development Bank (ETDB)	Sub-Regional	No	353,797	321,547	11,644	Türkiye	6
Eurasian Development Bank (EADB)	Sub-Regional	Yes	8,167,342	1,988,006	22,755	Kazakhstan	6
European Bank for Reconstruction and Development (EBRD)	Regional	Yes	84,687,923	23,042,753	2,298,568	United Kingdom	73
European Investment Bank (EIB)	Regional	Yes	632,088,853	98,363,226	2,565,347	Luxembourg	27
FONPLATA - Banco Multilateral de Desarrollo	Sub-Regional	No	2,640,100	1,549,600	92,100	Bolivia	5
Inter-American Development Bank (IDB)	Regional	Yes	152,019,000	38,846,000	1,179,000	United States	48
Inter-American Investment Corporation (IDB Invest)	Regional	Yes	11,328,234	3,229,889	163,900	United States	48
International Bank for Reconstruction and Development (IBRD)	Global	Yes	332,641,000	60,382,000	357,000	United States	189
International Development Association (IDA)	Global	Yes	227,482,000	185,782,000	-2,317,000	United States	174
International Finance Corporation (IFC)	Global	Yes	110,547,000	35,038,000	723,000	United States	186
Islamic Development Bank (IsDB)	Regional	Yes	39,362,797	14,585,951	424,907	Saudi Arabia	57
New Development Bank (NDB)	Regional	Yes	28,840,000	11,642,000	593,000	Brazil	8
Nordic Investment Bank (NIB)	Sub-Regional	Yes	43,377,866	4,765,421	274,667	Finland	8
OPEC Fund for International Development (OFID)	Global	Yes	7,731,900	6,355,000	240,000	Austria	12
International fund for Agriculture and Development (IFAD)	Global	Yes	11,723,829	8,034,048	-254,876	Italy	178

Source: Orbis Bank Focus & Fitch Connect Pro. Syndicated base shows whether the MDB reports data in the syndicated loan market.

The size and scope of these MDBs vary significantly. The top three institutions (EIB, IBRD,, and ADB) account for 57% of the total assets, reflecting the broad geographical coverage of global MDBs and the relatively smaller size of regional MDBs, which typically serve fewer member countries. The institutions in our sample also vary in age, from the establishment of IBRD in 1944 to the creation of the NDB in 2015. Most MDBs report positive operating profits, consistent with the general profitability of MDBs,[56] although IDA and IFAD report losses due to the highly concessional nature of their financing operations.

While our report is based, wherever possible, on information from all the MDBs in our sample, data for several institutions is often limited. For instance, in Chapter 2, we explore data from the syndicated loan market, for which seven MDBs, as shown in Table 1.1, do not report data. Additionally, our interviews focus primarily on global and regional MDBs.

4. Structure of the report

This report is structured into five chapters, in addition to the introductory chapter.

Chapter 2 outlines the various ways MDBs can offer LC financing to LMICs, detailing the size and allocation of these operations. Although most MDBs provide some LC financing, the overall scale remains limited. The chapter then explores the key barriers to scaling up LC financing, with currency risk—and the limited availability and high cost of instruments to manage it—emerging as the primary challenge. It also shows that other than in very rare cases, MDBs fully hedge that risk taking on no to very limited currency risk. The chapter then examines the main forms of currency hedging and demonstrates how hedging can limit the attractiveness of LC lending by raising borrowing costs (the pricing problem). It concludes with some examples of instances where MDBs have taken on some currency risk.

Chapter 3 focuses on the legal and regulatory constraints that limit the capacity of MDBs to provide LC financing. It explores both statutory and non-statutory institutional frameworks that primarily position MDBs to lend in FC. The chapter also examines how various domestic legal and regulatory frameworks affect the capacity of MDBs to operate onshore and enable LC financing. Additionally, it addresses the complexities involved in drafting LC financing contracts.

Chapter 4 assesses the currency risk associated with LC financing. The analysis shows that unhedged LC lending across LMICs can yield positive excess returns, particularly over one- and five-year horizons. However, periods of significant negative returns occur during global instability, often affecting multiple LMICs simultaneously. We identify global commodity prices as a key predictor of these currency crashes—in particular in countries with a large share of non-resident investors in domestic bond markets—providing insights into extreme depreciation events and their causes.

Chapter 5 shifts the focus to credit risk in LC lending. Drawing on data from credit rating agencies and sovereign default databases, we demonstrate that credit risk for LC debt is generally lower than for FC debt. Despite this, credit rating agencies often overlook this distinction. The chapter further examines the

[56] C Humphrey, 'The Politics of Loan Pricing in Multilateral Development Banks' (2014) 21(3) Review of International Political Economy 611-39.

potential impact of LC lending on MDBs' capital adequacy and shows that credit rating methodologies do not sufficiently account for currency denomination, suggesting potential for LC's lower credit risk to be more fully reflected."

We also explore how LC lending can positively influence MDBs' risk-weighted capital ratios in the event of a downgrade coupled with a depreciation, compared to FC lending.

Finally, **Chapter 6** builds on the preceding analysis to propose policy recommendations aimed at enhancing MDBs' capacity to provide LC financing in LMICs. The chapter reviews existing proposals, offering an assessment of their key features and limitations, before presenting our own recommendations. These recommendations are global in scope but allow for flexibility in application, considering the diversity of economic structures, regulatory environments, and capital market development across regions. Rather than a one-size-fits all approach, we present a range of different initiatives (some scalable, some small scale), which together could represent the ecosystem of initiatives that enhance the availability of LC lending to LMICs. In our recommendations, we partly build on existing proposals but also go beyond them to ar-gue that some—carefully assessed and modelled—assumption of currency risk should become part of MDBs' developmental toolkit.

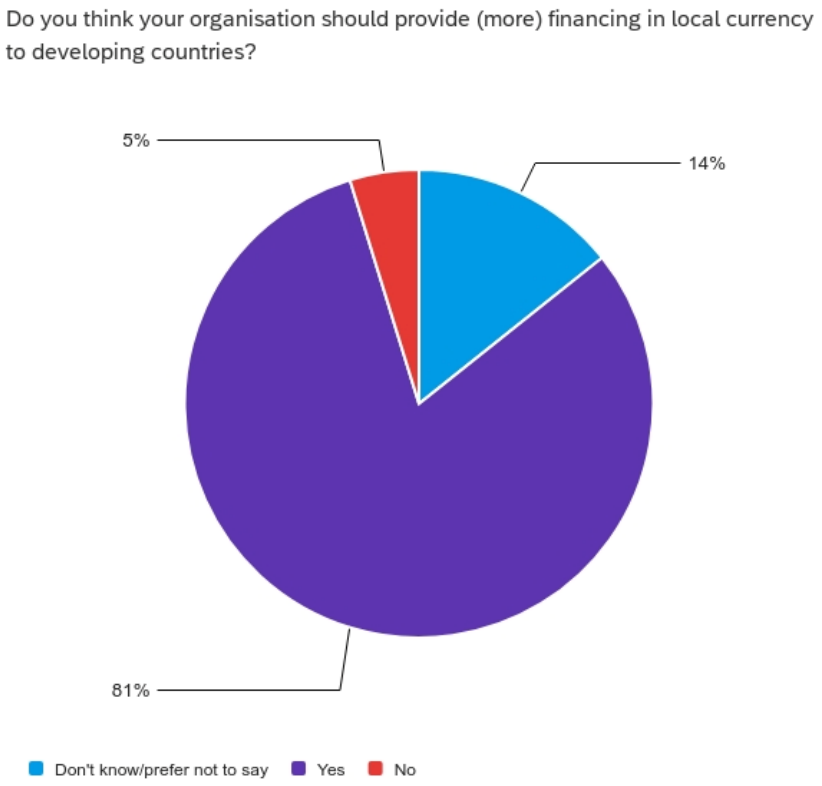
Chapter 2

Overview of Local Currency Financing Practices by MDBs

1. Introduction

As established in the previous chapter, local currency (LC) financing offers significant benefits, particularly in mitigating exchange rate risk for borrowers in low- and middle-income countries (LMICs). This conclusion is supported by our survey responses, which overwhelmingly affirm the advantages of LC financing, with many respondents indicating that their institutions should increase their provision of such financing. Notably, 81% of respondents identified a gap in LC financing that requires attention.

Figure 2.1 The need for further local currency financing, according to respondents



Source: Authors' survey responses.

The primary reason cited by respondents is the need to reduce currency risk and financial uncertainty for borrowers, particularly those in countries with poorly developed domestic financial markets and limited hedging opportunities. Respondents noted that LC financing would not only reduce credit risk and increase the sustainability of lending but also lead to a higher development impact. Some respondents also emphasised the need to respond to client demand for more LC borrowing. Despite these advantages, there is a significant gap in the systematic analysis and understanding of LC financing by multilateral development banks (MDBs), and its use remains relatively limited within MDB portfolios.

This chapter aims to provide a comprehensive overview of current LC financing practices by MDBs. Drawing on policy and legal documents, survey responses, and syndicated loan data, the chapter analyses the forms of LC financing, its scale within MDB portfolios, and the key risks and challenges involved. A key focus of this discussion is currency risk management, which significantly influences the feasibility and pricing of LC loans.

The chapter is structured as follows: Section 2 identifies the various forms of LC financing provided by MDBs, including grants, technical assistance, loans, guarantees, and equity investments. Section 3 analyses the scale of these financing activities using syndicated loan data and survey responses, revealing patterns based on currency, region, sector, and borrower type.

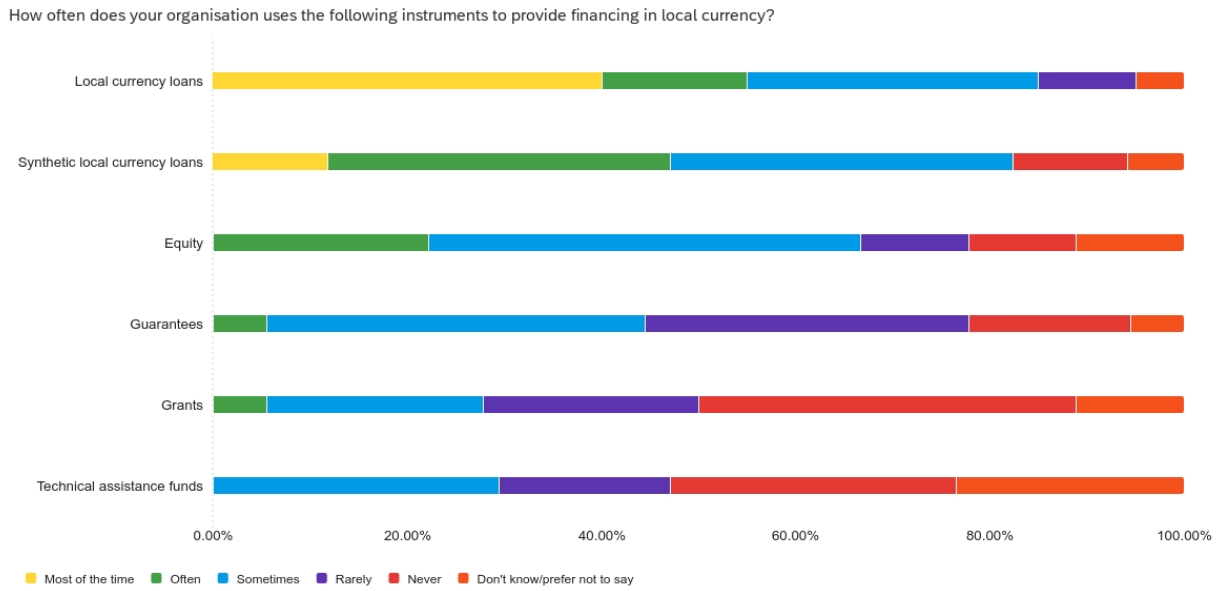
Drawing on survey data, Section 4 examines the barriers to expanding LC financing, focusing on three key areas: the availability and cost of risk management tools, the challenges associated with mitigating currency risk, and the implications of these factors for MDBs' capacity to offer affordable LC financing. Finally, Section 5 explores instances where MDBs have taken on currency risk, such as through off-balance sheet structures and initiatives involving external guarantors, allowing for some degree of currency exposure in specific projects.

2. Forms of local currency financing

This section provides a comprehensive overview of the various forms of LC financing arrangements offered by MDBs, including grants, loans, guarantees, and equity investments, with a focus on their legal structures. The current practices of selected MDBs in providing LC financing are summarised in Table 2.1. It is important to note that this table does not indicate the frequency of these arrangements, as some are offered only occasionally.

While most MDBs offer LC arrangements to some extent (Table 2.1), the frequency of these arrangements varies significantly (Figure 2.2). Furthermore, Figure 2.2 does not account for disparities across various MDBs, which—as discussed in Section 3 may be substantial, with some MDBs being much more active than others in the LC financing landscape.

Figure 2.2 MDBs local currency financing instruments by frequency of use



Source: Authors' survey respondents.

Table 2.1 Overview of Selected MDBs' Local Currency Financing Arrangements

	Grants and technical assistance funds	Loans	Guarantees	Equity
African Development Bank (AfDB)	✓	✓	✓	✓
Asian Development Bank (ADB)	✓	✓	✓	✓
Asian Infrastructure Investment Bank (AIIB)	✓	✓	✓	✓
Council of Europe Development Bank (CEB)	✓	✓	✓	✓
Development Bank of Latin America (CAF)	✓	✓	✓	✓
European Bank for Reconstruction and Development (EBRD)	✓	✓	✓	✓
European Investment Bank (EIB)	✓	✓	✓	✓
Inter-American Development Bank (IDB)	✓	✓	✓	✗
Inter-American Development Bank (IDB) Invest	✗	✓	✓	✓
International Bank for Reconstruction and Development (IBRD)	✓	✓	✓	✗
International Development Association (IDA)	✓	✓	✓	✗

International Finance Corporation (IFC)	✓	✓	✓	✓
New Development Bank (NDB)	✓	✓	✓	✓

Source: Author's review of MDBs' legal documents, official websites, and/or responses provided by survey participants. The MDBs selected for this overview are those for which either public official information or survey responses were available.

2.1. Grants and technical assistance funds

Grants are non-repayable funds typically, though not necessarily, provided to countries eligible for concessional financing due to fragile debt sustainability, such as those at high risk or already in debt distress. Technical assistance funds, in turn, are non-repayable resources or in-kind contributions generally targeted at socially vulnerable and disadvantaged areas or sectors in member countries. These funds support training, feasibility studies, project preparation, and other developmental activities, including capacity-building across various sectors to enhance the capabilities of public and private institutions.[1] For example, they can cover consultant fees, travel expenses, and costs related to publishing project outcomes.[2] These funds may be provided through various trust funds, special funds, and co-financing arrangements, with MDBs acting as implementation agents for donor-provided resources.[3]

While our survey responses indicate that grants and technical assistance are not as prominent in MDBs' LC financing operations compared to other instruments, these resources are crucial for enabling access to concessional LC financing for the most vulnerable members, including low-income countries (LICs) and strategic sectors of LMIC economies that may lack access to affordable financing.

MDBs' policies on LC grants and technical assistance vary, with those serving more LICs being the most active. For example, the *General Conditions* governing the disbursement of grants by the African Development Bank Group stipulate that grants should be made in the currencies in which costs have been paid or in other currencies determined by the African Development Fund, the concessional window of the African Development Bank Group (Section 3.02).The value of disbursed funds in one or more currencies is to be reasonably determine by the Fund as of the date of each disbursement (Section 3.03).[4]

In their operations with LMICs, MDBs may provide financing on concessional terms, effectively blending grants with loans or guarantees. Notably, the International

[1] Asian Development Bank, 'ADB's Microfinance Program' https://www.adb.org/what-we-do/microfinance-program/overview accessed 26 July 2024.
[2] Development Bank of Latin America, 'Technical Cooperation' https://www.caf.com/en/about-caf/what-we-do/products-and-services/technical-cooperation accessed 26 July 2024.
[3] African Development Bank, *Financial Products Handbook 2022-2023* (African Development Bank Group 2022) 59-61 https://www.afdb.org/en/documents/financial-products-handbook-2022-2023 accessed 26 July 2024; Asian Development Bank, 'Overview: Asian Development Fund (ADF)' https://www.adb.org/what-we-do/funds/adf/overview accessed 26 July 2024; Development Bank of Latin America (n 2).
[4] African Development Bank (n 3).

Development Association (IDA) is the World Bank Group's (WBG) arm that provides financing to LICs or otherwise eligible countries based on relative poverty, defined as GNI per capita below an established threshold, which is updated annually.[5] Typically, the IDA offers financing to eligible countries on highly concessional terms. However, for LC financing, borrowers under IDA concessional financing must bear the market cost of currency conversion. IDA concessional credits are offered either in Special Drawing Rights (SDRs), or as single currency credits. For SDR-denominated credits, repayments must be made in one of five currencies—US dollars, pounds sterling, yen, euros, or Chinese yuan—with the borrower assuming the foreign exchange risk between the repayment currency and the SDR.[6] Single currency concessional credits are available in US dollars, pounds sterling, yen, or euros.[7] Borrower requests for currency conversions are subject to the maximum maturity available in the swap or capital markets for the respective currency or currencies. Conversions into local or authorised currencies at the time of credit disbursement are permitted, provided that the IDA can hedge such conversions through a currency swap or a back-to-back IDA bond issuance. Importantly, pricing for currency conversions is determined at market rates, and conversions are subject to transaction fees periodically set by management.[8] In summary, under IDA concessional financing, repayment is always in hard currency, with no concessionality regarding exchange rate risk.

Another relevant aspect in the discussion on concessionality and LC financing relates to specific MDB programmes that use donor funds to support high-impact projects in countries where LC solutions are either underdeveloped or unaffordable for local borrowers. Examples include the IDA-IFC-MIGA Private Sector Window (PSW)'s Local Currency Facility (LCF), and the Asian Development Fund (ADF) PSW's Local Currency Solution (LCS), which are further discussed in Section 4.2.

2.2. Loans

Loans, also referred to as credit facilities or loan agreements, are financial arrangements in which a lender—typically a bank or financial institution—stipulates the terms and conditions for providing funds to a borrower. These terms often include conditions precedent, repayment schedules, interest rates, and other financial covenants.[9] When multiple lenders provide funds to a borrower (or a group of associated borrowers) under a single facility agreement, these arrangements are known as syndicated loans or facilities.[10]

As our survey responses indicate, loans are the most common form of financing provided by MDBs in their LC operations, with 55% of participants reporting that their institutions offer

[5] The terms and conditions of IDA grants are given particular emphasis in this report because, although other MDBs also have concessional lending arms, the IDA is the most prominent. The need for specific policy reforms in its financing terms to enhance LC financing capacity emerged more clearly during the semi-structured interviews we conducted.
[6] Section III(2)(a)(ii)(A) of the International Bank for Reconstruction and Development and International Development Association's *Bank Policy: Financial Terms and Conditions of Bank Financing*, OPS5.09-POL.178 (7 July 2023) https://treasury.worldbank.org/en/about/unit/treasury/ibrd-financial-products/guidelines-and-forms accessed 27 August 2024.
[7] ibid, Section III(2)(a)(ii)(B).
[8] ibid.
[9] Thompson Reuters Practical Law, 'Glossary: Facility Agreement' (Thompson Reuters 2024) https://uk.practicallaw.thomsonreuters.com/8-200-1386 accessed 29 July 2024.
[10] ibid.

LC loans either frequently or most of the time. Notably, 47% of respondents specified that these are typically structured as synthetic loans—the mechanics of which are discussed in Section 2.2.2 below. Importantly, the survey did not explore specific loan types or terms, so the responses encompass all categories of loans mentioned in this section.

MDB loans can be categorised into two types: sovereign-guaranteed loans and non-sovereign-guaranteed loans. Sovereign-guaranteed loans are extended to state governments or entities backed by a sovereign guarantee, ensuring repayment through the central government's full faith and credit. These loans primarily support public sector projects that foster economic development and stability, such as infrastructure for transportation, telecommunications, power generation, and water supply. In contrast, non-sovereign-guaranteed loans are provided to public or private sector entities without a sovereign guarantee and are typically used for corporate or project financing. Both types of loans can be offered on concessional or non-concessional terms, depending on the country eligibility policies of individual MDBs.

2.2.1. Standalone loans and co-financing

Within these categories, MDBs offer various financial arrangements, either as standalone loans or through co-financing structures involving multiple lenders.

a. Standalone loans

Standalone loans involve the MDB acting as the sole lender. MDBs generally prefer the entity responsible for implementing and operating the project to be the loan recipient. Direct lending enables MDBs to monitor the project's implementation more effectively and recommend corrective measures when necessary. If direct lending is not feasible due to legal considerations, MDBs may lend to another entity, provided the project can still be efficiently implemented and operated.[11]

For each loan, MDBs enter into a loan agreement with the recipient, outlining the loan amount and the terms and conditions.[12] In sovereign-backed financing, the member state provides a guarantee for each loan made to a recipient that is not the member. This guarantee covers the payment of principal, interest, and other charges, generally as the principal debtor and not merely as a surety. This arrangement allows the MDB to call directly on the member for payment without first exhausting its remedies against the recipient.[13] In non-sovereign-backed financing, the MDB may lend with the support of a third party—such as recourse to designated assets, the sponsor's balance sheet, or a bank guarantee—or on a limited recourse basis.[14] The latter, known as 'structured financing', is backed only by the project's cash flows and assets.[15] In the former, the lender conducts an in-depth analysis of income statement dynamics and

[11] See, eg, Article 8.1.1 of the Asian Infrastructure Investment Bank, 'Operational Policy on Financing' (26 June 2024) https://www.aiib.org/en/policies-strategies/_download/operation-policy/AIIB-Operational-Policy-on-Financing_OPF.pdf accessed 29 July 2024.
[12] ibid, Article 8.1.2.
[13] ibid, Article 8.1.4.
[14] ibid, Article 4.4 of the Asian Infrastructure Investment Bank's *Operational Policy on Financing* (26 June 2024).
[15] Latin American Development Bank, 'Structured Financing' https://www.caf.com/en/about-caf/what-we-do/products-and-services/structured-financing/ accessed 30 July 2024.

evaluates the sponsor's balance sheet. In the latter, the lender assesses the adequacy of capitalisation in the special purpose vehicle and the debt service coverage ratio.

Loan agreements are generally based on general conditions periodically approved by MDB boards, setting forth terms applicable to all loans and those specifically applicable to sovereign or non-sovereign-backed lending arrangements.[16] Typically, the loan agreement, member guarantee agreement, and project implementation agreement incorporate these general conditions by reference.[17]

MDBs typically do not require specific security in sovereign-guaranteed loans, although they may require guarantees or security in non-sovereign-guaranteed financing.[18] Non-sovereign-backed loans may be required to be extended as senior loans.[19] If a co-financier of the loan requires security, the MDB typically follows suit.[20] Common clauses include negative pledge provisions, and remedies may include the suspension or cancellation of disbursements, acceleration of payments due under the loan, enforcement of security, and the exercise of rights vis-à-vis sponsors or other third parties, such as guarantors.[21]

In addition to direct loans, MDBs may provide lines of credit to financial institutions for on-lending to their customers based on an indicative pipeline of transactions. This product targets various end beneficiaries, such as small and me-dium-sized enterprises (SMEs) and underserved communities struggling to access local credit. While the MDB bears the credit risk of the inter-mediary financial institution, the local institution assumes the end beneficiaries' credit risk. These are generally senior unsecured loans, extended only to financial institutions with satisfactory credit standing and the ability to manage the on-lending business. In some cases, the MDB may require additional security to guarantee reim-bursement of the line of credit.[22]

To better serve SMEs, especially in frontier credit markets, MDBs may assume the end beneficiaries' credit risk through agency line arrangements, with financial institutions or other partners acting as their agents. This approach is relevant where the MDB lacks confidence in the credit capacity of local partner institutions. The selection of projects for MDB support is largely delegated to these intermediaries, who use MDB resources to make loans for their account, ensuring that projects meet pre-agreed criteria.

The intermediary acts solely as an agent for the MDB, assuming no credit operation risk and receiving an agency fee.[23]

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[16] Asian Infrastructure Investment Bank (n 11) Articles 3.4 and 5.1 (non-sovereign-backed financing).

[17] Asian Infrastructure Investment Bank (n 11) Article 8.1.9. See also African Development Bank, *General Conditions applicable to Loan, Guarantee and Grant Agreements* (African Development Bank Group, February 2009) https://www.afdb.org/fileadmin/uploads/afdb/Documents/Legal-Documents/General%20Conditions%202009.pdf accessed 26 July 2024; Inter-American Investment Bank, *General Conditions for the Sovereign Guaranteed Loan Contracts* https://www.iadb.org/en/who-we-are/how-we-are-organized/legal-department/legal-resource-center accessed 26 July 2024.

[18] Asian Infrastructure Investment Bank (n 11) Articles 4.5 and 8.1.5.

[19] Asian Infrastructure Investment Bank (n 11) Article 4.5.

[20] Asian Infrastructure Investment Bank (n 11) Article 8.1.5.

[21] Asian Infrastructure Investment Bank (n 11) Articles 8.1.3 (sovereign-backed financing) and 6.2.3 (non-sovereign backed financing). See also African Development Bank, *General Conditions applicable to Loan, Guarantee and Grant Agreements* (African Development Bank Group, February 2009) Article VII.

[22] African Development Bank (n 3) 23.

[23] ibid 24.

b. Co-financing

Co-financing involves multiple lenders funding a project, whether sovereign-guaranteed or purely private sector-based. This approach often includes partnerships with other development finance institutions and private sector participants, commonly used in large-scale infrastructure projects where financial requirements exceed the capacity of a single lender.

A novel initiative in this area is the Global Collaborative Co-financing Platform, launched during the 2024 IMF and World Bank Spring Meetings. This digital marketplace—comprising the AIIB, the WBG, AfDB, ADB, CEB, EBRD , EIB, IDB, IsDB, and NDB—aims to streamline co-financing by providing a centralised hub for project information, enhancing collaboration across MDBs.[24]

Co-financing can take several forms, including:

- **A/B loans:** In this structure, the MDB acts as the lender-of-record, splitting the loan into an A-Loan (retained on the MDB's balance sheet) and a B-Loan (syndicated to participating financial institutions that take full exposure to the project's credit risk).[25] B-Loan participants benefit from the MDB's immunities and exemptions, including preferred creditor status (PCS),[26] encouraging eligible lenders to finance under the MDB's 'umbrella'.[27] Eligible participants are usually robust, investment-grade banks. Ineligible participants include project sponsors, export credit agencies (ECAs), governmental agencies, and local banks.[28] The IFC also arranges B-Loans for development finance institutions without supporting A-Loans, though this operation remains small and not widely replicated by other MDBs.[29]

- **Parallel loans:** Under this structure, the MDB, mandated by the borrower, seeks eligible financial institutions to participate on a best-efforts basis. Typically, MDBs partner with institutions not eligible for A/B loans, such as development finance institutions and local commercial banks.[30] The MDB acts as the lead arranger and coordinator, with agreements governed by a Common Terms Agreement (CTA) that allows each lender to refer to its policy requirements.[31] This allows each lender to explicitly refer to their policy requirements. For large and complex transactions, the MDB may appoint a co-mandated lead arranger or distribute aspects of the due diligence among financiers in the syndicate.

- **Classic syndicated loans:** This involves a group of financial institutions providing a large loan to a borrower. One or more MDBs act as lead arrangers, providing a portion of the loan and managing the negotiation

[24] World Bank Group, 'The Global Collaborative Co-Financing Platform' (19 April 2024) https://www.worldbank.org/en/programs/trust-funds-and-programs/brief/global-collaborative-co-financing-platform accessed 27 July 2024.
[25] Asian Infrastructure Investment Bank (n 11) Article 4.8.
[26] African Development Bank (n 3) 27.
[27] European Bank for Reconstruction and Development, *EBRD Mobilisation of Private Finance* (April 2020) 21 https://www.ebrd.com/documents/evaluation/2020-ebrd-mobilisation-of-private-finance.pdf accessed 27 July 2024.
[28] African Development Bank (n 3) 29.
[29] European Bank for Reconstruction and Development (n 27) 21.
[30] African Development Bank (n 3) 30.
[31] ibid.

process. These loans follow standard commercial loan syndication principles, with all lenders operating under a single facility document. The eligibility criteria and terms are similar to those of parallel loan structures.[32]

2.2.2. Structuring of local currency loans

The standalone and co-financing arrangements discussed earlier can be structured as either deliverable or non-deliverable in LC. Deliverable loans are denominated, disbursed, and serviced in LC. In contrast, non-deliverable loans, also known as synthetic loans, are denominated in LC but involve disbursements and debt service in hard currency at the prevailing exchange rate. This structure combines a hard currency loan with a non-deliverable foreign exchange hedge and is particularly used when physical delivery of LC is not required or where settlement in LC is constrained by legal or market factors.[33] Under this arrangement, the borrower bears both conversion and transfer risks, as well as basis risk between the agreed spot exchange rate and the actual rate at the time of conversion.

Repayment structures for LC loans can be tailored to the cash flow profile of the financed project. Repayments may take the form of bullet payments—a single lump-sum payment at the end of the term—or amortising payments, distributed over the loan duration and aligned with the project's revenue generation patterns. The choice of structure depends on the capacity of the LC market to support the loan's size, tenor, and repayment profile, as well as the demand from investors and financial intermediaries.[34]

2.2.3. Guarantees

Guarantees are widely employed in both domestic and international commercial contracts as safeguards against non-performance or financial default. The issuer of a guarantee assumes responsibility for fulfilling a contractual or legal obligation owed by one party to another in the event of a default by the first party.[35] These instruments are provided by MDBs to guarantee sovereign or non-sovereign-backed payment obligations, such as debt and interest payments, including those denominated in LC.

As with loans, guarantees can be either sovereign-backed or non-sovereign-backed. Sovereign-backed guarantees protect against debt service defaults under a loan, whether arising from a government's failure to meet specific project-related obligations or the borrower's failure to make loan payments. These guarantees usually entitle the guarantor, through subrogation rights or a counter-guarantee and indemnity agreement, to reclaim any amounts paid to the beneficiary.

In contrast, non-sovereign-backed guarantees support financing for private enterprises or sub-sovereign entities—such as political subdivisions or public sector bodies—without relying on a sovereign counter-guarantee. Like loans, guarantees can be offered on either concessional or non-concessional terms, depending on the country eligibility criteria set by individual MDBs.

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[32] ibid 31.

[33] Asian Infrastructure Investment Bank, 'Local Currency Financing' (15 April 2024) https://www.aiib.org/en/treasury/_common/_download/AIIB_Local-Currency-Financing-FactSheet.pdf accessed 29 July 2024.

[34] ibid.

[35] K Spencer, S Sabin, R White, and H Howarth, 'Bonds, Guarantees and Standby Credits: Overview' (Thompson Reuters Practical Law) https://uk.practicallaw.thomsonreuters.com/4-107-3649 accessed 1 August 2024.

While the specific nature of the payment undertaking by the MDB varies across institutions, it is generally understood to be a form of surety.[36] This means that the guarantee is payable upon the beneficiary's first demand, provided there is a complying presentation. It does not require the beneficiary to exhaust its remedies against the obligor under the underlying contract or obligation.[37] This practice is common in international trade and project financing and extends beyond MDBs.[38] The tenor of MDB guarantees is influenced by risk considerations and market conditions, though it usually corresponds to that of the underlying guaranteed obligations or does not exceed the maximum tenor for ordinary capital resources lending operations applicable to the borrower.[39]

Our survey responses indicate a relatively low prevalence of guarantees in supporting MDBs' LC financing operations, with only about 6% of respondents reporting that their institutions frequently use such instruments. This result may reflect a distortion in the sample, as the type of borrower to whom financing is provided could significantly influence the use of guarantees.

Despite the low reported rate of use, guarantees hold significant potential to enhance MDBs' capacity to expand access to financing for strategic projects in domestic markets. By providing guarantees, MDBs leverage their PCS to help eligible borrowers secure financing from third-party lenders, including those in capital markets.

Currently, as discussed in the context of loans and elaborated further in Section 4, MDBs operate under 'perfect hedging' requirements when offering LC guarantees. However, as explored in Chapter 6, guarantees offer unique potential to scale up LC financing through alternative approaches to currency risk management.

While the terms of guarantees vary across MDBs, they can generally be categorised based on the type of risk covered, the structure of the guarantee, their applicability to LC lending, and the type of beneficiaries. The survey responses do not distinguish between these categories, all of which are addressed in the discussion below.

2.2.4. Credit guarantees

Credit guarantees protect lenders from the risk of default on scheduled payments by the borrower. These guarantees enhance the creditworthiness of the borrower, enabling them to obtain financing on more favourable terms by improving credit profiles, extending debt tenors, and lowering spreads. While typically used to cover public sector borrowers' debt obligations to private sector investors,[40] they can also be

[36] See, eg, Asian Infrastructure Investment Bank (n 11) Article 8.1.4(a), which explicitly refers to such an undertaking as not being a surety yet provides a definition that aligns with the common law understanding of a surety, namely, a primary payment obligation.

[37] See, eg, African Development Bank, 'Bank Policy on Guarantees' (African Development Bank Group 2000) 23.

[38] G Wynne, *A Practitioner's Guide to Trade and Commodity Finance* (Sweet & Maxwell 2021) Ch 5.

[39] African Development Bank (n 3) 45; Asian Development Bank, *Financial Report 2023* (Asian Development Bank, March 2024) 87 https://www.adb.org/sites/default/files/institutional-document/959761/adb-financial-report-2023.pdf accessed 21 August 2024.

[40] Asian Development Bank, 'Private Sector Financing: Guarantees' https://www.adb.org/what-we-do/private-sector-financing/guarantees accessed 21 August 2024; Development Bank of Latin America and the Caribbean, 'Partial Guarantees' https://www.caf.com/en/about-caf/what-we-do/products-and-services/partial-guarantees/ accessed 21 August 2024; African Development Bank (n 3) 40-44; World Bank Group, 'Products: Non-Honoring of Financial Obligations' https://www.miga.org/product/non-honoring-financial-obligations accessed 12 August 2024.

extended to private entities such as companies and financial institutions.[41]

Credit guarantees can cover most types of debt, including commercial bank loans, shareholder-guaranteed loans, capital market debt instruments, financial leases, letters of credit, promissory notes, and bills of exchange.[42] The multiplier effect of credit guarantees can be significant, leveraging overall mobilisation of external resources for a project.

In most cases, only a pre-agreed percentage of the underlying debt is covered, facilitating risk-sharing between the MDB and private investors or lenders. The level and scope of coverage are tailored to each transaction's specific needs. For instance, the guarantee might cover principal repayment of a bullet bond issue, rolling coupon payments, or latter part repayments of amortised loans. The amount of coverage depends on the borrower's objectives and market conditions, though MDBs generally aim to provide the minimum necessary to attract private investors.[43] Some institutions, notably the IFC, may offer both partial and full credit guarantees, covering up to 100% of the outstanding principal.[44]

2.2.5. Risk guarantees

Risk guarantees, often referred to as political risk insurance, are key instruments employed by MDBs to mitigate political and sovereign risks in investments in LMICs. These guarantees primarily protect private lenders and investors against a government or government-owned agency's failure to meet obligations towards a private sector project, though they may also cover private parties' obligations. Government obligations may be financial or non-financial in nature, including regulatory approvals crucial to the project's execution.

Risk guarantees differ from credit guarantees in that they do not protect against commercial risks inherent in a project but focus on sovereign and political risks. These guarantees are particularly useful when commercial lenders are willing to assume commercial risks but are unwilling to take on political ones. By covering these specific risks, MDBs foster private sector participation in sectors heavily influenced by government policies, such as infrastructure, energy, telecommunications, and capital markets.

As with credit guarantees, most forms of debt can be covered with risk guarantees, including commercial bank loans, shareholder loans, loans guaranteed by shareholders or third parties, capital market debt instruments, bonds, financial leases, promissory notes, and bills of exchange. Commonly covered risks include non-honouring of contractual obligations, breach of contract, currency inconvertibility and transfer restrictions, political force majeure, and expropriation.

The extent of coverage under a risk guarantee is negotiated based on project-specific risks, the host country's environment, and the level of

[41] African Development Bank (n 3) 43.
[42] Asian Development Bank (n 40); International Finance Corporation, 'Product: Guarantees for Approved Exposures' https://www.ifc.org/en/what-we-do/products-and-services/treasury-client-solutions/guarantees-for-approved-exposures accessed 21 August 2024.
[43] World Bank Group, 'Product Note: World Bank Credit Guarantee' https://pubdocs.worldbank.org/en/948571507314980958/product-note-world-bank-credit-guarantee-2015.pdf accessed 21 August 2024; Asian Development Bank (n 39) 87.
[44] World Bank Group, 'Product: Partial/Full Credit Guarantee for Loans' https://www.miga.org/product/partial-full-credit-guarantee-loans accessed 21 August 2024.

protection required by private investors. Although risk guarantees can cover up to 100% in exceptional cases, MDBs generally aim to provide the minimum necessary to mobilise financing.

MDBs often employ syndication arrangements to extend the reach and impact of their guarantees, mobilising additional capacity through partnerships with insurers and other financial institutions. The Africa Co-Guarantee Platform (CGP), for instance, was launched in 2018 to enhance risk mitigation efforts and increase capital mobilisation for trade and investment in Africa. The CGP aims to centralise trade and investment-related guarantees and insurance, streamline application processes, and improve risk mitigation instruments to attract private investment more effectively.

2.2.6. Use of guarantees in local currency financing

MDB guarantees in LC financing usually take the form of LC guarantees or risk-sharing facilities. LC guarantees can be issued in any of the MDB's lending currencies, including designated local currencies,[45] and may be provided on concessional or non-concessional terms.[46] If a guarantee is called, the MDB may raise LC from the market or convert hard currency to fulfil its obligations. To support this, MDBs may establish medium-term note (MTN) programmes, standby LC lines, commercial paper programmes, and other funding options. They may also borrow directly from local commercial banks.[47] Should the MDB be unable to procure LC, it may convert hard currency into LC and record the transaction in its equity book.[48]

Risk-sharing facilities, on the other hand, are employed in credit guarantee transactions to address the challenges posed by the MDB's back-to-back funding requirements for LC transactions, which are further discussed in Section 5.[49] In these transactions, a local lender, typically a bank, extends the loan and partially assumes the risk on its balance sheet, benefiting from an irrevocable, first-demand guarantee for the MDB's share.[50] Risk-sharing credit guarantees can be applied to any project or line of credit where a lender provides full LC funding to the borrower.[51] This approach is particularly useful when a local lender has a funding advantage in LC but is constrained in its capacity to manage the credit exposure of the borrower, allowing MDBs to provide LC loans at competitive rates.

For instance, the ADB's Microfinance Risk Participation and Guarantee Programme (MFP) collaborates with lenders to enhance microfinance institutions to enhance their access to LC funding, addressing the financial needs of those at the base of the economic pyramid.[52] The MFP shares the default risk—up to 50%—on wholesale loans to microfinance institutions provided by its Partner Financial Institutions (PFIs), including commercial banks and others. The programme aims to encourage new funding

[45] See, eg, Article 5.15.1 of the African Development Bank's *Revised Bank Group Policy on Guarantees* (Revised Version, July 2020) https://www.afdb.org/en/documents/revised-bank-group-policy-guarantees accessed 21 August 2024.
[46] World Bank Group (n 43).
[47] African Development Bank (n 45) I.
[48] ibid 17.
[49] World Bank Group, 'Product: Risk-Sharing Facility' <https://www.miga.org/product/risk-sharing-facility> accessed 21 August 2024.
[50] African Development Bank (n 45) Article 5.15.1.
[51] ibid.
[52] Asian Development Bank (n 1).

towards financial inclusion initiatives, including loans to SMEs in the informal sector, micro-housing, and related activities.

Another example of a risk-sharing facility used to promote LC financing is the IFC's Synthetic Risk Transfer (SRT).[53] This is a partial guarantee on credit losses extended by the IFC to commercial banks, allowing them to use the freed regulatory capital for increased lending to local borrowers. Unlike traditional securitisation, where assets are sold to a special purpose vehicle (SPV), SRTs keep assets on the bank's balance sheet, with third-party investors, such as the IFC, assuming some of the risk.

In terms of eligibility, risk-sharing credit guarantees are accessible to a wide range of lenders, including commercial banks, develop-'ment finance institutions (DFIs), other MDBs, and ECAs.[54] Eligible lenders must comply with the MDB's due diligence processes, including know-your-customer (KYC) and environmental and asset-liability management (ALM) policies.[55]

2.2.7. Equity

Equity investments, also referred to as equity interests, represent a form of investment in an entity, such as capital stock, partnership interests, or limited liability company interests. These investments entitle the investor to a share of the entity's profits and enterprise value, following the satisfaction of creditors' claims.[56] In the context of MDBs, equity investments are a prominent type of non-sovereign-guaranteed financing.[57] Since equity investments are typically made in the currency in which the investee company's shares are denominated—often the LC—they hold particular importance within the LC financing landscape of MDBs.[58] According to the survey responses, 22% of respondents reported that their institutions frequently make equity investments, while only 11% stated that they never do so.

MDBs engage in equity investments to fulfil several strategic objectives, such as supporting key sectors like SMEs, infrastructure, and clean energy, thereby stimulating growth, job creation, and competitiveness.[59] Additionally, equity investments enable MDBs to pursue their dual mandate of development impact and financial returns, allowing for reinvestment in future initiatives.[60] By holding equity positions, MDBs can influence corporate governance, provide technical expertise, and ensure alignment with broader development goals, often securing

[53] See, eg, International Finance Corporation, 'IFC and BNP Paribas Launch Landmark SRT Transaction to Support Trade Finance in Emerging Markets' https://www.ifc.org/en/pressroom/2023/ifc-bnp-paribas-launch-landmark-srt-transaction-to-support-trade-finance-in-emerging-markets accessed 26 July 2024; Multilateral Investment Guarantee Agency, 'Significant Risk Transfer' https://www.miga.org/product/significant-risk-transfer accessed 26 July 2024.

[54] See, eg, African Development Bank (n 45) Article 5.15.3.

[55] ibid.

[56] Thompson Reuters Practical Law, 'Glossary: Equity' <https://uk.practicallaw.thomsonreuters.com/5-382-3436> accessed 21 August 2024.

[57] Asian Infrastructure Investment Bank (n 11) Article 3.1.

[58] Asian Infrastructure Investment Bank (n 11) Article 4.7.2.

[59] Office of Evaluation and Oversight, *Comparative Study of Equity Investing in Development Finance Institutions* (Inter-American Development Bank, March 2017) 13-14 https://publications.iadb.org/en/publications/english/viewer/Comparative-Study-of-Equity-Investing-in-Development-Finance-Institutions.pdf accessed 21 August 2024.

[60] International Finance Corporation, 'Equity Investments' https://www.ifc.org/en/what-we-do/products-and-services/equity-investments accessed 21 August 2024.

board representation or facilitating strategic decisions.[61]

MDBs use both direct and indirect channels for equity investments. Direct investments involve direct stakes in companies, such as ordinary shares, preference shares, or loans convertible into equity, and are used when MDBs seek close monitoring and influence over company operations.[62] Indirect investments, made through financial intermediaries like private equity funds, allow MDBs to diversify their investments and leverage fund managers' expertise while still influencing strategic direction in line with development objectives.[63]

To manage risk and ensure alignment with strategic goals, MDBs set specific limits on their equity investments. For instance, the ADB caps its equity investments at 10% of the aggregate amount of its unimpaired paid-in capital stock, along with reserves and surplus included in its ordinary capital resources.[64] Additionally, it stipulates that the amount of any equity investment shall not exceed a certain percentage of the entity's equity capital, as determined by the Board of Directors.[65] The ADB also mandates that it shall not seek a controlling interest in the entity unless necessary to safeguard its investment.[66]

Similarly, the AIIB limits its equity investments to 30% of a company's ownership, except in exceptional circumstances,[67] to maintain diversification in its investments.[68] The AfDB mandates that its equity investment shall not exceed the lesser of 25% of the investee's total share capital or a lower percentage representing a non-controlling interest.[69] These provisions are designed to prevent situations where the MDB might need to directly manage the entity, imposing restrictions on assuming a controlling interest unless required to safeguard its own investment.[70]

MDBs engage in equity investments only when there is a clear prospect of financial returns.[71] Each investment is expected to achieve a return that reflects its risks, typically benchmarked against the interest rate the MDB would charge for a comparable loan, with an added risk premium.[72] For instance, the AIIB's expected returns on investments generally range from 8% to 20%, depending on the type of investment.[73] Although MDBs usually invest with a medium-term perspective, they may retain investments for the long term in exceptional cases. To manage these investments effectively, MDBs incorporate exit strategies in their agreements, aiming to exit when a reasonable price can be achieved and their developmental role is deemed

[61] Asian Infrastructure Investment Bank (n 11) Article 4.9.4.
[62] Office of Evaluation and Oversight (n 59) 14.
[63] ibid 15.
[64] Asian Development Bank, 'Articles of Agreement' (ADB Charter) Article 12 s(3).
[65] ibid, Article 12 s(4).
[66] ibid.
[67] Asian Infrastructure Investment Bank, 'Articles of Agreement' Article 14 s(3); Asian Infrastructure Investment Bank (n 11) Article 4.9.2.
[68] Asian Infrastructure Investment Bank (n 11) Article 3.1.3(j).
[69] African Development Bank (n 3) 38.
[70] Asian Infrastructure Investment Bank (n 11) Articles 3.1.3(k) and 4.9.2.
[71] African Development Bank (n 3) 39.
[72] ibid.
[73] Asian Infrastructure Investment Bank (n 11) Article 4.9.3.

complete.[74] Valuations at exit are based on audited accounts, market practices, and relevant data, considering ongoing risks and market maturity. Achieving a minimum return is not a prerequisite for exit—in some instances, MDBs may choose to exit to minimise anticipated losses if the investment is assessed as non-performing.[75]

In sum, this section has outlined the main ways MDBs provide LC financing. The survey results have given us some insight into the relative importance of these instruments. However, we know very little about the relative share of LC versus FC financing, the different sectors these funds are directed to, and the terms at which they are provided. A comprehensive assessment of LC financing across all MDBs remains challenging due to the lack of an integrated database encompassing the variety of financing arrangements discussed in Section 2. The next section attempts to bridge this information gap by combining evidence from syndicated loan data—a quantifiable subset of MDB lending activities—with our survey responses to provide a comprehensive overview of the LC financing landscape by MDBs today.

3. Representation of local currency financing in MDB portfolios

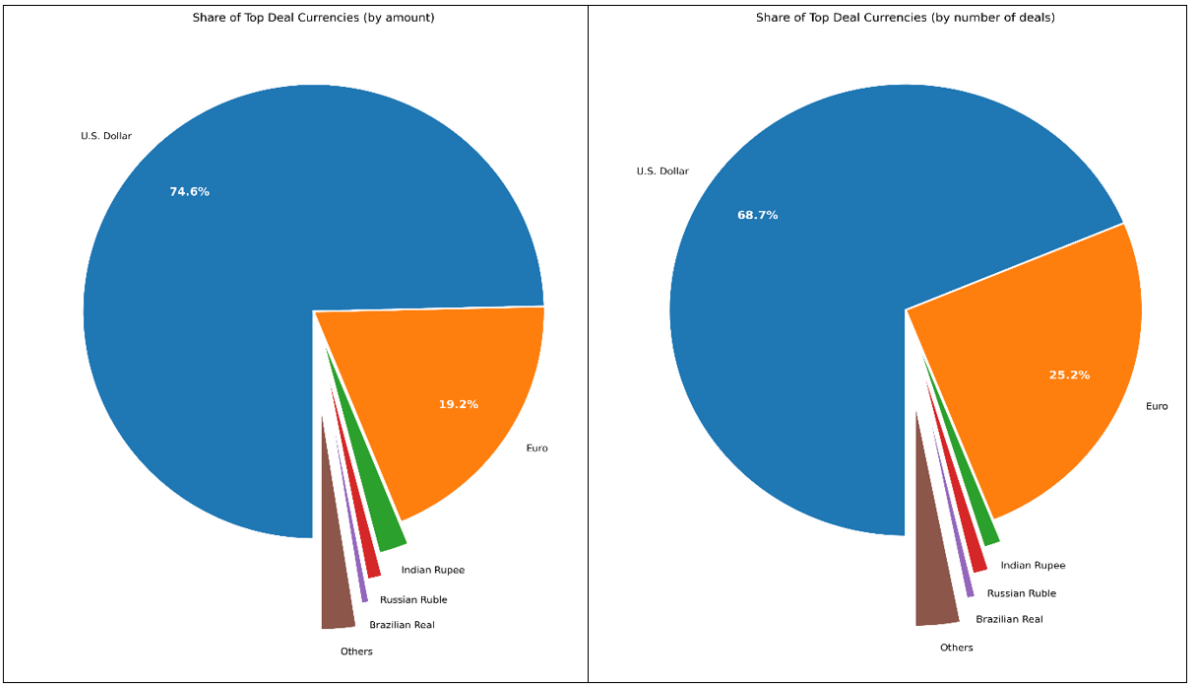
3.1. Evidence from the syndicated loan market

We obtained syndicated loan data from the WRDS-Reuters DealScan Database. This dataset covers 1,354 loans made by the 23 institutions in our sample that have offered loans on a syndicated basis, totalling USD 556 million, and includes loans issued to entities in LMICs between April 2000 and June 2023 (Table 1.2). While this represents only a subset of total loans—around 27% of total assets—since it only includes loans issued in the syndicated loan market, it nonetheless provides a useful disaggregated picture of these loans.

We begin by examining the currency composition of these loans. As shown in Figure 2.3 , loans in currencies other than the US dollar or euro account for just under 6%, whether measured by the total amount or the number of loans. This figure aligns with Kapoor and others' finding that development finance institution (DFI) loans in hard currency—primarily the US dollar—account for 80-90% of the total.[76]

[74] See, eg, Asian Infrastructure Investment Bank (n 11) Articles 4.9.6 and 4.10.
[75] African Development Bank (n 3) 39; Asian Infrastructure Investment Bank (n 11) Article 4.1.
[76] S Kapoor, H Hirschhofer, D Kapoor, and N Klieterp, 'A Multilateral Solution to Hedging Currency Risk in Developing Country Finance' (Nordic Institute for Finance, Technology and Sustainability, 2021).

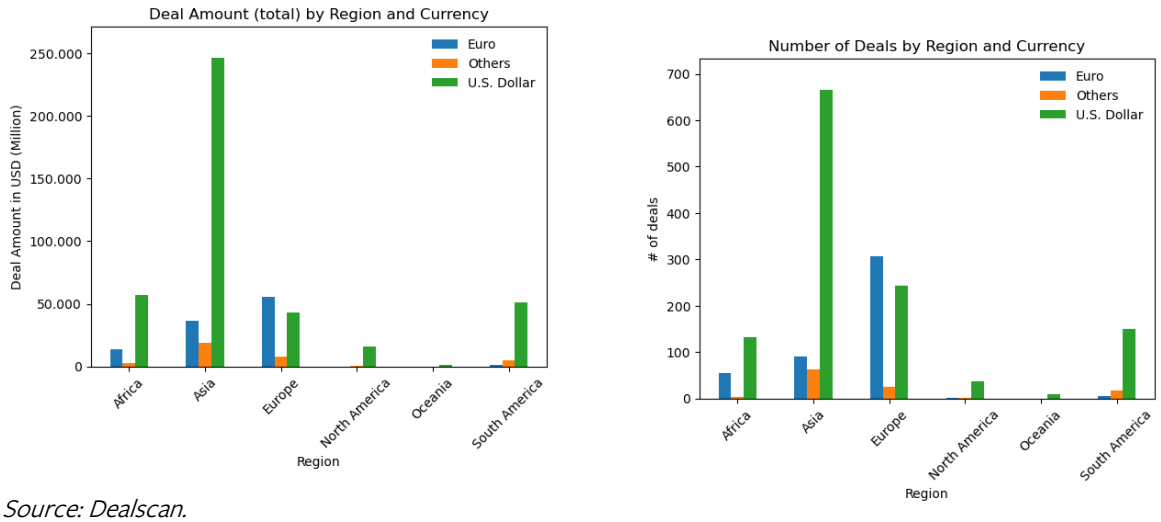
Figure 2.3 Currency denomination of MDB loans



Source: Dealscan.

Figure 2.4 shows the distribution of MDB loans by region. The euro, unsurprisingly, holds a significant share in Europe and Asia, while loans in other currencies—predominantly LC—are more common in Europe and Asia compared to Africa and the Americas. Additionally, Europe has a larger number of deals, but smaller loan amounts compared to other regions, indicating a higher proportion of smaller loans in Europe.

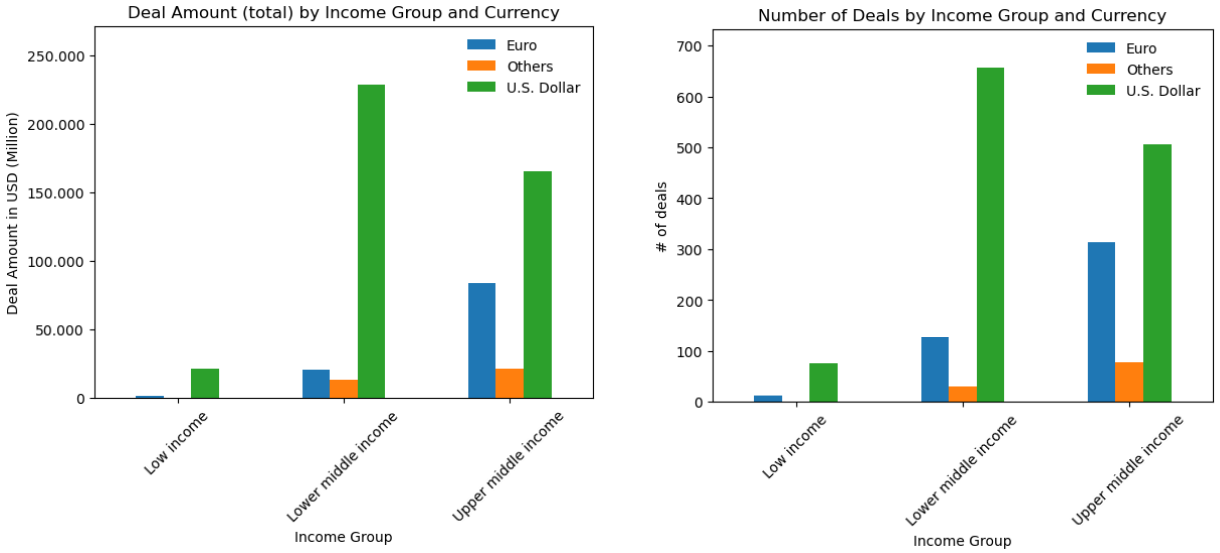
Figure 2.4 MDB loans by currency and region



Source: Dealscan.

Figure 2.5 illustrates the currency breakdown by income group. LICs receive fewer and smaller loans, all in hard currency. Lower-middle-income countries receive some LC loans, though the amounts remain modest. Only in upper-middle-income countries do LC loans become slightly more prevalent.

