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Bonding Through Crises with NBFIs*

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ABSTRACT: We study how banking crises reshape nonbank financial institutions' (NBFIs) role in corporate debt markets using primary-market syndicated loans and corporate bonds over 1990–2025. We find that NBFIs cyclicalities are function-specific: NBFIs contract syndicated loans relative to banks but expand corporate bond underwriting, especially through bank-affiliated NBFIs. Firms with stronger pre-crisis NBFIs underwriting relationships are more likely to switch from loans to bonds, raise more bond financing, experience smaller declines in total borrowing, and exhibit stronger crisis outcomes. This reconciles competing views of nonbank cyclicalities: NBFIs may amplify stress as loan-market risk bearers while preserving market access as bond underwriters.

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1 Introduction

Banking crises impair bank balance sheets and reduce corporate loan supply. A large literature shows that disruptions to bank credit affect firms' financing, investment, and employment (Khwaja and Mian 2008, Chodorow-Reich 2014, Amiti and Weinstein 2018). At the same time, firms with access to public debt markets can substitute from bank loans to bonds when bank credit tightens, mitigating the real effects of financial stress (Adrian et al. 2013, Becker and Ivashina 2014, Fernández et al. 2018, Goel and Zemel 2018, Cortina et al. 2021, Chen 2026). Recent evidence adds a further dimension: nonbank financial institutions (NBFIs) in syndicated loan markets are often more procyclical than banks, contracting credit sharply in stress episodes (Aldasoro et al. 2025, Fleckenstein et al. 2026). Taken together, these facts raise a central question: is nonbank procyclicality an intrinsic feature of NBFIs, or does it depend on the market and the function intermediaries perform?

This paper argues that the cyclicity of nonbank finance is function-specific. We distinguish between two forms of NBFI intermediation observed simultaneously in primary corporate debt markets: balance-sheet-intensive syndicated lending and distribution-based corporate bond underwriting. During systemic banking crises in borrower countries, impaired balance sheets, capital erosion, and tight wholesale funding can compress risk-bearing (syndicated) lending, while bond underwriting can remain comparatively resilient because it relies more on origination and distribution capacity. The same nonbank sector can therefore contract relative to banks in lending markets while expanding relative to banks in bond markets during the same crisis episode.

In syndicated lending, intermediaries bear credit risk, commit balance-sheet capacity, monitor borrowers, and participate in renegotiation when firms become distressed. These activities become more costly during banking crises, when borrower risk rises, uncertainty increases, and funding conditions deteriorate. This mechanism builds on classic theories of financial intermediation and debt choice, in which banks and other informed lenders are valuable because they monitor borrowers and provide flexible, relationship-based credit (Diamond 1984, 1991, Rajan 1992). It is also consistent with theories emphasizing intermediary capital and banks' liquidity-provision role (Holmström and Tirole 1997, Kashyap et al. 2002, Gatev et al. 2009). Nonbank lenders may be especially exposed to this margin because they lack access to central bank emergency liquidity facilities, and exhibit more fragile funding models—reliance on wholesale or intermediated funding implies that their funding conditions may deteriorate more

quickly than those of banks during downturns (Abbas et al. 2025, Aldasoro et al. 2025, Fleckenstein et al. 2026). Deposit-taking banks, while constrained, may cut syndicated lending by less than nonbanks because of relationship considerations, their comparative advantage in providing commitments and monitoring, and government support for bank liabilities (Aldasoro et al. 2025, Fleckenstein et al. 2026).

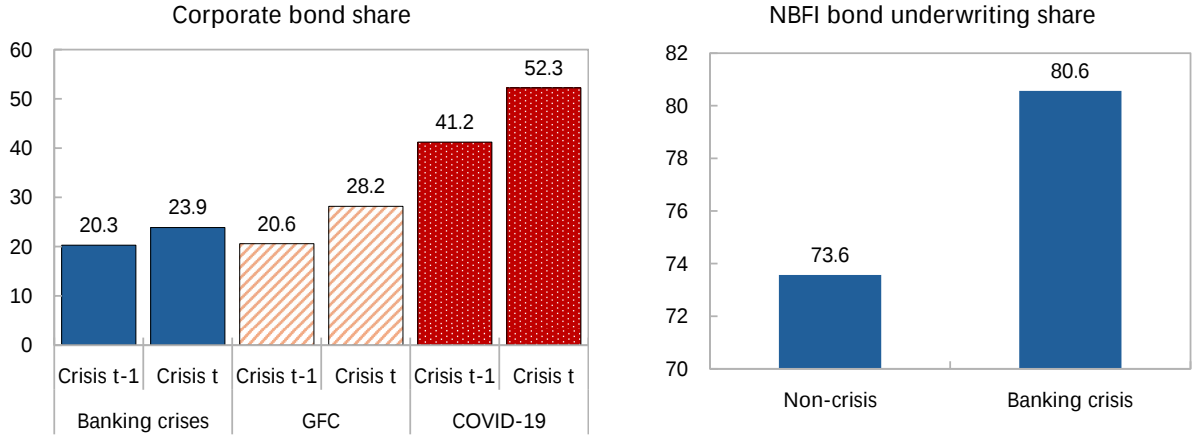
In corporate bond markets, the relevant activity is underwriting rather than lending in the traditional sense. Underwriters certify issuers, organize syndicates, build order books, and place securities with investors. Although they may bear temporary price and inventory risk, the defining feature of bond underwriting is not the long-run retention of credit exposure but the ability to connect issuers to investor capital. This distinction creates scope for NBFIs active in capital markets, especially broker-dealers, to expand underwriting relative to banks when firms shift from loans to bonds during banking crises. The prediction is therefore not that banks withdraw from bond underwriting, but that NBFIs with stronger distribution capacity gain underwriting share relative to banks. The underwriting function is closer to certification, information production, and repeated interaction with investors than to traditional loan monitoring (Chemmanur and Fulghieri 1994, Fang 2005, Yasuda 2005). As a result, banking crises can simultaneously lead NBFIs to contract relative to banks in syndicated lending and expand relative to banks in corporate bond underwriting.

Figure 1 motivates the analysis. The left panel shows that corporate bonds account for a larger share of firms’ market debt financing during stress episodes: bond shares rise from the year before to the first year of country-specific banking crises, the Global Financial Crisis (GFC), and the COVID-19 shock. This pattern is consistent with bond markets serving as an alternative financing margin in periods of financial stress (Goel and Serena 2020, Becker and Benmelech 2025). The right panel shows that the volume-weighted share of corporate bonds underwritten by NBFIs is substantially higher, by 7 percentage points, during banking crises relative to non-crisis periods.¹ These patterns suggest that loan–bond substitution depends not only on borrower characteristics and investor demand, but also on which intermediaries connect firms to each market.

We use Dealogic primary-market data on syndicated loans and corporate bonds across a large

¹The increase in the share of bonds underwritten by NBFIs relates to the growing role of NBFIs in overall corporate financing, which has been one of the most consequential structural shifts in global financial markets since the GFC. NBFIs—e.g., broker-dealers, securities arms of large banking conglomerates, investment funds, and finance companies—have steadily expanded their footprint in both credit markets and capital markets (Financial Stability Board 2025), raising fundamental questions about how this transformation affects the resilience of corporate funding during episodes of stress.

Figure 1: Corporate bond shares during periods of financial stress



Notes: Left panel: issuance of corporate bonds as a share of bonds and syndicated loans one year before (*Crisis t-1*) and in the first year (*Crisis t*) of a country-specific banking crisis, the GFC, and the COVID-19 pandemic. The pre-crisis years for the GFC and the pandemic are respectively 2007 and 2019, and the crisis years are 2008 and 2020. Right panel: volume-weighted share of corporate bonds underwritten by NBFIs in borrower-country-years without and with a systemic banking crisis.

sample of countries over 1990–2025. We study the two markets jointly to assess how NBFIs affect corporate financing during banking crises through both lending and underwriting margins. Because the focus is on primary markets, we do not ask whether NBFIs improve secondary-market liquidity or ultimately absorb the credit risk of newly issued bonds (Goldberg and Nozawa 2021, Kargar et al. 2021). Instead, we study the financing margin most directly relevant for nonfinancial firms (NFCs) during crises: whether firms can raise new debt, through which instrument, and through which intermediary. Secondary-market prices and investor demand may affect issuance conditions, but access to primary issuance also depends on underwriters’ ability to certify issuers, organize syndicates, and place securities.

Our empirical design proceeds in four steps. First, we compare bank and NBFI participation in syndicated loan and corporate bond markets during borrower-country banking crises, using the systemic banking-crisis database of Laeven and Valencia (2026). Second, we move to the firm-quarter level and test whether firms with stronger pre-crisis relationships with NBFI bond underwriters are more likely to substitute from syndicated loans to corporate bonds during crises. Third, we examine whether this substitution preserves financing capacity and is associated with differences in firm outcomes. Fourth, we distinguish independent NBFIs from NBFIs affiliated with banking groups to assess whether the increase in NBFI bond underwriting reflects broad nonbank resilience or within-group reallocation.

Our results can be summarized as follows. First, in syndicated lending, NBFIs contract relative to banks during banking crises. A one-standard-deviation increase in lenders’ expo-

sure to borrower-country banking crises is associated with about 1.3 percent lower syndicated lending by NBFIs relative to banks. This result is consistent with the view that syndicated lending is balance-sheet-intensive, relationship-based, and exposed to monitoring and renegotiation risk. During crises, these activities become more costly, and NBFIs retrench more than banks, amplifying credit cycles ([Aldasoro et al. 2025](#), [Fleckenstein et al. 2026](#)).

Second, the pattern reverses in corporate bond markets. A one-standard-deviation increase in underwriters' exposure to borrower-country banking crises is associated with about 8.0 percent higher bond underwriting by NBFIs relative to banks. This finding does not imply that NBFIs absorb more long-run credit risk. Rather, it indicates that NBFIs, especially broker-dealers, expand in the part of corporate debt intermediation where there is limited balance-sheet exposure, and investor placement is central. The result points to a shift in primary-market intermediation toward institutions with stronger distribution capacity when firms move from bank loans to public debt markets during banking crises. Consistent with this interpretation, borrowers with stronger pre-crisis relationships with NBFI underwriters face smaller increases in bond spreads during banking crises, whereas borrowers with stronger pre-crisis nonbank lending relationships face larger increases in syndicated-loan spreads.

Third, firms with stronger pre-crisis relationships with NBFI bond underwriters are more likely to substitute from syndicated loans to corporate bonds during banking crises. In our preferred firm-quarter specification with country-sector-quarter fixed effects, a one-standard-deviation higher NBFI bond-underwriting share is associated with a 2.2 percentage point higher probability of switching to bonds during crises. This result is not driven by financially weaker firms being forced out of syndicated loan markets: firms with stronger NBFI underwriting relationships are not more leveraged, more vulnerable, or riskier. If anything, they are larger and have lower default risk. Additional heterogeneity tests show that the switching effect remains present among safer reference groups, indicating that the result is not driven only by weak borrowers.

We then examine alternative mechanisms. The substitution result is not explained by firms' prior exposure to NBFI lenders in the syndicated loan market, mitigating the concern that the result reflects only a loan-market push channel. It is also not explained by changes in the relative cost of loan and bond financing, access to high-reputation underwriters, prior bond-market access, or firms' prior importance in the bond market. These tests support the interpretation that NBFI underwriting relationships capture an intermediary-access margin: when banking

crises impair syndicated loan supply, firms with stronger pre-existing relationships with NBFIs bond underwriters are better positioned to access corporate bond markets.

Fourth, the shift toward bonds is large enough to preserve financing capacity. Firms with stronger NBFIs underwriting relationships experience a larger contraction in syndicated loan borrowing during banking crises, consistent with the retrenchment of NBFIs in balance-sheet-intensive loan markets. However, these firms also increase bond issuance substantially more. As a result, their total borrowing across syndicated loans and corporate bonds falls by less. For firms with no prior NBFIs underwriting relationship, total borrowing declines by around 14 percent during banking crises. For firms with the average NBFIs underwriting share, the decline is about 6 percent, implying that NBFIs underwriting relationships offset roughly half of the fall in total market borrowing. Thus, NBFIs relationships in the bond market operate as a partial ‘spare tire’ during banking crises: they mitigate the syndicated-loan credit supply shock through substitution across instruments rather than through the preservation of syndicated lending.

Fifth, firms with stronger NBFIs underwriting relationships exhibit relatively stronger outcomes during banking crises. They maintain higher debt capacity, invest more in tangible and intangible capital, and face smaller increases in the cost of debt relative to other firms operating in the same country, sector, and quarter. These reduced-form results suggest that the financing-capacity margin associated with NBFIs underwriting relationships is economically relevant.

Finally, the increase in NBFIs bond underwriting during crises is driven predominantly by NBFIs affiliated with banking groups. This result points to an organizational margin. Banking groups may sustain corporate-client relationships and fee income by reallocating activity toward broker-dealer affiliates when deposit-taking affiliates face tighter balance-sheet constraints (Albuquerque, Cerutti, Firat and Kagerer 2026). Because these affiliates specialize in origination-to-distribution intermediation, they can expand underwriting activity without increasing long-run credit exposure in the same way as syndicated lending. Independent NBFIs do not exhibit the same pattern, suggesting that the result reflects banking-group organization rather than broad sectoral nonbank resilience. This pattern is consistent with two complementary mechanisms: information and relationships accumulated through lending activities may support certification and placement by affiliated underwriters, and banking groups may help borrowers shift from balance-sheet-intensive syndicated loans toward bond issuance when bank balance sheets are constrained.

These findings help reconcile competing views of NBFIs during financial stress. Nonbanks may amplify downturns when they act as loan-market risk bearers, especially in markets where intermediation requires funding stability, exposure retention, and renegotiation capacity. At the same time, they may mitigate refinancing disruptions when they act as bond-market underwriters. The rise of nonbank finance therefore has different implications depending on the function performed: it can intensify stress in relationship-based loan markets while preserving access to market-based financing through primary bond issuance.

The paper contributes to three strands of literature. First, it contributes to research on nonbank cyclicalities. Recent work shows that NBFIs credit can be more procyclical than bank credit in syndicated loan markets ([Aldasoro et al. 2025](#), [Fleckenstein et al. 2026](#)). We show that this cyclicalities differs across intermediary functions: NBFIs retreat when they act as loan-market risk bearers but expand when they act as bond-market underwriters. This distinction helps explain why nonbanks can appear destabilizing in syndicated loan markets while supporting refinancing capacity in corporate bond markets.

