Loan-funded Loans: Equity-like Liabilities inside Bank Holding Companies*

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January 2026

Abstract

Leveraging regulatory data on fund flows within bank holding companies (BHCs), we show that internal loans from parent BHCs to commercial bank subsidiaries are a critical and understudied funding source for banks. Although recorded as liabilities, these parent-to-bank claims function as contingent support that resembles capital. Banks funded with internal loans do not hoard liquidity; instead, they originate more loans, extend longer maturities at lower spreads, initiate more relationships with marginal borrowers, and retain larger shares in syndicated deals. Internal-loan-funded lending is followed by higher short-run profits but worse subsequent loan performance. We further show that organizational structure shapes internal lending: in BHCs with both bank and nonbank operations, nonbank affiliates crowd out internal lending to banks and discipline banks' use of internal funds, and these BHCs exhibit higher overall performance. To strengthen causal interpretation, we exploit three complementary quasi-experimental designs: positive and negative BHC-level shocks and subsidiary-level external funding shock. Their consistent pattern shows that internal loans are not merely another liability source, but a distinct channel through which BHCs shape credit supply, risk-taking, and monetary policy transmission.

JEL Classification: G21, G23, G28
Keywords: Internal capital markets, bank holding company, nonbank, monetary policy

*We thank Ricardo Correa (discussant), Roman Goncharenko (discussant), Ivan Ivanov (discussant), Philip Strahan (discussant), and seminar and conference participants at the University of Pennsylvania (Wharton), European Central Bank, Bank of Italy, KU Leuven, Leibniz Institute for Financial Research SAFE, Humboldt-Universität at Berlin, Vienna University of Economics and Business, Drexel University, Georgetown University, Purdue University, the BIS-CEPR-Gerzensee-SFI Conference on Financial Intermediation 2025, the 8th Bristol Workshop on Banking and Financial Intermediation, SFS Cavalcade North America 2025 and the 2026 Midwest Finance Annual Meeting. None of the authors have any sources of research support, financial relationships, or other potential conflicts of interest to disclose.

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Abstract

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I. Introduction

Researchers and policymakers often conflate commercial banks and bank holding companies (BHCs), ignoring the fact that most U.S. banks operate as subsidiaries inside BHCs with active internal capital markets. In this vein, traditional analyses of bank funding liquidity emphasize arm's-length liabilities, such as deposits and wholesale debt, and abstract from intragroup loans. Nonetheless, loans from a parent BHC to its bank subsidiaries are critically important: they are legally structured as debt on the subsidiary's balance sheet, yet function as contingent support that resembles capital. Notably, these claims are far more flexible than runnable external debt: they can be extended, rolled over, or repriced; they can be provided when the subsidiary faces binding regulatory constraints; they can be subsidized; and can be structured to absorb losses under stress. Internal loans can be tailored along multiple dimensions such as maturity, collateralization, covenants, and pricing, and can be adjusted as conditions evolve; they can even contribute to the subsidiary's total capital (Tier 2 recognition). This equity-like internal debt channel can materially shape bank credit supply, risk-taking, and performance. This paper provides the first systematic analysis of the prevalence, determinants, and real effects of internal loans from parent BHCs to subsidiary banks.

The internal capital markets that we study are institutionally and economically distinct from those considered in the prior banking literature. Parent BHCs and their bank subsidiaries are legally separate entities that can fail independently and are subject to different supervisory and resolution regimes. Parent-to-bank transfers take the form of explicit debt contracts, rather than operational transfers within a single legal entity (as in branch systems studied in Cetorelli and Goldberg (2012c) and Strahan et al. (2016)).

Our work is based on a new dataset that combines unconsolidated parent regulatory filings (FR Y-9LP) that record parent claims on bank and nonbank subsidiaries with subsidiary-bank filings (FFIEC Call Reports) over the 1991–2023 period. These filings allow us to construct new, detailed measures of internal lending from BHCs to their subsidiaries —

we can identify whether internal support is actually deployed and whether it alters funding constraints or risk-taking incentives. This differs from prior papers on internal capital markets in financial conglomerates that were based on crude indicators of BHC affiliation and reduced-form sensitivities of bank subsidiary outcomes to BHC resources (Campello, 2002; Ashcraft and Campello, 2006).[1]

Our work introduces novel evidence on internal capital markets inside BHCs. More importantly, it shows that internal loans are an economically important but understudied channel through which banking groups shape subsidiary credit supply, risk-taking, and performance. Ignoring this channel can leave regulators and policymakers with an incomplete assessments of supervisory risk, intra-group support, and the transmission of monetary and regulatory shocks through the banking system.

Our analysis yields several new findings. First, internal loans generally translate into increased external credit supply rather than liquidity hoarding. Notably, internal loans are a far more important funding source to subsidiary commercial banks than other BHC sources, such as parent equity injections.[2] Controlling for a rich set of subsidiary- and parent-level characteristics and exploiting within-BHC time variation, we show that a bank's quarterly loan growth is about 6.7% higher after it receives an internal loan than in otherwise comparable quarters without internal borrowing. For context, moving from the 25$^{\text{th}}$ to the 75$^{\text{th}}$ percentile of a continuous measure of internal-loan intensity implies roughly 9.4% higher annual loan growth, and each additional 1% of assets funded by internal loans corresponds to about a 0.3 percentage point increase in quarterly loan growth. The lending response is broad-based across all loan categories but strongest for commercial real estate loans. We do not observe a commensurate buildup of cash or securities.

[1] Realized internal loans are discretionary and episodic. Indeed, two-thirds of bank-quarters receive no internal loan from their parents. Direct measurement of these flows is therefore essential for identifying the states in which internal capital markets matter and for quantifying their effects.

[2] As we discuss in Section II, equity injections into bank subsidiaries are rare and difficult to reverse; they may also impact consolidated capital planning and supervisory stress-tests. Internal loans, in contrast, can be scaled up quickly, yield interest income to the parent, and be reduced without the frictions of reversing equity infusions.

Second, the lending expansion is associated with higher subsequent credit risk. Banks that receive more internal loans exhibit weaker loan performance, with higher non-performing-to-total loan (NPL) ratios. The within-BHC estimate implies that a one percentage point increase in internal loans (as a share of assets) predicts a 69 bps increase in the NPL ratio over the subsequent year. Loan-level evidence from the syndicated loan market clarifies *how* this risk emerges, demonstrating that internal-loan funded banks: (1) extend larger and longer-maturity credit on more favorable terms, (2) form more new lending relationships, and (3) disproportionately lend to more financially constrained borrowers. In parallel, these banks retain larger exposures within loan syndicates and are more likely to lead, implying less risk-sharing and more concentrated credit risk on their balance sheets. Risk-taking emerges both on the intensive and extensive margins of bank lending activities.

Third, internal loans are followed by higher short-run profitability despite weaker subsequent loan performance. Recipient banks report a 16 bps increase in next-quarter ROA following internal borrowing in our within-BHC tests. A central empirical challenge in this test is borrower selection — riskier firms may sort into particular bank lenders. We address this concern by looking at loan-level data with a *within-borrower* comparison similar to Khwaja and Mian (2008). In particular, we focus on syndicated loans in which a borrower obtains credit from multiple banks, allowing us to compare contracts written to the same firm in the same quarter by banks with *versus* without internal-loan funding. Our evidence is consistent with internal loans relaxing binding funding constraints and lowering the marginal cost of funds, enabling profitable intermediation even as marginal borrowers added during rapid expansion are riskier. It indicates that internal loans operate as a funding backstop that amplifies credit supply and profitability, but at the cost of greater risk-taking.

Fourth, internal lending is shaped by intragroup allocation, with first-order implications at both the subsidiary and consolidated levels. On the allocation margin, nonbank subsidiaries crowd out parent lending to commercial banks: BHCs with a larger nonbank footprint are less likely to extend internal loans to their bank subsidiaries and do so at smaller magnitudes. At

the same time, nonbank presence is associated with a disciplining margin: conditional on internal borrowing, banks within diversified BHCs exhibit better subsequent loan performance and stronger *bank-level* profitability. Crucially, these allocations matter for the group as a whole. In particular, internal lending to banks alone is associated with positive but insignificant BHC profitability; in contrast, BHCs that combine nonbank operations with an active internal loan market exhibit significantly stronger *BHC-level* profitability. This pattern is consistent with intragroup competition improving the efficiency of internal capital allocation.

One potential concern with our baseline tests is that the observed relationships among lending, risk, and performance may reflect local subsidiary-level loan demand rather than parent-level loan supply. To strengthen causal interpretation, we therefore exploit three complementary quasi-experimental designs that shift funding from different margins. The first two are parent-level regulatory shocks to internal funding capacity: the Gramm–Leach–Bliley Act of 1999, which expanded BHCs' ability to provide internal support through FHC conversion, and the December 2010 Basel III announcement, which tightened parent capital constraints and compressed that capacity. These positive and negative shocks yield symmetric results: expansions in internal lending increase subsidiary loan growth and profitability, followed by worse loan performance, while contractions in internal lending reduce loan growth and profitability, followed by improved loan performance. Our third design exploits the expiration of the FDIC's Transaction Account Guarantee Program as a subsidiary-level shock to external deposit funding that leaves parents' internal lending capacity largely unchanged. This contrast test shows that although external funding shocks reduce lending, they do not generate the same risk and profitability effects. The consistency of these three tests is central to identification: taken together, they show that our results are not driven by local loan demand or generic funding shocks, but by a distinct internal-capital-market channel.

