



Long-term finance provision: National development banks vs commercial banks



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ABSTRACT

Despite its practical significance in promoting long-term economic growth, long-term finance is often in short supply, especially in developing countries. Governments in both developed and developing countries have established national development banks (NDBs) to provide much-needed long-term loans. We have built the first database on NDBs worldwide to systematically examine whether NDBs lend longer than commercial banks in deciding the maturity of their loans. We find that long-term loans constitute a larger proportion of the total loan portfolio in NDBs than that in commercial banks in general and privately owned commercial banks in particular. This result is statistically significant after controlling for country- and bank-level factors. Our study contributes to the literature on loan maturity because we are the first to use a comprehensive panel data to systematically examine whether NDBs—an understudied but important financial intermediary—play a maturity-lengthening role in filling the financing gap.

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1. Introduction

Long-term finance plays a significant role in promoting long-term economic growth and financial stability (Aghion et al., 2005; Beck, 2012; Diamond, 1991). However, long-term finance is often in short supply. Such a deficit in the provision of long-term finance is particularly severe in developing countries because credit rationing is further exacerbated by underdeveloped financial systems, poor legal and institutional frameworks, and unstable political and macroeconomic environments (Demirgüç-Kunt & Maksimovic, 1999).

In the wake of the recent global financial crisis that erupted in 2008, reversing the prolonged decline in the supply of long-term funding tops the agenda of policy makers worldwide. G20 leaders have highlighted the importance of long-term financing in boosting infrastructure investment to foster long-term growth. The Organization for Economic Co-operation and Development has developed the “High-Level Principles on Long-Term Investment Financing by Institutional Investors” report, which G20 finance ministers and central bank governors have endorsed (OECD, 2013).

One key way for governments to overcome the scarcity of long-term finance is to establish development banks with the official mission of providing long-term capital to fill the market gaps. Worldwide, there are approximately 520 development financing institutions (DFIs)¹ at subnational, national, and multilateral levels with total assets of nearly 18.7 trillion USD. It is estimated that DFIs' annual contribution to global investment was \$2.2 trillion in 2019, accounting for about 10% of the world's investment (Xu et al., 2021a). Furthermore, the world is witnessing a renaissance of national development banks (NDBs) initiated by central governments to advance development goals. Both advanced and developing countries alike, such as the United States, the United Kingdom, India, Nigeria, and Ghana, have recently established or are planning to build new NDBs to provide long-term finance to meet economic, social, and environmental development challenges.

However, little systematic research has been conducted to examine whether NDBs have provided that much-needed long-term finance. Anecdotal evidence has suggested mixed findings.

On the one hand, some renowned NDBs seem to have provided long-term capital as expected. For example, the German NDB –

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¹ DFIs are an umbrella term that includes development banks, equity investment vehicles, and guarantee funds. Development banks are a major category of DFIs.

Kreditanstalt für Wiederaufbau (KfW) – was created in 1948 to finance the long-term reconstruction of Germany after World War II. In 2020, KfW's total assets were 546 billion euro (equivalent to 668 billion USD), accounting for 17% of the German GDP. The ratio of long-term loans to short-term loans is about 5:1.² Another example is the China Development Bank (CDB), which was established in 1994. CDB had total assets of more than 2.62 trillion USD in 2020, on par with the largest U.S. bank, JP Morgan, and accounting for nearly one-fifth of Chinese GDP.³ CDB has provided long-term loans to finance basic infrastructure and pillar industries in China and has become a key provider of long-term infrastructure financing in developing countries since 2005 (Chin and Gallagher, 2019).

On the other hand, the World Bank (2015) has noted that political capture and poor corporate governance practices undermine the success of NDBs in the provision of long-term finance. The World Bank further argues that good corporate governance of development banks is difficult to establish in weak country-level institutional environments. Hence, the World Bank maintains that governments should refrain from making direct efforts to build NDBs to fill the financing gaps in the provision of long-term finance. Instead, the World Bank recommends that governments need to focus on fundamental institutional reforms, including putting in place sound legal and contractual environments.

To fill the gap, we are the first to systematically examine whether NDBs on average lend longer than commercial banks. We distinguish NDBs from commercial banks by rigorously identifying NDBs worldwide. To build a credible list of NDBs, we must establish what NDBs are; we do so by proposing qualification criteria that distinguish NDBs from similar institutional arrangements. We then systematically apply these criteria to each member of DFIs and DFI-like associations as well as every institution in the DFI-like category, such as specialized financial institutions in the official classification of national financial systems country by country. This comprehensive list of NDBs enables us to systematically compare the loan maturity of NDBs with that of commercial banks worldwide.

In this paper, we econometrically examine whether the proportion of long-term loans in the total loan portfolio of NDBs is on average larger than that in commercial banks. Matching our list of NDBs with bank-level data from BankFocus, we can build a large international data set for 1,253 banks, of which 58 are NDBs, 112 are state-owned commercial banks (SCBs), 695 are privately owned domestic commercial banks (PCBs), and 388 are foreign commercial banks (FCBs) from 106 countries during the 2011–2018 period. We find NDBs lend longer than commercial banks in general and privately owned commercial banks in particular. After controlling for country- and bank-level factors, this result is statistically significant.

² ² The data on the total assets and loan maturity of KfW come from its annual reports of 2021 and 2020, respectively, and the GDP data of Germany comes from the World Development Indicators.

³ ³ The data on total assets of CDB come from their annual report of 2021, and the GDP data of China comes from the World Development Indicators.

⁴ ⁴ Researchers and practitioners have not reached a consensus on the common definition of NDBs, let alone completed systematic efforts to identify worldwide NDBs. Diamond (1957) narrowly defined DFIs as “an institution to promote and finance enterprises in the private sector” and listed fewer than 100 development banks that provide financial and intellectual support for private sectors in the Appendix. Bruck (1998) mentioned that there are over 550 DFIs worldwide, including 32 multilateral development banks and 520 national development banks, but he failed to provide a clear qualification criterion or a comprehensive list. Musacchio and Lazzarini (2014) relied on the membership list of DFI associations and identified 288 DFIs. But it is not rigorous to purely rely on the membership list of DFI associations to identify DFIs for two reasons: first, self-identity is a subjective judgment made by organizations themselves that may not be consistent over time or across institutions; second, not all DFIs choose to join international DFI associations.