Second, the paper contributes to the literature on loan–bond substitution and the real effects of bank credit supply shocks ([Adrian et al. 2013](#), [Becker and Ivashina 2014](#), [Fernández et al. 2018](#), [Goel and Zemel 2018](#), [Cortina et al. 2021](#), [Chen 2026](#)). We show that loan–bond substitution depends not only on borrower characteristics and investor demand, but also on pre-crisis relationships with NBFIs underwriters.

Third, the paper contributes to work on financial-group organization and the bank–nonbank nexus. Recent evidence shows that banking groups can shift activity between bank and nonbank affiliates when regulation or balance-sheet constraints change ([Cetorelli and Prazad 2025](#), [Albuquerque, Cerutti, Firat and Kagerer 2026](#), [Bai et al. 2026](#), [Cetorelli and Kundu 2026](#)). We show that banking crises generate a form of within-group reallocation from balance-sheet-intensive loan origination toward distribution-based bond underwriting through affiliated NBFIs. This result highlights how organizational structure shapes the transmission of banking crises to non-financial firms.

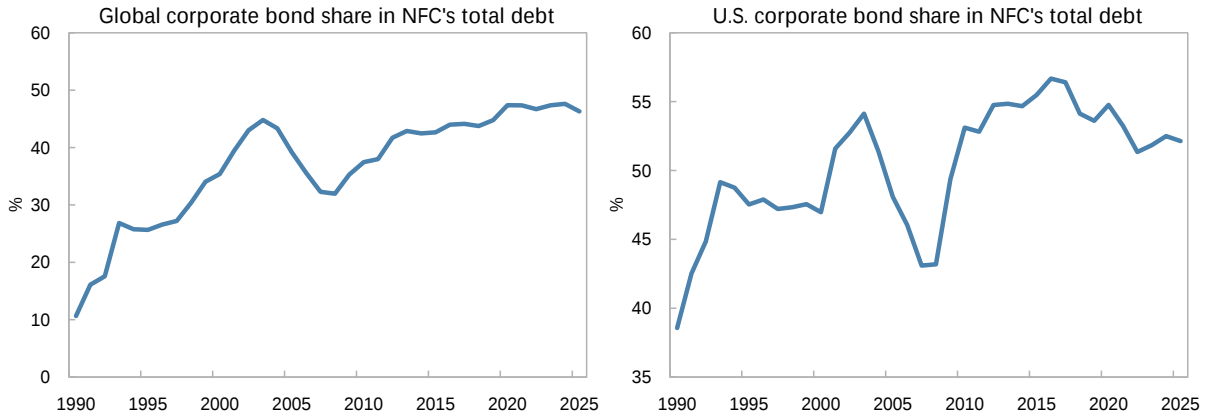
The remainder of the paper is organized as follows. Section 2 describes the data. Section 3 presents the main empirical results. Section 4 examines whether the increase in NBFIs bond underwriting reflects broad nonbank resilience or reallocation within banking groups. Section 5 reports robustness checks, and Section 6 concludes.

2 Data

2.1 Syndicated loans and corporate bonds

Nonfinancial firms rely on syndicated loans and corporate bonds to finance operations, investment, and refinancing needs. Studying the two markets jointly is thus important for understanding how banking crises affect firms' access to external debt. [Cortina et al. \(2021\)](#) estimate that syndicated loans and corporate bonds accounted for around half of NFCs' total debt financing over 2000–2014 across a large set of advanced economies (AEs) and emerging market economies (EMs). Corporate bonds have become especially important since the GFC. In our Dealogic sample, corporate bonds accounted for around 46 percent of the outstanding stock of syndicated loans and corporate bonds in 2025, up from 32 percent in 2007 (left panel of Figure 2).² For U.S. NFCs, Flow of Funds data show a similar trend: corporate bonds represented 52 percent of total bond and loan liabilities in 2025, up from 43 percent in 2007 (right panel of Figure 2). These patterns motivate our joint analysis of syndicated loans and corporate bonds.

Figure 2: Corporate bonds as a share of total debt



Source: Left panel: Dealogic and authors' calculations. Right panel: Financial Accounts of the United States (Z.1), and authors' calculations.

Notes: Left panel: stock of outstanding corporate bonds issued by NFCs as a share of total syndicated loans and corporate bonds for a large set of AEs and EMs. Right panel: U.S. nonfinancial corporate business bond liabilities (NCBCBIA027N) as a share of nonfinancial corporate business debt securities and loan liabilities (BCNSDODNS).

We obtain primary-market data on syndicated loans and corporate bonds from Dealogic. The syndicated loan data include loan amounts, maturity, facility type, borrower characteristics, syndicate composition, lender identity, and pricing through the all-in drawn spread, which includes fees, margins, and reference rates. Borrowers obtain funding from syndicates of lenders, with lead arrangers playing a central role in negotiating terms, assembling the syndicate, and

²Our numbers are broadly aligned with those reported in the OECD Global Debt Report 2025 for OECD countries, showing that outstanding NFC debt accounted for 43 percent of total market debt at end-2024 ([OECD 2025](#)).

coordinating with participating lenders. Because lender-specific participation amounts are often missing, we follow the literature and impute missing shares by assigning 50 percent of the facility amount to lead arrangers and distributing the remainder equally among other syndicate participants (Duchin and Sosyura 2014, Albuquerque, Cerutti, Chen and Firat 2026). This approach is consistent with evidence that lead arrangers typically retain the largest loan shares (Sufi 2007, Ivashina 2009), and prior work shows that alternative allocation rules generally produce similar results (Cerutti et al. 2015, Doerr and Schaz 2021, Aldasoro et al. 2025, Albuquerque, Cerutti, Chen and Firat 2026).

The corporate bond data include issuance amounts, maturity, coupon payments, yield-to-maturity (YTM), credit ratings, bond type, interest-rate type, and underwriting syndicate composition. Unlike in the syndicated loan data, we observe underwriter-specific participation amounts for most bond deals. When participation amounts are missing, we allocate the unsigned amount equally among underwriters. Conceptually, bonds and syndicated loans differ in important ways. Syndicated loans are typically more flexible, often allowing prepayment and renegotiation of terms, and are more likely to be floating-rate instruments. Corporate bonds are generally more standardized, are often issued at fixed rates, and are distributed to dispersed investors through bookrunners and underwriters. These differences are central to our distinction between balance-sheet-intensive lending and distribution-based underwriting.

Underwriting is not passive matching between issuers and investors. Bond underwriters accept mandates, advise on timing, conduct due diligence, certify issuers, build order books, coordinate syndicates, and place securities with investors. They may also bear reputational and short-run price or inventory risk. These functions imply that underwriter relationships can affect bond issuance during stress, even though underwriters typically do not retain the long-run credit exposure associated with syndicated lending.

Our analysis requires classifying financial intermediaries into banks and NBFIs.³ We follow Albuquerque, Cerutti, Chen and Firat (2026) and classify institutions using Dealogic SIC codes. Banks take SIC codes beginning with 60, referring to depository institutions. NBFIs are identified by SIC codes 61 to 67, excluding most real estate companies, primarily SIC codes starting with 65, and mortgage brokers with SIC code 6162.⁴ For intermediaries without SIC codes, we use a text-based classification based on institution names. We then manually review and reclas-

³Throughout the analysis, we use the term ‘intermediaries’ to refer jointly to lenders in syndicated loan markets and underwriters in corporate bond markets.

⁴We include the following SIC codes from the 65 series as NBFIs: 6510 (Real Estate Operators & Lessors), 6519 (Lessors of Real Property), and 6532 (Real Estate Dealers).

sify large investment banks that are frequently misclassified as banks, and exclude international financial institutions and development banks. This classification is based on the institutional type of the Dealogic deal participant. In Section 4, we separately use banking-group ownership data to distinguish independent NBFIs from NBFIs affiliated with banking groups.

Table 1 reports the composition of NBFIs in each market. In syndicated lending, NBFIs are concentrated among investment banks and broker-dealers, and investment funds and asset managers, including hedge funds. The sample also includes insurance and pension funds. In the bond market, NBFI underwriters are dominated by investment banks and broker-dealers. Figure A.1 in Appendix A shows that NBFIs have increased their participation in syndicated lending over time, reaching slightly less than half of outstanding syndicated loans in 2025, consistent with Albuquerque, Cerutti, Chen and Firat (2026). Their role is even larger in corporate bonds, where they underwrite around 80 percent of issuance by volume.

Table 1: Types of NBFIs

Type	Loans		Bonds	
	Number	Share	Number	Share
Investment banks, broker-dealers	1,925	41.7	1,966	82.6
Business credit institutions	153	3.3	13	0.5
Insurance and pension funds	371	8.0	8	0.3
Investment funds & asset managers	947	20.5	171	7.2
Other NBFIs	1,223	26.5	222	9.3
Total	4,619	100	2,380	100

Notes: Number and share of unique NBFIs in the syndicated loan market and bond market.

Tables A.1 and A.2 in Appendix A report summary statistics for syndicated loans and corporate bonds. Bonds carry longer maturities than loans, consistent with Hale (2007), while term length is relatively similar between banks and NBFIs within each market. Tranche sizes are also broadly comparable across loans and bonds, suggesting that bond issuance can provide economically meaningful financing for firms with bond market access. In the syndicated loan market, NBFIs originate larger tranches on average and charge higher spreads than banks.

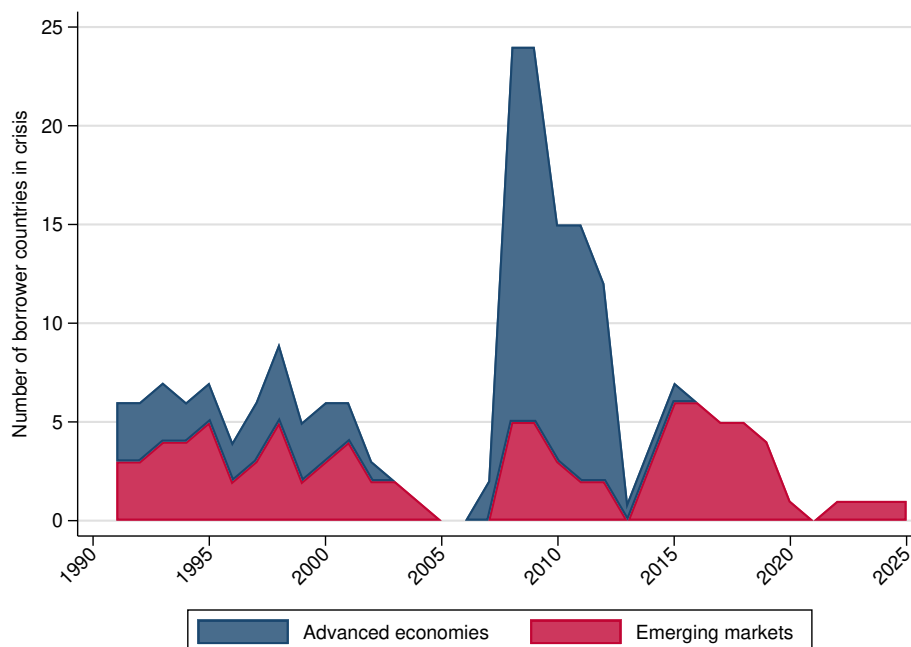
2.2 Banking crises

We proxy financial stress using the systemic banking-crisis database of Laeven and Valencia (2026), which identifies episodes of acute banking distress associated with large-scale policy interventions. In our Dealogic sample, we cover 60 distinct banking-crisis episodes over 1990–2025, corresponding to 203 borrower-country-year crisis observations. Figure 3 shows the dis-

tribution of borrower countries experiencing banking crises over time, separately for AEs and EMs. Although many countries experienced banking crises around the GFC, the sample also includes important crisis episodes outside this period. In the post-GFC period, banking-crisis observations are concentrated in EMs.

Our main outcome variables are new originations of syndicated loans and corporate bonds, deflated by the borrower country’s CPI deflator. In pricing exercises, we use the all-in drawn spread for syndicated loans and the bond yield spread, defined as the YTM net of a maturity-matched benchmark yield. The final estimation sample with non-missing banking-crisis information spans 1990–2025 and covers 10,451 lenders in the syndicated loan market and 3,931 underwriters in the corporate bond market, of which roughly 44 percent and 60 percent, respectively, are classified as NBFIs. The sample includes intermediaries from 108 countries, of which 34 are AEs and 74 are EMs. We restrict the analysis to lending and underwriting for nonfinancial firms by excluding banks, diversified financial firms, and insurance companies as borrowers. The final borrower sample covers 83,400 unique NFCs in the syndicated loan market and 32,063 unique NFCs in the corporate bond market, located in 109 borrower countries.

Figure 3: Borrower countries in banking crisis



Notes: Number of borrower countries experiencing a systemic banking crisis in each year, based on the [Laeven and Valencia \(2026\)](#) crisis indicator.

2.3 Balance sheet data on nonfinancial firms

Starting in Section 3.2, we use balance-sheet data for NFCs from S&P Compustat to study heterogeneity in financing choices and firm outcomes. The match is necessarily imperfect because balance-sheet data are available only for listed companies. We link Dealogic borrowers to Compustat using a country-blocked fuzzy name-matching procedure.⁵ We match around 14,000 unique NFCs with Compustat data.

We use several balance-sheet indicators: total assets; leverage, defined as the sum of short- and long-term debt scaled by total assets; net liquid assets scaled by total assets; tangible capital stock (property, plant, and equipment); intangible investment, proxied by R&D expenses plus 30 percent of SG&A expenses; total asset turnover (APK), measured as sales divided by total assets; employment; sales; and the implicit interest rate, measured as interest expenses over total debt. We also use the probability of default (PD) over the next 24 months from the National University of Singapore’s Credit Research Initiative (NUS-CRI).

Table A.3 in Appendix A compares selected borrower characteristics across the syndicated loan and corporate bond markets. Total corporate leverage is similar across the two markets, with average debt-to-assets ratios of about 31 percent in both samples. However, firms accessing the corporate bond market are considerably larger, and their capital stock is roughly twice as large. Bond-market borrowers also appear somewhat less risky, with lower probabilities of default and slightly lower implicit interest rates. Overall, these patterns are consistent with the view that access to corporate bond markets is concentrated among larger and safer firms, in line with the idea that firms that graduate from the loan market to the bond market tend to have stronger balance sheets.