We conclude our analysis by showing that internal loans bear significant macroeconomic consequences. Around monetary policy tightening and easing episodes, for example, banks with internal loans support adjust lending and mortgage pricing less. In all, we show how

intragroup funding dampens the bank-lending channel of monetary policy through a number of channels. Our evidence connects internal capital markets inside financial conglomerates to policy transmission, and complements recent work showing that diversification into nonbank activities can weaken monetary policy effectiveness (e.g., Gelman et al. (2024)).

Our paper contributes to the internal capital markets literature by studying a distinct intragroup contract that is central to modern financial conglomerates but largely absent from existing evidence: internal loans from parent BHCs to commercial bank subsidiaries. Unlike liquidity reallocation within a single legal entity (e.g., across branches of the same commercial bank, Strahan et al. (2016) or within global bank networks (Cetorelli and Goldberg, 2012a,b,c)), parent-to-bank support operates across legally separate entities that can fail independently and face different supervisory and resolution regimes (Bliss and Kaufman, 2006). These claims are recorded as debt on the subsidiary bank's balance sheet, yet function as contingent, equity-like support that can relax both liquidity and solvency constraints in ways that differ from runnable external debt such as deposits and bonds.

Second, we make a measurement contribution that is essential for identification. Prior work typically infers internal capital market activity indirectly from BHC affiliation or from reduced-form sensitivities of subsidiary outcomes to parent resources (Houston et al., 1997; Campello, 2002; Ashcraft and Campello, 2006). In contrast, we use unconsolidated parent-only filings to directly observe realized internal loan flows between holding companies and their subsidiaries. This allows us to measure both the presence and intensity of internal lending. These direct measure matters because, as we demonstrate, internal support is discretionary and episodic. Affiliation alone is therefore a noisy proxy that does not identify when internal capital markets are active nor when they relax subsidiary constraints.

Third, we show that internal loans are a distinct funding channel, not simply another form of bank liability. Relative to conventional external funding sources emphasized in the bank lending literature (Bernanke and Blinder, 1992; Kashyap and Stein, 2000; Gatev et al.,

2009; Ivashina and Scharfstein, 2010; Drechsler et al., 2017), internal loans increase external loan growth and shift lending toward riskier margins, as reflected in loan terms, new lending relationships, weaker syndicate risk-sharing, and worse subsequent loan performance. More broadly, our findings suggest that ignoring the internal-loan channel leaves an incomplete view of how credit is funded within BHCs, how parent support shapes subsidiary lending, and how risk is transmitted within a banking group.

Finally, our paper contributes to work on the organizational scope of BHCs and internal capital allocation (Stein, 1997; Scharfstein and Stein, 2000; Shin and Stulz, 1998; Rajan et al., 2000; Cetorelli et al., 2021; Acharya et al., 2024; Cetorelli and Prazad, 2024). We show that support to bank subsidiaries is not automatic, but depends on parent allocation choices across affiliates competing for internal funds. This rationalizes why internal loans are episodic even when they are valuable at the subsidiary level, and it allows us to connect modern BHC complexity to variation in internal funding access. We argue that if the internal-loan channel is ignored, policy and research will tend to: (1) misdiagnose credit supply mechanics, (2) mis-price risk buildup, and (3) mis-estimate monetary-policy pass-through, because a key state variable becomes realized parent support, not just deposits, wholesale funding, or subsidiary standalone capital.

II. Institutional Background

A. Specialness of Internal Loans

Internal loans from a BHC to a bank subsidiary are legally structured as debt claims, but they often function economically as contingent capital support. In particular, when a bank approaches binding liquidity or capital constraints, parent-provided funding can relax short-run balance-sheet pressure without requiring an immediate equity injection.

A key distinction from arm's-length liabilities is contractual and governance-based flexibil-

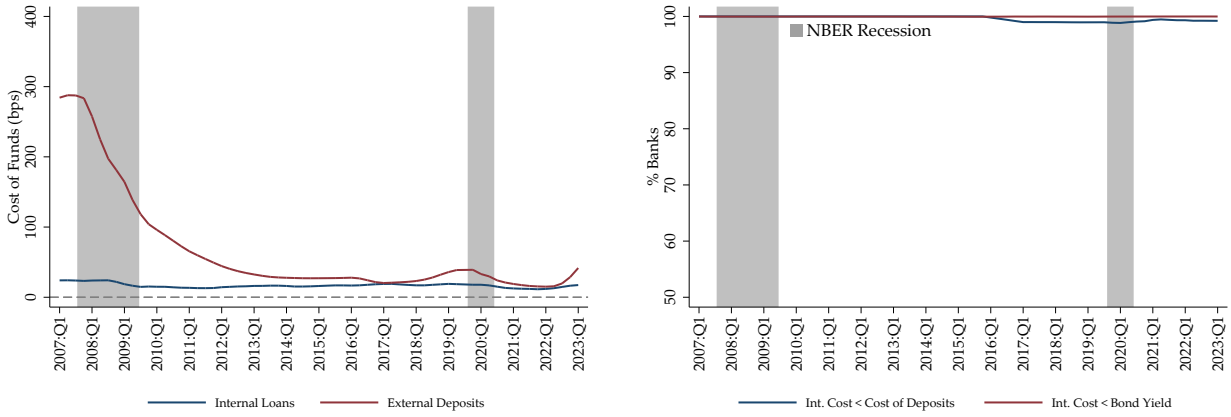
ity. Deposits and market debt (e.g., unsecured bonds) are standardized, legally enforceable contracts held by outside creditors. These liabilities are difficult to renegotiate ex post and, in stress, can contribute to rollover risk and run dynamics. By contrast, internal funding is set under intra-group agreements approved within the BHC structure, typically with overlapping governance and strong informational advantages of the parent over the subsidiary. As a result, internal loans can be tailored along multiple dimensions such as maturity, collateralization, covenants, and pricing, and can be adjusted as conditions evolve. In practice, internal claims can take the form of (1) short-maturity advances that are routinely rolled over, (2) longer-maturity notes designed to stabilize subsidiary funding, or (3) subordinated intercompany debt intended to absorb losses at the subsidiary in stress (e.g., via contractual subordination and/or conversion or write-down features in resolution-related arrangements).

Internal loans also differ from external liabilities in pricing and availability. Because the parent's objective is to allocate scarce liquidity within the conglomerate (rather than price a security for outside investors), internal funding need not satisfy market-clearing conditions each quarter. Consistent with this view, Figure 1 shows that the imputed interest cost of internal loans is systematically lower than the cost of two major external funding channels: deposits and bond issuance. Panel A shows that the average internal-loan rate is lower than the average deposit rate over time. Panel B shows that, for the vast majority of banks in the post-2007 period, internal-loan rates are below both deposit rates and bond yields at issue.[3]

Beyond pricing, internal loans can be "equity-like" in their loss-absorption and resolution treatment. First, when structured as long-term subordinated claims that satisfy regulatory criteria, intercompany debt held by the parent can contribute to the subsidiary's total capital (e.g., through Tier 2 recognition when applicable).[4] Second, in distress and resolution planning, large BHCs commonly organize intercompany claims to support orderly recapitalization

[3]Section III details the computation of internal-loan costs as well as deposits and bond funding costs.

[4]Title 12 of the Code of Federal Regulations explains Tier 2 eligibility criteria for subordinated debt, https://www.ecfr.gov/current/title-12/chapter-II/subchapter-A/part-217/section-217.20. FDIC also summarizes eligibility conditions for subordinated debt being converted to Tier 2 capital, https://www.fdic.gov/bank-examinations/subordinated-debt-issuance-and-investment-considerations



(A) Internal Loans vs Deposits

(B) Proportion of Banks with Lower Internal Cost

Figure 1. Comparison of funding costs: internal loans vs. external debt. Panel A plots the time series of average funding costs (in basis points) for internal loans from parent BHCs to their commercial bank subsidiaries and for external deposits, aggregated by quarter over the sample. Panel B plots, by quarter, the fraction of banks for which the internal-loan rate is below (i) the bank's average deposit rate and (ii) the yield at issuance on the bank's bond financing (when issued).

of operating subsidiaries. Public resolution-plan discussions ("living wills") and related supervisory frameworks emphasize the role of pre-positioned internal resources and interaffiliate support arrangements so that subsidiaries can remain open while losses are absorbed at (or upstream from) the holding-company level.[5] In these settings, certain intercompany claims are designed to be contractually subordinated and to be written down, converted, or otherwise treated as loss-absorbing instruments upon predefined stress or resolution triggers. More broadly, bankruptcy doctrine also allows insider claims to receive nonstandard treatment in extreme cases (e.g., equitable subordination or recharacterization) reinforcing that intra-group "debt" can behave differently from arm's-length liabilities (Meisler et al., 2010).

