

September 2024

Mapping Characteristics and Financial Importance of Development Banks Across the World

Jan Porenta

University of Ljubljana, School of Economics and Business, Ljubljana, Slovenia

Vasja Rant

University of Ljubljana, School of Economics and Business, Ljubljana, Slovenia, vasja.rant@ef.uni-lj.si

Follow this and additional works at: <https://www.ebrjournal.net/home>



Part of the [Finance Commons](#), and the [Growth and Development Commons](#)

Recommended Citation

Porenta, J., & Rant, V. (2024). Mapping Characteristics and Financial Importance of Development Banks Across the World. *Economic and Business Review*, 26(3), 168-183. <https://doi.org/10.15458/2335-4216.1340>

This Original Article is brought to you for free and open access by Economic and Business Review. It has been accepted for inclusion in Economic and Business Review by an authorized editor of Economic and Business Review.

ORIGINAL ARTICLE

Mapping Characteristics and Financial Importance of Development Banks Across the World

Jan Porenta, Vasja Rant *

University of Ljubljana, School of Economics and Business, Ljubljana, Slovenia

Abstract

This paper investigates the financial importance of development banks across regions and income groups. We construct a global banking dataset for the period 1995 to 2021 and analyse the distribution of development banking assets across macro regions and country income groups. We create a composite global and national Development Bank Financial Importance index (DBFI index) that enables us to rank the most financially important development banks across the globe. Development banks play significant and diverse roles in the global financial system, but their financial importance varies across regions and income groups. The paper offers a broad analysis of the global development banking landscape and advances the area of research further.

Keywords: Development banking, Development finance, Financial importance, Socio-economic development, Regional analysis

JEL classification: G21, G28, O19

Introduction

Development banking and development finance, which stagnated at the beginning of the century, have regained considerable relevance in recent years. Development banks and development finance institutions that act as lenders (hereinafter, development banks) play a crucial role in advancing sustainable socio-economic development in developing, emerging, and developed countries. These institutions are also financially important as their financing accounts for 10% of the total global investment (Xu et al., 2021).

Despite their developmental and financial significance, development banks receive less academic attention than conventional banking institutions. While studies on individual development banks or global surveys of the sector exist (e.g., Luna-Martínez & Vicente, 2012), there is a notable gap in the literature regarding a comprehensive, multiannual global examination of the financial importance of development

banks and, more broadly, the development banking sector. The sector exhibits substantial qualitative and quantitative heterogeneity, resulting from differences in asset size, mandates, geographical scope of operation, and ownership levels of individual institutions. A global, regional, and national understanding of the development banking landscape is important for both academic and practical purposes, as it informs regulators and policymakers about the development ecosystem and the instruments that can be utilized for development. In this paper we address this gap by asking two research questions: How do development banking sectors differ in their financial importance across regions, country income groups, and mandates? How can we measure and compare the financial importance of development banks at the global and national level?

To answer these questions, we build upon the work done by Xu et al. (2021) and construct a global banking dataset for the period 1995 to 2021. We gather qualitative and quantitative data on development

Received 3 January 2024; accepted 15 March 2024.
Available online 16 September 2024

* Corresponding author.
E-mail address: vasja.rant@ef.uni-lj.si (V. Rant).

<https://doi.org/10.15458/2335-4216.1340>

2335-4216/© 2024 School of Economics and Business University of Ljubljana. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

banks from multiple sources to explore the financial importance of the development banking sector and development banks, presenting the first comparative study not only of individual development banks but of entire development banking sectors.

This paper contributes to the existing body of knowledge in two key areas. Firstly, it conducts a detailed examination of the global distribution of development banks with respect to their inherent heterogeneity. This also includes an analysis of the distribution of development banking assets across macroregions and country income groups, providing valuable insights into the financial significance of the development banking landscape within the respective banking systems of these regions and income groups. Secondly, employing principal component analysis, the paper introduces a novel Development Bank Financial Importance (DBFI) index. This index enables us to highlight and rank the most financially significant national and multilateral development banks worldwide.

The rest of the paper is organized as follows: [Section 1](#) presents an extensive literature review that examines the theoretical rationale for the existence of development banks, the historical evolution of the development banking concept, contemporary roles within the socio-economic landscape, and the critical issues and trade-offs inherent in their mandates. In [Section 2](#), we discuss the data utilized in this study, offering detailed insights into the steps taken to construct the dataset. [Section 3](#) encompasses the analysis and discussion of the results derived from our investigation. [Section 4](#) concludes.

1 Literature review

The academic literature provides a nuanced portrayal of the roles assumed by development banks within the contemporary economic environment. As government-sponsored financial institutions with a primary dedication to the provision of long-term capital to industries ([Chern, 2019](#); [De Aghion, 1999](#)), development banks operate as agents of socio-economic development. Their functions encompass addressing market failures, bridging finance gaps ([Chandrasekhar, 2016](#); [Culpeper, 2012](#); [Gerschenkron, 1962](#)), and providing indispensable technical expertise and advisory services to projects of developmental significance, thereby enhancing the likelihood of project success ([Gutierrez et al., 2011](#); [Musacchio et al., 2017](#)). Their expertise serves as a catalyst for private finance mobilization, mitigating project risk and fostering trust ([Geddes et al., 2018](#); [Zhang, 2022](#)). In this capacity, development banks function as knowledge hubs, adept not only

at addressing recognized market failures but also at identifying and delineating barriers to development ([Fernández-Arias et al., 2020](#); [Griffith-Jones & Ocampo, 2018](#); [Mazzucato & Penna, 2015](#)).

In addition, development banks are frequently tasked with the mandate to mitigate and smooth economic cycles. Accordingly, during periods of economic slowdowns, many national development banks proactively increase their lending activities, injecting liquidity into the economy and contributing to the recovery process ([Brei & Schclarek Curutchet, 2017](#); [Feil & Feijó, 2021](#); [Frigerio & Vandone, 2020](#); [Gong et al., 2023](#); [Luna-Martínez & Vicente, 2012](#)). In times of economic downturns, these institutions have the capacity to strategically reduce lending interest rates, channelling their development initiatives to generate employment opportunities, strengthen social safety nets, and support other sustainable development initiatives. This countercyclical effect in lending patterns during downturns extends to multilateral development banks, particularly in regions such as Latin America and East Asia ([Galindo & Panizza, 2018](#)).

Due to diverse roles they are mandated to assume within the socio-economic environment, development banks are also diverse in their qualitative attributes. While some development banks provide direct financing through lending, others offer credit guarantees without direct financing ([Musacchio et al., 2017](#)). [Luna-Martínez and Vicente \(2012\)](#) further distinguish between first-tier development banks, which lend directly to end customers, and second-tier development banks, which lend to other private financial institutions, which subsequently lend to end customers. They find that 52% of development banks in their sample lend first- and second-tier, while 36% engage in first-tier lending and 12% engage in second-tier lending only. In addition to conventional lending models and credit guarantees, development banks also engage in direct equity investment ([Chandrasekhar, 2016](#); [Lazzarini & Musacchio, 2010](#); [Pissarides, 1999](#)).

Another important qualitative attribute of development banks is their mandates, which are legal acts or laws through which development banks are established and governed by. A mandate can either be sector-specific, targeting sectors such as agriculture, small and medium-sized enterprises, social housing, infrastructure, or local governments, or broad, focusing on general socio-economic development. [Luna-Martínez and Vicente's \(2012\)](#) survey of 90 national development banks revealed that 47% of institutions have a broad mandate while the remaining 53% have a narrow and specific development mandate. [Xu et al. \(2021\)](#) similarly find that 37% of 526 development

banks and financing institutions follow a mandate of general development. On one hand, [Rudolph \(2009\)](#) suggests that while a broad mandate allows development banks to diversify their portfolios, it may also result in suboptimal goal focus and potential inefficiencies. [Scott \(2012\)](#) echoes this idea by advocating for narrow and explicit policy mandates. [Yeyati et al. \(2004\)](#) more generally state that public sector banks (of which development banks are a subset, mostly) with narrow, well-defined mandates are less prone to conflicting objectives and tend to be more efficient. On the other hand, [Fernández-Arias et al. \(2020\)](#) argue that narrow mandates may lack the flexibility needed to effectively target market failures.

Qualitative heterogeneity in development banks extends to ownership levels, with [Buiter and Fries \(2002\)](#) highlighting the distinctive multilateral shareholder structure and subsidized capital base that sets multilateral development banks (MDBs) apart from other financial institutions and national development banks. Formed primarily in the 1960s, MDBs have undergone substantial transformations in their mandates, progressing from addressing Millennium Development Goals (MDGs) to the subsequent Sustainable Development Goals (SDGs) outlined in Agenda 2030 ([Engen & Prizzon, 2018](#); [Faure et al., 2015](#)). This evolution, as articulated by [Prizzon et al. \(2017\)](#), is a direct response to an increasingly diverse client base and the enhancement of MDBs' expertise. Notably, the International Bank for Reconstruction and Development (IBRD), initially established in 1944 for European post-World-War-II reconstruction, later broadened its mandate to encompass global growth and poverty eradication.