3 Main results

The empirical analysis proceeds at two levels of aggregation. In Section 3.1, the unit of observation is the intermediary–borrower–year, which allows us to compare whether banks and

⁵We first standardize firm names in both datasets by converting them to uppercase, removing punctuation and excess whitespace, and deleting common legal and organizational suffixes such as “Inc.,” “Corp.,” “Ltd.,” “Holdings,” and “Group.” We then compare each Dealogic firm only with Compustat firms located in the same country. Name similarity is measured using a weighted combination of character-based, partial-string, and token-based matching scores. We supplement the name-based score with industry information by assigning a bonus when firms have identical four-digit SIC codes or belong to the same two-digit SIC industry. For each Dealogic firm, the procedure identifies the Compustat candidate with the highest combined score. To construct the final crosswalk, we retain only exact matches with a combined similarity score of 100.

NBFIs continue to originate or underwrite primary-market financing for the same borrowers during crises. We study syndicated loans and corporate bonds separately to test whether the cyclicity of NBFIs differs across the two intermediation functions. We then aggregate the data to the firm–quarter level to study firms’ financing choices. Section 3.2 asks whether firms are more likely to rely on corporate bonds rather than syndicated loans during banking crises, and whether this substitution is stronger for firms with pre-crisis relationships with NBFI bond underwriters. Section 3.3 examines alternative mechanisms that could explain the switching result. Section 3.4 studies whether the substitution toward bonds preserves financing capacity by examining firms’ total market borrowing. Finally, Section 3.5 asks whether firms with stronger NBFI underwriting relationships exhibit different outcomes during crises. Throughout the firm-level analysis, we use quarterly data because financing choices and firm outcomes can adjust within narrow refinancing windows during periods of financial stress.

3.1 Bank and NBFI credit intermediation during banking crises

Our first research question is to study how bank and nonbank participation in primary debt markets changes during banking crises. We study this question separately for syndicated loans and corporate bonds. To measure each intermediary’s exposure to banking crises in borrower countries, we construct the following measure:

$$Crisis\ exposure_{l,c,t} = \frac{Credit_{l,c,t-1}}{\sum_c^N Credit_{l,t-1}} \times Crisis_{c,t}, \quad (1)$$

where $Credit_{l,c,t-1}$ is the lagged loan or bond volume originated or underwritten by intermediary l to NFCs in borrower country c , and $\sum_c^N Credit_{l,t-1}$ is the intermediary’s total loan or bond book across borrower countries. $Crisis_{c,t}$ is an indicator equal to one if borrower country c is experiencing a systemic banking crisis in year t , based on [Laeven and Valencia \(2026\)](#), and zero otherwise. This construction follows the logic of exposure measures used in the international banking literature, where the effect of a shock depends on the intermediary’s pre-existing exposure to affected countries ([Popov and Van Horen 2015](#)). In our sample, average crisis exposure is 6.7 percent in the syndicated loan market and 5.1 percent in the corporate bond market, with standard deviations of 23.1 and 20.3 percentage points, respectively.

We aggregate the data at the intermediary–borrower–year level. This level of aggregation allows us to compare credit originated or underwritten by different intermediaries to the same

borrower over time. Following [Aldasoro et al. \(2025\)](#), we focus on the extensive margin of lending by adjusting our panel with credit amounts of zero in the years immediately before and after each observed credit origination. We estimate the following specification separately for syndicated loans and corporate bonds:

$$\begin{aligned} \log(1 + Y)_{l,i,t} &= \beta_1 \text{Crisis exposure}_{l,c,t} + \beta_2 \text{Crisis exposure}_{l,c,t} \times \text{Nonbank}_l \\ &+ \phi_{l,i} + \psi_{p,t} + \mu_{i,t} + \epsilon_{l,i,t}, \end{aligned} \quad (2)$$

where the dependent variable is the logarithm of one plus new syndicated lending or new corporate bond issuance originated or underwritten by intermediary l to borrower i in year t . Nonbank_l is equal to one for NBFIs and zero for banks. $\text{Crisis exposure}_{l,c,t}$ is the previously computed intermediary-specific crisis exposure to borrower-country c , ranging from zero to one. The coefficient β_1 captures the response of banks to crisis exposure, while β_2 measures the differential response of NBFIs *relative* to banks. We report economic magnitudes for a one-standard-deviation increase in crisis exposure. All specifications include intermediary–borrower fixed effects, $\phi_{l,i}$, which absorb persistent relationship-level heterogeneity. The most demanding specifications also include parent×year fixed effects, $\psi_{p,t}$, and firm×year fixed effects, $\mu_{i,t}$, so identification comes from comparing financing provided to the same borrower in the same year by intermediaries with different exposure to borrower-country banking crises. Standard errors are clustered by intermediary and borrower country.

Table 2 reports the results for syndicated loans. Higher crisis exposure is associated with lower syndicated lending (column 1), and this contraction is stronger for NBFIs than for banks (columns 2–4). In the preferred specification in column (4) with a tight set of fixed effects, the interaction coefficient is -0.056 , implying that a one-standard-deviation increase in crisis exposure is associated with about 1.3 percent (-0.056×0.231) lower syndicated lending by NBFIs relative to banks. The result is robust to replacing crisis exposure with a banking-crisis dummy (Table B.1 in Appendix B). It is also stronger for term loans than for credit lines (Table B.2), consistent with NBFIs retrenching more sharply in the funded-credit segment of the syndicated-loan market, while banks remain relatively more willing to provide commitment-based facilities during crises. Overall, these findings are consistent with syndicated lending being a relationship- and balance-sheet-intensive form of credit, and with recent evidence that NBFI lending is more cyclical than bank lending during periods of stress, as documented by [Aldasoro et al. \(2025\)](#) for a global sample over 1995–2018, and by [Fleckenstein et al. \(2026\)](#) for a sample

of U.S. firms over 2000-20.

Table 2: Syndicated loans: banking crises exposure

	(1)	(2)	(3)	(4)
Crisis Exp.	-0.207*** (0.066)	-0.175** (0.072)	-0.156* (0.089)	0.059 (0.083)
Crisis Exp. $\times$ Nonbank		-0.088*** (0.026)	-0.096*** (0.029)	-0.056*** (0.013)
Borrower $\times$ Lender FE	✓	✓	✓	✓
Time FE	✓	✓		
Parent $\times$ Time			✓	✓
Firm $\times$ Time FE				✓
Observations	2,532,973	2,532,973	2,501,495	2,425,913
R^2	0.160	0.160	0.177	0.786

Notes: The dependent variable is $\log(1 + Y)$, where Y is new syndicated lending. Crisis exposure ranges from zero to one. Standard errors clustered at the lender and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table 3 reports the corresponding results for corporate bonds. In the preferred specification in column (4), a one-standard-deviation increase in crisis exposure is associated with about 8 percent (0.393×0.203) higher bond underwriting by NBFIs relative to banks. This differential effect remains robust to replacing crisis exposure with a banking-crisis dummy (Table B.3 in Appendix B) and to estimating the specification at quarterly frequency (Table B.4).⁶ The result does not imply that NBFIs absorb more long-run credit risk. Rather, it indicates that NBFIs expand in the part of corporate debt intermediation where balance-sheet exposure is more limited, and where investor placement is central.

We also address the concern that the crisis-exposure measure may partly capture intermediary geographic concentration. Because crisis exposure is based on the intermediary's lagged portfolio share in the crisis country, it may be correlated with how diversified the intermediary is across borrower countries. We therefore construct an intermediary-level geographic concentration measure, $HHI_{l,t-1} = \sum_c s_{l,c,t-1}^2$, where $s_{l,c,t-1}$ is intermediary l 's lagged portfolio share in borrower country c , and re-estimate the baseline specification controlling for $HHI_{l,t-1}$ and its interactions with crisis exposure and the nonbank indicator. Table B.6 in Appendix B shows that the results are robust. In syndicated loans, the marginal differential response of NBFIs

⁶As an additional robustness check, we re-estimate the baseline specifications for syndicated loans and corporate bonds using Poisson pseudo-maximum likelihood (PPML), following Santos Silva and Tenreyro (2006). This addresses concerns that estimates based on $\log(1 + Y)$ may be sensitive to the treatment of zero credit observations and to the scaling of the outcome variable (Chen and Roth 2024). Table B.5 in Appendix B shows that the results are robust: NBFIs contract syndicated lending relative to banks during banking crises, while expanding corporate bond underwriting relative to banks.

Table 3: Corporate bonds: banking crises exposure

	(1)	(2)	(3)	(4)
Crisis Exp.	-0.039 (0.111)	-0.283*** (0.096)	-0.406*** (0.149)	-0.005 (0.224)
Crisis Exp. $\times$ Nonbank		0.293*** (0.048)	0.452*** (0.086)	0.392*** (0.062)
Borrower $\times$ Underwriter FE	✓	✓	✓	✓
Time FE	✓	✓		
Parent $\times$ Time			✓	✓
Firm $\times$ Time FE				✓
Observations	1,025,505	1,025,505	1,008,748	965,019
R^2	0.182	0.182	0.211	0.723

Notes: The dependent variable is $\log(1+Y)$, where Y is new corporate bond issuance. Crisis exposure ranges from zero to one. Standard errors clustered at the underwriter and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

remains negative across the admissible range of $HHI_{l,t-1}$. The positive triple interaction with intermediary HHI implies that geographic concentration attenuates rather than amplifies the differential NBFIs contraction. In corporate bonds, the corresponding marginal differential response of NBFIs remains positive. These results indicate that the main quantity findings are not driven by differences in geographic diversification across banks and NBFIs.

Taken together, Tables 2 and 3 show that NBFIs cyclicalities differs sharply across debt markets. In syndicated loans, NBFIs contract relative to banks during banking crises. In corporate bonds, they expand underwriting relative to banks. This contrast is consistent with the different functions intermediaries perform across markets: NBFIs act as loan-market risk bearers in syndicated lending, but as bond-market underwriters in corporate bond issuance. The same broad nonbank sector can therefore amplify stress in balance-sheet-intensive lending while supporting access to market-based debt through distribution-based underwriting. The increase in NBFIs underwriting during crises therefore represents a relative shift in primary-market origination and distribution capacity toward intermediaries specialized in placing securities with investors.

We next examine whether this functional distinction is also visible in pricing. We aggregate the data to the instrument–borrower–year level to avoid duplicating pricing information across multiple intermediaries within the same transaction. The term ‘instrument’ refers to a loan facility for syndicated loans and a bond tranche for corporate bonds. We estimate:

$$\begin{aligned}
Spread_{f,i,t} = & \beta_1 Crisis_{c,t} + \beta_2 Crisis_{c,t} \times NB\ shr_{i,t-1} + \beta_3 NB\ shr_{i,t-1} \\
& + Ctrls_{f,t} + \alpha_i + \zeta_t + \epsilon_{f,i,t},
\end{aligned} \tag{3}$$

where the dependent variable is a pricing measure for debt instrument f issued by borrower i at time t : the all-in drawn spread over LIBOR for syndicated loans and the bond yield spread for corporate bonds, defined as the YTM net of a maturity-matched benchmark yield. For bonds denominated in USD, CHF, GBP, JPY, and EUR, we use the corresponding government benchmark curve; for other currencies, we use the USD curve because currency-specific maturity-matched benchmarks are not consistently available. Since pricing is observed at the instrument–borrower–year level, we compute $NB\ shr_{i,t-1}$ at the borrower level. In the loan regressions, this is the lagged share of syndicated loans originated by nonbanks over the previous five years, as in [Albuquerque, Cerutti, Chen and Firat \(2026\)](#); in the bond regressions, it is the lagged share of corporate bonds underwritten by NBFIs over the previous five years. $Crisis_{c,t}$ equals one if borrower country c is experiencing a banking crisis in year t . Facility-level controls in $Ctrls_{f,t}$ include years to maturity, log instrument amount, and instrument-type controls: loan type (term loans, credit lines, and other) for syndicated loans, and rating category (investment grade versus junk rating) and interest-rate type (floating versus fixed rate) for bonds. All specifications include firm and time fixed effects, with tighter specifications adding country $\times$ year or country $\times$ sector $\times$ year fixed effects. Standard errors clustered at the borrower-country level.

Table 4 shows that the pricing evidence mirrors the evidence on quantities. Column (1) shows that spreads of syndicated loans increase by an average of 46.7 bps during crises. We then show that borrowers with stronger prior nonbank lending relationships face larger increases in loan spreads during banking crises. In column (2), a one-standard-deviation higher nonbank loan share is associated with an additional 7.5 bps increase in loan spreads during crises, or about 20 percent more relative to borrowers with no prior nonbank loan share (relative to an increase of 36.8 bps for borrowers with no prior nonbank loan share).⁷ The effect declines somewhat when controlling for country-by-year and country-by-sector-by-year shocks, but it remains statistically significant (columns 3–4), fully consistent with the notion that nonbank loan facilities become more expensive relative to bank facilities during periods of financial stress ([Aldasoro et al. 2025](#), [Fleckenstein et al. 2026](#)).

In corporate bonds, the pattern is the opposite. Bond spreads increase during banking crises, but the increase is smaller for borrowers with stronger pre-crisis relationships with NBFIs underwriters. In column (6), a one-standard-deviation higher NBFIs underwriting share is associated with an 18.5 bps lower increase in bond spreads during banking crises, or about 21 percent less

⁷The standard deviation of the five-year $NB\ shr$ in the syndicated loan market is 29.2 percent, so the implied effect is $25.832 \times 0.292 = 7.5$ bps, or $\frac{7.5}{36.8} \times 100 = 20.4$ percent.

relative to borrowers with no prior NBFi underwriting share.⁸ This relative reduction declines by about half when comparing borrowers within the same country-year and country-sector-year, but remains statistically significant in columns (7)–(8).

Overall, we find that during banking crises, NBFIs contract in syndicated lending relative to banks, where intermediation requires balance-sheet capacity and risk retention. At the same time, they expand corporate bond underwriting relative to banks, where the key function is to certify issuers and place securities with investors. The pricing results are consistent with this interpretation: nonbank relationships are associated with higher loan spreads in crises but smaller increases in bond spreads. The evidence therefore supports our central claim that nonbank cyclicity is function-specific.