A key contribution of this paper is to construct a novel comprehensive list of worldwide NDBs that enables us to thoroughly compare the loan maturity of NDBs worldwide with that of commercial banks. Despite their practical significance, NDBs are understudied, largely because of a lack of data.⁴ In the absence of a comprehensive list of NDBs, researchers have mainly proposed conceptual frameworks for the role of development banks (Griffith-Jones, et al., 2022); investigated the role of a single NDB in the credit market or industrial development, such as the Brazilian Development Bank (Doctor, 2015; Hochstetler, 2014; Lazzarini et al., 2015) and the CDB (Chin & Gallagher, 2019; Ru, 2018); and conducted comparative case studies (Gottschalk et al., 2022). Our pilot database on development banks worldwide has enabled us to conduct the first empirical study to systematically evaluate whether NDBs lend longer than commercial banks.

Our paper also contributes to the literature on the determinants of the maturity of bank loans by examining the role of NDBs, a unique but understudied bank type, in affecting loan maturity. Apart from country-level factors, such as legal institutions and macroeconomic factors (Bae & Goyal, 2009; Booth et al., 2001; Caprio & Demirgüç-Kunt, 1998; Fan et al., 2012; Qian & Strahan, 2007; Tasić & Valev, 2010), the existing literature has emphasized the role of bank types in determining banks' loan maturity with a special focus on bank ownership. Schclarek et al. (2019) present a theoretical model to study why national development banks (NDBs) may provide longer-term loans to firms than private commercial banks (PCBs). La Porta et al. (2002) stated that government ownership of banks may enable the government to collect savings and to direct them toward strategic long-term projects, but they did not test this hypothesis empirically. Tasić and Valev (2010) found that the share of majority state-owned banks' assets in total bank sector assets is negatively correlated with credit maturity in transition economies. However, they neither distinguished state-owned NDBs from SCBs nor tested this hypothesis on a global scale. In this paper, we econometrically examine whether NDBs, on average, lend longer than commercial banks. In particular, we distinguish NDBs from SCBs for the first time, and we find that SCBs are more likely to provide short-term loans than NDBs.

The rest of our paper proceeds as follows. In Section 2, we develop hypotheses for empirical testing. In Section 3, we introduce the new database on NDBs and construct a large and international sample for empirical testing. In Section 4, we present the descriptive statistics, econometric analysis, and robustness check. In Section 5, we conclude with key findings and policy implications.

2. Hypotheses development

Long-term finance is often in short supply in a laissez-faire decentralized banking system with only commercial banks. Commercial banks are often reluctant to provide long-term finance because they take household deposits as their main funding source and hence suffer from maturity mismatch, liquidity risks, and potential runs (Martin et al., 2014). Furthermore, coordination failures among profit-driven commercial banks result in a “maturity rat race,” in which all lenders shorten the maturity of contracts to protect their claims (Brunnermeier & Oehmke, 2013).

As a unique bank type, NDBs are specialized financial institutions initiated and steered by central governments to fill the financing gap. Compared with commercial banks, NDBs possess distinctive features that may enable them to provide long-term loans. Such distinctive features include development-oriented mandates, long-term liabilities, the higher collateral value of their bond issuances, and the acquisition and dissemination of expertise

in providing long-term loans to finance new industries. We will elaborate on these features below.

First, unlike profit-maximizing commercial banks, NDBs are mandated to proactively pursue public policy objectives. Because NDBs may be more willing to internalize certain positive externalities of longer-term loans to firms and take on risks that private commercial banks do not (Brei & Schclarek, 2015, 2018), they are willing to lend longer-term than private commercial banks, even if doing so entails higher risks.

Second, long-term funding on the liability side enables NDBs to provide long-term loans on the asset side. Because commercial banks rely predominantly on short-term bank deposits that may be withdrawn at any moment, commercial banks are prone to higher maturity mismatch and refinancing risks when providing longer-term loans. By contrast, NDBs usually do not take short-term household deposits as commercial banks do, or they may be forbidden from doing so. For example, KfW and Development Bank of Mongolia are prohibited from taking household deposits in their articles of agreement. Based on firsthand data of worldwide NDBs' funding sources, Xu et al. (2021b) discovered that NDBs often rely on government creditworthiness to issue long-term bonds in capital markets at a relatively low cost or rely on on-lending from multilateral development banks. Moreover, compared with commercial banks, NDBs rely more on recapitalizations and internal financing to finance their lending (Xu et al., 2021b). Therefore, NDBs can grant longer-term credits without incurring substantial maturity mismatch and refinancing risks (Griffith-Jones et al., 2018).

Third, if the bonds issued by NDBs to finance their bank lending have higher collateral value (i.e., the maximum amount that banks may obtain by issuing bonds) than those issued by commercial banks, then NDBs may lend longer-term to firms than commercial banks do. NDBs may enjoy a greater collateral value of their bonds than private commercial banks because the state (the owner of the NDBs) provides higher prospects of recapitalization than private bank owners in case of difficulties when honoring the issued bank bonds. Furthermore, NDBs may even have an advantage over state-owned commercial banks in providing long-term finance if NDB bonds enjoy higher market liquidity than state-owned commercial banks owing to the larger size of their bond issuances, thus enhancing their collateral value (Schclarek et al., 2019).⁵

Last, NDBs can foster the acquisition and dissemination of expertise in providing long-term loans to finance new industries (de Aghion, 1999). In a laissez-faire decentralized banking system, commercial banks often underinvest in and undertransmit expertise in long-term industrial finance. Long-term projects involve large sunk costs, which require cofinancing by several banks. However, cofinancing induces a free rider problem in monitoring effort. Each bank will provide a limited monitoring effort because part of the marginal return from this effort will accrue to other banks. Consequently, insufficient monitoring jeopardizes project profitability, thus discouraging the cofinancing of long-term projects by commercial banks (Dewatripont & Maskin, 1995).

Based on the preceding discussion, we derive the following hypothesis for empirical testing: *On average, NDBs lend longer than commercial banks (i.e., the proportion of long-term loans in the total loan portfolio of NDBs is on average larger than that in commercial banks).*

⁵ Although NDBs have the potential to provide long-term finance, their poorer monitoring skills and quality may undermine their ability to provide long-term loans and thus diminish their advantages over private commercial banks. Hence, we control for nonperforming loan ratios in our regression analysis.

3. Sample construction

In this section, we first introduce our pilot effort to propose rigorous qualification criteria to systematically identify NDBs worldwide and build the first database on development banks; we then explain how we constructed the sample and the dependent variable of loan maturity for empirical analysis.

3.1. A new database on development banks worldwide

To ensure our research is feasible, we manually constructed a new database on NDBs worldwide. We define NDBs as financial institutions created by national governments to deploy loans or other financial instruments to fulfill public policy objectives as stipulated in their official mandates. To distinguish NDBs from other similar entities, we propose five qualification criteria.