It is important to note that the extensive mandates and numerous institutions within the multilateral development banking landscape pose certain challenges. [Kellerman \(2019\)](#) notes a recurring trend of new MDB establishments, averaging one every three years, leading to significant and inefficient duplication of international institutions with overlapping functions. Moreover, [Kharas et al. \(2014\)](#) argue that MDBs struggle to adequately address the financing gap in lower-middle-income countries and contend with overfinancing in more developed regions. In addition to distinguishing between multilateral and national development banks, [Xu et al. \(2021\)](#) further categorize national development banks based on their focus, classifying them as nationally, internationally, or subnationally oriented. MDBs are also differentiated into regionally and globally focused entities.

2 Data

The database utilized for our analysis is constructed from three distinct data sources. Fitch Connect Fundamental Data (FCFD) and [Xu et al.'s \(2021\)](#) databases are the source of bank-specific financial variables and information on qualitative bank characteristics. World Bank's World Development Indicators database covers country-specific characteristics. Initially, we obtained total assets for both development banks and other banks from the FCFD database and removed duplicated statements. To prevent overrepresentation of a particular bank's assets, we furthermore proceeded with context-based removal of duplicates, as detailed below. Prior to the data cleansing process, we eliminated inherent duplicated statements.

Working with the FCFD dataset presented several challenges. One primary challenge is the absence of a unique identifier denoting the specific period covered by each financial statement. Whereas most banks release their statements at year-end, some banks follow non-calendar fiscal years, posting their statements in January (e.g., most Russian banks) or March (e.g., Japanese and Indian banks) of the following year. While records point to year $t + 1$ in this case, these statements in fact contain data for year t . To address this, the approach suggested by [Duprey and Lé \(2016\)](#) was applied, marking such statements as belonging to year t .

Another challenge arose due to the use of multiple accounting standards in preparing financial statements. Statements conforming to either GAAP or IFRS were retained, with preference for IFRS in cases where both were available¹. Duplicates within the dataset were addressed further by retaining only the most recent statement for banks with restated records. Additionally, only audited statements were included, with preference for the most recently audited statement in cases when multiple auditors were involved. We also prioritized unconsolidated reports in cases when both consolidated and unconsolidated statements were present. As the number of banks in our sample is sufficiently large, this approach preserves individual entities while concurrently offering a comprehensive representation of global banking assets. This approach aligns with the methodology of [Micco et al. \(2007\)](#). Following an extensive check for duplicates, we arrived to a uniquely identifiable panel dataset structure with bank i , in country j and time period t . To maintain a balanced representation of years in our sample, we limited the time period to 1995–2021.

¹ Several studies have shown GAAP and IFRS to be comparable for analytical purposes (see, e.g., [Beuren et al., 2008](#), and [Barth et al., 2012](#)).

Focusing our attention on development bank characteristics, we matched quantitative financial data from FCFD with the qualitative dataset on development banks compiled by Xu et al. (2021). Their dataset contains substantive qualitative information on over 500 development financial institutions, including their mandates, size, ownership, and geographical scope of operation. Since the bank names in both databases did not match exactly, and there was no other unique bank identifier enabling an accurate automated merging process, we merged the data manually. We considered bank names in multiple languages. For some banks FCFD provides names in local languages and for some in English, whilst Xu et al. (2021) provide bank names in both languages. For instance, a very important development bank—the German KfW—is listed in Xu et al.’s (2021) database under its original name, Kreditanstalt für Wiederaufbau, and translated to English as Credit Company for Reconstruction. However, in FCFD, it is simply referred to as KfW. Moreover, some multilateral banks have official names in more than two languages. Xu et al.’s (2021) database records the name for the Development Bank of Latin America (CAF) in English and in Spanish under Banco de Desarrollo de América Latina; however, in FCFD, this bank’s statements are reported under its Portuguese name, Corporacion Andina de Fomento. Therefore, if a match was manually identified in either language or otherwise, the corresponding data was merged.

Our final dataset encompasses 319,690 observations from 22,949 individual banks, of which 233 are categorized as development banks. Although the precise global count of banks remains uncertain, other widely recognized banking databases offer similar or somewhat larger coverage. For instance, the Bankers’ Almanac, provided by LexisNexis, contains information on over 21,500 banks, while the Bank-Focus database, jointly offered by Bureau van Dijk and Moody’s Investors Service, encompasses data on 46,700 banks across the world.

In terms of the population of development banks, the database constructed by Xu et al. (2021) identifies 526 public development banks and development financial institutions on a global scale. Consequently, our sample provides a meaningful representation of both the worldwide population of banks and development banks concerning their numbers. These figures also extend to offer a close approximation of the global banking system in relation to total assets.

As depicted in the upper left panel of Fig. 1, our sample represents approximately 92% of the total assets within the global banking system² for the period spanning from 1995 to 2021, ensuring a comprehensive and extensive representation.

Within our sample, development banks account for approximately 4.8% of the total banking system assets (upper middle and upper right panels in Fig. 1). Notably, there is a consistent and gradual increase in the relative share of development banks’ assets within the banking system from 2005 onwards. This trend underscores the growing financial importance of development financial institutions—this is particularly true in the case of nationally owned development banks, which are well positioned to better understand the complexities of the socio-economic environment of individual countries. The collective share of multilateral development bank assets remains relatively consistent throughout the period from 1995 to 2021.

Over time, the number of development banks included in our dataset also increases; however, a slow decrease is observed from 2014 onwards (lower left panel in Fig. 1). Development banks are on average significantly larger in terms of total assets as a share of the global banking system assets compared with the average bank size of other bank types, encompassing commercial, retail and consumer banks, and investment banks (lower middle panel in Fig. 1). Across the entire period, the average development bank represents approximately 0.035% of the global banking system assets, while the average across all other bank types in our sample is 0.011%. This substantial disparity in asset size emphasizes the significance of development banks in financial markets as individual institutions since they typically operate on a considerably larger scale compared to other bank types in our study (lower middle panel in Fig. 1). However, it is also important to note that there is substantial variation in development bank size. For example, our sample includes multilateral development banks, which tend to be relatively large in terms of asset size—the lower right panel in Fig. 1 shows that the average size of multilateral development banks falls below the average size of national development banks only in the period from 2007 to 2010 and in 2021. Interestingly, the average size of multilateral development banks declined substantially in the years preceding the global financial crisis of 2008. The crisis marks a clear end to their waning importance.

² The variable representing the assets of the global banking system is derived from the Fitch Connect Sovereigns package. This was achieved by aggregating the assets of the banking systems of all countries included in the database. Given that the precise value of the global banking system’s assets cannot be accurately computed, alternative approximations of this time series could be employed. One such approximation is provided by the Financial Stability Board (2022). A comparison of our calculations with the report from the Financial Stability Board (2022) indicates that the differences between the two are negligible.