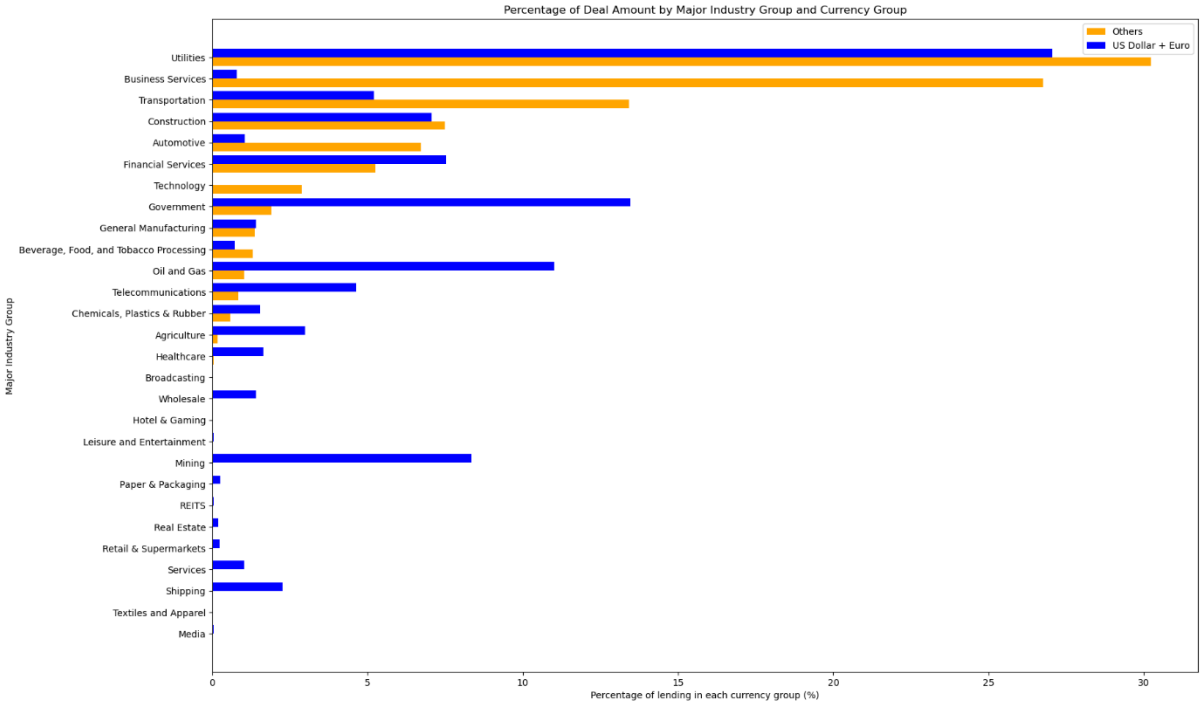
Figure 2.5 MDB loans by currency and income group



Source: Dealscan.

LC loans tend to focus on a narrower range of industries compared to hard currency loans. As shown in Figure 2.6, the top four sectors are utilities, business services, transportation, and construction. Except for the automotive sector, these industries are generally oriented towards domestic markets and generate LC revenue. While utilities are also significant recipients of hard currency loans, the other top sectors that receive hard currency loans—such as oil and gas, and mining—receive very little LC lending and either focus on export sectors or have access to other sources of LC financing, such as government funding or financial services.

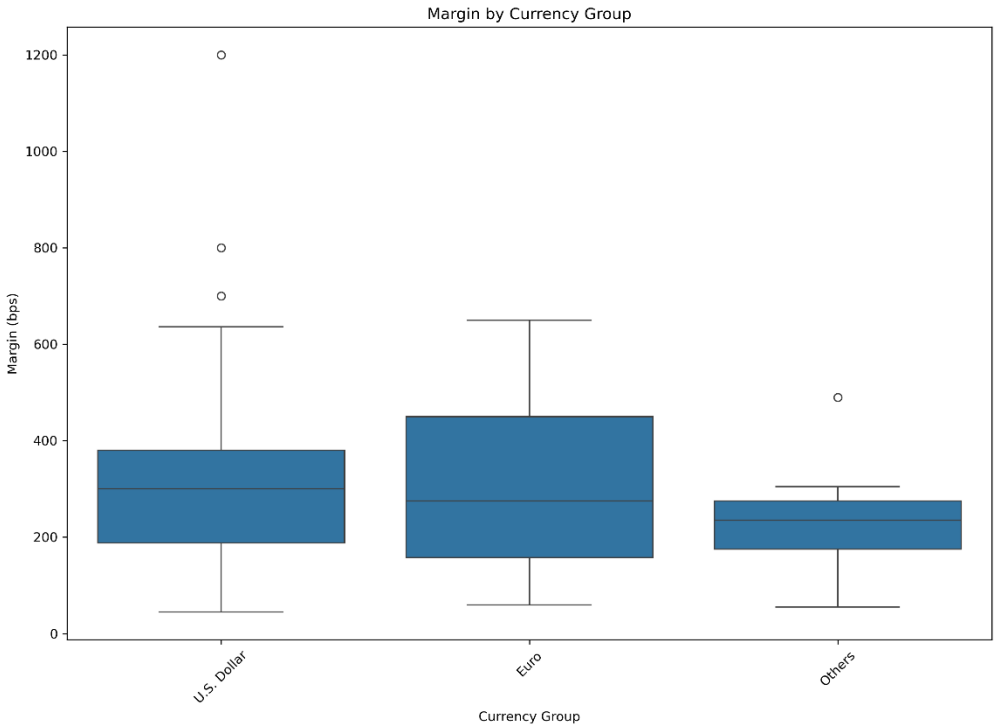
Figure 2.6 Local currency loans by industry



Source: Dealscan

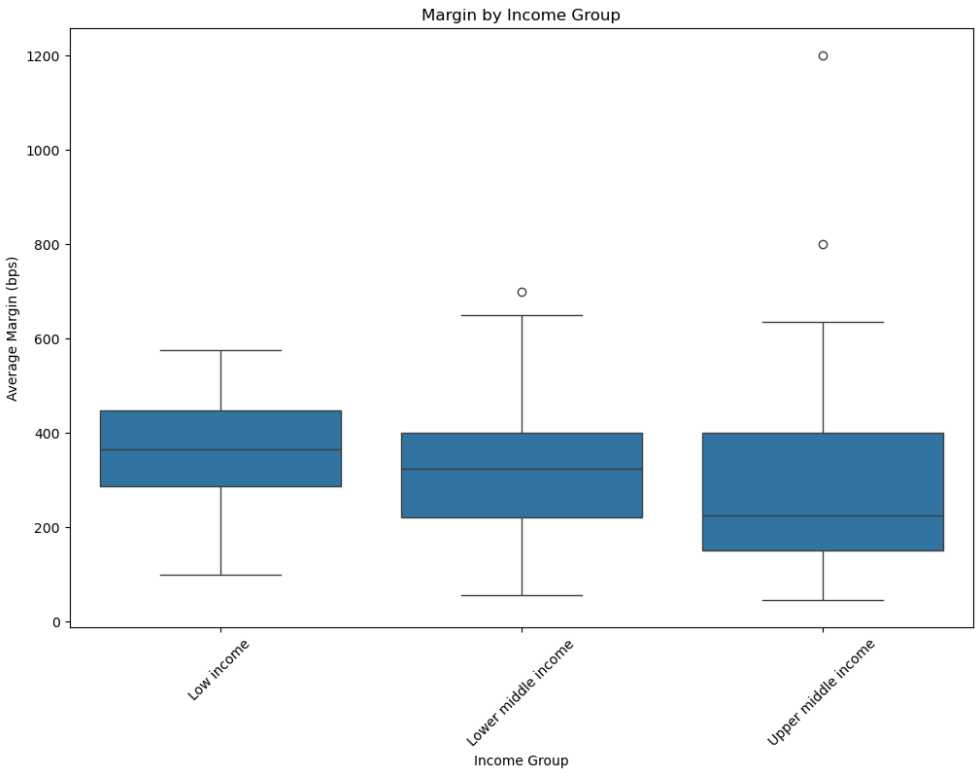
Interestingly, as shown in Figure 2.7, LC loans—except those in Chinese renminbi—tend to have lower margins than euro or US dollar loans. Margins, which reflect the extra interest rate charged by banks to compensate for the lending risk, indicate that the risk premium on LC borrowers is generally lower than that on hard currency loans. This could signal lower perceived credit risk on LC debt or the higher concentration of LC loans in middle-income countries, where margins are typically lower (Figure 2.8). Importantly, as discussed in section 6, the interest rate on LC loans is still likely to be higher, but this is because the benchmark for those loans is more likely to be a local or fixed-rate benchmark rather than LIBOR, not due to higher margin levels (Figure 2.9).

Figure 2.7 Interest rate margins by currency



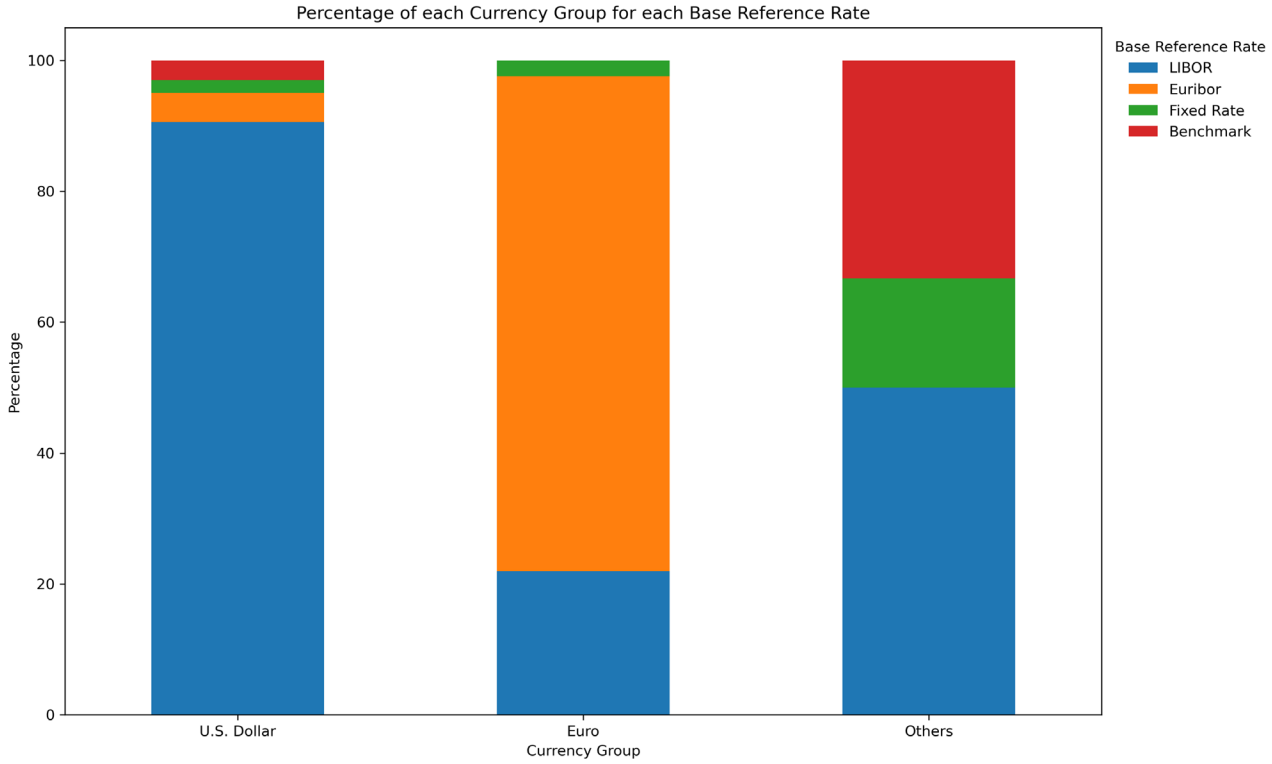
Source: Dealscan.

Figure 2.8 Interest rate margin by income group



Source: Dealscan.

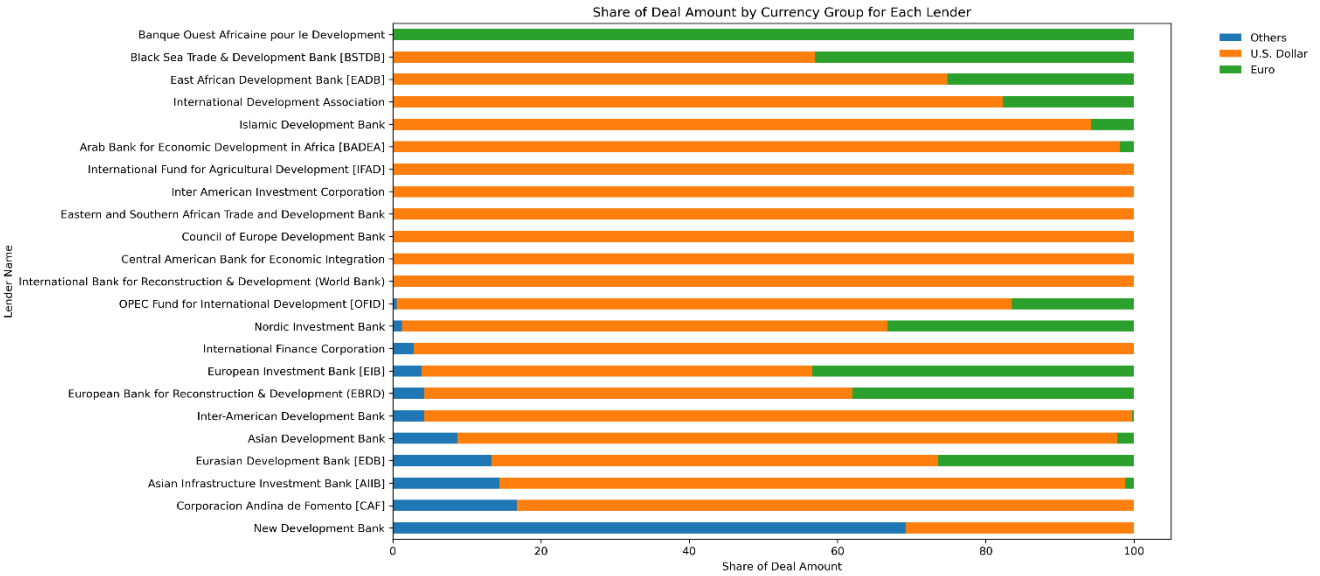
Figure 2.9 Base reference rate by currency



Source: Dealscan.

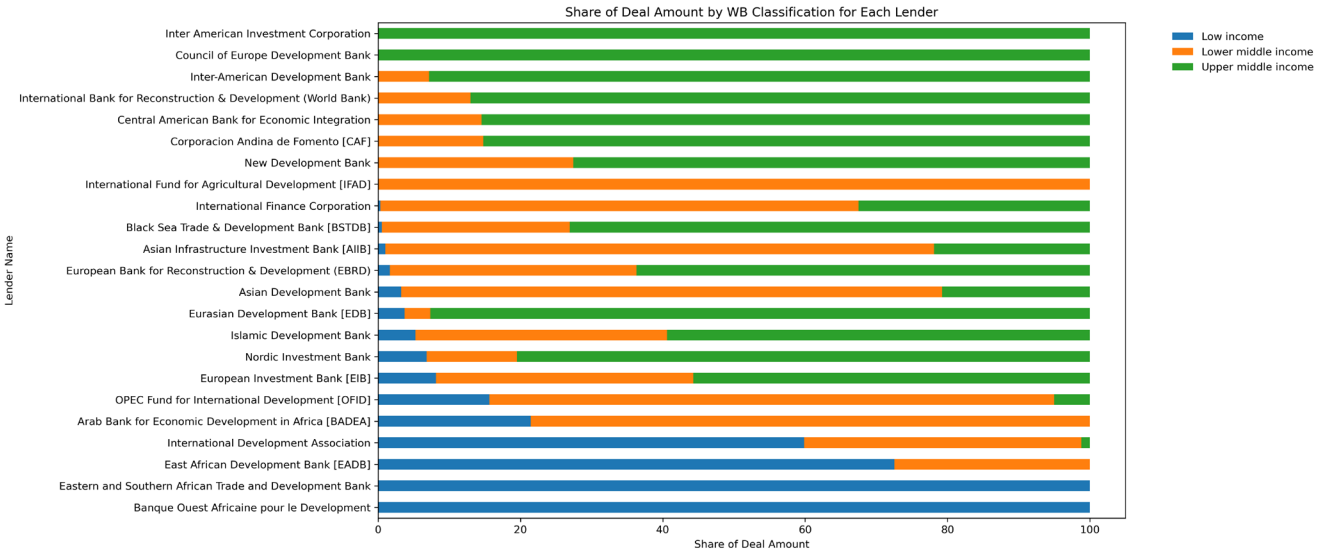
Regarding the issuing institutions, Figure 2.10 shows that loans in currencies other than US dollars or euros are concentrated among a small number of MDBs. Only half of the institutions in our sample have any loans in other currencies, and only a small group provide such loans in significant amounts. Relative to their syndicated loan issuance, only four institutions (CAF, AIIB, EDB, and NDB) have LC loans exceeding 10%, with the NDB being a noticeable outlier, as nearly two-thirds of its issuance is denominated in LC. These institutions primarily focus on upper-middle-income countries, except for AIIB, where lower-middle-income countries account for almost 80%. In terms of amounts, only eight MDBs have syndicated loans exceeding USD 1 billion in other currencies, and the top three institutions (ADB, AIIB, and EBRD) account for over 60% of the total (Figure 2.11).

Figure 2.10 Loans by different MDBs, currency shares



Source: Dealscan.

Figure 2.11 Loans by different MDBs, income group shares



Source: Dealscan.

Table 2.2 Loans by institutions and currency in US dollars

Lender	US Dollar	Euro	Others	Total
Arab Bank for Economic Development in Africa (BADEA)	5,694	111.35	0	**5,805**
Asian Development Bank	103,842	2,645	10,219	**116,706**
Asian Infrastructure Investment Bank [AIIB]	35,528	507.82	6,048	**42,084**
Banque Ouest Africaine pour le Development	0	217.21	0	**217**
Black Sea Trade & Development Bank [BSTDB]	10,200	7,724	0	**17,923**
Central American Bank for Economic Integration	2,478	0	0	**2,478**
Corporacion Andina de Fomento [CAF]	12,878	0	2,593	**15,471**
Council of Europe Development Bank	140	0	0	**140**
East African Development Bank [EADB]	1,965	661.49	0	**2,626**
Eastern and Southern African Trade and Development Bank	600	0	0	**600**
Eurasian Development Bank [EDB]	5,290	2,315	1,168	**8,773**
European Bank for Reconstruction & Development (EBRD)	88,093	58,012	6,447	**152,552**
European Investment Bank [EIB]	27,837	22,920	2,048	**52,805**
Inter American Investment Corporation	1,647	0	0	**1,647**
Inter-American Development Bank	30,389	82.5	1,345	**31,817**
International Bank for Reconstruction & Development (World Bank)	3,971	0	5.9	**3,977**
International Development Association	2,040	440.62	0	**2,481**
International Finance Corporation	30,971	0	897.49	**31,869**
International Fund for Agricultural Development [IFAD]	963	0	0	**963**
Islamic Development Bank	15,863	982.17	0	**16,845**
New Development Bank	1438.67	0	3236.28	**4,675**
Nordic Investment Bank	11,175	5,687	214.67	**17,076**
OPEC Fund for International Development [OFID]	22,303	4,433	147.58	**26,884**
Total	**415,307**	**106,738**	**34,370**	**602,022**

Source: Dealscan.

In sum, MDB syndicated loan data suggest that lending in currencies other than hard currency remains limited, with most lending occurring overwhelmingly in hard currency. Other-currency loans are primarily concentrated in upper-middle-income countries, mainly in Europe, Asia, and, to a lesser extent, Latin America. Lending margins are generally lower,

but they are based on higher benchmark rates. The bulk of these loans originate from a small group of institutions, indicating that a closer examination of their operations could provide valuable insights into scaling up LC lending.

3.2. Evidence from survey responses

While syndicated loan data provide a clear picture of LC financing by MDBs, they only cover a subset of MDBs' total activities. We therefore complement this secondary data with our primary survey data.

Table 2.3 shows the average amount of LC financing according to our survey respondents. There is a wide range of responses, but on average, the share of LC financing (15%) tends to be higher than what the syndicated loan markets indicate, with some respondents reporting up to 30% of their organisation's financing in LC. Despite potential sample self-selection bias, this suggests that more LC financing occurs outside the syndicated loan market or through instruments such as equity, guarantees, and other forms discussed in Section 2.

Table 2.3 Proportion of local currency financing

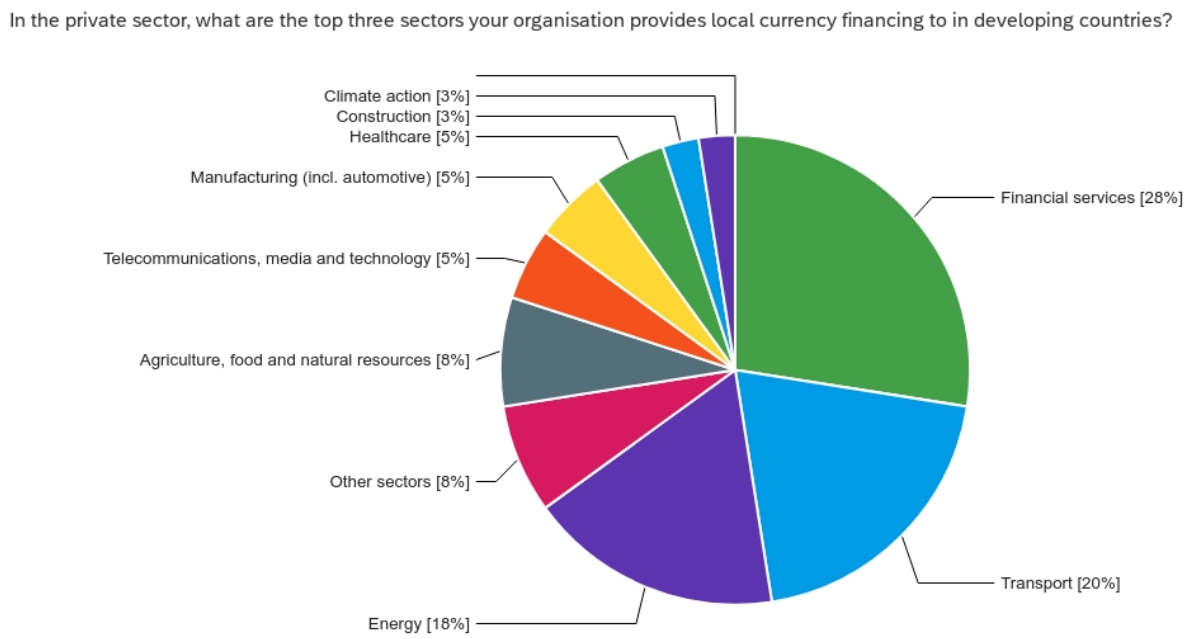
Field	Min	Max	Mean	Median	Responses
Percentage of financing in local currency	2.00	30.00	14.25	11.00	16
Percentage of local currency financing to public-sector borrowers	0.00	100.00	32.92	27.00	13
Percentage of local currency financing made on concessional terms	0.00	40.00	6.20	3.00	10

Source: Authors' survey responses.

Table 2.3 further indicates that most LC financing tends to go to private-sector borrowers, which aligns with the pricing of LC loans, as we will explore later in this chapter. The high proportion of LC lending to the private sector also explains the relatively low share of concessional lending denominated in LC.

Regarding the key recipient sectors, there is significant overlap with the syndicated loan data. Transportation and utilities (energy, telecommunications) rank among the top three sectors, according to our respondents. Financial services, which ranked sixth in the syndicated loan market, are also important recipients of LC financing. Construction and automotive sectors do not appear as prominently in the survey, which may indicate that syndicated lending is prioritised for these industries.

Figure 2.12 Top local currency recipient sectors, according to respondents



Source: Authors' survey responses. Excludes don't know/prefer not to say.

Finally, in terms of the lending terms for LC (interest rates, maturity, collateral requirements, and deal size), the survey indicates that these terms are either similar to or less favourable than those for FC loans (Table 2.4). Forty percent of our respondents noted that interest rates on LC loans are generally higher, while another 40% indicated that they are similar. This finding is not inconsistent with the margin figures discussed earlier. As mentioned in Section 4, LC financing may have higher interest rates due to the cost of hedging, which is factored into the final financing costs. Additionally, a significant minority of respondents indicated that LC loans tend to have shorter maturities (22%) and smaller sizes (33%) compared to FC loans. Collateral requirements were generally the same or lower. Lastly, while average deal sizes are reportedly similar, a significant minority of respondents noted smaller deal sizes, a detail not revealed in the syndicated loan market data.

Table 2.4 Characteristics of local currency financing

Interest rate	Higher: 45%	Similar: 35%	Lower: 10%
Maturity	Shorter: 25%	Similar: 55%	Longer: 5%
Collateral requirements	Higher: 5%	Similar: 65%	Lower: 5%
Average deal size	Smaller: 35%	Similar: 50%	Larger: 5%

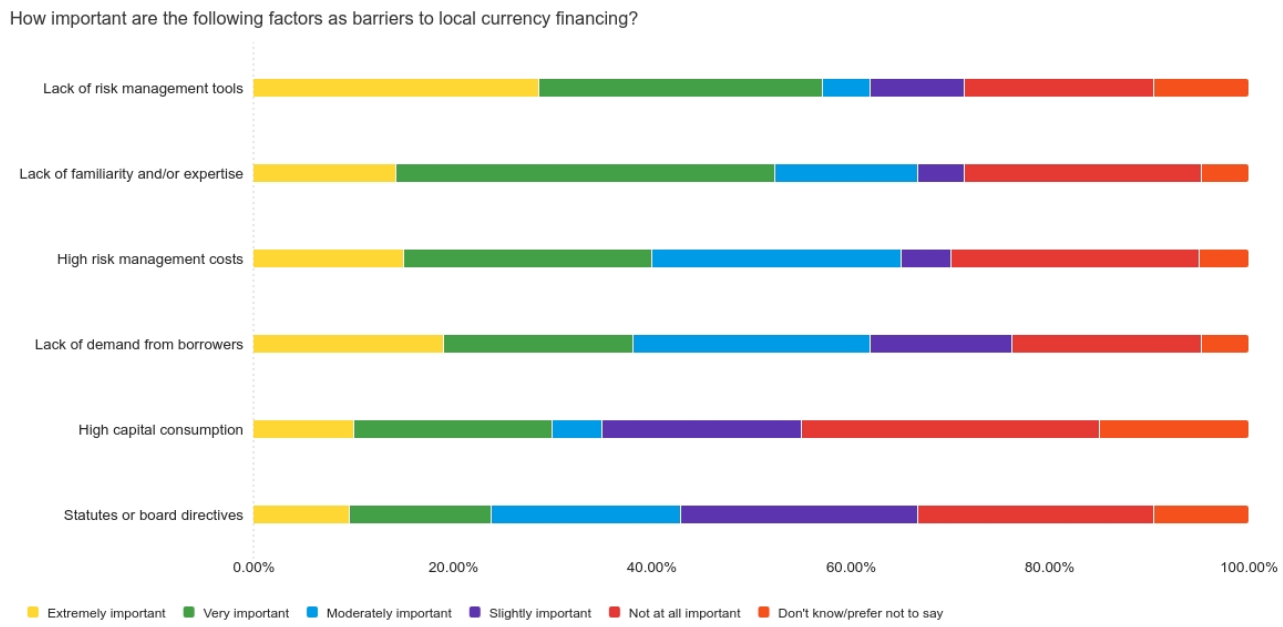
Source: Authors' survey responses. Excludes don't knows/prefer not to say.

Overall, the survey results broadly confirm the picture described in the previous subsection: MDBs are active in LC financing, likely more so than indicated by syndicated loan market data, with a focus on the private, non-tradable sector. The financial terms of LC lending are generally similar to or less favourable than those for hard currency financing. LC financing is largely a comparative option for smaller, specific private-sector deals. This reflects the different types of borrowers involved, as well as the barriers and risks associated with LC financing, which hinder its further development.

4. Barriers to local currency financing

The small proportion of LC financing indicates the presence of barriers that prevent its expansion. This section explores those barriers. Several key barriers were identified by our respondents (Figure 2.13).

Figure 2.13 Barriers to local currency financing



Source: Authors' survey responses.

According to our survey responses, the lack of risk management tools is the most critical factor, with over half of the respondents indicating it as extremely or very important, and a further 40% citing high risk management costs. These responses highlight the centrality of risk and risk management as the key barriers to expanding LC financing. Additionally, around 40% of respondents identified a lack of borrower demand as a significant barrier. This, too, may be related to the high cost of providing LC loans, as the pricing of such loans often reflects the elevated costs of managing risks, which can make them less attractive to potential borrowers (as further discussed in Section 4.2.2).

About half of the respondents also identified a lack of familiarity and expertise as a significant barrier. These responses reveal the difficulties MDBs face in providing financing in currencies for which financial markets are underdeveloped, or where there is insufficient expertise. In some countries, for example, the lack of domestic financial development constrains MDBs' ability to price LC loans. Existing statutes or board directives were only an extremely or very important barrier in 20% of our respondents (for a more detailed discussion of these potential legal and/or institutional barriers, see Chapter 3).

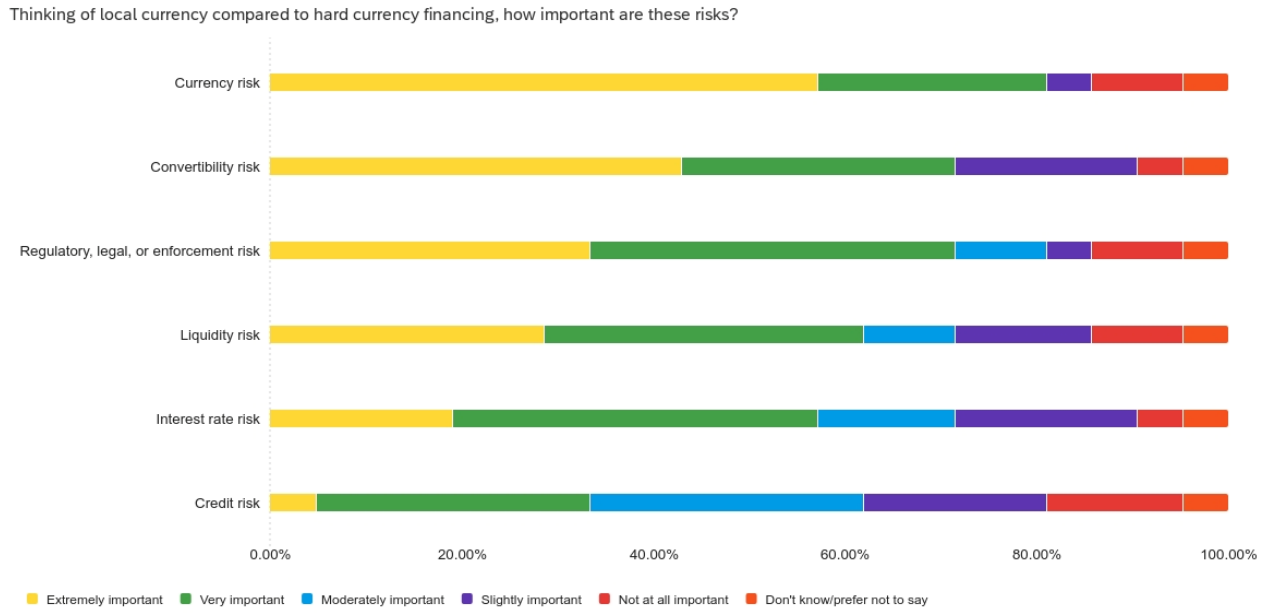
4.1. The role of currency risk

The significance of risk as a key barrier was confirmed when respondents were asked to assess the importance of various risk categories in the context of LC financing (see Table 2.5 for a brief summary of the different risk categories).

Table 2.5 Risks of local currency lending

Type of risk	Description
Currency risk	The risk of local currency depreciation when there is a mismatch between assets and liabilities, and cash inflows and outflows
Convertibility risk	The risk of converting local currency receipts into foreign currency (e.g. due to lack of counterparties or foreign exchange restrictions)
Credit risk	The default risk of local currency borrowers
Interest rate risk	The risk originating from local currency interest rate volatility, which can negatively impact the assets
Liquidity risk	The risk of being unable to service liabilities due to a mismatch between assets and liabilities
Regulatory, legal or enforcement risk	The risk originating from differences in domestic regulations, laws, and enforcement

Figure 2.14 Risks of local currency lending



Source: Authors' survey respondents.

Unsurprisingly, currency risk was regarded as the most critical risk of LC financing by MDBs, with over 80% of respondents considering it very or extremely important. MDBs' liabilities are largely denominated in high-income country currencies, primarily US dollars and euros. As a result, by providing LC financing, MDBs potentially expose themselves to a currency mismatch between LC assets and FC liabilities. A depreciation of the LC, for example, could result in a reduction in asset value when measured in FC, leading to a decline in the MDB's capital. This balance sheet structure makes MDBs highly sensitive to exchange rate changes.

The second and third most important risk categories for MDBs in the context of LC lending are convertibility risk and regulatory, legal, or enforcement risk, with around 70% of respondents considering them extremely or very important. These risks stem from underdeveloped financial markets and the broader macro-financial and regulatory context.

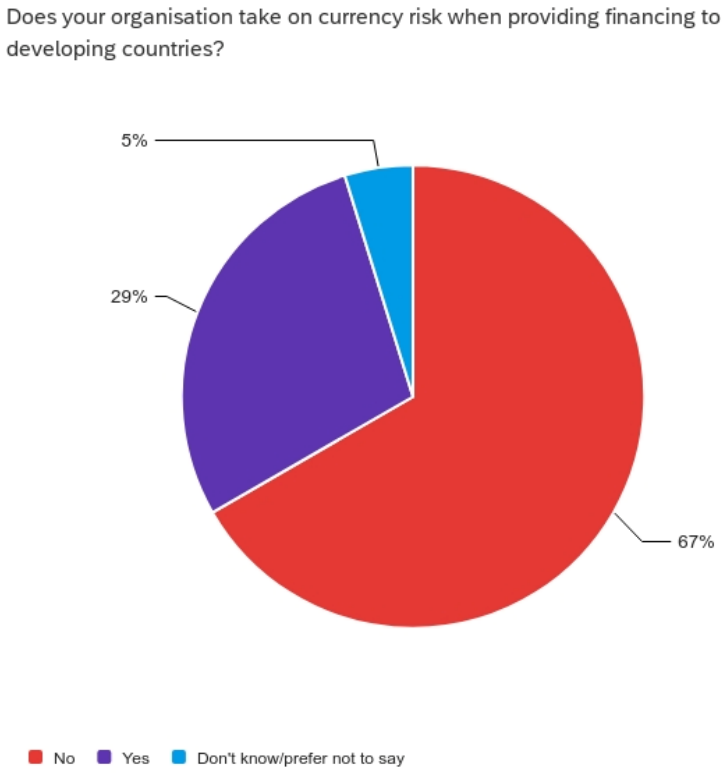
Interestingly, while liquidity risk—the risk of being unable to service liabilities as they come due—is important, it is considered somewhat less critical by MDBs. In LC operations, liquidity risk can arise from mismatches between short-term liabilities and long-term assets. Of similar importance is interest rate risk, where fluctuations in local interest rates can negatively impact asset values, potentially generating losses for MDBs.

Interestingly, respondents found credit risk—the risk of borrower default—less important in LC lending compared to FC lending. As discussed in more detail in Chapter 5, this may reflect the fact that LC financing generally carries lower risk for borrowers, as it eliminates the currency mismatch that would otherwise affect borrowers' balance sheets, reducing the likelihood of default. This is especially true for sovereign borrowers, who have more direct control over their currency. It may also be related to the fact that MDBs are partially protected

from credit risk through their preferred creditor status, which gives them priority for repayment in the event of a default.

The fact that currency risk is the most significant risk in LC lending is unsurprising. More critically, however, only a limited number of MDBs assume any currency risk, except in equity investments. In other words, even if MDBs extend LC loans, they do not take on the potential risks associated with adverse exchange rate movements. Instead, MDBs hedge all the currency risk arising from their LC loans, which explains why the high cost of risk management tools is a major barrier to extending LC loans.

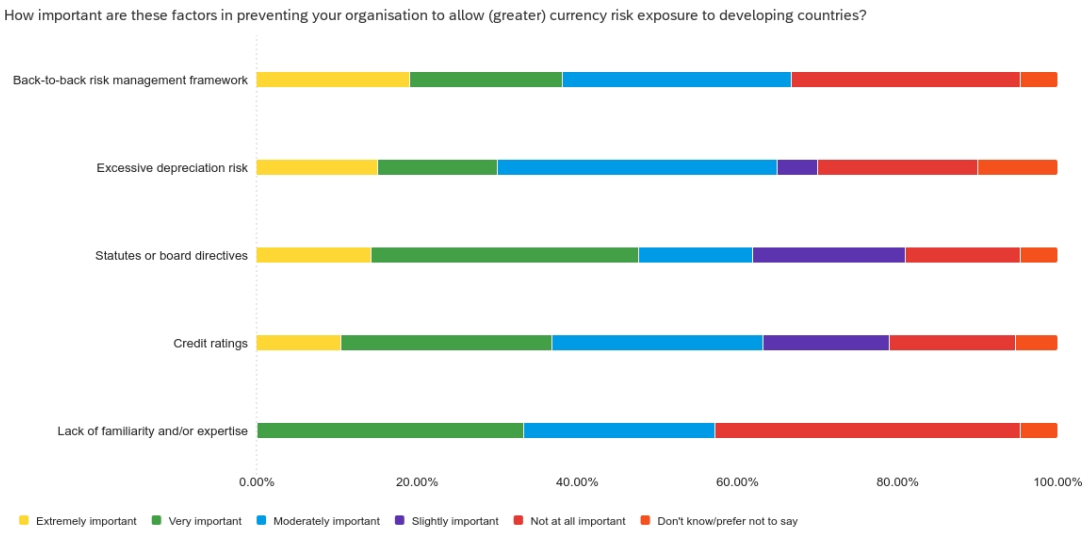
Figure 2.15 Limited exposure to currency risk



Source: Authors' survey respondents.

The lack of exposure to currency risk has several causes (Figure 2.16). Several respondents indicated that internal institutional frameworks play a key role. Currency risk exposure may be restricted by MDBs' own statutes or back-to-back risk management frameworks. As Interviewee 1 noted: 'The exposure is zero by a risk management framework. We cannot take on any exposure to LC'. The role of internal rules in limiting currency exposure will be explored further in Chapter 3, as these rules reflect deeper conceptions of the MDBs' role, which generally does not include taking open currency positions. As Interviewee 12 said, 'I don't want our treasury to be currency traders'. The volatility of LMIC currencies, which are subject to significant annual depreciations, is also a key factor, as noted by Interviewee 15. As a result, MDBs generally do not take currency risk and lack the familiarity or expertise to manage it effectively.

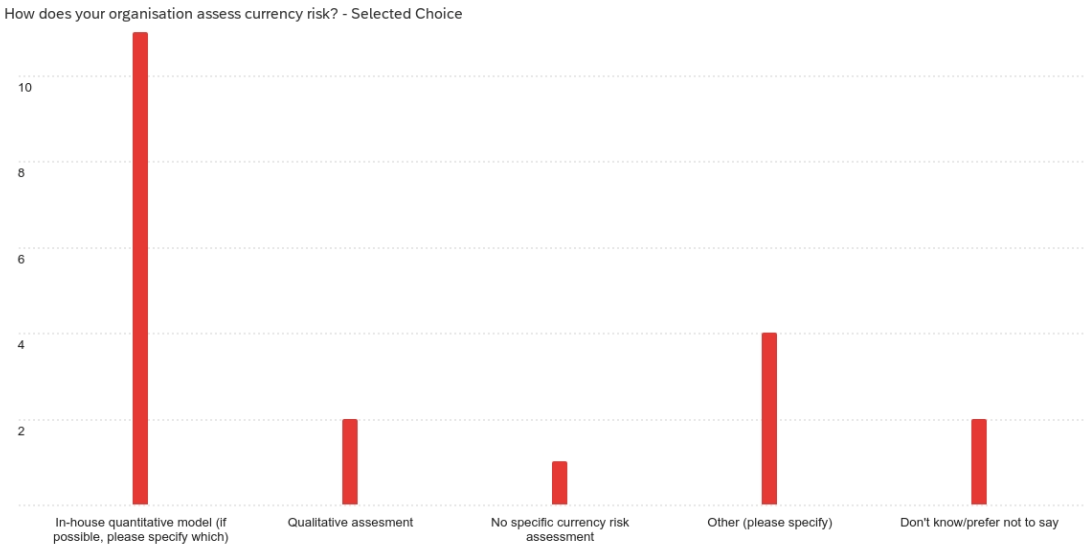
Figure 2.16 Barriers to currency risk exposure



Source: Authors' survey respondents.

Despite limited exposure to currency risk, the majority of respondents indicated that their organisations explicitly evaluate currency risk (see Figure 2.17). Over 50% of respondents stated that their organisations use some form of quantitative model for this purpose. Other organisations use qualitative methods, or rely on FX swap markets, as revealed by the "other" category, to evaluate and hedge currency risk. This suggests that there is available expertise and experience that could enable MDBs to take a more active role in exchange rate modelling and pricing currency risk.

Figure 2.17 Currency risk calculation



Source: Authors' survey respondents.

4.2. Currency risk mitigation

As discussed in the previous section, given that MDBs cannot or do not want to take on any currency risk, the lack of risk management tools and their high cost are key barriers to expanding LC lending. While there are various ways to mitigate this risk, MDBs primarily adopt two strategies: borrowing in LC and utilising foreign exchange derivatives. This section examines these two approaches using our survey results, highlighting both the primary methods and their associated limitations.

In general, derivatives are used more frequently than LC borrowing. Compared to LC borrowing, FX derivatives offer significant flexibility with limited risk for MDBs. Swaps, for example, can be tailored to specific maturities and payment schedules, whereas bonds tend to have a more standardised structure. Swaps are also preferred due to their greater liquidity (Interviewee 1).

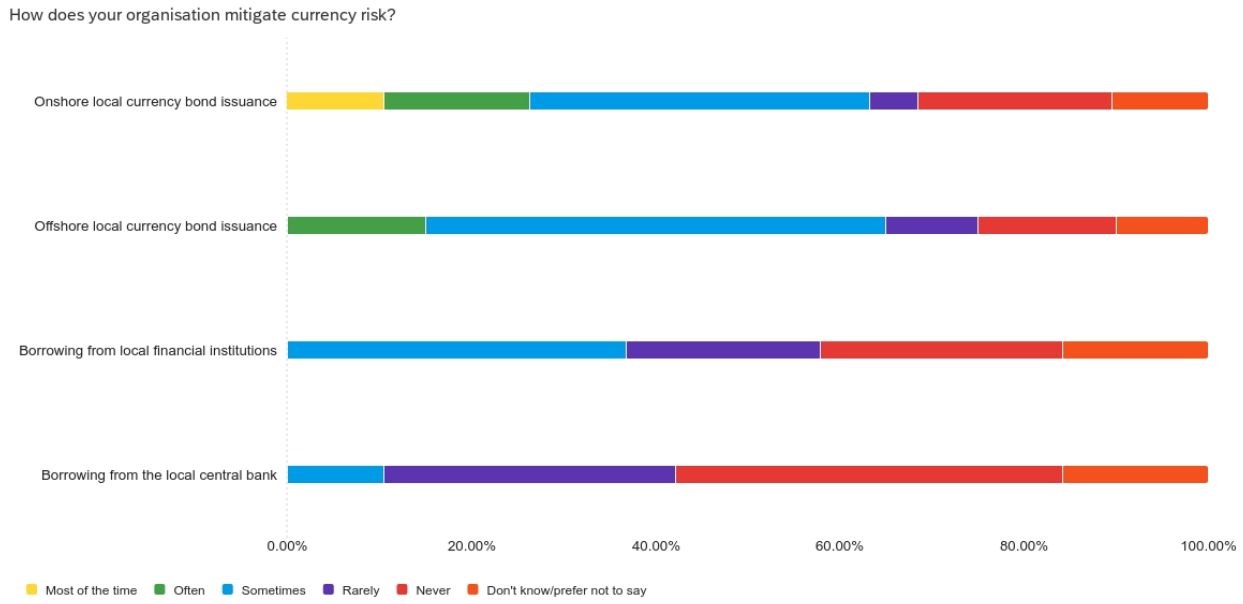
Furthermore, LC borrowing usually requires MDBs to operate onshore, which can generate significant regulatory and legal hurdles, as discussed in Chapter 3.

4.2.1. Borrowing in local currency

One way to avoid currency mismatches is to align liabilities with assets by borrowing in the same currency as the assets. MDBs can and do borrow in local currencies, matching these liabilities with their LC assets, thereby removing currency risk. Additionally, borrowing in LC allows MDBs to directly source LC liquidity, which can be used to disburse LC loans.

MDBs can borrow LC in various ways. They may issue bonds, either onshore in the domestic market or offshore in global markets. MDBs can also borrow directly from local private institutions or central banks. Figure 2.18 summarises the survey responses on the frequency of different borrowing methods.

Figure 2.18 Hedging currency risk I: borrowing local currency



Source: Authors' survey respondents.

Our results show that issuing bonds in the onshore market is the most common method for raising LC liabilities, followed by offshore LC bond issuance. As further discussed in Chapter 3, onshore bonds are issued under the local legal and regulatory framework, where the currency of denomination is legal tender. For instance, the ADB has made several issuances in the Panda bond market—the market for Chinese renminbi bonds issued by foreign institutions. The IFC has been active in domestic bond markets across many countries. For example, in fiscal year 2024, the IFC issued bonds totalling USD 70 million, denominated in Kazakhstani tenge, Bangladeshi taka, Mexican peso, and Zambian kwacha[77]—a notable development given Zambia's ongoing sovereign debt restructuring.

Alternatively, LC bonds can be issued in offshore markets. Although less common, 15% of our respondents indicated that their organisation uses this method often, with 50% stating that they use it sometimes. Bonds issued outside the domestic market in the currency of denomination are typically called Eurobonds. Eurobonds are usually underwritten by an international syndicate and cleared through international clearing systems such as Euroclear or Clearstream. Alternatively, MDBs can issue global bonds, which can be offered in several markets simultaneously.

For example, the EBRD has issued Eurobonds denominated in 24 local currencies of its member countries, compared to five bonds issued in domestic markets. Many MDBs operate Global Medium-Term Note (GMTN) programmes, which allow them to issue bonds in local currencies. For instance, the AIIB's ongoing GMTN programme specifies that notes can be issued in any currency.[78] As of March 2024, the Turkish lira and Indonesian rupiah are among the largest currencies of denomination in AIIB's borrowings under its GMTN programme.[79] Most IBRD bonds are issued under its Global Debt Facility, which has included issuances in seven LMIC currencies[80]

Offshore and onshore bond issuances differ in several important respects. The first is the regulatory and legal framework. Onshore bonds are subject to domestic capital market regulations, which may require authorisation from local authorities. As discussed in detail on Chapter 3, these regulations can be onerous and may limit the ability to issue onshore bonds. Offshore bonds, on the other hand, are subject to more standard international regulations. For example, bonds issued under MDBs' GMTN programmes typically use a standardised prospectus, requiring only specific pricing supplements for each issuance.[81]

The second key difference is market characteristics. Onshore bonds tend to attract domestic investors seeking to diversify their portfolios away from other local issuers, such as the government. However, onshore bond markets may be narrow in terms of maturity and

[77] International Finance Corporation, *Spring Investor Newsletter* (June 2024) https://www.ifc.org/content/dam/ifc/doc/2024/IFC-Spring24-Newsletter-Final.pdf.

[78] Asian Infrastructure Investment Bank, *Global Medium Term Note Programme, Base Prospectus* (March 2023) https://www.aiib.org/en/treasury/_common/_download/AIIB-GMTN-Base-Prospectus-March-2023.pdf.

[79] Asian Infrastructure Investment Bank, *Condensed Financial Statements* (31 March 2024) https://www.aiib.org/en/about-aiib/financial-statements/.content/index/pdf/AIIB-Q1-2024-Financial-Statements-clean.pdf.

[80] Chinese Renminbi, Uruguayan Peso, Indian Rupee, Brazilian Real, South African Rand, Kazakhstani Tenge and Mexican Peso. Data as of 25/09/2024 https://financesone.worldbank.org/world-bank-ibrd-bonds-1947-present/DS00052.

[81] Interview 2.

volume, necessitating the management of domestic currency cash flows, which can increase issuance costs. At the same time, MDBs can contribute to the development of domestic capital markets. Offshore bonds, by contrast, generally attract foreign investors, in part because these bonds are often 'linked bonds':

> 'sold off to international investors, who are usually seeking exposure to the local market because they like the high yield, but without having to go all the trouble of opening an account there and having an account in local currency... all of the payments, even though they take place [and] they are settled in US dollar, they are indexed to the performance of the local currency, hence why they get the performance in local currency without having any credit risk because the issuer is [name of the MDB].[82]

Offshore bond markets can be less active, however, with investor interest often being volatile. For example, Interviewee 2 noted the 'masala market' (offshore bond market of India), which disappeared during the COVID-19 pandemic and only recently returned. Offshore markets are therefore more flexible to access, but can be less reliable and do not directly contribute to local market development. Another method of raising local currency is to borrow from local financial institutions. According to our respondents this method is used sometimes in a bit less than 40% of cases. As the AfDB states, 'this is the most straightforward method of obtaining LC and involves the MDB simply receiving a loan or line of credit facility from a local banking institution in the desired currency'.[83] Other MDBs also engage in these practices. The EBRD, for instance, negotiates credit facilities with local commercial banks.[84] These facilities enable the EBRD to borrow LC on a revolving basis. In January 2024, for example, the EBRD signed a USD 100 million credit facility with Citi Ukraine to source Ukrainian hryvnia for its LC operations.[85] These revolving lines of credit are drawn only on demand, which reduces the cost of managing local liquidity. However, maturity mismatches can arise, as these credit lines are often on a 1-year revolving basis, while EBRD's LC loans tend to be long-term.[86]

Borrowing from central banks, by contrast, is quite uncommon due to regulatory and political complexities. As Interviewee 9 explained:

> 'In general, no, because they [central banks] have charter issues and the IMF will say it's not allowed. A prime example for us was [anonymised country], where at some point we were totally reliant on the central bank... but with each new governor, things changed. We learned a lesson. We want to be independent of political winds. Therefore, we prefer dealing with the private sector rather than being held hostage to political fortune."[87]

[82] Interview 2.

[83] African Development Bank (n 3) 25.

[84] European Bank for Reconstruction and Development, *Local Currency Operations of the EBRD: Considerations on Country and Client Selection* (EBRD) 4 https://www.ebrd.com/downloads/capital/select.pdf accessed 14 October 2024.

[85] European Bank for Reconstruction and Development, 'EBRD and Citi Ukraine sign a UAH revolving credit facility to support Ukrainian clients', Nigina Mirbabaeva, 31 January 2024 https://www.ebrd.com/news/2024/ebrd-and-citi-ukraine-sign-a-uah-revolving-credit-facility-to-support-ukrainian-clients.html.

[86] European Bank for Reconstruction and Development, 'Local currency financing: Treasury' (May 2024) https://www.ebrd.com/local-currency-financing-presentation.pdf.

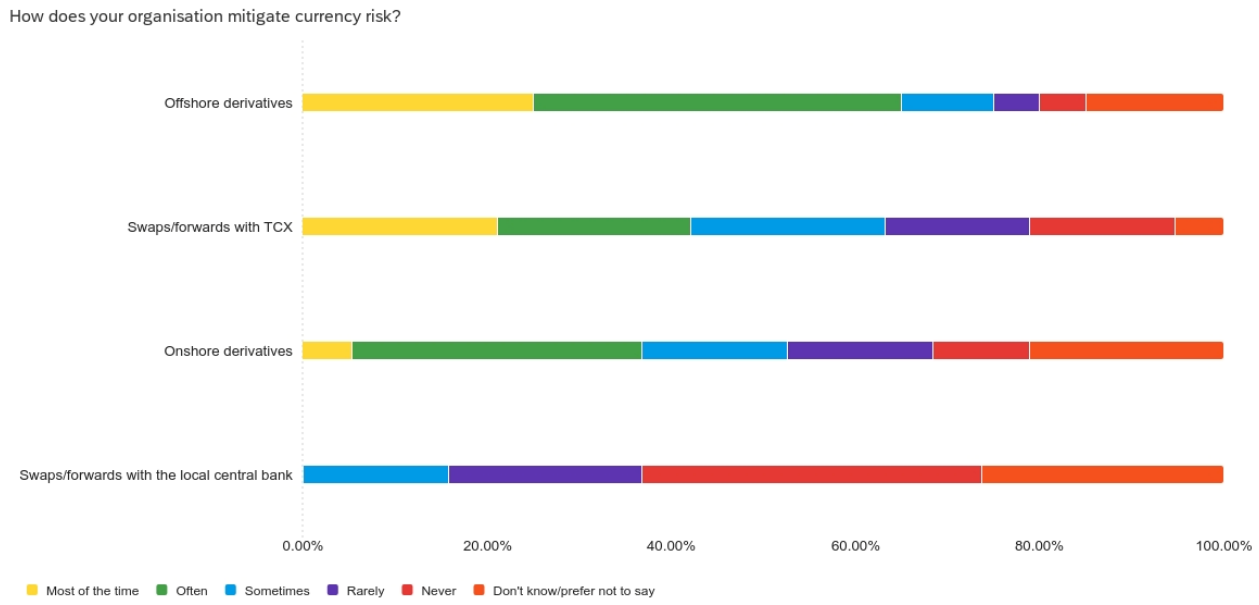
[87] Interview 9.

4.2.2. Using FX derivatives markets

Rather than borrowing directly from institutions or bond markets, MDBs can also hedge the currency risk of their LC operations using FX derivatives. The main instruments used by MDBs are cross-currency swaps and forward contracts.

These instruments protect MDBs by locking in exchange rates between the local and base currencies of the MDB, allowing them to mitigate the risk of LC depreciation. Figure 2.19 shows our survey results concerning the use of FX derivatives.

Figure 2.19 Hedging currency risk II: derivatives



Source: Authors' survey respondents.

Just like bonds, cross-currency swaps and forwards can be used in both offshore and onshore markets. Offshore derivatives, typically executed with international banks, are the most common, with 65% of our respondents indicating that they use them often or most of the time. Onshore derivatives, where the counterparty is a local financial institution, are less common but still utilised.

Another source of hedging for MDBs—particularly in countries with shallow and underdeveloped financial markets—is the Currency Exchange Fund TCX. TCX was founded in 2007 by a group of DFIs, specialised microfinance investment vehicles (MIVs), and donors to provide a solution for managing LMIC currency risk. TCX acts as a market-maker in currencies and maturities not covered by private financial institutions, particularly in those currencies where there are no offshore hedge markets, no long-term hedging products, or no hedging markets at all. The broader goal is to progressively develop an offshore FX risk market in these currencies, with risks subsequently sold to investors. Given this role, TCX cannot hedge its currency risk with counterparties and relies purely on diversification across different currencies to manage exchange rate risk. Forty percent of our respondents indicated that they use TCX most of the time or often.

As discussed in Chapter 3, in offshore markets—and in the case of TCX—these instruments are

typically non-deliverable. This means that principal amounts are not exchanged, and transactions are 'cash-settled'; i.e., at maturity, the difference between the prevailing exchange rate and the agreed exchange rate is exchanged. For example, in the case of LC depreciation, the MDB would receive a payment from the counterparty equivalent to the difference between the lower value of the LC and the exchange rate agreed upon in the swap contract. All payments are generally made in FC. These non-deliverable contracts are the typical instruments supporting synthetic LC loans, as described in the previous section.

This mechanism allows MDBs to reduce borrowers' currency risk, as payments are indexed to LC. At the same time, this solution does not require any exchange of LC by the MDBs, as all payments are made in FC, reducing operational costs such as maintaining a LC treasury. However, some risks remain. For instance, the borrower will still need to convert LC into FC and transfer it to the MDB. Derivative contracts can also be expensive—a topic we will discuss in more detail in the next section.