First, NDBs are standalone entities, having separate legal personalities, financial accounts, and dedicated personnel, and are not set up to achieve specific short-term goals. This helps distinguish NDBs from government credit programs, trust funds, and special purpose vehicles. Second, they deploy loans or other financial instruments whose business models permit some form of repayment, capital dividends, or risk premium. This would require imposing financial discipline upon clients, which differentiates NDBs from grant-executing agencies. Third, their funding sources go beyond periodic budgetary transfers, which differentiates NDBs from aid agencies. Fourth, NDBs have a proactive public policy-oriented official mandate, which distinguishes them from profit-driven commercial banks. Even if state-owned commercial banks may sometimes undertake development projects in an ad hoc manner, they are not qualified as NDBs because these activities are not their proactive endeavors but policy burdens imposed by governments. In addition, we disqualify banks that establish extensive branches to take household deposits as NDBs, even though they may officially claim to pursue public policy objectives. The rationale is that their business models are closer to typical commercial banks because household deposits are short-term liabilities that would constrain a bank's ability to provide long-term and high-risk capital on its asset side. Fifth, governments play a steering role in setting NDBs' corporate strategies to ensure they are development oriented. This helps distinguish NDBs from grassroots development initiatives such as microfinance institutions. Only when an entity meets all five of these criteria do we qualify it as an NDB (Xu et al., 2021a).

To identify NDBs worldwide, we rigorously applied the five aforementioned qualification criteria to each DFI or DFI-like association. Here, DFI is an umbrella term that includes development banks at the multilateral, national, and subnational levels and equity-, and guarantee-focused financial institutions sponsored by governments with a development-oriented mandate. DFI associations mainly include the World Federation of DFIs, which has four regional chapters: Africa, Asia and the Pacific, Latin America, and the Islamic countries. DFI associations also include the Global Network of Export-Import and DFIs, the Association of Bilateral European DFIs, and the International Development Finance Club. DFI-like associations include the European Association of Public Banks, the Long-Term Investors Club, and the Network of European Financial Institutions for Small and Medium Sized Enterprises.

Because not all NDBs choose to be members of DFI associations, we investigated the official classification of national financial systems by country through visiting the official websites of nearly 200 countries' central banks and national regulatory agencies. After identifying DFI-like official categories such as specialized financial institutions, we discerned NDBs that met all five qualification criteria. Based on firsthand data collection, we found that

NDBs are prevalent globally. Most countries (150 out of 195 examined) have currently active NDBs.

Interestingly, we find that NDBs are not dying out in high-income countries (HICs) despite full-fledged capital markets and well-developed commercial banking systems; on average, each HIC has two NDBs in operation. Furthermore, we find that national governments in developing countries do not refrain from establishing NDBs as recommended by the World Bank. In fact, the proportion of countries that have currently active NDBs is 75%, 84%, and 62% for upper-middle-income countries, lower-middle-income countries, and low-income countries, respectively.

3.2. Bank ownership of commercial banks

After systematically identifying NDBs worldwide, we further categorize commercial banks by ownership type. We start by categorizing the banks as “foreign” or “domestic,” comparing for each bank the BankFocus variable “Country ISO Code” with the BankFocus variable “GUO – Country ISO Code” from “Ownership Data/Shareholders/Global Ultimate Owner Information.” If both codes are the same, then the bank is “domestic.” If not, then the bank is “foreign.” For those cases where there is no value for the “GUO – Country ISO Code” or the value is “n.a.” (not available), we use the classification of the Bank Ownership Database by [Claessens and Van Horen \(2014\)](#).⁶ If the bank has no “GUO – Country ISO Code” at BankFocus and is not classified in the Bank Ownership Database, then we manually categorize banks using the available information, such as information from the banks’ websites. If we still cannot determine whether it is “domestic” or “foreign,” we assume it is “domestic.”

Next, we categorize domestically owned banks into “state-owned” or “privately-owned.” First, for each bank, we analyze the BankFocus variable “GUO – Type” from “Ownership Data/Shareholders/Global Ultimate Owner Information.” If the value is “Public Authority, State, Government,” then it is “state-owned.” Second, for those banks for which the BankFocus variable “Specialization” in “Industry & Activities/Industry Classification” is “Specialized Governmental Credit Institution,” we categorize it as “state-owned,” independent of the BankFocus variable “GUO – Type” value. Third, if we cannot identify ownership after following the aforementioned two methods, we manually categorize bank ownership using the available information from the banks’ websites or other reliable sources. We require that the total state or government ownership must exceed 50% of the bank shares and allow that such shares may be owned by different state or government entities. For the rest of the banks that lack sufficient information to make the coding, we assume they are “privately-owned.” In short, we classify commercial banks into three categories: SCBs, PCBs, and FCBs.

4. Descriptive statistics and econometric analysis

In this section, we first conduct the baseline analysis by comparing the loan maturity of NDBs with that of commercial banks in general and different types of commercial banks without controlling for determinants of loan maturity. We then conduct an econometric analysis by controlling for country- and bank-level factors and conclude with robustness checks.

⁶ Their data set contains full ownership data for the 1995–2009 period of all commercial banks, savings banks, bank holding companies, and cooperative banks (as identified in BankFocus) that are currently or have been active in 137 countries. The virtue of this data set is that the authors manually collected the data to solve the problem of double counting (i.e., the parent bank and subsidiary bank were counted at the same time).

4.1. Baseline analysis

In this subsection, we conduct the first-cut analysis by presenting the stylized facts of loan maturity by different types of banks. Our sample includes 58 NDBs, 112 SCBs, 695 PCBs, and 388 FCBs from 106 countries during the 2011–2018 period.