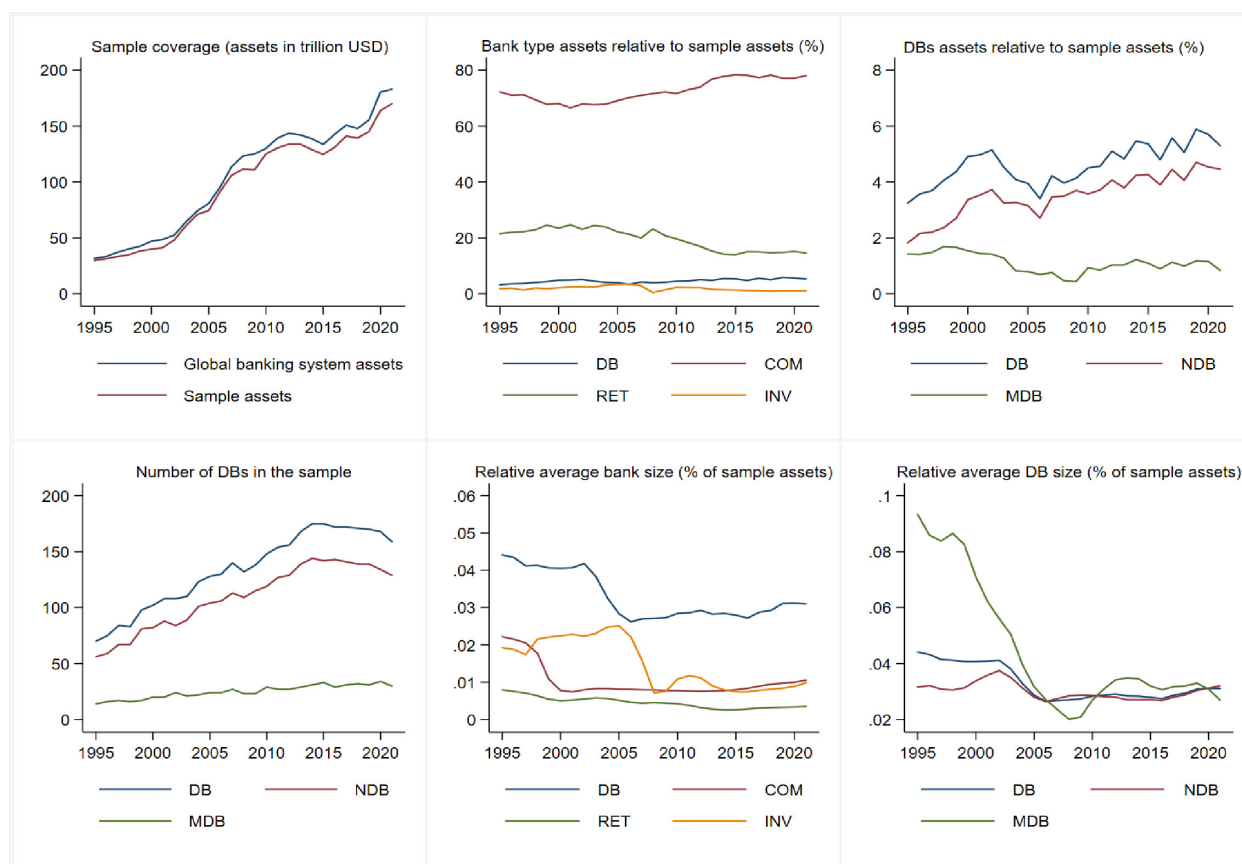


Fig. 1. Sample composition and data coverage. Note. DB = all development banks; NDB = national development banks; MDB = multilateral development banks; COM = commercial banks; RET = retail and consumer banks; INV = investment banks.

3 Analysis

3.1 Regional and country income group distribution of development banks

We gained further insights into geographic and socio-economic focus of development banks in our sample by looking at their distribution (number of institutions and total assets) across different regions and country income groups. For this purpose, each development bank was assigned to a region and income level group based on the country of its residence. The assignment was straightforward in the case of national development banks, which constituted most of our sample. However, it was less clear in the case of multilateral development banks because some of them operate globally, whereas others are mostly confined to continental or subcontinental regions. At the same time, all multilateral development banks operate in countries with substantial income

level differences, so it is difficult to assign them to any single country income group. For these reasons, our approach to the assignment of multilateral development banks was as follows. Multilateral development banks with a global scope were not included in the regional and country income group statistics because it was difficult to allocate their assets to specific regions or country income groups.³ Nevertheless, they were accounted for in the overall global statistics. Secondly, banks that primarily concentrate their operations within a specific region, such as the AfDB in Sub-Saharan Africa and the EIB in Europe, were included in the regional statistics⁴. We did not include those banks in country income group statistics—AfDB supports development efforts in both low-income and lower-middle-income countries, while EIB operations are similarly not confined to a single income group of countries. Country income-level groups and regional operational scopes of multilateral development banks were based on data from Xu et al. (2021), manually

³ Three such institutions were not included—International Fund for Agricultural Development (IFAD), International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC).

⁴ The New Development Bank (NDB) with a primary focus on BRICS countries was not geographically attributed to a specific region.

Table 1. Regional and country income group distribution of development banks.

	Number of obs.		Number of banks		DB sector assets relative to banking system assets	Average DB asset size		Difference in total assets to other bank types	
	(1) N	(2) %	(3) N	(4) %	(5) %	(6) mil USD	(7) %	(8) b	(9) p
Total	3617	1.12	233	1.01	4.75	34,746	0.035	22,237	.000
East Asia and Pacific	523	1.98	34	1.59	5.68	93,409	0.278	60,531	.082
Europe and Central Asia	1199	0.96	69	0.66	4.29	41,557	0.094	26,418	.010
Latin America and Caribbean	672	4.38	45	3.01	13.77	15,103	0.575	8,560	.045
Middle East and North Africa	305	5.20	20	4.44	3.33	4,974	0.291	−489	.770
North America	106	0.08	6	0.10	1.10	39,801	0.249	37,933	.122
South Asia	233	5.01	17	4.43	6.10	10,158	0.638	3,260	.316
Sub-Saharan Africa	511	7.01	38	5.19	6.87	2,535	0.344	717	.479
High Income	1238	0.46	70	0.42	2.63	43,126	0.057	36,437	.000
Upper Middle Income	1040	3.17	71	2.03	8.63	40,481	0.228	22,318	.191
Lower Middle Income	575	3.76	45	2.98	4.87	5,464	0.217	4,447	.057
Low Income	93	3.57	8	2.53	3.49	496	0.702	331	.389

Note. Column (2) shows the percentage of observations pertaining to development banks (DBs) relative to total number of observations in the sample. Column (4) shows the percentage of the number of DBs relative to the total number of banks in the sample. Column (7) shows the percentage of assets that the average development bank represents in the respective banking system. In column (8) a random-effects model was used to test the mean difference in total assets between development banks and other bank types, addressing the downward bias from clustering of standard errors in standard *t* tests in panel data setting. The coefficient estimate (b) for the dummy variable for development banks represents the mean difference of total assets between development banks and other bank types in millions of USD. Robust standard errors were used to obtain *p* values. Multilateral development banks operating worldwide are excluded from statistics on regional and income group distribution but not from statistics globally. Out of 233 development banks operating worldwide, 229 were classified into the regional distribution and 194 were classified into the income level group distribution.

verified using information from official websites of the respective institutions.

Although national development banks' activities are mostly focused on domestic operations, several national development banks in higher-income countries also conduct cross-border activities. Similarly, multilateral development banks, predominantly operating in higher-income countries, conduct activities in lower-income countries. The Fitch Connect and Xu et al.'s (2021) databases do not include detailed information about the regional and income-level group allocations of individual development banks' lending portfolios, which would allow us to paint a more granular picture of the regional and developmental focus of development banks. Our analysis therefore reflects singular regional and income-level group assignment of development banks as institutions, which may differ from the regional and income-level group allocation of their assets. To some extent, we attempted to mitigate this by excluding banks operating across multiple income-level groups (in particular, multilateral development banks with a global scope); however, we recognize that these effects persist in the data.

Our results are presented in Table 1. Approximately one third of development banks are located in Europe and Central Asia, yet these banks represent a relatively modest 4.3% of the region's banking system assets. The average development bank in this region represents less than 0.1% of regional banking system

assets, which is the smallest proportion among all regions. Nevertheless, a mean difference test revealed that, on average, development banks in this region are significantly larger than other bank types. In fact, the average development bank is more than four times larger.

The development banking sector holds the largest proportion of total banking system assets in Latin America and the Caribbean (13.2% of the region's banking system assets). In terms of absolute size, the average development bank in this region is significantly smaller compared to their counterparts in East Asia and Pacific (approximately six times smaller), Europe and Central Asia (approximately three times smaller), or North America (approximately three times smaller). However, in terms of relative importance of individual institutions within the region's banking system, the average development bank in the region represents almost 0.6% of the total banking system assets. Development banks in this region exhibit larger asset size on average compared to other bank types, with a statistically significant difference at the 5% level.

The development banking sector in North America accounts for the smallest proportion of the regional banking system assets at only 1.1% of the region's total. Only 6 development banks from our sample (not accounting for MDBs operating worldwide) are located in and focus their operations on this region.

Table 2. Distribution of total assets of development banking sector by mandates.

	Broad %	HOUS %	AGRI %	EXIM %	INFRA %	INT %	LGOV %	SME %
Total	74.48	4.41	5.51	6.86	0.89	2.20	1.76	3.90
East Asia and Pacific	78.24	3.19	6.88	10.29	0.29	0.00	0.01	1.11
Europe and Central Asia	80.54	0.00	4.71	3.32	0.00	2.56	3.26	5.61
Latin America and Caribbean	73.65	6.22	1.06	4.60	0.44	0.42	5.50	8.11
Middle East and North Africa	62.25	14.44	0.00	15.20	0.00	0.00	0.57	7.54
North America	0.75	69.29	0.00	22.21	0.00	0.00	0.00	7.74
South Asia	0.48	6.90	35.29	10.07	36.83	0.00	0.00	10.44
Sub-Saharan Africa	83.40	0.21	6.37	0.00	3.75	4.79	0.00	1.48
High Income	72.17	7.14	4.40	6.27	0.00	0.65	2.96	6.41
Upper Middle Income	73.30	3.61	8.40	10.53	0.11	0.00	1.44	2.61
Lower Middle Income	13.25	5.22	26.69	16.02	27.81	0.00	0.28	10.73
Low Income	77.55	0.00	22.45	0.00	0.00	0.00	0.00	0.00

Note. Broad = broad mandate; HOUS = social housing; AGRI = agriculture and rural development; EXIM = export and import, foreign trade; INFRA = infrastructure; INT = international financing of private sector development; LGOV = local government; SME = small and medium enterprises. Multilateral development banks operating worldwide are excluded from statistics on regional and income group distribution but not from statistics globally.