Table 4: Spreads

	(1) Loans	(2) Loans	(3) Loans	(4) Loans	(5) Bonds	(6) Bonds	(7) Bonds	(8) Bonds
Crisis	46.718*** (7.018)	36.815*** (7.957)			29.325 (24.957)	89.699** (42.745)		
Crisis $\times$ NB shr.		25.832*** (7.773)	25.645*** (7.523)	15.108*** (2.082)		-71.279* (40.579)	-39.610*** (9.554)	-38.572** (15.033)
NB shr.		3.617 (3.612)	7.780*** (1.435)	9.255*** (0.894)		24.905 (22.476)	15.651 (11.837)	27.830 (23.954)
Facility controls	✓	✓	✓	✓	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓			✓	✓		
Country $\times$ Time FE			✓				✓	
Country $\times$ Sector $\times$ Time FE				✓				✓
Observations	96,273	96,273	96,072	93,816	130,736	130,736	130,658	129,689
R^2	0.581	0.581	0.591	0.616	0.021	0.021	0.022	0.026

Notes: Data aggregated at the instrument-borrower-year level. ‘Instrument’ refers to a loan facility for syndicated loans, and a bond tranche for corporate bonds. Dependent variable is the all-in drawn loan spread (in bps) in columns (1)–(4), and the yield to maturity net of the corresponding maturity yield curve in the bond market in columns (5)–(8). *NB shr.* refers to the share of loans (bonds) originated (underwritten) by NBFIs in total loans (bonds) over the previous five years for each borrower. Standard errors clustered at the borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

3.2 Loan–bond substitution during crises

The previous section studied how banks and NBFIs adjust their participation in syndicated loan and corporate bond markets during banking crises. We now move from the financial intermediary–borrower level to the firm–quarter level to study firms’ financing choices. This exercise asks whether firms substitute from syndicated loans to corporate bonds during banking crises, and particularly whether this substitution margin is stronger for firms with pre-crisis

⁸The standard deviation of the five-year *NB shr.* in the corporate bond market is 26 percent, so the implied effect is $-71.279 \times 0.26 = -18.5$ bps, or $\frac{-18.5}{89.699} \times 100 = -20.6$ percent.

relationships with NBFI bond underwriters. We use quarterly data because loan–bond substitution can occur within narrow refinancing windows, although the results are largely insensitive to aggregating the data at the firm-year level.⁹

This exercise builds on [Becker and Ivashina \(2014\)](#), who show that firms substitute from bank loans to bonds when bank credit supply tightens, helping preserve access to external finance. We extend this setting to systemic banking crises across countries and ask whether pre-crisis relationships with NBFI bond underwriters facilitate firms’ access to bond markets when bank credit is impaired.

The sample consists of firm-quarter observations in which the firm raises debt in the primary market, either through a syndicated loan or a corporate bond. We therefore exclude firm-quarters with no debt issuance, following the approach in [Becker and Ivashina \(2014\)](#), and [Goel and Zemel \(2018\)](#). Relative to this literature, our focus is not only on whether firms substitute from loans to bonds during banking crises, but on whether this substitution is stronger for firms with pre-existing relationships with NBFI underwriters. We estimate the following linear probability model:¹⁰

$$B_{i,t} = \beta_1 NB\ shr_{i,t-1} + \beta_2 Crisis_{c,t} \times NB\ shr_{i,t-1} + \mu_{c,s,t} + \epsilon_{i,t}, \quad (4)$$

where $B_{i,t}$ is an indicator equal to one if the dollar amount of corporate bonds issued by firm i in quarter t exceeds the dollar amount of syndicated loans obtained in the same quarter. This definition allows firms to issue both loans and bonds within the same quarter, in the spirit of [Cortina et al. \(2021\)](#). The results are robust to restricting the comparison to quarters in which the firm issues only one instrument, essentially dropping firm-quarters in which firms issue both loans and bonds, as in [Becker and Ivashina \(2014\)](#).¹¹ $Crisis_{c,t}$ is an indicator equal to one if borrower country c is in a banking crisis in quarter t . The variable $NB\ shr_{i,t-1}$ measures the firm’s pre-existing relationship with NBFI underwriters, defined as the lagged share of the firm’s

⁹Annual aggregation combines loans and bonds issued at different points in the year and thus obscures short-run shifts in financing composition. Quarterly data allow us to capture higher-frequency changes in instrument choice.

¹⁰We use a linear probability model because it allows us to absorb high-dimensional fixed effects, in particular country–sector–quarter fixed effects and, in robustness checks, firm fixed effects. Nonlinear fixed-effects logit models are considerably less convenient in this setting and may drop observations from fixed-effect groups without within-group variation in the outcome. The linear specification keeps the estimating sample transparent and yields coefficients that are directly interpretable as changes in the probability of bond financing.

¹¹[Becker and Ivashina \(2014\)](#) and [Goel and Zemel \(2018\)](#) note that simultaneous issuance of loans and bonds in the same quarter is uncommon. In our sample, firm-quarters with both loan and bond issuance account for around three percent of debt-issuance observations.

corporate bond issuance underwritten by NBFIs over the previous five years. We assign the value of zero to firms with no observed NBFI bond underwriting.¹²

The coefficient of interest is β_2 , which measures whether the relation between pre-crisis NBFI underwriting relationships and bond financing is stronger during banking crises. Our preferred specification includes country–sector–quarter fixed effects, $\mu_{c,s,t}$, which absorb all shocks common to firms operating in the same country and sector at the same point in time, including the standalone banking-crisis dummy. Identification therefore comes from cross-sectional differences across firms within the same country, sector, and quarter, comparing firms with stronger and weaker pre-crisis NBFI underwriting relationships.

We do not include firm fixed effects in the baseline specification because we aim to capture persistent differences in firms’ pre-crisis access to NBFI underwriters. Firm fixed effects would absorb much of this cross-sectional variation and identify the coefficient only from within-firm changes in the interaction between banking crises and the NBFI relationship measure. This is a demanding specification because $NB\ shr_{i,t-1}$ is highly persistent by construction and empirically: firm fixed effects alone explain about 56 percent of its variation, and the pooled autocorrelation remains around 0.6 up to eight quarters. We nevertheless report specifications with firm fixed effects as robustness checks.

In some specifications, we add Compustat firm controls, lagged one quarter: log assets, debt-to-assets, net liquid assets-to-assets, and asset turnover. We include these controls directly and interact them with the banking-crisis indicator and $NB\ shr_{i,t-1}$, allowing the switching response to vary with observable firm characteristics. Continuous controls are demeaned within the relevant estimation sample, so the coefficient on $Crisis \times NB\ shr$ is evaluated at average firm characteristics. The sample size declines because Compustat covers listed firms and the Compustat–Dealogic match is imperfect. Standard errors are clustered at the firm level.

Column (1) of Table 5 shows that firms are, on average, 9.7 percentage points more likely to issue corporate bonds rather than syndicated loans during banking crises, consistent with bond markets providing an alternative financing source when bank credit supply is impaired. Column (2) shows that this substitution is stronger for firms with pre-existing relationships with NBFI

¹²A potential concern is that $NB\ shr_{i,t-1}$ may be correlated with persistent firm unobservables that also affect firms’ propensity to issue bonds during crises. We address this concern by comparing firms within the same country–sector–quarter, by adding lagged firm controls and firm fixed effects in some specifications, and by showing that the result survives in the subsample of firms with prior bond-market access, where identification comes from variation in the composition of past underwriters rather than from the extensive margin of bond access.

bond underwriters: firms with higher lagged NBFI underwriting shares are differentially more likely to switch to bonds during banking crises.

Our results are robust to increasingly demanding fixed effects. Column (4), our preferred specification, includes country–sector–quarter fixed effects and therefore compares firms operating in the same country and sector at the same point in time. In this specification, a one-standard-deviation higher NBFI bond-underwriting share is associated with a 2.2 percentage point higher probability of switching to bonds during banking crises.¹³ The result is also robust when adding lagged firm balance-sheet controls (column 5), and when including firm fixed effects to explore within-firm changes in financing choice over time (columns 6–7). Overall, the evidence indicates that firms with stronger NBFI underwriting relationships are differentially more likely to substitute from syndicated loans to corporate bonds when their country is experiencing a banking crisis.

Table 5: Probability of switching to bond issuance during banking crises

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crisis	0.097*** (0.005)	0.034*** (0.004)	-	-	-	-	-
Crisis $\times$ NB shr.		0.102*** (0.008)	0.057*** (0.009)	0.064*** (0.010)	0.071*** (0.025)	0.093*** (0.010)	0.059** (0.028)
NB shr.		0.741*** (0.004)	0.724*** (0.004)	0.703*** (0.004)	0.742*** (0.010)	0.536*** (0.005)	0.665*** (0.012)
Country FE	✓	✓					
Sector FE	✓	✓					
Time FE	✓	✓					
Country $\times$ Time FE			✓				
Sector $\times$ Time FE			✓				
Country $\times$ Sector $\times$ Time FE				✓	✓	✓	✓
Firm Controls					✓		✓
Firm FE						✓	✓
Observations	329,422	329,422	327,260	292,603	40,448	232,126	36,829
R^2	0.316	0.552	0.604	0.671	0.710	0.828	0.775

Notes: The dependent variable is an indicator equal to one if the dollar amount of corporate bonds issued by a given firm in a given quarter exceeds the dollar amount of syndicated loans obtained in the same quarter. *Crisis* is an indicator equal to one if the borrower’s country is experiencing a banking crisis. *NB shr.* is the lagged share of the firm’s corporate bond issuance underwritten by NBFIs over the previous five years. Firm controls are lagged one quarter and include firm size, leverage, net liquidity asset ratio, and total asset turnover ratio. Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table 6 shows that the result is robust to alternative measures of NBFI underwriting relationships. Columns (2)–(4) use alternative windows for the NBFI bond-underwriting share: the previous year, the previous two years, and all past observations, respectively. Column (5) counts the number of prior NBFI-underwritten bond issues over the previous five years, capturing the

¹³The standard deviation of *NB shr.* in this firm-quarter sample is 33.7 percent, and the mean is 17.2 percent.

intensity of the firm’s relationship with NBFIs underwriters. In each case, firms with stronger prior NBFIs underwriting relationships are more likely to switch to bonds during banking crises. The result also remains qualitatively unchanged when restricting the sample to firm-quarters in which the firm issues only one instrument, either bonds or loans (column 6), as in [Becker and Ivashina \(2014\)](#). Finally, the result is robust to replacing the continuous NBFIs underwriting share with an indicator for firms whose NBFIs underwriting share is above the 90th percentile of the quarterly distribution (column 7).

Table 6: Probability of switching to bond issuance during banking crises: robustness

	(1) Base	(2) 1y	(3) 2y	(4) All	(5) Count	(6) Alt. dep.	(7) High shr.
Crisis $\times$ NB shr.	0.064*** (0.010)	0.082*** (0.014)	0.076*** (0.011)	0.078*** (0.010)	0.002* (0.001)	0.115*** (0.009)	0.095*** (0.011)
NB shr.	0.703*** (0.004)	0.567*** (0.006)	0.634*** (0.005)	0.735*** (0.004)	0.007*** (0.000)	0.773*** (0.005)	0.532*** (0.005)
Country $\times$ Sector $\times$ Time FE	✓	✓	✓	✓	✓	✓	✓
Observations	292,603	292,603	292,603	292,603	292,603	282,776	292,603
R^2	0.671	0.586	0.625	0.689	0.548	0.711	0.584

Notes: The dependent variable in columns (1)-(5) and (7) is an indicator equal to one if the dollar amount of corporate bonds issued by a given firm in a given quarter exceeds the dollar amount of syndicated loans obtained in the same quarter. In column (6), the sample is restricted to firm-quarters in which the firm issues only one instrument, either bonds or loans. *Crisis* is an indicator equal to one if the borrower’s country is experiencing a banking crisis. *NB shr.* is the lagged share of the firm’s corporate bond issuance underwritten by NBFIs over the previous five years (column 1), over the previous one year (column 2), over the previous two years (column 3), and over all past observations (column 4). Column (5) counts the number of bonds intermediated by NBFIs over the preceding five years. Column (7) uses *NB shr.* as a dummy variable equal to one if the NBFIs bond-underwriting share of the firm is above the 90th percentile of the sample distribution in each quarter. Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

We now examine whether the stronger loan–bond substitution among firms with higher NBFIs bond-underwriting shares reflects borrower selection. A natural concern is that firms with stronger NBFIs underwriting relationships may be systematically weaker and therefore more likely to move into bond markets during banking crises because they are shut out of syndicated loan markets. We address this concern in two steps. First, we compare the observable characteristics of firms with different degrees of prior NBFIs bond-underwriting relationships during crisis-period financing decisions. Second, we test whether the switching result is concentrated only among financially weak borrowers.

We begin with a borrower-quality diagnostic. Although [Table 5](#) shows that the switching result is robust to adding firm controls, that exercise asks whether the switching coefficient survives after conditioning on firm characteristics. Here, we instead ask whether firms with stronger NBFIs underwriting relationships are weaker before their financing decisions during

banking crises. Specifically, for each firm characteristic k , we estimate:

$$X_{i,t}^{k,pre} = \beta NB\ shr_{i,t-1} + \mu_{c,s,t} + \epsilon_{i,t}, \quad \text{for } Crisis_{c,t} = 1, \quad (5)$$

where $X_{i,t}^{k,pre}$ is the average of firm characteristic k over the four quarters preceding quarter t . $NB\ shr_{i,t-1}$ is the lagged share of firm i 's corporate bond issuance underwritten by NBFIs over the previous five years. The fixed effects $\mu_{c,s,t}$ are country–sector–quarter fixed effects. The coefficient β therefore compares firms operating in the same country and sector at the same point in time during a banking crisis, but with different intensities of prior NBFI underwriting relationships.

Table 7 does not indicate that firms with stronger NBFI underwriting relationships are systematically weaker around the financing decision during banking crises. Columns (1)–(4) use continuous measures of leverage, liquidity, firm size, and default risk measured with PDs over the next 24 months. Columns (5)–(10) focus instead on the tails of the distribution: firms with high leverage, low liquidity, small size, high default risk, vulnerable firms, and zombie firms.¹⁴ Although firms with stronger NBFI bond-underwriting relationships tend to have lower liquid asset ratios, there is no evidence that they are more levered, more vulnerable, or more likely to be zombies. If anything, they appear stronger along other dimensions: they are larger and less likely to be classified as small or high-PD firms. This pattern is consistent with prior evidence that stronger and less risky firms are more likely to switch from loans to bonds during crises (Becker and Ivashina 2014, Goel and Zemel 2018, Cortina et al. 2021).