To obtain our measures for loan maturity at the bank level, we match NDBs and commercial banks with BankFocus to enable us to use banks’ balance sheet information. When matching, we use consolidated financial statements if available; otherwise, we use unconsolidated financial statements.⁷

Our dependent variable, loan maturity, has two measures. One is the maturity of loans to customers, and the other is the maturity of loans to banks.⁸ Both are reported in absolute volume by the following terms at BankFocus: less than 3 months, 3–12 months, 1–5 years, and more than 5 years. Based on the raw data, we further construct a new term, less than 1 year, that is conventionally regarded as short-term loans. We then construct loan ratios by term calculated as the ratio of loans with different maturities to total outstanding loans. In our regression analysis in [Section 4.2](#), we use three terms: less than 1 year (short-term loans), between 1 and 5 years (medium-term loans), and longer than 5 years (long-term loans). We first deploy ratios of loans to customers of three maturities (i.e., less than 1 year, 1–5 years, and more than 5 years) as the dependent variable and then use ratios of loans to banks in the robustness checks.⁹

To ensure the quality of data, we have taken three steps to clean our data set. First, we identify all negative loan ratios and turn them into missing values. There are 10 negative loans detected, so we would not use that bank in that year in our analysis. Second, if banks have no loans that fall into the category of less than

⁷ The same BVD ID number corresponds to multiple consolidation codes because the same organization has multiple data owing to different accounting standards. Each datum corresponds to a different BVD bank index number. Following the existing literature ([Birchwood et al., 2017](#); [Brei & Schclarek, 2013, 2018](#)), we use the financial standards of C1, C2, and U1 to attain the index number of each matched bank. The BankFocus classification regarding consolidated statements is as follows. For any bank, if there are both consolidated and unconsolidated statements data, then the consolidated statements data have the consolidation code C2, and the unconsolidated statements data have the consolidation code U2. If the bank has only consolidated data, then the consolidation code is C1. If the bank has only unconsolidated data, then the consolidation code is U1. Because we always prefer working with consolidated data, we use data with consolidation codes C2, C1, and U1. In other words, we do not use data with consolidation code U2 because that means there are C2 data available, which we prefer. We do not want to use data with consolidation codes C* and U* because those are special data that have been, for example, adjusted for inflation.

⁸ Although loans to banks may include short-term interbank loans for solving the liquidity problems apart from on-lending via financial intermediaries to end customers, this may underestimate the maturity-lengthening role of NDBs. If the data could exclude short-term interbank loans, then that would have strengthened our results.

⁹ One caveat is that the maturity here refers to terms of loans maturing within certain periods. For example, a bank may grant a loan with a maturity of 10 years; if the loan will mature in 1 month, then it will be recorded in loans to customers in less than 3 months. Although this measure may underestimate long-term loans in absolute terms, it reflects the structure of loan maturity in relative terms. This enables us to compare the loan maturity of NDBs with that of commercial banks.

3 months or 3–12 months, then we treat that bank in that year as missing values. The rationale is that it is highly unlikely for a bank to have no loan maturing within 1 year.¹⁰ There are altogether five cases (observations defined by bank-year pair) with zero loans of less than 3 months or 3–12 months. Third, we generate an inconsistency indicator for cross-year loan structure differences. It is unlikely that a bank primarily offers short-term loans in 1 year and then shifts to long-term loans the following year.¹¹

Figures 1a, 1b, and 1c compare NDBs with different types of commercial banks in terms of the ratio of long-term loans (greater than 5 years), medium-term loans (1–5 years) and short-term loans (less than 1 year) to customers in total outstanding loans, respectively. They show that, on average, NDBs lend much longer than commercial banks. For instance, about 48% of NDB loans are long-term, which is much higher than SCBs, PCBs, and FCBs. Correspondingly, short-term loans constitute the least share, at merely 19% in the total loan portfolio in the case of NDBs, whereas the ratio of short-term loans is as high as 30%, 27%, and 38% in the case of PCBs, SCBs, and FCBs, respectively.

4.2. Econometric analysis

In the econometric analysis, we use the panel analysis to examine the relationship between bank type and loan maturity. Following the literature (Park et al., 2015; Qian & Strahan, 2007), we adopt the following standard panel regression framework with random effects:

$$\frac{\text{Loan with term } j}{\text{total loan}_{it}} = \gamma_j \cdot \text{bank type}_i + \alpha \cdot \text{controls}_{it} + \delta_i + \delta_t + \varepsilon_{ijt} \tag{1}$$

In Eq. (1), *i*, *j*, and *t* are the subscripts for bank, loan term, and year, respectively. The dependent variable *Loan with term j/total loan_{it}* is equal to the ratio of the amount of loans to customers (or banks) with a certain term (such as less than 1 year, 1–5 years, and more than 5 years) to total outstanding loans to customers (or banks). It is a ratio ranging from 0 to 1. The variable *bank type_i* is a dummy variable equal to 1 if bank *i* is an NDB. The variable δ_i is a random effects term that controls for bank heterogeneity. *controls_{it}* is a vector of control variables, including country-level factors, bank-level characteristics, and a set of country dummies for country fixed effects. δ_t is a time fixed effects term. In terms of bank-specific characteristics, these variables (notably bank size, liquid assets, capitalization, profitability, and funding structure) have been used in the bank lending channel literature (Brei et al., 2013; Brei & Schclarek, 2013, 2018; Ehrmann & Worms, 2004; Gambacorta, 2005; Kishan & Opiela, 2000). In terms of country-level variables, the existing studies show that high inflation discourages long-term finance by raising uncertainty about the real value of future nominal payments (Boyd et al., 2001; Rousseau & Wachtel, 2002), and stable legal institutions promote long-term finance by effectively enforcing loan contracts (Diamond, 2004; Giannetti, 2003). We use the

¹⁰ ¹⁰ Note that “no loan” means “0” instead of “missing.”

¹¹ ¹¹ We consider four loan ratios for each bank in each year (each observation), so these four figures can be regarded as a point with four coordinates in a dimension-4 simplex (the four ratios sum to one and are nonnegative). For each bank, there are 8 years; thus, the Euclidean difference between two points in any 2 years is calculated. The theoretical range for this 2-year difference is from 0 to $\sqrt{2}$. Thus, we get $C_8^2 = \frac{8!}{2!(8-2)!} = 28$ differences for each bank. We then average the 28 differences for each bank, and we define this as the “cross-year loan-structure inconsistency” indicator; the larger this indicator, the more inconsistent the loan structure of this bank across years. For the preceding analysis, we take them to the full sample as well as a subsample, excluding the largest 5 percentiles of this indicator for robustness; all the qualitative results are the same between the two, so we omit the results from the subsample and exclude the largest 5 percentiles in the inconsistency indicator.

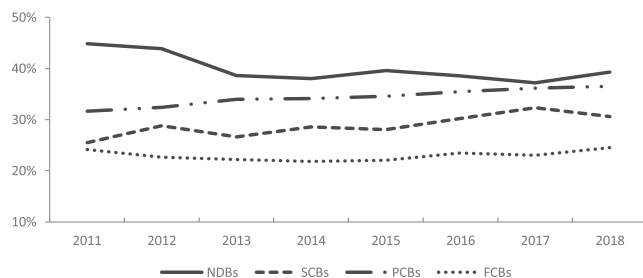


Fig. 1a. Average Ratio of Loans to Customers With a Maturity of More Than 5 Years in Total Outstanding Loans by NDBs, SCBs, PCBs, and FCBs.