The global distribution of development banks based on country income levels (data for country income levels comes from the WDI database) reveals that the majority of development banks (141 out of 233 total and 194 of those that can be attributed to specific country income groups) are situated in high-income and upper-middle-income countries, consistent with the findings of Xu et al. (2021). Conversely, a relatively small number of banks and observations originate from low-income countries. Furthermore, the development banking sector as a whole represents a substantial 8.63% of the upper-middle-income countries' banking system assets, which is nearly twice the proportion observed in the lower-middle-income countries and more than double compared to low-income countries. Contrary to what one might expect, these results suggest that development banking is a more prominent component of the banking system in wealthier nations. This is in line with the critique presented by Kharas et al. (2014) regarding the "overfinancing" of more developed and the "underfinancing" of less developed countries. However, it is important to note that the relative size of the average development bank (as a share of banking system assets within income level groups) is higher in low-income countries than in upper-middle or upper-income countries.

In terms of the absolute amount of total assets, the average development bank size increases across income level groups, from low to high income. Specifically, the average development bank in high-income countries is almost 90 times larger than its counterpart in low-income countries⁵. This pattern reveals the re-

stricted scale of operation due to limited resources for national development banks operating in economies with lower levels of income, which underscores the importance of MDBs (both regional and those with a global scope) supporting development efforts in less developed countries.

Interestingly, the mean difference test indicates no statistically significant disparities between the average size of development banks and other bank types in either low-income, lower-middle-income or upper-middle-income countries (the difference is close to being significant in the lower-middle-income group). However, in high-income countries, development banks are on average significantly larger compared to other bank types. The average development bank in high-income countries is approximately six times larger relative to other banks.

3.2 Distribution of development banks across mandates

Distinct mandates are a defining characteristic of development banking, warranting our further attention. Mandates can either be broad or specific (in the sense of targeting individual sectors). Table 2 provides additional insights into the distribution of development banking sector assets across different mandates within regional and country income groups during the sample period.

Globally, three quarters of the development banking sector assets are held by banks with broad mandates focusing on general socio-economic development. Asset concentration in broad mandates is observed in most regions, with the exception

⁵ While development banks primarily operating in developed countries tend to be larger than those in developing countries, it is crucial to recognize that the former can also function with the aim of supporting developing nations. Despite the exclusion of globally operating MDBs from this analysis, residual spillover effects persist in the data, as elaborated in the initial two paragraphs of Section 3.1. Unfortunately, our dataset constrains the examination of such effects.

Table 3. Distribution of development banks by ownership level and geographic scope.

	National development banks				Multilateral development banks		
	Total	Subnational focus	International focus	National focus	Total	Regional MDB	Global MDB
Banks (N)	194	25	42	127	39	34	5
Assets (%)	79.19	5.79	49.63	23.77	20.81	15.67	5.14

Note. The row “Assets (%)” represents the proportion of global development banking assets covered by banks corresponding to specific operational scopes. Columns “Total” represent the asset coverage and number of banks with respect to their level of ownership.

of North America and South Asia. North America stands out with a majority of assets concentrated in banks that primarily focus on social housing and international trade promotion (export–import banks). The non-standard asset distribution in this region is also attributable to a small number of development banks operating in this region (only 6 in our sample). South Asia is another region that exhibits a distinct asset concentration pattern, with the majority of assets held by banks with narrow mandates focusing on agriculture, rural development, and infrastructure, particularly in the electrification and power sectors.

Looking at the distribution pattern of development banking assets across mandates within income level groups, a distinct difference can be observed between high-income and upper-middle-income as well as low-income countries on the one hand, where approximately three quarters of assets are associated with broad mandates, and lower-middle-income countries, where the asset share in broad mandates is much lower (13.25 percent). In low-income countries, national development banks with broad mandates such as the Development Bank of Ethiopia, Development Bank of Rwanda, and Uganda Development Bank represent a substantial proportion of development banking assets in that income group. However, those banks are relatively small in terms of asset size, which leaves their financial capacity to influence development outcomes comparatively limited.

3.3 Distribution of development banks according to ownership levels and geographic scope of operations

Delving into the nuances of development banks’ ownership levels and operational focus, Table 3 provides an overview of the distribution of development banks concerning ownership level and operational focus. In terms of ownership level, we distinguish between national and multilateral development banks. It is noteworthy that the majority of development banking assets, amounting to 79.19%, is concentrated in nationally owned development banks, with the remaining 20.81% represented by MDBs.

Data further reveals that approximately half of global development banking assets are attributed to nationally owned development banks engaged

in international operations. Illustrative examples of such institutions include the KfW, the Development Bank of Japan, and several trade-promoting export–import-oriented development banks. In contrast, subnationally focused development banks constitute a relatively modest 5.79% of the total assets in the global development banking sector. Notable instances of such banks include the German NRW Bank, which specifically operates within the German state of North Rhine–Westphalia (Nordrhein-Westfalen), and the Brazilian Banco do Nordeste do Brasil (BNB), which primarily concentrates its activities within nine states of the Northeast region of Brazil.

3.4 Global and regional concentration of development banking assets

The field of development banking, as a distinct sector within the banking industry, exhibits a notable degree of concentration, with certain banks having significant influence, especially at the regional level. To assess the extent of market concentration in the development banking sector, we computed two key concentration ratios: the 3-bank asset concentration ratio (CR₃) and the 5-bank asset concentration ratio (CR₅) within regional country groups. It is important to understand that by defining ratios in such a manner, CR₃ and CR₅ represent only the concentration of assets within the regional development banking sector and are thus not representative of the banking system as a whole. Additionally, to provide a deeper understanding of the significance of individual institutions, we graphically ranked the ten largest development banks within each region based on their market shares, determined by their total assets.

Fig. 2a and Fig. 2b present global and regional market shares of the ten largest development banks based on total assets. The asset proportions were calculated from average annual assets of individual development banks across the sample period from 1995 to 2021. We used these shares to calculate the CR₃ and CR₅ concentration ratios.

The upper left panel of Fig. 2a depicts the largest development banks globally. By far the largest in terms of total assets is the China Development Bank, which covers 17.1% of global development banking

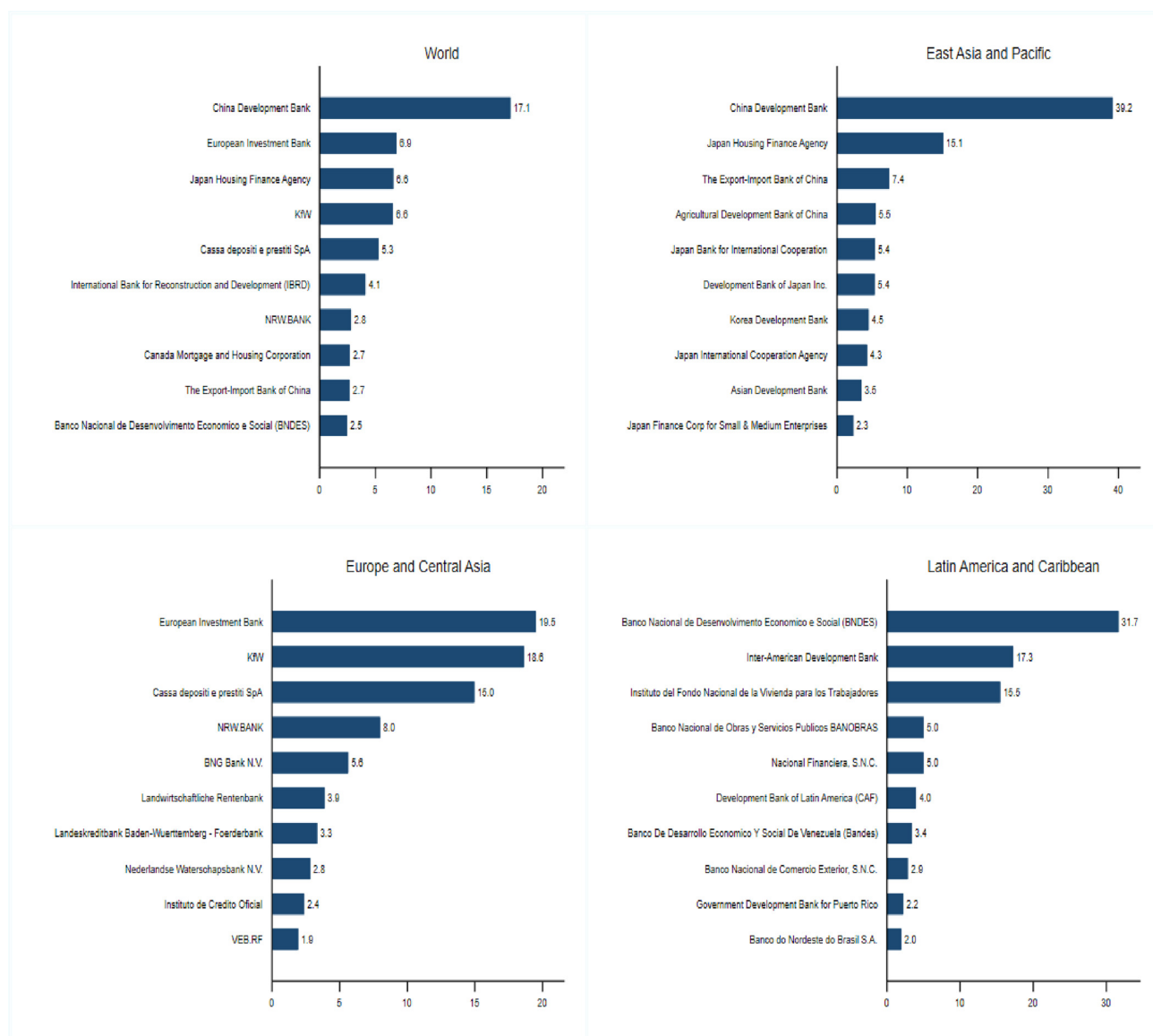


Fig. 2a. Development bank asset concentration globally and by region (% of region's development banking assets).