An alternative to commercial swaps and forwards—whether offshore or onshore—are currency swaps with the monetary authority issuing the LC. These are rarer, as indicated byour survey respondents, but they do occur.

The IFC, for example, can enter into swap agreements with local central banks for the purpose of making LC loans where commercial swaps are unavailable.[88] This includes low- and lower-middle-income countries such as Rwanda,[89] Paraguay,[90] and the Democratic Republic of Congo.[91] Such agreements can also be particularly important during times of economic and financial stress, as demonstrated by the EBRD's agreements with the central banks of Azerbaijan[92] and Georgia[93] in spring 2020 during the COVID-19 crisis.

4.2.3. Currency hedging and funding models

As indicated by our respondents, while these risk mitigation tools protect MDBs from currency risk, they also pose challenges due to their high cost and limited availability. To fully appreciate the issue, it is important to relate these tools to MDBs' underlying funding and risk management models. While MDBs generally seek to limit currency risks as much as possible, there are still variations in how this is operationalised.

The most common approach is a back-to-back funding structure, which is ingrained in MDB's institutional and legal structures, as further discussed in Chapter 3. Financially, back-to-back

[88] International Finance Corporation, *Annual Report Financials 2023* https://www.ifc.org/content/dam/ifc/doc/2023/ifc-annual-report-2023-financials.pdf.

[89] International Finance Corporation, 'IFC Signs Agreement with Rwanda's Central Bank to Provide Local Currency Loans', Press Release, 8 December 2010 https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=23857.

[90] International Finance Corporation, 'IFC Signs Swap Agreement with Paraguayan Central Bank to Provide Local Currency Loans', Press Release, 25 July 2011 https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=23688.

[91] International Finance Corporation, 'IFC, Central Bank of the Congo Launch Swap Facility for Private Sector Local Currency Financing', Press Release, 1 June 2015 https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=16521.

[92] European Bank for Reconstruction and Development, 'EBRD and Azerbaijan's Central Bank Promote Manat Lending to Coronavirus-Hit Firms' (19 May 2020) https://www.ebrd.com/news/2020/ebrd-and-azerbaijans-central-bank-promote-manat-lending-to-coronavirushit-firms.html accessed 14 October 2024.

[93] European Bank for Reconstruction and Development, 'EBRD and NBG Join Forces to Support Coronavirus-Hit Firms in Georgia' (27 April 2020) https://www.ebrd.com/news/2020/ebrd-and-nbg-join-forces-to-support-coronavirushit-firms-in-georgia.html accessed 14 October 2024.

funding requires MDBs to perfectly match assets and liabilities. As Interviewee 15 explained, 'it basically means you can only lend what you can find'.[94] This implies that LC loans must be perfectly covered by liabilities of equal size, maturity, and structure. For example, the IBRD loan in Uruguayan pesos mentioned earlier follows a back-to-back structure, so 'the terms of the loan exactly replicated the bond (i.e. bullet maturity, payment dates, etc.). A 30 basis point contractual spread was added'.[95] Similarly, the AfDB explicitly states that its LC loan process works in the same way, with funding raised first and the terms of the loan, including its cost, dictated by the funding costs plus a spread.[96] This perfect asset-liability matching model means that MDBs are not exposed to any risk except credit risk, with each project funded by its own dedicated liability. However, this model significantly limits MDBs' ability to extend LC financing to operations where a perfect match for the LC loan can be found.

As an alternative to back-to-back funding models, some MDBs are experimenting with more flexible structures that allow for a separation between LC financing and liabilities. For instance, some of them have shifted to a risk management approach that sets maximum risk limits in terms of value-at-risk and expected shortfall across the overall portfolio, rather than matching individual loans 'back-to-back'.[97] This approach allows MDBs to disconnect specific LC loans from liabilities and to keep liquid assets in domestic currencies. These liquid assets can then be used to disburse loans on demand without necessarily finding a matching funding source first. Similarly, these liquid resources can help manage rollover risks arising from possible mismatches between short-term liabilities or hedging instruments and long-term assets. However, this strategy can result in negative carry, as liquid assets held in LC typically yield low interest rates.[98]

While the currency risk mitigation and risk management approaches discussed here are the most common, it is also important to remember that exceptions to these conventional operations exist. One such exception involves MDBs' equity capital, as discussed in Section 2.2.7, which is derived from paid-in capital and retained earnings denominated in specific local currencies. Equity investment can provide a more flexible source of funding for LC operations, as it does not entail specific payment schedules.[99]

Notwithstanding these exceptions, full hedging remains the norm. While full hedging protects MDBs from currency risk, it can also act as a barrier to expanding LC financing. First, the lack of available instruments to hedge currency risk—especially when coupled with a back-to-back model—limits MDBs' flexibility. Moreover, even when mitigation tools are available, their high cost can still make LC financing unattractive to borrowers. The next section will explore this issue through an example.

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[94] Interview 15.

[95] World Bank, 'Case Study: Local Currency Financing in Uruguay' (2015) https://documents1.worldbank.org/curated/es/278031468126557301/pdf/81177-REVISED-WP-Uruguay-LocalCurrency-2015.pdf accessed 14 October 2024.

[96] African Development Bank (n 3) 24.

[97] Interview 12.

[98] Interview 15.

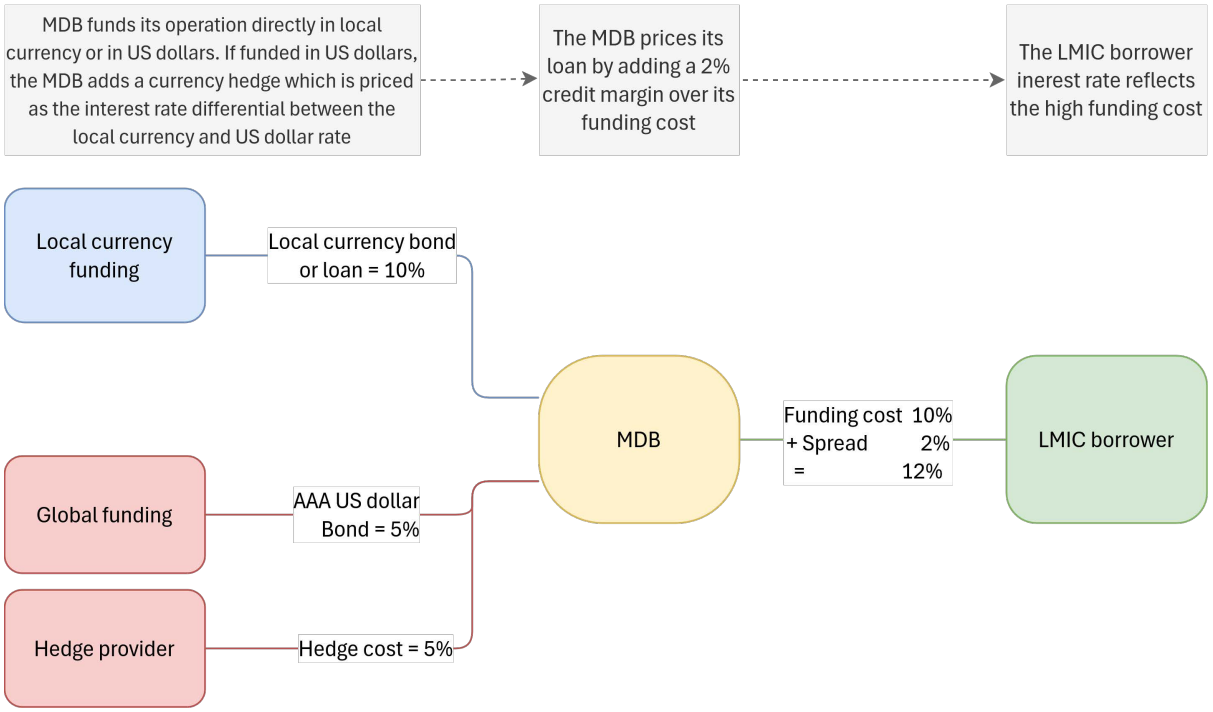
[99] Interview 2.

4.2.4. Currency risk mitigation: the pricing problem

This section explores the issue of pricing LC loans in the context of the risk mitigation strategies discussed in the previous section.

Figure 2.20 provides a stylised summary of how MDBs extend a LC loan.

Figure 2.20 The pricing of MDB local currency loans



Source: Authors' elaboration.

Suppose an MDB needs to price a five-year LC loan for a borrower in a LMIC. The interest rate charged will reflect the cost of funding, plus a margin to cover the specific credit risk of the borrower. The funding cost for the MDB is based on its cost of borrowing. One option is for the MDB to fund itself directly in LC markets. For instance, in a back-to-back funding arrangement, the MDB could issue an LC bond or borrow from a local bank and pay an LC rate with a five-year maturity. This rate can vary depending on local regulation and macroeconomic conditions, but it will generally be based on local base or government borrowing rates, which are typically higher than global interest rates on high-income country, such as the US dollar. For simplicity, let us assume that the MDB, thanks to its AAA rating, is able to pay the same rate as the government, making the MDB's cost of funding, for example, 10%.

Alternatively, the MDB could fund itself on global markets in US dollars and combine this with a financial instrument (e.g. a currency swap) to hedge the currency risk. In this case, the MDB would pay a much lower rate on its liability

(e.g.5%),[100] similar to sovereign borrowers, thanks to its AAA rating. The hedge cost would be based on the interest rate differential between the local and US dollar interest rates. Assuming, for simplicity, that the differential is based on government bond rates,[101] the MDB would pay 5% on its hedge cost. This would again make the cost of funding for the MDB 10%.

As a result, in the absence of any concessionality, the MDB can at best offer a 10% lending rate in this example, plus a margin to compensate for credit risks. In practice, the rate would likely be higher, as margins are also applied to the hedges purchased by MDBs, or LC bonds may carry higher interest rates than the central government. Such additional costs can be substantial, particularly when involving currencies with underdeveloped markets. However, it is important to note that even without these considerations, the cost of LC loans offered by MDBs remains high, and often comparable to prevailing LC government borrowing rates, because these reflect the high-interest rate differentials that underpin the currency hedging.

These high-interest rate differentials represent the significant compensation required for the exposure to LC and the local economy:

> 'Interest rates in other currencies are generally higher because they reflect the local economic conditions. There's nothing we can do about it."[102]

In part, this is due to high inflation:

> 'One of the biggest issues is around pricing interest rates in those local markets—because you cannot have negative interest rates. Many people come to us and say local banks are way too expensive. They are lending to us at 27%. Why do not you come in and lend at 9%? I say to them, what is the inflation in your country? Is it 20-22%? And you want me to come in and lend at 9%—so who pays for the difference? You know, because someone has to take on the difference."[103]

Whatever their cause, these high-interest rates are incorporated into MDBs' LC lending rates. This means that LC lending rates are often not attractive for sovereign borrowers:

> 'Usually, it does not make sense because the sovereign can issue itself or generate local currency at a cheaper cost than we can offer."[104]

> 'When it is the sovereign, they usually want hard currency from us. And they have the cheapest funding costs in local currency anyway, because they are not supposed to default on their local currency obligations"[105]

[100] For instance, the IDA issued a 5-year US dollar bond on 24 October 2023 with a yield of 4.98%, 18.38 basis points over the US Treasury. World Bank Group, 'IDA Prices New USD 2.5 Billion 5-Year Sustainable Development Bond' (24 October 2023) https://treasury.worldbank.org/en/about/unit/treasury/ida/ida-press-releases-19 accessed 14 October 2024.

[101] Normally, interest rate differentials are based on risk-free reference rates, such as SOFR or EONIA. However, for LMIC currencies, such rates are sometimes unavailable and need to be calculated from existing government bond rates (Interviewee 3).

[102] Interview 11.

[103] Interview 5.

[104] Interview 1.

[105] Interview 5.

LC loans for sovereigns are particularly unattractive when offered by MDBs, as they can offer FC loans at significantly lower rates than prevailing market rates:

> 'When [country's name] considers taking a loan from [MDB's name] or any multilateral, the difference is not just 8% in dollars versus 11% in [local currency], as it would be in the market. With a multilateral, it could drop to 5% in dollars. So, the gap they are looking at is not between 8% and 11% anymore; it is between 5% and 11%. This substantial difference makes it appealing to manage currency risk through multilaterals where they get the most comparative advantage."[106]

This explains why LC financing by MDBs focuses mostly on the private sector, where, despite the hedging costs, MDBs can still offer competitive rates and/or beneficial terms (e.g. longer maturities) to potential borrowers compared to what they can find in domestic markets.

In sum, the cost of hedging currency risk is a key factor constraining MDBs' LC financing. While MDBs have an advantage over other lenders in providing loans in FC, thanks to their lower funding costs, these advantages are lost when lending in LC and fully hedging currency exposure. To avoid this, MDBs could reduce hedging and take on some currency risk. While rare, there are instances where MDBs have—within specific and well-defined frameworks—taken on such risk, which we explore in the next section.

5. Taking on currency risk

While the majority of MDBs LC operations are fully hedged, some specific initiatives allow a degree of currency exposure outside of their main operations, often with the involvement of external funds acting as guarantors. Most of the existing examples take the form of off-balance sheet separate fund structures, where the losses are not absorbed by the MDBs' capital but by the contributors to the fund's equity (which could include the MDBs themselves if they are shareholders). Below are some of the most prominent examples.

5.1. Asian Development Fund (ADF)'s Private Sector Window (PSW) Local Currency Solution (LCS)

The ADB provides grants to its poorest and most vulnerable developing member countries through the Asian Development Fund (ADF). ADF resources primarily come from contributions by ADB member countries, which are mobilised under periodic replenishments and net income transfers from ordinary capital resources. Eligibility for ADF grant assistance is determined based on a three-tier classification system grounded in gross national income per capita and creditworthiness. Developing member countries are classified into Group A (concessional assistance only), Group B (ordinary capital resources blend), and Group C (ordinary capital resources only). ADF grants support under-invested areas, including regional cooperation, disaster risk reduction, and climate adaptation, particularly in Group A countries.[107]

[106] Interview 11.

[107] Asian Development Bank, 'Overview: Asian Development Fund (ADF)' https://www.adb.org/what-we-do/funds/adf/overview accessed 26 July 2024.

Of relevance in ADF's LC grants is the Private Sector Window (PSW), which is currently deployed on a pilot basis to promote private sector growth, expand investment, and mobilise private finance in Group A countries. A key part of the PSW is the Local Currency Solution (LCS), which mitigates and protects potential losses of commercial lenders due to LC exposure, addressing the lack of currency hedging solutions in lower-income economies.[108] ADB-PSW resources backstop the LCS to enable commercial lenders to lend to a project or borrower on terms not available in the market—namely, with proceeds in LC and longer tenors. LCS support includes credit lines and facilities to local commercial lenders and financial institutions, including local development banks, to support LC lending to SMEs and other projects.[109]

Transactions typically follow this sequence: (1) lenders issue a USD-denominated loan that is converted to LC at the financial close of a project; (2) the borrower assumes the liability and services the debt from LC revenue generated by the project. Should the LC depreciate against the USD and a loss is realised during loan repayment, (3) the lenders issue a reimbursement request to ADB, as administrator of the LCS, to recover the loss due to foreign exchange movements; and (4) upon approval of the reimbursement request, LCS resources, funded by ADB-PSW, are disbursed to the lenders to cover the foreign exchange loss. Should the LC appreciate against the USD, the borrower will continue to make LC payments, and the lender will keep and accrue the gain to offset future depreciation. If a lender's loss exceeds its accrued gains, it would issue a reimbursement request.[110]

5.2. IDA-IFC-MIGA Private Sector Window (PSW)'s Local Currency Facility (LCF)

The IDA-IFC-MIGA Private Sector Window (PSW) aims to derisk and boost investments in IDA and IDA-eligible fragile and conflict-affected states by addressing fundamental constraints, including the limited availability of LC loans.[111] The Local Currency Facility (LCF) specifically addresses this by providing long-term LC investments in countries with undeveloped capital markets and insufficient market solutions. Backed by IDA resources, the LCF enables IFC to support various operations in LC. The facility acts as a risk transfer vehicle for operations in PSW-eligible countries, up to the designated allocation of PSW's resources.[112]

While IFC retains the credit risk of the underlying loans and investments, the LCF undertakes several operations to source LC funding for PSW projects:[113]

[108] Asian Development Bank, 'Concessional Assistance Policy for the ADF 13 Period' (October 2020) https://www.adb.org/sites/default/files/institutional-document/649536/concessional-assistance-policy-adf13.pdf accessed 26 July 2024.

[109] Asian Development Bank, 'ADB Private Sector Window to Promote Private Sector Operations in Group A Countries' (ADF 13 Replenishment Meeting, 5-7 November 2019, Manila, Philippines) https://www.adb.org/sites/default/files/page/561776/psw-pso-group-a-countries-discussion-paper.pdf accessed 26 July 2024.

110 ibid.

[111] International Development Association, 'What is the IDA Private Sector Window?' https://ida.worldbank.org/en/financing/ida-private-sector-window/what-is-ida-private-sector-window accessed 27 July 2024.

[112] International Development Association, 'Operationalizing the IDA18 IFC-MIGA Private Sector Window' (11 April 2017) 26 https://documents1.worldbank.org/curated/en/928011520447801610/pdf/123995-BR-PUBLIC-IDA-R2017-0347-1.pdf accessed 26 July 2024.

[113] ibid 27.

- Counterparty credit risk: When IFC enters into an LC transaction, it hedges the currency risk with an offshore or onshore market counterparty. LCF resources absorb counterparty credit losses if the counterparty's credit quality does not meet IFC's standard criteria or if they are non-traditional counterparties.

- Market and credit risk: IFC may issue bonds in a local market to obtain the necessary currency for its loans and invest in the local fixed income market until the funds are disbursed to the client. The client covers expected negative changes in value, while the PSW covers unexpected changes in the value of the local investments.

- Transfer/convertibility risk: When using local counterparties, IFC may offer a deliverable swap but hedge the market risk with an undeliverable swap offshore. LCF resources cover the inability to convert/transfer the currency without loss when the underlying hedged loan matures.

- Open currency/interest rate risk: If market-based solutions are unavailable, IFC hedges its currency and interest rate risk with the LCF, which covers any losses (or gains) related to changes in market rates over the term of the hedged investment. The LCF is actively managed by IDA-IFC-MIGA on a portfolio basis, employing strategies to hedge open risks. Should they incur realised losses on LC investments made with the LCF, they can submit a payout request to IDA for reimbursement. Losses under certain LCF operations could exceed the initial investment on a transaction-specific basis, but aggregate claims on IDA under the LCF are capped, with any losses exceeding this cap borne by IFC-MIGA.[114] In this sense, the LCF acts as a last-resort currency risk absorber.

5.3. ACP Investment Facility

The EIB's ACP Investment Facility, established under the Cotonou Agreement, operates as a revolving fund, reinvesting income and repayments into new projects. The Investment Facility receives capital from the 9th, 10th, and 11th European Development Funds. Capital contributions are made by Member States to the EIB.[115] The Facility provides a diversified mix of financing options, including equity, infrastructure project financing, and credit lines to financial intermediaries. The unhedged LC tranche currently stands at around EUR 900 million, representing 20% of the total capital raised and diversified across 15 currencies.[116] Their LC financing is limited to countries with macroeconomic stability and strong financial regulation and supervision, as well as firms, primarily SMEs, with LC revenues.[117] Interest rates are set using prevailing market rates, plus

[114] ibid.

[115] European Court of Auditors, *The ACP Investment Facility: Does It Provide Added Value?* (Special Report No 14, European Union 2015).

[116] C Fink, HP Lankes, and C Sacchetto, *Mitigating Foreign Exchange Risk in Local Currency Lending in Fragile States: Review and Options* (International Growth Centre, June 2023).

[117] European Investment Bank, 'Financing Conditions and Instruments in the ACP Countries' (EIB) https://www.eib.org/attachments/country/eib_in_acp_financing_conditions_and_instruments_en.pdf accessed 14 October 2024.

administrative and risk-related mark-ups.[118] This fund structure allows the EIB to manage FX risk effectively by leveraging a diverse portfolio across currencies, geographies, clients, and sectors. The Facility's sustainability is evidenced by its performance, which has not only been sustainable but has also generated positive returns.[119]

5.4. MASSIF Fund

FMO's MASSIF Fund, established in 2006 and managed by FMO on behalf of the Dutch government, is another example of an MDB using a fund structure to bear FX risk. The fund's capital base (over EUR 463 million by 2023) allows it to absorb FX risk effectively while maintaining financial sustainability. MASSIF's financing includes LC seed capital, loans, mezzanine structures, and grants. The fund maintains broad diversification in terms of geographies, clients, and sectors. While their maximum portfolio exposure to LC is capped at 20%, most of the portfolio is denominated in US dollars and euros, with only 10% in unhedged LC financing by 2023. However, since the fund has 43% of its assets categorized as hard currency equity investments, even when these instruments do not imply hard currency commitments, the actual currency risk of its clients is smaller.

MASSIF's pricing strategy builds on the reference prices provided by TCX, with deviations allowed on a case-by-case basis. Similar to the ACP Investment Facility, MASSIF has remained financially sustainable, fulfilling its revolvability target of 100%. MASSIF's net profits over capital between 2014–2019 fluctuated between -0.8% and 11.6%, mainly due to fluctuations in the EUR-USD exchange rate, since 57% of its assets are denominated in US dollars, while the euro is their accounting currency.[120]

5.5. UNCDF BRIDGE facility

Launched in 2017, the BRIDGE facility is an 'on-balance sheet' investment vehicle of the United Nations Capital Development Fund (UNCDF), capitalised by grants from donors, including member states, foundations, and philanthropies.[121] Although it is not an MDB-led initiative, the structure provided by this facility offers valuable insights for the analysis conducted in this report. The facility provides concessional loans, guarantees, and quasi-equity to SMEs, municipalities, and project developers with primarily LC revenues in sectors such as food, financial inclusion, the green economy, and public infrastructure. The initial capitalisation of the fund was USD 50 million, with future replenishments planned. BRIDGE's LC financing represents 90% of its portfolio, with unhedged

[118] ibid.

[119] S Andreasen, W Bartz, C Clubb, J Durland, A Efiong, Y Ehlert, P Horrocks, J Sedemund, H Hirschhofer, and K Parplies, 'The Need to Reduce FX Risk in Development Countries by Scaling Blended Finance Solutions' (FX Risk in Development Workshop, Convergence, EDFI, European Commission, OECD, TCX, 2017) https://assets.ctfassets.net/4cgqlwde6qyo/3UYrVVpyqckCsw802wWoOi/7abfe71c3b60ff521635f713865cad16/FX_Risk_in_Development_Primer.pdf accessed 11 October 2024.

[120] N Oomes and others, *Evaluation of the FMO-MASSIF Fund (2015-2019): Final Report* (SEO Amsterdam Economics, Report No 2020-83, Commissioned by the Dutch Ministry of Foreign Affairs, 19 November 2020) https://www.government.nl/binaries/government/documenten/reports/2020/11/19/evaluation-of-the-fmo-massif-fund-2015-2019/EvaluationoftheFMO-MASSIFFund2015-2019.pdf accessed 14 October 2024.

[121] United Nations, *Midterm Review of the UNCDF Strategic Framework, 2022-2025, and Report on Results Achieved by UNCDF in 2023* (UN 2024) https://coilink.org/20.500.12592/6wwq4wz accessed 14 October 2024.

exposures to currency risk.[122] Its portfolio comprises fewer than 40 companies, with loan sizes mostly between USD 100,000 and USD 1 million USD equivalent. While the lending rate is set based on an internal scoring model, TCX provides reference swap rates for the currency risk. By 2023, the facility had only one write-off and a few instances of restructuring.[123]

In conclusion, these funds' performance shows that MDBs can successfully provide LC financing by taking on FX risk in a sustainable manner.

[122] Fink, Lankes, and Sacchetto (n 116).
[123] ibid.

Chapter 3

Legal and Regulatory Matters

1. Introduction

As highlighted in Chapter 2, respondents to our survey identified two critical barriers to local currency (LC) financing: a lack of familiarity and expertise in LC arrangements, and legal and regulatory factors. This chapter delves deeper into these issues, examining the primary challenges and constraints faced by Multilateral Development Banks (MDBs) in their LC financing operations from a legal and regulatory perspective. It employs an integrated methodology, combining survey responses, semi-structured interviews, and desk-based research from both academic and official sources.

The chapter begins by exploring statutory and non-statutory constraints within MDBs that limit their ability to provide LC financing. It examines how legal frameworks—often inherited from the Bretton Woods system—have historically restricted MDBs to lending primarily in foreign currencies and analyses how these limitations are reflected in both statutory and non-statutory rules.

The analysis then shifts to domestic legal and regulatory frameworks in Low- and Middle-Income Countries (LMICs), exploring how various aspects of domestic law affect the capacity of MDBs to operate onshore and provide LC financing. Lastly, the chapter discusses the complexities associated with LC financing contractual terms.

2. Statutory and non-statutory constraints

As highlighted in Chapter 1, a key constraint to the ability of MDBs to provide LC financing stems from the institutional legacy of the Bretton Woods system, which was based on fixed (though adjustable) exchange rates tied to the US dollar, with the dollar itself pegged to gold.[1] Although the international monetary system shifted towards floating exchange rates following the collapse of Bretton Woods in the early 1970s, MDBs have continued to lend primarily in FC.[2] This legacy persists and is largely reflected in the legal and institutional practices of MDBs, including both statutory and non-statutory frameworks.

[1] JA Ocampo, 'A Brief History of the International Monetary System since Bretton Woods' in *Resetting the International Monetary (Non)System* (Oxford University Press 2017).

[2] S Kapoor and others 'A Multilateral Solution to Hedging Currency Risk in Developing Country Finance' https://shorturl.at/4y8d8 accessed 9 September 2024.

In this context, statutory frameworks refer to the formal, legally binding provisions enshrined in the founding agreements or charters of MDBs, which define their legal authority and operational limits. In contrast, non-statutory frameworks consist of internal policies and guidelines adopted by MDBs' governing bodies, which—though not legally entrenched in international law—are binding within the institution and guide its internal decision-making processes, including treasury and risk management activities.

2.1. Statutory provisions

The Articles of Agreement governing MDBs typically address various aspects of currency usage, including: (1) the authorised capital of the MDB, (2) the currency for payment of subscriptions, (3) the terms and conditions for loans and guarantees, specifying the currency of lending and repayment, (4) authorisations and limitations on the bank's power to use or exchange the currencies of its members, (5) provisions on the bank's authority to borrow currencies from or within the jurisdictions of its members, as well as the currency of payment for such loans, (6) the valuation of currencies and determination of their convertibility, (7) the use of currencies by members, particularly prohibiting members from imposing restrictions on the receipt, holding, use, or transfer of currencies by the bank or any recipient of bank funds for specified purposes, (8) the currency of dividend payments, where applicable, and (9) provisions on the maintenance of the value of the bank's currency holdings vis-à-vis the paid-in subscriptions of its members.

These provisions form the core legal and operational framework for MDB activities, especially in relation to currency management. Notably, most MDBs have their authorised capital denominated in US dollars.[3] While these provisions shape the predominantly dollar-based structure of MDB balance sheets and risk management frameworks, they do not, in themselves, preclude LC lending. As identified in Chapter 2, the most significant statutory constraints to such transactions typically arise from provisions governing MDB operations, which often require strict back-to-back hedging—also known as 'perfect hedging'—against foreign exchange risk.

For example, Article 15(3) of the Agreement Establishing the African Development Bank (AfDB)[4] and Article 12(2) of the Articles of Agreement establishing the Asian Development Bank (ADB)[5] limit ordinary operations by stipulating that the principal amount outstanding and payable to the bank in a specific currency must not exceed the total principal amount of funds borrowed by the bank in that currency. Similarly, Article III(5)(b) of the Agreement Establishing the Inter-American Development Bank (IDB) contains comparable provisions,

[3] There are a few exceptions to this, including the European Bank for Reconstruction and Development (EBRD), whose authorised capital stock is set in the European Currency Unit (ECU), the predecessor of the Euro. The Islamic Development Bank designates the Islamic Dinar—valued equivalent to one SDR—as its unit of account for authorised and subscribed capital. The West African Development Bank (BOAD) specifies its authorised capital in CFA francs, which aligns with its membership in the West African Monetary Union. Similarly, the Council of Europe Development Bank (CEB) issues participating certificates denominated in euros, the currency adopted by most of its members.

[4] African Development Bank, *Agreement Establishing the African Development Bank* https://shorturl.at/LZktR accessed 9 September 2024.

[5] Asian Development Bank, *Agreement Establishing the Asian Development Bank* https://shorturl.at/tyhnH accessed 9 September 2024.

requiring the bank to maintain a balance between the amount it owes and the amount it is due to receive in any given currency.

While these mechanisms do not preclude MDBs from maintaining sufficient liquidity to meet obligations in the relevant currency if needed, they limit their capacity to provide LC loans to those which can be perfectly hedged. This creates a tension between the statutory requirement for perfect hedging and the developmental need to finance projects in LC, particularly in jurisdictions where LC markets are underdeveloped.

In contrast, some MDBs have less stringent statutory provisions that do not impose the requirement of perfect hedging. These frameworks delegate the management of currency risk to non-statutory frameworks that are more flexible. For example, the Agreement Establishing the European Bank for Reconstruction and Development (EBRD) contains no specific provisions regarding currency risk management, requiring only that the bank applies sound banking principles in Article 13(i).[6] Similarly, Article 14(4) of the Articles of Agreement of the Asian Infrastructure Investment Bank (AIIB) allows for financing in LC, provided it is done in accordance with policies that minimise currency risk.[7]

2.2. Non-statutory provisions

In addition to the statutory provisions, MDBs operate under non-statutory frameworks. These frameworks, often consisting of internal policies and guidelines, are not legally entrenched in the institutions' founding charters but are adopted by governing boards to regulate their activities. While not legally binding under public international law, these rules are binding within the internal decision-making processes of MDBs, including those related to LC financing.

Non-statutory frameworks establish general policies related to treasury operations, including LC funding and financing. For example, they typically define the roles of key officers, such as the Chief Financial Officer and the Chief Risk Officer, in managing the risks associated with such activities. Additionally, specific guidelines, such as treasury authority and liquidity procedures, often provide detailed instructions on foreign exchange and LC transactions.[8]

Non-statutory rules frequently limit LC financing through prohibitions on assuming most forms of currency risk. For instance, Chapter IV, Section 4 of the Development Bank of Latin America and the Caribbean (CAF)'s *Management Policies* states that the institution 'will not assume currency risk in its transactions, except in the case of equity investments denominated in local currency'. For these investments, 'CAF will evaluate the currency risk and ensure that it is acceptable, based on a satisfactory compensation between the yield projection and risk taken'.[9]

As noted in Chapter 2,[10] such provisions may even apply in concessional lending contexts,

[6] European Bank for Reconstruction and Development, *Agreement Establishing the European Bank for Reconstruction and Development* https://shorturl.at/V63Qo accessed 9 September 2024.
[7] Asian Infrastructure Investment Bank, *Articles of Agreement of the Asian Infrastructure Investment Bank* https://shorturl.at/cy79l accessed 9 September 2024.
[8] Interview 14.
[9] Development Bank of Latin America and the Caribbean, *Management Policies* (September 2019) https://shorturl.at/GN694 accessed 9 September 2024.
[10] Section 2.1.

avoiding any foreign exchange risk by shifting it entirely onto the borrower. For example, Section III(2)(a)(ii)(A) of the International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA)'s *Financial Terms and Conditions of Bank Financing* stipulates that IDA concessional credits are to be offered in either Special Drawing Rights (SDRs) or as single currency credits, with the recipient bearing the foreign exchange risk between the currency of payment and the SDR.[11]

Another common non-statutory provision is that the availability and terms of LC financing are subject to prevailing market conditions, which can constrain the provision of such financing. For example, while the AfDB has been able to lend in local African currencies since 2010, its policy framework stipulates that such loans depend on the Bank's ability to fund itself in those currencies through bond issuances or market-based hedging strategies.[12] Similarly, Section 8 of its *Guidelines for Synthetic Local Currency Loans* provides that in such transactions, the availability of a hedge or non-deliverable forward contract (NDF) with a market counterparty is essential. The NDF transaction amount includes the lending margin to ensure that the Bank's margin is not exposed to currency risk.[13]

The IDB also reflects this approach. For example, Article 5.02 of its *General Conditions for Investment Loans Chargeable to Ordinary Capital Resources* provides that any currency conversion in financing arrangements shall be subject to the bank's ability to execute the conversion, which depends on its capacity to source funding or enter a hedge on terms acceptable to the bank, in accordance with prevailing market conditions.[14].

As discussed in Chapter 2, subjecting LC financing to market conditions as a general policy increases the cost and complexity of raising such funds. New bond issuances or premium hedging fees are often required before loans can be disbursed, making LC financing costly in certain contexts. This reliance on market mechanisms for hedging presumes that financial markets will consistently offer the most cost-effective solution for managing exchange rate risk. However, this assumption is somewhat at odds with the core purpose of MDBs. Indeed, currency volatility lies at the heart of this issue. Viewing currency risk management through a narrow, transactional lens—focusing exclusively on the exchange rate risk of individual contracts—overlooks the broader macroeconomic perspective that typically informs MDB investment portfolio strategies.

3. Domestic legal and regulatory challenges

Beyond the legal and institutional frameworks of MDBs, the domestic legal and regulatory

[11] International Bank for Reconstruction and Development and International Development Association, *Bank Policy: Financial Terms and Conditions of Bank Financing*, OPS5.09-POL.178 (7 July 2023) https://shorturl.at/KyhNw accessed 9 September 2024.

[12] See Section 6.2.9 and Article 3.3 on Annex 3 of the African Development Bank Group's *Policy on Non-Sovereign Operations* (29 May 2019) <https://shorturl.at/NpII5> accessed 2 September 2024.

[13] African Development Bank, *Guidelines for Synthetic Local Currency Loans* (May 2008) https://shorturl.at/FwbgP accessed 2 September 2024.

[14] Inter-American Development Bank, *General Conditions for Investment Loans Chargeable to Ordinary Capital Resources* (September 2023) https://shorturl.at/SSXok accessed 2 September 2024.

environments in borrowing countries significantly influence MDBs' ability to provide LC financing, as identified by survey respondents.

This section draws on both academic and policy literature, as well as the semi-structured interviews conducted for this project, to explore key aspects such as capital markets law and regulation, banking law and regulation, tax law, exchange restrictions, and issues related to the civil and criminal liability of public officials.

3.1. Onshore issuance of local currency bounds

As discussed in Chapter 1 and Chapter 2, one way of hedging the currency risk of LC lending is to issue bonds in that currency, either offshore or onshore. As also shown in Chapter 2, onshore LC bond issuance is particularly important, as our survey results indicate it is the most common method for raising LC liabilities, providing MDBs with a direct source of local currency liquidity.

However, in issuing bonds onshore, MDBs encounter numerous challenges arising from the domestic legal and regulatory infrastructures of the capital markets in which they operate. Addressing these issues often requires MDBs to collaborate actively with local authorities and law firms, offering technical advice to facilitate domestic legal reforms aimed at developing LC debt markets.[15]

These challenges can be broadly divided into two areas: general capital markets law and regulation, linked to the broader policy objective of developing local capital markets, and the specific legal and regulatory challenges facing MDB activities due to their unique status as international financial institutions operating onshore.

3.1.1. General capital markets law and regulation

a. Contractual framework of local currency bond

In many LMICs, LC government bonds often lack a well-developed contractual framework.[16] In contrast, government bonds issued in foreign currency are typically governed by foreign law—usually English or New York law—and include detailed contractual provisions. The absence of comparable provisions for locally issued government bonds, which are often among the most significant financial assets in the market, contributes to the underdevelopment of domestic bond markets. Establishing a comprehensive contractual framework for LC government bonds is therefore essential.[17]

The lack of a comprehensive contractual framework for LC government bonds also affects MDB bonds, given their unique status as international financial institutions operating onshore. Clear rules are needed to address key issues, such as the permissible governing law for locally issued debt securities. Local law must explicitly specify whether such bonds can be

[15] See, eg, European Bank for Reconstruction and Development, *Building the Foundations for Financial Market Development: A Retrospective of More than 10 Years of EBRD Engagement in Georgia* (EBRD 2023).

[16] W Bossu W, C Hillier, and W Bergthaler, 'Local Currency Bond Markets Law Reform: A Methodology for Emerging Markets and Developing Economies', IMF Working Paper (20 November 2020) 22-25.

[17] W Bossu and EA Awadzi, 'Private Law Underpinnings of Public Debt Securities Markets' (2014) 18(3) Uniform Law Review 564-88.

governed by foreign law, as is often the case with government bonds issued offshore in foreign Currency, or if only local law is permissible. Similar considerations relate to the use of foreign languages in bond documentation, often preferred by foreign investors.[18]

b. Enforcement of investor rights in case of default

Effective enforcement of investor rights plays a critical role in the development of local bond markets. While large institutional investors and banks often ensure their payment rights due to their influence and access to information, smaller investors rely more heavily on the legal system to protect their interests. However, in many jurisdictions, obstacles such as unclear legal frameworks or practical difficulties in the enforcement of rights—particularly in the context of issuer insolvency—create uncertainties.[19] For example, some local laws require creditor consent for corporate debt restructuring, which can be challenging to implement. Additionally, inconsistent application of the law, limited use of collective action clauses, and lengthy, costly enforcement procedures further complicate the situation.

These uncertainties may deter investors, particularly smaller ones, from participating in local bond markets, which in turn limits the depth of these markets. For MDBs, a reduced investor base diminishes demand for LC bonds, which in turn affects their ability to raise funds onshore.[20]

c. Disclosure rules and procedures

Inconsistencies, inefficiencies, and cumbersome disclosure rules and procedures hinder the development of local debt markets in many jurisdictions. Challenges may include onerous documentation requirements, unclear processes for the approval and filing of marketing materials, inadequate staffing and training of reviewing agencies, inconsistent review procedures for offering documentation or prospectuses, unclear rules for updating disclosures, and the lack of a central repository for public access to documents.[21]

These factors may dissuade domestic and foreign actors from investing in locally issued bonds, leading to a lack of depth in local capital markets. This has crucial implications for MDBs seeking to raise funds in those markets, compounded by other regulatory challenges facing MDBs specifically, which are discussed below.

d. Credit rating requirements

Despite the scrutiny faced by credit rating agencies during the global financial crisis, they continue to provide investors with valuable market information, particularly where cost-effective alternatives for evaluating credit risk are lacking. These agencies operate on different scales, from global players like Moody's, Standard & Poor's (S&P), and Fitch (often referred to as the 'big three') to regional or national agencies that cater to local market dynamics.

[18] F Dahan, J Kubas, L Cohen, Y Mihaleva, and M Welsh, 'The EBRD's Legal and Regulatory Assessment – What Limits Development of Local Capital Markets?' in European Bank for Reconstruction and Development, *Law in Transition 2012: Developing Local Capital Markets* (EBRD 2012) 37.
[19] ibid 34-35.
[20] ibid.
[21] ibid 36.

The absence of formal credit rating requirements or reputable agencies with local expertise in many countries presents significant challenges to the development of local debt markets. Locally issued debt securities are typically expected to be rated by an agency with relevant local market experience, either as a legal requirement or based on established market practices.[22] However, in some jurisdictions, local regulations mandate ratings only on a national or regional scale, assessing an issuer's creditworthiness relative to others within the same area, which limits comparability on an international level.

The variability in credit rating requirements across jurisdictions has significant implications for MDBs' ability to raise funds in local markets. Local regulations may favour different types of ratings, sometimes prioritising local agencies over international ones.[23] For instance, while one jurisdiction may accept an international rating from a well-known global agency, another may strictly require a local rating reflecting specific market conditions. Additionally, regulations may even mandate the use of the lowest rating among multiple agencies. In some cases, short-term ratings are prioritised over long-term ones, particularly in more volatile markets.[24]

Another consideration is how an MDB's credit rating is influenced by the location of its headquarters.[25] In some jurisdictions, an MDB's rating may be affected by the sovereign rating of the country in which it is based, impacting the cost of raising funds. This treatment can alter the feasibility of issuing bonds in certain markets, disproportionately disadvantaging MDBs headquartered in LMICs.

e. Use of repo and collateral

The use of repo transactions is vital for injecting liquidity into local financial markets, allowing institutions to secure financing using debt securities as collateral. A repo transaction involves the sale of securities with an agreement to repurchase them at a later date, while a reverse repo refers to the purchase of securities with a commitment to resell them in the future. Repos gained prominence post-global financial crisis due to their potential to minimise counterparty credit risks.

A robust short-term yield curve, coupled with an active repo market, forms the foundation for issuing long-term securities and fostering the development of secondary markets. However, in many jurisdictions, the legal and regulatory frameworks governing repo transactions remain either underdeveloped or ambiguous. These legal gaps restrict the effective use of locally issued debt securities as collateral, thereby limiting the growth of LC markets.

Although repos are legally structured as a sale and repurchase of securities, they are, in economic terms, a form of collateralised borrowing. This duality can lead to complex legal challenges, particularly in jurisdictions lacking a clear framework for repo transactions. Standardised master agreements, such as the

[22] ibid.
[23] Interview 10.
[24] Interview 10.
[25] Interview 10.

Global Master Repurchase Agreement (GMRA)[26] and the Master Repurchase Agreement (MRA)[27], have been established to provide uniform documentation for these transactions.

However, the GMRA is governed by English law, and the MRA by New York law, which may lead to contentious issues of applicability across jurisdictions. Local legislation is often necessary to address legal transplantation issues, including the recognition of collateral ownership and enforceability of close-out netting rights in insolvency cases.[28]

In jurisdictions lacking such legislation, courts may refuse to recognise the transfer of title to the collateral, instead recharacterising the repo as a collateralised loan. This can place the collateral holder at risk, granting them no greater rights than other creditors in insolvency proceedings, or invalidating netting agreements altogether.[29]

Additionally, the legal framework must provide clarity regarding the operational flexibility for managing repo portfolios. It should specify whether different types of repo transactions are permitted, including the right of substitution, whereby the seller may retrieve the securities and replace them with equivalent assets during the term of the agreement. Similarly, the frame work should clarify whether rehypothecation of collateral is allowed, enabling buyers to reuse the securities as collateral in separate transactions. Without such clarity, the effectiveness of repo transactions could be significantly diminished, discouraging participation from financial institutions.[30]

f. Local settlement systems

Effective local settlement systems are vital to the operation of capital markets, particularly for MDBs issuing bonds onshore. These systems facilitate the clearing and settlement of bond transactions, ensuring efficient transfer of securities and payments. In jurisdictions with well-developed infrastructures, such as Central Securities Depositories (CSDs) and real-time gross settlement (RTGS) systems, market participants face fewer barriers to bond transactions.

However, in certain jurisdictions, legal provisions governing the transfer of locally issued debt securities require bilateral settlement by physical delivery, which leads to delays and increases costs, thereby reducing the efficiency of transactions.[31] These regulatory frameworks pose challenges for MDBs operating onshore by deterring potential investors and complicating local bond issuance strategies.[32]

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[26] International Capital Markets Association (ICMA), 'Global Master Repurchase Agreement (GMRA)' https://shorturl.at/UjI3j accessed 18 September 2024.

[27] Securities Industry and Financial Markets Association (SIFMA), 'Master Repurchase Agreement (MRA)' https://shorturl.at/JDdG7 accessed 18 September 2024.

[28] H Hashimoto, Y Mooi, G Pedras, A Roy, K Chung, T Galeza, MG Papaioannou, P Katz, Z Bango, JA Gragnani, B Gurhy, and C Paladines, *Guidance Notes: Developing Government Local Currency Bond Markets* (IMF and World Bank 2021) 21 https://shorturl.at/IAR1R accessed 19 September 2024.

[29] ibid.

[30] W Bossu W, C Hillier, and W Bergthaler, 'Local Currency Bond Markets Law Reform: A Methodology for Emerging Markets and Developing Economies', IMF Working Paper (20 November 2020) 31-33.

[31] Dahan and others (n 18) 37.

[32] Frontclear and OGResearch, *Diagnostic Handbook for Money Market Development* (2018) 27-31 <https://shorturl.at/8Ze8o> accessed 18 September 2024.

A key legal consideration in settlement systems is the concept of 'finality' in settlements. In some legal frameworks, the finality of payments and the transfer of securities—meaning the point at which these transfers are definitive—is clearly protected by law. This provides market participants with certainty that once a transaction is completed, it cannot be reversed, even in cases of insolvency.[33] However, in jurisdictions lacking such legal clarity, there may be a heightened risk that insolvency courts could intervene in settled transactions. Such uncertainties can discourage market participation and contribute to a lack of depth in local bond markets.

The integration of CSDs with central bank RTGS systems also raises legal questions. In markets where CSDs and RTGS systems are linked, the legal framework may provide for delivery versus payment (DVP) mechanisms, ensuring that the transfer of securities and corresponding cash payments occur simultaneously.[34] This mechanism reduces the risk of one party failing to meet its obligations, offering greater safety in transactions. For MDBs, such integrated systems are important as they minimise counterparty risk, particularly when issuing bonds in volatile markets.

Another aspect of the legal framework that impacts settlement systems is the reliance on intermediaries, such as banks and investment firms.[35] The role of these intermediaries, and the legal obligations placed upon them, can vary significantly across jurisdictions, influencing both the speed and efficiency of settlement. In jurisdictions where intermediaries are legally required to execute trades—in some cases, despite the existence of established CSDs—this reliance may slow settlement processes, thereby constraining the liquidity of MDB bonds.

g. Investor remedies for market abuse

In some jurisdictions, the absence of effective legal remedies for market actors issuing or trading debt securities based on false or misleading information can undermine investor confidence and hinder local capital market participation.[36] Weak enforcement mechanisms, limited access to legal protections, and the lack of a regulatory institution capable of bringing enforcement claims, along with the absence of ombudsman services, leave investors vulnerable to misconduct. This lack of protection can discourage investment, particularly in markets with weaker regulatory frameworks, leading to shallow local capital markets and a limited investor base for locally issued MDB bonds.

h. Availability of shelf registration

Shelf registration is a regime that allows issuers to register a large amount of generic, unspecified securities with the securities regulator upfront. This enables issuers to 'take securities off the shelf' for immediate sale when market conditions are favourable, without the need for prior regulatory review of each individual offering. The main advantage of this approach lies in its flexibility and efficiency, enabling issuers to avoid delays typically associated with the traditional method of registering each offering separately. Additionally, shelf registration facilitates the use of short-form prospectuses that incorporate information already filed with the

[33] Hashimoto and others (n 28) 46.
[34] ibid.
[35] Dahan and others (n 18) 37.
[36] ibid 38-39.

securities regulator by reference, thereby reducing administrative burdens and expediting market access.

In the United States, the shelf registration regime was introduced by the Securities and Exchange Commission (SEC) in 1982 concerning corporate issuers,[37] having undergone various enhancements since then. The SEC's most recent enhancement, under the Securities Offering Reform initiative of 2005, permits certain reporting corporate issuers to undertake registered offerings without the regulatory delays typically associated with the registration process.[38]

For international financial institutions such as MDBs and foreign governments, the shelf registration system has been implemented through statements of policy rather than formal rules.[39] Specifically, the SEC published statements in 1980 and 1982 that allow international financial institutions to file a base prospectus disclosing political, economic, and statistical information appropriate for Schedule B registration.[40] Subsequently, when an offering is planned, the issuer prepares a prospectus supplement outlining the use of proceeds, detailed security information, the plan of distribution, and recent material developments. Although the SEC's policy does not explicitly provide for incorporation by reference, an informal process exists whereby MDBs can request permission to use this approach by explaining their plans to set up a shelf registration for debt securities.[41] Through this process, numerous MDBs have successfully utilised the shelf registration system, offering a streamlined process that reduces issuance costs and administrative hurdles.

In jurisdictions where a shelf registration programme is not available or is underdeveloped, issuers face greater challenges in making multiple public offerings. The absence of a system for pre-approving offerings means that each issuance requires separate regulatory approval, which can slow the process and limit fundraising activities by MDBs.[42]

3.1.2. Challenges specific to MDBs

a. Regulatory misalignment

MDBs frequently face domestic legal and regulatory frameworks designed for local issuers, which create significant obstacles when issuing LC bonds onshore. While these frameworks are typically intended to safeguard market integrity, they often fail to align with the unique status and operational models of MDBs, resulting in higher transaction costs and delays.[43]

For instance, stringent disclosure requirements aimed at protecting local investors are not always flexible enough to accommodate MDB-issued bonds. Unlike corporate issuers, MDBs are international financial institutions governed by representatives of member countries rather than

[37] Securities and Exchange Commission, *Rule 415: Delayed or Continuous Offering and Sale of Securities*, 17 CFR § 230.415 (1982).
[38] Securities and Exchange Commission, *Securities Offering Reform*, 17 CFR Parts 200 et seq (2005).
[39] P Dudek, 'Regulation of Offerings by International Financial Institutions under the US Federal Securities Laws' in C Smith, X Gao, and T Dollmaier (eds), *Funding International Development Organizations* (Brill 2023) 80, 82-88.
[40] ibid.
[41] ibid.
[42] Dahan and others (n 18) 40.
[43] E Sulima, 'Development of Domestic Capital Markets: The EBRD Experience' in C Smith, X Gao, and T Dollmaier (eds), *Funding International Development Organizations* (Brill 2023) 9, 13-14.

private shareholders.[44] They typically disclose material information in international markets according to their treaties, internal by-laws, and procedures, which makes it difficult to comply with local disclosure rules requiring different formats, languages, and timelines.[45] In the European Union (EU), MDBs with an EU member state as a participant are exempt from prospectus requirements, and no mandatory ongoing disclosure is required for non-equity securities.[46] Other countries have adopted similar exemptions, allowing MDBs to disclose information according to their established practices while meeting ongoing disclosure requirements.[47] However, in many cases, no such exemptions exist, and local rules fail to account for the unique structures of MDBs, creating unnecessary friction in the issuance process.

Another substantial regulatory barrier in the issuance of debt securities by MDBs involves national legal frameworks that prohibit non-resident entities from issuing bonds.[48] This prohibition often stems from concerns within ministries of finance about competition with government bond issuers, particularly when the competing entity holds a AAA rating.[49] Domestic banks may also oppose such issuances, fearing competition from MDBs in the LC market.[50] As a result, MDBs frequently need to persuade national authorities that permitting their bond issuances would benefit the local economy. Moreover, extensive documentation requirements and the need for multiple approvals from central banks, ministries of finance, local securities regulators, and exchanges can significantly delay the process. As one interviewee familiar with the matter noted, these delays can extend up to five years from the initial conversations with local authorities to the actual bond issuance.[51]

Due to these regulatory hurdles, when MDBs first enter a market, they often need to engage in extensive dialogue with local regulators. Internal resources and external counsel are required to secure exemptions, approvals, and waivers from various requirements, including disclosure rules and documentation.[52] These processes not only delay the issuance of LC bonds but also substantially increase transaction costs. However, once local bond programmes are established, MDBs can issue bonds more efficiently, reducing the burden on future

[44] Interview 7.
[45] Sulima (n 43) 9, 13-14.
[46] Article 8.1(a) of Directive 2013/ 50/ EU of the European Parliament and of the Council of 22 October 2013 amending Directive 2004/ 109/ EC of the European Parliament and of the Council on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market, Directive 2003/71/EC of the European Parliament and of the Council on the prospectus to be published when securities are offered to the public or admitted to trading and Commission Directive 2007/14/EC laying down detailed rules for the implementation of certain provisions of Directive 2004/109/EC.
[47] Sulima (n 43) 9, 13-14.
[48] Interview 18.
[49] C Fink, HP Lankes, and C Sacchetto, *Mitigating Foreign Exchange Risk in Local Currency Lending in Fragile States: Review and Options* (International Growth Centre, June 2023) 27.
[50] ibid.
[51] Interview 2.
[52] Interview 7.

issuances and streamlining operations.[53] As mentioned in an interview, the costs associated with gaining the necessary approvals and negotiating exemptions are considerable issuing a single bond is costly, but issuing multiple bonds allows MDBs to benefit from economies of scale.[54]

Even when permission to issue a bond is obtained, restrictions on the use proceeds by non-resident issuers may still apply. Local regulations may require government approval for the use of proceeds or impose limits on the types of potential investment targets.[55]

Due to these challenges, MDBs are often disincentivised from issuing bonds onshore until substantial legal reforms are implemented. However, such reforms can take years to negotiate. It is not uncommon for reform processes to take a decade, with MDBs often working alongside local law firms to engage governments in making local legal frameworks more favourable for MDB operations.[56] This includes ensuring that local regulations align with the privileges and immunities granted to MDBs under international law and do not conflict with treaty obligations, particularly in countries that are members of the MDB in question.[57]

As a result, MDBs often find that hedging, including with local counterparties, is a more flexible and efficient approach in economies lacking the scale necessary to make multiple bond issuances cost-effective. As stated by an interviewee:

> 'Generally, we find that developing instruments other than bonds is much easier and more flexible. For example, we often use derivative instruments with onshore local counterparts before legal reforms are fully enacted, even though this involves increased risk, which we consider in our credit assessment. However, we are more likely to proceed with derivatives than with local bond issuances until all necessary legal changes are in place. It is much more challenging and time-consuming to reach the point where we are ready to issue a domestic bond compared to executing a domestic derivative transaction'.[58]

b. Repo eligibility

A crucial regulatory issue concerning MDB-specific legal and regulatory matters is the repo eligibility of MDB bonds. Securing central bank approval for bonds to qualify for repo transactions significantly enhances their attractiveness to local financial institutions, particularly banks.[59] Repo eligibility enables banks to use MDB bonds as collateral in transactions with the central bank, thereby improving liquidity and incentivising local banks to invest in these instruments.

[53] See, eg, Y Chen, 'Inspiring Opening- Up, Innovation and Transparency: International Organizations in the Development of China's Debt Capital Market' in C Smith, X Gao, and T Dollmaier (eds), *Funding International Development Organizations* (Brill 2023) 36-51.
[54] Interview 7.
[55] Sulima (n 43) 9, 16.
[56] Interview 14.
[57] Sulima (n 43) 9, 15-16.
[58] Interview 9.
[59] Bossu (n 16) 33-34.

However, the process of securing repo eligibility is often complicated by legal and regulatory frameworks primarily designed to accommodate sovereign and corporate bonds.[60] In many jurisdictions, MDB bonds do not automatically qualify for repo transactions,[61] and obtaining such eligibility typically requires a range of reforms to domestic securities laws.[62] Without these adjustments, MDB bonds may struggle to gain traction in the domestic market, as local banks are less likely to invest in bonds that are not eligible for central bank repo transactions.[63]

3.2. Onshore hedging and derivatives

Hedging LC risk is crucial for managing foreign exchange volatility, serving as a key mechanism enabling LC financing by MDBs. As discussed above, hedging is particularly important where local capital markets lack depth. This section examines the legal and regulatory challenges associated with the onshore hedging activities of MDBs, considering both general local derivatives law and the specific operational frameworks of MDBs.

3.2.1. Local derivatives law

According to the Bank for International Settlements (BIS), only 10% of global derivatives turnover is in contracts denominated in the currencies of emerging market economies, which mostly comprise LMICs—a figure significantly lower than the share of these economies in global GDP or world trade. Derivatives in LMIC currencies also tend to be less complex and are more frequently traded outside their home economies compared to those in advanced economies.[64]

While there are many reasons for this disparity, a key factor is the presence of legal and regulatory barriers, along with uncertainty surrounding the validity of derivative contracts.[65] In some jurisdictions, banks and other investors face restrictions on freely purchasing and selling derivative instruments or hedging risks associated with debt securities. Additionally, significant uncertainty often exists regarding the enforceability of derivatives transactions and the validity of their underlying legal documentation.