Table 7: Borrower quality during banking crises

	(1) Lev.	(2) Liq.	(3) Size	(4) PD	(5) High Lev.	(6) Low Liq.	(7) Small	(8) High PD	(9) Vuln.	(10) Zom
NB shr.	0.983 (1.112)	-3.320*** (0.835)	1.703*** (0.100)	-0.635*** (0.100)	-0.002 (0.022)	0.063*** (0.023)	-0.295*** (0.015)	-0.082*** (0.022)	-0.001 (0.014)	-0.005 (0.013)
Country×Sector× Time FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	5,767	5,641	5,767	4,168	5,767	5,641	5,767	4,168	5,641	3,195
R^2	0.262	0.398	0.405	0.330	0.233	0.361	0.284	0.258	0.209	0.376

Notes: The sample is restricted to firm-quarter observations in which the borrower's country is experiencing a banking crisis. The dependent variables are firm characteristics measured over the four quarters preceding the financing quarter. Columns (1)–(4) use continuous measures of leverage, liquidity, firm size, and probability of default. Columns (5)–(8) use indicators for high leverage, low liquidity, small size, and high PD. Column (9) uses an indicator for vulnerable firms, defined as firms with high debt and low liquid assets following Albuquerque (2024). Column (10) uses the zombie-firm indicator from Albuquerque and Iyer (2024). *NB shr.* is the lagged share of the firm's corporate bond issuance underwritten by NBFIs over the previous five years. Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

¹⁴We define vulnerable firms as in Albuquerque (2024), i.e., firms with high debt (top quintile of the debt distribution), and low liquid assets (bottom quintile of the liquid-assets distribution). Zombie firms are computed following Albuquerque and Iyer (2024), who identify unprofitable and unviable firms as those with an interest coverage ratio below one, leverage above the median firm in the same country-industry pair, and negative real sales growth, with all three conditions satisfied for at least two consecutive years.

We next test whether the switching result is concentrated only among financially weak borrowers. Table 8 interacts $Crisis \times NB\ shr.$ with indicators for high-PD firms, low-liquidity firms, high-leverage firms, small firms, vulnerable firms, and zombie firms. The specifications mirror the specification in column (5) of Table 5, which uses Compustat-based firm controls. The coefficient on $Crisis \times NB\ shr.$, which captures the switching effect for the safer reference group, remains positive and statistically significant across all specifications. The switching result is therefore not driven only by weak firms being forced out of syndicated loan markets.

Overall, these exercises mitigate the concern that the substitution toward bonds is driven by distressed firms being pushed out of syndicated loan markets. Firms with stronger NBFI underwriting relationships are not observably weaker on average, and the switching effect is present among safer reference groups. The evidence is instead consistent with an intermediary-access channel among bond-eligible firms: when banking crises impair syndicated loan supply, firms with stronger pre-existing relationships with NBFI bond underwriters are better positioned to access corporate bond markets.

Table 8: Loan–bond substitution during banking crises: borrower heterogeneity

	(1) High PD	(2) Low liq.	(3) High lev.	(4) Small	(5) Vulnerable	(6) Zombie
$Crisis \times NB\ shr.$	0.110*** (0.035)	0.087*** (0.027)	0.052* (0.028)	0.045* (0.027)	0.068*** (0.026)	0.137*** (0.038)
$Crisis \times NB\ shr. \times Risk$	-0.093* (0.056)	-0.068* (0.039)	0.096** (0.048)	0.297*** (0.072)	0.059 (0.055)	0.231* (0.122)
$NB\ shr.$	0.690*** (0.013)	0.739*** (0.011)	0.757*** (0.010)	0.746*** (0.011)	0.744*** (0.010)	0.644*** (0.014)
Country $\times$ Sector $\times$ Time FE	✓	✓	✓	✓	✓	✓
Firm controls	✓	✓	✓	✓	✓	✓
Observations	28,365	40,448	40,448	40,448	40,448	20,258
R^2	0.725	0.710	0.710	0.710	0.710	0.752

Notes: The dependent variable is an indicator equal to one if the dollar amount of corporate bonds issued by a given firm in a given quarter exceeds the dollar amount of syndicated loans obtained in the same quarter. $Crisis$ is an indicator equal to one if the borrower’s country is experiencing a banking crisis. $NB\ shr.$ is the lagged share of the firm’s corporate bond issuance underwritten by NBFIs over the previous five years. Each column reports a separate regression that interacts $Crisis \times NB\ shr.$ with an indicator for a given borrower characteristic. $Risk$ is defined as follows: high-PD firms and high-leverage firms are those in the top quartile of their respective distributions; low-liquidity firms and small firms are those in the bottom quartile of their respective distributions; vulnerable firms are those with both high leverage and low liquidity; and zombie firms are defined following [Albuquerque and Iyer \(2024\)](#). All borrower characteristics are measured using averages over the four quarters preceding the financing quarter, except the zombie indicator, which is lagged one quarter. Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

3.3 Alternative mechanisms

The results so far show that firms with stronger pre-crisis relationships with NBFIs bond underwriters are more likely to substitute from syndicated loans to corporate bonds during banking crises. We interpret this as an intermediary-access channel: NBFIs underwriters provide primary-market execution capacity by certifying issuers, organizing syndicates, building investor demand, and placing bonds when balance-sheet-intensive syndicated lending becomes harder to obtain. We now test whether this result instead reflects alternative mechanisms: (i) exposure to NBFIs retrenchment in syndicated lending, (ii) changes in relative loan–bond financing costs, (iii) access to high-reputation bond underwriters, or (iv) prior bond-market access and issuer bond-market activity.

We begin with the possibility that the result reflects a loan-market push channel rather than a bond-underwriting access channel. Since NBFIs cut syndicated lending relative to banks during banking crises, as seen in Section 3.1, it is possible that firms with stronger relationships with NBFIs lenders may be mechanically pushed out of the syndicated loan market and into bonds. In that case, the coefficient on the NBFIs bond-underwriting share could partly capture exposure to NBFIs loan-market retrenchment rather than access to NBFIs bond underwriters. To test this, column (2) of Table 9 adds the firm’s lagged five-year share of syndicated loans involving NBFIs, together with its interaction with the banking-crisis indicator. The coefficient on $Crisis \times NB \text{ loan shr.}$ is statistically insignificant, while the coefficient on $Crisis \times NB \text{ shr.}$ remains positive, statistically significant, and close to the baseline estimate in column (1). This indicates that the main switching result is not driven by firms being especially exposed to NBFIs retrenchment in syndicated lending.

A second concern is that our main finding could reflect changes in the relative price of bonds and loans. If bond financing becomes cheaper relative to syndicated loans during banking crises, firms with stronger NBFIs underwriting relationships may switch to bonds simply because they are better positioned to exploit favorable bond-market pricing, rather than because NBFIs underwriters facilitate primary-market execution. This concern about credit demand is closely related to [Becker and Ivashina \(2014\)](#), who show that loan–bond substitution is unlikely to be driven solely by relative pricing conditions, and to [Cortina et al. \(2021\)](#), who interpret switching across markets during banking crises as evidence of credit-supply disruptions. It also relates to [Chen \(2026\)](#), who shows that relative loan–bond spreads shape firms’ debt-structure choices during monetary tightening. We therefore control for the relative cost of syndicated loan and

bond financing using a loan–bond cost ratio, similarly to the pricing exercise in Section 3.1.¹⁵ Column (3) shows that the coefficient on $Crisis \times NBshr.$ remains positive and statistically significant in the smaller cost-ratio sample. Thus, differences in the relative financing costs do not explain why firms with stronger NBFIs underwriting relationships are differentially more likely to switch during banking crises.

A third possibility is that the NBFIs relationship variable proxies for access to more reputable underwriters, i.e., firms may self-select into higher-quality bond underwriters during crises. The literature emphasizes that reputable intermediaries can certify issuer quality, reduce information frictions, and improve placement capacity in public securities markets (Megginson and Weiss 1991, Fang 2005, Yasuda 2005). If NBFIs in our sample are disproportionately high-reputation underwriters, the estimated effect of NBFIs underwriting relationships may simply capture access to reputable underwriters, rather than a distinct nonbank intermediation channel. To address this concern, we construct a measure of underwriter reputation based on lagged market share in corporate bond underwriting. This measure follows the logic of reputation proxies used in the related literature, where past market share and league-table position capture an intermediary’s overall certification ability and placement capacity. We focus on lead underwriters and bookrunners because these intermediaries are most directly involved in certification, bookbuilding, syndication, and investor placement.

For each underwriter, borrower country, and quarter, we compute the underwriter’s share of corporate bond issuance volume over the previous five years. Specifically, we first compute the market share of each underwriter as follows:

$$UW \text{ market share}_{j,c,t-1} = \frac{\sum_{\tau=t-k}^{t-1} \sum_{d \in \mathcal{D}_{j,c,\tau}} \frac{Amount_d}{N_d}}{\sum_{\tau=t-k}^{t-1} \sum_{d \in \mathcal{D}_{c,\tau}} Amount_d},$$

where $\mathcal{D}_{j,c,\tau}$ is the set of corporate bond deals in borrower country c and quarter τ for which underwriter j appears as a lead underwriter or bookrunner, $\mathcal{D}_{c,\tau}$ is the set of all corporate bond deals in borrower country c and quarter τ , and N_d is the number of lead underwriters or bookrunners on deal d . Our baseline uses $k = 20$ quarters; as a robustness test, we use $k = 8$ quarters, matching our five-year and two-year relationship windows used previously for NBFIs

¹⁵We group loan and bond transactions into five maturity buckets—up to 1 year, 1–3 years, 3–5 years, 5–10 years, and more than 10 years. We then calculate the average all-in drawn loan spread and average bond spread within each maturity bucket, and take the ratio of the maturity-matched average spreads in the two markets. This measure follows the logic of Becker and Ivashina (2014), who compare loan spreads with bond yields net of maturity-matched swap rates to assess whether loan–bond substitution reflects changes in relative financing costs.

bond-underwriting share.

Table 9: Probability of switching to bonds during banking crises: alternative mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)
Crisis $\times$ NB shr.	0.064*** (0.010)	0.051*** (0.010)	0.238*** (0.055)	0.062*** (0.012)	0.258*** (0.055)	0.155*** (0.011)
Crisis $\times$ NB loan shr.		0.001 (0.009)				
Crisis $\times$ Cost ratio			0.046** (0.023)		0.050** (0.022)	
Crisis $\times$ NB shr. $\times$ Cost ratio			-0.052 (0.050)		-0.064 (0.049)	
Crisis $\times$ UW rep.				5.586** (2.831)	15.162*** (2.292)	
Crisis $\times$ NB shr. $\times$ UW rep.				-5.820* (2.982)	-16.558*** (2.584)	
Crisis $\times$ No bond						0.104*** (0.006)
NB shr.	0.703*** (0.004)	0.671*** (0.004)	0.672*** (0.017)	0.698*** (0.006)	0.671*** (0.017)	0.672*** (0.005)
NB shr. $\times$ Cost ratio			-0.002 (0.014)		-0.001 (0.014)	
NB shr. $\times$ UW rep.				-1.115*** (0.276)	-0.536** (0.224)	
No bond						-0.034*** (0.003)
Country $\times$ Sector $\times$ Time FE	✓	✓	✓	✓	✓	✓
Observations	292,603	292,603	35,502	292,603	35,502	292,603
R^2	0.671	0.688	0.759	0.673	0.761	0.671

Notes: The dependent variable is an indicator equal to one if the dollar amount of corporate bonds issued by a given firm in a given quarter exceeds the dollar amount of syndicated loans obtained in the same quarter. *Crisis* is an indicator equal to one if the borrower's country is experiencing a banking crisis. *NB shr.* is the lagged share of the firm's corporate bond issuance underwritten by NBFIs over the previous five years. Column (1) reports the baseline specification, column (2) controls for the lagged five-year share of syndicated loans originated by NBFIs, column (3) controls for the relative cost of loan and bond financing (*Cost ratio*), column (4) controls for bond-underwriter reputation, measured by lagged underwriting market share (*UW rep.*), column (5) includes both the relative-cost and underwriter-reputation controls, and column (6) controls for whether the firm had no bond issuance over the previous five years (*No bond*). Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

At the firm level, we define pre-crisis access to reputable underwriters as the weighted average reputation of the underwriters used by the firm in the previous five years:

$$UW\ reputation_{i,t-1} = \sum_{j \in \mathcal{J}_{i,t-1}} w_{ij,t-1} UW\ market\ share_{j,c,t-1},$$

where $\mathcal{J}_{i,t-1}$ is the set of bond underwriters used by firm i in the previous 20 quarters, and $w_{ij,t-1}$ is the share of firm i 's past bond issuance handled by underwriter j . For firms without prior bond issuance, the indicator is set to zero.

Column (4) adds the underwriter-reputation measure, and its interaction with the other variables to the baseline specification. The coefficient on $Crisis \times UW\ rep.$ is positive and statistically significant, indicating that firms with access to more reputable bond underwriters are more likely to switch to bonds during banking crises, consistent with the view that certification and placement capacity matter especially for borrowers during stress periods. Importantly, however, the coefficient on $Crisis \times NB\ shr.$ remains positive and statistically significant after controlling for underwriter reputation. The triple interaction between $Crisis$, $NB\ shr.$, and $UW\ rep.$ is negative, suggesting that the incremental role of NBFIs underwriting relationships is weaker for firms that already have access to high-reputation underwriters. This pattern is intuitive: when firms already have strong certification and placement capacity through reputable underwriters, the marginal value of NBFIs relationships is smaller. Conversely, NBFIs underwriting relationships appear especially relevant for firms for which access to bond-market intermediation is less fully captured by standard reputation measures. We show in column (5) that our results are unaffected when combining the relative-cost and underwriter-reputation controls. Overall, we find that NBFIs underwriting relationships predict loan–bond substitution during crises above and beyond both relative pricing conditions and access to reputable bond underwriters.¹⁶

Finally, we address the concern that the NBFIs underwriting share may partly proxy for prior bond-market access or for firms' prior importance in the bond market. Firms with no corporate bond issuance over the previous five years mechanically have no observed NBFIs underwriting share over that window. If these firms differ systematically from prior bond issuers, a value of zero for $NB\ shr.$ may confound the absence of NBFIs relationships with the absence of recent bond-market access. More broadly, even among firms with prior bond issuance, high values of $NB\ shr.$ may identify larger or more frequent bond issuers that are better able to access bond markets during crises regardless of their underwriter relationships. Column (6) provides a first check by controlling for whether the firm had no bond issuance over the previous five years. The coefficient on $Crisis \times No\ bond$ is positive, indicating that firms without recent bond

¹⁶In robustness checks, Table B.7 in Appendix B proxies underwriter reputation with the two-year rolling market shares, and with global top-10 underwriter shares (based on both past two and five years). All specifications remain qualitatively similar to the baseline.

issuance are more likely to switch to bonds during crises, consistent with an entry margin into the bond market. Importantly, however, the coefficient on $Crisis \times NBshr.$ remains positive and statistically significant. Thus, the NBFI underwriting relationship result is not absorbed by the distinction between firms with and without recent bond-market access.