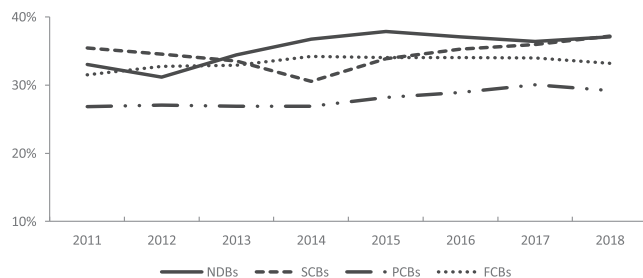


Fig. 1b. Average Ratio of Loans to Customers With a Maturity of 1–5 Years in Total Outstanding Loans by NDBs, SCBs, PCBs, and FCBs.

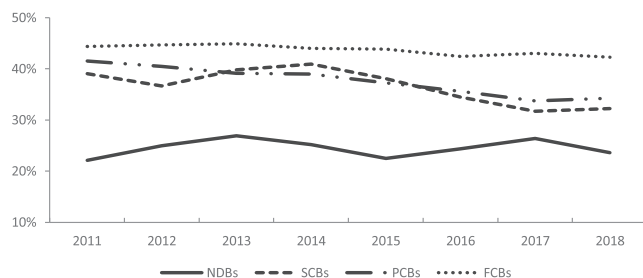


Fig. 1c. Average Ratio of Loans to Customers With a Maturity of Less Than 1 Year in Total Outstanding Loans by NDBs, SCBs, PCBs, and FCBs Data Sources: BankFocus; The database on development banks constructed by authors at <http://www.dfidatabase.pku.edu.cn/>.

lagged country-level variables in the previous year in the regression analysis. The coefficient of key interest is thus γ_j , which indicates the differential change in the loan maturity owing to different bank types. If our hypothesis holds, then we would expect that γ_j turns from negative into positive as the loan maturity increases and that $\gamma_j < \gamma_{j'}$ if $j < j'$. Table 1 contains detailed definitions of all the variables used in the paper, and Table 2 lists the descriptive statistics for the main variables used in the econometric analysis.

Table 3 reports the regression results with the control variables.¹² It shows that the bank type of NDBs matters in terms of the loan maturity. When the loan maturity is shorter than 1 year, the coefficient associated with bank type is -0.16 , which is statistically significant at the 1% level. This means the proportion of short-term loans provided by NDBs is on average smaller by 16 percentage

¹² ¹² To control for country-level and bank-level variables, we have to accept a smaller final sample size owing to missing variables. This practice, however, is not uncommon when using data from BankFocus, which was formerly known as Bankscope. See Scholtens and Dam (2007) for an example. To evaluate whether selection bias might be a concern in our study, we have run a Probit model and found no evidence that banks of a certain type are more likely to have missing data.

Table 1
Definition of variables.

Variable Names	Variable Definitions	Data Source
Dependent Variables		
Loans to customers ratio (<1 year)	Loans and advances to customers with maturities less than 1 year [sum of 80,640 and 80650]	BankFocus
Loans to customers ratio (1–5 years)	Loans and advances to customers with maturities greater than 1 year but less than 5 years [80660]	BankFocus
Loans to customers ratio (>5 years)	Loans and advances to customers with maturities greater than 5 years or maturity unspecified [80670]	BankFocus
Loans to banks ratio (<1 year)	Interbank loans and advances with maturities less than 1 year	BankFocus
Loans to banks ratio (1–5 years)	Interbank loans and advances with maturities greater than 1 year but less than 5 years [80760]	BankFocus
Loans to banks ratio (>5 years)	Interbank loans and advances with maturities greater than 5 years or maturity unspecified [80770]	BankFocus
Independent Variables		
NDB dummy	A dummy variable that equals 1 if the bank is an NDB and 0 otherwise.	Data collected by authors
Bank type	1 for NDBs, 2 for SCBs, 3 for PCBs, and 4 for FCBs	BankFocus; Claessens and Van Horen (2014)
Country-level Factors		
GDP growth	The annual real GDP growth rate	WDI
Real interest rate	Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator.	WDI
Inflation	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly, and rescaled as ratio.	WDI
Exchange rate depreciation	The fall in the exchange value of a country's currency in comparison to other currency.	WDI
Rule of law	Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. It ranges from approximately –2.5 (weak) to 2.5 (strong).	Worldwide Governance Indicators
Bank Characteristics		
Bank size	Logarithm of total assets to measure bank size [52600]	BankFocus
Return on average equity (ROAE)	Net income as a ratio of average total equity; average total equity excludes hybrid capital, and interims are annualized. [99480]	BankFocus
Capitalization	the ratio of total equity to total assets; total equity excludes hybrid capital. [99060]	BankFocus
Non-performing loan (NPL) ratio	The sum of impaired, restructured loans, and past due but not impaired loans as a percentage of gross customer loans and advances [99300]	BankFocus
Liquidity	Ratio of liquid assets including available for sale, held to maturity, and other securities to total assets	BankFocus
Liability structure	Ratio of customer deposit to total funding, excluding derivatives [99690]	BankFocus

This table presents the definitions and data sources of each variable; WDI refers to World Development Indicators. The numbers in the brackets refer to the serial numbers of variables in the BankFocus.

points than that provided by commercial banks. When the loan maturity is between 1 and 5 years, the coefficient on bank type is 0.111, turning from negative to positive, which is statistically significant at the 1% level. This indicates NDBs on average provide more medium-term loans (1–5 years) by 11.1 percentage points than commercial banks. When the loan maturity is longer than 5 years, the coefficient of bank type is 0.049, which is statistically significant at the 10% level. This means the proportion of long-term loans (longer than 5 years) by NDBs is on average larger by 4.9 percentage points than those by commercial banks. Notably, these numbers are not only statistically significant but also economically significant. In summary, NDBs, on average, are more likely to lend longer than commercial banks in their choices of loan maturity.