Finally, internal loans offer the parent an instrument with regulatory and balance-sheet flexibility relative to equity injections. An equity injection into the bank subsidiary is typically slow-moving and difficult to reverse, and it may interact with consolidated capital planning and supervisory stress-test constraints. Internal loans, in contrast, can be scaled up quickly, generate interest income to the parent, and when conditions normalize, be re-

[5]See https://www.fdic.gov/resolutions/fdic-and-financial-regulatory-reform-title-i-and-idi-resolution-planning.

duced without the same frictions as reversing an equity infusion. Figure B.1 of the Appendix illustrates this asymmetry in practice: while most U.S. bank subsidiaries are wholly owned by their BHCs, equity injections are rare and concentrated around crisis episodes, whereas internal lending exhibits rich time-series variation. This flexibility is consistent with the supervisory expectation that the holding company support its subsidiary bank when needed.[6]

Internal loans are neither standard bank debt nor common equity. They are best viewed as *equity-like liabilities*: legally debt, but economically close to contingent internal capital that can be priced, rolled, and reallocated within the BHC in response to stress and regulatory pressure.

B. Implications to Bank Lending

The preceding discussion implies that internal loans can affect lending through channels that differ from conventional funding. External debt, especially deposits and wholesale bonds, primarily relaxes a bank's liquidity constraint, but it also imposes market discipline and exposes the bank to rollover/run risk and funding-cost pass-through. Internal loans relax liquidity constraints as well, yet they additionally soften effective solvency pressure by providing parent-contingent support that is comparatively flexible in maturity and pricing and can be structured to absorb losses in stress. Indeed, as we show above, internal loans are cheaper than other sources of funds available to commercial banks. In all, internal funding can reduce the bank's *marginal cost* of balance-sheet expansion not only by supplying cash, but also by dampening the shadow cost of regulatory capital and liquidity constraints.

These features yield clear predictions for credit supply and risk-taking. Relative to otherwise similar banks — inside the same BHC — that rely more heavily on external funding, banks with access to internal loans should: (1) expand lending more when internal funding is available, (2) compete more aggressively on loan terms (e.g., larger commitments, longer

[6]Regulation Y in the Bank Holding Company Act states that "A bank holding company shall serve as a source of financial and managerial strength to its subsidiary banks."

maturities, lower spreads), and (3) extend credit to more marginal or financially constrained borrowers. At the same time, because internal loans relax discipline and can cushion losses, such banks may exhibit greater ex post risk realization (e.g., higher nonperforming loan ratios) even if average profitability is maintained or improved. These implications guide the empirical tests of Section IV.

III. Data and Variable Construction

A. Data

Our primary data source is the Federal Reserve's FR Y-9LP, which reports unconsolidated, parent-only balance-sheet information for top-tier bank holding companies (BHCs) and itemizes transactions with subsidiaries. Although Y-9LP filings are available starting in 1981, we focus on 1991–2023 because coverage is limited and reporting conventions change in the 1980s. To maintain a consistent reporting population over time, we impose a uniform filing standard by restricting attention to BHCs that satisfy the tighter size thresholds introduced in September 2018 ($3 billion).

A critical feature of the Y-9LP is that parents report outstanding claims on subsidiaries as separate line items. In particular, the parent discloses loans and other credit instruments extended to bank subsidiaries and to nonbank subsidiaries, which we use to measure internal lending in the next subsection. We merge the parent-level Y-9LP to subsidiary-level regulatory data and other BHC filings using the Federal Reserve identifier (RSSDID). For each BHC-quarter we link: (1) Call Reports (FFIEC 031/041) for commercial bank subsidiaries (assets, loans, deposits, capital ratios, and performance outcomes); (2) FR Y-9C for consolidated BHC financials; and (3) FR Y-6 for organizational structure (e.g., identification and characteristics of nonbank subsidiaries). This merged dataset allows us to observe, for a given BHC-quarter, both the parent's internal loan position and the subsidiary banks' balance sheets and outcomes. We also merge in quarterly macroeconomic controls (e.g., interest

rates and market volatility) from the Federal Reserve Economic Data (FRED) website.

In addition, we incorporate loan-level data from the Reuters DealScan database for certain analyses. The Dealscan data provides detailed information on syndicated loan deals, including loan terms (amount, maturity, interest spread) together with the identities of lenders and borrowers. We link DealScan borrowers to Compustat using the mapping in Schwert (2018) and extend the link through 2023 using fuzzy matching with manual verification.[7] We restrict to facilities with U.S. bank lenders and use standard lender-matching procedures (e.g., Chava and Roberts (2008)).

We also obtain data on deposit rates and bond issuance characteristics (volumes and yields) from Standard & Poor's Global Market Intelligence platform (SNL Financial). Our final sample contains 33,986 BHC-quarter observations representing 386 unique BHCs over 1991–2023, comparable to other studies using BHC regulatory filings over similar horizons (e.g., Stulz et al. (2022)).

B. Variable Construction

B.1. Measures of Internal Lending

We construct two measures that capture the presence and intensity of internal lending from the parent BHC to its commercial bank subsidiaries.

Internal-loan indicator. $\mathbf{1}_{InternalLoans}$ equals one in a BHC-quarter if the parent reports a positive outstanding internal loan position to its bank subsidiaries, and zero otherwise. This variable captures the *extensive margin* of internal funding.

Internal-loan intensity. *Internal Loan* is the total dollar amount of credit that the parent extends to its bank subsidiaries in a quarter (loans, notes, bonds, and related instruments), scaled by total assets of the bank-subsidiary segment. The numerator is reported in

[7] Schwert (2018) provides the link up to April 2020. We extend it through 2023 and make the updated link available upon request.

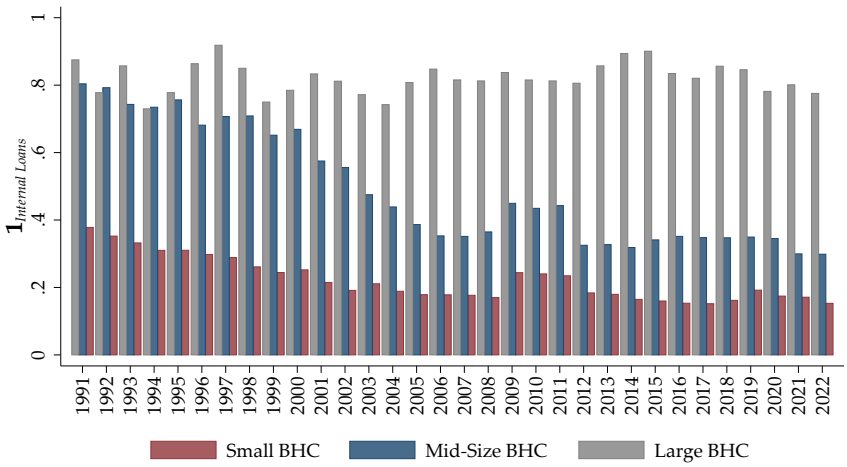


Figure 2. The Proportion of Internal Lending across BHCs. This plot shows, for each year, the cross-sectional average of $\mathbf{1}_{InternalLoans}$, which equals one for BHC-quarters with a positive outstanding internal loan to commercial bank subsidiaries (as reported in FR Y-9LP) and zero otherwise. Grey bars denote large BHCs (assets > \$50 billion); blue and red bars denote small (assets ≤ \$5 billion) and mid-size (assets between \$5 and \$50 billion) BHCs, respectively.

Schedule PC-A of Y-9LP (Item 1.b.(1), BHCP 0533). Scaling by bank assets expresses internal funding as a share of subsidiary size and captures the *intensive margin* of internal funding.

Both measures are defined at the BHC-quarter level. We use them as outcomes when studying the determinants of internal lending and as key regressors when studying how internal funding relates to subsidiary banks' credit supply and performance. In certain tests, we use a measure of change in internal loans from prior quarter ($\Delta InternalLoans$), and the analogous change in internal equity capital (Y-9LP, Item 1.a.(1)).

Figure 2 shows that internal loans are prevalent across the size spectrum. Large BHCs (assets over \$50 billion) are the most active: on average, 82% of large BHCs extended loans to bank subsidiaries in a given quarter over the past three decades. Mid-sized and small BHCs lend funds internally less frequently — the share of mid-sized (small) BHCs using internal loans fell from approximately 80% (38%) in 1991 to 30% (15%) by 2022 — though these institutions temporarily increased internal lending during stress episodes such as the 2007–2009 global financial crisis.