Table B.8 provides additional robustness checks. Column (1) reports the baseline specification. Column (2) restricts the sample to firms with prior bond-market access over the previous five years, and column (3) adds firm fixed effects. The coefficient on $Crisis \times NBshr.$ remains positive and statistically significant in both specifications, indicating that the result also holds among firms with recent bond-market access. Column (4) adds controls for the firm's lagged issuer market share in the borrower-country bond market, prior bond-market access, log prior bond issuance, and their interactions with the banking-crisis indicator. We include these controls to address the possibility that the NBFI underwriting share simply captures seasoned or large bond issuers rather than an underwriter-relationship margin. The coefficient on $Crisis \times NBshr.$ remains positive and statistically significant. Thus, the NBFI underwriting relationship effect is not absorbed by prior bond-market access or by firms' prior importance in the bond market.

Overall, this section strengthens the interpretation that NBFI underwriting relationships facilitate access to bond markets during banking crises. The key result is not explained by prior exposure to NBFI syndicated lenders, relative loan–bond pricing, access to high-reputation underwriters, or prior bond-market access and issuer activity. The evidence is therefore consistent with an intermediary-access channel: when banking crises impair syndicated loan supply, firms with stronger pre-existing relationships with NBFI bond underwriters are better positioned to substitute toward corporate bonds.

This interpretation does not imply that the shift toward bonds is purely borrower-driven. A related possibility is that banking groups themselves have incentives to reallocate corporate financing from balance-sheet-intensive syndicated loans toward bond issuance through affiliated nonbank underwriters when bank balance sheets are constrained. We return to this organizational channel in Section 4. Before doing so, we first examine whether the observed loan–bond substitution is large enough to preserve firms' overall financing capacity.

3.4 Financing capacity during banking crises

The previous sections show that firms with stronger pre-crisis relationships with NBFIs are more likely to substitute from syndicated loans to corporate bonds during banking crises, and that this result is not explained by alternative mechanisms. This extensive-margin evidence, however, does not establish whether loan–bond substitution preserves financing capacity. Firms may switch to bonds but raise only limited amounts, or firms with stronger NBFIs underwriting relationships may experience a larger contraction in syndicated loan borrowing that more than offsets the increase in bond issuance. In this case, total borrowing would decline more for these firms than for other firms. We therefore examine issuance volumes in syndicated loan and corporate bond markets, total borrowing across both markets, and, for the subset of firms matched to Compustat, total debt scaled by assets. We estimate the following specification for each market:

$$Y_{i,t} = \beta_1 Crisis_{c,t} + \beta_2 Crisis_{c,t} \times NB\ shr_{i,t-1} + \beta_3 NB\ shr_{i,t-1} + \alpha_{c,s} + \delta_t + \epsilon_{i,t}, \quad (6)$$

where the dependent variable is the logarithm of one plus new syndicated lending, new bond issuance, or total borrowing (the sum of syndicated loans and corporate bonds). We also use total debt scaled by assets from Compustat, available for the restricted sample of listed firms. $Crisis_{c,t}$ is an indicator equal to one if borrower country c is in a banking crisis in quarter t , while $NB\ shr_{i,t-1}$ is the lagged share of the firm’s corporate bond issuance underwritten by NBFIs over the previous five years. Since we are interested in estimating the average crisis effect and how this effect varies with prior NBFIs underwriting relationships, we replace country $\times$ sector $\times$ time fixed effects with country $\times$ sector fixed effects, $\alpha_{c,s}$, and time fixed effects, δ_t . The coefficient β_1 measures the average change in borrowing during banking crises for firms with no prior NBFIs underwriting relationship, while β_2 measures how this change differs for firms with higher NBFIs bond-underwriting shares. To interpret magnitudes, we multiply β_2 by the sample mean of the NBFIs bond-underwriting share (17.2 percent).

Table 10 reports the results. Consistent with our findings in Section 3.1, columns (1)–(2) show that syndicated loan issuance contracts sharply during banking crises, and that this decline is considerably larger for firms with stronger prior NBFIs underwriting relationships. For firms with no prior NBFIs underwriting share, the crisis-related decline in syndicated loan borrowing is around 16 percent, which increases by an additional 7 percent ($-0.402 \times 0.172 = 0.07$) for

firms with an average NBFBI underwriting share (column 2). The decline in syndicated loans is accompanied by a substantial increase in corporate bond issuance (columns 3–4). This increase is concentrated among firms with stronger prior NBFBI underwriting relationships (column 4): firms with an average NBFBI bond share are able to issue 17 percent ($0.997 \times 0.172 = 0.17$) more bonds relative to firms with no prior NBFBI underwriting share, and 14 percent in absolute terms. These estimates imply that firms with stronger NBFBI underwriting relationships not only switch debt instruments during crises, but they also raise substantially larger bond amounts during banking crises.

We now investigate whether the increase in bond issuance offsets the decline in syndicated loans (columns 5–6). We estimate that total borrowing (the sum of syndicated loans and bonds) falls by 13.7 percent during banking crises for firms with no prior NBFBI underwriting relationships (column 6). By contrast, for firms with the average NBFBI underwriting share, the decline is only 6 percent ($-0.137 + 0.429 \times 0.172 = -0.06$). This implies that NBFBI underwriting relationships offset on average roughly half of the decline in total market borrowing. Columns (7)–(8) provide complementary evidence using total debt to assets from Compustat for selected listed firms. This measure, which we call total leverage, reflects balance-sheet debt stocks rather than primary-market issuance flows. We show in column (8) that the decline in leverage is attenuated for firms with stronger NBFBI underwriting relationships.

Table 10: Borrowing capacity during banking crises: role of NBFBI underwriters

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Loans	Loans	Bonds	Bonds	Tot. borr.	Tot. borr.	Leverage	Leverage
Crisis	-0.416*** (0.025)	-0.161*** (0.022)	0.397*** (0.027)	-0.032* (0.018)	-0.028 (0.018)	-0.137*** (0.017)	-0.497 (0.412)	-1.559*** (0.492)
Crisis $\times$ NB shr.		-0.402*** (0.054)		0.997*** (0.048)		0.429*** (0.035)		3.448*** (0.721)
NB shr.		-3.180*** (0.024)		4.441*** (0.029)		0.642*** (0.018)		0.109 (0.451)
Time FE	✓	✓	✓	✓	✓	✓	✓	✓
Country $\times$ Sector	✓	✓	✓	✓	✓	✓	✓	✓
Observations	328,931	328,931	328,931	328,931	328,931	328,931	70,167	70,167
R^2	0.311	0.446	0.285	0.563	0.311	0.328	0.154	0.154

Notes: The dependent variable is $\log(1 + Y)$, where Y is new syndicated lending in columns (1)–(2), new corporate bond issuance in columns (3)–(4), and total borrowing in columns (5)–(6), where total new borrowing is the sum of syndicated loan and corporate bond issuance. In columns (7)–(8), the dependent variable is total debt scaled by assets from Compustat. *Crisis* is an indicator equal to one if the borrower’s country is experiencing a banking crisis. *NB shr.* is the lagged share of the firm’s corporate bond issuance underwritten by NBFIs over the previous five years. Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Overall, our findings suggest that NBFBI underwriting relationships help firms mitigate the syndicated-loan credit supply shock during banking crises. The mechanism operates through

substitution across instruments rather than through the preservation of syndicated lending. Although firms with stronger NBFI underwriting relationships are hardest hit by the contraction in syndicated loans, they manage to increase bond issuance, which allows their total borrowing to fall by less than for other firms. This exercise relates to [Cortina et al. \(2021\)](#), who show that corporate bond markets can act as an imperfect substitute for syndicated loans during crises. We show that this ‘spare-tire’ function is stronger for firms with pre-existing relationships with NBFI bond underwriters.

3.5 Firm outcomes during banking crises

NBFI underwriting relationships help preserve financing capacity during banking crises. We now ask whether this financing-capacity margin is associated with differences in firm outcomes. This exercise tests whether firms with stronger NBFI underwriting relationships exhibit different outcomes during banking crises, conditional on observable firm characteristics and fixed effects. This outcome analysis relates to [Becker and Ivashina \(2014\)](#), who show that loan–bond substitution can mitigate the real effects of bank credit contractions by preserving firms’ access to external finance. Our analysis differs by focusing on systemic banking crises across countries and by studying firms’ reliance on NBFI bond underwriters.

$$Y_{i,t} = \beta_1 Crisis_{c,t} \times NB\ shr_{i,t-1} + \beta_2 NB\ shr_{i,t-1} + \beta_3 X'_{i,t-1} + \mu_{c,s,t} + \epsilon_{i,t}, \quad (7)$$

where $Y_{i,t}$ denotes firm outcomes from Compustat. The dependent variables are total debt scaled by assets, the log change in tangible and intangible investment, the log change in sales, the log change in employment, net liquid assets scaled by assets, the PD over the next 24 months, and the implicit interest rate measured as interest expenses over total debt. $NB\ shr_{i,t-1}$ and $Crisis_{c,t}$ are defined as before, and the vector $X_{i,t-1}$ includes the same lagged firm controls used previously. We add country-sector-time fixed effects, and cluster standard errors at the firm level. The coefficient of interest is β_1 , which captures differential crisis-period performance for firms with stronger NBFI bond-underwriting relationships.

Panel A of Table [11](#) includes time fixed effects and country×sector fixed effects to allow us to estimate the average crisis effect on firms’ performance. We find that firms’ outcomes deteriorate during banking crises: leverage declines, tangible and intangible investment fall, sales growth weakens, liquid asset holdings fall, default risk rises, and the cost of debt increases.

These patterns are consistent with banking crises tightening external financing conditions and weakening firm performance.

Panel B corresponds to Equation (7), which estimates the differential crisis-period outcomes associated with prior NBFIs underwriting relationships. Identification comes from comparing firms within the same country–sector–quarter that differ in their pre-crisis NBFIs underwriting relationships. Firms with stronger NBFIs underwriting relationships maintain higher leverage, consistent with the financing-capacity evidence in Table 10. They also exhibit higher tangible and intangible investment growth and face smaller increases in the implicit cost of debt.

Table 11: Firm outcomes during banking crises

Panel A								
	(1) Debt/Asset	(2) ΔK	(3) ΔIntan	(4) ΔEmp	(5) ΔSales	(6) Liq.asset	(7) PD	(8) Int.rate
Crisis	-0.542*** (0.186)	-1.928*** (0.459)	-2.522*** (0.407)	-1.008 (0.752)	-4.097*** (1.261)	-0.389* (0.209)	0.190*** (0.061)	1.114*** (0.393)
Firm Controls	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓	✓
Country $\times$ Sector FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	51,316	51,271	44,039	26,460	50,593	51,303	37,343	47,393
R^2	0.852	0.064	0.119	0.092	0.042	0.785	0.290	0.190

Panel B								
	(1) Debt/Asset	(2) ΔK	(3) ΔIntan	(4) ΔEmp	(5) ΔSales	(6) Liq.asset	(7) PD	(8) Int.rate
Crisis $\times$ NB shr.	1.196*** (0.294)	0.593* (0.308)	1.245** (0.590)	0.181 (1.068)	1.343 (1.068)	0.316 (0.393)	-0.151 (0.103)	-1.905*** (0.405)
NB shr.	0.693*** (0.131)	0.794*** (0.174)	-0.365 (0.237)	2.143*** (0.521)	0.241 (0.587)	1.035*** (0.155)	-0.322*** (0.051)	-0.157 (0.214)
Firm Controls	✓	✓	✓	✓	✓	✓	✓	✓
Country $\times$ Sector $\times$ Time FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	40,448	40,402	33,636	18,284	39,991	40,438	28,578	36,863
R^2	0.867	0.291	0.301	0.289	0.280	0.811	0.425	0.301

Notes: Data aggregated at the firm-quarter level. The dependent variables are: (1) total debt scaled by assets, (2) the log change in tangible investment, (3) the log change in intangible investment, (4) the log change in employment, (5) the log change in sales, (6) liquid assets scaled by assets, (7) the probability of default over the next 24 months, and (8) the implicit interest rate. *Crisis* is an indicator equal to one if the borrower's country is experiencing a banking crisis. *NB shr.* is the lagged share of the firm's corporate bond issuance underwritten by NBFIs over the previous five years. Firm controls are lagged one quarter and include firm size, leverage, net liquidity asset ratio, and total asset turnover ratio. Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Taken together, Table 11 suggests that the financing-capacity margin documented in Section 3.4 is economically relevant. Firms with stronger NBFIs underwriting relationships are not only more likely to switch toward bonds and preserve total borrowing; they also exhibit relatively stronger financial performance during crisis periods. These findings are consistent with the view that NBFIs bond underwriters help mitigate syndicated-loan credit supply shocks by preserving

access to market-based debt financing.

4 Banking groups: nonbank resilience or reallocation within financial groups?

So far, we have studied the differential behavior of banks and NBFIs without distinguishing among NBFIs by ownership structure. We now ask whether the increase in NBF bond underwriting during banking crises reflects a broad nonbank response or reallocation within financial groups. This distinction is important because NBFIs affiliated with banking groups may differ from independent NBFIs in their access to internal capital markets, liquidity support, client relationships, and group-level balance-sheet management (Ashcraft 2008, Cetorelli and Prazad 2025, Bai et al. 2026, Cetorelli and Kundu 2026). To examine this margin, we use the time-varying banking-group ownership dataset developed in Albuquerque, Cerutti, Firat and Kagerer (2026), which allows us to distinguish independent NBFIs from NBFIs affiliated with banking groups over 2000-24.¹⁷

We adapt Equation (2) by breaking down NBFIs into independent NBFIs and NBF subsidiaries of banking groups:

$$\begin{aligned} \log(1+Y)_{l,i,t} = & \beta_1 \text{Crisis exposure}_{l,c,t} + \text{Crisis exposure}_{l,c,t} \times (\beta_2 \text{NB indep.}_l + \beta_3 \text{NB subs.}_l) \\ & + \phi_{l,i} + \psi_{p,t} + \mu_{i,t} + \epsilon_{l,i,t}, \end{aligned} \quad (8)$$

where NB indep._l is an indicator equal to one for independent NBFIs, and NB subs._l is an indicator equal to one for NBF subsidiaries of banking groups. The coefficient β_1 captures the response of bank subsidiaries to an increase in the crisis exposure, while β_2 and β_3 capture, respectively, the differential response of independent NBFIs and bank-affiliated NBFIs relative to banks. The difference between bank-affiliated and independent NBFIs is given by $\beta_3 - \beta_2$.