assets. It holds nearly as much assets as the second (European Investment Bank—6.9%), third (Japan Housing Finance Agency—6.6%), and fourth (KfW—6.6%) largest banks combined. In the remainder of this section, we delve into the significance of the largest banks and their operations across macro regions.

Notably, the development banking sector in Europe and Central Asia exhibits the lowest level of asset concentration, with a CR₃ ratio of 53.1%. The three systemically important banks in this region are the EIB (second largest development bank in the world), German KfW (fourth largest in the world), and Italian Cassa Depositi e Prestiti (CDP S.p.A), which is the fifth largest development bank worldwide. These

institutions, along with the French Caisse des Dépôts, are the founding members of the Long-Term Investors Club (LTIC). The primary objective of the LTIC is to advance collaboration among leading development financing institutions worldwide and foster development in both emerging and developed countries by providing sustainable long-term and preventing speculative short-term financing. The relatively modest CR₅ ratio of 66.7% in the region in comparison with other regions further indicates a diverse and dispersed development banking sector. However, it is noteworthy that four out of the ten largest development banks within the region operate primarily in Germany with either national or subnational operational focus.

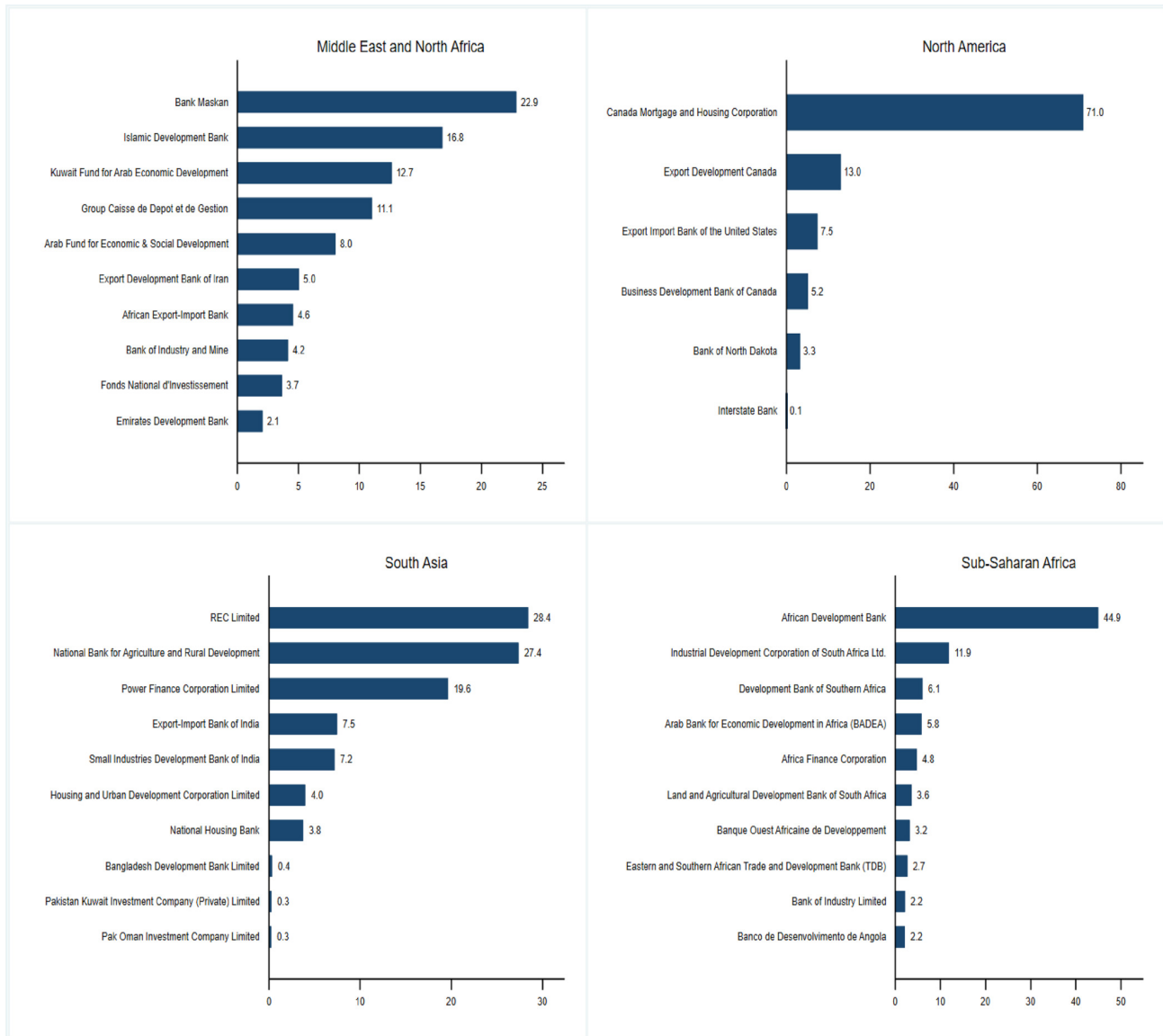


Fig. 2b. Development bank asset concentration by region (% of region's development banking assets).

Similarly, the Middle East and North Africa region experiences medium development banking asset concentration based on CR₃ and CR₅ ratios, which amount to 59.6% and 78.3%, respectively. In this region, Bank Maskan (Housing Bank) holds the position of the largest development bank and the sole provider of residential mortgages in Iran. However, it is worth noting that this is not solely due to a market gap but also due to limitations in offering mortgage services imposed on commercial banks (Gholipour et al., 2020). The second largest development bank in the region is the Islamic Development Bank (IsDB), which operates as an MDB with a focus on Islamic finance. With ownership shared among 57 member countries, the IsDB carries a broad mandate encompassing

general socio-economic development objectives. The third largest in the region is the Kuwait Fund for Arab Economic Development (KFAED). Turki (2014) stresses the significance of KFAED's activities in fostering not only Arab economic development but also Arab relations with non-Arab countries. These three banks can be considered systemically important development banks within the region, with roles in promoting economic development and regional cooperation.

In the Latin America and Caribbean region, the 3- and 5-bank asset concentration ratios are also within the middle range (at 64.5% and 74.5%, respectively). With respect to individual banks, the Brazilian Development Bank (BNDES) holds a substantial share

of almost 32% in the region's development banking sector. In Brazil, the systemic importance of BNDES is comparable to the combined significance of the Instituto del Fondo Nacional de la Vivienda para los Trabajadores (INFONAVIT), Banco Nacional de Obras y Servicios Públicos (BANOBRA), and Nacional Financiera (Nafin) in Mexico. INFONAVIT serves as the largest lender for social housing projects in Latin America; BANOBRA focuses on financing local governments and providing project finance, while Nafin supports small and medium-sized enterprises.

As the second most systemically important development bank in the region, the multilateral Inter-American Development Bank (IADB) covers the entire region and operates with a broader mandate of promoting socio-economic development. The IADB holds 17.3% of the region's development banking assets. The region's substantial share of development banking assets in the broader banking system assets and diversity of mandates coupled with the fact that the average development bank in this region is larger than other bank types indicate the significant importance and diversity of development banking in this region.

The East Asia and Pacific region is also characterized by a high level of concentration of development banking assets in the largest development institution, namely the China Development Bank (CDB). As the largest development bank in the world, CDB covers nearly 40% of the region's development banking sector assets, which is approximately equivalent to the combined assets of the next five banks. CDB provides financial support for infrastructure projects, industrial development, and helps implement government policies. The second Chinese policy bank, the Agricultural Development Bank of China (ADBC), contributes to the modernization, efficiency, and sustainability of China's agricultural sector through the provision of loans and expertise, while the third policy bank, the Export-Import Bank of China, promotes foreign trade and investment. These three Chinese policy banks account for more than 50% of the region's development banking sector assets.