This table presents the regression analysis of the impact of bank types upon loan maturity. The dependent variables are the maturity of loans to customers: the loan ratios of less than 1 year, 1–5 years, and more than 5 years are presented in columns 1–3, respectively. The independent variable of interest is NDB. Control variables include both bank- and country-level factors. We also include country fixed effects and time fixed effects. *t* statistics are reported in parentheses below the coefficient estimates. Finally, ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

To further examine the difference in loan maturity between NDBs and different types of commercial banks by bank ownership, we further classify bank type into four types: 1 for NDBs, 2 for SCBs, 3 for PCBs, and 4 for FCBs. Table 4 reports the results of three types of loan maturity with control variables. Compared with NDBs, the coefficients of all three types of commercial banks generally decrease as the loan term increases. This preliminarily indicates that commercial banks may be less likely to provide medium- and long-term loans. A closer look at the coefficients of bank types reveals that the proportion of short-term loans (less than 1 year) in the total loan portfolios of all three types of commercial banks is larger than that in NDBs. The coefficients for SCBs, PCBs, and FCBs are 0.094, 0.165, and 0.166, which are statistically significant at the 5%, 1%, and 1% levels, respectively. This means that compared with NDBs, the proportion of short-term loans to customers by SCBs, PCBs, and FCBs is on average larger by 9.4 percentage points, 16.5 percentage points, and 16.6 percentage points, respectively. This finding is both statistically and economically significant. Regarding the medium-term loans (1–5 years), the coefficients for SCBs, PCBs, and FCBs are –0.104, –0.115, and –0.109, respectively, which are all statistically significant at the 1% level. This indicates that the proportion of medium-term loans provided by NDBs is on average larger than those by SCBs, PCBs, and FCBs by 10.4 percentage points, 11.5 percentage points, and 10.9 percentage points, respectively. In summary, NDBs are more likely to lend longer than commercial banks. In terms of long-term finance provision (i.e., the loan maturity is longer than 5 years), the coefficients for PCBs and FCBs are –0.051 and –0.058, which are statistically significant at the 10% and 5% levels, respectively. This means that in comparison with NDBs, the proportion of long-term loans provided by PCBs and FCBs is on average smaller by 5.1 percentage points and 5.8 percentage points, respectively. Yet the coefficient for SCBs is not statistically significant. This implies that SCBs may sometimes shoulder the policy burden of providing

Table 2
Summary statistics.

	N. Obs	Mean	Std. Dev.	Min	Max
Loans to customers ratio (<1 year)	7273	0.383	0.228	0.000	1.000
Loans to customers ratio (1–5 years)	7273	0.308	0.144	0.000	0.918
Loans to customers ratio (>5 years)	7273	0.309	0.230	0.000	0.992
Loans to banks ratio (<1 year)	1436	0.727	0.266	0.021	1.000
Loans to banks ratio (1–5 years)	1436	0.160	0.171	0.000	0.957
Loans to banks ratio (>5 years)	1436	0.113	0.166	0.000	0.979
NDB	10,024	0.046	0.210	0.000	1.000
Bank type	10,024	3.128	0.754	1.000	4.000
Bank size	8375	15.225	2.189	8.250	21.946
ROAE	8371	0.064	1.848	-132.117	62.316
Capitalization	8372	0.120	0.093	-0.272	0.981
NPL ratio	7632	0.109	0.169	0.000	1.472
Liquidity	8367	0.351	0.171	0.003	1.000
Liability structure	8110	0.655	0.319	0.000	1.000
Lagged GDP growth	9997	0.034	0.029	-0.101	0.252
Lagged inflation	9975	0.034	0.051	-0.037	2.549
Lagged real interest rate	6291	0.051	0.073	-0.336	0.524
Lagged exchange rate depreciation	8161	0.036	0.107	-0.150	0.838
Lagged rule of law	10,008	0.589	1.078	-2.255	2.100

This table presents the number of observations (N. Obs), mean, standard deviation (Std. Dev.), minimum (min), and maximum (max) value for the main variables used in the paper.

long-term finance even though they would prefer offering short-

Table 3
Bank type and loan maturity.

	(1) Loans to customers ratio (<1 year)	(2) Loans to customers ratio (1–5 years)	(3) Loans to customers ratio (>5 years)
NDB	-0.160*** (-4.56)	0.111*** (4.45)	0.049* (1.73)
Bank size	-0.019*** (-5.30)	0.003 (1.30)	0.015*** (5.14)
ROAE	-0.000 (-0.70)	-0.000 (-0.45)	0.001 (1.53)
Capitalization	0.062 (1.27)	-0.014 (-0.37)	-0.058 (-1.57)
NPL ratio	-0.047*** (-2.87)	-0.003 (-0.27)	0.050*** (4.12)
Liquidity	0.110*** (4.49)	-0.036* (-1.94)	-0.078*** (-4.19)
Liability structure	-0.005 (-0.65)	0.004 (0.73)	-0.000 (-0.08)
Lagged GDP growth	-0.146 (-1.36)	0.125 (1.47)	0.021 (0.27)
Lagged inflation	0.282*** (4.06)	-0.122** (-2.22)	-0.158*** (-3.08)
Lagged real interest rate	0.157*** (3.31)	-0.059 (-1.57)	-0.098*** (-2.78)
Lagged exchange rate depreciation	-0.103*** (-4.07)	0.033 (1.63)	0.069*** (3.71)
Lagged rule of law	-0.034* (-1.67)	-0.003 (-0.19)	0.037** (2.44)
Constant	0.467*** (2.97)	0.113 (1.01)	0.436*** (3.45)
Year dummies controlled	Yes	Yes	Yes
Country dummies controlled	Yes	Yes	Yes
Observations	4028	4028	4028
Number of Banks	770	770	770
Overall R-squared	0.463	0.390	0.592

term loans as analyzed earlier. Because SCBs primarily rely on taking household deposits to mobilize funding, providing long-term finance may put SCBs in a difficult predicament of maturity mismatch and liquidity risks.

4.3. Robustness checks

To conduct the robustness check, we use loans to banks as an alternative dependent variable to see whether the same pattern holds. There are two implementation arrangements for banks to provide loans: first-tier (retail) and second-tier (wholesale). In the first-tier implementation, banks extend a direct loan to customers. In the second-tier implementation, banks select a financial intermediary that lends to end customers. Banks sometimes choose the second-tier implementation arrangements because they would like to tap into the tacit knowledge of local financial intermediaries to enable them to reach out to small and medium-sized enterprises to reduce the transaction cost. In Bank-Focus, “loans to banks” is the best available variable that captures such second-tier implementation arrangements; however, this variable also includes short-term interbank borrowing for solving liquidity problems. As a result, it may underestimate the proportion of medium- and long-term loans that banks provide. Hence, we must interpret the results of robustness checks cautiously.