One example of enforceability issues relates to the distinction between deliverable and non-deliverable derivative transactions. In a deliverable transaction, the underlying currencies are physically exchanged at maturity, requiring both parties to deliver and receive the currencies at the agreed rate. Conversely, non-deliverable transactions do not involve the physical exchange of currencies—they are pegged to the domestic currency, but payments at maturity are made in a convertible currency, usually the US dollar.

Some jurisdictions recognise only deliverable transactions, excluding non-deliverable ones. This is problematic for MDBs, which often rely on non-deliverable derivatives in situations where local forex market limitations or central bank regulations restrict full currency convertibility.

[60] ibid 45-48.
[61] Interview 16.
[62] See, eg, European Bank for Reconstruction and Development, *Building the Foundations for Financial Market Development: A Retrospective of More than 10 Years of EBRD Engagement in Georgia* (EBRD 2023).
[63] Interview 16.
[64] Bank for International Settlements, 'Emerging Derivatives Markets' (2016) BIS Quarterly Review, December 67 https://www.bis.org/publ/qtrpdf/r_qt1612.htm accessed 14 October 2024.
[65] Sulima (n 43) 9, 17-19.

Since most LMIC currencies are not fully convertible, non-deliverable derivatives are essential for managing foreign exchange risk while ensuring payments are made in a convertible currency.[66]

Despite their crucial role in MDBs' LC financing operations, some jurisdictions may classify non-deliverable derivatives as wagering or gambling contracts, making them unenforceable under local law.[67] In such cases, counterparties may be required to prove that the transaction is linked to the 'real economy' rather than being speculative.[68] This increases counterparty risks for MDBs, as there is a possibility that local courts may invalidate these transactions.

Additionally, the absence of established mechanisms such as netting, collateral agreements, and close-out frameworks—standard in developed capital markets—further increases MDBs' exposure to exchange rate and credit risks. Without these mechanisms, MDBs cannot effectively manage potential losses resulting from currency fluctuations or counterparty insolvency.[69]

While derivatives laws in LMICs must consider their potential to become a source of systemic risk,[70] it is important to recognise that an appropriate legal framework for derivatives, tailored to the vulnerabilities of these economies, can foster the development of local capital markets. This, in turn, could enhance financial stability by promoting greater reliance on LC financing rather than foreign currency debt.

3.2.2. Challenges specific to MDBs

a. Counterparty credit risk restrictions

MDBs typically maintain strict internal guidelines that limit their capacity to transact with local financial institutions unless these counterparties meet stringent credit rating thresholds. These frameworks often require counterparties to hold a AAA in global scales or similarly high credit rating,[71] significantly narrowing the pool of eligible local entities for hedging operations. This presents a substantial challenge in LMICs, where few local financial institutions—particularly those most exposed to domestic currency volatility—meet the credit rating requirements to engage in derivative transactions such as currency swaps or forwards. The situation becomes even more problematic during economic downturns, when the credit ratings of local banks are likely to decline further.

These restrictions reduce the availability of hedging options in local markets, forcing reliance on international financial institutions for hedging operations. While hedging with local institutions may not always reduce costs, it would provide MDBs with greater flexibility in managing currency risks in the jurisdictions where they operate.

[66] Interview 11.
[67] Frontclear and OGResearch (n 32) 43; Abbas and Hazzaa (n 18) 62.
[68] Frontclear and OGResearch (n 32) 42-43.
[69] PM Werner, 'Close-out Netting and the World of Derivatives in Central and Eastern Europe and Beyond—ISDA's Perspective' in European Bank for Reconstruction and Development, *Law in Transition 2012: Developing Local Capital Markets* (EBRD 2012) 48-55; Frontclear and OGResearch (n 32) 43.
[70] D Gabor, *Understanding the Financialisation of International Development Through 11 FAQs* (Heinrich Böll Stiftung North America, August 2018).
[71] Fink, Lankes, and Sacchetto (n 49) 26.

b. Cross-currency swaps with local central banks

As mentioned in Chapter 2, MDBs have utilised cross-currency swaps with local central banks to secure access to LC liquidity and mitigate foreign exchange risks.[72] These swaps not only support MDBs' LC financing operations but also help central banks stabilise currency demand and manage foreign exchange reserves during periods of economic instability. Such transactions benefit both parties, provided the legal and regulatory frameworks surrounding derivatives are well-developed.[73]

However, the effectiveness of cross-currency swaps depends on the creditworthiness of the central bank involved and the strength of the legal environment governing derivative transactions. While there may be room for ad hoc negotiations with the central bank, MDBs must exercise greater caution when entering swap transactions in jurisdictions where the legal framework for derivatives is underdeveloped. The absence of clear regulations or comprehensive legal documentation introduces counterparty risks and increases exposure to regulatory uncertainty.[74]

3.3. Banking law and regulations

The regulatory framework governing local banks in LMICs can present significant challenges for MDBs operating onshore. These challenges arise from both the structure of banking law and the regulatory environment in which local financial institutions operate. This section explores several relevant legal and regulatory barriers to MDBs' local financing activities, including restrictions on non-residents' operations, local banking operations, and prudential regulation and capital requirements.

3.3.1. Restrictions on non-residents' operations

When operating onshore, MDBs may face limitations or restrictions on non-residents both seeking to access liquidity and lend in LC. Regarding borrowing, it is sometimes the case that MDBs attempt to access LC from domestic financial institutions to on-lend within local markets. However, central banks or other regulators may impose restrictions on non-residents accessing local liquidity. These restrictions are typically designed to protect LC markets from external pressures and manage foreign exchange risks. Consequently, MDBs may need to seek interpretations from local authorities and obtain exemptions or approvals to access LC.[75]

In addition to these restrictions, there may also be legal limitations on MDBs' ability to lend. In some jurisdictions, banking regulations may prevent non-resident entities from fully participating in local markets, requiring MDBs to obtain specific permissions or exemptions from relevant authorities to engage in local lending.[76]

To circumvent these regulatory hurdles, MDBs typically rely on alternative strategies such as engaging in cross-currency swaps, using local financial intermediaries, or issuing LC bonds.

[72] See, eg, TC Hoschka, 'Local Currency Financing: The Next Frontier for MDBs?', Economics and Research Department (ERD) Working Paper No 68 (Asian Development Bank, April 2005) 15 https://shorturl.at/mHw6c accessed 25 September 2024.

[73] Frontclear and OGResearch (n 32) 42-43.

[74] See, eg, Werner (n 69).

[75] Interview 7.

[76] Interview 7.

3.3.2. Local banking infrastructures

A critical challenge MDBs face in LMICs is the underdevelopment of local financial infrastructure. In many jurisdictions, key operational components such as payment systems and local custody accounts are not fully developed.[77] The lack of integrated settlement systems and automated processes introduces delays and operational risks, generally increasing the cost and time involved in MDB operations onshore.

The requirements for opening local banking and custody accounts can be particularly burdensome for MDBs, as local banks often have limited experience working with international institutions. For instance, local banks may require specific documentation to open an account that does not align with the operations of international financial institutions.[78] Also, even small fees—such as taxes on bank transfers, typically reimbursed only at the end of the fiscal year—can affect how MDBs manage onshore financing.[79]

There are also instances of regulatory misalignment with the specific mandates of MDBs as international financial institutions. For instance, non-nationals may face specific restrictions when attempting to open bank or securities accounts with local financial institutions, registrars, or custodians. These restrictions can affect their ability to issue, repurchase, or redeem bonds, or manage payments such as interest and income distributions to investors.[80] Overall, the regulatory divergences across jurisdictions concerning local banking operations—such as opening exclusive accounts to deposit raised currency and then disbursing it—can be onerous for MDBs to manage.[81]

In cases where local counsel is unsure of the applicable regulatory framework, MDBs may need to consult the local central bank. This can result in lengthy discussions with local authorities, who are often protective of their regulatory domains, especially in countries that have undergone banking reforms.[82] Central banks have valid reasons for maintaining oversight, such as preventing financial institutions from engaging in risky activities. However, certain regulatory restrictions—sometimes unintentionally—add an extra layer of complexity to the onshore operations of MDBs. This causes delays, even for transactions that appear relatively straightforward, such as opening a bank account.

3.3.3. Prudential regulation and capital requirements

In some jurisdictions, prudential regulations impose restrictive capital requirements on local institutional investors, such as pension funds and insurance companies. Regulatory frameworks may place caps on certain asset classes—such as corporate and government bonds—and set restrictions on both domestic and foreign

[77] Frontclear and OGResearch (n 32) 27-31.
[78] Interview 10.
[79] Interview 10.
[80] Sulima (n 43) 9, 16.
[81] Interview 7.
[82] Interview 7.

investments. This is the case, for instance, in some Latin American[83] and Sub-Saharan African countries.[84]

As part of these prudential regulatory frameworks, capital requirement regulations often impose unfavourable risk weightings on locally issued debt securities. Such overly stringent liquidity standards increase the required capital that financial institutions must hold, disincentivising investment in local bonds.[85] Moreover, the absence of clear rules for risk weightings may exacerbate the problem, creating uncertainty about banks' regulatory obligations when investing in local securities.[86] These regulatory policies may create barriers to entry for potential investors, which in turn reduces liquidity and overall demand for local securities.

Within these frameworks, capital requirement regulations often treat MDB bonds as higher risk than local government bonds, limiting the ability of institutional investors to purchase them, despite the typically strong credit ratings of MDBs.[87] As a result, MDB bonds may experience reduced demand from local institutional investors, who are incentivised to favour domestic government bonds due to these regulatory provisions. The exclusion of MDB bonds from more favourable capital requirement regulations limits the options available for local institutional investors to diversify their portfolios in local capital markets, which often offer limited access to higher-quality assets.

3.4. Tax legislation

Tax legislation plays a critical role in shaping the attractiveness and viability of local capital markets, with important implications for the issuance of bonds by MDBs. In many jurisdictions, the legal frameworks that govern tax treatment are often fragmented or underdeveloped, creating negative incentives for the purchase of locally issued MDB bonds. These disincentives stem from various tax policies, such as those relating to withholding taxes, value-added tax (VAT), and capital gains tax.

One of the main challenges faced by MDBs in developing markets is the unequal tax treatment between government securities and bonds issued by non-domestic entities like MDBs.[88] In numerous jurisdictions, locally issued government securities benefit from more favourable tax treatment, often being exempt from withholding taxes, while MDB bonds remain subject to such levies.[89] For instance, domestic investors may be liable for withholding tax or VAT when purchasing MDB bonds, effectively penalising them for choosing MDB-issued securities over government bonds.[90] This disparity undermines the attractiveness of MDB bonds for domestic investors.

The absence of tax uniformity across different categories of issuers creates a barrier for MDBs that rely on tax-neutral environments to ensure

[83] B Bonizzi, D Guevara and J Churchill, 'Variegated Financialization and Pension Fund Asset Demand: The Case of Colombia and Perú' (2021) 19(2) Socio-Economic Review 789.

[84] E Osano, M Fuchs, A Mugi, and J Gathumi, *A Local Currency Solution for Multilateral Development Bank Portfolio Transfer* (FSD Africa 2024) https://fsdafrica.org/wp-content/uploads/2024/06/Report-Local-Currency-Solution-for-Multilateral-Development-Bank-Portfolio-Transfer-004.pdf accessed 10 October 2024.

[85] Hashimoto and others (n 28) 79.

[86] Dahan and others (n 18) 39.

[87] Interview 8; Interview 16.

[88] Interview 16.

[89] Hashimoto and others (n 28) 40.

[90] Interview 16.

competitive pricing for their debt instruments. MDBs typically issue bonds with the expectation that the proceeds will be used to fund LC lending or project finance in the issuing country. However, the imposition of negative tax incentives for the purchase of these bonds can undermine the development objectives that MDBs seek to advance.

Another key factor is regulatory uncertainty regarding the tax treatment of MDB bonds. When tax regimes do not clearly address the treatment of MDB bonds relative to government securities, investors in the local market—particularly local institutional investors such as pension funds and insurance companies—may be discouraged from including MDB bonds in their portfolios.

3.5. Exchange restrictions

Exchange restrictions take various forms and serve different purposes, including capital outflow or inflow controls, general and selective controls, market-based and quantitative controls, prudential controls, and controls imposed for macroeconomic or balance of payment reasons.[91] According to the IMF, an exchange restriction is 'a direct governmental limitation on the availability or use of exchange as such'.[92]

Given the limited foreign currency liquidity in many LMICs, exchange restrictions lead to what this report has previously referred to as convertibility and transfer risks. Convertibility risk refers to the inability to convert LC into foreign currency on repayment dates, while transfer risk involves capital outflow controls that prevent fund transfers to offshore creditors, even after the currency has been converted.[93]

MDBs often benefit from privileges and immunities that exempt them from local exchange and capital controls in their member countries. This special status, granted under their Articles of Agreement or founding treaties, generally allows MDBs to transfer funds, repatriate capital, and convert currencies without being subject to local restrictions. These treaty provisions mean that obligations to MDBs by both sovereign borrowers and private entities hold a priority claim on the international reserves of the central bank of the country of operations. Furthermore, MDBs hold a preferred creditor status (PCS) through customary international law, meaning that if a sovereign borrower cannot meet its international financial obligations, the debt claims of MDBs are typically treated as senior to those of bilateral and commercial creditors.[94] These conventions grant MDBs a senior claim on the balance of external payments, net of interest payments on external debt, and, in the case of sovereign loans, a senior claim on primary fiscal balances. In turn, the seniority of MDB claims on private borrowers is determined by the contractual terms of their financing.[95]

Despite their treaty-based privileges and immunities, MDBs may still face challenges in countries where extraordinary circumstances,

[91] M Waibel, 'BIT by BIT: The Silent Liberalization of the Capital Account' in C Binder, U Kriebaum, A Reinisch, and S Wittich (eds), *International Investment Law for the 21st Century: Essays in Honour of Christoph Schreuer* (Oxford University Press 2009).

[92] Decision No. 1034-(60/27), 1 June 1960, *Selected Decisions of the International Monetary Fund and Selected Documents* (Washington, 10 May 1976), at 139.

[93] Fink, Lankes, and Sacchetto (n 49) 23.

[94] RSJ Martha, *The Financial Obligations in International Law* (Oxford University Press 2015) 492-513.

[95] Willem Buiter and Steven Fries, 'What Should the Multilateral Development Banks Do?', Working Paper No 74 (EBRD, June 2002) 8-9 https://www.ebrd.com/downloads/research/economics/workingpapers/wp0074.pdf accessed 26 September 2024.

such as sanctions or a shortage of foreign reserves, restrict cross-border payments.[96] In such cases, MDBs generally negotiate with national authorities to ensure that their senior claim on the country's external payments is upheld.[97] However, when conducting bond issuances or hedging transactions outside the jurisdiction of a member state, the treaty-based privileges and immunities do not apply. This may expose MDBs to local exchange and capital transfer regulations adopted by the relevant authorities.[98]

In contrast, private entities and foreign investors purchasing MDB-issued LC bonds do not automatically benefit from the privileges or immunities of MDBs. As a result, they may be subject to exchange restrictions. For example, there may be restrictions on non-residents' ability to engage in forward foreign exchange contracts, limiting their capacity to hedge LC-denominated assets. Additional restrictions may apply to borrowing in LC, often affecting non-resident stockbrokers or custodian banks that require overdraft facilities to settle security purchases.[99]

These currency control restrictions can adversely affect the attractiveness of LC debt markets to foreign investors—including MDB bonds—contributing to greater shallowness of those markets.[100] As highlighted by one interviewee:

> 'One important thing that hampers the development of local currency is the local regulatory environment, particularly the existence of capital controls or obstacles to moving currency in and out of the country… The risks of investing in a country and repatriating the repayment… are important to consider… It is often not just about the amount of capital but the possibility of moving it, which can be challenging.'[101]

Certain provisions within Bilateral Investment Treaties (BITs)) may offer exemptions from exchange restrictions for foreign investors. These treaties often include free transfer clauses that protect investors' rights to transfer capital, profits, dividends, loan repayments, and proceeds from partial or total liquidation or disposition of the investment freely and without undue restrictions. They may also require host states to allow such transfers in a freely convertible currency at the market exchange rate.[102] However, these clauses can be subject to balance-of-payments safeguards, permitting the state to impose exchange restrictions during serious balance-of-payments crises or external financial difficulties, or when capital movements pose significant threats to macroeconomic stability, particularly concerning monetary and exchange rate policies.[103]

[96] Interview 6; Interview 14.
[97] Interview 6; Interview 14.
[98] Interview 6.
[99] See, eg, Hashimoto and others (n 28) 100.
[100] Sulima (n 43) 9, 16.
[101] Interview 16.
[102] M Waibel, 'BIT by BIT: The Silent Liberalization of the Capital Account' in C Binder, U Kriebaum, A Reinisch, and S Wittich (eds), *International Investment Law for the 21st Century: Essays in Honour of Christoph Schreuer* (Oxford University Press 2009).
[103] ibid.

3.6. Criminal and civil liability of public officials

A residual and often overlooked factor posing challenges to currency conversions of existing loans into LC, which emerged during interviews conducted for this research, is the local legal frameworks concerning the criminal and civil liability of public officials.[104] In some jurisdictions, officials may hesitate to make active decisions, such as seeking the conversion of MDB loans initially issued in hard currency into LC, due to concerns about being held liable if market conditions following the conversion result in financial losses for the state.

As a result, there is often reluctance to pursue conversions to LC, even when it may better align with the borrowing country's economic needs and debt management strategy. As summarised by an interviewee: 'Once a loan is issued in dollars, it is hard to change because everyone is afraid of making a decision—although by not deciding, you're still deciding. There is an inertia due to these incentives.'[105]

4. Complexities and tailoring of contracts

As previously noted in this chapter, MDBs have traditionally operated as dollar-based institutions, conducting most of their financing activities in hard currency. A legal repercussion of this institutional legacy is that, when engaging in LC financing, MDBs often replicate the contractual provisions used in their FC agreements in their facility agreements in LC. This includes maintaining governing laws such as New York or English law, which provide a familiar legal framework for both MDBs and international investors.[106]

The widespread adoption of these core governing laws in international finance, reflecting broader global monetary hierarchies,[107] is generally interpreted by practitioners as a means of utilising standardised agreements that facilitate harmonisation in lending processes and ensure legal certainty.[108] As one interviewee remarked:

> 'If we were to lend based on local law and forum in all those jurisdictions, it would be incredibly challenging. We'd need to know all the laws of those places, which is not feasible. The only way we can have an efficient lending platform is if we have legal standards that are enforceable under English law and New York law'.[109]

However, some regional MDBs, particularly those more embedded within local legal and financial systems, may occasionally opt to use local law, particularly when dealing with longstanding clients or less complex transactions.[110] This practice is seen as aligning more closely with the expectations and practices of local clients, as

[104] Interview 11.

[105] Interview 11.

[106] Interview 7; Interview 14.

[107] K Patrício Ferreira Lima, 'Sovereign Solvency as Monetary Power' (2022) 25(3) *Journal of International Economic Law* 424–446; A Kaltenbrunner, 'Financialised Internationalisation and Structural Hierarchies: A Mixed-Method Study of Exchange Rate Determination in Emerging Economies' (2018) 42(5) Cambridge Journal of Economics 1315–1341.

[108] Interview 7; Interview 13; Interview 14.

[109] Interview 7.

[110] Interview 13.

'there is a big push by the market for local lawand local currency'.[111] Nonetheless, for larger transactions or those involving new clients, especially where multiple international lenders are involved, New York or English law is generally preferred.[112]

While loan agreements may be governed by New York or English law, certain instruments—such as equity subscription agreements, mortgage agreements, and security interests on equipment, collateral, and other assets—are necessarily governed by local law.[113] This is because the assets securing the loan are usually located within the borrower's jurisdiction. To ensure that these arrangements are properly perfected and enforceable under domestic legal frameworks, MDBs engage local counsel.[114] As one interviewee explained, 'typically, the security would be governed by local law, though sometimes we might get an English law guarantee from a sponsor'.[115]

Despite similarities between the contractual provisions of local and hard currency financing, LC contracts are inherently more complex due to the challenges of sourcing LC and managing associated risks. These challenges require a greater degree of tailoring in contractual provisions, particularly in matching funding sources with lending terms and adapting to local market practices. As succinctly summarised by one interviewee:

> 'There are always going to be unusual elements in our local currency financing that are required by the fact that we are a dollar-based institution and that we want to minimise costs and risks associated with doing things that are not in dollars'.[116]

4.1. Matching funding sources with lending terms

Funding and hedging-related clauses are crucial in LC financing arrangements due to the specific funding mechanics employed by MDBs and the need to match funding or hedging sources with lending terms.

One such clause pertains to temporary currency substitution, addressing situations where the MDB is unable to source the LC for the financing arrangement. For example, Article IV, Section 4.04(a) of the *General Conditions applicable to Loan, Guarantee, and Grant Agreements of the African Development Bank and the African Development Fund* states that 'if the Bank reasonably determines that an extraordinary situation, whether factual or legal, has arisen under which the Bank is unable to provide the loan currency', it 'shall promptly notify the Borrower of its inability to access or procure' such currency. Additionally, if the parties cannot agree on a substitute currency, 'the Borrower may cancel the undisbursed portion of the Loan for which an agreement has not been reached as to the currency of substitution'.[117]

[111] Interview 13.

[112] Interview 13.

[113] Article 5.2 of the Asian Infrastructure Investment Bank's *Operational Policy on Financing* (26 June 2024).

[114] Interview 14.

[115] Interview 14.

[116] Interview 7.

[117] African Development Bank Group, *General Conditions applicable to Loan, Guarantee and Grant Agreements of the African Development Bank and the African Development Fund* (February 2009) https://shorturl.at/NCoOk accessed 26 July 2024.

Another distinctive feature of LC financing arrangements is their pricing clauses, influenced by the costs incurred by the MDB in sourcing LC. While hard currency loans are typically based on established benchmarks such as LIBOR or SOFR, the interest rates and fees in LC loans are affected by the costs of issuing LC bonds or engaging in currency swaps to hedge against exchange rate risks. Thus, the pricing process in LC lending involves bespoke interactions with borrowers to ensure they understand the variability in costs associated with different funding structures. As explained by an interviewee:

> 'We engage with borrowers to ensure they have control over pricing, which can vary significantly if funded through swaps or bonds. This is crucial because once we commit to a swap or bond, we are obligated to our counterparty or investors, regardless of whether the borrower finds the rate acceptable. This involvement of the borrower in the pricing process is what distinguishes local currency lending from dollar lending.'[118]

Notably, pricing clauses addressing market disruption and increased costs enable MDBs to manage the risk if sourcing LC becomes prohibitively expensive or impossible. These clauses provide mechanisms for either continuing or exiting the arrangement under specific terms.[119] For instance, Article III, Section 3.03(b) of the *General Conditions applicable to Loan, Guarantee, and Grant Agreements of the African Development Bank and the African Development Fund* provides that 'the Bank may establish an alternate interest rate [other than the rate specified in the Loan Agreement] which shall be applicable if, for any reason, including, but not limited to, financial market disruption, the Bank determines that it has become impossible to calculate the interest rate in the manner agreed upon in the Loan Agreement'. If the costs of LC sourcing increase, the same provision continues: 'the Borrower shall have the right to prepay the Loan without thereby incurring any penalty or prepayment costs'.[120]

Another important type of pricing clause addresses unwinding costs, applicable when a borrower seeks to prepay a loan or terminate the financing early.[121] These costs are passed onto the borrower,[122] potentially increasing transaction costs depending on market conditions. For example, Article III, Section 3.06(c) of the *General Conditions applicable to Loan, Guarantee, and Grant Agreements of the African Development Bank and the African Development Fund* establishes that 'prepayment costs ... on prepayment of any maturity shall... be an amount reasonably determined by the Bank to represent any cost to the Bank of redeploying the amount to be prepaid from the date of prepayment to the maturity date...'.[123]

These costs include those incurred in engaging in currency swaps with third parties, from which the lender must then withdraw, incurring transactional costs for the MDB. As one interviewee observed:

[118] Interview 7.
[119] Interview 14.
[120] African Development Bank Group (n 117).
[121] Interview 14.
[122] Interview 7.
[123] African Development Bank Group (n 117).

> 'If the borrower wants to prepay, we have to terminate the swap we entered into, and there could be a cost associated with that... All these costs associated with getting out of a local currency financing early have to be part of the equation agreed to upfront with the borrower.'[124]

4.2. Specific definitions and operational provisions

Another set of distinct terms in LC financing involves specific definitions and operational clauses tailored to local market practices. This includes defining business days, interest payment dates, and the method for calculating interest In line with the practices adopted in the local market.[125] Additionally, adaptations may be required to ensure payment mechanisms, settlement instructions, and communication protocols align with the local financial infrastructure. This often involves modifying standard contractual terms to accommodate local payment systems and clearing mechanisms.[126]

While these may seem like minor adjustments, they may require the engagement of local counsel to ensure the arrangement operates effectively within the market practices and financial infrastructure of the borrower's country.

[124] Interview 7.
[125] Interview 14.
[126] Interview 13.

Chapter 4

Exchange Rate Risk

1. Introduction

As discussed in Chapter 2, multilateral development banks (MDBs) consider exchange rate risk the most significant risk associated with local currency (LC) lending in low- and middle-income countries (LMICs), and typically hedge their currency exposure in full. Moreover, as noted in Chapter 2, a key risk—particularly for long-term oriented MDBs—is the risk of sudden and significant exchange rate depreciations, often referred to as 'crash risk'. Recent literature suggests that with increased financial integration, this crash risk is driven by global economic conditions and is exacerbated by the substantial presence of non-resident investors in LC markets.

This chapter examines two central questions. First, it considers the historical returns on LC lending to LMICs and whether, on average, such lending would have been profitable across a broad set of LMICs. By analysing the historical volatility of exchange rates to estimate the unhedged returns on LC loans, the chapter demonstrates that these returns are generally positive. However, it also highlights that periods of negative excess returns are not uncommon and often occur concurrently across multiple countries, indicating the presence of significant tail depreciation or crash risk.

Second, this chapter explores the determinants of tail risks. The hypothesis is that the co-movement of currencies is driven by common global factors. Departing from much of the existing literature, global commodity prices are used as a proxy for these factors, given the critical role commodities play in the production and export structures of many LMICs. The findings suggest that global commodity prices are a significant determinant of large exchange rate movements, with commodity price booms, in particular, showing predictive power for future depreciations. Additionally, the role of non-resident investors in domestic bond markets is examined as a major driver of depreciation risks. The chapter finds that, alongside interest rate and inflation differentials, the participation of these investors can significantly amplify depreciations triggered by commodity price shocks.

This chapter proceeds as follows. Section 2 analyses the excess returns on unhedged positions in LMICs. Section 3 motivates and reviews the literature on tail risks in LMIC currencies and outlines the regression methodology. Section 4 discusses the data and stylised facts used in the quantile regression approach. Section 5 presents the regression results. Section 6 offers concluding remarks.

2. Exchange rates and excess returns

An increase in MDBs' LC financing with partially unhedged positions could impact the profitability of these institutions in the event of adverse (depreciating) exchange rate

movements. Currency depreciation may result in capital losses on their asset side, which, in turn, generate losses on their capital positions. As discussed in Chapter 2, MDBs consider these risks to be excessive and utilise risk management models that typically prevent any exposure to currency risk. As a result, MDBs tend to hedge such risks fully, insulating themselves against potential losses. Nevertheless, despite their general aversion or inability to take on currency risk, our findings indicate that many MDBs do assess currency risk, often employing in-house quantitative models.

One way for MDBs to assess the impact of currency risk is by calculating the return on financing positions in different currencies, comparing their own lending rates with their cost of capital. An excess return exists when the interest rates of risk-free financial instruments in local currencies, minus the depreciation against another currency (usually the US dollar), exceed the interest rates of risk-free financial instruments in that other currency. In our analysis, if interest rates in LC exceed those in US dollars, minus the depreciation of the LC, MDBs could achieve positive excess returns.

Formally, the (approximate) excess return on a (risk-free) LC LMIC asset is:

$$excess\ return_t = (i_t^{LMIC} - i_t) + \frac{e_{t+1} - e_t}{e_t} \qquad (4.1)$$

Where $i_t^{LMIC} - i_t$ represents the current interest rate differential between the LMIC and the US, e_t is the current exchange rate quoted as US dollars per unit of LC (where an increase in e implies a LC appreciation), and e_{t+1} is the exchange rate one period (e.g. a month) ahead.

Equation (4.1) shows the 'ex-post' excess return, i.e., the realised returns from an unhedged position in LC, with e_{t+1} being the actual realised exchange rate in the following period. Alternatively, excess returns can be calculated 'ex-ante' using expected depreciation from surveys or derivative markets (or implicit in other asset prices), or the forward/futures exchange rate observed in derivative markets (where e_{t+1} is replaced by an approximation of the expected exchange rate).

This approach relates to Persaud's work, where he compares the cost of hedging, reflected in the difference between the forward rate (f) and the actual observed exchange rate (e_{t+1}).[1] Reformulating equation (4.2), he tests whether:

$$(i_t^{LMIC} - i_t) + \frac{f_t - e_t}{e_t} < (i_t^{LMIC} - i_t) + \frac{e_{t+1} - e_t}{e_t} \qquad (4.2)$$

In essence, he examines whether the excess return on a hedged position is lower than on an unhedged one. Persaud shows that this inequality holds on average in five key emerging markets,[2] over five-year periods from 1999 to 2018. He demonstrates that this is the case when $f_t < e_{t+1}$, i.e., when the exchange rate depreciation implied by the forward rate exceeds the actual depreciation. From another perspective, investors tend to pay a premium in forward markets to protect themselves against exchange rate depreciation that consistently exceeds

[1] A Persaud, *Unblocking the Green Transformation in Developing Countries with a Partial Foreign Exchange Guarantee* (2023) https://www.climatepolicyinitiative.org/wp-content/uploads/2023/06/An-FX-Guarantee-Mechanism-for-the-Green-Transformation-in-Developing-Countries.pdf accessed 11 October 2024.

[2] These are Brazil, Colombia, Indonesia, Mexico, and South Africa.

actual depreciation. Persaud refers to these as 'overpayments' and shows that they are more substantial during periods of financial turmoil, such as the Global Financial Crisis and the Fed's taper tantrum in 2015.[3]

Persaud's findings align with existing literature on excess returns, which primarily focuses on advanced economy currencies.[4] Besides Persaud, an exception is Gilmore and Hayashi, who find that investors have historically obtained profits by borrowing in US dollar markets and investing in LMIC currencies, even considering short-term losses during global crises.[5] However, empirical studies on excess returns in LMICs are limited, and, to our knowledge, there are no studies using panels of countries rather than focusing on single-country analyses.

Adopting an ex-post approach, we estimate excess returns based on the approach shown in equation (4.1). Using data from the International Financial Statistics of the International Monetary Fund (see Table A-1), we examine excess returns in a broader sample of 110 LMICs from 1990 to 2022.[6] We approximate these returns using the deposit rates in local currencies and US dollars, as well as changes in the bilateral nominal exchange rate:

$$r_{t+h}^{j} = \frac{1 + i_t^j}{1 + i_t^{USD}} \Big/ \left(\frac{xr_{t+h}^{USD/j}}{xr_t^{USD/j}} \right)^{\frac{4}{h}} - 1 \qquad (4.3)$$

Where r_{t+h}^{j} represents the excess returns in the LC j calculated h quarters ahead, using the LC deposit interest rate i_t^j, the deposit rate in US dollars in the United States i_t^{USD}, and the annualised variation h quarters ahead of the bilateral nominal exchange $xr_t^{USD/j}$ between the currency j and the US dollar. Our ex-post approach uses realised—that is, historically observed—nominal exchange rates and interest rates. In this context, $t + h$ refers to the evaluation of excess returns h quarters after period t, based on actual historical exchange rates and deposit interest rates. This equation is the non-approximated equivalent of equation (4.1.)

Focusing on the average values since 2000, our results, shown in Figure 4.1, confirm that, on average, and over a time horizon greater than one year, excess returns have been positive in the LMICs studied. Both the 1-year and 5-year horizons (in line with the longer maturity of MDBs' financing) show that mean and median returns are positive for all income groups. The results are statistically and economically significant: mean yearly returns are 2.23% for upper-middle-income countries, and 2.70% for lower middle-income and 3.25% for low-income countries over the 1-year horizon. Notably, low-income countries report the highest mean and median returns across both time horizons, despite a lower standard deviation than lower-middle-income countries.

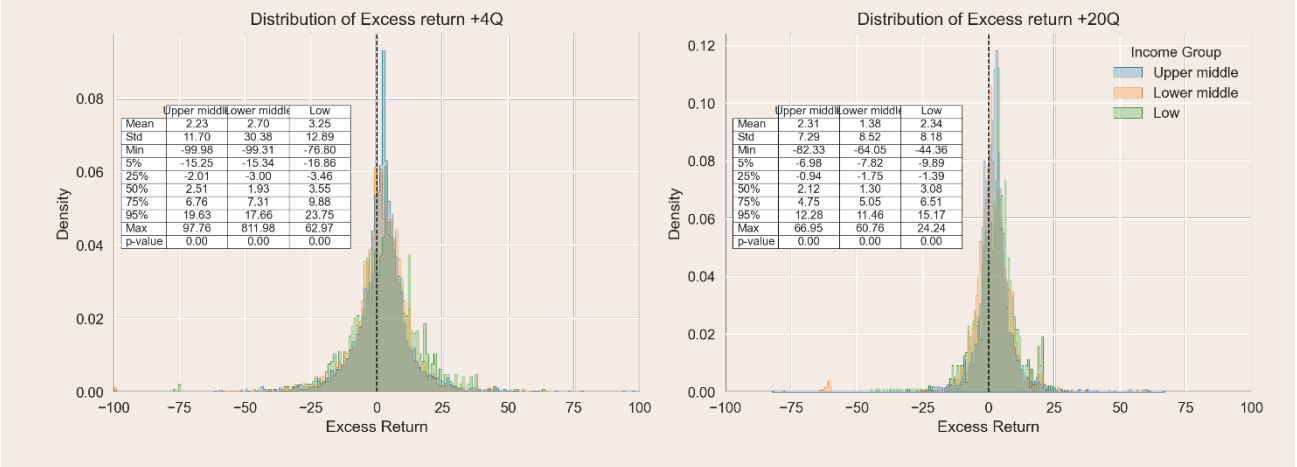
[3] Persaud (n 1).

[4] C Burnside, 'Carry Trades and Risk' in J James, IW Marsh, and L Sarno (eds), *Handbook of Exchange Rates* (Wiley 2012) 283; K Daniel, RJ Hodrick, and Z Lu, 'The Carry Trade: Risks and Drawdowns', NBER Working Paper No 20433 (August 2014); G Bekaert and G Panayotov, 'Good Carry, Bad Carry' (2020) 55(4) Journal of Financial and Quantitative Analysis 1063; S Abankwa and LP Blenman, 'Measuring Liquidity Risk Effects on Carry Trades Across Currencies and Regimes' (2021) 60 Journal of Multinational Financial Management 100683; T Maurer, TD Tô, and NK Tran, 'Pricing Implications of Covariances and Spreads in Currency Markets' (2021) 12(1) The Review of Asset Pricing Studies 336.

[5] S Gilmore and F Hayashi, 'Emerging Market Currency Excess Returns' (2011) 3(4) American Economic Journal: Macroeconomics 85.

[6] For this analysis, we consider LMICs with all types of exchange rate regimes. As discussed in more detail below, we later exclude permanently fixed regimes from our econometric analysis to allow for sufficient variation in the data.

Figure 4.1 Distribution of excess returns

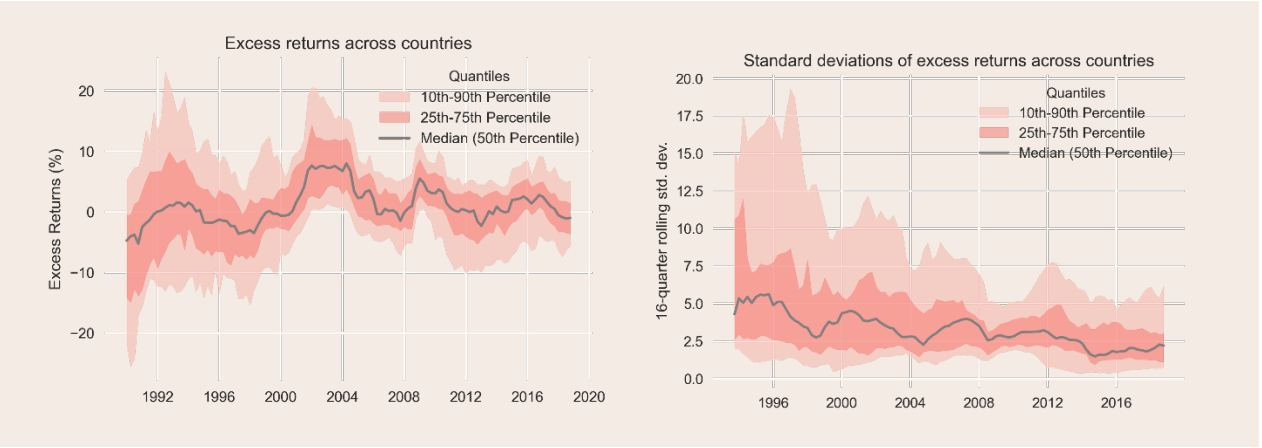


However, the distributions also reveal considerable volatility, with particularly large standard deviations for lower-middle-income countries. Tail risks, mainly driven by significant depreciations, indicate that negative returns can be substantial. Nevertheless, the distribution is not overly asymmetrical, as the 5th percentile shows smaller negative returns compared to the high positive returns at the 95th percentile.

The next charts display the distribution of excess returns across currencies and their volatility over time, showing the median values, interquartile ranges, and extreme bounds (5th to 95th percentiles). Figure 4.2 right panel shows that positive excess returns are common: median excess returns have remained mostly positive over time, while median negative returns have become less frequent and shorter in duration. Moreover, negative excess returns are generally concentrated during periods of global financial stress, such as the US and European financial crises and COVID-19. Figure 4.2 right panel indicates that the cross-country dispersion of these excess returns has been declining in recent years, suggesting a stronger co-movement across currencies.

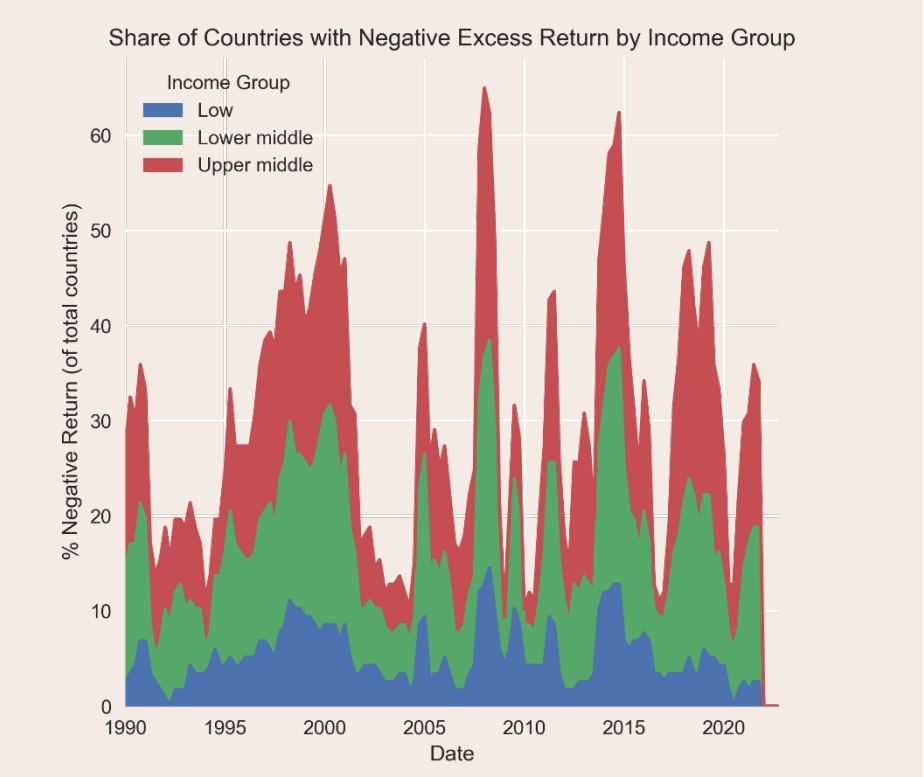
Figure 4.2 left panel illustrates two key dynamics. First, in line with the previous chart, the volatility of excess returns across currencies is time-varying and has increasingly been linked to global financial conditions. Second, it shows that large volatility events in LMIC currencies have declined in recent years: excess median returns in these currencies have become less volatile (as shown by the grey line), and this trend holds across the entire distribution, as indicated by the narrowing shaded areas.

Figure 4.2 Excess returns 16-quarters ahead and their rolling standard deviations (16-quarters)



We next focus specifically on negative excess returns to understand their timing, magnitude, and cross-country co-movement. Figure 4.3 shows the share of countries with negative excess returns over time, disaggregated by income group. The second panel of Figure 4.3 further breaks down the results by the magnitude of the negative excess returns.

Figure 4.3 Share of countries with negative excess returns by income group



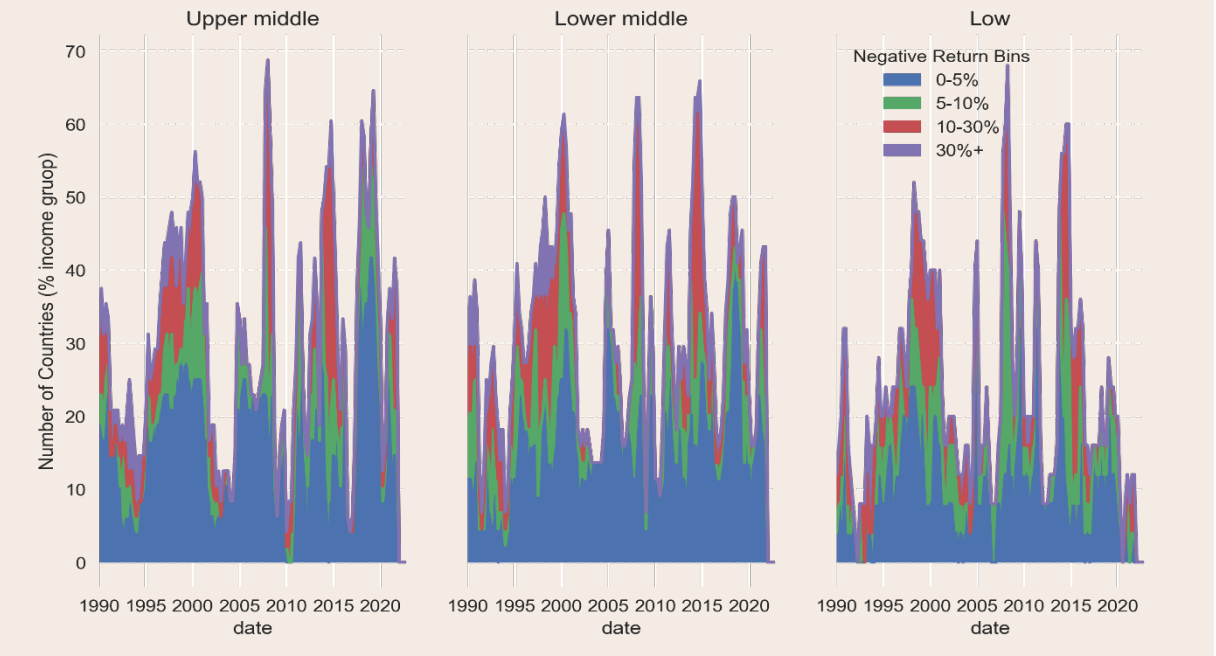
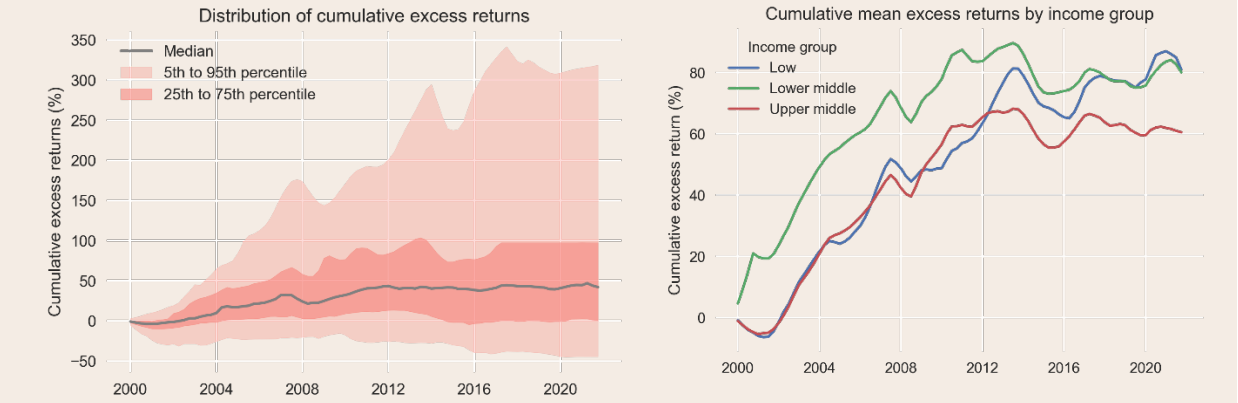


Figure 4.3 shows that after 2002, the share of countries with negative excess returns has generally decreased, although it increases during periods of global financial turmoil. This common cyclicality is evident across upper-, lower-middle-, and low-income economies. Additionally, during periods when a larger share of countries experiences negative returns, the magnitude of these negative returns also tends to increase. This suggests that the risk of large depreciations is correlated across currencies, confirming the growing importance of common global factors driving tail risks in LMICs.

However, our data also indicate that over longer horizons, the mean positive excess returns of LMIC currencies can compensate for these common depreciation events. Focusing on the post-2000 period, Figure 4.4a plots the cross-currency distribution of the cumulative excess returns, showing that, within our sample of LMICs, the median and interquartile range exhibit non-negative cumulative returns between 2000 and 2021. In other words, only systematically selecting the worst-performing 25% of currencies would yield negative cumulative excess returns. Additionally, the tails of this distribution are asymmetric: while the 5th percentile (lower excess returns) records a cumulative loss of less than 50%, the 95th percentile reflects a cumulative gain of over 300%. This highlights that long-term exposure to LC can significantly boost returns and supports earlier conclusions that, although large negative returns are possible, even larger positive returns are achievable.

Furthermore, negative returns appear to be primarily concentrated in upper-middle-income economies. When differentiating by income group, Figure 4.4 reveals that cumulative mean excess returns in low- and lower-middle-income countries outperform those in upper-middle-income economies. This suggests that focusing on unhedged loans to LMICs could indeed enhance returns.

Figure 4.4 Cumulative excess returns



Note: The chart on the left only includes 84 currencies for which data are available for the entire sample period since 2000.

It is important to note that these analyses do not reflect any attempt at currency diversification. The cumulative mean returns shown in Figure 4.4 are an equally weighted portfolio across LMIC currencies. These returns could be further boosted through strategic diversification. Evidence from the currency exchange fund TCX shows that their portfolio, which is diversified across 100 currencies, earned a positive return on average[7]. Our results point to further potential diversification benefits of including more low-income countries.

In summary, our analysis shows that excess returns on unhedged LMIC currencies are generally positive and have become less volatile over time. During periods of global financial turmoil, excess returns are more likely to turn negative and become significant across multiple countries, underscoring the persistent relevance of tail risks arising from currency depreciations. Nevertheless, over the long term, cumulative excess returns remain positive. Notably, low-income countries present the highest positive returns, suggesting that their lower financial integration reduces their vulnerability to global financial shocks.

3. An investigation of tail risk: motivation and literature review

This section discusses and provides the rationale for our regression analysis on the predictors of tail currency risk. Section 2 has demonstrated that, although the likelihood of large negative tail events has declined on average, these events have become more correlated and seem to be driven by a common global factor. We test this hypothesis by analysing the determinants of currency risk, specifically focusing on the right tail of the distribution of depreciation rates against the US dollar. For a panel of up to 90 countries, we explore how global shocks affect the 95th quantile of depreciation rates in a panel of low- to middle-income countries. Additionally, we consider structural country-specific factors that mediate the impact of these global shocks

[7] They calculated a 1.6% annualised return based on actual executed deals, or 2.4% based on all their quoted prices. These figures are comparable to our results, as shown in Figure 4.1. See TCX, *Scaling Up Currency Risk Hedging for Low and Lower Middle-Income Countries: A Proposal to Mitigate Currency Risk at Scale and Mobilize Private Finance for Sustainable Development* (September 2023).

on tail risk. In line with recent literature on 'original sin redux' discussed in Chapter 1,[8] we pay particular attention to the role of non-resident investors in domestic bond markets as a key channel through which global financial conditions are transmitted into exchange rate instability in LMICs.

Unlike previous research, which has primarily focused on global financial conditions as predictors of currency risk,[9] we investigate the role of commodity price fluctuations as risk factors. Commodity prices are well-established drivers of exchange rates, particularly for low- and middle-income countries that are often commodity exporters.[10] However, their role in influencing tail risks has been explored to a much lesser extent. We focus on the cyclical properties of commodity prices, examining the potential asymmetric effects between booms and busts. Commodity price busts tend to be sharp and sudden, often accompanied by depreciations, but due to their short-lived nature, they offer limited predictive power. In contrast, commodity price booms typically last longer and are usually associated with currency appreciation. Our findings confirm the conventional understanding that commodity price expansions tend to appreciate currencies at the median of the distribution. However, we also report a novel finding: in low- to middle-income countries, commodity price booms increase future currency risk at the tail of the distribution, raising the likelihood of a significant depreciation following the expansion.

In terms of mediating effects, contrary to expectations, this effect is not related to the share of commodities in exports. Instead, we find that the share of non-bank foreign investors in domestic bond markets amplifies the risk-enhancing effect of commodity price booms. This points to the presence of a financial channel in which currency depreciations following commodity price booms are exacerbated by the behaviour of 'impatient' foreign investors. This result aligns with the 'original sin redux' literature, highlighting the ongoing vulnerability of LMICs due to the increasing presence of foreign investors in domestic financial markets.

3.1. Literature review

Research on currency crash risk has traditionally focused on identifying the factors that increase the likelihood of a currency crisis.[11] These crises are often treated as binary events, with their probability being estimated through logit or probit models.[12] This body of work has primarily

8 A Kaltenbrunner and JP Painceira, 'Developing Countries' Changing Nature of Financial Integration and New Forms of External Vulnerability: The Brazilian Experience' (2015) 39(5) Cambridge Journal of Economics 1281; M Onen, HS Shin, and G von Peter, 'Macroprudential Policy in Developing Economies' (BIS Working Papers No 1075, 21 February 2023) <https://www.bis.org/publ/work1075.htm> accessed 11 October 2024; LF de Paula, B Fritz, and D Prates, 'The Metamorphosis of External Vulnerability from "Original Sin" to "Original Sin Redux": Currency Hierarchy and Financial Globalization in Emerging Economies' (2024) 15(2) Review of International Political Economy 1-28.

9 F Eguren-Martin and A Sokol, 'Attention to the Tail(s): Global Financial Conditions and Exchange Rate Risks' (2022) 70(3) IMF Economic Review 487.

10 Y Chen and K Rogoff, 'Commodity Currencies' (2003) 60(1) Journal of International Economics 133; P Cashin, LF Céspedes and R Sahay, 'Commodity Currencies and the Real Exchange Rate' (2004) 75(1) Journal of Development Economics 239; S Van Huellen and RB Palazzi, 'Commodity Currencies: Unpicking the Asymmetric Relationship Between Commodity Prices and Exchange Rates' (2023), Unpublished Manuscript.

11 A Berg and C Pattillo, 'Predicting Currency Crises' (1999) 18(4) Journal of International Money and Finance 561; JA Frankel and AK Rose, 'Currency Crashes in Emerging Markets: An Empirical Treatment' (1996) 41 Journal of International Economics 351; TM Boonman and others, 'Early Warning Systems for Currency Crises with Real-Time Data' (2019) 30(4) Open Economies Review 813.

12 Events are defined based on specific criteria, for example, an annual rate of depreciation of 25% or more.

identified weak domestic macroeconomic fundamentals—such as foreign reserves, exchange rate overvaluation, domestic credit growth, public debt, and inflation—as key determinants of currency crashes.

More recent studies have shifted towards exploring extreme macroeconomic events, often referred to as 'tail risk'.[13] One notable approach, the growth-at-risk framework, utilises quantile regressions to estimate the distribution of GDP growth based on risk factors, including the deterioration of global and domestic financial conditions. This method enables the assessment of how changes in macroeconomic indicators affect the tails of the GDP growth distribution—specifically, how they alter the size of a recession at particular quantiles, typically the left tail represented by the 5th quantile.[14] Adrian, Boyarchenko, and Giannone applied this framework to a panel of advanced economies, finding that looser financial conditions initially boost median GDP growth but subsequently increase the left tail of the GDP growth distribution after about 10 quarters, signalling a heightened risk of a significant recession.[15]

Eguren-Martin and Sokol extended the growth-at-risk framework to exchange rates, focusing on global financial conditions as a key determinant of tail risks.[16] A substantial body of literature suggests that short-term currency fluctuations are largely driven by capital flows resulting from portfolio reallocations, making global financial conditions a critical factor in exchange rate risk.[17] Eguren-Martin and Sokol estimated quantile regressions for 61 advanced and emerging economies, using the growth rate of the nominal exchange rate as the dependent variable and a global financial conditions index as the key explanatory variable. They found that tightening global financial conditions increases tail risk in most countries, with exceptions for safe-haven currencies such as the Swiss Franc and the US dollar. To examine cross-country differences, they sorted currencies into three portfolios based on characteristics such as interest rate differentials, current account balances, fiscal balances, net foreign assets, and international reserves. The results indicated that currencies in high-risk portfolios, particularly in terms of interest rate differentials, international reserves, and fiscal balances, respond more strongly to tightening financial conditions than those in low-risk portfolios.

However, Eguren-Martin and Sokol (2022) did not consider the role of non-resident investors in shaping the transmission of global shocks in domestic financial markets. Cerutti, Claessens, and Puy, along with Kohler, Bonizzi, and Kaltenbrunner, show that countries with a larger share of domestic bonds held by non-bank foreign investors are more vulnerable to global

13 T Adrian, N Boyarchenko and D Giannone, 'Vulnerable Growth' (2019) 109(4) American Economic Review 1263; M Gächter, M Geiger and H Hasler, 'On the Structural Determinants of Growth-at-Risk' (2023) 19(2) International Journal of *Central Banking 251.*

14 The quantile is the point in the distribution at which a given proportion of the data is less than or equal to that value.

15 Adrian, Boyarchenko, and Giannone (n 13).

16 Their global financial conditions index is based on a principal component analysos of monthly financial indicators for 43 countries comprising term, sovereign, interbank, and coporate spreads, long-term interest rates, equity returns and volatility a well as relative market capitalisation of the financial sector. The index is strongly correlated with the US stock market volatility index VIX (correlation coefficient: 0.81). See Eguren-Martin and Sokol (n 9).