¹⁷This dataset maps bank and nonbank lender entities in Dealogic to their ultimate controlling parent over time, allowing us to identify whether a given intermediary belongs to a banking group. For each entity, Albuquerque, Cerutti, Firat and Kagerer (2026) reconstruct the evolution of ultimate ownership using FINRA BrokerCheck, SEC filings, Companies House, national business registries, regulatory disclosures, annual reports, press releases, acquisition approvals, and Legal Entity Identifier relationship data. These sources provide dated information on parent–subsidiary relationships and ownership changes, allowing the dataset to distinguish true changes in control from legal mergers, internal reorganizations, partial divestitures, and rebranding events. Our matched sample in the syndicated loan market includes 55 percent bank subsidiaries, and 21 percent NBF subsidiaries; the remaining 23 percent are independent NBFIs. In the bond market, bank subsidiaries account for 41 percent, NBF subsidiaries for 31 percent, and independent NBFIs for 28 percent. Figure A.2 in Appendix A shows that independent NBFIs accounted on average for about 8 percent of syndicated loans origination, and 15 percent of corporate bond underwriting.

Table 12 reports the results. We first find that the previously documented higher nonbank cyclical in the syndicated loan market during banking crises is driven both by independent and bank-owned NBFIs (columns 2 and 3). Independent NBFIs exhibit larger declines in loan syndication, with the coefficient statistically significant at the 5 percent level in column (2). This pattern is consistent with independent NBFIs being more exposed to funding constraints in balance-sheet-intensive lending markets. At the same time, the fact that bank-affiliated NBFIs also contract relative to banks is not inconsistent with evidence that banking groups shift lending toward NBFI affiliates after macroprudential tightening (Albuquerque, Cerutti, Firat and Kagerer 2026). Macroprudential tightening raises the marginal regulatory cost of bank balance-sheet activity; a systemic banking crisis, by contrast, also raises borrower credit risk, funding stress, and uncertainty. In such an environment, affiliated NBFIs may not be able to expand loan intermediation, even if they sit outside the most binding bank-level prudential constraints.

The pattern is markedly different in the corporate bond market. The increase in NBFI underwriting during crises is concentrated among NBFIs affiliated with banking groups (columns 3-4). Our estimates in column (4) imply that a one-standard-deviation increase in underwriters' crisis exposure is associated with approximately 8.4 percent (0.415×0.203) higher bond underwriting by bank-affiliated NBFIs relative to banks. The corresponding differential between bank-affiliated and independent NBFIs is $0.415 - 0.086 = 0.329$, implying 6.7 percent (0.329×0.203) higher underwriting by bank-affiliated NBFIs relative to independent NBFIs.

These findings indicate that the increase in NBFI bond underwriting during banking crises does not reflect broad sectoral nonbank resilience. Rather, it is concentrated within banking groups. This pattern is consistent with two complementary mechanisms. First, banking groups may use information and relationships accumulated through lending activities to support certification, bookbuilding, and placement by affiliated underwriters. Second, when deposit-taking affiliates face tighter balance-sheet constraints, banking groups may help corporate clients shift from balance-sheet-intensive syndicated loans toward bond issuance through affiliated broker-dealers or securities entities. Independent NBFIs do not display the same increase in bond underwriting, suggesting that access to group-level relationships, internal capital markets, or liquidity support may be important for scaling distribution-based intermediation during crises (Cetorelli and Prazad 2025, Bai et al. 2026). The results therefore point to banking-group organization as an important margin through which corporate financing is reallocated dur-

ing banking crises, and complement [Albuquerque, Cerutti, Firat and Kagerer \(2026\)](#): banking groups may reallocate toward nonbank affiliates after regulatory tightening, but during systemic crises this reallocation appears more viable in bond underwriting than in balance-sheet-intensive loan origination.

Table 12: Corporate credit during banking crises: independent and bank-affiliated NBFIs

	(1) Loans	(2) Loans	(3) Bonds	(4) Bonds
Crisis Exp.	-0.148* (0.087)	0.063 (0.082)	-0.399** (0.155)	0.005 (0.223)
Crisis Exp. $\times$ NB indep.	-0.343*** (0.107)	-0.183*** (0.057)	0.005 (0.158)	0.086 (0.143)
Crisis Exp. $\times$ NB subs.	-0.081*** (0.020)	-0.049*** (0.016)	0.485*** (0.082)	0.415*** (0.060)
Borrower $\times$ Intermediary FE	✓	✓	✓	✓
Parent $\times$ Time	✓	✓	✓	✓
Firm $\times$ Time FE		✓		✓
Observations	2,491,718	2,416,252	1,008,615	964,900
R^2	0.177	0.786	0.211	0.723

Notes: The dependent variable is $\log(1 + Y)$, where Y is new syndicated lending in columns (1)-(2), and new corporate bond issuance in columns (3)-(4). Crisis exposure ranges from zero to one. *NB indep.* takes the value of one for independent NBFIs, and *NB subs.* takes the value of one for NBFIs subsidiaries of banking groups. Standard errors clustered at the intermediary and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

5 Robustness checks

This section reports additional robustness checks for the firm-level loan–bond substitution result in column (4) of Table 5. Our baseline specification identifies banking crises using the systemic banking-crisis database of [Laeven and Valencia \(2026\)](#). This measure is well suited to our setting because it captures episodes of severe banking-sector distress. However, one may be concerned that our results depend on this particular crisis classification, are driven primarily by the GFC, or are sensitive to the types of NBFIs included in the measure of bond underwriting. We address these concerns in Table B.9 in Appendix B.

Column (1) reproduces the baseline result. Column (2) excludes the GFC period (2008Q1–2009Q4). The coefficient on *Crisis* $\times$ *NB shr.* remains positive and statistically significant, although its magnitude declines relative to the baseline. This indicates that the switching result is not driven solely by the GFC, while also suggesting that the GFC is an important episode

for the economic magnitude of the baseline estimate. Column (3) replaces the Laeven–Valencia crisis indicator with the systemic bank-run episodes identified by [Jamilov et al. \(2024\)](#). This alternative measure captures a distinct form of banking-sector stress, centered more directly on depositor runs and liquidity pressures. The interaction coefficient remains positive and statistically significant. Column (4) instead uses technical recessions, defined as two consecutive quarters of negative real GDP growth, as a broader measure of macroeconomic stress. The estimated interaction is again positive and statistically significant.

Columns (5) and (6) assess whether the results depend on the underwriting roles used to construct the NBFIs bond-underwriting share. We recompute the NBFIs share over the previous five years using only *bookrunners* in column (5), and *bookrunners* and *lead managers* in column (6). In both specifications, the interaction coefficient remains positive, statistically significant, and of the same order of magnitude as the baseline estimate. These results indicate that the switching result is not sensitive to whether firms’ prior NBFIs underwriting relationships are measured using the full underwriting syndicate or only senior syndicate roles.

These robustness checks show that firms with stronger pre-crisis relationships with NBFIs bond underwriters are more likely to shift toward bond financing across alternative measures of financial and macroeconomic stress. The result is also robust to excluding the GFC and to alternative definitions of NBFIs bond-underwriting relationships. This indicates that the finding is not driven by a particular crisis classification, a single dominant episode, or the specific underwriting roles used to measure firms’ prior NBFIs exposure in bond markets.

We also examine whether inference on the key interaction coefficient is sensitive to alternative clustering choices. Table [B.10](#) reports results using our baseline firm-level clustering, as well as clustering by firm and quarter, by country–quarter, and two-way clustering by firm and country–quarter. The key coefficient remains statistically significant across all specifications, indicating that the inference is robust to alternative treatments of within-firm and common time-varying correlation in the error term.

6 Conclusion

This paper shows that the cyclicity of nonbank finance depends on the function intermediaries perform. Using global primary-market data on syndicated loans and corporate bonds from 1990 to 2025, we document that NBFIs contract syndicated loan participation relative to banks

during banking crises, but expand corporate bond underwriting relative to banks. This contrast reflects the different nature of the two intermediation functions. Syndicated lending requires balance-sheet capacity, risk retention, monitoring, and renegotiation, while bond underwriting relies more on certification, bookbuilding, and investor placement. The same nonbank sector can therefore amplify stress when acting as loan-market risk bearer, while supporting access to market-based debt when acting as bond-market underwriter.

At the firm level, pre-crisis relationships with NBFI bond underwriters help explain which firms can access bond markets when bank credit is impaired. Firms with stronger NBFI underwriting relationships are more likely to substitute from syndicated loans to corporate bonds during banking crises, raise more bond financing, and experience smaller declines in total borrowing. These relationships are not simply a proxy for weaker borrower quality, exposure to NBFI loan retrenchment, relative financing costs, underwriter reputation, prior bond-market access, or firms' prior importance in the bond market. They are also associated with relatively stronger crisis-period outcomes, suggesting that the financing-capacity margin captured by NBFI underwriting relationships is economically relevant. This channel should not be interpreted as a universal financing backstop for all firms. Rather, it operates primarily among firms with potential access to public debt markets, for which underwriting relationships can help preserve market-based financing when syndicated loan supply is impaired.

The increase in NBFI bond underwriting is concentrated among NBFIs affiliated with banking groups. This finding suggests that the expansion of nonbank underwriting during crises does not reflect broad sectoral nonbank resilience. Rather, it points to within-group reallocation from balance-sheet-intensive loan origination toward distribution-based bond underwriting through affiliated broker-dealers. Organizational structure therefore matters for how banking-sector stress is transmitted to nonfinancial firms.

Our results have broader implications for assessing the financial-stability role of nonbank finance. Classifying intermediaries as banks or nonbanks is not sufficient to understand their behavior in stress periods. What matters is also the market in which they operate, the function they perform, and their links to banking groups. NBFIs may transmit stress when they bear credit risk and commit balance-sheet capacity, but they may also help preserve refinancing capacity when they certify issuers and place securities with investors. Nonbank finance can therefore both amplify and mitigate financial shocks, depending on whether NBFIs operate as loan-market risk bearers or bond-market underwriters.

Appendix A: Data

Table A.1: Syndicated loan characteristics

	Mean	STD	P25	P50	P75
Banks					
Term length (years)	5.07	3.99	3.00	5.00	6.00
Tranche value (US million)	253.61	492.73	23.57	80.78	251.60
Syndicate members	6.11	6.32	2.00	4.00	8.00
All-in-pricing (bps)	244.00	181.13	125.00	225.00	325.00
Nonbanks					
Term length (years)	5.22	3.48	3.00	5.00	6.00
Tranche value (US million)	322.61	557.20	38.80	119.77	345.36
Syndicate members	7.17	7.09	3.00	5.00	9.00
All-in-pricing (bps)	274.06	207.18	150.00	242.14	350.00

Notes: Summary statistics of syndicated corporate loans by lender type.

Table A.2: Bond market characteristics

	Mean	STD	P25	P50	P75
Banks					
Term length (years)	7.36	7.18	3.00	5.00	9.00
Tranche value (US million)	295.20	1018.42	46.71	140.97	374.95
# Members	5.96	6.03	2.00	4.00	8.00
Yield-to-maturity (%)	5.27	6.36	3.57	5.00	6.55
Nonbanks					
Term length (years)	8.32	7.77	3.00	5.00	10.00
Tranche value (US million)	256.26	866.62	42.98	128.12	313.51
# Members	4.95	5.14	1.00	3.00	6.00
Yield-to-maturity (%)	5.16	14.77	3.10	5.02	6.75

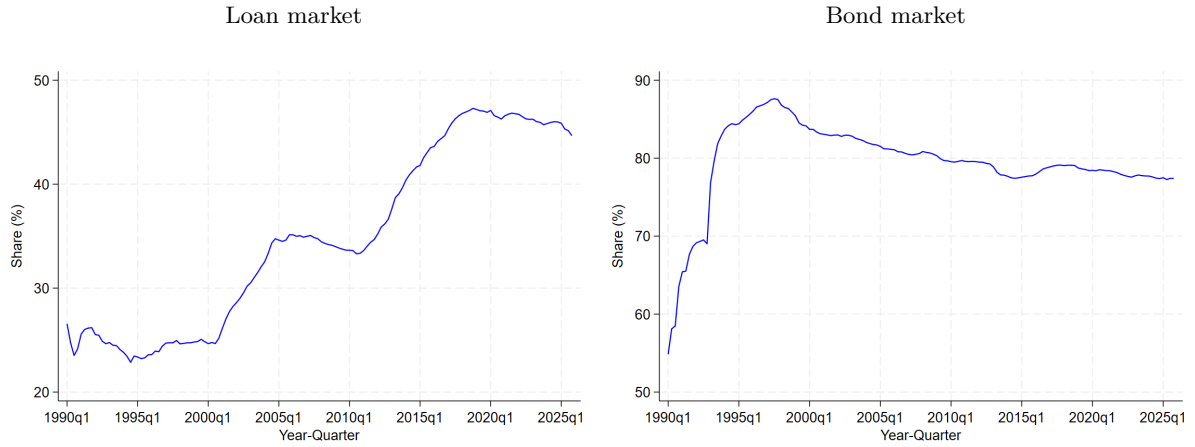
Notes: Summary statistics of the corporate bond market by intermediary type.