Table 5 reports the regression results of comparing the maturity of loans to banks by NDBs with that by commercial banks in general. Regarding medium-term loans, the coefficient for the NDB is 0.107, which is statistically significant at the 5% level. This indicates NDBs on average offer a much larger proportion of medium-term loans to financial intermediaries by 10.7 percentage points than do commercial banks, but the coefficient for the NDB is not statistically significant when the loan maturity is less than 1 year or longer than 5 years. One reason might be that loans to banks include short-term loans for solving liquidity problems, which may skew our result. Another reason is that the data availability for loans to banks is much more limited than loans to customers because the number of banks decreases from 770 to 138, and the number of observations shrinks from 4,028 to 400. In summary, the basic pattern still holds that NDBs are more likely than commercial banks to provide medium-term loans.

Table 6 goes a step further to compare the maturity of loans to banks by NDBs with three types of commercial banks: SCBs, PCBs, and FCBs. A general pattern is that the coefficients of SCBs, PCBs,

Table 4
Bank Type by Ownership and Loan Maturity.

	(1) Loans to customers ratio (<1 year)	(2) Loans to customers ratio (1–5 years)	(3) Loans to customers ratio (>5 years)
SCB	0.094** (2.42)	-0.104*** (-3.68)	0.009 (0.30)
PCB	0.165*** (4.66)	-0.115*** (-4.50)	-0.051* (-1.79)
FCB	0.166*** (4.64)	-0.109*** (-4.23)	-0.058** (-2.01)
Bank size	-0.017*** (-4.58)	0.003 (1.15)	0.013*** (4.41)
ROAE	-0.000 (-0.71)	-0.000 (-0.45)	0.001 (1.53)
Capitalization	0.066 (1.36)	-0.015 (-0.40)	-0.061 (-1.64)
NPL ratio	-0.044*** (-2.71)	-0.004 (-0.28)	0.048*** (3.93)
Liquidity	0.109*** (4.46)	-0.036** (-1.94)	-0.076*** (-4.12)
Liability structure	-0.004 (-0.60)	0.004 (0.74)	-0.001 (-0.13)
Lagged GDP growth	-0.143 (-1.34)	0.125 (1.47)	0.019 (0.24)
Lagged inflation	0.284*** (4.08)	-0.122** (-2.22)	-0.160*** (-3.11)
Lagged real interest rate	0.157*** (3.30)	-0.059 (-1.57)	-0.097*** (-2.76)
Lagged exchange rate depreciation	-0.103*** (-4.06)	0.033 (1.63)	0.069*** (3.70)
Lagged rule of law	-0.035* (-1.73)	-0.003 (-0.18)	0.038** (2.51)
Constant	0.270* (1.68)	0.233* (2.01)	0.512*** (3.97)
Year dummies controlled	Yes	Yes	Yes
Country dummies controlled	Yes	Yes	Yes
Observations	4028	4028	4028
Number of Banks	770	770	770
Overall R-squared	0.471	0.391	0.599

This table presents the regression analysis of the impact of bank types upon loan maturity with control variables. The dependent variables are the maturity of loans to customers: the loan ratios of 1 year, 1–5 years, and more than 5 years are presented in columns 1–3, respectively. Bank types include NDBs, SCBs, PCBs, and FCBs. Control variables include both bank- and country-level factors. We also include country fixed effects and time fixed effects. *t* statistics are reported in parentheses below the coefficient estimates. Finally, ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

and FCBs turn from negative to positive as the loan term changes from short-term to long-term.¹³ Similar to the findings shown in Table 5, although the coefficients for bank types when the loan maturity is longer than 5 years are not statistically significant as expected owing to the data limitation, the overall pattern still holds that NDBs are less likely to provide short-term loans and are more likely to offer at least medium-term loans compared with PCBs. In terms of short-term loans, the coefficient for PCBs is 0.111, which is statistically significant at the 10% level. This means PCBs are on average more likely than NDBs to provide more short-term loans by 11.1 percentage points. In terms of medium-term loans, the coef-

Table 5
Bank type and the maturity of loans to banks.

	(1) Loans to banks ratio (<1 year)	(2) Loans to banks ratio (1–5 years)	(3) Loans to banks ratio (>5 years)
NDB	-0.100 (-1.57)	0.107** (2.35)	-0.006 (-0.14)
Bank size	0.024** (2.50)	-0.019*** (-2.67)	-0.005 (-0.80)
ROAE	0.044* (1.90)	-0.062*** (-3.64)	0.017 (1.18)
Capitalization	0.385* (1.90)	-0.359** (-2.44)	-0.016 (-0.13)
NPL ratio	0.115 (0.90)	-0.178* (-1.92)	0.052 (0.65)
Liquidity	0.096 (0.94)	0.114 (1.54)	-0.205*** (-3.20)
Liability structure	0.030 (0.76)	0.010 (0.34)	-0.036 (-1.48)
Lagged GDP growth	-0.679 (-1.51)	0.457 (1.37)	0.212 (0.78)
Lagged inflation	0.220 (0.58)	-0.356 (-1.27)	0.137 (0.59)
Lagged real interest rate	-0.092 (-0.41)	0.125 (0.75)	-0.045 (-0.33)
Lagged exchange rate depreciation	-0.106 (-0.81)	0.047 (0.48)	0.055 (0.69)
Lagged rule of law	0.036 (0.38)	-0.119* (-1.70)	0.080 (1.40)
Constant	0.401** (2.36)	0.351*** (2.86)	0.236** (2.18)
Year dummies controlled	Yes	Yes	Yes
Country dummies controlled	Yes	Yes	Yes
Observations	400	400	400
Number of Banks	138	138	138
Overall R-squared	0.449	0.426	0.373

This table presents the regression analysis of the impact of bank types upon loan maturity with control variables. The dependent variables are the maturity of loans to banks: the loan ratios of less than 1 year, 1–5 years, and more than 5 years are presented in columns 1–3, respectively. The independent variable of interest is NDBs. Control variables include both bank- and country-level factors. We also include country fixed effects and time fixed effects. *t* statistics are reported in parentheses below the coefficient estimates. Finally, ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

cient for PCBs is -0.128, which is statistically significant at the 1% level. This means that the proportion of medium-term loans provided by NDBs is on average larger by 12.8 percentage points than those by PCBs. In summary, we have found evidence that NDBs are less likely to offer short-term loans than PCBs.

5. Conclusion and policy implications

Building on a novel and comprehensive list of NDBs worldwide, our paper is the first to conduct a systematic comparison of the loan maturity of NDBs with that of commercial banks in general and different types of commercial banks by bank ownership. Using a large international sample of 1,253 banks across 106 countries during the 2011–2018 period, we find that NDBs on average lend longer than do commercial banks in general and private commercial banks in particular. These findings are statistically significant after controlling for country- and bank-level characteristics.

Based on our empirical analyses, we have drawn the following policy implications:

First, policy makers should not dismiss the role of NDBs in providing long-term finance simply based on anecdotal evidence.