Figure 3 shows that internal loans are small relative to the size of the bank-subsidiary

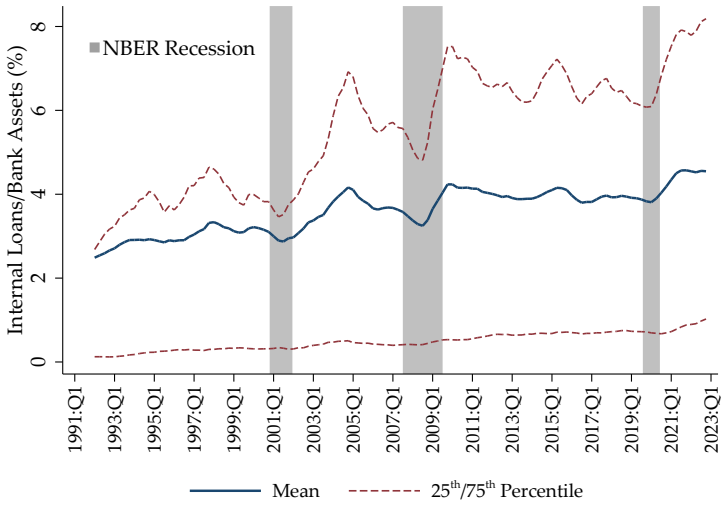


Figure 3. The Intensity of Internal Lending. This figure plots the quarterly stock of internal loans from parent BHCs as a percentage of subsidiary banks' total assets over 1991–2023. Shaded areas indicate NBER recessions.

segment on average, but vary over time and rise in downturns. As we show in Section IV, this margin of internal funding nonetheless has meaningful implications for subsidiary lending and performance.

B.2. Measures of Bank Lending Outcomes and Performance

We measure the effects of internal loans using three bank-level outcomes: loan growth, loan performance, and bank profitability.

Loan growth. $\Delta \log(Loans)$ is the quarterly growth rate of total loans outstanding for commercial bank subsidiaries, defined as the log difference between current- and lagged-quarter loans. Total loans include commercial and industrial (C&I), real estate (CRE), and consumer loans. In regressions, we multiply this variable by 100 so coefficients can be read as percentage-point changes.

Loan performance. NPL is the ratio of nonperforming loans (nonaccrual loans plus loans 90+ days past due) to total loans, expressed in percentage terms. This variable captures ex-post credit quality and serves as our primary measure of loan performance.

Bank-segment profitability. *Return on Bank Assets* measures the profitability of the bank-subsidiary segment from the parent's perspective. We compute it as the parent's share of bank subsidiaries' undistributed earnings (i.e., subsidiary net income not paid out as dividends), scaled by bank-subsidiary total assets. We obtain undistributed earnings from Schedule PI of the Y-9LP (Item 7.a, BHCP 3156). Because Y-9LP income items are reported on a year-to-date basis, we convert them to quarterly flows. The resulting measure is expressed as percent per quarter and can be negative when banks incur losses.

In selected tests, we compare internal loans to alternative liquidity and funding measures. These include bank liquidity creation (Berger and Bouwman, 2009), bank holdings of high-quality liquid assets (cash, Treasuries, and agency MBS; Stulz et al., 2022), and demand deposits (Gatev et al., 2009). We also inspect the change in cash holdings and securities (available for sale and held to maturity), which are potential alternate allocations of internal loans. We introduce these variables where relevant in Section IV.

B.3. Loan-level Measures (Loan Terms and Relationships)

To study how internal funding relates to loan contract terms and relationship formation, we use DealScan to construct facility-, bank-quarter-, and deal-level measures.

Facility terms. At the facility level, *Facility Amount* is the dollar size of the facility scaled by the lending bank's assets. *Maturity* is the number of months to maturity at origination (in logs). *All-in Drawn Spread* is the drawn spread over the base rate plus annual fees (in logs), with lower values indicating cheaper borrowing costs. We measure borrower credit quality using DealScan's S&P rating scale (higher values correspond to better ratings); lower scores and unrated borrowers proxy for more constrained firms.

New relationships. We identify a new bank–borrower relationship when a borrower has no prior syndicated loan with a given bank in our sample. *New Borrower Count* is the number of first-time borrowers for bank b in quarter t. *New Borrower Lending* is the sum of

the bank's allocated amounts across loans to these first-time borrowers in quarter t. These measures capture whether internal-loan funded banks expand along the extensive margin by entering new relationships.

Syndicate structure and risk sharing. At the lender–deal level, *Lead Arranger* equals one if the bank is a lead arranger and zero if it is only a participant. *Lender Share* is the log of the fraction of the total deal amount allocated to the bank. At the deal (package) level, we measure lender concentration using the Herfindahl–Hirschman Index: $Lender\ HHI_p = \sum_{l=1}^{N} \left(LenderShare_{l,p}^{\$}\right)^2$, where $LenderShare_{l,p}^{\$}$ is lender l's percentage allocation in package p. Higher values indicate more concentrated syndicates and less risk sharing.

Finally, following Benmelech et al. (2012), we proxy for the likelihood that a facility is intended to be distributed rather than retained. We classify term loan B (or lower) facilities as *originate-to-distribute* when at least one CLO participates in the syndicate. We then define *Originate to Hold* as an indicator equal to one for term loan A facilities and zero for facilities classified as originate-to-distribute.

B.4. Measures of Nonbank Scope

We capture within-BHC allocation across business lines by measuring the presence and relative importance of nonbank subsidiaries in the organizational structure. These variables summarize the scope of nonbank activity and are used to study how internal lending to bank subsidiaries varies with the BHC's nonbank footprint.

- $\mathbf{1}_{NonbankSubsidiary}$ equals one if the BHC has at least one nonbank subsidiary in quarter t (from FR Y-6 organizational structure data) and zero otherwise.
- *Nonbank Subs Ratio* measures the breadth of nonbank activity and is defined as the number of nonbank subsidiaries divided by the total number of subsidiaries (bank and nonbank) in quarter t.
- *Nonbank Asset Ratio* measures the scale of nonbank activity and is defined as the

proportion of nonbank subsidiaries assets to BHC total assets. So larger values indicate a greater nonbank share of consolidated assets.

B.5. Control Variables

We control for bank- and BHC-level characteristics that may jointly affect internal borrowing, bank lending, and performance.

Bank controls. *Asset Liquidity Ratio* is the sum of cash and balances due, securities, federal funds sold and repos, and trading assets (net of pledged securities), scaled by total assets. *Core Deposits* are the sum of transaction deposits, savings deposits, and small time deposits, scaled by total assets. *Tier 1 Capital Ratio* is Tier 1 capital (CET1 plus Additional Tier 1) divided by risk-weighted assets. *Bank Size* is the log of total assets.

BHC controls. *BHC Size* is the log of total assets, and *BHC CET1 Ratio* is consolidated Common Equity Tier 1 capital divided by risk-weighted assets.

Macroeconomic controls. We include quarterly GDP growth (in logs), the 10-year Treasury yield, the federal funds rate, and the VIX level to capture time-varying macroeconomic and financial conditions.

C. Summary Statistics

TABLE 1 ABOUT HERE

Table 1 presents summary statistics for the key variables in our analysis. About one-third of BHC-quarter observations show non-zero internal loans to bank subsidiaries. Over 82% of BHCs in the sample have exactly one banking subsidiary, as depicted in Figure B.2 of the Appendix. Conditional on having internal loans, the intensity of internal loans (ratio to bank assets) averages around 2.1%, with a standard deviation of 4.3%. The average quarterly loan growth ($\Delta log(Loans)$) is 2.4%. The mean NPL ratio is 1.1% of loans, though this spiked during crisis years. The mean value of *Return on Bank Assets* is –2.5% per quarter, reflecting

the heavy losses banks incurred in the late 2000s; excluding crisis periods, this measure is generally near zero or slightly positive.

On the DealScan side, the average syndicated loan in our matched sample has a deal size equal to about 1.5% of the lending bank's assets, a maturity of around 50 months, and an all-in drawn spread corresponding to about 200∼250 basis points over LIBOR. Approximately 40% of loans in the sample involve first-time lending relationships.

These summary statistics show significant heterogeneity in bank funding and outcomes, which our regression analysis will exploit.

IV. Internal Loans and Bank Outcomes

We now examine how internal loans from parent BHCs shape bank subsidiaries' credit supply, risk-taking, and performance. As discussed in by Section II, internal loans are not merely another funding source: they are comparatively flexible intra-group claims that can be deployed when external funding is expensive or unreliable and when regulatory constraints tighten. We begin by documenting the conditions under which banks tap internal loans in Subsection IV.A. We then study their effects on lending and outcomes in Subsections IV.B–IV.C using the following panel specification:

$$Y_{i,t} = \beta_1 \cdot Internal\ Loan_{i,t-1} + Controls_{i,j,t-1} + \phi_j + \phi_t + \epsilon_{i,t}, \tag{1}$$

where $Y_{i,t}$ is an outcome for bank i (in BHC j) in quarter t, including loan growth, loan performance, lending relationships, risk-taking, and profitability, as defined in Section III.B. The key regressor is either the indicator $\mathbf{1}_{Internal\ Loan}$ or the continuous intensity measure (*Internal Loan*), lagged one quarter. Controls include lagged bank- and BHC-level characteristics introduced in Section II and used in Equation (2). We include BHC fixed effects ϕ_j and time fixed effects ϕ_t, so identification comes from within-BHC variation, where we

compare the same subsidiary's outcomes in quarters when it does versus does not receive internal funding, holding constant BHC-specific factors and aggregate shocks.