Table A.3: Borrower characteristics

	Mean	STD	P25	P50	P75
Syndicated loan market					
Debt/assets	30.68	21.92	15.58	28.17	41.31
Total assets (US million)	7283.65	19864.29	346.91	1329.62	5310.55
Capital stock (US million)	1579.34	2784.62	71.20	356.48	1753.92
Asset turnover ratio	92.70	70.85	39.25	75.44	125.60
PD - 24 months (%)	1.18	2.13	0.12	0.40	1.18
Implicit interest rate (%)	8.62	11.40	4.13	6.23	8.96
Corporate bond market					
Debt/assets	31.39	18.66	18.34	30.04	40.87
Total assets (US million)	17758.57	33623.14	2114.13	6311.28	19218.86
Capital stock (US million)	3122.90	3461.24	544.67	2017.09	4944.72
Asset turnover ratio	59.29	48.11	25.73	45.62	78.99
PD - 24 months (%)	0.92	1.65	0.11	0.39	1.05
Implicit interest rate (%)	8.09	9.47	3.81	5.64	8.30

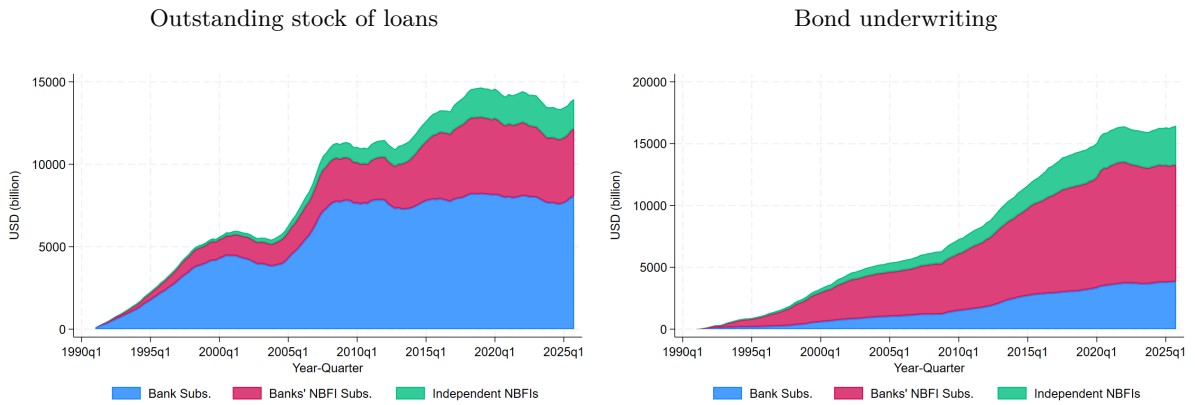
Notes: Balance-sheet characteristics of corporate borrowers in the syndicated loan and bond markets.

Figure A.1: Nonbank share in syndicated loan market vs bond underwriting



Notes: Left panel: share of syndicated corporate loans originated by NBFIs lenders in total syndicated corporate loans. Right panel: share of corporate bonds underwritten by NBFIs in total corporate bonds.

Figure A.2: Syndicated loan origination and bond underwriting by bank subsidiaries, NBFIs subsidiaries, and independent NBFIs



Notes: Left panel: volume of outstanding syndicated loans to NFCs by bank subsidiaries (blue area), NBFIs subsidiaries of banking groups (red area), and independent NBFIs (green area). Right panel: volume of corporate bond underwriting to NFCs by bank subsidiaries (blue area), NBFIs subsidiaries of banking groups (red area), and independent NBFIs (green area).

Appendix B: Tables

Table B.1: Syndicated loans: [Laeven and Valencia \(2026\)](#) banking crisis dummy

	(1)	(2)	(3)	(4)
Crisis	-0.210*** (0.047)	-0.178*** (0.052)	-0.127*** (0.037)	
Crisis $\times$ Nonbank		-0.103*** (0.026)	-0.136*** (0.035)	-0.095*** (0.024)
Borrower $\times$ Lender FE	✓	✓	✓	✓
Time FE	✓	✓		
Parent $\times$ Time			✓	✓
Firm $\times$ Time FE				✓
Observations	2,782,097	2,782,097	2,721,512	2,646,055
R^2	0.154	0.154	0.172	0.778

Notes: The dependent variable is $\log(1 + Y)$, where Y is new syndicated lending. *Crisis* takes the value of one for borrower countries experiencing a banking crisis. Standard errors clustered at the lender and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.2: Syndicated loans: Term loans vs. Credit lines

	(1) Full sample	(2) Term loans	(3) Credit lines
Crisis Exp.	0.059 (0.083)	-0.022 (0.057)	0.151** (0.060)
Crisis Exp. $\times$ Nonbank	-0.056*** (0.013)	-0.128*** (0.024)	-0.023** (0.010)
Borrower $\times$ Lender FE	✓	✓	✓
Time FE			
Parent $\times$ Time	✓	✓	✓
Firm $\times$ Time FE	✓	✓	✓
Observations	2,425,913	801,762	1,194,056
R^2	0.786	0.872	0.811

Notes: The dependent variable is $\log(1 + Y)$, where Y is new syndicated lending. Crisis exposure ranges from zero to one. Columns (2) and (3) split the sample into term loans and credit lines. Standard errors clustered at the lender and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.3: Corporate bonds: [Laeven and Valencia \(2026\)](#) banking crisis dummy

	(1)	(2)	(3)	(4)
Crisis	0.022 (0.074)	-0.018 (0.087)	-0.090 (0.082)	
Crisis $\times$ Nonbank		0.053 (0.062)	0.126 (0.082)	0.142** (0.054)
Borrower $\times$ Underwriter FE	✓	✓	✓	✓
Time FE	✓	✓		
Parent $\times$ Time			✓	✓
Firm $\times$ Time FE				✓
Observations	1,142,410	1,142,410	1,116,061	1,071,799
R^2	0.173	0.173	0.201	0.707

Notes: Dependent variable is $\log(1 + Y)$, where Y is new corporate bond issuance. *Crisis* takes the value of one for borrower countries experiencing a banking crisis. Standard errors clustered at the underwriter and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.4: Corporate bonds: [Laeven and Valencia \(2026\)](#) banking crises exposure: quarterly data

	(1)	(2)	(3)	(4)
Crisis Exp.	-0.135*** (0.049)	-0.332*** (0.109)	-0.800*** (0.194)	-0.320*** (0.081)
Crisis Exp. $\times$ Nonbank		0.225** (0.092)	0.527*** (0.157)	0.180*** (0.021)
Borrower $\times$ Underwriter FE	✓	✓	✓	✓
Time FE	✓	✓		
Parent $\times$ Time			✓	✓
Firm $\times$ Time FE				✓
Observations	1,368,909	1,368,909	1,362,993	1,290,985
R^2	0.107	0.107	0.132	0.838

Notes: Dependent variable is $\log(1 + Y)$, where Y is new corporate bond issuance. Crisis exposure ranges from zero to one. Standard errors clustered at the underwriter and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.5: Poisson pseudo-maximum likelihood regressions (PPML)

	Loans		Bonds	
	(1) OLS	(2) PPML	(3) OLS	(4) PPML
Crisis Exp.	0.059 (0.083)	0.072 (0.065)	-0.005 (0.224)	0.005 (0.196)
Crisis Exp. $\times$ Nonbank	-0.056*** (0.013)	-0.044*** (0.012)	0.392*** (0.062)	0.286*** (0.048)
Borrower $\times$ Lender FE	✓	✓	✓	✓
Parent $\times$ Time	✓	✓	✓	✓
Firm $\times$ Time FE	✓	✓	✓	✓
Observations	2,425,913	1,019,764	965,019	510,172
R^2	0.786		0.723	

Notes: The dependent variable is $\log(1 + Y)$ in the OLS columns and Y in the PPML columns, where Y is new syndicated lending in columns 1 and 2, and corporate bond issuance in columns 3 and 4. Columns 2 and 4 are estimated using Poisson pseudo-maximum likelihood regressions (PPML). Crisis exposure ranges from zero to one. Standard errors are clustered at the lender or underwriter and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.6: Role of intermediaries' geographic concentration

	Loans		Bonds	
	(1) Baseline	(2) HHI control	(3) Baseline	(4) HHI control
Crisis Exp.	0.059 (0.083)	0.259 (0.255)	-0.005 (0.224)	-0.016 (0.373)
Crisis Exp. $\times$ Nonbank	-0.056*** (0.013)	-0.248*** (0.062)	0.392*** (0.062)	1.153*** (0.266)
Crisis Exp. $\times$ Intermediary HHI		-0.204 (0.179)		0.092 (0.277)
Crisis Exp. $\times$ Nonbank $\times$ Intermediary HHI		0.226*** (0.071)		-0.922*** (0.308)
Intermediary HHI		-0.110 (0.078)		0.022 (0.085)
Nonbank $\times$ Intermediary HHI		0.006 (0.150)		-0.103 (0.109)
Borrower $\times$ Intermediary FE	✓	✓	✓	✓
Parent $\times$ Time FE	✓	✓	✓	✓
Borrower $\times$ Time FE	✓	✓	✓	✓
Observations	2,425,913	2,425,913	965,019	965,019
R^2	0.786	0.786	0.723	0.723

Notes: The dependent variable $\log(1 + Y)$ is new syndicated lending in columns 1 and 2, and corporate bond issuance in columns 3 and 4. Columns 2 and 4 add interactions of the variables of interest with the intermediary's lagged geographic concentration, measured using the HHI of its borrower-country portfolio shares as described in the main text. Crisis exposure ranges from zero to one. Standard errors clustered at the intermediary and borrower-country level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.7: Underwriter reputation channel: robustness checks

	(1) Baseline	(2) 2-year	(3) Top-10, 5-year	(4) Top-10, 2-year
Crisis $\times$ NB shr.	0.062*** (0.012)	0.058*** (0.011)	0.067*** (0.016)	0.066*** (0.013)
Crisis $\times$ UW rep.	5.586** (2.831)	6.708*** (1.532)	-0.483** (0.218)	-0.324* (0.186)
Crisis $\times$ NB shr. $\times$ UW rep.	-5.820* (2.982)	-6.968*** (1.612)	0.333 (0.225)	0.181 (0.200)
NB shr.	0.698*** (0.006)	0.702*** (0.005)	0.638*** (0.005)	0.658*** (0.005)
NB shr. $\times$ UW rep.	-1.115*** (0.276)	-1.173*** (0.248)	-2.796*** (0.106)	-2.394*** (0.095)
Country $\times$ Sector $\times$ Time FE	✓	✓	✓	✓
Observations	292,603	292,603	292,603	292,603
R^2	0.673	0.673	0.678	0.676

Notes: The dependent variable is an indicator equal to one if the dollar amount of corporate bonds issued by a given firm in a given quarter exceeds the dollar amount of syndicated loans obtained in the same quarter. *Crisis* is an indicator equal to one if the borrower's country is experiencing a banking crisis. *NB shr.* is the lagged share of the firm's corporate bond issuance underwritten by NBFIs over the previous five years. *UW rep.* proxies underwriter reputation, computed as the lagged underwriting market share over the past five years (column 1), over the past two years (column 2), the top 10 underwriters' share over the past five years (column 3), and over the past two years (column 4). Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.8: Loan–bond substitution during crises: prior bond-market access and issuer activity

	(1) Baseline	(2) Prior access	(3) Prior access	(4) Issuer activity
Crisis $\times$ NB shr.	0.064*** (0.010)	0.201*** (0.012)	0.080*** (0.011)	0.149*** (0.011)
NB shr.	0.703*** (0.004)	0.679*** (0.006)	0.775*** (0.006)	0.665*** (0.005)
Country $\times$ Sector $\times$ Time FE	✓	✓	✓	✓
Firm FE			✓	
Issuer activity controls				✓
Observations	292,603	93,067	87,596	292,603
R^2	0.671	0.730	0.834	0.673

Notes: The dependent variable is an indicator equal to one if the dollar amount of corporate bonds issued by a given firm in a given quarter exceeds the dollar amount of syndicated loans obtained in the same quarter. *Crisis* is an indicator equal to one if the borrower's country is experiencing a banking crisis. *NB shr.* is the lagged share of the firm's corporate bond issuance underwritten by NBFIs over the previous five years. Column 1 is based on the full sample, while columns 2 and 3 restrict the sample to firms with prior bond market access over the past five years. Column (4) adds controls for the firm's lagged issuer market share in the borrower-country bond market, prior bond-market access, log prior bond issuance, and their interactions with the banking-crisis indicator. Standard errors clustered at the borrower level. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.9: Additional robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline	Excl. GFC	Systemic run	Recession	Bookrunners	Bookrunners+Lead Man.
Crisis $\times$ NB shr.	0.064*** (0.010)	0.022* (0.012)	0.055** (0.024)	0.081*** (0.009)	0.088*** (0.014)	0.084*** (0.014)
NB shr.	0.703*** (0.004)	0.702*** (0.004)	0.733*** (0.004)	0.726*** (0.004)	0.786*** (0.006)	0.786*** (0.006)
Country $\times$ Sector $\times$ Time FE	✓	✓	✓	✓	✓	✓
Observations	292,603	278,789	284,277	278,033	292,603	292,603
R^2	0.671	0.671	0.660	0.659	0.646	0.647

Notes: The dependent variable is an indicator equal to one if the dollar amount of corporate bonds issued by a given firm in a given quarter exceeds the dollar amount of syndicated loans obtained in the same quarter. *NB shr.* is the lagged share of the firm's corporate bond issuance underwritten by all NBFIs (columns 1–4), Bookrunners only (column 5), or Bookrunners and Lead Managers (column 6) over the previous five years. *Crisis* is an indicator equal to one if the borrower's country is experiencing a systemic banking crisis in columns (1), (2), (5), and (6), a systemic bank run from [Jamilov et al. \(2024\)](#) in column (3), or a technical recession in column (4). Technical recessions are defined as two consecutive quarters of negative real GDP growth. Standard errors clustered by firm. Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

Table B.10: Alternative clustering

	(1)	(2)	(3)	(4)
	Baseline	Firm & time	Ctry-time	Firm & ctry-time
Crisis $\times$ NB shr.	0.064*** (0.010)	0.064** (0.026)	0.064** (0.026)	0.064** (0.026)
NB shr.	0.703*** (0.004)	0.703*** (0.010)	0.703*** (0.014)	0.703*** (0.015)
Country $\times$ Sector $\times$ Time FE	✓	✓	✓	✓
Observations	292,603	292,603	292,603	292,603
R^2	0.671	0.671	0.671	0.671

Notes: The dependent variable is an indicator equal to one if the dollar amount of corporate bonds issued by a given firm in a given quarter exceeds the dollar amount of syndicated loans obtained in the same quarter. *Crisis* is an indicator equal to one if the borrower's country is experiencing a banking crisis. *NB shr.* is the lagged share of the firm's corporate bond issuance underwritten by NBFIs over the previous five years. Standard errors are clustered by firm in column (1), by firm and quarter in column (2), by country–quarter in column (3), and by firm and country–quarter in column (4). Asterisks, *, **, and ***, denote statistical significance at the 10%, 5%, and 1% levels.

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