17 Eg, V Bruno and HS Shin, 'Cross-Border Banking and Global Liquidity' (2015) 82(2) The Review of Economic Studies 535; X Gabaix and M Maggiori, 'International Liquidity and Exchange Rate Dynamics' (2015) 130(3) The Quarterly Journal of Economics 1369; C Engel and SPY Wu, 'Liquidity and Exchange Rates: An Empirical Investigation' (2023) 90(5) The Review of Economic Studies 2395.

financial shocks.[18] This suggests that a significant portion of currency fluctuations in response to global risk factors may be driven by the behaviour of institutional investors, who tend to be more sensitive to changes in risk perceptions.

Another important determinant of exchange rate tail risks overlooked by Eguren-Martin and Sokol is commodity prices. Commodity prices are particularly relevant for low- to middle-income countries, given their reliance on concentrated trade structures, either as commodity exporters or importers. Earlier literature on the commodity-exchange rate nexus has primarily focused on the real exchange rate of commodity-exporting countries (so-called 'commodity currencies'), examining how exogenous changes in commodity prices affect relative prices.[19] Typically, rising commodity prices are expected to lead to a real appreciation of the currency. More recent studies, however, highlight financial channels in the relationship between commodity prices and nominal exchange rates. Some studies argue that commodity prices are inversely related to the risk premium on local-currency liabilities of commodity exporters.[20] Commodity price booms would then reduce the risk premium, attracting financial inflows and appreciating the currency.

Van Huellen and Palazzi integrate this financial channel into an exchange rate model that assumes foreign investors follow different expectational rules. In their model, fundamentalist traders expect the exchange rate to revert to its fundamental value, while positive feedback traders extrapolate past trends. The presence of feedback traders can cause the exchange rate to overshoot temporarily in response to commodity price shocks, resulting in sharper reversals towards the fundamental value compared to a market that was dominated by fundamentalists only.[21] Sockin and Xiong demonstrate in their model how informational frictions can lead market participants to misinterpret commodity demand, making commodity markets highly susceptible to volatility.[22] Nalin and Yajima's macroeconomic model further highlights the destabilising effects of commodity price fluctuations, showing that price booms attract financial inflows into domestic bond markets, increasing currency sensitivity when the boom ends.[23]

Motivated by this recent theoretical work on the interaction between commodity prices, exchange rates, and foreign investor behaviour, we empirically investigate whether the presence of foreign investors in domestic bond markets

18 E Cerutti, S Claessens and D Puy, 'Push Factors and Capital Flows to Emerging Markets: Why Knowing Your Lender Matters More than Fundamentals' (2019) 119 Journal of International Economics 133; K Kohler, B Bonizzi and A Kaltenbrunner, 'Global Financial Uncertainty Shocks and External Monetary Vulnerability: The Role of Dominance, Exposure, and History' (2023) 88 Journal of International Financial Markets, Institutions and Money 101818.

19 Chen and Rogoff (n 10); Cashin, Céspedes and Sahay (n 10).

20 T Drechsel and S Tenreyro, 'Commodity Booms and Busts in Emerging Economies' (2018) 112 Journal of International Economics 200; A Fernández, A González and D Rodríguez, 'Sharing a Ride on the Commodities Roller Coaster: Common Factors in Business Cycles of Emerging Economies' (2018) 111 Journal of International Economics 99; S Van Huellen and RB Palazzi, 'Commodity Currencies: Unpicking the Asymmetric Relationship Between Commodity Prices and Exchange Rates' (2023), Unpublished Manuscript.

21 Van Huellen and Palazzi (n 10).

22 M Sockin and W Xiong, 'Informational Frictions and Commodity Markets' (2015) 70(5) The Journal of Finance 2063.

23 L Nalin and GT Yajima, 'Commodities Fluctuations, Cross-Border Flows and Financial Innovation: A Stock-Flow Analysis' (2021) 72(3) Metroeconomica 539.

amplifies future currency crash risks stemming from commodity price shocks. Our approach builds on recent literature on exchange rate tail risks but departs from it in several key respects. First, unlike Eguren-Martin and Sokol, who conducted country-by-country regressions and reported results primarily for advanced economies,[24] we use panel quantile regressions for low- to middle-income countries. Second, we focus on commodity prices, rather than financial conditions, as the primary global shock variable. Commodity prices are especially pertinent to exchange rates in developing countries, yet have been overlooked in studies on exchange rate tail risks. Third, instead of concentrating on standard macroeconomic fundamentals, such as current account balances and fiscal positions, we explore the role of international financial integration, specifically the influence of foreign investors in domestic bond markets.[25] Finally, we give greater attention to prediction by examining the determinants of elevated currency tail risks up to four quarters ahead.

3.2. Methodology

Following the growth-at-risk literature,[26] we apply quantile regressions to assess the determinants of currency tail risk in low- to middle-income countries. While Ordinary Least Squares (OLS) regressions estimate the mean of a dependent variable conditional on a set of regressors, quantile regressions estimate any quantile of interest of the dependent variable based on the same regressors.[27] Panel quantile regression (PQR) extends this approach to panel datasets, allowing for quantile-specific fixed effects.[28] PQR can also be combined with the local projections approach to estimate how current changes in explanatory variables affect future tail risks.[29]

Our dependent variable is the quarterly rate of depreciation of the nominal US dollar (USD) exchange rate, denoted as ΔXR_{it} for currency i. Applying the local projections approach, where an increase in the value is a depreciation of the local currency against the Dollar, we estimate the coefficients of the following quantile function:

$$Q_{\Delta XR_{it+h}}(\tau|X_t, Z_{it}, Y_{it}) = \alpha_{i\tau} + \sum_{k=0}^{p} \beta_{k\tau} X_{t-k} + \delta_\tau Z_{it-1} X_t + \gamma_\tau Z_{it-1} + \theta'_\tau Y_{it-1} \quad (4.4)$$

where Q is the τ -th quantile of the distribution of Δ , $h = 0, \ldots, 4$ is the forecast horizon, α is a quantile-specific country fixed effect, X_t is a common global shock, Z is a (structural) country-specific characteristic that may mediate the effect of the global shock on the quantile of the rate of depreciation, and is a vector of country-specific macroeconomic control variables.

Parameter estimates are obtained by solving the following optimisation problem:

[24] Eguren-Martin and Sokol (n 9).

[25] Cerutti, Claessens and Puy (n 18); Kohler, Bonizzi and Kaltenbrunner (n 18).

[26] Adrian, Boyarchenko, and Giannone (n 13); Gächter, Geiger and Hasler (n 13).

[27] R Koenker and G Bassett, 'Regression Quantiles' (1978) 46(1) Econometrica 33.

[28] R Koenker, 'Quantile Regression for Longitudinal Data' (2004) 91(1) Journal of Multivariate Analysis 74.

[29] T Adrian and others, 'The Term Structure of Growth-at-Risk' (2022) 14(3) American Economic Journal: Macroeconomics 283; J Baruník and F Čech, 'Measurement of Common Risks in Tails: A Panel Quantile Regression Model for Financial Returns' (2021) 52 Journal of Financial Markets 100562.

$$\min_{\alpha_{i\tau},\beta_\tau,\delta_\tau,\gamma_\tau,\theta'_\tau} \sum_{t=1}^{T-h}\sum_{i=1}^{N} \rho_\tau \Bigg(\Delta XR_{it+h} - \alpha_{i\tau} - \sum_{k=0}^{p} \beta_{k\tau} X_{t-k} - \delta_\tau Z_{it-1} X_t - \gamma_\tau Z_{it-1} - \theta'_\tau Y_{it-1} + \lambda \sum_{i=1}^{N} |\alpha_{i\tau}| \Bigg), \tag{4.5}$$

where $\rho_\tau(u)=u(\tau-1(u\leq 0))$ is the quantile loss function[30] and $\sum_{i}^{N}{}_{=1}|\alpha_{i\tau}|$ is a penalty for the potentially large number of estimated fixed effect parameters with penalty term λ. For $\lambda = 0$, a full set of country-specific fixed effects is estimated; for $\lambda > 0$, the fixed effects for some countries shink towards zero and as $\lambda \to \infty$, the model drops any fixed effects. In our estimations, we set $\lambda = 1$ given the relatively large number of countries in our dataset relative to the number of periods.[31] We also check the robustness of our results with respect to this assumption.

As common in the quantile regressions literature, we obtain standard errors through bootstrap resampling.[32] We employ the random-weighted bootstrap proposed by Galvao, Parker, and Xiao for PQR with fixed effects.[33] This method performs well in small samples and preserves the temporal structure of the panel data, a key consideration for our application, which utilises the dynamic properties of the dataset for local projections.

To determine an appropriate lag structure, we initially estimated equation (4.4) with a lagged dependent variable. However, this variable proved statistically insignificant across various specifications and was subsequently excluded from the model. We also tested different lag lengths for the global shock variable, ultimately finding that a lag of $p = 1$ w as s tatistically significant in most cases.

Van Huellen and Palazzi allow for asymmetric effects of global commodity price booms and busts on exchange rates, hypothesising that investors, being loss-averse, may respond more strongly to negative shocks than positive ones. However, their analysis focuses on the conditional mean of the exchange rate, while our approach examines the right tail of the distribution. It is not clear a priori whether asymmetry exists in the response of exchange rate tail risks to booms or busts in the global shock variable. We assess the existence of asymmetric effects by additionally estimating the following augmented quantile regression:

$$Q_{\Delta XR_{it+h}} = \alpha_{i\tau} + I_t^+ \left(\sum_{k=0}^{p} \beta_{k\tau}^+ X_{t-k} + \delta_\tau^+ Z_{t-1} X_t + \gamma_\tau^+ Z_{it-1} + \theta_t'^+ Y_{it-1} \right) + I_t^- \left(\sum_{k=0}^{p} \beta_{k\tau}^- X_{t-k} + \delta_\tau^- Z_{t-1} X_t + \gamma_\tau^- Z_{it-1} + \theta_t'^- Y_{it-1} \right) \tag{4.6}$$

[30] This is also called the 'check function', whose value depends on the sign of the residuals $u = \Delta_{+h} - \alpha - \sum_{k=0}^{p} \beta_{k\tau} X_{t-k} - \delta_\tau Z_{it-1} X_t - \gamma_\tau Z_{it-1} - \theta'_\tau Y_{it-1} + \lambda \sum_{i=1}^{N} |\alpha_{i\tau}|$, which is measured by the indicator function $\mathbf{1}(u < 0)$.

[31] Ont his issue, see Baruník and Čech (n 29).

[32] Adrian and others (n 29); Baruník and Čech (n 29).

[33] The random-weighted bootstrap relies on cross-sectional resampling, where, in each bootstrap iteration, a different non-negative random weight ω_i applied to each cross-section i. The random weights have mean and variance of unity. See AF Galvao, T Parker and Z Xiao, 'Bootstrap Inference for Panel Data Quantile Regression' (2024) 42(2) Journal of Business & Economic Statistics *628*

where I_t^+ is a dummy variable for $\Delta X_t > 0$ and I_t^- for $\Delta X_t \leq 0$.[34] This specification allows the estimated coefficients to differ depending on whether the global shock variable is experiencing expansions or contractions.

4. Data and stylized facts

Our dataset consists of quarterly data with a maximum period of 1990Q1 – 2022Q4. Besides being constrained by data availability, our country selection is based on two criteria. First, we include all countries classified by the World Bank in 2019 as low-, lower-middle-, or upper-middle-income. Second, we exclude countries classified as hard pegs for the entire sample period according to the exchange rate regime classification by Ilzetzki, Reinhart, and Rogoff, countries with no variation in the dependent variable, and those with significant gaps in the dependent variable. This results in an unbalanced panel of up to 90 low- to middle-income countries.[35]

The dependent variable is the quarterly depreciation rate of the nominal USD exchange rate (ΔXR).[36] As global shock variables, we use the (logged) global commodity price index (*CMP*) and, for comparison, the (logged) VIX index (*VIX*), which measures market expectations of near-term volatility conveyed by stock index option prices. We also explore alternative commodity price indices, such as an energy commodity index (*CMP_EN*), an index excluding energy commodities (*CMP_NEN*), and country-specific indices based on commodity export (*CMP_EXP)* or import (*CMP_IMP*) shares. Our key country characteristic is the ownership of government debt, measured by the share held by foreign investors (*FI*), including both bank (*BFI*) and non-bank (*NBFI*) investors, based on data from Arslanalp and Tsuda.[37] To explore potential effects that take place via the trade channel, we test the effect of adding the median share of commodities in total export (*CMEX_MED*) and the median economic complexity index (*ECI*) to the estimation. All regressions control for domestic interest rate differentials relative to the US Federal Funds rate (*INTDIFF*) and the inflation differential between the domestic economy and the US (*INFLDIFF*).

Figure 4.5 displays the unconditional quantile function of the quarterly depreciation rate for the full sample. The quantile function, which is the inverse of the cumulative distribution function, shows the probability that the depreciation rate will be less than or equal to a specific value. The distribution is highly right-skewed, indicating that depreciations are more frequent and severe than appreciations. The quantile function varies from a quarterly rate of appreciation of 8% at the 1st quantile to a rate of depreciation of 73% at the 99th quantile. It is close to zero (0.5%) at the median and 15% at the 95th quantile.

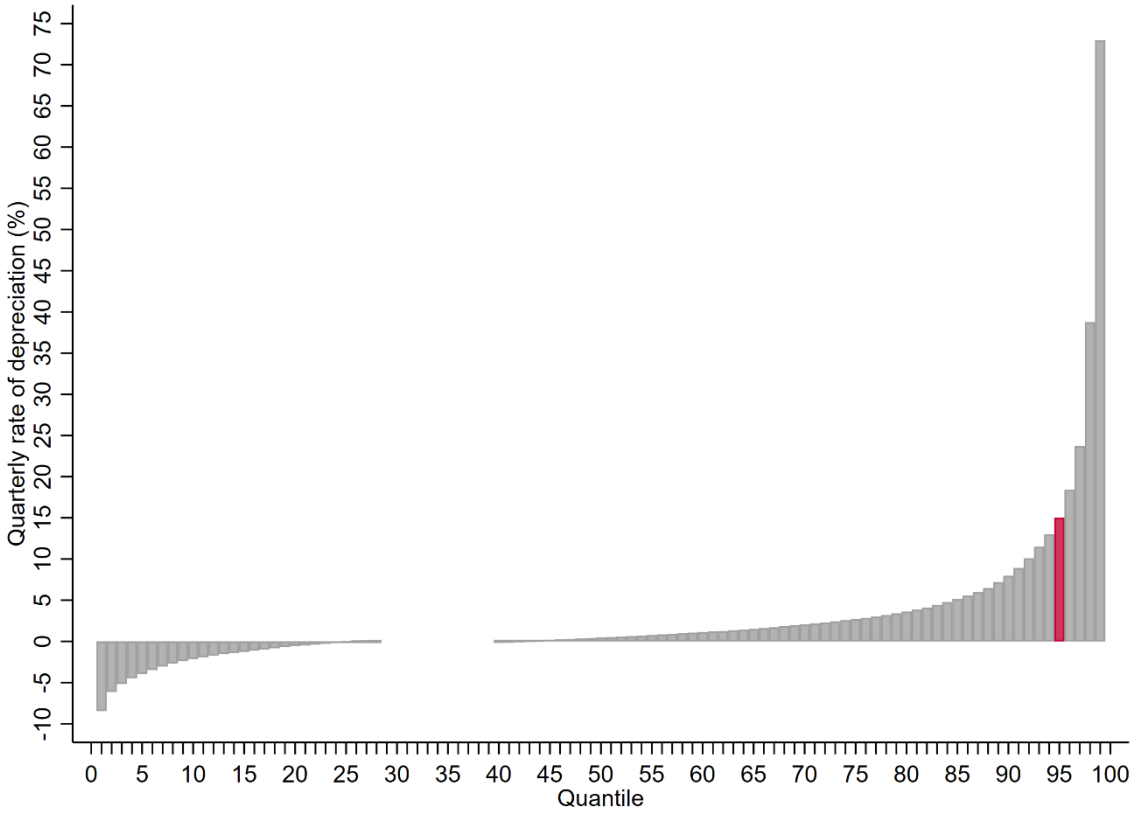
[34] See, eg, N Ben Zeev, VA Ramey and S Zubairy, 'Do Government Spending Multipliers Depend on the Sign of the Shock?' (2023) 113 AEA Papers and Proceedings 382; Van Huellen and Palazzi (n 10).

[35] The number of countries may vary across regressions due to country-specific data availability constraints on the control variables. See E Ilzetzki, CM Reinhart and KS Rogoff, 'Exchange Arrangements Entering the Twenty-First Century: Which Anchor Will Hold?' (2019) 134(2) The Quarterly Journal of Economics 599.

[36] For a comprehensive overview of the data, please refer to Table A-1 in the appendix.

[37] S Arslanalp and T Tsuda, 'Tracking Global Demand for Emerging Market Sovereign Debt' IMF Working Paper No 39 (2014)

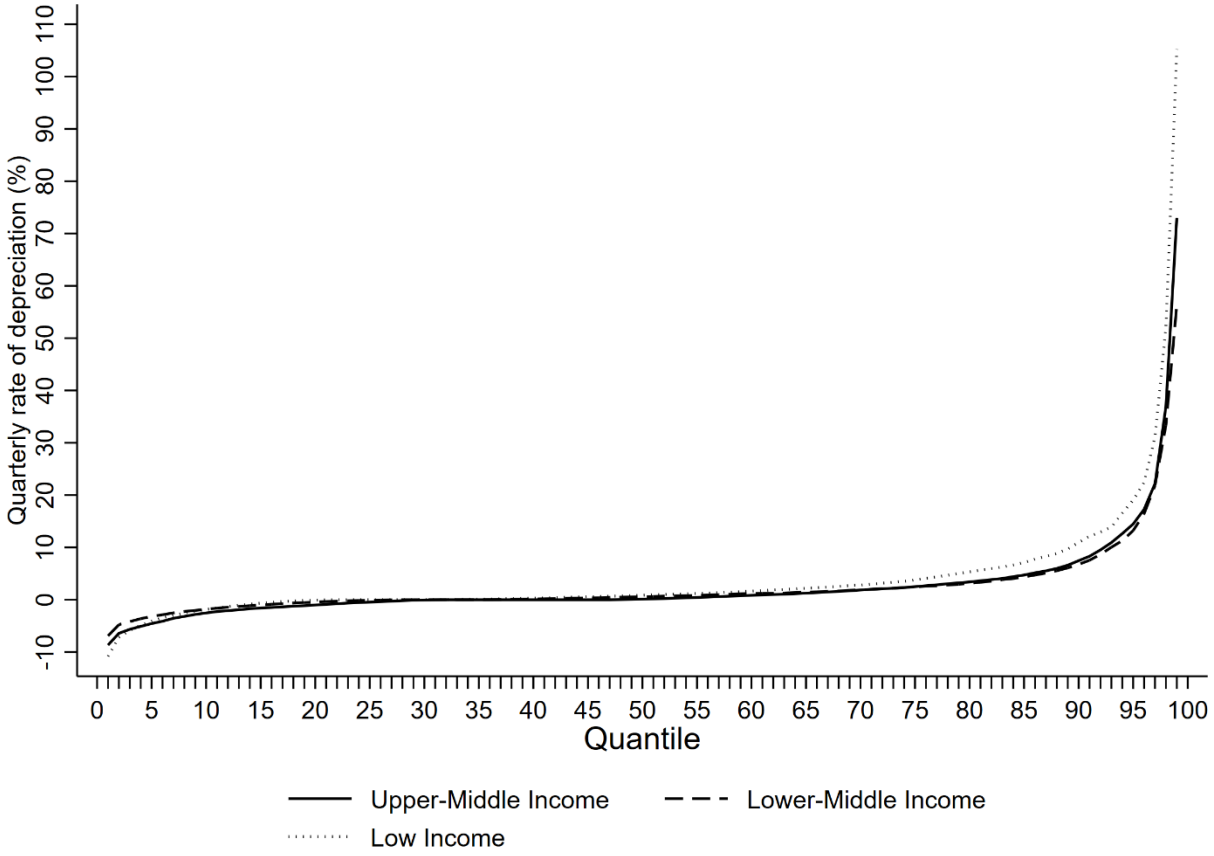
Figure 4.5 Unconditional quantile function of the quarterly rate of depreciation



Note: Quarterly rate of depreciation of nominal US dollar exchange rate; unbalanced panel of 90 countries, 1990Q1 – 20122; Q4. Quantiles range from 1st to 99th. Highlighted bar demarks the 95th quantile.

Figure 4.6 presents quantile functions by income group based on the 2019 World Bank country classification. While the middle of the distribution is quite similar across the three country groups, low-income countries display a slightly thicker right tail at the 25th percentile, a somewhat larger 95th quantile of approximately 19%, and a significantly elevated 99th quantile of 105%, indicating that low-income countries experience higher tail risks compared to middle-income countries.

Figure 4.6 Unconditional quantile function of the quarterly rate of depreciation by income group

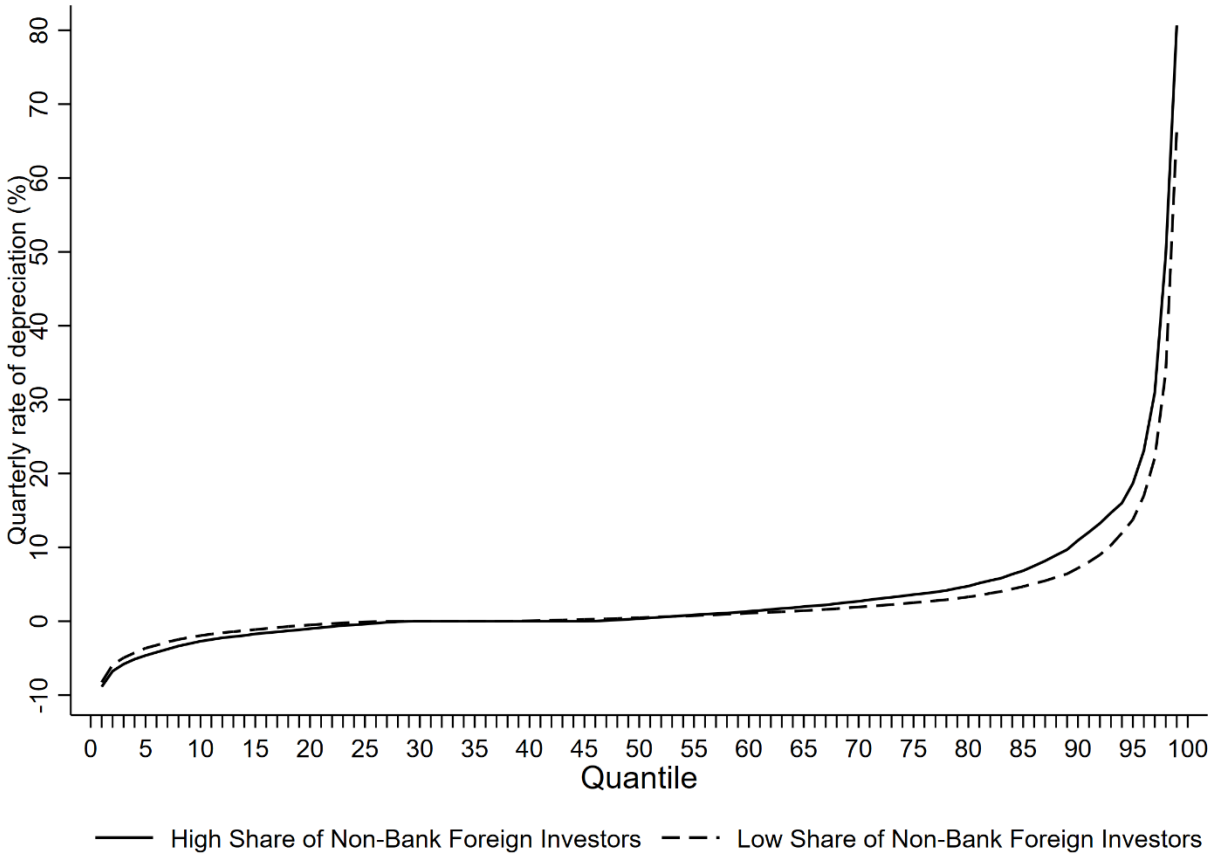


Note: Quarterly rate of depreciation of the nominal US dollar exchange rate; unbalanced panel of 90 countries, 1990Q1 – 2022; Q4; grouped based on the 2019 WB classification. Quantiles range from 1% to 99%.

Finally, Figure 4.7 compares the quantile functions of two country groups defined by whether the median share of domestic government debt held by non-bank foreign investors is above ('high') or below ('low') 10%.[38] While the quantile functions are largely identical in the middle of the distribution, the group with a high share of non-bank foreign investors exhibits a markedly thicker right tail, with the 95th quantile being approximately 5 percentage points larger. This provides some preliminary evidence that the presence of non-bank foreign investors in domestic bond markets amplifies currency risk. The following section explores the role of foreign investor exposure in greater detail using regression analysis.

[38] The sample average is 7%, and the 75th quantile is 11.5%.

Figure 4.7 Unconditional quantile function of the quarterly rate of depreciation by share of non-bank foreign investors in domestic bond markets



Note: Quarterly rate of depreciation of the nominal US dollar exchange rate; unbalanced panel of 90 countries, 1990Q1–2022; Q4, grouped based on whether the median share of non-bank foreign investors in the domestic bond market is above or below 10%. Quantiles range from 1% to 99%.

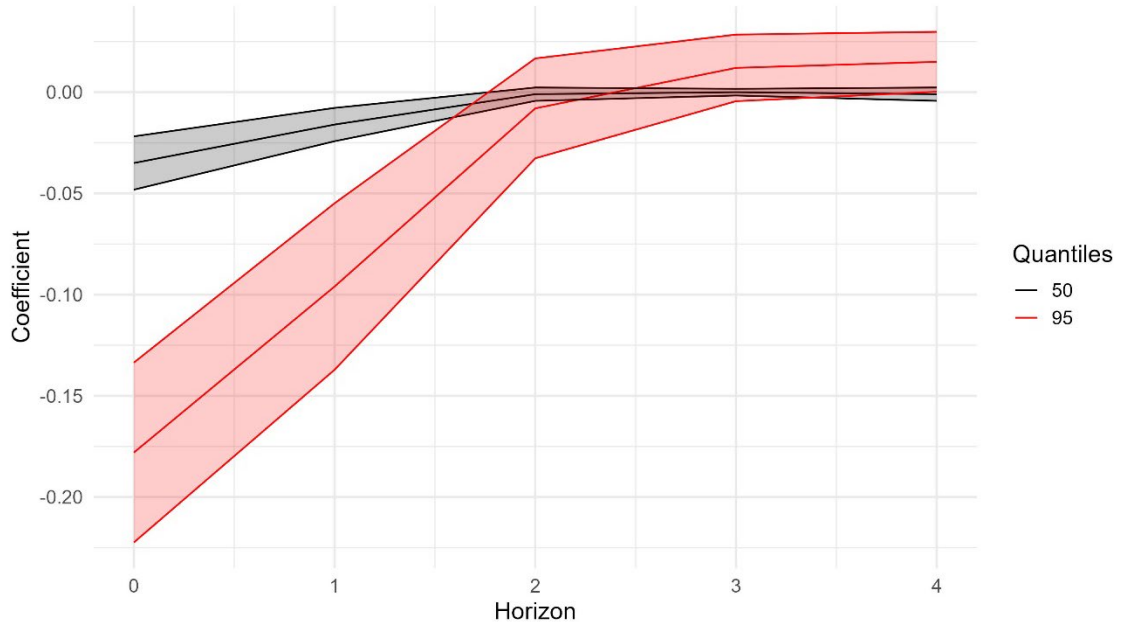
5. Results

We start by estimating a restricted version of equation (4.4) that excludes the structural country characteristic (i.e. we set $\delta_\tau = \gamma_\tau = 0$) for the 50th and 95th quantiles. Figure 4.8 plots the estimated coefficients on CMP along with a 90% confidence band over the horizon $h = 0,..,4$. It can be observed that an increase in CMP significantly reduces the rate of depreciation on impact. The effect persists for about two quarters and is generally much stronger for the 95th tail of the distribution, with a 1% increase in commodity prices reducing the rate of depreciation by approximately 0.18 percentage points on impact. To gauge the economic significance of this effect, it is important to note that the standard deviation of the quarterly growth rate of commodity prices is around 10%, indicating that quarterly changes in commodity prices of this magnitude are relatively common. The finding that commodity price increases tend to appreciate the currencies of low- and middle-income countries aligns with the terms-of-trade and risk-premium channels discussed earlier.

To further compare the magnitude of the effect of CMP on the rate of depreciation, we run an additional regression where we add the US stock

market volatility index VIX as a second global shock variable. We normalise both CMP and VIX to have zero means and standard deviations of unity to be able to compare the estimated coefficients. The results are presented in Figure A-1 in Appendix A. It can be seen that the magnitude of CMP exceeds that of VIX across all horizons. Only for CMP do we observe a reversal of the sign of the effect over the forecasting horizon, pointing to a boom-bust-cycle pattern that is absent from the VIX. The relative importance of commodity prices compared to the more familiar effects of global financial shocks corroborates our focus on commodities and their cyclical properties as predictors of currency tail risk.

Figure 4.8 Estimated coefficients on CMP for 50th and 95th percentile of nominal rate of depreciation



Notes: Estimated coefficients on CMP_t ($\beta_{0,50}$ and $\beta_{0,95}$ in equation 1) from panel quantile regressions with nominal rate of depreciation as dependent variable (in %) with horizon $h = 0, \dots, 4$. Regression includes control variables but excludes structural country characteristics (i.e. $\delta_\tau = \gamma_\tau = 0$). Confidence bands represent the 90% confidence interval based on bootstrapped standard errors. Number of observations: 7,586.

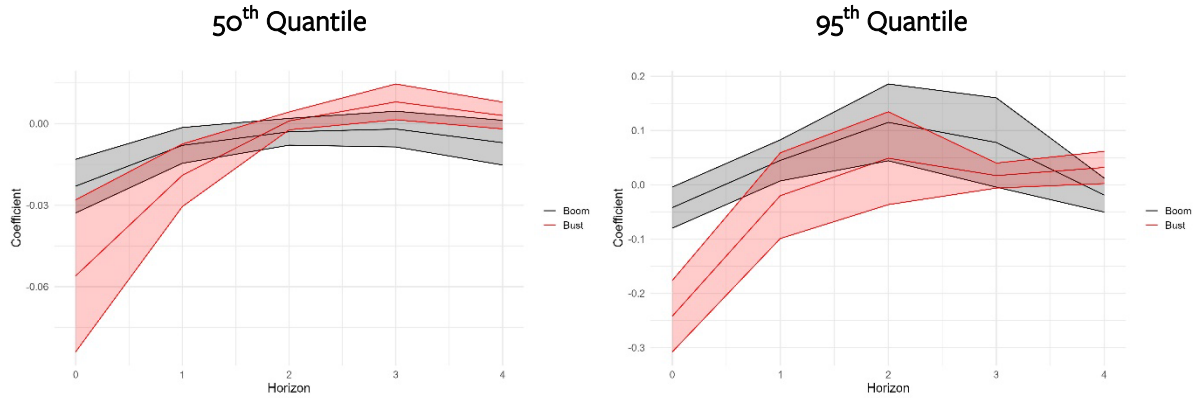
Next, following Van Huellen and Palazzi,[39] we allow for asymmetric effects of commodity price booms and busts. To this end, we first estimate a restricted version of equation (4.6) where, as before, we exclude the structural country characteristic (i.e. we set $\delta_\tau^i = \gamma_\tau^i = 0$ for all i). Figure 4.9 plots the estimated coefficients on the commodity price boom and bust terms respectively, for both the 50th and the 95th quantile. For the 50th quantile, the impact of commodity prices on exchange rates is stronger for commodity price booms than busts, but the difference is not statistically significant.

By contrast, the results for the 95th quantile are strongly asymmetric. The effect appears to be largely driven by commodity price busts that exert immediate and strong effects on the right tail of depreciation rates. However, from the first quarter onwards, the effect becomes statistically

[39] Van Huellen and Palazzi (n 10).

insignificant, suggesting that it plays out rapidly. Interestingly, the effect of commodity price booms on currency tail risk behaves rather differently. While commodity price booms lower tail risks on impact, they *raise* future tail risk between the first and the third quarter. The effect peaks in the second quarter, where a one percent increase in commodity prices during booms raises future tail risks by about 0.12 percentage points. With quarterly commodity prices rising by more than 10% during some boom episodes, the effect is economically sizeable. The asymmetric nature of this effect being confined to the tails of the distribution is consistent with the idea that some, but not all, commodity price booms end with sharp depreciations. Commodity price expansions thus carry predictive information about elevated tail risks.

Figure 4.9 Estimated coefficients on CMP for 50th and 95th quantile of nominal rate of depreciation, separated into commodity price booms and busts



Notes: Estimated coefficients on CMP_t for commodity price booms and busts (β_0^+ and β_0^- in equation 2) from panel quantile regressions with nominal rate of depreciation as dependent variable (in %) with horizon $h = 0, \dots, 4$. Regression includes control variables but excludes structural country characteristics (i.e. $\delta_\tau^i = \gamma_\tau^i = 0$ for all i). Confidence bands represent the 90% confidence interval based on bootstrapped standard errors. Number of observations: 7,586.

Next, we assess the role of non-bank foreign investors in domestic bond markets by estimating the unrestricted version of equation (4.6, i.e. we allow for $\delta_\tau^i \neq \gamma_\tau^i \neq 0$ during both commodity price booms and busts. Results are presented in Table 4.1. Our main interest is in the interaction term between CMP and $NBFI$. During commodity price booms, the interaction amplifies currency tails risks at all horizons. Thus, a higher share of non-bank foreign investors in domestic bond markets increases the predicted future tail risk from commodity price booms. To assess the size of the effect, consider a country with a share of non-bank foreign investors of 10% ($NBFI = 10$) undergoing a quarterly increase of commodity prices of 10% ($\Delta CMP = 10$). The marginal effect two quarters ahead is around 2.9, i.e. the rate of depreciation at the 95th percentile is predicted to increase by 2.9 percentage points, which is economically sizable. Table A-2 in Appendix A reports analogous results for the 50th quantile, for which the estimated effect on the interaction term is either much smaller or less significant.

These results are consistent with the theoretical argument discussed above whereby commodity price booms that are accompanied by increased exposure to fickle foreign investors can result in deeper busts.

Table 4.1 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.044**	0.028	0.09*	0.045	-0.018
	(0.021)	(0.021)	(0.052)	(0.048)	(0.02)
CMP x BUST	-0.233***	-0.026	0.006	0.017	0.02
	(0.039)	(0.05)	(0.051)	(0.014)	(0.016)
L1.CMP x BOOM	0.015	-0.047**	-0.108**	-0.062	0.002
	(0.02)	(0.021)	(0.051)	(0.047)	(0.019)
L1.CMP x BUST	0.206***	0.018	-0.018	-0.032**	-0.034**
	(0.038)	(0.047)	(0.051)	(0.014)	(0.014)
CMP X L1.NBFI x BOOM	0.001***	0.001***	0.002***	0.002**	0.001**
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
CMP x L1.NBFI x BUST	-0.001	-0.001	0.001	0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
L1.NBFI x BOOM	-0.508***	-0.499***	-0.731***	-0.779***	-0.674**
	(0.179)	(0.171)	(0.256)	(0.279)	(0.307)
L1.NBFI x BUST	0.431	0.272	-0.317	-0.139	-0.352
	(0.492)	(0.53)	(0.362)	(0.169)	(0.22)
L1.INFLDIFF x BOOM	0.118***	0.122***	0.056	-0.004	-0.005
	(0.017)	(0.015)	(0.062)	(0.033)	(0.041)
L1.INFLDIFF x BUST	0.082	0.049	0.123**	0.079	0.031
	(0.094)	(0.063)	(0.062)	(0.053)	(0.042)
L1.INTDIFF x BOOM	0.001	-0.001	0.033	0.099***	0.12***
	(0.135)	(0.064)	(0.074)	(0.028)	(0.034)
L1.INTDIFF x BUST	0.02	0.022	0.000	0.035	0.069
	(0.202)	(0.219)	(0.146)	(0.101)	(0.132)

*Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,079.*

Table 4.2 reports analogous results for a restricted sample that only includes countries that were classified by the WB as low- or lower-middle income countries in 2019. The main results become stronger: commodity price booms predict an even larger increase in currency tails risks two and three quarters ahead, and the amplifying effect of non-bank foreign investors is between two and four times stronger.

Table 4.2 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, low- and lower-middle income countries

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.047**	0.001	0.134*	0.133*	0.025
	(0.023)	(0.038)	(0.079)	(0.076)	(0.044)
CMP x BUST	-0.219***	-0.145**	0.019	0.048	0.022
	(0.049)	(0.058)	(0.043)	(0.032)	(0.021)
L1.CMP x BOOM	0.012	-0.02	-0.15*	-0.145*	-0.038
	(0.024)	(0.041)	(0.079)	(0.076)	(0.045)
L1.CMP x BUST	0.185***	0.128**	-0.033	-0.062**	-0.036**
	(0.047)	(0.056)	(0.04)	(0.03)	(0.018)
CMP X L1.NBFI x BOOM	0.004***	0.003**	0.004*	0.009***	0.008**
	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)
CMP x L1.NBFI x BUST	0.000	0.006	0.004	0.001	0.003
	(0.003)	(0.004)	(0.004)	(0.003)	(0.002)
L1.NBFI x BOOM	-1.688***	-1.546**	-1.839*	-3.834***	-3.606**
	(0.535)	(0.694)	(1.005)	(1.198)	(1.439)
L1.NBFI x BUST	0.046	-2.658	-1.751	-0.712	-1.231
	(1.347)	(1.729)	(1.852)	(1.342)	(1.071)
L1.INFLDIFF x BOOM	0.083***	0.101***	-0.004	-0.004	-0.004
	(0.013)	(0.019)	(0.058)	(0.014)	(0.02)
L1.INFLDIFF x BUST	-0.006	-0.001	-0.001	-0.009	0.017
	(0.087)	(0.074)	(0.022)	(0.038)	(0.033)
L1.INTDIFF x BOOM	0.555***	0.36***	0.481***	0.117	0.065
	(0.164)	(0.129)	(0.148)	(0.077)	(0.085)
L1.INTDIFF x BUST	0.71***	0.696***	0.741***	0.862***	0.569***
	(0.216)	(0.194)	(0.239)	(0.235)	(0.192)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. The sample is restricted to countries that were classified by the WB as low- or lower-middle income in 2019. Number of observations: 3,642.*

In Table 4.3, we replace the time-varying $NBFI$ with the median value over time for each country (denoted as $NFBFI\_MED$). This adjustment removes any within-country variation, allowing us to isolate the between-country effect. Compared to the main results in Table 4.1, the mediating effect of the share of non-bank foreign investors becomes somewhat weaker but remains statistically significant in the first and second quarters. This suggests that the main results capture both between- and within-country effects. In other words, countries with higher median shares of non-bank foreign investors in domestic bond markets are not only more exposed to future currency tail risks from commodity price booms, but dynamic increases in those shares during commodity price booms also contribute to heightened risk.

Table 4.3 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, median value of NBFI

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.03	0.032	0.089*	0.049	-0.017
	(0.021)	(0.023)	(0.046)	(0.052)	(0.02)
CMP x BUST	-0.224***	-0.037	0.039	0.023*	0.021
	(0.031)	(0.05)	(0.046)	(0.012)	(0.017)
L1.CMP x BOOM	0.006	-0.05**	-0.101**	-0.064	0.006
	(0.02)	(0.023)	(0.046)	(0.051)	(0.021)
L1.CMP x BUST	0.202***	0.028	-0.045	-0.035***	-0.031**
	(0.03)	(0.049)	(0.046)	(0.011)	(0.015)
CMP X NBFI_MED x BOOM	0.001	0.001**	0.001**	0.001	0.001
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
CMP x NBFI_MED x BUST	-0.002*	-0.001	-0.001	0.000	-0.001
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
NBFI_MED x BOOM	-0.322	-0.364*	-0.521**	-0.53	-0.212
	(0.234)	(0.215)	(0.261)	(0.439)	(0.384)
NBFI_MED x BUST	1.182*	0.718	0.52	0.14	0.334
	(0.649)	(0.709)	(0.782)	(0.388)	(0.654)
L1.INFLDIFF x BOOM	0.118***	0.122***	0.198***	-0.004	-0.005
	(0.018)	(0.018)	(0.042)	(0.034)	(0.033)
L1.INFLDIFF x BUST	0.062	0.041	0.131**	0.081	0.028
	(0.093)	(0.063)	(0.063)	(0.055)	(0.037)
L1.INTDIFF x BOOM	0.002	-0.001	-0.015	0.1***	0.121***
	(0.145)	(0.073)	(0.069)	(0.036)	(0.031)
L1.INTDIFF x BUST	0.023	0.026	0.001	0.034	0.072
	(0.182)	(0.2)	(0.169)	(0.139)	(0.142)

*Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \dots, 4$. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,095.*

5.1. Additional exercises

In this section, we conduct a couple of additional exercises to shed further light on our main findings.

First, we replace the generic commodity price index once with an energy commodity price index (CMP_EN) and once with a non-energy index (CMP_NEN). Results are reported in Tables A-3 and A-4 in Appendix A. The main results are weaker, but the interaction term between commodity sub-indices and $NBFI$ is significant and positive for most horizons during commodity price booms. The fact that the results are weaker when using more fine-grained commodity price indices suggests that booms of the generic commodity price index carry greater predictive power for elevated currency tail risk.

Second, to contrast the financial channel captured by $NBFI$ more directly with the conventional terms of trade channel, we replace in the regression reported in Table 4.4 $NBFI$ with the median share of commodities in total export ($CMEX\_MED$). The interaction between

commodity rices and *CMEX_MED* is consistently insignificant for commodity price booms. For commodity price busts, there is a statistically significant effect on impact, whereby a higher share of commodities in total exports amplifies the contractionary effect of commodity price busts on exchange rates, consistent with the terms-of-trade channel.[40] When using instead the median economic complexity index (*ECI*), a measure of the diversity and rarity of a country's exports (Hidalgo and Hausmann 2009), the coefficient on the interaction term is again statistically insignificant, lending further support to the finding that export structure does not seem to be relevant for the predictive power of commodity price booms for currency risk (see Table A-5 in Appendix A).

Table 4.4 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, median share of commodities in total exports (CMEX_MED)

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.035	0.024	0.137**	0.131**	-0.029
	(0.027)	(0.028)	(0.057)	(0.051)	(0.035)
CMP x BUST	-0.221***	-0.023	0.006	0.04**	0.015
	(0.042)	(0.063)	(0.057)	(0.018)	(0.023)
L1.CMP x BOOM	0.035	-0.02	-0.144**	-0.138***	0.014
	(0.023)	(0.026)	(0.058)	(0.051)	(0.031)
L1.CMP x BUST	0.223***	0.033	-0.01	-0.046***	-0.031*
	(0.039)	(0.061)	(0.055)	(0.012)	(0.018)
CMP x CMEX_MED x BOOM	-0.026	-0.024	0.008	0.015	0.019
	(0.017)	(0.02)	(0.023)	(0.023)	(0.026)
CMP x CMEX_MED x BUST	-0.077***	-0.042	-0.037	-0.035	-0.008
	(0.024)	(0.03)	(0.025)	(0.026)	(0.032)
CMEX_MED x BOOM	14.471**	14.403	-0.594	-3.99	-5.036
	(7.316)	(8.916)	(9.847)	(9.955)	(11.357)
CMEX_MED x BUST	37.438***	24.771*	20.563*	19.056	9.351
	(11.131)	(13.436)	(11.73)	(11.767)	(14.304)
L1.INFLDIFF x BOOM	0.175***	0.121***	0.181***	0.007	0.022
	(0.041)	(0.019)	(0.068)	(0.049)	(0.023)
L1.INFLDIFF x BUST	0.047	0.087***	0.101***	0.088***	0.111*
	(0.061)	(0.029)	(0.031)	(0.013)	(0.057)
L1.INTDIFF x BOOM	-0.015	0.01	-0.01	0.092*	0.103***
	(0.133)	(0.057)	(0.054)	(0.05)	(0.021)
L1.INTDIFF x BUST	0.108	0.008	0.031	0.028	0.021
	(0.221)	(0.123)	(0.106)	(0.077)	(0.102)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 6,675.*

[40] The results reported in Table 4.4 are qualitatively similar for the subsample of LMICs.

Third, we further explore the terms-of-trade channel by replacing the global commodity price index with an index with country-specific weights based on the share of commodities in total exports or imports (*CMP_EXP* and *CMP_IMP*, respectively.[41] Results are reported in Tables A-6 and A-7 in Appendix A. Similar to the results with *CMEX_MED* in Table 4.4, the impact effects of commodity price busts on exchange rates are stronger for commodity exports. Commodity price booms alone, without the interaction with *NBFI*, do not exhibit statistically significant predictive power for future currency tail risks. However, the interaction between the weighted commodity price indices and *NBFI* is positive and statistically significant for commodity price booms in both cases, supporting the main results.

Taken together, the additional regressions on the role of the terms-of-trade channel suggest that commodity dependence does increase tail risks from commodity price downturns on impact, but unlike dependence on non-bank foreign investors, it seems to carry little predictive power for future risk. This suggests that the predictive power of commodity price booms for future currency tail risk is indeed driven by the financial channel as captured by *NBFI*, which reflects foreign investor behaviour rather than trade in commodities.

Fourth, to check that it is indeed *non-bank* foreign investors that are particularly prone to speculative behaviour,[42] we report results in Tables A-8 and A-9 in Appendix A where we used instead the combined share of foreign investors (*FI*) and the share of bank foreign investors (*BFI*) only. For *FI*, the interaction term with commodity prices during booms is positive and statistically significant, but the size of the effect is smaller. By contrast, with *BFI* the effect is not statistically significant. This confirms that the effect is indeed driven by non-bank foreign investors.

Finally, we explore the role of global financial shocks by replacing *CMP* with the US stock market volatility index *VIX* (see Table 4.5). As the *VIX* displays higher frequency fluctuations than commodity prices, we report results without allowing for asymmetric effects during booms and busts (i.e. we estimate equation 1 with the *VIX* as the global shock).[SR] Spikes in the *VIX* represent increased global financial uncertainty and are associated with increased currency risk, both on impact and over the entire four-quarter horizon. This is consistent with the results in Eguren-Martin and Sokol (2022) and extends them to a longer forecast horizon.[SS] Importantly, the interaction with *NBFI* is mostly statistically insignificant, except for the third quarter, where it lowers crash risk. When estimating the same

[41] The main difference to the specification with *CMEX_MED* reported in Table 4.4 is that *CMP_EXP* and *CMP_IMP* are time-varying and based on the data compiled by the IMF, whereas *CMEX_MED* is calculated based on data from the Penn World Table. Furthermore, in the specifications with *CMP_EXP* and *CMP_IMP* reported in Tables B5 and B6, we consider the interaction with *NBFI*.

[42] E Cerutti, S Claessens and D Puy, 'Push Factors and Capital Flows to Emerging Markets: Why Knowing Your Lender Matters More than Fundamentals' (2019) 119 Journal of International Economics 133; K Kohler, B Bonizzi and A Kaltenbrunner, 'Global Financial Uncertainty Shocks and External Monetary Vulnerability: The Role of Dominance, Exposure, and History' (2023) 88 Journal of International Financial Markets, Institutions and Money 101818.

[43] We also experimented with a specification as in equation (2) but the results appeared to be less meaningful, consistent with the visible frequencies in the *VIX* series.

[44] Eguren-Martin and Sokol (n 9) only consider impact effects on currency tail risks. Their main explanatory variable is a novel global financial conditions index, which is however highly correlated with the *VIX*.

regression with the median of $NBFI$ (see Table A-11 in Appendix A), the coefficient on the interaction term becomes statistically insignificant across all horizons, suggesting that the statistically significant effect in the third quarter in Table 4.5 is entirely driven by within-country dynamics rather than between-country differences.

Table 4.5 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, VIX

Variable	h=0	h=1	h=2	h=3	h=4
VIX	0.081***	0.061***	0.021**	0.028**	0.017*
	(0.011)	(0.016)	(0.01)	(0.012)	(0.01)
L1.VIX	-0.034***	-0.03**	0.005	-0.002	0.000
	(0.009)	(0.012)	(0.008)	(0.008)	(0.006)
VIX x NBFI	0.000	0.000	-0.001	-0.001*	-0.001
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
L1.NBFI	0.112	0.084	0.12	0.153	0.079
	(0.171)	(0.114)	(0.113)	(0.118)	(0.132)
L1.INFLDIFF	0.119***	0.122***	0.07	-0.003	-0.005
	(0.041)	(0.016)	(0.056)	(0.052)	(0.044)
L1.INTDIFF	0.014	0.003	0.025	0.085	0.1**
	(0.168)	(0.139)	(0.109)	(0.074)	(0.047)

*Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \dots, 4$ (see equation 1). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,079.*

5.2. Robustness tests

We perform several robustness test on the main results in Table 4.1. The relevant regression tables are reported in Appendix A. First, we check the sensitivity of the results to the sample. Table A-11 reports results when setting the sample start to 2000Q1 so as to exclude the 1990s and Table A-12 when setting the sample end to 2019Q4 to exclude the Covid-19 pandemic. The interaction term between CMP and $NBFI$ during commodity price booms becomes insignificant for some horizons but does remain significant for at least two horizons.

Second, we set the shrinkage parameter to $\lambda = 0.5$, thereby allowing a larger number of countries to have non-zero fixed effects (at the expense of estimation precision) (Table A-13). The estimated coefficients and standard errors on the interaction term of interest are not visibly affected by this. We get very similar results when decreasing the shrinkage parameter further to $\lambda = 0.01$.

Third, instead of Koenker's penalised fixed effects PQR estimator,[45] we use Canay's estimator which allows for individual fixed effects for all countries but assumes that the fixed effects are

[45] R Koenker, 'Quantile Regression for Longitudinal Data' (2004) 91(1) *Journal of Multivariate Analysis* 74.

invariant across quantiles.[46] As for the main results, we use the random-weigthed bootstrap to obtain standard errors.[47] Results are reported in Table A-14. Compared to the baseline, the estimated coefficients on the commodity price boom and on the interaction term of interest tend to be larger. However, the standard errors are larger as well. Nevertheless, the interaction with is s tat istically at t he firs t, thir d, and fourth horizon, confirming the main results.

6. Discussion and implications

This chapter has presented the results of an econometric analysis of currency tail risks. It utilised panel quantile regressions to investigate the role of global commodity prices in predicting future currency risk, as measured by the right tail of depreciation rates against the US dollar. The findings reveal a strong connection between commodity prices and currency tail risk. In line with conventional theory, commodity price busts have immediate and significant effects on tail risks, with these impacts being more pronounced for commodity exporters. However, the chapter's main contribution is novel: it demonstrates that commodity price booms predict elevated crash risks several quarters ahead. The analysis provides evidence that this effect is not driven by commodity dependence or export structure, but by the behaviour of foreign investors in domestic bond markets. The predictive effect of commodity price booms on future currency tail risk is stronger when there is a higher share of non-bank foreign investors in these markets. Furthermore, this effect is found to be specifically related to non-bank foreign investors, as opposed to foreign banks, which is consistent with the view that non-bank investors are less patient and more sensitive to global factors.[48]

The finding that exposure to non-bank foreign investors is associated with commodity price booms is novel and supports theoretical claims that such booms tend to attract speculative foreign investment.[49] While these dynamics may generally lead to currency appreciation, they can also result in extreme depreciations when commodity price booms end. Importantly, we find no evidence of a similar interaction between non-bank foreign investors and global uncertainty shocks, as measured by the VIX. This suggests that the channel identified is specific to global commodity price dynamics, which may act as a key information signal for institutional investors, guiding their portfolio choices in low- and middle-income countries.

From a policy perspective, the findings suggest that periods of commodity price booms should be viewed as opportunities to prepare for increased currency risk, particularly when such

46 IA Canay, 'A Simple Approach to Quantile Regression for Panel Data' (2011) 14(3) The Econometrics Journal 368. For an application of this estimator to growth-at-risk, see D Aikman and others, 'Credit, Capital and Crises: A GDP-at-Risk Approach', Staff Working Paper No 824 (Bank of England, 20 September 2019).

47 AF Galvao, T Parker and Z Xiao, 'Bootstrap Inference for Panel Data Quantile Regression' (2024) 42(2) Journal of Business & Economic Statistics 628.

48 Cerutti, Claessens and Puy (n 42); Kohler, Bonizzi and Kaltenbrunner (n 42); M Onen, HS Shin, and G von Peter, 'Macroprudential Policy in Developing Economies' (BIS Working Papers No 1075, 21 February 2023) https://www.bis.org/publ/work1075.htm accessed 11 October 2024; LF de Paula, B Fritz, and D Prates, 'The Metamorphosis of External Vulnerability from "Original Sin" to "Original Sin Redux": Currency Hierarchy and Financial Globalization in Emerging Economies' (2024) 15(2) Review of International Political Economy 1-28.

49 L Nalin and GT Yajima, 'Commodities Fluctuations, Cross-Border Flows and Financial Innovation: A Stock - Flow Analysis' (2021) 72(3) Metroeconomica 539.

booms are accompanied by capital inflows into domestic bond markets. Although commodity price expansions may initially appear advanta-geous due to local currency appreciation, they also raise the potential for substantial deprecia-tion in the future. This implies that precautionary measures should be considered during periods of sustained commodity price increases. Additionally, the findings highlight the risks of financing sustainable transitions through yield-seeking non-resident institutional investors, such as asset managers. As discussed in Chapter 1, this reinforces the importance of patient institutions, such as MDBs, which provide counter-cyclical lending, and it underscores the risks of relying on global institutional investors to assume financial risks.

Chapter 5

Credit Risk, Exchange Rates, and Capital Requirements

1. Introduction

This chapter examines the interplay between credit risk and exchange rates in the context of multilateral development banks' (MDBs) local currency (LC) financing activities. It approaches the subject from two key perspectives. First, it investigates the relative credit risk associated with lending in local versus foreign currency (FC). Second, it explores how exchange rate fluctuations, and sovereign credit rating downgrades impact MDBs' own credit ratings and their capital adequacy.

The first central argument advanced in this chapter is that, while credit risk on LC debt is not insignificant, it tends to be lower than that associated with FC debt. The second is that, when MDBs hedge against currency risk—or even in some cases where hedging is incomplete—the effect of a currency depreciation on MDBs' risk-weighted capital ratios is typically positive in comparison to their FC exposures.

This chapter proceeds as follows: Section 2 examines the relative credit risk of local versus foreign currency debt, focusing on available data and sovereign defaults. Section 3 explores how increased exposure to LC debt may affect MDBs' credit ratings, with a particular focus on capital adequacy.

2. Existing evidence on credit risk and currency of denomination

MDB lending to low and middle-income countries (LMICs) often involves a significant degree of credit risk. Borrowers in these countries are more prone to default due to higher economic volatility and vulnerability to external conditions.[1] MDBs assume some of these risks, easing access to credit for borrowers underserved by private-sector banks, partly due to their preferred creditor status (PCS), which helps reduce losses from potential defaults.[2]

Comprehensive data on defaults of MDB loans is collected through the Global Emerging Markets (GEMs) Risk Database, which has recently been updated and now includes information on

[1] L Catão and B Sutton, 'Sovereign Defaults: The Role of Volatility' (2002) IMF Working Paper No. 02/149; L Martinez and others, 'Sovereign Debt', IMF Working Paper No 122 (17 June 2022)
[2] D Gurara, A Presbitero and M Sarmiento, 'Borrowing Costs and the Role of Multilateral Development Banks: Evidence from Cross-Border Syndicated Bank Lending' (2020) 100 Journal of International Money and Finance 102090.

default and recovery rates.[3] From the perspective of expanding LC financing by MDBs, the key question is the credit risk of LC versus FC debt. However, the GEMs database does not currently publish default rate statistics by currency, so it cannot be used for this specific purpose.