A. Driving Factors of Internal Loans

An internal loan is jointly determined by the subsidiary bank's demand for support and the parent's capacity and willingness to supply it. We address identification more formally in Section V. Here, we provide a descriptive characterization of when internal loans occur, which helps interpret the outcome tests that follow.

We first estimate a logistic regression where the dependent variable is the internal loan indicator:

$$\mathbf{1}_{InternalLoan\ i,t} = \beta_1 \cdot \mathbf{\Pi}^{Bank}_{i,t-1} + \beta_2 \cdot \mathbf{\Pi}^{BHC}_{j,t-1} + \beta_3 \cdot \mathbf{Macro}_t + \phi_j + \phi_t + Rating_{i,t} + \epsilon_{i,t}. \quad (2)$$

The independent variables include a rich set of lagged subsidiary-bank characteristics ($\mathbf{\Pi}^{Bank}$) and lagged parent-BHC characteristics ($\mathbf{\Pi}^{BHC}$), measured in the previous quarter t–1, along with contemporaneous macro-financial conditions ($\mathbf{Macro}_t$). We include BHC fixed effects, year-quarter fixed effects, and credit-rating-group fixed effects to absorb persistent differences in external credit access. This setup isolates within-BHC changes in internal funding associated with time-varying subsidiary conditions and aggregate funding environments.

TABLE 2 ABOUT HERE

Table 2 reveals several systematic patterns consistent with Section II. Subsidiary banks with weaker liquidity positions are significantly more likely to borrow internally. For example, the coefficient on *Asset Liquidity Ratio* implies that a one standard deviation decline in liquidity (about 16.8%) is associated with a 3.2% (=0.168×0.193) increase in the probability of an internal loan. Likewise, banks with a lower share of core deposits, a proxy for stable external funding, are more likely to tap internal loans: a one standard deviation decline (21.7%)

corresponds to a 0.8% (=0.217×0.035) increase in the likelihood of internal borrowing. We also find that banks with lower regulatory capital (Tier 1 capital ratio), constrained in their ability to access external capital, are more likely to seek internal parent support.

Turning to parent BHC factors, Table 2 indicates that internal lending also reflects the parent's balance-sheet capacity. Internal loans are significantly more likely when the parent is larger (*BHC Size*) and better capitalized (*BHC CET1 Ratio*); both coefficients are positive and statistically significant. This pattern aligns with the internal capital market view in Section II: financially stronger BHCs can more readily deploy flexible intra-group funding to subsidiaries when constraints bind.

Finally, macro-financial conditions predict internal borrowing in a way that reinforces the "substitution" logic from Section II. Tighter monetary conditions and elevated market uncertainty are associated with a higher likelihood of internal loans: increases in the federal funds rate, the 10-year Treasury yield, and the VIX all predict more internal borrowing. These results suggest that internal loans become especially salient when external funding is expensive, volatile, or rationed. A caveat is that during severe stress, the parent itself may be constrained; we revisit this identification-related issue in Section V.

B. The Impact of Internal Loans on Bank Loan Growth

We now study the impact of internal loans on bank outcomes while controlling for the determinants of internal loans identified above. The first outcome is whether subsidiary banks channel BHC-loans into external credit supply. We estimate Equation (1) with quarterly loan growth, $\Delta \log(Loans)$, as the dependent variable. The results are shown in Table 3.

TABLE 3 ABOUT HERE

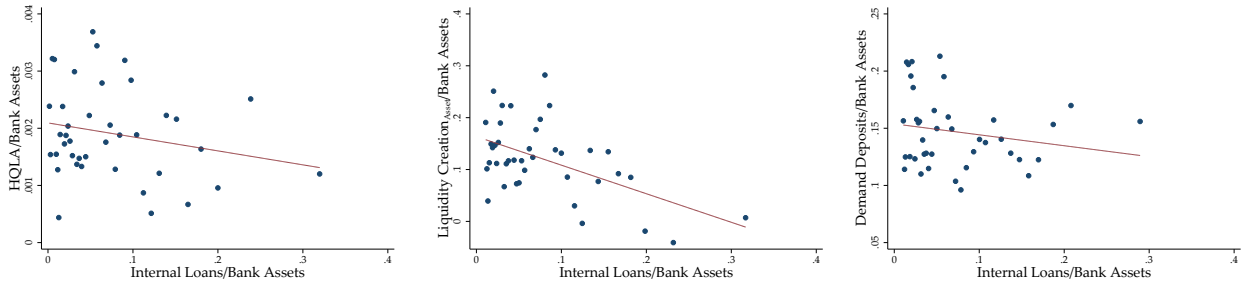
Columns (1)–(2) include only year-quarter fixed effects, while columns (3)–(4) add BHC fixed effects and therefore exploit within-BHC variation. In column (3), the coefficient on the internal loan indicator $\mathbf{1}_{Internal\ Loan}$ is positive and statistically significant: receiving an inter-

nal loan is associated with 6.7% (= 0.160/2.405) higher next-quarter loan growth relative to quarters without internal borrowing. Column (4) yields a similar conclusion using the continuous measure. The estimate of 2.825 implies that moving from the 25$^{\text{th}}$ to the 75$^{\text{th}}$ percentile of internal-loan intensity corresponds to roughly 9.4% higher annual loan growth. Equivalently, each additional 1% of assets funded via internal loans predicts about a 0.3% higher quarterly loan-growth rate (1.2% annualized). These magnitudes indicate substantial pass-through from internal funding to external credit supply. They confirm the claims in Section II: internal loans provide a flexible, low-friction funding backstop that banks deploy quickly into lending markets. The effect is also broad-based across loan categories. Table B.1 in the appendix shows significant growth in all loan types: commercial & industry (C&I), commercial real estate (CRE), and consumer lending, with the largest economic effects in CRE.

When banks receive internal funding from parents, they may hoard liquidity (by increasing cash and securities) rather than expand lending. Empirical findings, however, do not support this channel. Table B.2 in the appendix shows that internal loans have no statistically meaningful effect on the growth of bank cash or securities; the point estimates are small (0.001 for cash and 0.002 for securities) relative to the effect on loan growth (0.160). Thus, internal borrowing primarily shows up as higher lending rather than as an increase in liquid-asset buffers.

An important follow-up is whether internal loans simply proxy for conventional liquidity. Banks can also support lending by drawing down liquid assets or relying on stable liabilities such as demand deposits. We therefore run a horse-race between internal loans and three standard liquidity proxies: (1) the asset-side liquidity creation measure of Berger and Bouwman (2009), (2) high-quality liquid assets (HQLA) comprised of cash, U.S. Treasuries, and agency mortgage-backed securities as in Stulz et al. (2022), and (3) demand deposits as in Gatev et al. (2009). We include these measures alongside *Internal Loans* in Equation (1).

Figure 4 provides descriptive evidence that internal loans substitute for weaker on-balance-sheet liquidity positions: internal borrowing is higher among banks with lower HQLA (Panel A),



(A) High-Quality Liquid Assets **(B)** Asset-side Liquidity Creation **(C)** Bank Demand Deposits

Figure 4. Correlation of Internal Funding and Conventional Bank Liquidity Measures. This figure depicts a comparison of *Internal Loans* against alternate three liquidity measures at the bank level: HQLAs (A), asset-side liquidity (B), and demand deposits (C). The quarterly variables are aggregated across all bank subsidiaries at the BHC level and represented in the form of 40 equal-sized bins based on the cross-sectional distribution of the depicted variables.

lower asset-side liquidity creation (Panel B), and fewer demand deposits (Panel C).[8] These patterns match Subsection IV.A; that is, internal funding flows to subsidiaries when conventional liquidity is scarce.

TABLE 4 ABOUT HERE

Table 4 shows that internal loans remain a strong predictor of loan growth after controlling for these alternative liquidity sources. The coefficient on internal loans is only modestly attenuated, implying that parent-provided funding has effects above and beyond what the bank can accomplish through its own liquid-asset buffers or deposit base. Among the alternatives, HQLA is positively related to loan growth, but the internal loan effect is quantitatively larger. Overall, these results reinforce the institutional interpretation in Section II: internal loans are a distinct and flexible source of funding that sustains credit supply precisely when external or on-balance-sheet liquidity is constrained.

C. The Impact of Internal Loans on Bank Loan Performance

We next examine whether the credit expansion enabled by internal loans comes at the cost of loan quality. We estimate Equation (1) using the bank's one-year forward nonper-

[8] Formal regression results are presented in Table B.3 of the appendix.

forming loan ratio (NPL) as the dependent variable.Because NPL is scaled by total loans, the outcome naturally accounts for contemporaneous portfolio growth (cf. Rajan (1994) and Berger and DeYoung (1997)).