¹³ One exception is the coefficient of PDBs for long-term loans to banks.

Table 6
Bank Type by Ownership and the Maturity of Loans to Banks.

	(1) Loans to banks ratio (<1 year)	(2) Loans to banks ratio (1–5 years)	(3) Loans to banks ratio (>5 years)
SCB	0.083 (1.14)	−0.080 (−1.57)	−0.004 (−0.09)
PCB	0.111* (1.69)	−0.128*** (−2.77)	0.017 (0.39)
FCB	0.088 (1.22)	−0.078 (−1.53)	−0.013 (−0.27)
Bank size	0.025** (2.48)	−0.020*** (−2.83)	−0.004 (−0.67)
ROAE	0.043* (1.81)	−0.059*** (−3.43)	0.015 (1.05)
Capitalization	0.386* (1.90)	−0.358** (−2.45)	−0.017 (−0.13)
NPL ratio	0.106 (0.82)	−0.161* (−1.72)	0.041 (0.52)
Liquidity	0.097 (0.95)	0.115 (1.57)	−0.206*** (−3.20)
Liability structure	0.029 (0.72)	0.011 (0.38)	−0.037 (−1.50)
Lagged GDP growth	−0.696 (−1.54)	0.496 (1.49)	0.193 (0.71)
Lagged inflation	0.191 (0.50)	−0.300 (−1.06)	0.112 (0.48)
Lagged real interest rate	−0.099 (−0.44)	0.141 (0.85)	−0.053 (−0.39)
Lagged exchange rate depreciation	−0.106 (−0.80)	0.048 (0.49)	0.054 (0.69)
Lagged rule of law	0.035 (0.37)	−0.115 (−1.64)	0.078 (1.36)
Constant	0.293 (1.51)	0.466*** (3.37)	0.232* (1.86)
Year dummies controlled	Yes	Yes	Yes
Country dummies controlled	Yes	Yes	Yes
Observations	400	400	400
Number of Banks	138	138	138
Overall R-squared	0.449	0.432	0.373

This table presents the robustness analysis of the impact of bank types on loan maturity without control variables. The dependent variables are the maturity of loans to banks: the loan ratios of less than 1 year, 1–5 years, and more than 5 years are presented in columns 1–3, respectively. Bank types include NDBs, SCBs, PCBs, and FCBs. Control variables include both bank- and country-level factors. We also include country fixed effects and time fixed effects. *t* statistics are reported in parentheses below the coefficient estimates. Finally, ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Although it is true that not all NDBs have been successful and some NDBs have failed miserably in the past, this does not mean that NDBs cannot play a maturity-lengthening role. As we argued in the section on hypotheses development, there are sound theoretical rationales behind the belief that NDBs are well positioned to provide long-term finance to fill the financing gap. Relying on a comprehensive panel data set of NDBs worldwide, our empirical analysis demonstrates that NDBs on average lend longer than commercial banks. Given the fact that NDBs are prevalent worldwide, we should shift the policy debate from whether governments should establish NDBs to how to make NDBs work better.

Second, NDBs should be well capitalized to unleash their potential for scaling up the provision of long-term finance. This policy recommendation is particularly relevant given the trend that NDBs are undergoing a renaissance worldwide. Even if NDBs have comparative advantages in providing long-term finance, their contribution to filling the financing gap would be substantially undercut if they are undercapitalized. Hence, the maturity-lengthening role of

NDBs is more relevant for countries that have governments with stronger credibility, finances, and net worth than for countries with governments plagued by credibility concerns, over-indebtedness, and excessive fiscal deficits. For countries whose governments are in a relatively weak financial position, their NDBs should try to seek on-lending from multilateral development banks or NDBs from countries with a strong financial foothold.

Third, NDBs need to focus on long-term finance to fill the financing gap and avoid unfair competition with commercial banks. NDBs are initiated and steered by governments to fulfill public policy objectives; accordingly, NDBs often enjoy government support, such as sovereign guarantee, preferential tax treatment, and concessional borrowing. NDBs should not provide short-term loans to firms that could have access to credits from commercial banks. Otherwise, NDBs would create distortions in credit markets and crowd out commercial banks. Recently, there has been a worrying trend that a few NDBs decide to take household deposits because they lack alternative funding sources. Because taking household deposits may create the maturity mismatch problem, it would undercut the comparative advantage of NDBs in providing long-term finance.

Fourth, governments should not only provide sovereign guarantee to enable NDBs to issue long-term bonds on capital markets to enable them to provide long-term loans but should also foster and improve the development of bond markets. If the liability structure of NDBs is deficient in long-term funding sources, NDBs would fall short of providing the much-needed long-term finance on their asset side. Based on the experience of CDB in China, CDB as a “bond bank” has helped incubate China’s bond markets owing to government support. Upon its establishment in the early 1990s, China’s bond markets were almost nonexistent. To ensure that CDB had sufficient funding sources, the People’s Bank of China placed the administrative order upon state-owned commercial banks to purchase CDB bonds, which helped turn short-term and small-scale household deposits into long-term and large-scale funding for CDB. Later in 1998, with the strong support of the Chinese government, CDB started to pilot bond issuances via market means. Since then, CDB has been a primary bond issuer and innovated new bond products on the China’s interbank bond market. The frequency of CDB bond issuances is much higher than government bonds, so the coupon rates of CDB bonds have acted as the anchor rate to incubate China’s bond markets. We are not arguing that the CDB case can be replicated elsewhere. But it does show that government support is essential for NDBs to mobilize sufficient long-term funding to fulfill their mandate of long-term finance provision.

Finally, NDBs need to be well governed to unleash their potential for providing long-term finance. State ownership is a double-edged sword. On the one hand, governments have to play a steering role in setting the corporate strategy of NDBs to ensure they proactively fulfill public policy objectives. NDBs cannot be deprived of essential government support to fulfill their development-oriented missions. On the other hand, governments should not unduly intervene into the microlevel loan approval or appraisal procedure of NDBs. Otherwise, undue government intervention would undermine the quality of assets, hence undercutting their ability of providing long-term finance. Therefore, governments should try to build the firewalls to guard NDBs against undue political influence and should ensure that NDBs enjoy a sufficient degree of professional autonomy to better implement their development-oriented mandates.

Looking ahead, we plan to collect firsthand data and conduct case studies to examine the variation, if any, in the provision of long-term finance among NDBs and explore under what conditions NDBs can provide long-term loans. This will help us make specific

policy recommendations on how to enhance the maturity-lengthening role of NDBs in the future.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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