To gain some insights into the relative default risk of LC debt, we rely on other data sources. First, we examine credit rating data across our sample of low and middle-income countries (LMICs) from the three major credit rating agencies—Standard & Poor's (S&P), Fitch, and Moody's. Credit ratings provide a direct market indicator for assessing the credit risk of different borrowers.[4] Second, we use data on sovereign defaults from various sources, as described in more detail below.[5] Our analysis focuses primarily on sovereign debt rather than private borrowers, mainly due to data limitations, as no information is currently available on the default risk of LC versus FC debt for private borrowers. This highlights the need for more comprehensive, granular default data from MDBs and GEMs, including LC specific data. Nevertheless, sovereign defaults remain important for understanding the relative risk of local versus FC debt, given the close link between sovereign and private credit risk—where sovereign defaults significantly limit private sector access to credit.[6]

In recent years, a large body of research has focused on collecting evidence and analysing sovereign debt defaults. The works of Reinhart and Rogoff,[7] Beers, Bhullar, and Nystrand,[8] Asonuma and Trebesch,[9] and Erce, Mallucci, and Picarelli document a significant number of defaults over time and across countries.[10] A more recent question emerging from this literature is the likelihood and incidence of sovereign defaults involving LC debt, which had been previously overlooked.[11]

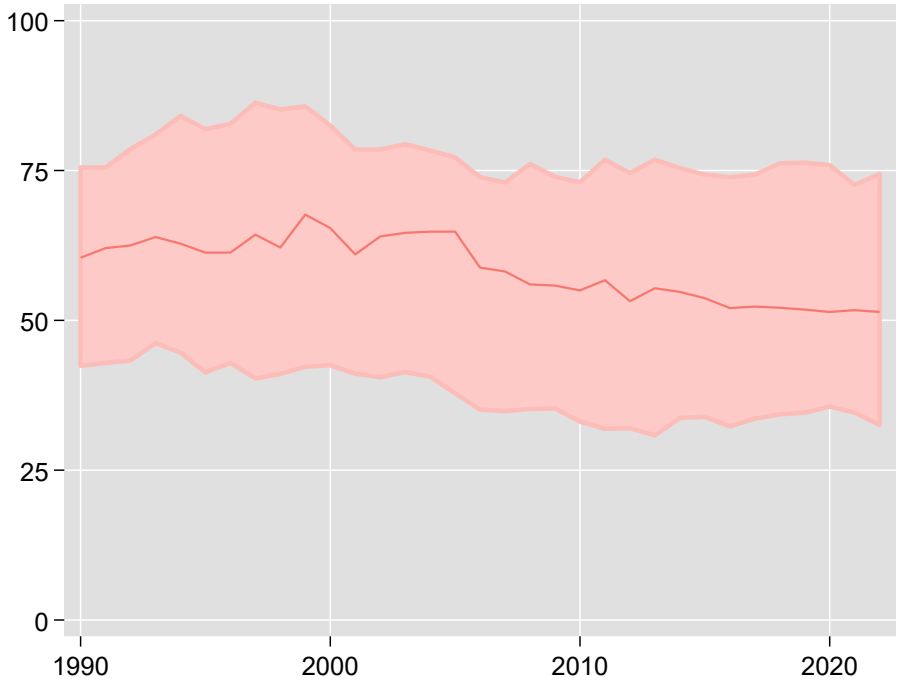
This oversight can be partly explained in two ways. First, conceptually, it could be argued that LC debt is unlikely to present a problem for sovereigns. After all, if governments retain control over their currency, they can always refinance LC debt. At the macroeconomic level, currency depreciation and high inflation, though harmful to the economy, reduce the real value of debt burdens.

Second, in LMICs, research and policy attention have historically focused on external and foreign currency debt, as this has been the dominant form of borrowing outside high-income economies. As discussed in Chapter 2, this

[3] European Investment Bank, *Default Statistics: Private and Sub-Sovereign Lending 1994–2022* (Global Emerging Markets Risk Database Consortium (GEMs) 2024); European Investment Bank, *Recovery Statistics: Private and Sub-Sovereign Lending 1994–2022* (Global Emerging Markets Risk Database Consortium (GEMs) 2024); European Investment Bank, *Default Statistics: Sovereign and Sovereign Guaranteed Lending 1994–2022* (Global Emerging Markets Risk Database Consortium (GEMs) 2024).
[4] Another indicator are credit default swaps, but these do not exist for the vast majority of LMIC.
[5] A Erce, E Mallucci and MO Picarelli, 'A Journey in the History of Sovereign Defaults on Domestic-Law Public Debt' (2022) European Stability Mechanism Working Paper; D Beers, V Bhullar, and D Nystrand, 'BoC–BoE Sovereign Default Database: What's New in 2023?' (2023) Bank of Canada Staff Analytical Notes No 2023–10; S Horn, CM Reinhart and C Trebesch, 'Hidden Defaults' (2022) 112 *AEA* Papers and Proceedings 531.
[6] US Das, MG Papaioannou, and C Trebesch, 'Sovereign Default Risk and Private Sector Access to Capital in Emerging Markets' IMF Working Papers No 10 (2010)
[7] CM Reinhart and K Rogoff, *This Time Is Different: Eight Centuries of Financial Folly* (Princeton University Press 2011).
[8] Beers, Bhullar, and Nystrand (n 5).
[9] T Asonuma and C Trebesch, 'Sovereign Debt Restructurings: Preemptive or Post-Default' (2016) 14(1) Journal of the European Economic Association 175.
[10] Erce, Mallucci and Picarelli (n 5).
[11] KJ Mitchener and C Trebesch, 'Sovereign Debt in the 21st Century: Looking Backward, Looking Forward' (2021) CESifo Working Paper No. 8959.

phenomenon, traditionally called 'original sin', has been both a barrier to financial and economic development and a source of recurrent financial instability in developing and emerging economies.[12]

Figure 5.1 Foreign currency debt share (% of total public debt)



Source: S Arslanalp and T Tsuda, 'Tracking Global Demand for Emerging Market Sovereign Debt' IMF Working Paper No 39 (2014)

However, as LC debt in LMICs has become more prominent and domestic defaults more visible, LC debt defaults have started to attract more attention. As shown in Figure 5.1, while the median share of FC debt remains above 50%, it has slowly declined over the past thirty years. Longer-term historical analyses reveal that average shares of LC debt in emerging markets have fluctuated, staying above 50% from the 1940s until the mid-1980s, and that defaults during earlier periods were not uncommon.[13]

As LC debt has grown in importance, more studies have been conducted on LC debt defaults. Recent evidence shows that LC debt defaults do occur, but they differ from FC defaults. Kohlscheen finds that default rates are lower for LC debt than for FC debt, though they are harder to predict.[14] Using a different sample focused on bonds from 1996 to 2012, Jeanneret and Souissi find that both LC and FC defaults are equally likely, but their causes differ—high inflation is the primary driver of LC defaults,

12 B Eichengreen and R Hausmann, 'Exchange Rates and Financial Fragility', NBER Working Paper No 7418 (1999).
13 CM Reinhart and KS Rogoff, 'The Forgotten History of Domestic Debt' (2011b) 121(552) The Economic Journal 319.
14 E Kohlscheen, 'Domestic vs External Sovereign Debt Servicing: An Empirical Analysis' (2010) 15(1) International Journal of Finance & Economics 93.

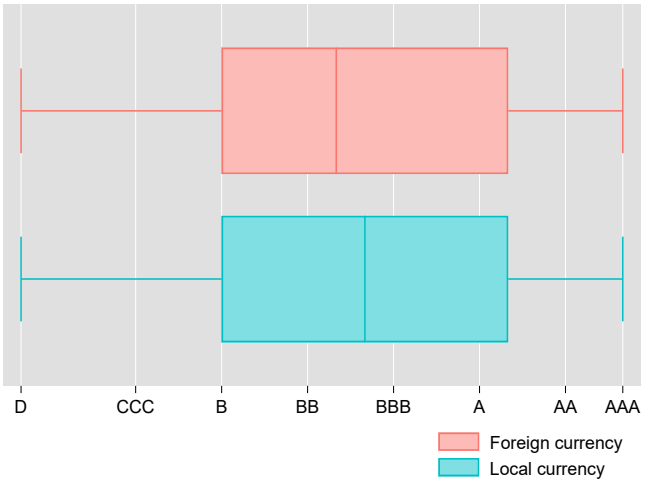
while high government debt and short-term liabilities are more likely to lead to FC defaults.[15] Beers, Jones, and Walsh report that LC defaults are less frequent than FC defaults and tend to reflect specific, isolated issues rather than widespread financial distress.[16] Panizza and Taddei argue that a higher share of LC debt does not increase the moral hazard problem, except in countries with weak institutions.[17]

Sovereign rating agencies have also recognised that LC defaults, while less common, are still possible. A report by Fitch highlights that while high inflation can reduce real debt burdens, this effect may be short-lived and politically costly if governments borrow primarily on short-term maturities and run persistent primary deficits.[18] As a result, governments may occasionally choose to default on LC debt as the least damaging option. Nonetheless, the authors conclude that LC defaults remain much less common, which is why LC credit ratings tend to be equal to or better than foreign currency ratings. This rating gap is often 'justified by the sovereign's ability to tax and appropriate domestic currency assets', as well as its capacity to 'print money to meet domestic currency obligations'.[19]

2.1. Credit ratings by currency

We first examine credit ratings as a measure of sovereign credit risk. Data from the three major credit rating agencies—Fitch, Moody's, and S&P—are collected and the latest average values are presented in Figure 5.2 and Figure 5.3.

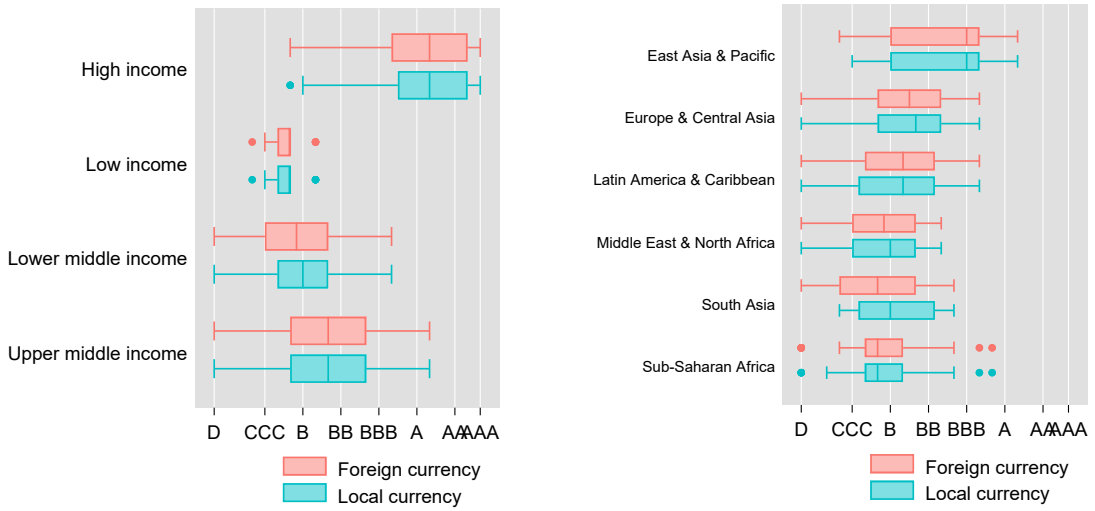
Figure 5.2 Sovereign credit ratings by currency



Note: The figure shows the latest ratings for each country in foreign and local currency, calculated as an average of the ratings from Fitch, Moody's, and S&P. Data is current as of July 2024. The boxes represent the median and interquartile range, while the whiskers indicate the minimum and maximum values.

15 A Jeanneret and S Souissi, 'Sovereign Defaults by Currency Denomination' (2016) 60 Journal of International Money and Finance 197.
16 D Beers, E Jones and J Walsh, 'Special Topic: How Frequently Do Sovereigns Default on Local Currency Debt?', Bank of England and Bank of Canada Paper No 13 (2020)
17 U Panizza and F Taddei, 'Local Currency Denominated Sovereign Loans – A Portfolio Approach to Tackle Moral Hazard and Provide Insurance' (2020) IHEID Working Paper 09-2020, Economics Section, The Graduate Institute of International Studies.
18 E Parker and D Riley, 'Why Sovereigns Can Default on Local-Currency Debt' (2013) Fitch Ratings Special Report.
19 ibid, 57.

Figure 5.3 Sovereign credit ratings by currency, country group and region



Note: This figure illustrates the latest credit ratings for each country in foreign and local currency, averaged across Fitch, Moody's, and S&P. Data for regions excludes high-income countries and is current as of July 2024. The boxes show the median and interquartile range, whiskers show the minimum and maximum, and dots represent outliers—values that exceed 1.5 times the interquartile range from the median.

Credit rating data reveal no significant differences between sovereign ratings in LMICs, although a slight advantage is observed for LC ratings overall. Notably, in lower-middle-income countries, LC ratings are higher on average. In no region are FC ratings higher than LC ratings, with a particularly pronounced positive gap in South Asia, Europe, and Central Asia. Similarly, most emerging market corporations have similar ratings in both LC and FC (Table 5.1). In about 10% of cases, a gap in favour of LC debt can be observed. Overall, credit ratings suggest that exposure to local currency debt does not increase credit risk exposure.

Table 5.1 Fitch credit ratings for emerging market corporates

Rating in foreign vs local currency	Count	Percentage
Same rating	494	90%
Local currency one notch above	48	9%
Local currency two or more notches above	8	1%
Total	**550**	100%

Source: Fitch as of 20/06/2024.

2.2 Sovereign defaults

Is this perceived risk of default consistent with historical evidence? We combine data from various sources on sovereign debt defaults to provide an overview.

Our primary source for LC debt default events is the dataset by Erce, Mallucci, and Picarelli.[20] This dataset tracks defaults and restructuring events between governments and private creditors on a monthly basis for instruments issued under domestic law, covering 134 sovereign defaults in 52 countries between 1980 and 2018. Unlike other datasets, [21] this one distinguishes between LC and FC debt defaults.[22]

We complement this data with information from Horn, Reinhart, and Trebesch, who compile data from several sources on sovereign defaults under foreign law with both Paris Club and external private creditors.[23] Additionally, we use the dataset by Beers, Bhullar, and Nystrand, which offers a comprehensive view of sovereign defaults over time, including details about domestic LC debt defaults.[24] As a result, our analysis combines data on default events in LC and FC from Erce, Mallucci, and Picarelli,[25] as well as Horn, Reinhart, and Trebesch,[26] with default amounts from Beers, Bhullar, and Nystrand.[27]

Despite being comprehensive, the data have some limitations. First, we assume that defaults under foreign law with foreign creditors are denominated in FC.[28] Second, our analysis lacks data on defaults involving only multilateral creditors. However, defaults involving *only* multilateral creditors are unlikely. According to Beers, Bhullar, and Nystrand, only three countries (Haiti, Samoa, and Syria) have defaulted on debts owed exclusively to multilateral creditors,[29] making it unlikely that our figures underestimate the total number of defaults.

Using these datasets, we find that LC defaults are much less common than FC defaults (Table 5.2). Between 1990 and 2021, there were 72 LC debt defaults compared to 445 FC defaults. LC defaults also involved fewer countries—34 countries defaulted on LC debt, compared to 109 for FC debt.

We calculate default rates using the cohort method on a yearly basis, by taking the ratio of the number of countries defaulting (either in LC or FC) in a given year to the number of countries with public debt in the previous year.[30] This calculation is done separately for LC and FC. The results show that default rates on LC debt are significantly lower than on FC debt—around 1% compared to approximately 10%.

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[20] A Erce, E Mallucci and MO Picarelli, 'A Journey in the History of Sovereign Defaults on Domestic-Law Public Debt' (2022) *European Stability Mechanism Working Paper.*
[21] Reinhart and Rogoff (n 7); Asonuma and Trebesch (n 9).
[22] We thank the authors for sharing this data with us.
[23] Horn, Reinhart and Trebesch (n 5).
[24] Beers, Bhullar, and Nystrand (n 5). Unlike the other datasets considered, however, it does not include data for discrete default events.
[25] Erce, Mallucci and Picarelli (n 5).
[26] Horn, Reinhart and Trebesch (n 5).
[27] Beers, Bhullar, and Nystrand (n 5).
[28] This is unlikely to be a significant problem for our dataset: Erce, Mallucci, and Picarelli report excluding only one LC under foreign law default event from their dataset. See Erce, Mallucci and Picarelli (n 5).
[29] Beers, Bhullar, and Nystrand (n 5).
[30] European Investment Bank, *Default Statistics: Sovereign and Sovereign Guaranteed Lending 1994-2022* (n 3). The underlying idea is that the relevant 'cohort' is any country with public debt in the previous year, as this implies payments (due to servicing or repayment) in the current year.

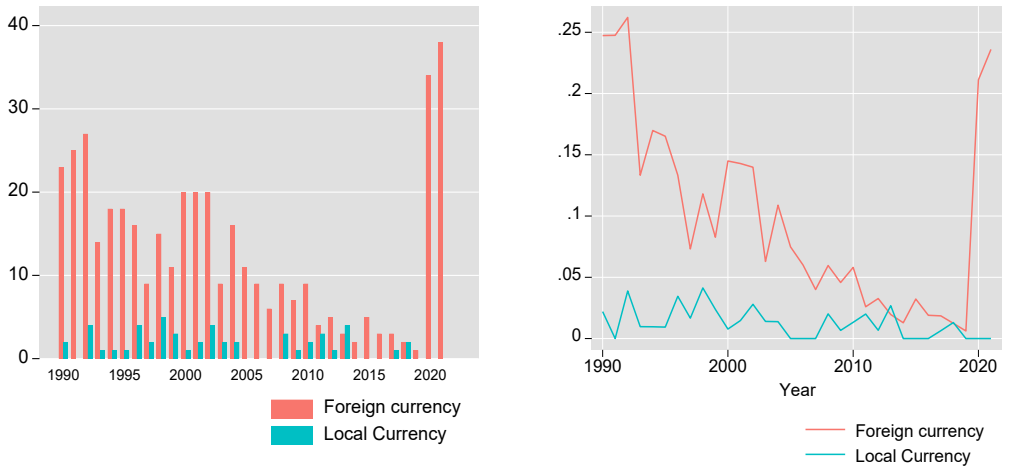
Table 5.2 Sample statistics about sovereign defaults

	Foreign Currency	Local currency
Number of events	445	72
Number of country defaults	109	34
Average default rate	10%	1.2%
Share of events involving face value reduction	30.8%	28.3%
Median amounts in default to total public debt	6.9%	5.4%

Source: Authors calculations based on S Arslanalp and T Tsuda, 'Tracking Global Demand for Emerging Market Sovereign Debt', IMF Working Paper No 39 (2014); D Beers, E Jones and J Walsh, 'Special Topic: How Frequently Do Sovereigns Default on Local Currency Debt?', Bank of England and Bank of Canada Paper No 13 (2020); S Horn, CM Reinhart and C Trebesch, 'Hidden Defaults' (2022) 112 AEA Papers and Proceedings 531; and A Erce, E Mallucci and MO Picarelli, 'A Journey in the History of Sovereign Defaults on Domestic-Law Public Debt' (2022) European Stability Mechanism Working Paper.

Figure 5.4 and Figure 5.5 illustrate that over the last 30 years, LC defaults have consistently been less common than FC defaults, with the exception of 2013. FC defaults have steadily declined, although there was a spike during the COVID-19 pandemic, likely due to the Debt Service Suspension Initiative, which involved many low-income countries.[31] Africa has experienced the majority of FC defaults, while Latin America has seen most LC defaults.

Figure 5.4 Default numbers and rates

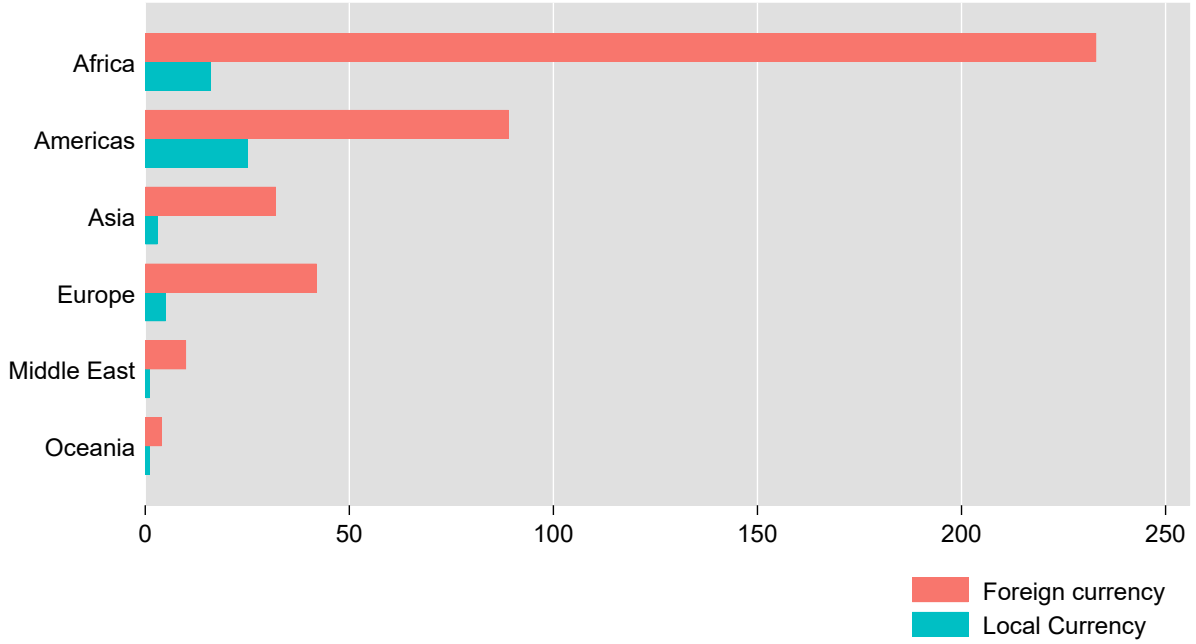


Source: *Authors calculations based on S Arslanalp and T Tsuda, 'Tracking Global Demand for Emerging Market Sovereign Debt' (2014) IMF Working Paper No 14/39; A Erce, E Mallucci and MO Picarelli, 'A Journey in the History of Sovereign Defaults on Domestic-Law Public Debt' (2022) European Stability Mechanism Working Paper; and S*

[31] For an updated list of countries, see World Bank, 'COVID-19: Debt Service Suspension Initiative' (World Bank, 2023) https://www.worldbank.org/en/topic/debt/brief/covid-19-debt-service-suspension-initiative accessed 13 October 2024.

Horn, CM Reinhart and C Trebesch, 'Hidden Defaults' (2022) 112 AEA Papers and Proceedings 531. The left panel shows the number of countries defaulting on a yearly basis, and the right panel shows the default rate, calculated as defined.

Figure 5.5 Number of defaults by region



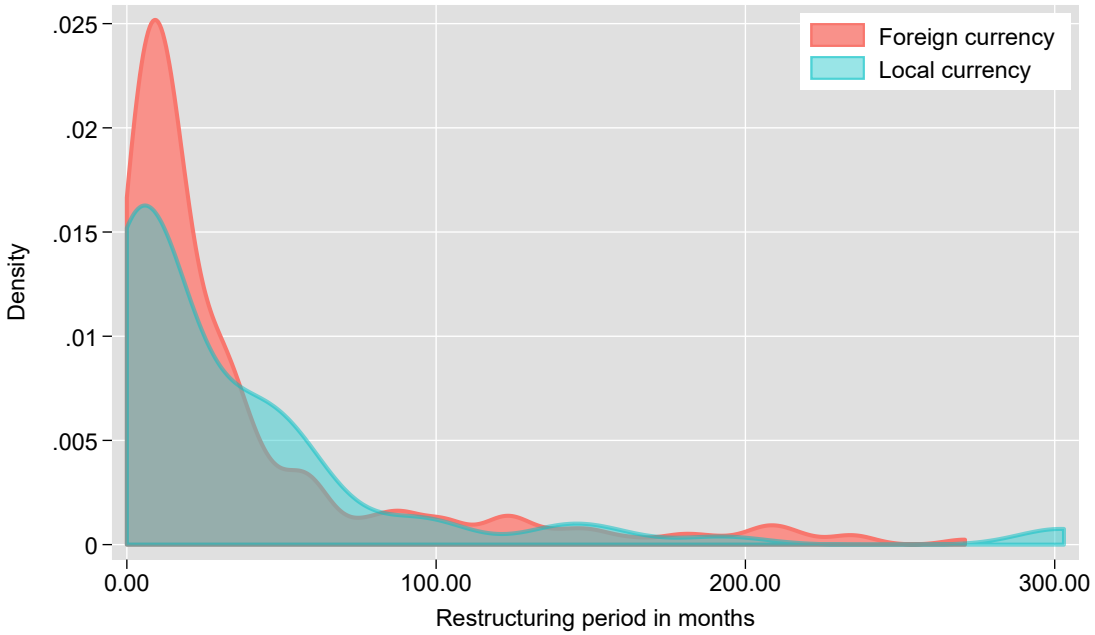
Source: Authors calculations based on S Arslanalp and T Tsuda, 'Tracking Global Demand for Emerging Market Sovereign Debt', IMF Working Paper No 39 (2014); A Erce, E Mallucci and MO Picarelli, 'A Journey in the History of Sovereign Defaults on Domestic-Law Public Debt' (2022) European Stability Mechanism Working Paper; and S Horn, CM Reinhart and C Trebesch, 'Hidden Defaults' (2022) 112 AEA Papers and Proceedings 531. The left panel shows the number of countries defaulting on a yearly basis, and the right panel shows the default rate, calculated as defined.

2.3. Characteristics of defaults by currency

LC defaults exhibit some differences compared to FC defaults. First, a slightly lower proportion of LC defaults involve face value reductions.[32] While haircut values (i.e., the net present value loss from restructuring) are not included in our dataset, other studies indicate that haircuts for domestic-law debt tend to be slightly higher on average.[33] Second, FC defaults generally take longer to resolve, with a median duration of 16 months compared to 12 months for LC defaults. Long restructurings are rare but are slightly more common for FC defaults lasting more than five years, as shown in Figure 5.6. This may be due to the complexities of restructuring external debt involving multiple creditors under foreign law. The longest restructuring in our dataset is a LC default that took over 25 years (Peru, 1992).

[32] Restructuring can take various forms, including face value reductions, and changes to maturity or coupon terms.
[33] Erce, Mallucci and Picarelli (n 5).

Figure 5.6 Distribution of default events by duration

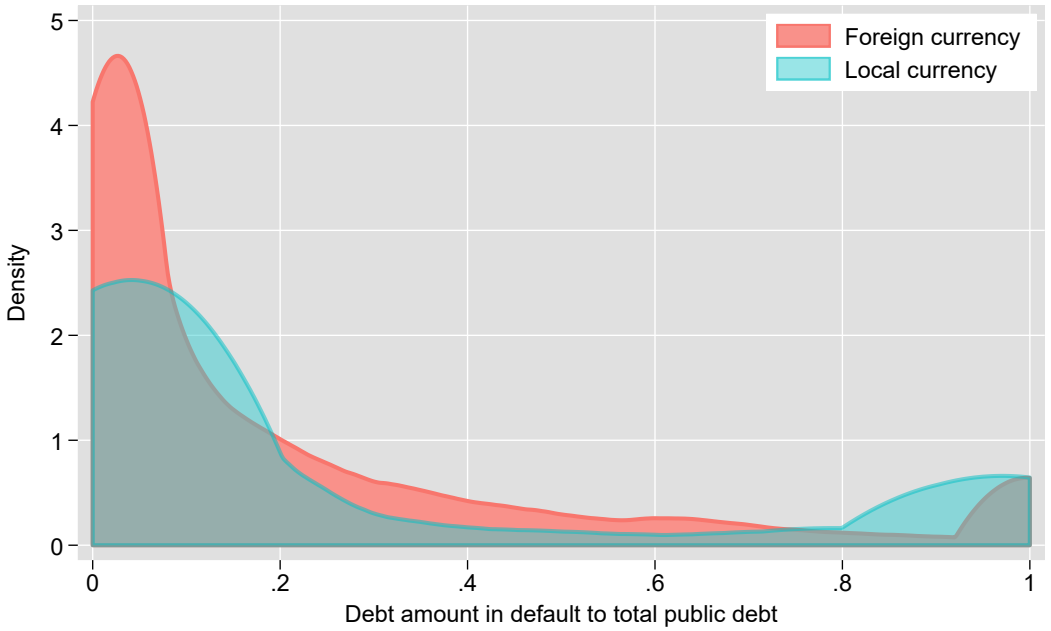


Source: Authors' calculations based on S Horn, CM Reinhart and C Trebesch, 'Hidden Defaults' (2022) 112 AEA Papers and Proceedings 531; and A Erce, E Mallucci and MO Picarelli, 'Sovereign Defaults at Home and Abroad' (2024) European Stability Mechanism Working Paper. Kernel density plots estimated with the Epanechnikov kernel function, with a Bandwith chosen through the Silverman method.

In absolute terms, the amounts in default for LC debt are smaller, partly because LMICs tend to have lower levels of LC public debt. Even relative to the total amount of LC debt outstanding, LC default amounts tend to be lower, with a median of 5.4% compared to 6.9% for FC defaults (Table 5.2). Looking at the distribution in Figure 5.7, FC default amounts are higher across most of the distribution to FC public debt.[34]

[34] However, there is scope for tail events where the total amount of debt outstanding is in default. This likely reflects data limitations regarding public debt outstanding by currency, which may be underestimated. In a few instances, the amounts in default exceeded the reported total outstanding debt, with values higher than 100%, indicating underreporting of the latter. These values have been capped at 100%.

Figure 5.7 Distribution of amounts in default to public debt outstanding



Source: Authors' calculations based on S Arslanalp and T Tsuda, 'Tracking Global Demand for Emerging Market Sovereign Debt', IMF Working Paper No 39 (2014); and D Beers, E Jones and J Walsh, 'Special Topic: How Frequently Do Sovereigns Default on Local Currency Debt?', Bank of England and Bank of Canada Paper No 13 (2020). The figures show the distribution of amounts in default scaled by total public debt outstanding. Kernel density plots estimated with the Epanechnikov kernel function, with a Bandwith chosen through the Silverman method.

Overall, the evidence shows that LC defaults, while less frequent, are significant in terms of their relative size and duration. However, the smaller sums involved, and their lower frequency suggest that credit ratings may underestimate the gap between local and foreign currency default risks.

3. Currency risk and credit rating agencies' assessments of MDBs' capital adequacy

As discussed in Chapter 2, MDBs have low exposure to local currency financing due to their aversion to currency risk, driven by the need to protect their capital, satisfy shareholders, and maintain their high credit ratings from Credit Rating Agencies (CRAs). The previous section demonstrated that the actual default risk of LC debt is lower than that of FC debt, which is reflected in CRAs' equal or slightly better ratings for LC sovereign debt. This section examines how a larger exposure of MDBs to LC debt might impact their credit ratings, particularly in relation to capital adequacy.

As indicated in the *Independent Review of Multilateral Development Banks' Capital Adequacy Frameworks (CAF)* report, MDBs are not regulated like conventional banks under

Basel rules; instead, they rely on their own internal ratings.[35] Furthermore, MDBs benefit from preferred creditor status, which means their exposure to credit risk differs fundamentally from other banks. In practice, MDBs heavily rely on the methodologies and ratings provided by CRAs, making those institutions' assessments crucial for MDB asset allocation and risk management. For many MDBs, maintaining AAA ratings from CRAs is an explicit goal, which reduces their risk tolerance and limits the financing available to many borrowers. As the G20 CAF report highlights, no other type of financial institution achieves this rating, except for a few state-backed ones.

In principle, given CRAs' equal or better ratings for LC compared to FC debt, a higher exposure to LC debt by MDBs should not negatively affect their ratings—and could potentially improve them. However, as discussed in other chapters of this report, LC debt carries additional risks, such as exchange rate and convertibility risks, which might influence CRAs' assessments. This section will explore the potential implications of increased MDB exposure to LC sovereign debt on their credit ratings, based on existing frameworks and assessments. This highlights the need for more comprehensive data on MDBs' credit risk exposure.

To examine various aspects of the relationship between MDBs' LC exposure and their credit ratings, Section 3.1. introduces the general CRA rating criteria for MDBs. It explores how relevant LC financing exposure and currency risk are to CRAs' assessment criteria. The analysis shows that the main factor driving CRAs' ratings of MDBs is capital adequacy, for which LC financing exposure and currency risk are not primary considerations. Currency risk is a secondary consideration, assessed within broader market risk metrics and the qualitative evaluation of MDBs' hedging practices. As mentioned earlier, because borrowers generally have equal or better credit ratings in LC than in FC, LC financing exposure might improve MDBs' balance sheets from a credit risk perspective. The potential negative impact of LC exposure may arise from unhedged positions in the context of market risk considerations.

Building on this, Section 3.2 explores how currency depreciation affects MDBs' capital adequacy and credit ratings when MDBs lend in LC. The findings suggest that, with full currency hedging, depreciation of the risky asset would reduce the MDB's nominal exposure to that asset, improving the risk-weighted capital ratio. The reduction in risk-weighted assets is more significant when LC financing makes up a larger share of the MDBs' portfolio. If the MDB has only a partially hedged position, depreciation would reduce risk-weighted assets, but also lower the level of capital. In this case, the overall effect on the risk-weighted capital ratio depends on the level of currency hedging, the share of LC financing in the total portfolio, and the initial capital ratio. These factors will determine whether the effect is positive or negative. Additionally, even if depreciation leads to a negative net effect on capital levels due to unhedged currency exposure, this may be offset over time by increased internal capital generation (profitability) from these currency exposures, given the average returns of these positions (see Chapter 4).

[35] *Boosting MDBs' Investing Capacity: An Independent Review of Multilateral Development Banks' Capital Adequacy Frameworks* (2022).

Finally, to fully assess the impact of LC financing on MDBs' capital adequacy, it is important to consider the potential co-movement between CRAs' credit ratings of MDB borrowers and exchange rates. If credit downgrades lead to significant currency depreciations, the negative impact of a credit rating downgrade on MDBs' portfolios could be offset by the positive valuation effect of LC exposure, as discussed above. In line with this, Section 3.3 examines the empirical relationship between exchange rates and sovereign credit ratings, and later analyses how depreciations and borrowers' credit rating downgrades affect MDBs' capital adequacy. The empirical analysis suggests that there is no systemic relationship between exchange rate depreciations and credit downgrades. However, even when downgrades and depreciations occur simultaneously, increased LC financing exposure will not result in a more severe deterioration of MDBs' ratings. This is because downgrades typically occur in both foreign and local currency. In such scenarios, while the value of risk-weighted assets may be negatively affected by the downgrade, the impact on LC positions will not be more severe.

3.1. Credit rating agencies' assessments of MDBs' capital adequacy

The three main Credit Rating Agencies (CRAs)—Moody's, Fitch, and S&P—share similar assessment criteria for rating MDBs. These ratings are based on two elements: the MDB's Standalone Credit Profile, which primarily relates to the entity's past and expected performance, and the support (and other additional considerations) the MDB might receive from its shareholders, such as callable capital, guarantees, or other support commitments. The Standalone Credit Profile is in turn based on an assessment of capital adequacy,[36] liquidity, operating governance, and the business environment, including risks associated with institutional strategy and the countries in which the MDB operates.[37]

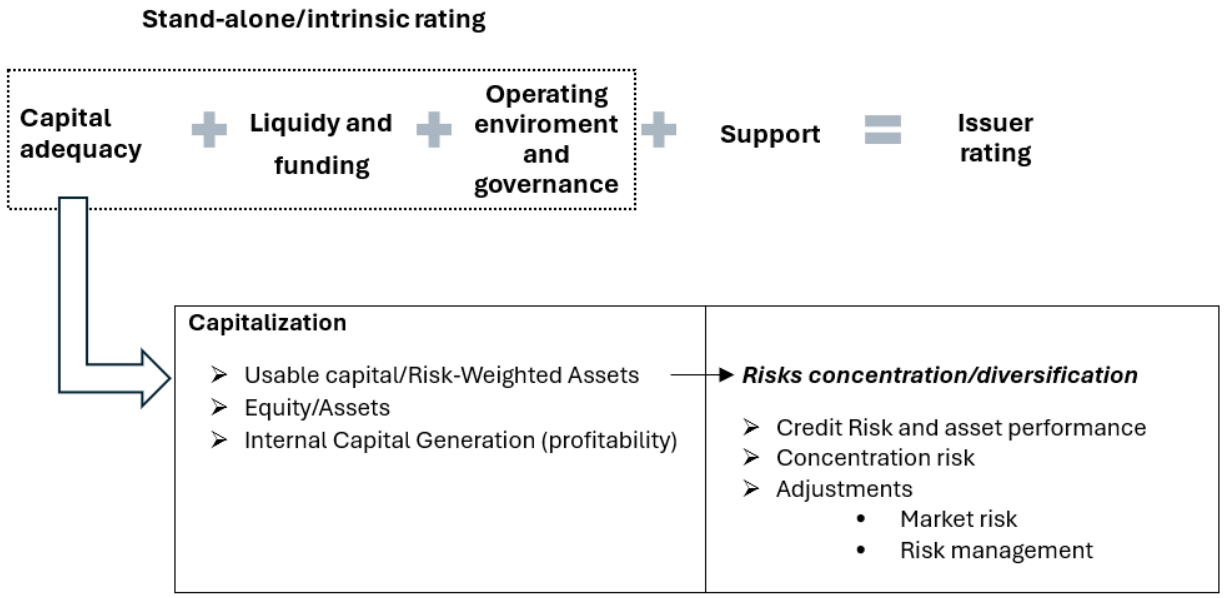
The capital adequacy assessment focuses on the MDB's level of capitalisation (capital ratios) and risk exposures (credit risk, concentration risk, market risk, and internal risk management policies). Currency exposures, as will be explained in detail later, are factored into CRAs' assessments indirectly through credit risk and directly through market risk and risk management practices.

Figure 5.8 presents a simplified overview of the rating criteria used by the main CRAs, focusing on key indicators in the capital adequacy assessment.[38] The capital adequacy analysis is broadly similar across the CRAs and is based on three main indicators: 1) a credit risk measure, which calculates usable capital relative to risk-weighted assets (primarily based on the ratings of the MDB's borrowers); 2) the equity-to-assets ratio; and 3) internal capital generation (profitability). As will be discussed later, the most complex and significant aspect of the CRAs'

[36] The capital adequacy assessment evaluates the institution's capacity to absorb losses through its capital position without impairing its ability to meet liabilities. In turn, the liquidity assessment examines how effectively MDBs manage their liquid assets and funding structure to meet short-term obligations and maintain operational flexibility.
[37] To assess business profile risks, CRAs typically consider factors such as the size and quality of the banking portfolio, governance and strategy risks, non-sovereign sector financing, and the significance of the public mandate. For the operating environment, they evaluate the credit quality, income per capita, and political risks of the countries where the MDB operates, along with the political risks associated with the head office and the operational support from member states.
[38] Moody's IS, *Multilateral Development Banks and Other Supranational Entities Methodology* (2020); Fitch, *Supranationals Rating Criteria* (2023); S&P GR, *Multilateral Lending Institutions and Other Supranational Institutions Ratings Methodology* (2023).

assessments is the calculation of risk-weighted assets, which considers factors like risk concentration and diversification. This includes two key elements: (a) credit and concentration risk, and (b) additional risks not included in the ratios, such as market risks and risk management considerations, which may lead to adjustments in the final assessment.

Figure 5.8 Credit Rating Agencies criteria for MDBs



Source: Own elaboration based on Fitch Ratings, Moody's Investors Service and S&P Global Ratings.

While the internal capital generation (profitability) and unweighted equity-to-assets ratios are relatively straightforward, the risk-weighted capital ratio and associated risk exposure analysis are more complex and could be affected by larger exposure to LC financing. This analysis is based on a qualitative assessment of the MDB's portfolio, including credit risk and concentration risks. Additionally, as will be explored later, market risks and risk management considerations are included as adjustments to the rating outcome, affecting both the sub-rating for the risk-weighted capital ratio and the overall capital adequacy rating.

The first element, credit risk and asset performance, is based on a weighted average of loan exposures, with weights determined by the CRA ratings of the MDB's borrowers. Weights are applied to treasuries, loans, and guarantees according to their rating category (adjusted for PCS and other mitigants).[39] For unrated borrowers, the rating committees usually assess the average credit risk of the borrower, and Fitch may use external ratings from other sources. In cases where no information is available, CRAs typically assume a very weak credit quality for the borrower (e.g., CCC, Caa1, or B+ for Fitch, Moody's, and S&P, respectively). Within capital adequacy assessments, the risk-weighted assets measure plays a critical role. For example, Fitch Ratings reports that almost half of the capital constraints for rated MDBs are explained by the capital-to-risk-weighted assets ratio (FRA), rather than the unweighted capital ratio.

[39] Fitch Ratings focuses on the MDB's banking portfolio, while treasury portfolio is part of the liquidity analysis.

Currently, CRAs do not mention currency denomination as a significant factor in their credit quality assessments. Only S&P notes that for risk weights for sovereign, regional, and local authorities, they generally use the foreign currency credit rating of the sovereign. They use the LC rating only when they know the amount of domestic securities issued in LC by a central government in the MDB's portfolio. As discussed earlier, sovereign LC ratings are equal to, or slightly higher, than FC ratings. Therefore, from a credit risk perspective, higher LC exposure in MDB portfolios could have a neutral or positive effect on their rating assessments. Additionally, the limited impact of convertibility risk on risk assessments is not considered a significant risk factor for LC financing. Fitch also notes that MDBs with large exposures to private sector borrowers may receive a higher rating (+1) in this category due to the PCS, which has historically provided exemptions from FC restrictions. Fitch excludes from liquid assets any deposits in banks and securities denominated in non-convertible currencies, except when loans and capital are also denominated in the same currency.

The second main factor CRAs assess in relation to risk-weighted capital ratios is concentration risk, including borrower, geography, and sector concentration, as well as single-counterparty concentration, which tends to be higher for MDBs than for commercial banks. Fitch measures concentration risk by the ratio of the five largest exposures relative to the total banking portfolio. S&P's concentration adjustments are based on assumed correlations across sectors, geographies, and business lines, with penalties for single-sovereign concentration. Moody's adjusts its Development Asset Credit Quality indicator for high single-name exposures (or a limited number of entities), potentially incorporating sector and country concentration based on the Herfindahl-Hirschman Index. Again, currency exposure is not mentioned as a factor in the CRAs' concentration risk assessments.

CRAs also make small adjustments to the value of capital before adjusting assets to calculate capital adequacy. Fitch's usable capital-to-risk-weighted assets ratio includes shareholders' equity plus 10% of callable capital from 'AAA'/'AA' shareholders.[40] More relevant to this report, S&P deducts paid-in capital contributions made by MDB members in non-convertible or hard-to-convert currencies when calculating their Total Adjusted Capital (TAC) measure. However, S&P also states that they may include these LC contributions if the MDB has significant financing in the same currency. Therefore, an increase in LC financing, coupled with capital contributions in that currency, would not negatively affect capital measures for this CRA.

Besides the two main elements of credit quality and concentration risks, CRAs also adjust risk-weighted positions based on market risks. This is where currency risks are directly mentioned as one of the main market risks considered, along with interest rate risks. However, market risks—particularly currency market risk—play a minor role in CRAs' capital adequacy assessment criteria for MDBs, as these entities typically do not engage in market activities and maintain small treasury portfolios compared to their large banking portfolios. Only difficult-to-hedge currency or interest rate exposures are considered within this analysis.[41] The assessment of these risks is generally based on the MDBs'

[40] During 2023, Fitch Ratings started contemplating some changes in their criteria, including increasing the weight of usable capital in the FRA ratio, making this ratio the main anchor of the MDB's capitalisation assessment.
[41] This is relevant for MDBs financing borrowers in LMICs, where the currencies have a lower presence and liquidity in derivative markets such as swaps. As a result, hedging instruments may be difficult or costly to obtain.

exposure data (including internally authorised limits for these exposures), along with qualitative considerations, such as market uncertainty and volatility.[42]

For instance, Fitch Ratings measures currency mismatches relative to the MDB's shareholder equity, accounting for hedging techniques and the historical profit and loss volatility of these positions. S&P adjusts RWA ratios for additional risks, including currency risk, through stress testing based on the MDBs' hedging policy.[43] As a result, larger unhedged LC financing exposures could increase the role of market risk in these assessments, while hedged positions would have a minimal impact. In the case of partially unhedged LC financing exposures, both credit risk and internal capital generation should be considered, as these positions tend to generate higher returns, as discussed in Chapter 4. Additionally, as discussed earlier, CRAs may adjust capital levels based on the currency in which shareholder contributions are made. Capital contributions in the borrower's LC are considered part of the capital measure if the MDB holds assets in that currency.

In conclusion, currency risk exposure is not a primary driver in the main CRAs' rating criteria, even for hard currency exposures (e.g., US dollar financing by Euro-based MDBs). The limited focus on currency risk may be due to the low current LC exposure among MDBs, which makes it a low-risk factor. However, CRAs' methodologies are not designed to change frequently in response to evolving business models of MDBs. Therefore, increased LC financing exposure is unlikely to affect rating assessments in the short term.

Moreover, despite varying levels of LC exposure among MDBs (as discussed in Chapter 2), currency exposure does not appear to drive differences in MDBs' credit ratings in CRA reports. If currency risk were a major factor in these ratings, it would be frequently mentioned in reports for MDBs with higher LC financing exposure, which is not the case. This suggests that while MDBs' LC financing is not a significant concern for CRAs, these agencies may also fail to acknowledge the lower credit risk associated with these instruments, as explored in the previous section.

Although LC financing does not directly affect credit ratings—and may even improve MDBs' balance sheets from a credit risk perspective—there may still be indirect and dynamic effects from increased LC exposure on MDBs' risk-weighted assets if exchange rates depreciate. The following section explores how capital adequacy ratios respond to currency depreciation when MDBs have LC financing exposure, taking into account different levels of hedging.

3.2. Capital adequacy and borrowers' exchange rates

Based on CRAs' methodologies, it can be assumed that a larger exposure of MDBs to LC financing could reduce the value of risk-weighted assets, as MDB borrowers' credit ratings in LC tend to be equal to or better than in FC. Unhedged LC positions, however, can increase market risks and reduce the value of MDBs' equity, which also affects CRAs' capital adequacy assessments. The impact of unhedged positions should be analysed together with their effect on internal capital generation, i.e., the relative

[42] We know very little how these qualitative considerations are formed.
[43] The CRAs' assessment criteria provide limited detail on how they evaluate these policies.

returns of these assets compared to foreign currency positions. This section further explores these effects, focusing on the dynamic changes in MDBs' capital adequacy once currency risk has materialised—after a depreciation. First, we explore the effect of an exchange rate depreciation on MDBs' risk-weighted assets, and then on their risk-weighted capital ratio, which is the main driver of their capital adequacy assessment, as discussed above.

3.2.1. Risk-weighted assets

As previously described, CRAs' assessments of MDBs' capitalisation are strongly influenced by their measures of risk-weighted assets, which are based on the ratings of MDBs' borrowers. A simple way to illustrate how currency risk affects this measure is to define the risk-weighted asset value of an MDB's portfolio as:

$$RWA = \frac{A^{LC}}{FX} * \omega^{LC} + A^{HC} * \omega^{HC} \qquad (5.1)$$

Here, the risk-weighted value of the financing A in the LC of the borrower LC depends on the value of the asset measured in the MDB's hard currency using the exchange rate FX between these local and hard currencies. It also depends on the risk-weight ω^{LC}, which is based on the LC credit rating of the borrowers (and their countries) provided by a rating agency. Lower credit ratings imply higher risk weights. Similarly, the risk-weighted value of the financing in hard currency HC depends on the risk-weight ω^{HC}, which is based on the FC credit rating of the borrowers. Since this position is already denominated in hard currency, the exchange rate does not directly affect this measure.

It is straightforward to show that a depreciation of the LC (an increase in the value of FX) reduces the value of the risk-weighted assets measured in hard currency:

$$\downarrow RWA = \frac{A^{LC}}{\uparrow FX} * \omega^{LC} + A^{HC} * \omega^{HC} \qquad (5.2)$$

3.2.2. Risk-weighted capital ratio

To analyse how this impacts the risk-weighted capital ratios, we need to consider how currency exposures affect the MDBs' capital. This ratio compares the measure of capital E to the risk-weighted assets described above:

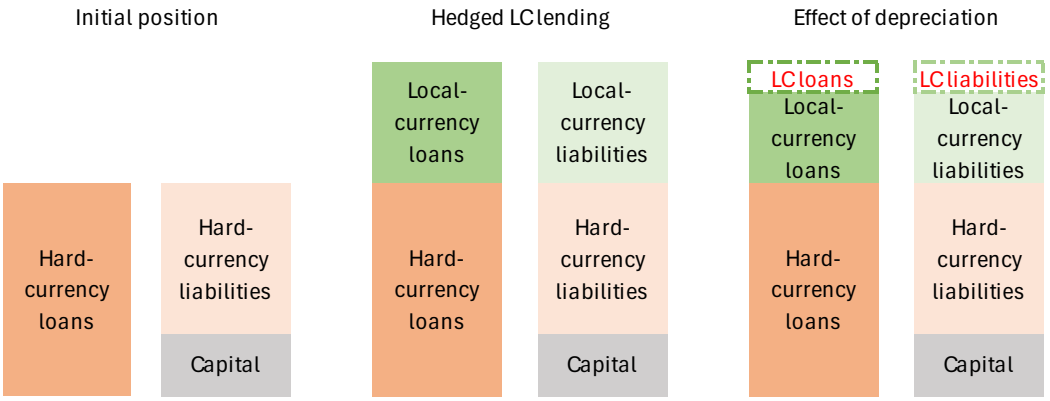
$$\frac{E}{RWA} = \frac{A - L}{RWA} \qquad (5.3)$$

Simplifying the measure of capital as the difference between total assets and liabilities allows us to focus on the effect of exchange rate variations on these two components. In this decomposition, a depreciation reduces the value of total assets through the valuation effect. However, the impact on capital will depend on the denomination of liabilities, which can also be affected by exchange rate movements:

$$\frac{E}{RWA} = \frac{\frac{A^{LC}}{FX} + A^{HC} - \frac{L^{LC}}{FX} - L^{HC}}{\frac{A^{LC}}{FX} * \omega^{LC} + A^{HC} * \omega^{HC}} \qquad (5.4)$$

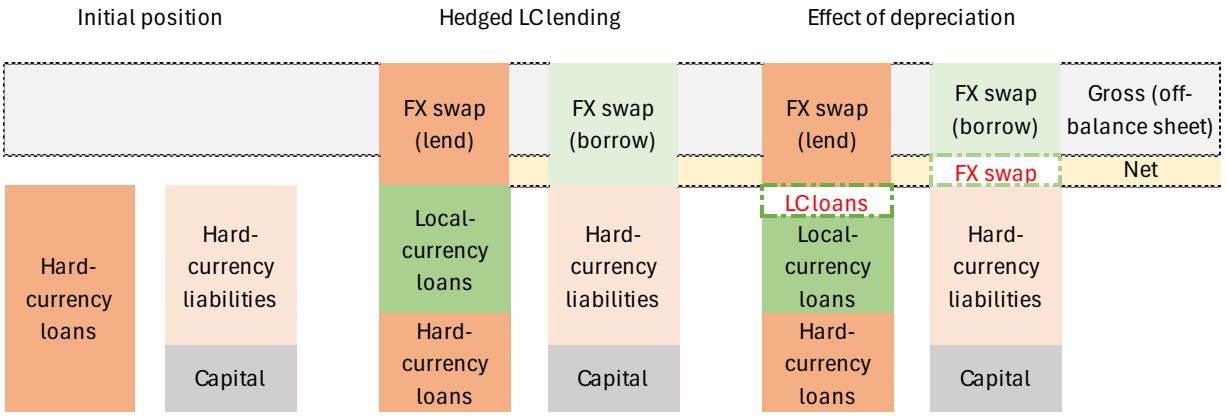
Typically, MDBs hedge most currency mismatches using various instruments. For instance, a depreciation that reduces the value of assets will also reduce the value of MDBs' LC liabilities used to hedge currency risk:

Figure 5.9 MDB balance sheet



If the hedging instrument is a foreign exchange (FX) swap, the effect is the same, but the accounting is more complex. Since only a portion (the net replacement value) of the FX swap is recorded on the balance sheet, the rest of the gross position (and the currency matching) is not observable. However, exchange rate gains/losses are recorded on the balance sheet.[44] Therefore, the effect on capital is nill:

Figure 5.10 MDB balance sheet with FX swaps hedging



In this scenario, if the MDB has no currency mismatches, the depreciation will have no effect on capital levels. In such cases, the impact of an exchange rate movement on the risk-weighted capital ratio will depend solely on the dynamics of the risk-weighted assets. The risk-weighted assets experience larger reductions when the LC financing share in MDB portfolios is higher.

If the MDB only has a partial hedge, the positive effect on the ratio from the depreciation of risk-weighted assets will be offset by the negative effect on capital. The net effect will depend on the level of currency hedging, the share of LC financing in the total portfolio, and the current gap between risk weights for local and foreign currency:

[44] BB Barkbu and LL Ong, 'FX Swaps: Implications for Financial and Economic Stability' (2010) IMF Working Paper WP/10/55

$$\downarrow\uparrow \frac{\downarrow E}{\downarrow\downarrow RWA} = \frac{\frac{A^{LC}}{\uparrow FX} + A^{HC} - \frac{L^{LC}}{\uparrow FX} - L^{HC}}{\frac{A^{LC}}{\uparrow FX} * \omega^{LC} + A^{HC} * \omega^{HC}} \quad (5.5)$$

To clarify the conditions under which the risk-weighted capital ratio decreases after a depreciation, we define the LC exposure as a ratio of equity $m = (A^{LC} - L^{LC})/E$ and the ratio of LC assets to total assets as $w = A^{LC}/A$. Using these ratios, the risk-weighted capital ratio will decrease after a depreciation if the unhedged currency exposure to equity ratio is less than the share of LC assets over total assets, adjusted for the risk-weight differential between assets in different currencies:

$$m < \frac{w\omega^{LC}}{\omega^{HC} + \mathrm{w} * (\omega^{LC} - \omega^{HC})} \quad (5.6)$$

If we assume that the risk weights are equal for both currencies, which is often the case, this condition simplifies to:

$$m < \mathrm{w} \quad (5.7)$$

Therefore, if the initial LC exposure as a ratio of capital is smaller than the initial share of LC assets over total assets, depreciation improves the risk-weighted capital ratio. Appendix B provides a detailed derivation of this result.

An important consideration when discussing unhedged positions is to account for not only the effects of risk realisations (such as currency depreciations), but also the average dynamics of exchange rates. As explored in Chapter 4, excess returns in lower-income economies tend to be positive on average. While tail risks exist, and can be significant, MDBs' countercyclical mandates suggest that these institutions should not be driven by excessive risk aversion. In this context, if unhedged LC financing generally offers higher profits, but carries larger, less diversifiable tail risks, MDBs could use the higher returns and lower credit risks to boost internal capital (profits) during stable periods. This capital could then be used to absorb losses during turbulent times, allowing MDBs to continue their countercyclical financing activities.