It is worth noting that Chinese development finance extends beyond development or policy banks. In that respect, [Chen \(2020\)](#) notes that although they cannot be considered development banks, China's major commercial banks, such as the Industrial and Commercial Bank of China, the China Construction Bank, and the Bank of China, also play a significant role in providing development finance. [Chin and Gallagher \(2019\)](#) further recognize the role of these commercial banks in cofinancing projects with the three policy banks.

Covering the entire Asia-Pacific region, the multilateral Asian Development Bank (ADB) offers its member countries a range of financial instruments, including loans, grants, technical assistance, and capacity-building support for various development projects. The ADB operates with a broad mandate and engages in cofinancing arrangements with other development institutions and the private sector, which helps mobilize additional capital and mitigate project risks.

Primarily financing development in Sub-Saharan Africa, the African Development Bank (AfDB) covers almost 45% of region's development banking sector, which is more than the next nine banks combined. It is important to note that Sub-Saharan Africa faces a limited presence of development banking institutions originating from within the region itself.

In the South Asian region, the five most important development banks in terms of asset coverage operate in India. REC Limited specializes in financing rural electrification projects in India. The Power Finance Corporation also provides financial support to companies in the power sector, including thermal power plants, hydroelectric projects, renewable energy installations, transmission networks, and other related infrastructure. Both institutions offer loans, financial assistance, and advisory services to promote the development of India's power sector, with a particular emphasis on sustainable and inclusive electrification. Another notable bank in this region is the National Bank for Agriculture and Rural Development (NABARD) in India. NABARD focuses on providing financial support and resources for agriculture and rural development initiatives. Collectively, these three development financing institutions account for 75.4% of the total development banking assets in the region. The Export-Import Bank of India and the Small Industries Development Bank of India also contribute significantly, with the five banks together representing over 90% of the region's development banking assets. High concentration of assets in these five Indian development banks indicates a limited presence of development banking in other South Asian countries, underscoring the need for further development and diversification in the region.

3.5 Composite global and national systemic financial importance of development banks

The analysis conducted thus far revealed significant disparities in the asset size of development banks, both in absolute terms and as a share of global and regional banking and development banking systems. However, the financial importance of development banks cannot be adequately captured by a single

Table 4. DBFI index creation—PCA results.

	Comp	Eigenvalue λ	Explained %	Variables	Loadings on Comp1	Unexplained %	Observations
Development banks (DFBI)	Comp1	2.06	0.69	Total assets	0.49	0.51	3549
	Comp2	0.68	0.23	Regional importance— banking system	0.61	0.23	
	Comp3	0.27	0.08	Regional importance— DB sector	0.62	0.20	
National Development Banks (extended DFBI)	Comp1	2.27	0.57	Total assets	0.47	0.49	2371
	Comp2	0.86	0.21	Regional importance— banking system	0.58	0.23	
	Comp3	0.61	0.15	Regional importance— DB sector	0.58	0.24	
	Comp4	0.25	0.06	Country importance— banking system	0.33	0.76	

Note. KMO measure of sampling adequacy is higher than .5 for all groups.

metric, but rather through consideration of multiple metrics concurrently. To achieve this objective, we created a composite Development Bank Financial Importance (DBFI) index by combining three metrics related to the absolute and relative size of development banks using principal component analysis (PCA) for this purpose. The values of this index are derived from scores of the first principal component, calculated through a linear combination of the original standardized three variables. The weights assigned to each variable in this combination are determined by the loadings on the first principal component. The key aim is to create a single linear combination of the original variables while minimizing any loss of information.

PCA is a frequently employed method when researchers are confronted with data reduction challenges, pioneered by Hotelling (1933).⁶ Jan et al. (2019) utilize bank-specific KPIs such as ROAA, ROAE, and Tobin's Q as measures of financial performance from the perspectives of management, shareholders, and markets, respectively. To capture financial performance comprehensively, they derived PCA scores from ROAA, ROAE, and Tobin's Q, and created the Islamic Financial Index. Likewise, Shi and Yu (2021) applied PCA to construct an index that measures Chinese banks' risk management, drawing from bank-specific KPIs. This allowed the authors to avoid the arbitrary assignment of weights to individual indicators.

Our first metric to enter the PCA analysis was absolute development bank size, measured by total assets, signaling the global size ranking of each development bank. The second one was the share of a

development bank's total assets in the total assets of the regional development banking sector, conveying the bank's importance among other regional development institutions. The last metric was the share of a development bank's total assets in the total assets of the regional banking system, measuring the bank's overall significance in relation to all banks operating in that region. Multilateral development banks that could not be accurately or predominantly attributed to a specific region (i.e. those with a global scope) were excluded from this analysis. The scores obtained from the first principal component serve as a proxy index of the weighted average global and regional financial importance of development banks (DBFI index).

Furthermore, we also considered an extended index of the global, regional, and national financial importance of national development banks (extended DBFI index). For this purpose, we incorporated an additional metric of relative bank size into the PCA, measuring the asset share of a particular development bank within its country's banking system. This metric adds a perspective on the overall national significance of a particular development bank. The PCA is repeated on the extended set of four variables. Notably, all multilateral development banks are excluded from this particular analysis as their scope of operations cannot be attributed to a single country.

Table 4 displays the PCA results. The left side of the table, containing columns Comp, Eigenvalue, and Explained, shows analytical results for all components derived from the original variables, separately for the DFBI and the extended DFBI indices. The Eigenvalue column denotes the eigenvalues of individual components, which are relevant in choosing the number of

⁶ See also Afifi et al. (2012). This method is widely applied across numerous disciplines—Lindman and Sellin (2011) criticize the methodology and arbitrary weighting employed in the construction of the Human Development Index (HDI), which incorporates life expectancy, education, and GNI per capita. They utilize PCA scores to create an alternative composite welfare metric that better captures the complexity of environmental issues. PCA scores are also employed by Bergenfeld et al. (2021) to construct a gender equity index for secondary schools, and by Vyas and Kumaranayake (2006) to develop a composite socio-economic household status index using household-specific data. Similarly, Lamichhane et al. (2021) condense 17 indicators of sustainable development goals (SDGs) for OECD countries into a composite sustainability index score, providing a robust alternative to standard United Nations benchmarking tools.

components to keep. Kaiser's rule suggests keeping only principal components with eigenvalues greater than one (Guttman, 1954; Kaiser, 1960). The Explained column represents the proportion of variance in original variables explained by each principal component. Total variance explained by all components sums to the total variance in the original variables.

The right side of Table 4, containing columns Variables, Loadings on Comp1, Unexplained, and Observations, only shows the analytical results for the first principal component, which is used to construct the DFBI and extended DFBI indices. The column Loadings on Comp1 is particularly relevant. The loadings are essentially weights used to construct the first principal component scores as a weighted linear combination of standardized original variables. The Unexplained column indicates the proportion of variation in the original variable not accounted for by the first principal component.

In the first sample, comprising all development banks except multilateral development banks with a global focus, all three bank size metrics of financial importance show positive and moderate to strong loadings on the first principal component (Comp1). The scores attributed to this component serve as the DBFI index. The rationale for exclusively utilizing scores from the first principal component is supported by two distinct perspectives within the literature: firstly, adhering to Kaiser's rule, which advocates retaining only those principal components with eigenvalues surpassing one (Guttman, 1954; Kaiser, 1960); and secondly, aligning with the proportion of variation captured by Comp1, which is comparable to the proportion explicated by the financial performance index formulated by Jan et al. (2019).

In the second sample, which includes only national development banks, the first three metrics of financial importance, which capture global and regional importance, exhibit positive and moderate loadings on the first component, whereas the last metric, which measures national importance, exhibits a weaker positive correlation with the first component. The scores of the first principal component (Comp1), which has an eigenvalue above one, serve as the extended DBFI index for national development banks, considering their global, regional, and (to a lesser extent) national financial importance within the banking system. It is important to acknowledge that these indicators do not provide a comprehensive measure of a development bank's overall significance, as they do not

account for resource allocation and the impact on development outcomes. Instead, these indicators serve as a strictly financial metric of importance, highlighting development banks that possess the greatest financial capacity to support and facilitate development initiatives.

Fig. 3 presents the results of the weighted financial importance of development banks based on the average DBFI index during the sample period. The upper panel shows the results based on the DFBI index for all development banks, whereas the lower panel shows the results based on the extended DFBI index for national development banks. As can be seen from the upper panel, CDB emerges as the most financially significant development bank overall, representing over 17% of global development banking assets and nearly 40% of the region's development banking assets in East Asia and the Pacific. BNDES holds the second position, despite being ranked 10th in terms of average total assets (please see the upper-left panel in Fig. 2a). Its significance within the development banking sector of Latin America and the Caribbean, as well as its size relative to the regional banking system, solidifies its financial importance.