Table 5 shows that internal loans is associated with worse subsequent loan performance. In specifications analogous to the loan growth analysis, the internal loan indicator has a positive and significant coefficient: banks that borrowed internally have higher NPL ratios in the following year than those that did not. The within-BHC estimate implies that receiving an internal loan is associated with an excess 1.82% ($= 0.020/(0.011 \times 100)$) increase in the NPL ratio in the following year. Using the continuous measure, we find similarly that a one percentage increase in internal loans (as a percentage of the bank's assets) leads to a 69 bps increase in the NPL ratio. Both results are statistically significant at the 1% level.

TABLE 5 ABOUT HERE

Taken together with the loan-growth results, these estimates indicate that internal funding expands credit supply but is associated with higher realized credit risk. But why do internal-loan funded banks banks generate more NPLs? In the next subsection, we use loan-level data to unpack this mechanism by examining whether internal-loan funded banks lend on different terms and to different borrowers.

D. Loan-Level Evidence: Loan Terms and Lending Relationship

The bank-level results indicate that internal funding expands lending but is followed by worse loan performance. We now use loan-level evidence to identify which contracts and borrowers account for these patterns, and to connect more directly to Section II. To wit, if internal loans relax funding and regulatory pressure, internally funded banks should compete more aggressively on terms and extend credit further down the borrower-quality distribution.

A central empirical challenge is borrower selection. Riskier firms may obtain different contract terms and may sort into particular lenders. We address this concern with a within-

borrower comparison design in the spirit of Khwaja and Mian (2008). We focus on syndicated lending quarters in which the same borrower obtains credit from multiple banks, allowing us to compare contracts written to the same firm in the same quarter by banks with versus without internal funding. While identification using multi-bank firms has been debated for estimating aggregate credit-supply shocks (Degryse et al., 2019), our goal is narrower: to characterize differential lender behavior holding borrower demand and fundamentals fixed.

D.1. Loan Terms and Borrower Characteristics

We implement this design by including borrower–quarter fixed effects so that comparisons are made side-by-side within the same borrower and quarter. We estimate:

$$Y_{i,k,l,t} = \beta_1 \cdot Internal\ Loan_{i,l,t-1} + Controls_{i,t-1} + \phi_i + \phi_{k,t} + \epsilon_{i,k,l,t}, \tag{3}$$

where $Y_{i,j,l,t}$ is a syndicated loan facility outcome for facility l, with i denoting the lead bank and k the borrower. The fixed effect $\phi_{k,t}$ absorbs borrower-specific demand and risk in quarter t. We restrict the sample to borrower–quarters with at least two loans, at least one led by a bank with internal funding and at least one led by a bank without internal funding.[9]

TABLE 6 ABOUT HERE

Table 6 shows that, holding borrower-quarter fixed, internal-loan funded banks offer systematically more aggressive terms. First, they originate larger facilities: column (1) implies loan sizes (scaled by bank size) are roughly twice as large as those originated by banks without internal funding, consistent with the risk-sharing patterns we document in the next subsection IV.E. Second, they extend longer maturities: columns (3)–(4) indicate maturities are about 2–3 months longer on average. Third, they offer cheaper credit: columns (5)–(6) show all-in drawn spreads that are approximately 5–10 bps lower. Finally, the last two columns indicate that the borrowers served by internal-loan funded banks banks are less creditworthy.

[9]Table B.5 in the appendix shows that this restriction does not materially change sample composition.

Taken together, these results suggest that access to internal loans enables banks to expand both the scale and risk profile of lending by competing more aggressively on terms.

These loan-level patterns reconcile the bank-level evidence. Internal loans are followed by faster loan growth (Subsection IV.B) but also higher future NPLs (Subsection IV.C) because internal-loan funded banks banks tilt toward larger, longer-maturity, lower-spread credit to weaker borrowers. At the same time, the more favorable terms imply improved access to credit for marginal firms, a point we examine further below.

D.2. New Lending Relationships

Next, we examine whether internal funding operates on the extensive margin by facilitating new bank–borrower relationships. We collapse syndicated loans to the bank–quarter level and track relationship formation over time. For the purpose of our test, we define: (1) *New Borrowers (Count)*, the number of first-time borrowers for bank i in quarter t, and (2) *New Borrower Lending*, the share of lending contributed to first-time borrowers.[10] We estimate Equation (1) using these variables as outcomes and report results in Table 7.

TABLE 7 ABOUT HERE

We find that internal-loan funded banks expand their client base; in particular, they lend to roughly one additional new borrower per year (about a 12% annual increase in new borrowers) and increase lending to new borrowers by about 10%. This is consistent with internal loans enabling banks to reach beyond established relationships, where informational frictions are typically larger and underwriting risk is higher.

To assess which firms enter these new relationships, we test whether internal-loan funded banks banks disproportionately match with more constrained borrowers. We proxy borrower constraints using the indices of Hadlock and Pierce (2010) and Whited and Wu (2006), and option-implied equity volatility. We estimate:

[10]Shares aggregate both lead arranger and participant roles.

$$
\begin{aligned}
Borrower\ Constraint_{j,t} \;=\; & \beta_1 \cdot \mathbf{1}_{InternalLoan\ i,t-1} \times NewBorrower_{j,t} \\
& + \beta_2 \cdot \mathbf{1}_{InternalLoan\ i,t-1} + \beta_3 \cdot NewBorrower_{i,j,t} \\
& + \phi_i + \phi_j + \phi_t + \epsilon_{i,j,t}, \qquad (4)
\end{aligned}
$$

where *New Borrower* is a dummy variable that equals to one if firm j borrows from a given bank i for the first time in quarter t. Table 8 reports the results.

TABLE 8 ABOUT HERE

The results demonstrate two main patterns. First, new relationships are, on average, formed with more constrained borrowers. Second, the interaction term is positive and significant: when banks have access to internal loans, their new relationships are disproportionately with firms that are more financially constrained and exhibit higher option-implied volatility relative to other borrowers and relative to new relationships formed by banks without internal funding.

Overall, the loan-level evidence sharpens the mechanism behind the bank-level results and ties directly to Section II. Internal loans allow banks to compete more aggressively on both the intensive margin (terms) and extensive margin (new relationships), expanding credit availability to marginal borrowers. This expansion, however, concentrates risk on the lender and helps explain the subsequent deterioration in loan performance.

E. The Impact of Internal Loans on Risk-Sharing

We next study how internal funding affects banks' risk-bearing in syndicated lending. Syndication allows originators to distribute exposures across lenders and thereby manage risk (Sufi, 2007). A bank that seeks to limit exposure can syndicate out larger portions of the deal, whereas a bank more willing (or able) to bear risk may retain a larger share and is more likely to serve as lead arranger, taking on both monitoring responsibilities and a larger

allocation. Consistent with Section II, internal loans can provide an internal backstop and increase solvency buffer, which may reduce incentives to share risk and increase willingness to retain credit exposure.

Using DealScan, we construct three measures of a lender's position within a syndicate: (1) an indicator for whether the bank is a lead arranger (*Lead Arranger*), (2) the bank's fractional exposure to the deal (*Lender Share*), and (3) a lender-level Herfindahl index capturing syndicate concentration from that lender's perspective (*Lender HHI*). We estimate within-syndicate regressions with borrower–quarter fixed effects, comparing banks lending to the same firm in the same quarter.

TABLE 9 ABOUT HERE

Table 9 shows that internal funding is associated with systematically lower risk-sharing. Banks with access to internal loans are significantly more likely to act as lead arrangers (see Sufi (2007) and Ivashina (2009)). They also retain larger *Lender Share*s, and syndicates in which they participate are more concentrated (higher *Lender HHI*), implying that risk is distributed across fewer counterparties. Together, these results indicate that banks with parent support "hoard" more credit risk rather than syndicating it out.

We stress that our identification comes from within-borrower-quarter variation: among banks lending to the same firm in the same quarter, those with internal funding retain more exposure. This reduces concerns that the findings are driven by borrower risk or time-varying borrower demand, and instead points to a lender-side shift in risk-bearing associated with internal liquidity.

These risk-sharing results complement the earlier evidence on loan terms and relationship formation. Internal-loans funded banks expand lending, offer larger and longer-maturity credit at lower spreads, and enter new relationships with weaker borrowers, while sharing less of the resulting risk with other lenders. This combination helps explain the subsequent increase in NPLs documented in Section IV.C. More broadly, it matches the institutional

view in Section II: because internal loans are flexible and less subject to external discipline than deposits or market debt, they can attenuate market scrutiny and amplify risk-taking within the BHC network.

These findings motivate the final question of this section, which is whether lending expansion and greater risk retention at the subsidiary level translate into changes in subsidiary financial performance.