In this section, we have assumed that risk weights remain stable. However, if credit rating changes are systematically related to exchange rate movements, changes in either variable could impact MDBs' balance sheet quality and, consequently, CRAs' assessments. In the case of LC financing, this could result in a negative impact from a credit rating downgrade and, as discussed above, a positive impact from exchange rate depreciation as the nominal exposure to the risky asset declines. To explore this potential effect, the next and final section analyses how depreciations and credit rating downgrades of MDB borrowers affect MDBs' capital adequacy. It also empirically examines the relationship between exchange rates and sovereign credit ratings, which are representative of MDB borrowers and relevant for exchange rate dynamics.

3.3. Capital adequacy and borrowers' exchange rates: credit ratings dynamics

An indirect channel through which a larger exposure of MDBs to LC financing could affect their credit ratings is the interplay between borrowers' exchange rate dynamics and their credit ratings. While exchange rate variations affect the value of these positions (as discussed in the previous section), borrowers' credit ratings influence the value of risk-weighted assets and capital ratios.

The connection between exchange rates and sovereign credit ratings can be bidirectional. Credit ratings are used by passive and active international investors for benchmarking and internal risk-exposure restrictions. As a result, downgrades can trigger a reversal in foreign demand for the issuing country's local assets, leading to LC depreciation. Downgrades can also worsen economic expectations if they convey new information to the market. In turn, depreciation can negatively impact the credit quality of borrowers with FC liabilities, as the increased burden of these liabilities can lead to downgrades.

Assuming that risk weights are correlated with exchange rates, and vice versa, the risk-weighted assets can be expressed as:

$$RWA = \frac{A^{LC}}{FX(\omega)} * \omega^{LC}(FX) + A^{HC} * \omega^{HC}(FX) \quad (5.8)$$

In this case, depreciation will reduce the value of risk-weighted assets through its effect on the value of LC financing but could increase the value of both LC and FC financing through an increase in risk weights following a downgrade:

$$\downarrow\uparrow RWA = \frac{A^{LC}}{\uparrow FX(\omega \uparrow)} *\uparrow \omega^{LC}(\uparrow FX) + A^{HC} *\uparrow \omega^{HC}(\uparrow FX) \quad (5.9)$$

The net effect depends on which of these two channels dominates. As previously discussed, CRAs typically assign the same rating to both local and FC instruments, or a slightly better rating to LC. This gap generally does not react to exchange rate dynamics. Therefore, we can assume that ω^{LC} is equal or lower than ω^{HC}. Given this assumption, when there is a depreciation, if ratings are negatively affected, the effect on ω^{LC} and ω^{HC} will be equal, making the total effect on risk-weighted assets depend on whether the effect on the risk weight or the valuation effect is stronger.

$$\uparrow\downarrow RWA = \left(\frac{A^{LC}}{\uparrow FX} + A^{HC}\right) * \omega\ (\uparrow FX) \quad (5.10)$$

Regardless of which effect dominates, for a given exposure to a set of borrowers, the larger the exposure to their LC financing, the smaller the increase (or larger the reduction) in risk-weighted assets after a depreciation. We can thus conclude that if borrowers' credit ratings in local and FC behave similarly during a depreciation, the larger the MDBs' LC exposure, the smaller the negative effect on risk-weighted assets. Consequently, the negative effect on the risk-weighted capital ratio will be smaller (or even positive) with larger LC exposures, especially if the unhedged currency exposure to capital is smaller. In this case, the effect of depreciation on the (unweighted) equity-to-asset ratio will be positive, as potential downgrades to borrowers' credit ratings play no role.

Similarly, if there is a significant relationship between exchange rate dynamics and credit rating downgrades, the effect of one variable on MDBs' balance sheets could be counteracted in the case of LC financing (or exacerbated in the case of FC financing). To explore this potential counteracting impact on MDBs' balance sheets, the next section empirically examines the relationship between sovereign credit ratings and exchange rates using various statistical and econometric methods.

3.4. Borrowers' exchange rates-credit ratings dynamics

The literature has explored the relationship between sovereign credit ratings and exchange rate dynamics. For example, Sy presents evidence that CRA sovereign credit ratings do not predict currency crises; rather, currency crises predict sovereign credit rating downgrades.[45] Conversely, Alsakka and ap Gwilym, using non-pooled data from various CRAs, find that both positive and negative credit news affect exchange rates (within 1 to 30 days after the credit event). Their findings suggest that credit actions have, on average, a 2.5% impact on exchange rate variations 30 days ahead. They further show that exchange rates react to both downgrades and upgrades, with a stronger effect for downgrades, especially multi-notch ones.[46] Similarly, using ratings from S&P and a treatment effect methodology, Balima and others find that rating events influence monthly exchange rate variations, with a larger effect for negative events. Their results indicate that a positive sovereign credit rating event leads to a 0.11% increase in the rate of appreciation, while a downgrade leads to a 0.42% increase in the depreciation rate on average.[47] In this vein, Fitch notes that the nominal exchange rate of emerging market currencies against the US dollar is strongly correlated with these countries' sovereign ratings. According to Fitch, a stronger US dollar deteriorates these countries' sovereign credit profiles through depreciation pressures and declines in international reserves, given their large shares of debt denominated in FC.[48]

To examine the effects of downgrades on exchange rates, we conducted various statistical exercises. We used nominal exchange rates from 105 LMICs and their sovereign credit ratings from the three main CRAs.

3.4.1. Average correlation

First, we calculated the correlation between changes in credit ratings and monthly depreciation (compared to the previous month) for each country. This coefficient is negative for most countries, but only significant for high-income countries, where a downgrade is associated with a 3% depreciation. However, when considering exchange rate depreciation from the month of the credit rating action to 12 months later, the correlation is positive, indicating that a downgrade is associated with a 2% cumulative appreciation over the following 12 months (mainly compensating for the initial depreciation) in high-income economies. For lower-middle-income countries, the correlation becomes significant but also positive.

[45] The paper defines 'currency crises' as events where a country's exchange market pressure index (a weighted average of depreciations and declines in foreign exchange reserves) exceeds its mean by more than three standard deviations. See A Sy, 'Rating the Rating Agencies: Anticipating Currency Crises or Debt Crises?' (2004) 28 Journal of Banking & Finance 2845.
[46] R Alsakka R and O Gwilym, 'Foreign Exchange Market Reactions to Sovereign Credit News' (2012) 31 Journal of International Money and Finance 845.
[47] H Balima, A Minea, and C Vinturis, 'Do Sovereign Credit Rating Events Affect the Foreign Exchange Market? Evidence From a Treatment Effect Analysis' (2023) 90 Southern Economic Journal 156.
[48] Fitch, *Risk of Stronger US Dollar Could Affect Emerging Market Credit Momentum* (2024).

Table 5.3 Correlation between downgrades and 12 months ahead depreciations

Income group	Monthly	After 12 months
High income	-0.03***	0.02***
Upper middle income	0.00	0.01
Lower middle income	-0.01	0.05***
Low income	-0.02	0.03

3.4.2. Non-linear effects and multi-notch downgrades

To further investigate the relationship between downgrades and exchange rates in our sample, we focused solely on negative credit actions. However, a downgrade from an AAA rating may differ from one from a BBB rating. Additionally, although rare, multi-notch downgrades can occur, potentially exerting stronger pressures on exchange rates.

To address these non-linearities, we followed Sy (2004) and rescaled the ratings according to the initial rating:

$$Scaled\ Rating = ln\left(\frac{Rating}{22 - Rating}\right) \quad (5.11)$$

By re-expressing the ratings on a scale with a maximum value of 21, the 22 ensures a positive value for this indicator. This scaling accounts for the fact that a downgrade from a high rating is not equivalent to one from an already low rating. Second, we explored the exchange rate dynamics at different horizons depending on the size of the downgrade. Using these scaled ratings, Figure 5.11 shows the percentage depreciation of nominal exchange rates against the US dollar (vertical axis) 1, 6, 12, and 24 months ahead (horizontal axis), after downgrades larger than 2 and 4 notches (first and second charts).

Figure 5.11 The impact of downgrades on currency depreciation

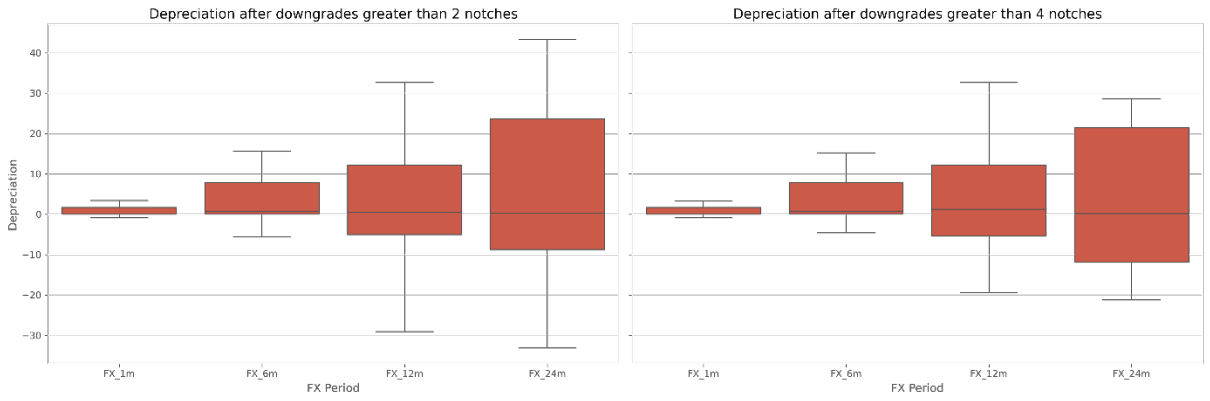
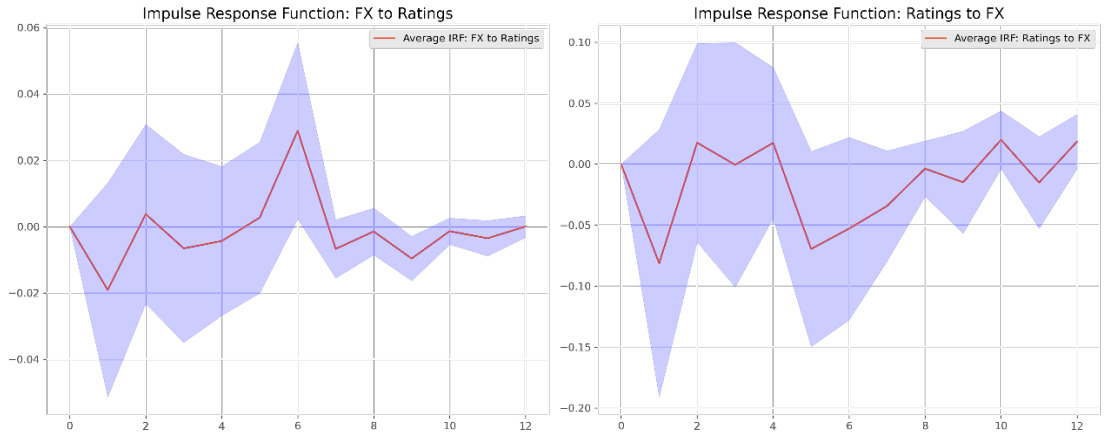


Figure 5.11 shows that currencies tend to depreciate after 2-notch downgrades on average, especially for horizons beyond six months, although there is significant variation across currencies. When observing downgrades greater than 4 notches, the average results are similar but continue to show a large dispersion. However, since such events are rare, this dispersion is smaller at different time horizons when considering downgrades of more than 4 notches. These results do not differentiate between CRAs predicting negative developments that could also cause depreciations, and the causal effect of downgrades on exchange rates.

3.4.3. Dynamic effects

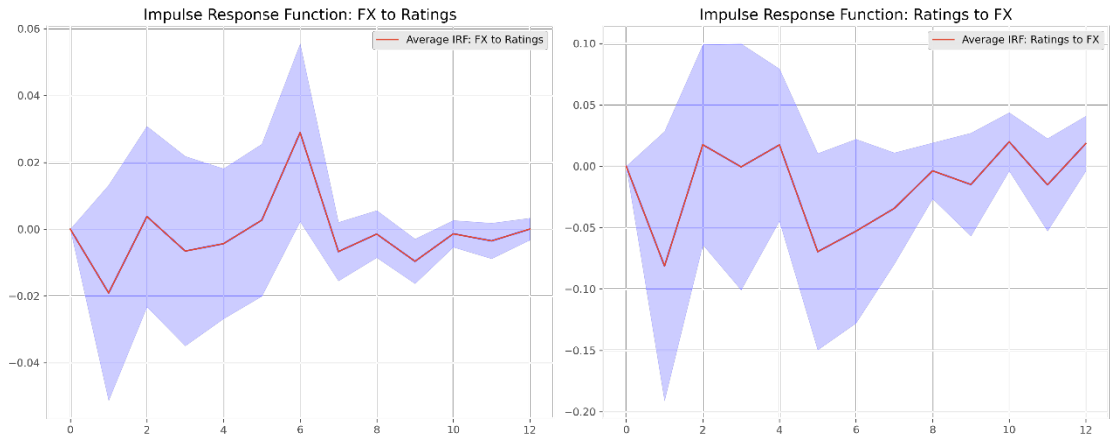
As mentioned before, exchange rates and credit ratings can influence each other. To explore the dynamic and bilateral relationship between them in more detail, we implemented a Vector Autoregressive (VAR) model with 12 lags. We ran the model for each country and plotted the distribution of the coefficients. The results show considerable variance across countries, with no significant effects over time for either of the two relationships (from depreciations to ratings and vice versa).

Figure 5.12 Impulse response from VAR



To explore differences across income groups, we ran the same VAR, but focused only on low- and lower-middle-income countries, obtaining similar results.

Figure 5.13 Impulse response from VAR for Low and Lower middle income countries



3.4.4. Extending the currency tail risks model

Finally, to explore whether downgrades affect not the average depreciation but the risk of large depreciations, we extended the quantile regression model from Chapter 4 to include downgrades as a factor influencing exchange rate risk. This model incorporates various country-level macroeconomic variables and common explanatory variables such as commodity prices. We found that CRAs' rating decisions have no significant effect on the tail of the distribution of exchange rate depreciations in the selected panel of countries for 1, 2, 3, and 4 quarters ahead. Table 5.4 presents the estimated coefficients.

Table 5.4 The impact of downgrades on tail risk: Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile

Quarters ahead	1	2	3	4
Downgrades [0.95]	-0.341 (-0.217)	-0.284 (-0.187)	-0.046 (-0.152)	0.033 (-0.096)

Notes: Estimated coefficients from panel quantile regression of the nominal rate of depreciation (in %), 95th quantile, with horizon h=1, 2, 3, 4. Bootstrapped standard errors are in parentheses. None of the coefficients is significant at the 10% level of statistical significance.

In summary, our results indicate that credit rating downgrades do not have a significant correlation with exchange rate depreciations over longer horizons. The statistical evidence shows that, while exchange rates and credit ratings may co-move on average, this is not a consistent regularity. However, the dispersion of the results suggests that it is not possible to rule out the occurrence of both depreciations and downgrades together. There are many country-specific cases supporting this relationship, and prior economic literature has found a statistically significant effect of downgrades on exchange rates, though perhaps not one that is economically significant for the purposes of this analysis.

Chapter 6

Policy Recommendations

1. Introduction

This chapter builds upon the analysis conducted in the preceding chapters to propose concrete policy measures aimed at enhancing the capacity of multilateral development banks (MDBs) to enhance local currency (LC) financing in low- and middle-income countries (LMICs). While the recommendations presented are global in scope, we acknowledge the diversity in economic structures, regulatory environments, and capital market development across different countries and regions. Relevant solutions depend on the region, including, the level of financial development, regulatory and institutional structure, and political buy-in.[1]

The chapter is structured as follows: Section 2 reviews the most significant existing proposals aimed at enhancing LC financing, along with our assessment of their key aspects. This is followed by our own recommendations in Section 3, which are informed by the lessons learned from these proposals and the comprehensive study conducted in this report. While our recommendations are designed to offer scalable solutions, they also allow for flexibility in application, taking into account the various realities of different regions. They also acknowledge that there is not one big solution to the issue of LC lending by MDBs, but that addressing the challenge of increasing LC lending will require a set of different initiatives, which complement and leverage onto each other.

2. Review of existing proposals

Efforts to overcome the barriers to increasing the volume of LC lending by MDBs have given rise to various policy proposals. We broadly classify these proposals into four categories. First, proposals that advocate for embedding local currency lending within the core developmental mandate of MDBs, requiring institutional, cultural, and legal changes (Section 2.1). Second, an extended set of proposals aimed at scaling up and enhancing the means of hedging currency risk to mitigate the challenges of foreign exchange volatility (Section 2.2). Third, proposals that focus on promoting MDBs' onshore local currency operations, which seek to develop domestic financial markets and reduce reliance on offshore mechanisms (Section 2.3). Finally, cross-cutting proposals that recommend donor-backed guarantees or additional equity capital to mitigate risks associated with large-scale LC lending (Section 2.4).

This review focuses primarily on those proposals that directly address the practices of MDBs. Broader macroeconomic, political, and institutional changes in borrower countries will

[1] S Andreasen and others, 'The Need to Reduce FX Risk in Development Countries by Scaling Blended Finance Solutions' (FX Risk in Development Workshop, Convergence, EDFI, European Commission, OECD, TCX, 2017) https://assets.ctfassets.net/4cgqlwde6qyo/3UYrVVpyqckCsw802wWoOi/7abfe71c3b60ff521635f713865cad16/FX_Risk_in_Development_Primer.pdf accessed 11 October 2024.

be discussed only insofar as they intersect with MDB-specific recommendations. This focused approach is necessary given the objective of this review: to assess actionable reforms that MDBs can implement to expand LC financing.

2.1. Bring local currency lending to the core of the developmental mandate of MDBs

The first category of proposals advocates for a cultural and organisational shift within MDBs, recognising LC lending as an integral part of their mandate and toolkit. Fink, Lankes, and Sacchetto recommend starting with relatively low-cost initiatives, such as sharing success stories of innovative LC transactions and integrating LC lending considerations early in the transaction cycle. Capacity-building efforts, including establishing cross-functional knowledge groups across MDB departments to provide LC-specific advice, are also suggested, alongside setting key performance indicators (KPIs) and annual targets for LC transactions.[2]

More generally, as noted by The Currency Exchange Fund (TCX), responsible lending practices must be tightened.[3] This includes offering borrowers options for currency indexation and other risk-mitigation clauses as default practices, providing dual currency loan arrangements—allowing borrowers to choose between LC and foreign currency (FC) loans at disbursement—or allowing for a conversion to LC after the loan has been disbursed in FC.[4] Fink, Lankes, and Sacchetto also highlight the need for a review of MDBs' risk management policies that require strict back-to-back hedging against foreign exchange (FX) risk or that restrict onshore operations due to counterparty restrictions.[5] More flexibility in managing FX, maturity, liquidity, and convertibility risks is required for MDBs to balance these trade-offs effectively.

2.2. Scale up and enhance means of hedging currency risk

A second key category of proposals and initiatives focuses on enabling MDBs to scale up their LC lending by mitigating currency risk through the provision and expansion of hedging instruments. These instruments would be provided by one or more entities, stepping in where private market solutions do not exist or remain too costly. As discussed in Chapter 2, one significant entity in this regard is the TCX, which provides hedging where private markets are either insufficient or completely absent, facilitated by diversification across a broad range of currencies. In the 15 years since its inception, TCX has hedged USD 1.4 billion in loans to developing countries, including USD 53 million in energy projects.[6] As discussed in Chapter 4, TCX has generated modest profits, showing that FX risk mitigation through diversification in LMIC currency markets is feasible, supported by a strong capital base provided by its investors.[7]

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[2] C Fink, HP Lankes, and C Sacchetto, *Mitigating Foreign Exchange Risk in Local Currency Lending in Fragile States: Review and Options* (International Growth Centre, June 2023).

[3] TCX, *Scaling Up Currency Risk Hedging for Low and Lower Middle-Income Countries: A Proposal to Mitigate Currency Risk at Scale and Mobilize Private Finance for Sustainable Development* (September 2023).

[4] Fink, Lankes, and Sacchetto (n 2).

[5] ibid.

[6] P Benoit and others, *Scaling Clean Energy through Climate Finance Innovation: Structure of an Exchange Rate Coverage Facility for Developing Countries* (Columbia Center on Global Energy Policy, Policy Note, October 2022) 13.

[7] Carnegie Consult, *The Development Impact of Local Currency Solutions: An Evaluation of 10 Years TCX* (2017).

However, the cost of hedging through TCX remains relatively high, which can be prohibitive in some markets.[8] Additionally, current hedging products often do not meet the scale required for investments in clean energy, which are essential to addressing the climate crisis.[9] TCX hedges must also be fully collateralised, which increases transaction costs for users. Several policy proposals aim to reduce these costs and expand TCX's hedging capacity, including increasing donor guarantees, engaging specialised insurance and guarantee providers, and adding capital. In response to the Bridgetown Initiative, for example, TCX has proposed expanding its hedging capacity to USD 50 billion and creating a donor-funded trust to offer concessional guarantees, lowering the cost of hedging or providing longer-term products not available in commercial banks.[10] Improved access to and affordability of currency hedging are expected to gradually lead to a supply response and foster the development of private hedging markets.[11] TCX also aims to increase its cooperation with Multilateral Investment Guarantee Agency (MIGA), Frontclear, and other specialised insurance providers to offer deliverable products and substitutes for cash-collateral requirements.[12]

Fink, Lankes, and Sacchetto have made a similar proposal, suggesting a Portfolio Return Guarantee for fragile and conflict-affected settings. In this model, TCX's hedging would be backed by a donor guarantee, ensuring a minimum return for a portfolio of fragile and conflict-affected settings, allowing TCX to lower its hedging costs in these countries.[13] The guarantee would work within a well-defined framework, with limits on how much hedging costs could drop and strict eligibility criteria. Importantly, the performance and cost to donors would be assessed over a longer period, not during short-term crises. Both TCX's own proposal and that of Fink, Lankes, and Sacchetto see expanding TCX and improving its capacity to manage risk as ways to attract institutional investors and private capital in the future.

The need to increase the availability of affordable LMIC currency hedges—particularly during times of global uncertainty—is also reflected in recent proposals calling for the establishment of new international institutions that would act as market makers for these currencies.[14] Persaud's proposal for a partial and countercyclical FX guarantee mechanism, for instance, has gained attention in the context of the Bridgetown

[8] ZB Yahmed, C Grant, and N Pinko, *Managing Currency Risk to Catalyze Climate Finance* (Climate Policy Initiative, August 2024) 5-7; European Bank for Reconstruction and Development (EBRD), *Local Currency Financing* (Treasury, August 2023) https://www.ebrd.com/downloads/capital/local.pdf accessed 12 October 2024.

[9] Benoit and others (n 6) 13.

[10] The current proposal is to do this for a swap portfolio of up to USD 10 billion limited to climate mitigation and adaptation projects.

[11] TCX (n 3) 14.

[12] ibid 2, 9.

[13] Fink, Lankes, and Sacchetto (n 2) 51.

[14] A Persaud, *Unblocking the Green Transformation in Developing Countries with a Partial Foreign Exchange Guarantee* (2023) https://www.climatepolicyinitiative.org/wp-content/uploads/2023/06/An-FX-Guarantee-Mechanism-for-the-Green-Transformation-in-Developing-Countries.pdf accessed 11 October 2024; Benoit and others (n 6); S Kapoor and others, 'A Multilateral Solution to Hedging Currency Risk in Developing Country Finance' (Nordic Institute for Finance, Technology and Sustainability, 2021). However, it is not always clear how these proposals relate to the existing structure of TCX. Some explicitly rely on TCX's expertise, while others seem to propose entirely new institutions, raising questions about potential overlap.

Initiative. His idea involves setting up an international entity—formed as a joint agency of MDBs with IMF liquidity support—to offer partial hedges for LMIC currencies when hedging costs exceed the three-year average. The agency would provide hedges at a lower cost than the market but would not fully cover the excess cost the so called "overpayment", discussed in Chapter 4. Persaud argues that this conservative approach, which avoids full subsidies, is crucial for allowing the mechanism to scale up sustainably. Similar to TCX, currency risk would be reduced through diversification by pooling MDB assets, while IMF support would provide the necessary dollar liquidity. Collaboration between MDBs and the IMF would combine MDBs' project expertise with the IMF's macroeconomic expertise.[15]

Kapoor and others have proposed the creation of an international currency fund to scale up the availability of LMIC currency hedges and to help develop currency risk markets.[16] Unlike Persaud's proposal, this institution would operate independently from MDBs and the IMF, established as a treaty-based international organisation with preferred creditor status, funded by a mix of paid-in and callable capital—similar to the International Bank for Reconstruction and Development (IBRD). Rather than focusing solely on countercyclical actions, the fund would aim to offer affordable currency hedges through greater diversification, relying on a smaller capital base (which could include callable capital). TCX's expertise in currency and modelling would contribute to the institution's operations, but hedging would be offered on a much larger scale—Kapoor and others estimate that up to USD 6 trillion in unhedged currency exposure will be needed by 2030 to meet the Sustainable Development Goals (SDGs) and climate targets. Additionally, the multilateral and preferred creditor status (PCS) of this currency fund would allow it to offer deliverable products onshore, supporting local market development and reducing collateral requirements—improving the efficiency of the TCX model.[17]

Benoit and others have proposed a Clean Energy Exchange Rate Coverage Facility (ERCF) to increase funding for clean energy projects in developing countries. The ERCF, capitalised by carbon credits, international development institutions (including MDBs), and other international capital, would cover the gap between local currency payments for clean energy projects and foreign currency-denominated debt payments when local currency depreciates. The facility would cover all shortfalls, including those from extreme depreciations, making direct payments in FC to the lenders. [18]

Finally, based on a proposal by Shrimali, Farooquee, and Trivedi,[19] the Climate Policy Initiative/India Innovation Lab for Green Finance developed an innovative hedging facility to manage currency risk for renewable energy projects in India. The facility divides depreciation risk into different tranches. For depreciations between 0% and 4.5%, investors and/or developers would cover the risk at a fixed cost, which is lower than private hedging costs. Gains from favourable exchange rate movements would accrue to the facility and could be

[15] Persaud (n 14).
[16] Kapoor and others (n 14).
[17] ibid.
[18] Benoit and others (n 6) 14.
[19] G Shrimali, AA Farooquee, and S Trivedi, *FX Hedging Facility* (Climate Policy Initiative, 25 September 2015) https://www.climatepolicyinitiative.org/fx-hedging-facility/ accessed 13 October 2024.

distributed to donors or users. For depreciations between 4.5% and 99.7%, the facility would cover the losses from accrued gains. For depreciations above 99.7%, public grants would be used to cover the losses. This proposal is promising and aligns with findings that LMIC currency returns are generally positive, though they carry significant tail risks. Unfortunately, as Yahmed, Grant, and Pinko note, this proposal has not been implemented due to regulatory constraints and market conditions in India, and it would require donor funding for initial capitalisation.[20]

2.3. Promote onshore local currency operations

The third set of proposals focuses on the development of LMICs' domestic financial markets and facilitating the onshore operations of MDBs. These initiatives aim to provide easier and cheaper access to LC liquidity and hedging through a broader array of counterparties, mitigate transfer and convertibility risks, and allow MDBs to benefit from local market knowledge and potentially interact more closely with the central bank.[21] As discussed in Chapter 1, having MDBs operate onshore could significantly contribute to local market development, which is key to sustainably addressing the illiquidity of domestic financial markets.

However, as elaborated in Chapter 3, operating onshore and managing liquidity requires basic infrastructure, such as local cash and custody accounts, and exposes MDBs to legal risks. Institutional and regulatory reform, along with policy dialogue and capacity-building efforts with the local banking system and central bank, are therefore crucial first steps in enabling the onshore presence of development finance institutions (DFIs) and MDBs.[22] According to Fink, Lankes, and Sacchetto, a focus should be placed on capacity building in areas such as local money market development and liquidity management. This includes defining an overnight benchmark rate, establishing a sound monetary policy framework to control inflation, developing an interest rate curve, and undertaking legal, regulatory, tax, and accounting reforms related to derivative instruments.[23]

To support onshore operations, especially in fragile and conflict-affected settings, the authors propose creating an FX platform that would act as an onshore treasury. This platform would source LC from local counterparts, establish the necessary onshore infrastructure, and centralise LC liquidity management across DFIs.[24] The platform would allow DFIs to continue on-balance sheet lending without exposure to FX risk, as the platform would manage the FX risk entirely. This would reduce transfer and liquidity risk and provide flexibility in setting LC lending rates without requiring immediate donor grants.[25] Another recommendation is to invest in and disseminate information on country-specific foreign investment regulations, such as local bank account requirements, interest rate regulation, and fund repatriation.[26]

In line with this proposal, a group of MDBs—including the Asian Infrastructure Investment Bank (AIIB) and the European Bank for

[20] Yahmed, Grant, and Pinko (n 8).
[21] Fink, Lankes, and Sacchetto (n 2); EBRD (n 8); Andreasen and others (n 1)..
[22] Fink, Lankes, and Sacchetto (n 2); EBRD (n 8); Andreasen and others (n 1).
[23] Fink, Lankes, and Sacchetto (n 2) 47.
[24] ibid 52.
[25] ibid.
[26] ibid 18-19.

Reconstruction and Development (EBRD)— and the financial markets development company Frontclear have put forward a similar proposal for an onshore hedging platform called 'Delta'.[27] This platform would source LC liquidity from various (ideally onshore) sources to support MDBs' LC operations. A portion of the liquidity would be held as a buffer, invested in very short-term assets, to manage the maturity risk that arises from the platform's short-term liabilities and long-term financing to MDBs. This would reduce maturity and refinancing risks for MDBs while allowing them to provide LC loans without abandoning their back-to-back risk management frameworks. The platform would also collaborate with onshore financial institutions and policymakers to support domestic market development. After initial capitalisation by donors or MDBs, the platform is expected to sustain itself through spreads between short-term borrowing and long-term lending.[28] This initiative addresses the core issue of inadequate LC lending due to underdeveloped domestic financial markets. However, its applicability is limited to relatively mature markets with some degree of LC funding, and, as noted by an interviewee, it faces challenges concerning its initial capitalisation. [29]

While developing onshore markets is ultimately the best way to enhance domestic LC financing, it is a long process hindered by structural barriers. LC market development is often a 'chicken and egg' problem: without proper infrastructure, institutions, macroeconomic stability, and capacity, LC markets struggle to develop. Yet, the instability caused by FX exposure or short-term LC borrowing further impedes the creation of these necessary conditions. Thus, transition policies are needed to help MDBs manage risks associated with LC lending and to allow them to play a catalytic role in developing domestic financial markets.

One such transition policy is the establishment or scaling up of hedging entities, as discussed earlier. Another approach is for domestic central banks to play an active role in collaborating with MDBs to develop local financial markets. As discussed in Chapter 2, one possibility—already practiced to a limited extent—is to source LC hedges and liquidity from domestic central banks through foreign exchange swaps. Fink, Lankes, and Sacchetto suggest that such swaps are a 'win-win' solution: MDBs gain access to LC at locally appropriate rates, while the swap can enhance trust in the local financial system by acting as a 'stamp of approval' and providing foreign currency liquidity, which is especially valuable during periods of financial uncertainty.[30] However, the authors also note that while cross-currency swaps might provide more attractive LC funding and may be the only option in underdeveloped financial systems with no local counterparties, they can be complex to implement, particularly in terms of accounting treatment.[31] Moreover, as discussed later, these swaps transfer the currency risk to domestic central banks, which may not be desirable from a development or balance of payments perspective.

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[27] *Viewpoint Note: MDBs Working as a System for Impact and Scale* (endorsed by the Heads of the African Development Bank and others, Washington, DC, 20 April 2024) https://www.aiib.org/en/about-aiib/who-we-are/partnership/_download/Heads-of-MDBs-Viewpoint-Note-20-April-2024.pdf accessed 13 October 2024.

[28] Yahmed, Grant, and Pinko (n 8) 15-16.

[29] Interview 18.

[30] Fink, Lankes, and Sacchetto (n 2) 27.

[31] ibid 47.

Another recent proposal, the FSD Africa MDB Portfolio Transfer Mechanism, aims to involve local market actors in absorbing some of the exchange rate risk faced by MDBs.[32] Under this proposal, MDBs would sell part of their loan portfolios to local institutional investors to free up risk capital and create additional balance sheet capacity. The mechanism is targeted at brownfield investments that generate revenue for debt repayments and would create a relatively safe asset class for domestic institutional investors. However, a key limitation is the currency mismatch that could arise if MDBs sell FC loans to local investors. As noted by Yahmed, Grant, and Pinko, it is converting these loans from FC to LC to avoid a currency mismatch that presents the most significant challenge to the proposal's large-scale implementation.[33] In this sense, and as discussed in more detail in our policy recommendations, the portfolio transfer mechanism could serve as an important complement and facilitator of onshore MDB LC loans by providing a means to remove the associated risks from MDBs' balance sheets.

Finally, it is important to recognise that developing local financial markets carries significant potential but also potential drawbacks and risks. More developed local financial markets can set LMICs on a path towards raising necessary LC financing domestically, reducing their reliance on volatile cross-border financing. However, as MDB liabilities issued to domestic investors do not generate additional foreign exchange revenues, this could be disadvantageous for balance-of-payments-constrained economies. MDBs issuing LC bonds to non-resident investors could attract external financing,[34] but carries risks if these investors are funded in FC and thus subject to currency mismatches.

2.4. Guarantees and additional equity capital

A key theme across the approaches discussed above is the recognition that enabling LC lending and addressing the risk of large currency depreciations—as discussed in Chapter 4—may require additional donor or shareholder support, either through capital injections or guarantees. Evidence from a 2017 LC workshop involving several DFIs and MDBs shows that even modest amounts of concessional funds or additional capital can significantly enhance sustainable investment and expand the balance sheet capacity of MDBs.[35] Indeed, many of the proposals mentioned earlier—such as scaling up TCX, the Delta platform, or the Climate Policy Initiative/India Innovation Lab Hedging facility—rely on some form of donor funding for initial capitalisation and/or to ensure affordable pricing in the face of large currency risks. As such, the feasibility of these proposals depends on the political willingness of potential donors to commit these resources.

Another proposal which explicitly relies on (additional) donor or shareholder support is an LC donor credit guarantee (focused on fragile and conflict-affected settings) put forward also by Fink, Lankes, and Sacchetto. By mitigating the

[32] E Osano and others, *A Local Currency Solution for Multilateral Development Bank Portfolio Transfer* (FSD Africa 2024) https://fsdafrica.org/wp-content/uploads/2024/06/Report-Local-Currency-Solution-for-Multilateral-Development-Bank-Portfolio-Transfer-004.pdf accessed 10 October 2024.

[33] Yahmed, Grant, and Pinko (n 8).

[34] See, eg, TC Hoschka, *Local Currency Financing – The Next Frontier for MDBs?* (Asian Development Bank, ERD Working Paper Series No 68, April 2005).

[35] Andreasen and others (n 1).

credit risk faced by LC lenders, the authors argue, this approach would facilitate loan delivery and reduce the overall spread on LC lending. Guarantees are flexible tools that can be tailored in terms of scope, eligibility, pricing, and the percentage of risk covered. A critical aspect in the context of this report is whether the guarantee should be applied to hedged LC loans or unhedged transactions, where the guarantor (donor) also assumes the currency risk. While providing guarantees for unhedged transactions could significantly lower LC lending costs (given the high cost and limitations of existing hedging markets), it would increase the risk of capital loss, at least in the short term, in the event of currency depreciation.

Another proposal to boost MDB LC lending, through increased shareholder participation, is presented by Schclarek and Xu.[36] They suggest a recapitalisation of MDBs using Special Drawing Rights (SDRs) from developed countries that have surplus SDRs. MDBs could use these SDRs to acquire LC from local central banks, which would then be used to provide LC loans for domestic projects. This approach would not only help reduce currency mismatches on MDB balance sheets when lending in LC, but also provide host countries with FC, which could be used to finance imports. However, as discussed in Appendix C, the legal feasibility of proposals of this kind under the legal frameworks of certain potential donors remains uncertain.

In summary, this section has discussed existing proposals aimed at initiating or scaling up LC lending by MDBs. Table 6.1 provides a summary of these proposals, categorised by their broader objectives. In the next section, we will build on the findings of this report to critically reflect on existing proposals (and potentially propose some modifications), and propose new initiatives aimed at increasing LC lending in LMICs. In particular, whereas existing proposals largely shift the currency risk to entities other than MDBs, we interrogate whether there would be some space for MDBs to take on limited, well defined, and fully modelled exchange rate risk to lower the cost of their LC financing and firmly establish LC lending as part of their developmental financing toolkit.

[36] A Schclarek and J Xu, 'Exchange Rate and Balance of Payment Crisis Risks in the Global Development Finance Architecture' (2022) 79 Journal of International Financial Markets, Institutions and Money 1-19.

Table 6.1 Summary of existing policy proposals[37]

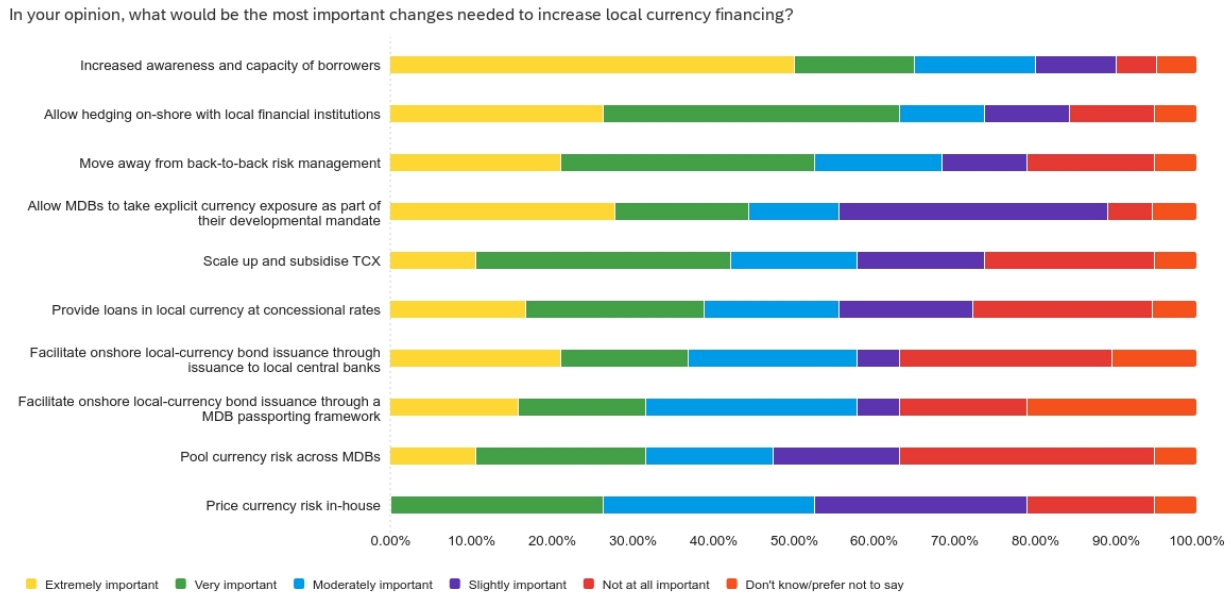
Bring local currency lending to the core of the developmental mandate of MDBs	Scale up and enhance means of hedging currency risk	Promote onshore local currency operations
Information sharing and internal capacity building Tightening of responsible lending practices Moving beyond back-to-back risk management	Scaling up TCX with donor guarantees/portfolio return guarantee (TCX; Fink, Lankes, and Sacchetto) Partial FX Hedging Mechanism (Persaud) International Currency Fund (Kapoor and others) Clean Energy Exchange Rate Coverage Facility (Benoit and others) Climate Policy Initiative/India Innovation Lab Hedging Facility (Yahmed, Grant, and Pinko) India Innovation Lab Hedging Facility (Shrimali, Farooquee, and Trivedi)	Capacity building and technical assistance to develop LMIC financial infrastructure Development of MDB LC liquidity pools (Delta Initiative) Foreign exchange swaps with LMICs central banks to obtain LC
Donor capital or guarantees to mitigate risks		

[37] Another recent proposal of interest, though not discussed in detail here as it deals with currency risk without promoting the use of LC lending, is the Eco Invest Brazil initiative. Based on Persaud's contribution, discussed in Chapters 1 and 4, this proposal aims to mitigate the risk of large depreciations by providing a hard-currency credit line—intermediated by the Brazilian government—through the IDB to climate-relevant projects, enabling these projects to service their foreign currency debt. Projects receive this dollar financing only if they are deemed capable of raising their prices at or above domestic inflation, ensuring stable dollar returns to the IDB. Additionally, the climate projects are encouraged to seek domestic (short-term) currency hedges or establish a sinking fund (which receives foreign currency during periods of appreciation) to hedge against regular exchange rate fluctuations. This is an interesting proposal as it acknowledges the cyclicality of LMIC exchange rates and the counter-cyclical role MDBs can play in addressing this issue. However, it has not been included in this review because it ultimately does not aim to enhance the availability of LC financing and continues to place the currency risk on borrowers. It also assumes that borrowers will be able to increase their prices above inflation—a condition that may be difficult to achieve in many cases. See further in Persaud (n 14); Yahmed, Grant, and Pinko (n 8).

3. Policy recommendations

Survey respondents were asked to share their perspectives on various policy areas they believed would serve to enhance LC financing. The results are presented in Figure 6.1.

Figure 6.1 Respondents views on policy areas to enhance local currency financing



Source: Authors' survey responses.

Informed by the analysis in our report, a review of existing policy initiatives, and the integration of these results, we propose the following eleven recommendations, grouped into four key areas.

3.1. Bring local currency lending to the core of the developmental mandate of MDBs

3.1.1. Develop capacity in local currency borrowing and lending

As discussed above, a key starting point to increase LC lending in MDBs is to create awareness and capacity of LC lending in MDBs across all stages of the lending cycle. As our results show, MDBs already have existing in-house expertise to assess currency risk they can build on. A cultural shift is needed which moves away from seeing hard currency loans as the default option, but makes LC part of the normal lending practice. Capacity-building efforts should also involve sharing expertise and training across the MDB system—particularly between larger and smaller MDBs, which may lack advanced expertise in LC financing.

Finally, MDBs should take an active role in providing technical assistance and building capacity in LMICs. This would enhance borrowers' understanding of the advantages of LC borrowing and increase their awareness of the availability and pricing of such products. Our survey results confirm this insight, with 65% of respondents identifying the need to increase the

awareness and capacity of borrowers as 'extremely' or 'very important'. While this report primarily focuses on supply-side changes to LC financing for LMIC borrowers, this result underscores the importance of addressing demand-side issues as well.

As part of these capacity-building strategies, it is important, as suggested by TCX, that MDBs develop the contractual structures of their financing arrangements to offer public and private borrowers the option to include features such as currency indexation of debt service, debt service conversion clauses, and suspension and reduction clauses.[38] In particular, it is crucial that sovereign borrowers are offered a synthetic option for their loans as standard practice, as this would significantly reduce the risk of debt distress. Incorporating these options into standard loan products would make LC financing a more central component of MDBs' product offerings.

3.1.2. Enhance the quality and availability of information on MDB local currency financing

To build capacity in LC lending and better understand current practices, successes, and limitations, there is an urgent need for enhanced availability and accessibility of information on MDB LC operations. Assessing the benefits and risks of LC lending requires more comprehensive data on existing LC operations, including both quantitative loan data for modelling and qualitative case studies that provide institutional insights for mutual learning within the MDB community and beyond.

One concerete recommendation is to increase the public availability and scope of the Global Emerging Markets (GEMs) dataset, expanding it to include more detailed information about MDB loans by currency and historical data on credit risk. This would enable thorough evaluations of the state, impact, and outcomes of MDB LC lending, specifically allowing for a more systematic analysis of the relationship between credit and currency risk. Such data would facilitate the formulation of specific policy proposals related to currency risk exposure (as further developed in section 3.4.3).

Another key area of focus is the need for in-depth evaluations of existing LC initiatives—particularly those involving MDBs assuming some currency risk. Presently, limited public information is available on how MDBs address or take on currency risk. Comprehensive evaluations—whether conducted internally or by external consultants—are essential to assess the feasibility of these initiatives, identify best practices, and support broader implementation across other MDBs.

3.1.3. Reassess back-to-back risk management frameworks and stringent counterparty rules

As discussed in Chapter 2 and Chapter 3, most MDBs operate within a back-to-back risk management framework, requiring that LC operations are fully matched by corresponding liabilities or currency hedges. This framework constraints MDBs' capacity to lend in LC due to the limited availability of funding and hedging instruments for the currencies of LMICs.

Moving beyond this restrictive framework could offer MDBs greater flexibility in LC financing. The recommendation to reassess and potentially move away from the back-to-back risk management model is strongly supported by the survey results. Over 55% of respondents rated

[38] TCX (n 3) 6.

the shift toward more flexible approaches—such as adopting a portfolio-based risk management model—as either 'very important' or 'extremely important'. This underscores the recognition within MDBs of the need for greater flexibility in managing currency risk.

One alternative to the back-back risk management framework is the adoption of a portfolio approach to risk management, already implemented by the EBRD. This approach sets overall risk limits for various categories, such as market risk, allowing MDBs to take on a measured degree of currency risk without leading to excessive portfolio volatility. Such flexibility would significantly expand their capacity to offer LC loans. Additionally, a shift toward more flexible risk management frameworks should include a reassessment of strict counterparty risk rules, which often restrict operations with onshore entities (see also 3.3.1). Nearly 60% of our MDB respondents thought that allowing hedging onshore with domestic financial institutions (which currently often do not fulfil these counterparty restrictions), would be an important measure to facilitate increased LC lending.

As noted in Chapter 3, transitioning away from back-to-back financing may require statutory reforms to the Articles of Agreement of certain MDBs, particularly those provisions that require strict hedging against foreign exchange risk in their operations.

3.2. Scale up and enhance means of hedging currency risk

3.2.1. Scale up and subsidise TCX

As discussed above, a core set of current proposals focuses on the need to scale up hedging opportunities in LMIC currencies, either by bolstering the currency exchange fund TCX or by creating a new treaty-based international organisation with preferred creditor status. Risk mitigation would be achieved either through TCX's diversification approach[39] or by pooling MDB assets.[40] Tail risks could be addressed either through a donor guarantee (as proposed by TCX and by Fink, Lankes, and Sacchetto) or through IMF support (Persaud).

Our research strongly endorses the need for an entity that provides hedges where private market solutions are either unavailable or too costly. These proposals could be implemented incrementally, starting with scaling up TCX's capacity by increasing capital from shareholders and/or allowing for higher leverage ratios. Donors could also allocate a portion of their concessional financing to provide capital to TCX, which could then be used to offer portfolio risk guarantees and interest rate subsidies to reduce the costs of the hedges provided by TCX.

The survey results strongly support this recommendation. Over 50% of respondents rated the need to scale up TCX, and to provide

[39] Kapoor and others (n 14).
[40] Persaud (n 14).

subsidies for its hedging products, as either 'very important' or 'extremely important'. This underscores the recognition within MDBs of the critical role TCX plays in filling the hedging gap in LMIC currencies, where private sector solutions are insufficient or unaffordable.

Scaling up TCX would not only enhance its diversification benefits and global presence, but it could also pave the way for its potential transformation into a more robust, treaty-based organisation with preferred creditor status. Capitalised with a mix of paid-in and callable capital, as proposed by Kapoor and others,[41] this entity could operate with a lower capital base. Its preferred creditor status would enable it to operate onshore and offer deliverable products, thus contributing to the development of domestic financial markets.

3.2.2. Country-specific hedging mechanisms

This international organisation could be complemented by national hedging mechanisms, as proposed by the Climate Policy Initiative Hedging Facility (Yahmed, Grant, and Pinko) and the India Innovation Lab Hedging Facility (Shrimali, Farooquee, and Trivedi). As discussed above, these proposals address the specific exchange rate risks in LMICs (see Chapter 4) and intelligently leverage donor funds to provide effective, sustainable hedging opportunities for LC projects. To address implementation barriers encountered in India, we suggest the need for a further study to identify other potential pilot countries and estimate the specific exchange rate hedging thresholds necessary to ensure the mechanism's sustainability.

3.3. Promote onshore local currency operations

3.3.1. Seek onshore hedging sources, including the local central bank

As discussed in Chapter 2, MDBs primarily source FC hedges from international banks in global financial markets. This practice can increase hedging costs due to the differing balance sheet structures and risk assessments between global and local banks. Expanding the availability of onshore hedging options would enable MDBs to diversify their hedging sources and potentially lower these costs. As indicated above, more than 60% of MDB staff rated the availability of onshore hedging with local financial institutions as either 'very important' or 'extremely important,' underscoring the crucial role of local financial markets in enhancing MDBs' ability to offer LC loans.

Ongoing MDB efforts to establish local onshore platforms—such as the Delta initiative— could offer more cost-effective hedging options by partnering with local financial institutions and sustaining local liquidity pools. These efforts should be further promoted and expanded, with a focus on fostering greater collaboration across MDBs. However, as previously mentioned, this initiative is currently limited to countries with relatively developed financial systems capable of providing short-term LC products.

In countries with less developed financial markets and limited access to local financial institutions, MDBs could engage with local central banks, either individually or through joint onshore platforms. Rather than following the

[41] Kapoor and others (n 14).

current common practice of engaging in swap operations, we propose that these platforms borrow or issue bonds to be purchased by local central banks. This approach would provide LC funding to MDBs, while allowing central banks to diversify their yield-seeking portfolios into high-credit-rating assets. Unlike central bank swap arrangements, these bonds would not generate foreign exchange liabilities, thereby preventing competing demands on foreign exchange reserves in the event of LC depreciation. Additionally, using a platform model—rather than having individual MDBs issue bonds directly to central banks—may help to mitigate potential political economy barriers.

The policy recommendation of facilitating MDB bond issuance to local central banks is further supported by our survey findings. Almost 60% of respondents rated this mechanism as either 'extremely important,' 'very important,' or 'moderately important' for increasing LC financing.

However, as noted in Chapter 3, MDBs must exercise caution when engaging with local central banks, particularly in jurisdictions where the legal framework governing derivative transactions is underdeveloped. The absence of clear regulations or comprehensive legal documentation introduces counterparty risks and regulatory uncertainty. These legal factors should be considered when designing onshore platforms to mitigate potential risks.

3.3.2. FDS Africa Portfolio Transfer Mechanism

Another way of mitigating the currency risk for onshore MDB LC financing is FSD Africa's portfolio transfer mechanism. As discussed above, whilst primarily aimed at developing local capital markets and providing safe assets to local institutional investors, this portfolio transfer mechanism could be a useful complement to, and enhance the ability of MDBs to provide LC financing by transferring the LC loans to onshore institutional investors' balance sheets (who are not exposed to the currency risk). Though we are generally critical towards the benefits of securitising MDB assets, if limited to long-term institutional investors in LMICs markets, the FSD mechanism could be an important toolkit in supporting the ecosystem of LC MDB financing.

3.3.3. Promote a harmonised transnational legal and regulatory framework for MDB operations

As discussed in Chapter 3, operating onshore involves high transaction costs and delays for MDBs, particularly due to complex and diverse legal frameworks across different jurisdictions. To address these challenges, MDBs could collaborate to create a harmonised transnational legal and regulatory framework aimed at simplifying MDBs' onshore fundraising activities, including bond issuance and hedging operations. This framework, championed by MDBs in consultation with national governments, would standardise and align key regulatory elements, offering a streamlined approach to MDB operations across jurisdictions to increase their LC financing capability.

Such harmonisation framework could include elements such as:

a. Securities regulation

As discussed in Chapter 3, MDBs face significant hurdles in issuing LC bonds due to varying disclosure requirements, prospectus approvals, and regulatory oversight. These challenges are particularly acute in smaller or less developed markets, where regulatory structures are often primarily designed for domestic issuers. The proposed harmonised securities framework would establish a consistent approach to disclosure requirements and other criteria for the scrutiny and approval of prospectuses and

marketing documentation. This would make the application processes as efficient, simplified, and streamlined as possible within the confines of applicable national laws. The European Union's Prospectus Regulation serves as a useful model, with its passporting mechanism allowing a prospectus approved in one Member State to be recognised across others without additional approvals.[42] While this proposal would preserve state-specific approval processes, it seeks to harmonise the securities regulations governing MDBs across different jurisdictions. Final approval for bond issuances would still rest with local authorities, who would retain the discretionary right to reject applications.

The survey results support the introduction of a harmonised cross-border securities framework for MDBs, with nearly 60% of respondents rating the proposal as 'extremely important', 'very important', or 'moderately important'. This suggests a recognition of the need for streamlined processes to address the regulatory hurdles that currently limit MDBs' ability to issue local currency bonds across multiple jurisdictions.

The framework could establish a shelf registration system specifically tailored for MDBs, allowing the use of short-form prospectuses that incorporate by reference information already filed with the securities regulator. Additionally, it could harmonise the criteria for the credit rating treatment of MDB bonds, enabling the recognition of international ratings for MDB issuers.

An additional benefit of such a ring-fenced harmonised framework for MDB bond issuances is that, in countries with less developed financial markets, the framework could function as a regulatory sandbox. Local authorities could use it to enhance their capacity for developing local debt markets, with the potential to later adapt the rules and practices to other types of issuers.

An accessible first step towards harmonising securities regulations could be the introduction of exemptions specific to MDBs. For instance, under the US Securities Act, non-domestic issuers must comply with registration requirements, and under the Exchange Act, they are subject to reporting obligations.[43] These requirements present a significant regulatory hurdle. However, certain US-supported MDBs benefit from exemptions from these requirements, as established in the enabling legislation for each institution.[44]

b. Local derivatives law

As discussed in Chapter 3, hedging currency risk is essential for MDBs engaged in LC financing, particularly in jurisdictions where local financial markets lack depth. Onshore hedging mechanisms, such as swaps and forwards, play a crucial role in managing exchange rate volatility; however, these instruments are often constrained by legal frameworks or regulatory barriers.

Whilst MDBs have a history of working with local authorities to promote the development of local derivatives markets, a harmonised framework for

[42] Article 25 of Regulation (EU) 2017/1129 of the European Parliament and of the Council of 14 June 2017 on the prospectus to be published when securities are offered to the public or admitted to trading on a regulated market [2017] OJ L168/12.

[43] Securities Act of 1933, 17 CFR § 230.77f; Securities Exchange Act of 1934, 17 CFR §§ 240.13a-1, 240.15d-1.

[44] P Dudek, 'Regulation of Offerings by International Financial Institutions under the U.S. Federal Securities Laws' in C Smith, X Gao, and T Dollmaier (eds), *Funding International Development Organizations* (Brill 2023) 80, 93.

such efforts could help build capacity across MDBs and local governments, yielding more effective results than if they worked in isolation.

A framework of this type could facilitate legal reforms to ensure the enforceability of key instruments, such as non-deliverable forwards (NDFs) and cross-currency swaps. In cases where concerns about financial stability arise, the framework could restrict eligibility for engaging in derivative transactions to MDBs, excluding other entities from such activities. By authorising MDBs as eligible counterparties for currency hedging onshore, these reforms would enable them to manage currency risk more effectively and provide expanded LC financing options.

c. Capital requirements

As discussed in Chapter 3, MDB bonds often receive unfavourable treatment under local capital requirement regulations, which typically classify them as higher risk than local government bonds. To address this issue, the harmonised regulatory framework should establish clear and consistent guidelines on the risk weightings for locally issued MDB bonds, ensuring that these securities receive treatment that recognises the strong credit ratings of these institutions.