Similarly, AfDB, although ranking only as the 31st largest development bank in the sample, demonstrates significant regional financial importance within Sub-Saharan Africa's development banking sector and the region's broader banking system, which positions it third globally. It is important to note that the exclusion of multilateral development banks operating worldwide prevents the inclusion of the IBRD among the rankings in Fig. 3. This exclusion arises from the challenge of accurately assigning their assets to a specific region and, consequently, the inability to compute their regional importance⁷. IBRD is the sixth largest development bank and one of the most significant ones globally. Interestingly, two of the globally largest multilateral and national development banks (the EIB and the KfW), while being important, only rank 8th and 9th using our composite index of financial importance.

Considering our extended composite index of financial importance on the subset of national development banks, BNDES and CDB retain their positions at the top (lower panel), further emphasizing their financial significance. The Canada Mortgage and Housing Corporation (CMHC)⁸ and the Japan Housing Finance Agency (JHC) follow as the third and fourth most financially important national

⁷ For a detailed explanation, please refer to the first paragraph of Section 3.1. Three such institutions are not included—International Fund for Agricultural Development (IFAD), International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC).

⁸ Originally established in 1946 with the purpose of assisting war veterans in acquiring housing, CMHC has since expanded its mandate to encompass a broader scope of social housing initiatives.

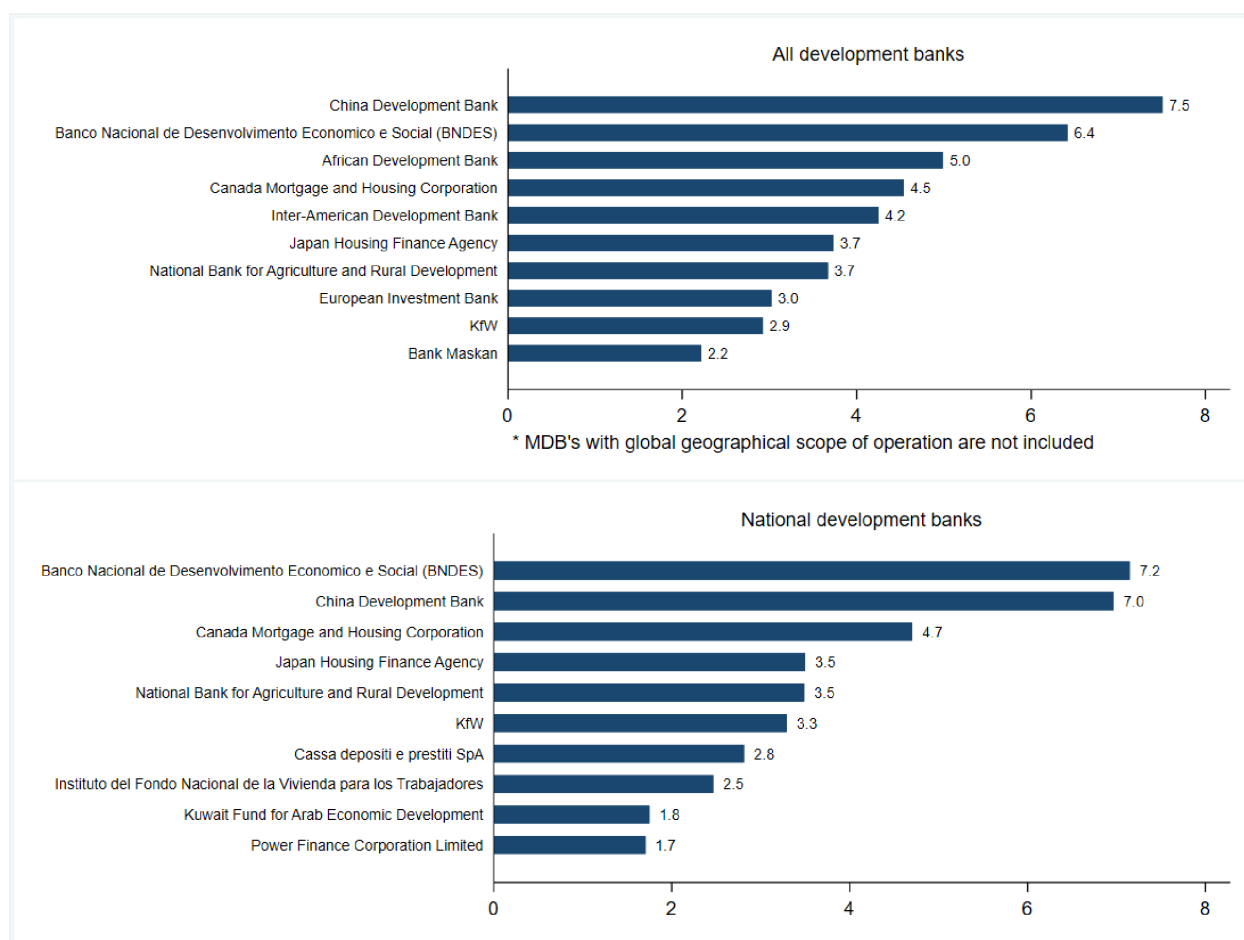


Fig. 3. Composite financial importance of development banks. Note. Horizontal axis in the upper panel represents the DBFI index. Horizontal axis in the lower panel represents the extended DBFI index.

development banks, serving as the primary lenders for social housing projects and offering loan guarantees and housing market research.

Among the top 10 financially important development banks globally and regionally, six banks have broad mandates, while three have specific mandates related to social housing. On the national level, five of the top 10 financially important banks have broad mandates, while three focus on social housing. These findings demonstrate the notable financial representation of social housing mandates within the development banking sector.

4 Concluding remarks

In this paper, we conducted an analysis of the financial importance of global banking sectors. Recognizing existing studies on the lending activities and financial performance of individual development banks, as well as global surveys focusing on development banks, we identified a knowledge gap regarding

a multiannual global analysis of the financial importance of development banks. To address this gap, we compiled a global banking dataset comprising 22,949 individual banks, including 233 categorized as development banks, spanning the period from 1995 to 2021. This paper presents the first comparative study not only of individual development banks but also of entire development banking sectors. Our research aims to address the following questions: How do development banking sectors differ in their financial importance across regions, income groups, and mandates? How can we measure and compare the financial importance of development banks at the global and national level?

Regarding our first research question, the analysis reveals significant diversity in development banking sectors across regions and income groups. The majority of development banks are concentrated in the Europe and Central Asia, East Asia and the Pacific, and Latin America and the Caribbean regions. Notably, development banks in Europe and Central

Asia, as well as Latin America and the Caribbean, exhibit substantially larger asset sizes compared to conventional banks. In the latter region, the development banking sector constitutes nearly 14% of the total banking system assets, which underscores its considerable significance. In terms of income group distribution, the majority of development banks, both in terms of numbers and assets, operate in high-income or upper-middle-income countries, indicating a notable underrepresentation in lower-middle- and low-income countries. Regarding mandates, our findings indicate that approximately three-quarters of global development banking assets originate from institutions with broad mandates, rather than narrow ones.

Addressing our second research question, we utilized PCA to construct the novel Development Bank Financial Importance (DBFI) index. The data included both absolute and relative metrics of development bank size, considering the representation of a bank's assets in national and regional banking and development banking sectors. In our multidimensional index of financial importance, the Chinese CDB and Brazilian BNDES emerge as the two financially most important national development banks. Among MDBs (excluding those with a global scope), African AfDB ranks the highest due to its regional significance, despite being substantially smaller than many of its global peers. In the global and regional context, six out of the top 10 financially significant development banks have broad mandates, with three specifically dedicated to social housing. At the national level, five of the top 10 financially important banks operate with broad mandates, while three emphasize social housing. These results underscore the considerable financial influence of social housing mandates within the development banking sectors.

Our results have important policy implications. The uncovered underrepresentation of development banks in lower income economies indicates substantial untapped development potential. This underscores a growing divide between countries which can afford sustainable development and those that cannot. In the light of rapid ongoing digital and green technological transformations, this divide could have adverse and lasting effects on the long-term prosperity of lower-income economies and the fulfillment of Sustainable Development Goals. One possible solution to level the playing field is to further concentrate the resources of MDBs on sustainable development of lower-income economies. Another possibility is to consider the cross-border activities of national development banks, as our dataset indicates that almost half of the global development banking sector's assets belong to national development banks with an

international focus. However, the downside of using national development banks for the development of lower-income economies is that their activities are primarily aligned with national (as opposed to international) policy considerations, raising fears of neocolonialism.