F. The Impact of Internal Loans on Bank Performance

Our outcome is *Return on Bank Assets* (*ROA*), defined in Section III.B as the bank subsidiary's net income (retained within the BHC) scaled by bank assets. We estimate Equation (1) with *ROA* as the dependent variable, using the same controls and fixed effects as in prior outcome tests.

TABLE 10 ABOUT HERE

Table 10 shows that internal loans are followed by higher short-run profitability. In the within-BHC specification (column (3)), receiving an internal loan is associated with a 16 bps increase in next-quarter *ROA*. Given that the sample mean *ROA* is -2.5% per quarter, this is economically meaningful. Column (4) yields a similar pattern with the continuous measure: a one percentage point increase in internal loans (as a share of assets) predicts a 3.4 percentage point increase in next-quarter *ROA*. These effects are statistically significant and robust to the full set of controls.

This pattern is consistent with the mechanism emphasized in Section II. Internal loans tend to occur precisely when subsidiaries face tighter external funding conditions or binding constraints. By relaxing these constraints, parent funding enables rapid balance-sheet expansion along both the intensive margin (larger volumes) and the extensive margin (new relationships). The accompanying rise in future NPLs (Section IV.C) indicates that the marginal lending induced by internal funding is, on average, riskier.

Higher lending, higher risk, and higher performance can nonetheless coexist because the relevant object is *risk-adjusted* profitability at the margin. Internal loans lower the subsidiary's marginal cost of funds (Section II and Figure 1), allowing the bank to originate and hold loans that would not be privately profitable under more expensive or volatile external funding. At the same time, the induced expansion can raise revenues by more than it raises expected credit losses. Marginal borrowers — often more constrained and riskier — can pay higher contractual rates and fees, while the bank's increased deal flow can build market share and relationship capital that improves the economics of future lending (e.g., through repeat business and ancillary services). Even if default rates rise for these marginal loans, the combination of cheaper internal funding, higher gross interest income, and franchise gains can more than offset incremental charge-offs, yielding a net positive effect on ROA.

The short-run profitability gains also help rationalize why BHCs use internal loans as a flexible support tool rather than relying on slower, less reversible equity injections.

V. Exogenous Shock to Internal Lending

Section IV documents strong within-BHC associations between internal loans and bank lending, risk-taking, and performance. A central concern, however, is that these patterns may reflect subsidiary-level *loan demand* (e.g., greater demand from riskier or more marginal borrowers) rather than parent-level *loan supply*. To sharpen causal interpretation, we bring three complementary quasi-experimental designs to the data. Importantly, our identification does not rest on any single shock in isolation. Each design has its own institutional limitations and potential alternative interpretations, but the fact that three distinct shocks, operating at different margins and with different signs, deliver a coherent pattern is central to our causal interpretation.

The first two exploit regulatory shocks that shift *parent BHCs'* capacity to provide internal funding: a positive shock, the Gramm–Leach–Bliley Act of 1999 (GLBA), which created

Financial Holding Company (FHC) status and expanded the set of permissible activities for qualifying BHCs; and a negative shock, the announcement of Basel III capital requirements, which tightened capital constraints and reduced some parents' ability to support subsidiaries. Our third test exploits the expiration of the FDIC's Transaction Account Guarantee (TAG) program as a subsidiary-level funding shock. Unlike GLBA and Basel III, TAG expiration reduces a bank's external deposit funding without directly changing the parent's capacity to lend internally, allowing us to distinguish the effects of internal funding from those of a more general contraction in bank liabilities. Taken together, these three designs allow us to separate the effect of internal loans from both subsidiary loan demand and generic funding shocks. The consistency across the three experiments therefore substantially strengthens identification and supports a causal interpretation that internal loans are a distinct source of funding, with effects that are not replicated by ordinary changes in external funding conditions.

A. Capital Easing: Financial Services Modernization Act of 1999

Our first quasi-natural experiment exploits GLBA (the Financial Services Modernization Act of 1999), which allowed BHCs to elect FHC status and engage in a broader set of financial activities, including securities underwriting, insurance, and investment banking.[11]

GLBA provides a quasi-exogenous shock to internal funding capacity through two related channels. First, FHC status is a parent-level regulatory change that shifts the supply of internal funding from above the subsidiary, rather than reflecting contemporaneous shocks to any one bank's local loan demand. FHC status expands the parent's capacity to generate and redeploy funds within the organization, thereby expanding the internal capital market and the scope for internal loans to bank subsidiaries.

FHC eligibility itself required subsidiary banks to be well capitalized, well managed, and

[11]See Public Law 106–102 (Nov. 12, 1999). The Federal Reserve notes that the interim rules implementing the GLBA became effective on March 11, 2000 (see Federal Reserve Board press release attachment, Dec. 21, 2000).

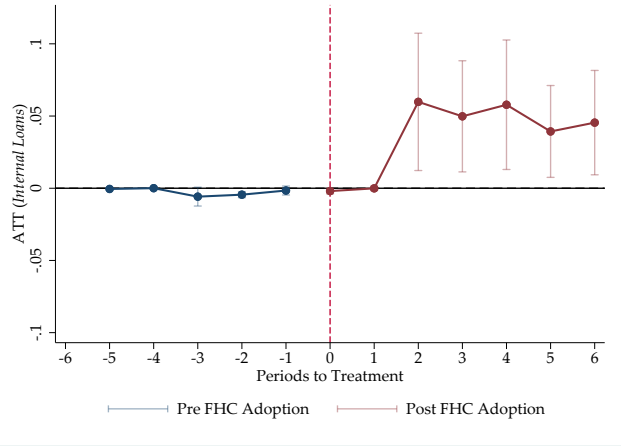


Figure 5. Internal lending around FHC adoption. Event-study estimates of the effect of a bank's election into FHC status on internal loans from the parent to its commercial bank subsidiaries. The horizontal axis reports event time (quarters) relative to the adoption quarter ($t = 0$). Coefficients are estimated using the Callaway and Sant'Anna (2021) difference-in-differences estimator with FHC and year-quarter fixed effects; vertical bars denote 95% confidence intervals.

CRA compliant.[12] These requirements do not eliminate all selection concerns, but they make it less likely that adoption is driven by short-run deterioration in subsidiary-specific loan demand or borrower composition. What GLBA changes most directly is the parent's organizational and funding flexibility, which is precisely the margin relevant for internal capital markets.

At the same time, FHC adoption is not random: larger and more sophisticated organizations were more likely to qualify and elect into the regime. We therefore do not rely on cross-sectional comparisons between adopters and non-adopters. Instead, we exploit within-BHC timing, comparing subsidiary outcomes before and after the parent adopts FHC status, while controlling for observable characteristics and common time shocks. The resulting estimates should therefore be interpreted as local treatment effects for BHCs whose internal funding capacity changes with FHC adoption.

We first verify that FHC adoption generates a discrete increase in internal lending. Because conversions occurred in a staggered manner after 2000, we estimate event-time effects

[12] See 12 C.F.R. §225.81(b) and §225.82 at eCFR: 12 CFR Part 225, Subpart I. The Federal Reserve's FHC election guidance summarizes the statutory and regulatory requirements at Financial Holding Company Election.

using the difference-in-differences framework of Callaway and Sant'Anna (2021). Figure 5 shows no detectable pre-trends prior to adoption and a sharp, persistent increase in internal loans afterward. This pattern supports the interpretation of FHC adoption as a meaningful positive shock to internal funding capacity.

We then embed this shock in an instrumental-variable framework. We use an indicator, *Parent FHC Adoption*, equal to one for banks within BHC j after the parent elects FHC status and zero beforehand, as an instrument for the bank's internal lending exposure. In the first stage, we use our baseline internal lending measures, $\mathbf{1}_{InternalLoans}$ and *Internal Loans*, as dependent variables. In the second stage, we use the fitted values to estimate the causal effect of internal loans on loan growth, one-year-ahead NPL, and bank performance. The subsidiary-bank–quarter specifications are:

$$\upsilon_{i,t} = \beta \cdot Parent\,FHC\,Adoption_{i,t} + Controls_{i,j,t-1} + \phi_j + \phi_t + \epsilon_{i,t} \tag{5}$$

$$y_{i,t} = \bar{\beta} \cdot \widehat{\upsilon_{i,t}} + Controls_{i,t-1} + \phi_j + \phi_t + \epsilon_{i,t} \tag{6}$$

where $\upsilon_{i,t}$ represents either $\mathbf{1}_{InternalLoans}$ or *Internal Loans* for commercial bank i falling falling within BHC j in quarter t, and $\widehat{\upsilon_{i,t}}$ denotes the fitted values from the first-stage regression. The outcome $y_{i,t}$ is one of loan growth, one-year forward NPL, or bank performance, for commercial bank i. Controls and fixed effects remain consistent with previous specifications.