Additionally, the proposed framework could include prudential regulation provisions that allow institutional investors greater flexibility to invest in MDB bonds. By aligning such regulations to support more diversified portfolios, local investors would be able to invest more actively in MDB bonds, which are some of the highest-quality securities in the market.

d. Repo eligibility

In order to promote LC bond markets, the framework could include provisions to ensure that MDB-issued bonds qualify as collateral in repurchase (repo) transactions with local central banks. Repo eligibility is a key mechanism for injecting liquidity into financial markets, and the inclusion of MDB bonds as eligible collateral in these transactions would incentivise local banks and other financial institutions to invest in these instruments.

e. Taxation

To enhance the attractiveness of MDB bonds to local investors, the framework could include provisions ensuring the tax neutrality of such bonds. It could align the tax treatment of MDB bonds with that of government debt, eliminating withholding taxes or VAT that disincentivise investment in MDB-issued securities.

3.4. Address the pricing problem directly

As highlighted above, whilst addressing the problem of lacking—or somewhat too expensive—hedging markets, existing proposals either do not, or rely on external capital to address the fundamental pricing problem discussed in Chapter 2. The core of the high LC lending rates is the very large interest rate differential that exists between hard and local currencies.

3.4.1. Reflect lower credit risk of local currency debt

As discussed in Chapter 2 and Chapter 5, LC debt carries lower credit risk for comparable LMIC borrowers, primarily due to the absence of currency mismatches that could otherwise lead to defaults in the event of significant depreciations. Furthermore, as also demonstrated in Chapter 5, LC loans can improve risk-weighted capital ratios compared to FC loans, as their value decreases in the event of currency depreciation. This lower credit risk

should be fully reflected in the pricing of LC loans, resulting in lower credit spreads and, consequently, reduced lending rates.

Achieving this will require active engagement with credit rating agencies (CRAs), as their current methodologies do not fully reflect the lower credit risk of LC debt. Without such engagement, this misalignment may hinder MDBs' ability to lower credit spreads. Our recommendation is to encourage CRAs to assess LC debt in MDB differently, and in particular to reduce the risk weights of LC debt.

Finally, as pointed out in proposal 3.1.2, a more comprehensive analysis of the relationship between credit and currency risk could help to further refine these proposals and initiatives. Greater availability of data, particularly through the dissemination of more granular information to the GEMs database, is fundamental to facilitate this analysis.

3.4.2. Provide financing in local currency at concessional rates

Some MDBs offer loans at highly concessional rates, with no or very low interest charges, based on criteria such as the recipient countries' risk of debt distress, level of GNI per capita, and creditworthiness. However, as discussed in Chapter 2 and Chapter 3 regarding the International Development Association (IDA)'s financing terms, these highly concessional rates currently apply only to loans in hard currency. This makes LC loans less attractive to borrowers, given the significant interest rate spread between the highly concessional rates in hard currency and the typically higher interest rates of LC loans. It is crucial that the concessional financing arms of MDBs ensure that their concessional capital is used to support LC financing at more attractive rates, which help reduce this spread—particularly in their lending and guarantee operations, given the vulnerable financial position of recipient countries.

The survey results support this recommendation, with over 55% of respondents rating the need to offer LC financing at concessional rates as either 'very important', 'extremely important' or 'moderately important'. This indicates a solid backing for extending concessional terms to LC loans, recognising the developmental benefits of making LC financing more affordable.

3.4.3. Take on some currency risk in lending and guarantee transactions

MDBs must exercise prudence in protecting their capital and maintaining high credit ratings, but this must be balanced against their developmental mandate. As discussed in Chapter 3, current legal and institutional frameworks generally restrict MDBs to assuming currency risk only in their equity investments. However, assuming limited currency risk in their lending and guarantee transactions could greatly enhance access to sustainable finance for vulnerable LMICs. In the absence of external donor-supported mitigation, permitting some degree of currency risk exposure is the most direct way to lower borrowing costs.

The survey results support this recommendation, with around 55% of respondents rating the policy proposal of allowing MDBs to take on currency risk as either 'very important,' 'extremely important,' or 'moderately important'. This reflects institutional recognition that, while prudent risk management is essential, taking on controlled currency risk could significantly expand MDBs' capacity to offer affordable LC financing. Crucially, this policy would rely on careful in-house modelling and pricing of exchange rate risk—a reform recognised by more than half of survey

respondents as either 'very important' or 'moderately important'.

For LC loans, our analysis in Chapter 4 indicates that currency risk in these settings may be less severe than typically assumed, with unhedged exposure to LMIC currencies yielding positive returns, especially in LICs. Nevertheless, tail risk events remain a concern, which necessitates provisions for potential losses. Currency exposure should thus be reserved for projects with the most significant developmental impact in the most vulnerable economies. Additionally, as discussed in Chapter 5, the benefits of LC loans—in terms of lower risk-weighted capital ratios—hold even in cases of partial hedging. By taking on some currency risk, MDBs could enhance their developmental impact while maintaining financial stability.

Guarantees also have the potential for enhancing LC financing capacity of MDBs, which may be currently underappreciated, particularly if they assume some currency risk. As discussed in Chapter 3, MDB guarantees are especially effective when local lenders have a funding advantage in LC but face credit exposure constraints. In such cases, MDBs can support LC lending by local lenders. The potential of guarantees in the context of unhedged currency exposure relies on the offsetting relationship between credit and currency risks. During a macroeconomic crisis, when defaults increase and more guarantees are called, local currencies typically depreciate. This depreciation lowers the cost for the guarantor, as the value of the guarantee in foreign currency terms decreases. While this mechanism works under normal conditions, extreme depreciation poses a risk—if it triggers widespread defaults, MDBs would face substantial demands to fulfil guarantees.

Although we consider taking on some currency risk to be feasible and consistent with the developmental mandate of MDBs, we also recognise the additional risks and potential consumption of risk capital that this could entail, particularly if such initiatives are scaled up. To address these limitations—especially in the presence of significant tail risks—we propose two potential mechanisms.

a. Fund structure

The first option involves creating a fund structure established by MDBs, designed with a ring-fenced, off-balance sheet model specifically for delivering unhedged LC financing. Similar to TCX, this fund would assume the currency risk associated with MDBs' LC loans. However, unlike TCX, it would also assume credit risk. By not explicitly providing hedging services to MDBs, this structure could lower the cost of financing LC loans, enabling MDBs to offer more competitive borrowing rates in LMICs. Importantly, while the loan rates could be lower than those of fully hedged loans, the fund's sustainability would depend on carefully modelling and pricing exchange rate risk

The fund could be structured as either:

- Single MDB-based fund: The fund could be hosted by a specific MDB, akin to the EIB's ACP Facility. This option would likely require external funding for initial capitalisation, potentially from donors. Once capitalised, the fund would provide unhedged LC financing to LMIC borrowers.

- Joint MDB fund: Alternatively, the fund could be jointly financed by several MDBs. Although our survey respondents expressed mixed views on whether MDBs should pool currency risk, the diversification benefits of such a structure could significantly reduce idiosyncratic currency risks, effectively acting as a partial hedge against exchange

rate fluctuations. This approach aligns with the current G20 Brazilian Presidency's roadmap for reforming MDBs to work together as a system to achieve scale and effectiveness.[45]

Regardless of the structure, the fund would likely require strong funding for initial capitalisation, given that it will be fully exposed to currency risk without relying on third-party risk mitigation. This recommendation is based on our result in Chapter 4 that—on average and over some horizon—LMICs excess returns are positive even taking account of potential tail risks.

b. SDR-based risk-sharing scheme against extreme depreciation

To further unlock the potential of LC loans and guarantees, MDBs need a backstop for extreme depreciations. Donor resources could support unhedged LC loans and guarantees through an external entity offering a partial exchange rate risk guarantee, covering losses from extreme currency depreciation, provided MDBs take on some currency risk. For loans, this could replicate the India Innovation Lab Hedging Facility (Shrimali, Farooquee, and Trivedi) proposal, where losses exceeding a certain depreciation threshold (4.5% in their proposal) are covered. Within that threshold, upside and downside currency risks are borne by the MDBs themselves. While backed by donor capital, this facility could become financially sustainable if MDBs pay fees proportional to gains from currency appreciation.

For MDB-provided guarantees, the entity would cover losses arising from systemic events where significant LC depreciation leads to widespread defaults. In order to achieve this, the guarantee could be set to cover losses on MDBs' guarantees portfolio exceeding a certain threshold, combined with a context of significant LC depreciation. In exchange, MDBs would pay a fixed fee—set lower than the fees earned on credit guarantees extended to local lenders—to the guaranteeing entity.

Given the political sensitivities surrounding donor resource pooling, a trust structure funded by rechannelled SDRs could support the guaranteeing entity. Drawing from the IMF's experience with the Poverty Reduction and Growth Trust (PRGT) and Resilience and Sustainability Trust (RST), this trust would align with the IMF's mandate to promote international monetary cooperation and exchange rate stability.[46]

The trust would function as a counter-guarantor, covering only tail risk. Standard currency risk would be borne by the MDBs, modelled appropriately, and incorporated into their pricing structures. In cases where MDBs benefit from currency appreciation, provisions could allow compensation to the trust fund. The impact of these transactions on the trust's resources would fluctuate, and while resource depletion may not always occur, external donor funding would be needed to provide a financial buffer and ensure the trust's long-term viability.

[45] G20 Brazil, 'Minister Haddad Announces the Creation of a G20 Roadmap for Multilateral Bank Reforms' (G20, 18 April 2024) https://www.g20.org/en/news/minister-haddad-announces-the-creation-of-a-g20-roadmap-for-multilateral-bank-reforms accessed 14 October 2024.

[46] Articles of Agreement of the International Monetary Fund (adopted 22 July 1944, entered into force 27 December 1945) 2 UNTS 39, Art 1(i) and (iii).

SDRs held within the trust would represent liabilities, requiring either interest payments by MDBs at the SDR rate or donor contributions to support concessional financing.[47] In non-concessional financing, the spread earned by MDBs would likely exceed the SDR interest rate, ensuring financial sustainability at the transactional level.

SDRs have a unique potential to mitigate currency risk because their value is based on the IMF's basket of currencies (the US dollar, euro, Chinese renminbi, Japanese yen, and British pound sterling). Even if one currency depreciates, the overall value of SDRs tends to remain stable, offering a reliable benchmark for mitigating currency risk. This lowers the likelihood of sharp losses that could occur if a guarantee were denominated in a single currency.

A legal question arises as to whether this structure would conflict with the domestic legal frameworks of potential donor countries. Given the current relevance of this discussion,[48] it will be explored in more detail in Appendix C.

[47] See further on T Pforr, F Pape, and S Murau, 'Bretton Woods, Brussels, and Basel: European Cross-Border Finance and the Rebirth of the Global Monetary System after the 1960s' (INET Working Paper No 180, February 2022) https://www.ineteconomics.org/uploads/papers/WP_180-Murau-et-al.pdf accessed 10 October 2024.

[48] See, eg, K Berensmann, 'How to Make the World Bank and IMF Support Global Public Goods' (IDOS Policy Brief, 2024) https://www.idos-research.de/fileadmin/user_upload/pdfs/publikationen/Policy_Brief/2024/PB_30.2024.pdf accessed 10 October 2024; S Paduano, 'SDR Rechanneling and ECB Rules: Options for Africa and Beyond' (FinDevLab, May 2023) https://findevlab.org/wp-content/uploads/2023/05/FDL_SDR-Rechanneling-and-ECB-Rules.pdf accessed 10 October 2024.

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A. Appendix: Data Description and Additional Estimation Results (Chapter 4)

1. Data Description

Table A-1 Data definitions and sources

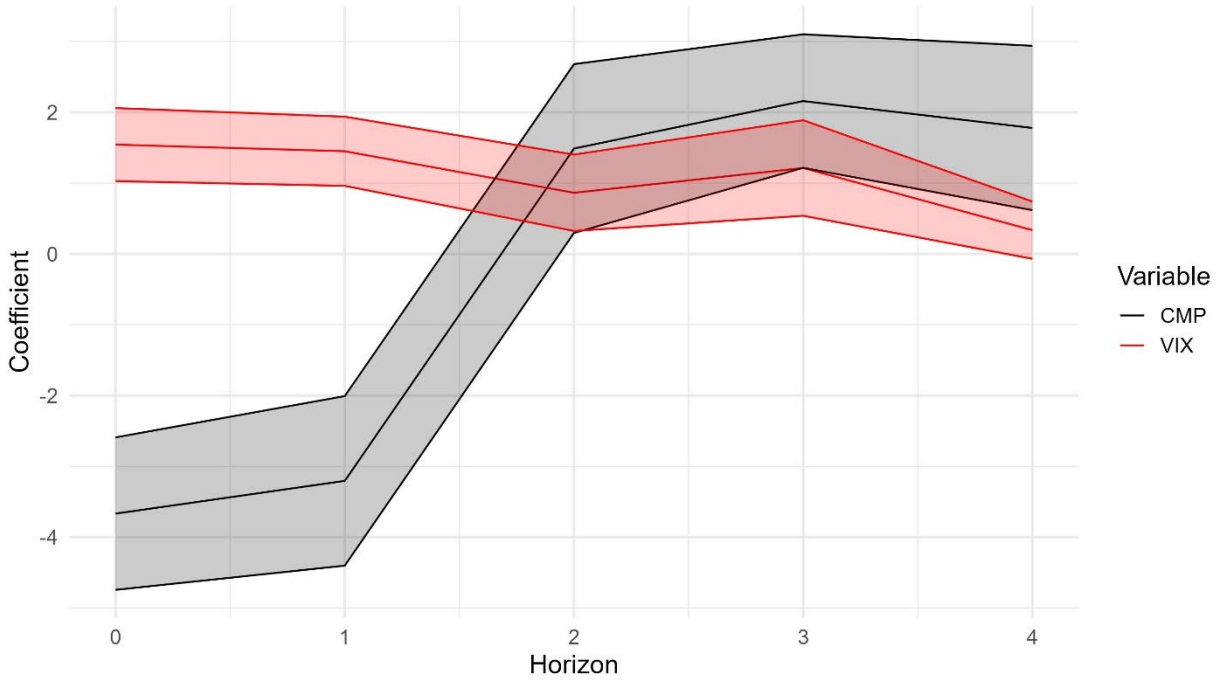
Variable	Definition	Description and unit	Source
BFI	Share of bank foreign investors	Share of government debt held by foreign banks. Percent.	Arslanalp and Tsuda (2014)*
CMEX_MED	The median share of commodities in total export	Share of commodities (food and beverages, fuels and lubricants, industrial supplies) of exports. Percent.	Feenstra and others (2015). Penn World Table.
CMP_EN	Energy commodity price index	Includes prices of coal, crude oil, natural gas. Natural log.	World Bank Commodity Price Data (The Pink Sheet)
CMP_EXP	Index with country-specific weights based on the share of commodities in total exports	Commodity Export Price Index, Individual Commodities Weighted by Ratio of Exports to Total Commodity Exports. Natural log.	International Monetary Fund (IMF)
CMP_IMP	Index with country-specific weights based on the share of commodities in total imports	Commodity Import Price Index, Individual Commodities Weighted by Ratio of Imports to Total Commodity Imports. Natural log.	International Monetary Fund (IMF)
CMP_NEN	Non-energy commodity price index	Includes agriculture, fertilizers and metals and minerals. Natural log.	World Bank Commodity Price Data (The Pink Sheet)
CMP	Commodity Price	Includes energy and non-energy commodities, and precious metals. Natural log.	World Bank Commodity Price Data (The Pink Sheet)
ECI	Economic Complexity Index	Na index based on how diversified and complex a country export basket is.	The Growth Lab at Harvard University. The Atlas of Economic Complexity
FI	Share of foreign investors	Share of government debt held by foreign investors (includes foreign banks, nonbanks, and official sector). Percent.	Arslanalp and Tsuda (2014)*
FX_RES	Foreign exchange reserves as a share of GDP	Foreign exchange reserves (minus gold) as a share of GDP	Lane and Milesi-Ferretti (2018)
INTDIFF	Interest rate differential	Difference between extrapolated deposit rate using policy rate and Federal Funds rate. The baseline level of domestic interest rate is given by the deposit rate level, which is extrapolated, when necessary, by the change in the policy rate. Percent.	International Financial Statistics (IFS), IMF. Board of Governors of the Federal Reserve System (US).
NBFI	Share of domestic government held by non-bank foreign investors	Share of government debt held by foreign nonbanks. Percent.	Arslanalp and Tsuda (2014)*
INFLDIFF	Difference in inflation	Difference in domestic and US inflation (Headline consumer price index). Percent.	World Bank. Jongrim and others (2023)
VIX	CBOE S&P 500 Volatility Index	VIX measures market expectation of near term volatility conveyed by stock index option prices. Natural log.	Chicago Board Options Exchange, CBOE Volatility Index: VIX, retrieved from

			FRED, Federal Reserve Bank of St. Louis
ΔXR_i	Quarterly rate of depreciation of the nominal USD dollar exchange rate of a currency i	Nominal US dollar exchange rate. Percent.	IMF-IFS

Source: International Monetary Fund (IMF), Version Updated on 15 December 2023 https://www.imf.org/-/media/Websites/IMF/imported-datasets/external/pubs/ft/wp/2014/Data/wp1439.ashx accessed 14 October 2024.

2. Additional estimation results

Figure A-1 Estimated coefficients on normalised CMP and normalised VIX, 95th percentile of nominal rate of depreciation



Notes: Estimated coefficients on normalised CMP and normalised VIX from panel quantile regressions with nominal rate of depreciation as dependent variable (in %), 95th quantile, with horizon $h = 0, \dots, 4$. CMP and VIX are normalised to have zero mean and unit standard deviation. Regression includes control variables but excludes structural country characteristics (i.e. $\delta_\tau = \gamma_\tau = 0$ in equation 1). Confidence bands represent the 90% confidence interval based on bootstrapped standard errors. Number of observations: 7,586.

Table A-2 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 50th quantile

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.026***	-0.013**	-0.006*	-0.006	-0.011**
	(0.006)	(0.005)	(0.004)	(0.004)	(0.005)
CMP x BUST	-0.07***	-0.025***	-0.001	0.013***	0.006
	(0.019)	(0.008)	(0.003)	(0.004)	(0.004)
L1.CMP x BOOM	0.021***	0.009**	0.004	0.003	0.007*
	(0.006)	(0.005)	(0.003)	(0.004)	(0.004)
L1.CMP x BUST	0.064***	0.021***	-0.002	-0.016***	-0.009**
	(0.019)	(0.008)	(0.003)	(0.005)	(0.004)
CMP x L1.NBFI x BOOM	0.000	0.000	0.000	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CMP x L1.NBFI x BUST	0.000**	0.000**	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
L1.NBFI x BOOM	-0.039	-0.054	-0.103	-0.138**	-0.128**
	(0.06)	(0.073)	(0.076)	(0.069)	(0.06)
L1.NBFI x BUST	-0.17**	-0.173**	-0.063	-0.047	-0.083
	(0.075)	(0.078)	(0.059)	(0.065)	(0.066)
L1.INFLDIFF x BOOM	0.01	0.000	0.000	0.000	0.000
	(0.013)	(0.001)	(0.001)	(0.001)	(0.002)
L1.INFLDIFF x BUST	0.014***	-0.002	-0.002	0.002	0.000
	(0.004)	(0.01)	(0.007)	(0.002)	(0.004)
L1.INTDIFF x BOOM	0.016	0.004	0.000	0.000	0.000
	(0.019)	(0.022)	(0.022)	(0.013)	(0.014)
L1.INTDIFF x BUST	0.04**	0.045***	0.046***	0.011	0.001
	(0.019)	(0.017)	(0.011)	(0.023)	(0.026)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 50th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,079.*

Table A-3 Estimated coefficients from panel quantile regression of nominal rate of depreciation, energy commodity price index (CMP_EN)

Variable	h=0	h=1	h=2	h=3	h=4
CMP_EN x BOOM	-0.028	0.024	0.031	-0.023	-0.031
	(0.018)	(0.026)	(0.028)	(0.017)	(0.019)
CMP_EN x BUST	-0.206***	-0.047**	0.001	0.001	-0.015
	(0.024)	(0.022)	(0.015)	(0.011)	(0.013)
L1.CMP_EN x BOOM	0.006	-0.042*	-0.045*	0.009	0.016
	(0.018)	(0.024)	(0.027)	(0.015)	(0.018)
L1.CMP_EN x BUST	0.183***	0.031	-0.012	-0.016	0.000
	(0.021)	(0.021)	(0.015)	(0.011)	(0.012)
CMP_EN x NBFI x BOOM	0.001	0.001**	0.001**	0.001*	0.001**
	(0.000)	(0)	(0.001)	(0.000)	(0.000)
CMP_EN x NBFI x BUST	0.001	0.001**	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
NBFI x BOOM	-0.275	-0.587***	-0.613**	-0.451**	-0.516**
	(0.214)	(0.223)	(0.279)	(0.205)	(0.211)
NBFI x BUST	-0.289*	-0.377**	-0.246	-0.164	-0.263
	(0.174)	(0.165)	(0.178)	(0.225)	(0.188)
L1.INFLDIFF x BOOM	0.118***	0.122***	0.022	-0.005	-0.005
	(0.016)	(0.014)	(0.044)	(0.038)	(0.044)
L1.INFLDIFF x BUST	0.045	0.087**	0.168**	0.006	0.018
	(0.081)	(0.044)	(0.074)	(0.058)	(0.023)
L1.INTDIFF x BOOM	0.001	-0.002	0.058	0.099***	0.119***
	(0.154)	(0.075)	(0.084)	(0.033)	(0.036)
L1.INTDIFF x BUST	0.027	0.009	-0.007	0.086	0.078
	(0.194)	(0.164)	(0.183)	(0.112)	(0.057)

*Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$. Estimated coefficients are allowed to differ depending on whether energy commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,079.*

Table A-4 Estimated coefficients from panel quantile regression of nominal rate of depreciation, non-energy commodity price index (CMP_NEN)

Variable	h=0	h=1	h=2	h=3	h=4
CMP_NEN x BOOM	-0.052**	-0.096*	0.18	-0.056	-0.04
	(0.026)	(0.058)	(0.118)	(0.051)	(0.048)
CMP_NEN x BUST	-0.571***	-0.23***	-0.071	0.027	0.005
	(0.101)	(0.074)	(0.086)	(0.024)	(0.033)
L1.CMP_NEN x BOOM	0.018	0.08	-0.199*	0.044	0.032
	(0.025)	(0.061)	(0.118)	(0.054)	(0.049)
L1.CMP_NEN x BUST	0.537***	0.211***	0.053	-0.039**	-0.012
	(0.097)	(0.073)	(0.086)	(0.02)	(0.029)
CMP_NEN x NBFI x BOOM	0.002***	0.002**	0.002***	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
CMP_NEN x NBFI x BUST	-0.002	0.001	0.001	0.001	0.002**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
NBFI x BOOM	-0.681***	-0.684**	-1.02***	-0.649	-0.574
	(0.262)	(0.28)	(0.327)	(0.479)	(0.352)
NBFI x BUST	0.945	-0.507	-0.323	-0.477	-0.76**
	(0.94)	(0.554)	(0.42)	(0.351)	(0.321)
L1.INFLDIFF x BOOM	0.118**	0.037	0.081	-0.007	0.019
	(0.052)	(0.043)	(0.059)	(0.045)	(0.035)
L1.INFLDIFF x BUST	0.039	0.112***	0.019	-0.001	-0.006
	(0.045)	(0.029)	(0.076)	(0.041)	(0.058)
L1.INTDIFF x BOOM	0.001	0.043	0.019	0.094***	0.078***
	(0.115)	(0.11)	(0.079)	(0.036)	(0.026)
L1.INTDIFF x BUST	0.162	0.16	0.12	0.095	0.199
	(0.239)	(0.179)	(0.145)	(0.109)	(0.154)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$. *Estimated coefficients are allowed to differ depending on whether non-energy commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,079.*

Table A-5 Estimated coefficients from panel quantile regression of nominal rate of depreciation, median economic complexity index (ECI_MED)

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.054**	-0.003	0.068	0.101*	-0.02
	(0.026)	(0.023)	(0.042)	(0.055)	(0.033)
CMP x BUST	-0.288***	-0.104	0.055	0.026	0.046**
	(0.046)	(0.064)	(0.041)	(0.017)	(0.022)
L1.CMP x BOOM	0.031	-0.007	-0.068*	-0.105*	0.019
	(0.024)	(0.022)	(0.04)	(0.056)	(0.031)
L1.CMP x BUST	0.267***	0.103	-0.049	-0.03*	-0.046**
	(0.045)	(0.063)	(0.04)	(0.017)	(0.02)
CMP X ECI_MED x BOOM	0.003	0.008	0.006	-0.007	0.001
	(0.008)	(0.006)	(0.009)	(0.012)	(0.013)
CMP x ECI_MED x BUST	0.01	0.027	0.018	0.022	0.023
	(0.013)	(0.018)	(0.018)	(0.016)	(0.017)
ECI_MED x BOOM	-0.338	-2.847	-1.279	3.736	-0.231
	(3.592)	(2.614)	(3.789)	(5.074)	(5.84)
ECI_MED x BUST	-1.696	-8.597	-7.621	-9.061	-8.938
	(5.542)	(7.7)	(7.497)	(6.911)	(7.344)
L1.INFLDIFF x BOOM	0.089**	0.106***	0.187***	-0.005	-0.005
	(0.04)	(0.028)	(0.035)	(0.005)	(0.006)
L1.INFLDIFF x BUST	-0.007	-0.002	0.002	0.002	0.017
	(0.153)	(0.083)	(0.061)	(0.093)	(0.058)
L1.INTDIFF x BOOM	0.451***	0.273***	0.223**	0.182***	0.126**
	(0.14)	(0.083)	(0.113)	(0.065)	(0.062)
L1.INTDIFF x BUST	0.624***	0.576***	0.409	0.405*	0.359*
	(0.195)	(0.174)	(0.271)	(0.22)	(0.199)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$. *Estimated coefficients are allowed to differ depending on whether non-energy commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 5,659.*

Table A-6 Estimated coefficients from panel quantile regression of nominal rate of depreciation, export-share weighted commodity price index (CMP_EXP)

Variable	h=0	h=1	h=2	h=3	h=4
CMP_EXP x BOOM	-0.036	-0.013	-0.025	-0.059*	-0.091**
	(0.039)	(0.022)	(0.022)	(0.036)	(0.042)
CMP_EXP x BUST	-0.339***	-0.201***	-0.092	0.02	-0.006
	(0.062)	(0.053)	(0.07)	(0.024)	(0.02)
L1.CMP_EXP x BOOM	-0.008	-0.02	-0.012	0.021	0.056
	(0.038)	(0.026)	(0.025)	(0.031)	(0.042)
L1.CMP_EXP x BUST	0.294***	0.17***	0.056	-0.058**	-0.029
	(0.059)	(0.051)	(0.072)	(0.027)	(0.019)
CMP_EXP x NBFI x BOOM	0.002**	0.002***	0.002***	0.003***	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
CMP_EXP x NBFI x BUST	0	0.001	0.002**	0.002*	0.002**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
NBFI x BOOM	-0.689**	-1***	-1.144***	-1.272***	-0.868**
	(0.296)	(0.326)	(0.366)	(0.41)	(0.4)
NBFI x BUST	0.196	-0.4	-0.799**	-0.741**	-0.796**
	(0.745)	(0.678)	(0.367)	(0.358)	(0.311)
L1.INFLDIFF x BOOM	0.119***	0.122***	0.021	-0.005	-0.004
	(0.019)	(0.012)	(0.049)	(0.034)	(0.017)
L1.INFLDIFF x BUST	0.112	0.102	0.096	0.024	0.016
	(0.096)	(0.072)	(0.063)	(0.056)	(0.058)
L1.INTDIFF x BOOM	0.001	0.001	0.059	0.09***	0.06***
	(0.158)	(0.092)	(0.087)	(0.026)	(0.022)
L1.INTDIFF x BUST	0.085	0.173	0.042	0.121	0.137
	(0.188)	(0.201)	(0.157)	(0.092)	(0.123)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether export-share weighted commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,043.*

Table A-7 Estimated coefficients from panel quantile regression of nominal rate of depreciation, import-share weighted commodity price index (CMP_IMP)

Variable	h=0	h=1	h=2	h=3	h=4
CMP_IMP x BOOM	-0.047*	0.009	0.05	0.006	-0.038
	(0.027)	(0.025)	(0.041)	(0.039)	(0.025)
CMP_IMP x BUST	-0.259***	-0.07	-0.017	0.006	0.005
	(0.043)	(0.047)	(0.047)	(0.01)	(0.013)
L1.CMP_IMP x BOOM	0.005	-0.037	-0.072*	-0.025	0.019
	(0.023)	(0.023)	(0.041)	(0.039)	(0.022)
L1.CMP_IMP x BUST	0.219***	0.049	-0.002	-0.025***	-0.024*
	(0.041)	(0.045)	(0.047)	(0.01)	(0.013)
CMP_IMP x NBFI x BOOM	0.002***	0.002***	0.003***	0.002**	0.001
	(0)	(0)	(0.001)	(0.001)	(0.001)
CMP_IMP x NBFI x BUST	-0.001	0.002	0.001	0.001*	0.001
	(0.001)	(0.002)	(0.001)	(0)	(0.001)
NBFI x BOOM	-0.717***	-0.705***	-1.181***	-0.852**	-0.718*
	(0.222)	(0.216)	(0.306)	(0.365)	(0.392)
NBFI x BUST	0.566	-0.674	-0.302	-0.417**	-0.344
	(0.517)	(0.741)	(0.314)	(0.209)	(0.27)
L1.INFLDIFF x BOOM	0.119***	0.122***	0.073	-0.004	-0.006
	(0.02)	(0.03)	(0.065)	(0.056)	(0.062)
L1.INFLDIFF x BUST	0.035	0.045	0.089	0.012	0.018**
	(0.083)	(0.067)	(0.069)	(0.04)	(0.008)
L1.INTDIFF x BOOM	0.001	-0.002	0.019	0.099**	0.121***
	(0.124)	(0.05)	(0.087)	(0.047)	(0.045)
L1.INTDIFF x BUST	0.029	0.029	0.023	0.08	0.077
	(0.208)	(0.238)	(0.177)	(0.088)	(0.095)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether import-share weighted commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,043.*

Table A-8 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, combined share of foreign investors (FI)

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.043**	0.033	0.095*	0.047	-0.016
	(0.02)	(0.022)	(0.051)	(0.049)	(0.021)
CMP x BUST	-0.234***	-0.03	0.033	0.012	0.017
	(0.037)	(0.046)	(0.051)	(0.015)	(0.015)
L1.CMP x BOOM	0.016	-0.051**	-0.11**	-0.063	0.001
	(0.019)	(0.022)	(0.051)	(0.048)	(0.02)
L1.CMP x BUST	0.209***	0.021	-0.042	-0.027*	-0.03**
	(0.036)	(0.044)	(0.051)	(0.015)	(0.013)
CMP X L1.FI x BOOM	0.001*	0.001***	0.001**	0.001*	0.001
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
CMP x L1.FI x BUST	-0.001	-0.001	0.000	0.000	0.000
	(0.001)	(0.002)	(0.001)	(0)	(0.001)
L1.FI x BOOM	-0.428*	-0.464***	-0.549**	-0.69*	-0.399
	(0.241)	(0.165)	(0.247)	(0.377)	(0.344)
L1.FI x BUST	0.477	0.558	-0.076	0	-0.211
	(0.588)	(0.714)	(0.51)	(0.174)	(0.222)
L1.INFLDIFF x BOOM	0.118***	0.122***	0.056	-0.004	-0.005
	(0.018)	(0.015)	(0.065)	(0.032)	(0.04)
L1.INFLDIFF x BUST	0.083	0.052	0.125**	0.077	0.03
	(0.091)	(0.074)	(0.063)	(0.056)	(0.036)
L1.INTDIFF x BOOM	0.002	-0.001	0.034	0.1***	0.122***
	(0.146)	(0.068)	(0.099)	(0.031)	(0.033)
L1.INTDIFF x BUST	0.019	0.02	0.000	0.037	0.071
	(0.181)	(0.204)	(0.193)	(0.127)	(0.115)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,079.*

Table A-9 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, share of bank foreign investors (BFI)

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.036*	0.043*	0.103**	0.083*	-0.011
	(0.021)	(0.025)	(0.051)	(0.047)	(0.023)
CMP x BUST	-0.26***	-0.043	0.038	0.026**	0.026
	(0.038)	(0.043)	(0.045)	(0.013)	(0.018)
L1.CMP x BOOM	0.019	-0.051**	-0.107**	-0.089*	0.008
	(0.02)	(0.025)	(0.051)	(0.047)	(0.022)
L1.CMP x BUST	0.244***	0.042	-0.038	-0.031***	-0.028*
	(0.038)	(0.042)	(0.045)	(0.012)	(0.016)
CMP X L1.BFI x BOOM	-0.004	-0.003	-0.003	-0.007	-0.008
	(0.005)	(0.005)	(0.006)	(0.007)	(0.007)
CMP x L1.BFI x BUST	-0.016***	-0.016***	-0.016**	-0.009	-0.011
	(0.005)	(0.005)	(0.007)	(0.006)	(0.007)
L1.FI x BOOM	1.983	1.446	1.619	3.099	3.503
	(2.338)	(2.503)	(2.993)	(3.298)	(3.112)
L1.FI x BUST	7.651***	7.199***	7.702**	4.412	4.907
	(2.424)	(2.54)	(3.2)	(2.94)	(3.392)
L1.INFLDIFF x BOOM	0.119***	0.123***	0.043	-0.004	-0.002
	(0.016)	(0.014)	(0.063)	(0.031)	(0.037)
L1.INFLDIFF x BUST	0.078	0.027	0.068	0.082	0.028
	(0.095)	(0.065)	(0.057)	(0.055)	(0.035)
L1.INTDIFF x BOOM	-0.003	-0.003	0.04	0.092***	0.111***
	(0.136)	(0.066)	(0.09)	(0.033)	(0.033)
L1.INTDIFF x BUST	0.009	0.026	0.01	0.028	0.065
	(0.171)	(0.171)	(0.141)	(0.125)	(0.122)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,079.*

Table A-10 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, VIX and median share of non-bank foreign investors (NBFI_MED)

Variable	h=0	h=1	h=2	h=3	h=4
VIX	0.074***	0.056***	0.02**	0.026**	0.015
	(0.014)	(0.016)	(0.009)	(0.012)	(0.01)
L1.VIX	-0.032***	-0.027**	0.008	0.001	0.004
	(0.009)	(0.012)	(0.009)	(0.008)	(0.007)
VIX x NBFI_MED	0.001	-0.001	-0.001	-0.001	0
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
NBFI_MED	-0.154	0.318*	0.378**	0.399**	0.174
	(0.295)	(0.189)	(0.161)	(0.191)	(0.167)
L1.INFLDIFF	0.119***	0.122***	0.195***	0.037	-0.005
	(0.032)	(0.017)	(0.038)	(0.038)	(0.041)
L1.INTDIFF	0.014	0.004	-0.01	0.059	0.101*
	(0.164)	(0.135)	(0.095)	(0.095)	(0.056)

*Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$ (see equation 1). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Number of observations: 7,079.*

3. Robustness tests

Table A-11 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, sample start 2000Q1

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.056**	0.033	0.155***	0.095*	0.006
	(0.023)	(0.025)	(0.054)	(0.051)	(0.036)
CMP x BUST	-0.283***	-0.177***	-0.075	0.004	0.005
	(0.044)	(0.062)	(0.047)	(0.02)	(0.013)
L1.CMP x BOOM	0.046**	-0.037	-0.145***	-0.086*	0.001
	(0.023)	(0.024)	(0.052)	(0.052)	(0.036)
L1.CMP x BUST	0.271***	0.174***	0.087*	0.003	0.001
	(0.043)	(0.061)	(0.046)	(0.02)	(0.011)
CMP X L1.NBFI x BOOM	0.001*	0.001	0.001	0.002*	0.001
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
CMP x L1.NBFI x BUST	0.001	0.003***	0.002**	0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
L1.NBFI x BOOM	-0.247	-0.282	-0.218	-0.676*	-0.457
	(0.16)	(0.215)	(0.311)	(0.365)	(0.433)
L1.NBFI x BUST	-0.393	-1.084***	-0.714**	-0.01	-0.294
	(0.376)	(0.41)	(0.326)	(0.192)	(0.323)
L1.INFLDIFF x BOOM	0.229**	0.097***	0.126***	0.04	0.024
	(0.089)	(0.033)	(0.044)	(0.036)	(0.025)
L1.INFLDIFF x BUST	0.218**	0.225***	0.024	0.015	-0.037
	(0.1)	(0.076)	(0.051)	(0.037)	(0.032)
L1.INTDIFF x BOOM	0.354***	0.258***	0.196*	0.053	0.05
	(0.127)	(0.084)	(0.103)	(0.073)	(0.081)
L1.INTDIFF x BUST	0.42***	0.384**	0.256**	0.192**	0.278***
	(0.126)	(0.154)	(0.116)	(0.095)	(0.103)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Sample start was set to 2000Q1. Number of observations: 5,939.*

Table A-12 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, sample end 2019Q4

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.086**	-0.019	0.139**	0.069	-0.048
	(0.034)	(0.028)	(0.065)	(0.061)	(0.035)
CMP x BUST	-0.283***	-0.058	-0.007	0.015	0.012
	(0.044)	(0.063)	(0.057)	(0.017)	(0.016)
L1.CMP x BOOM	0.051*	-0.005	-0.159**	-0.088	0.032
	(0.03)	(0.027)	(0.063)	(0.06)	(0.036)
L1.CMP x BUST	0.248***	0.044	-0.007	-0.031*	-0.026*
	(0.042)	(0.061)	(0.057)	(0.016)	(0.014)
CMP X L1.NBFI x BOOM	0.001*	0.001***	0.002**	0.002**	0.001
	(0.001)	(0)	(0.001)	(0.001)	(0.001)
CMP x L1.NBFI x BUST	-0.001	-0.001	0.001	0	0.001**
	(0.002)	(0.002)	(0.001)	(0)	(0)
L1.NBFI x BOOM	-0.421*	-0.538***	-0.762**	-0.796**	-0.571*
	(0.23)	(0.177)	(0.305)	(0.32)	(0.325)
L1.NBFI x BUST	0.713	0.317	-0.357	-0.184	-0.594***
	(0.796)	(0.701)	(0.508)	(0.195)	(0.2)
L1.INFLDIFF x BOOM	0.118***	0.122***	0.056	-0.004	-0.005
	(0.017)	(0.011)	(0.06)	(0.035)	(0.039)
L1.INFLDIFF x BUST	0.111	0.033	0.123*	0.066	0.021
	(0.103)	(0.073)	(0.063)	(0.062)	(0.04)
L1.INTDIFF x BOOM	0	-0.002	0.034	0.099***	0.12***
	(0.128)	(0.07)	(0.069)	(0.032)	(0.031)
L1.INTDIFF x BUST	0.014	0.03	0	0.043	0.076
	(0.172)	(0.203)	(0.151)	(0.117)	(0.135)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Sample start was set to 2000Q1. Number of observations: 6,388.*

Table A-13 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, λ=0.5

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.043**	0.032	0.076	0.037	-0.018
	(0.021)	(0.021)	(0.052)	(0.043)	(0.023)
CMP x BUST	-0.229***	-0.017	0.005	0.019	0.02
	(0.036)	(0.051)	(0.051)	(0.012)	(0.015)
L1.CMP x BOOM	0.015	-0.05**	-0.092*	-0.054	0.002
	(0.019)	(0.021)	(0.051)	(0.042)	(0.022)
L1.CMP x BUST	0.203***	0.009	-0.016	-0.034***	-0.034***
	(0.035)	(0.048)	(0.05)	(0.012)	(0.013)
CMP X L1.NBFI x BOOM	0.001***	0.001***	0.001**	0.002***	0.001*
	(0)	(0)	(0.001)	(0.001)	(0.001)
CMP x L1.NBFI x BUST	-0.001	-0.001	0.001	0	0.001
	(0.001)	(0.001)	(0.001)	(0)	(0)
L1.NBFI x BOOM	-0.486***	-0.523***	-0.686**	-0.782***	-0.647*
	(0.171)	(0.17)	(0.29)	(0.27)	(0.334)
L1.NBFI x BUST	0.446	0.325	-0.318	-0.136	-0.316
	(0.469)	(0.613)	(0.448)	(0.16)	(0.209)
L1.INFLDIFF x BOOM	0.118***	0.122***	0.022	-0.004	-0.005
	(0.017)	(0.017)	(0.062)	(0.03)	(0.043)
L1.INFLDIFF x BUST	0.087	0.035	0.123*	0.066	0.02
	(0.094)	(0.069)	(0.067)	(0.049)	(0.036)
L1.INTDIFF x BOOM	0.001	-0.002	0.056	0.099***	0.12***
	(0.127)	(0.072)	(0.075)	(0.024)	(0.035)
L1.INTDIFF x BUST	0.019	0.029	0	0.044	0.076
	(0.182)	(0.208)	(0.165)	(0.093)	(0.135)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Shrinkage parameter was set to* $\lambda = 0.5$*. Number of observations: 7,079.*

Table A-14 Estimated coefficients from panel quantile regression of nominal rate of depreciation, 95th quantile, Canay (2011) estimator

Variable	h=0	h=1	h=2	h=3	h=4
CMP x BOOM	-0.148**	0.011	0.127	0.161**	0.139*
	(0.054)	(0.051)	(0.221)	(0.073)	(0.063)
CMP x BUST	-0.289***	-0.207*	0.021	0.058	0.027
	(0.062)	(0.083)	(0.464)	(0.055)	(0.045)
L1.CMP x BOOM	0.116*	-0.031	-0.154	-0.179**	-0.161**
	(0.049)	(0.049)	(0.261)	(0.077)	(0.063)
L1.CMP x BUST	0.255***	0.193	-0.041	-0.068	-0.046
	(0.057)	(0.079)	(0.521)	(0.06)	(0.046)
CMP X L1.NBFI x BOOM	0.002	0.003*	0.001	0.003**	0.003**
	(0.001)	(0.001)	(0.051)	(0.001)	(0.001)
CMP x L1.NBFI x BUST	0.001	0.002	0	0	0.001
	(0.002)	(0.002)	(0.036)	(0.001)	(0.001)
L1.NBFI x BOOM	-0.778	-1.157*	-0.207	-1.366**	-1.387**
	(0.553)	(0.606)	(24.16)	(0.562)	(0.567)
L1.NBFI x BUST	-0.303	-0.757	0.249	-0.096	-0.483
	(0.699)	(0.727)	(19.182)	(0.595)	(0.456)
L1.INFLDIFF x BOOM	0.14	0.136***	0.092	0.113*	0.071*
	(0.107)	(0.038)	(3.689)	(0.054)	(0.039)
L1.INFLDIFF x BUST	0.212	0.096	0.148	0.117*	0.127
	(0.124)	(0.097)	(0.848)	(0.062)	(0.095)
L1.INTDIFF x BOOM	-0.015	-0.014	0.021	0.014	0.051
	(0.211)	(0.188)	(6.245)	(0.156)	(0.091)
L1.INTDIFF x BUST	-0.014	-0.001	0.003	0.011	0.011
	(0.236)	(0.247)	(2.633)	(0.277)	(0.227)

Notes: Estimated coefficients from panel quantile regression of nominal rate of depreciation (in %), 95th quantile, with horizon $h = 0, \ldots, 4$*. Estimated coefficients are allowed to differ depending on whether commodity prices are in a boom or bust (see equation 2). Bootstrapped standard errors in parentheses. *, **, and ***, indicate 10%, 5%, and 1% level of statistical significance, respectively. Based on Canay's (2011) fixed effects panel quantile estimator that allows for individual fixed effects for all countries but assumes that the fixed effects are invariant across quantiles. Number of observations: 7,079.*

B. Appendix: Impact of Depreciation on Risk-Weighted Capital Ratios with Currency Exposure (Chapter 5)

In this appendix we explore how a depreciation affects the risk-weighted capital ratio when the institution has currency exposure (partially unhedged positions). To facilitate the reading of the algebra, we use different ratios to re-express the risk-weighted capital ratio.

First, we express the exchange rate as how many units of the foreign currency are necessary to buy one unit of the local currency:

$$FX = 1/x \tag{B.1}$$

In this way, depreciations are reductions in the value of x.

Second, grouping assets and liabilities in the same currency, we can express the net exposure to each of these currencies:

$$E = x * (A^{LC} - L^{LC}) + A^{HC} - L^{HC} = x * E^{LC} + E^{HC} \tag{B.2}$$

Expressing the currency exposure in local currency as a ratio of total equity as:

$$m = E^{LC}/E \tag{B.3}$$

The ratio of local currency assets over total assets as:

$$w = A^{LC}/A \tag{B.4}$$

And the unweighted capital ratio as:

$$k = E/A \tag{B.5}$$

The risk-weighted capital ratio can be expressed as:

$$\frac{E}{RWA} = \frac{(x * m + (1 - m)) * k}{x * w * \omega^{LC} + \omega^{HC} * (1 - w)} \tag{B.6}$$

Then, the marginal effect of an appreciation on the ratio is:

$$\frac{\partial \frac{E}{RWA}}{\partial \mathrm{x}} = \frac{(m * k) * \left(x * w * \omega^{LC} + \omega^{HC} * (1 - w)\right) - ((x * m + (1 - m)) * k) * (w * \omega^{LC})}{\left(x * w * \omega^{LC} + \omega^{HC} * (1 - w)\right)^2} \tag{B.7}$$

In order to know under which conditions a depreciation improves the risk-weighted capital ratio, we evaluate when this derivative has negative values (since depreciations are reductions in x). This derivative would be negative if:

$$\partial \frac{E}{RWA} / \partial x < 0 \; if: \quad m * \omega^{HC} * (1 - w) - w * \omega^{LC}(1 - m) < 0 \tag{B.8}$$

If we express the risk-weights of the local currency assets as the risk-weights of the foreign currency assets multiplied by ρ (which usually is zero or negative):

$$\omega^{LC} = \omega^{HC} + \rho \tag{B.9}$$

Then, the effects of a depreciation of the local currency will improve the risk-weighted capital ratio, when the currency exposure as ratio of equity is smaller than this ratio:

$$m < \frac{w(\omega^{HC} + \rho)}{\omega^{HC} + \mathrm{w} * \rho} \tag{B.10}$$

This implies that, the higher the weight of local currency assets, both through their non-risk weighted shares and their risk-weight relative to the hard currency risk-weight, the larger can be the unhedged currency exposure. This is clearer considering the case where the risk-weights are equal both for local currency and foreign currency assets ($\rho = 0$):

$$m < \mathrm{w} \tag{B.11}$$

Therefore, if the initial currency exposure as ratio of capital is smaller than the initial share of local currency assets over total assets, depreciations improve the risk-weighted capital ratio.

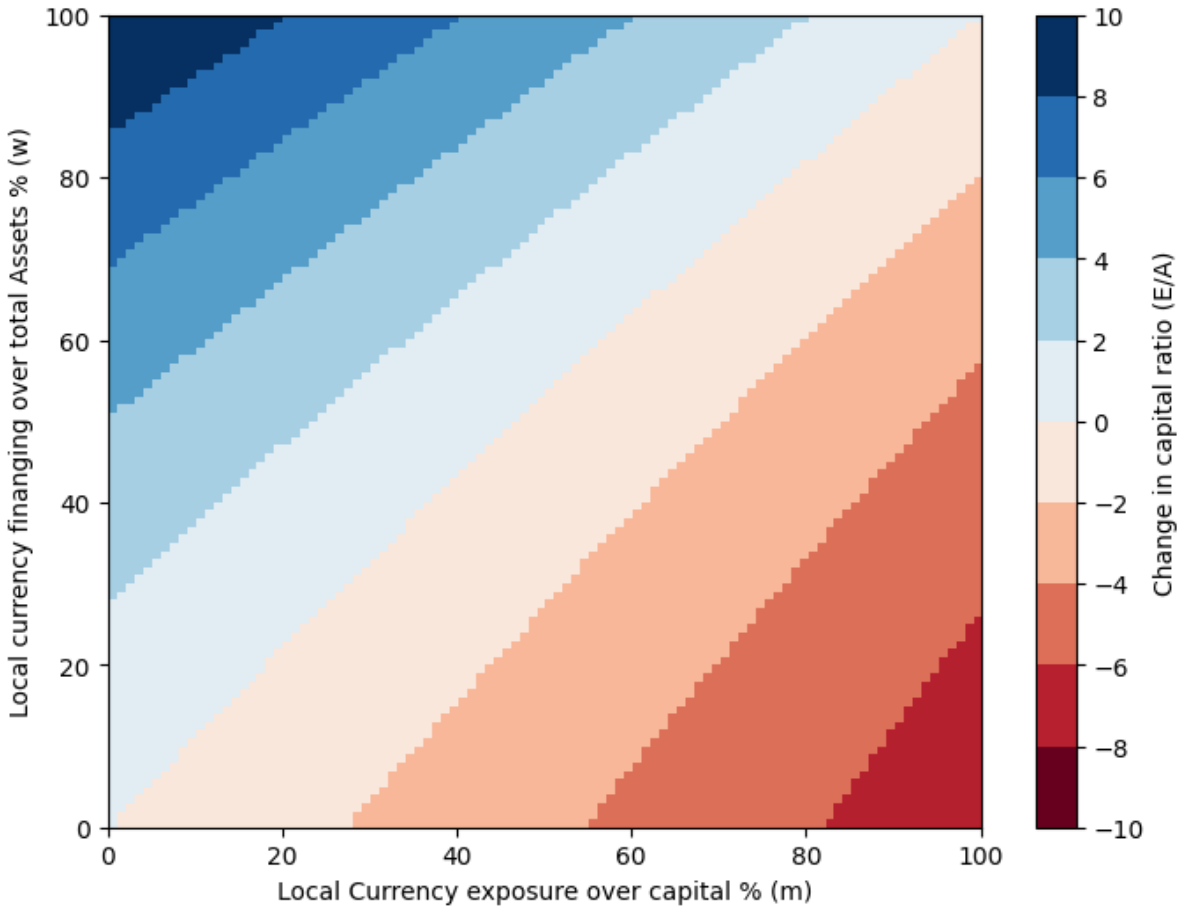
Finally, remembering that $m = (A^{LC} - L^{LC})/E$ and $w = A^{LC}/A$, we can rearrange the inequality:

$$(A^{LC} - L^{LC})/A^{LC} < \mathrm{E}/A \tag{B.12}$$

This equation emphasises that higher shares of unhedged positions over the local currency financing, require higher capital ratios.

To show this effect, the following figure simulates the effect of a 20% depreciation in the local currency on the capital ratio, for different values of the initial currency exposure as ratio of capital and the initial share of local currency assets over total assets.

Figure B-1 Effect of a 20% depreciation on the capital ratio for different values of the currency exposure to capital and the share of local currency assets over total assets



Note: the initial value of the capital ratio is calibrated to 35%.

C. Appendix: Legal Considerations of SDR-Funded Partial FX Guarantee (Chapter 6)

One of the policy recommendations made in Chapter 6 relates to an innovative trust structure funded by rechannelled Special Drawing Rights (SDRs). This structure would function as partial foreign exchange risk guarantee, covering losses from extreme currency depreciation, provided MDBs take on some currency risk in their lending and guaranteeing transactions.

The potential rechannelling of SDRs through multilateral development banks (MDBs) is currently at the centre of policy discussions.[1] Notably, the AfDB and Inter-American Development Bank (IDB) have proposed a mechanism by which countries could lend SDRs to MDBs in the form of hybrid capital.[2] In May 2024, the IMF Executive Board authorised IMF members to use SDRs to purchase hybrid capital instruments issued by prescribed holders, including MDBs, up to a cumulative limit of SDR 15 billion, with IMF members allocating SDRs through capital contributions expected to have Voluntary Trading Agreements (VTAs) in place to ensure sufficient liquidity.[3]

Regarding European Union law, concerns have been raised about whether channelling SDRs to MDBs to support their lending operations might breach Article 123 of the Treaty on the Functioning of the European Union (TFEU), which prohibits monetary financing.[4] While the legal status of this issue remains uncertain, it is crucial to distinguish the nature of the legal arrangement proposed on Chapter 6. Foreign exchange guarantees are not strictly a form of financing, as they do not involve the direct provision of capital, loans, or credit facilities to beneficiaries. Instead, they serve as risk mitigation tools, protecting the borrower or lender from currency depreciation and reducing financial exposure without extending liquidity or funding. As such, a foreign exchange guarantee does not transfer capital but shifts specific risks—related to currency fluctuations—from the borrower or lender to the guarantor. In line with Article 123's prohibitions, a foreign exchange guarantee provided in SDRs would not constitute a breach because it does not involve the creation of money or credit facilities. Instead, it provides

[1] See, eg, K Berensmann, 'How to Make the World Bank and IMF Support Global Public Goods' (IDOS Policy Brief, 2024) https://www.idos-research.de/fileadmin/user_upload/pdfs/publikationen/Policy_Brief/2024/PB_30.2024.pdf accessed 10 October 2024; S Paduano, 'SDR Rechanneling and ECB Rules: Options for Africa and Beyond' (FinDevLab, May 2023) https://findevlab.org/wp-content/uploads/2023/05/FDL_SDR-Rechanneling-and-ECB-Rules.pdf accessed 10 October 2024.

[2] International Monetary Fund, 'Use of SDRs in the Acquisition of Hybrid Capital Instruments of the Prescribed Holders' (IMF Policy Paper No 2024/026, 15 May 2024) https://www.imf.org/en/Publications/Policy-Papers/Issues/2024/05/15/Use-of-SDRs-in-the-Acquisition-of-Hybrid-Capital-Instruments-of-the-Prescribed-Holders-549003 accessed 10 October 2024.

[3] International Monetary Fund, 'IMF Executive Board Approves Use of SDRs in the Acquisition of Hybrid Capital Instruments Issued by Prescribed Holders' (IMF, 14 May 2024) https://www.imf.org/en/News/Articles/2024/05/14/pr24162-imf-exec-board-approves-sdr-acq-hybrid-capital-instr-issued-prescribed-holders accessed 10 October 2024.

[4] C Lagarde, 'Speech at the Forty-Fourth Meeting of the International Monetary and Financial Committee' (IMF Annual Meetings, 16 November 2021) https://www.bis.org/review/r211116g.htm accessed 10 October 2024. See also International Monetary Fund (n 2).

assurance against exchange rate volatility, functioning as an indirect support mechanism for financial transactions rather than a direct form of funding.

It is worth noting that the European Central Bank (ECB) already maintains an agreement with the European Investment Bank (EIB) that allows the EIB to repo ECB-eligible collateral, enhancing the EIB's operational liquidity resilience.[5] This arrangement allows the EIB to quickly convert high-quality assets into cash, ensuring it can meet its short-term liquidity needs, particularly during periods of market stress. Essentially, this is a liquidity management tool that helps the EIB mitigate risks associated with temporary funding shortfalls. A FX guarantee functions as a similar risk mitigation tool, though it focuses on managing exchange rate risk rather than liquidity risk. In both cases—repo collateral arrangements and FX guarantees—the institution is shielded from adverse market conditions by having mechanisms to offset potential losses.

[5] European Investment Bank, *Financial Report 2021* (EIB 2022) 30. See also S Paduano, *SDR Rechanneling and ECB Rules: Why Rechanneling SDRs to Multilateral Development Banks is Not Always and Everywhere Monetary Financing* (FDL Policy Note 7, 2023) https://findevlab.org/wpcontent/uploads/2023/05/FDL_SDR-Rechanneling-and-ECB-Rules.pdf accessed 14 October 2024.

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