While this paper is informative about the global development banking landscape, it does not seek to answer all questions. An important limitation of our dataset is that it does not allow us to disentangle cross-border assets of national and multilateral development banks by region and income level group. Such information would be welcome for a more granular assessment of their geographic and developmental impacts. Our analysis is also limited to studying the structural characteristics of the global development banking sector without looking at the relationships between these characteristics and various parameters of development banks' performance. Based on our understanding of contemporary development banking, at least three such parameters might be of interest. The first two parameters are developmental and countercyclical performance, with the former being a classical defining feature of development banks' mandates and the latter gaining prominence recently in the light of several crises. The third parameter is development banks' financial performance, which should be considered as a necessary precondition and not as a primary objective for fulfilling development bank mandates. Both the construction of more granular datasets and the study of relationships between development bank characteristics and their performance offer new promising avenues for research.

Funding statement

This work was supported by the research programme P5-0161 and the research project V5-2261 funded by the Slovenian Research and Innovation Agency.

References

- Afifi, A. A., May, S., & Clark, V. A. (2012). *Practical multivariate analysis* (5th ed.). CRC Press.
- Barth, M. E., Landsman, W. R., Lang, M., & Williams, C. (2012). Are IFRS-based and US GAAP-based accounting amounts comparable? *Journal of Accounting and Economics*, 54(1), 68–93.
- Bergenfeld, I., Jackson, E. C., & Yount, K. M. (2021). Creation of the gender-equitable school index for secondary schools using principal components analysis. *International Health*, 13(2), 205–207.
- Beuren, I. M., Hein, N., & Carlos Klann, R. (2008). Impact of the IFRS and US-GAAP on economic-financial indicators. *Managerial Auditing Journal*, 23(7), 632–649.
- Brei, M., & Schclarek Curutchet, A. (2017). *The countercyclical behavior of national development banks in Latin America and the Caribbean*.

- Repositorio digital universitario. Universidad Nacional de Córdoba.
- Buiter, W. H., & Fries, S. M. (2002). *What should the multilateral development banks do?* (Working paper No. 74). European Bank for Reconstruction and Development.
- Chandrasekhar, C. P. (2016). National development banks in a comparative perspective. In A. Calcagno, S. Dullien, A. Márquez-Velázquez, N. Maystre, & J. Priewe (Eds.), *Rethinking development strategies after the financial crisis—Vol II: Country studies and international comparisons* (pp. 21–30). United Nations Conference on Trade and Development; Hochschule für Technik und Wirtschaft Berlin.
- Chen, M. (2020). Beyond donation: China's policy banks and the reshaping of development finance. *Studies in Comparative International Development*, 55(4), 436–459.
- Chern, C. (2019). *Chern on Dispute Boards* (4th ed.). Routledge.
- Chin, G. T., & Gallagher, K. P. (2019). Coordinated credit spaces: The globalization of Chinese development finance. *Development and Change*, 50(1), 245–274.
- Culpeper, R. (2012). Financial sector policy and development in the wake of the global crisis: The role of national development banks. *Third World Quarterly*, 33(3), 383–403.
- De Aghion, B. A. (1999). Development banking. *Journal of Development Economics*, 58(1), 83–100.
- Duprey, T., & Lé, M. (2016). *Bankscope dataset: Getting started*. SSRN.
- Engen, L., & Prizzon, A. (2018). *A guide to multilateral development banks*. Overseas Development Institute.
- Faure, R., Prizzon, A., & Rogerson, A. (2015). *Multilateral development banks*. Overseas Development Institute.
- Feil, F., & Feijó, C. (2021). Development banks as an arm of economic policy—Promoting sustainable structural change. *International Journal of Political Economy*, 50(1), 44–59.
- Fernández-Arias, E., Hausmann, R., & Panizza, U. (2020). Smart development banks. *Journal of Industry, Competition and Trade*, 20(2), 395–420.
- Financial Stability Board. (2022). *Global monitoring report on non-bank financial intermediation*. <https://www.fsb.org/wp-content/uploads/P201222.pdf>
- Frigerio, M., & Vandone, D. (2020). European development banks and the political cycle. *European Journal of Political Economy*, 62, Article 101852.
- Galindo, A. J., & Panizza, U. (2018). The cyclicity of international public sector borrowing in developing countries: Does the lender matter? *World Development*, 112, 119–135.
- Geddes, A., Schmidt, T. S., & Steffen, B. (2018). The multiple roles of state investment banks in low-carbon energy finance: An analysis of Australia, the UK and Germany. *Energy Policy*, 115, 158–170.
- Gerschenkron, A. (1962). *Economic backwardness in historical perspective: A book of essays*. The Belknap Press of Harvard University Press.
- Gholipour, H. F., Oikarinen, E., & Tajaddini, R. (2020). Banks' lending to public and private sectors and house prices: Does bank ownership matter? *International Journal of Housing Markets and Analysis*, 13(2), 227–249.
- Gong, D., Xu, J., & Yan, J. (2023). National development banks and loan contract terms: Evidence from syndicated loans. *Journal of International Money and Finance*, 130, Article 102763.
- Griffith-Jones, S., & Ocampo, J. A. (Eds.). (2018). *The future of national development banks*. Oxford University Press.
- Gutierrez, E., Rudolph, H. P., Homa, T., & Beneit, E. B. (2011). *Development banks: Role and mechanisms to increase their efficiency* (Policy Research Working Paper 5729). World Bank.
- Guttman, L. (1954). Some necessary conditions for common-factor analysis. *Psychometrika*, 19(2), 149–161.
- Hotelling, H. (1933). Analysis of a complex of statistical variables into principal components. *Journal of Educational Psychology*, 24(6), 417–441.
- Jan, A., Marimuthu, M., bin Mohd, M. P., & Isa, M. (2019). The nexus of sustainability practices and financial performance: From the perspective of Islamic banking. *Journal of Cleaner Production*, 228, 703–717.
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20(1), 141–151.
- Kellerman, M. (2019). The proliferation of multilateral development banks. *The Review of International Organizations*, 14, 107–145.
- Kharas, H., Prizzon, A., & Rogerson, A. (2014). *Financing the post-2015 sustainable development goals*. Overseas Development Institute.
- Lamichhane, S., Eğilmez, G., Gedik, R., Bhutta, M. K. S., & Erenay, B. (2021). Benchmarking OECD countries' sustainable development performance: A goal-specific principal component analysis approach. *Journal of Cleaner Production*, 287, Article 125040.
- Lazzarini, S. G., & Musacchio, A. (2010). *Leviathan as a minority shareholder: A study of equity purchases by the Brazilian National Development Bank (BNDES), 1995–2003*. SSRN.
- Lindman, C., & Sellin, J. (2011). *Measuring human development: the use of principal component analysis in creating an environmental index* [Bachelor thesis, Uppsala University].
- Luna-Martínez, J., & Vicente, C. L. (2012). *Global survey of development banks* (Policy Research Working Paper 5969). World Bank.
- Mazzucato, M., & Penna, C. (2015). *The rise of mission-oriented state investment banks: The cases of Germany's KfW and Brazil's BNDES*. (SPRU Working Paper Series 2015–26). University of Sussex.
- Micco, A., Panizza, U., & Yanez, M. (2007). Bank ownership and performance. Does politics matter? *Journal of Banking & Finance*, 31(1), 219–241.
- Musacchio, A., Lazzarini, S. G., Makhoul, P., & Simmons, E. (2017). *The role and impact of development banks* [Working paper]. World Bank.
- Pissarides, F. (1999). Is lack of funds the main obstacle to growth? EBRD's experience with small- and medium-sized businesses in Central and Eastern Europe. *Journal of Business Venturing*, 14(5–6), 519–539.
- Prizzon, A., Humphrey, C., Kaul, I., Kodera, K., McKechnie, A., & Rogerson, A. (2017). *Six recommendations for reforming multilateral development banks: An essay series*. ETH Zurich.
- Rudolph, H. P. (2009). *State financial institutions: mandates, governance, and beyond* (Policy Research Working Paper 5141). World Bank.
- Scott, D. H. (2012). *Strengthening the governance and performance of state-owned financial institutions* (Policy Research Working Paper 4321). World Bank.
- Shi, X., & Yu, W. (2021). Analysis of Chinese commercial banks' risk management efficiency based on the PCA-DEA approach. *Mathematical Problems in Engineering*, 2021, Article 7306322.
- Turki, B. (2014). The Kuwait fund for Arab economic development and its activities in African countries, 1961–2010. *The Middle East Journal*, 68(3), 421–435.
- Vyas, S., & Kumaranayake, L. (2006). Constructing socio-economic status indices: How to use principal components analysis. *Health Policy and Planning*, 21(6), 459–468.
- Xu, J., Marodon, R., Ru, X., Ren, X., & Wu, X. (2021). What are public development banks and development financing institutions?—Qualification criteria, stylized facts and development trends. *China Economic Quarterly International*, 1(4), 271–294.
- Yeyati, E. L., Micco, A., & Panizza, U. (2004). *Should the government be in the banking business? The role of state-owned and development banks* (Working Paper #517). Inter-American Development Bank.
- Zhang, F. (2022). The policy coordinator role of national development banks in scaling climate finance: Evidence from the renewable energy sector. *Climate Policy*, 22(6), 754–769.