TABLE 11 ABOUT HERE

Table 11 reports the results. Columns (1)–(2) show that FHC adoption significantly increases both the likelihood and magnitude of internal loans, consistent with Figure 5. The IV estimates in columns (3)–(8) imply that the internal-loan variation induced by FHC adoption increases subsidiary loan growth, raises one-year-ahead NPL, and improves short-run ROA. First-stage F-statistics are comfortably above conventional weak-instrument thresholds. Taken together, these results indicate that when regulation expands the parent's ability to move funds internally, subsidiaries lend more aggressively, with both higher realized risk and higher short-run profitability.

B. Capital Constraints: Basel III Reforms

Our second quasi-experimental design exploits the December 2010 announcement of the Basel III capital reforms as a negative shock to parent BHCs' ability to provide internal support.[13] The key feature of this announcement is that it abruptly raised the shadow value of parent capital, especially for BHCs close to the new Common Equity Tier 1 (CET1) minimum of 4.5% (increased from 2% under Basel II). In the immediate post-announcement period, this is naturally interpreted as a capital shock rather than a liquidity shock, because the major liquidity requirements were introduced later: the LCR in January 2013[14] and the NSFR in October 2014 with implementation targeted for 2018.[15]

The identification logic parallels the GLBA design but with the opposite sign. If internal loans depend on the parent's balance-sheet capacity, then a tightening of parent capital constraints should reduce internal support to subsidiaries, particularly for BHCs near the new CET1 threshold. Because exposure is determined by the parent's capital position at the time of the announcement, this design again shifts the supply of internal funding from the parent side rather than from subsidiary-specific borrower demand. The narrow event window and near-threshold comparison are important here: they help isolate the announcement-driven repricing of scarce parent capital from slower-moving post-crisis adjustments.

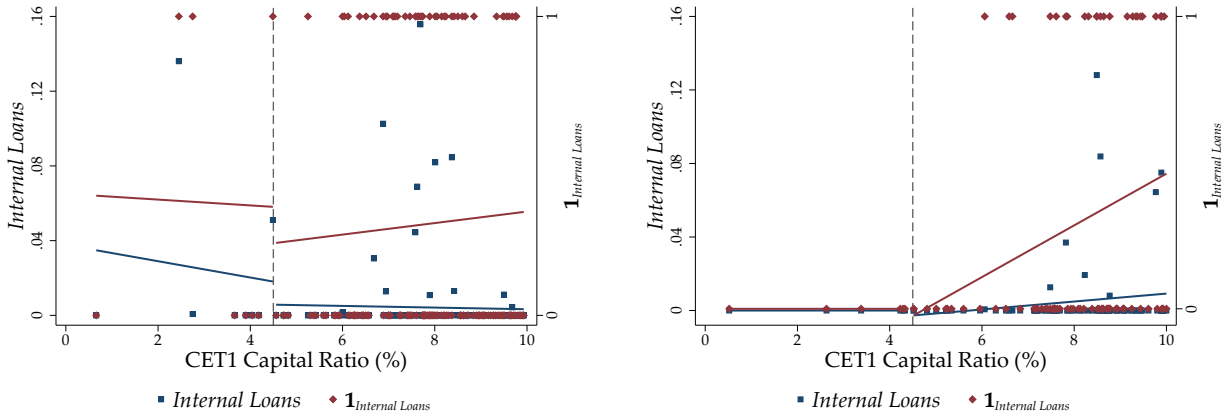
Figure 6 illustrates this mechanism. Before the announcement, internal lending varies smoothly across the CET1 distribution. In the announcement quarter, however, internal lending drops sharply for BHCs below the 4.5% cutoff, consistent with an immediate effort to conserve scarce parent capital.[16] This pattern is the mirror image of the GLBA results:

[13] See Basel Committee on Banking Supervision, *Basel III: A global regulatory framework for more resilient banks and banking systems*, Dec. 2010.

[14] *Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools*, Jan. 2013.

[15] *Basel III: The net stable funding ratio*, Oct. 2014.

[16] Appendix B.4 presents the joint dynamics of alternative liquidity sources—including internal loans, high-quality liquid assets, and demand deposits—for a representative mid-sized bank that failed to meet the CET1 requirement in 2010:Q4. In this example, these alternative liquidity sources do not fully offset the liquidity shortfall caused by the sudden shutdown of parent internal loans, and the bank's external lending declines proportionately. This pattern further supports the interpretation that internal loans are not readily replaced by alternative funding sources and that internal capital markets are a key driver of bank credit supply and



(A) 2010:Q1 **(B)** 2010:Q4

Figure 6. Internal Lending around Basel III Announcement. Each panel plots internal lending against parent CET1 for BHCs with CET1 in [0,10]%. Panel A is three quarters before the December 2010 Basel III announcement; Panel B is the announcement quarter. Blue markers show the level of internal loans; red markers show the indicator $\mathbf{1}_{InternalLoan}$. Lines are linear fits estimated separately below and above the 4.5% CET1 cutoff.

when parent capacity expands, internal lending rises; when parent capital becomes more constrained, internal lending falls.

We formalize this variation using an IV design in a narrow window around the announcement, 2010:Q1–2011:Q3. The instrument exploits predetermined cross-sectional exposure to the new capital standard: *Basel III Exposure* equals one for BHCs with CET1 below 4.5% in 2010:Q4 (the announcement quarter), and zero otherwise. We restrict the sample to BHCs with CET1 up to 10% so that the treated and control groups are meaningfully comparable and the new minimum is plausibly relevant.[17]

As in the GLBA analysis, the first stage uses the two internal lending measures as endogenous variables, instrumented by *Basel III Exposure*. The second stage then estimates the causal effect of the fitted reduction in internal loans on subsidiary outcomes, using specifications analogous to Equations (5)–(6).

risk-taking.

[17]Institutions far above this range are unlikely to face meaningful incremental capital pressure from a 4.5% minimum. Untabulated results are robust to alternative upper cutoffs. We also confirm the absence of differential pre-trends in internal lending prior to the announcement; see Appendix B.3.

TABLE 12 ABOUT HERE

Table 12 reports the results. Columns (1)–(2) confirm a strong first stage: after the announcement, exposed BHCs reduce internal lending significantly more than non-exposed BHCs. The IV estimates in columns (3)–(8) imply that this exogenous contraction in internal support reduces subsidiary loan growth, lowers one-year-ahead NPL, and reduces profitability. First-stage F-statistics again exceed conventional weak-instrument thresholds.

The importance of this experiment is not only that it identifies a negative parent-side shock, but also that it complements the earlier design. GLBA shows that when regulation expands the parent's internal funding capacity, subsidiaries lend more, take on more risk, and earn higher short-run returns. Basel III shows the reverse when parent capital becomes scarce. The fact that the GLBA and Basel III estimates are symmetric, while the TAG results do not replicate the same risk and profitability effects, provides much stronger identification than any single experiment alone.

C. Bank-Level Shock: TAG Expiration

Our third test exploits the expiration of the FDIC's Transaction Account Guarantee Program (TAGP) as a bank-level shock to external funding. This design complements the previous two experiments in an important way. GLBA and Basel III both shift the *parent BHC's* capacity to provide internal funds, from opposite directions. TAGP expiration, by contrast, reduces a *subsidiary bank's* outside funding without directly changing the parent's ability to reallocate resources within the group. It therefore provides a clean contrast test: if the effects documented above simply reflect any contraction in bank funding or lending, then a deposit-driven shock should generate similar effects on risk and profitability. If instead internal loans are a distinct channel, then TAGP expiration should reduce lending volume but need not replicate the same changes in loan risk or performance.

TAGP provided unlimited insurance on non-interest-bearing transaction accounts during

and after the financial crisis.[18] Its expiration withdrew that guarantee and induced deposit outflows, especially at banks more reliant on unstable transaction funding. The identifying advantage of this shock is precisely that it operates at the bank's external liability margin. Unlike GLBA or Basel III, it does not arise from changes in parent organizational scope or parent capital constraints. This makes TAGP expiration a useful falsification-style test for our mechanism: it moves funding and lending, but not through the internal capital market channel that is central to our hypothesis.

We implement this test using a difference-in-differences design. The key exposure variable, $TAGP\ Exposure_i$, is measured before expiration using the bank's wholesale funding share in 2012:Q2, defined as one minus core deposits over total deposits. Banks with higher wholesale funding shares are more exposed because a larger fraction of their funding base is likely to be sensitive to the withdrawal of the guarantee. We first estimate whether more exposed banks contract lending after TAGP expires:

$$y_{i,t} = \beta \cdot (\text{Post}_t \times TAGP\ Exposure_i) + Controls_{i,t-1} + \phi_i + \phi_t + \epsilon_{i,t}, \tag{7}$$

where Post_t equals one after 2012:Q4. We then use this interaction as an instrument for loan growth to estimate whether a deposit-driven contraction in credit supply affects future nonperforming loans (NPL) and profitability (ROA):

$$y_{i,t} = \delta \cdot \Delta \widehat{\log(\text{Loans})}_{i,t} + Controls_{i,t-1} + \phi_i + \phi_t + \epsilon_{i,t}. \tag{8}$$

The sample spans 2012:Q1–2014:Q2 and is restricted to propensity-score-matched banks.

TABLE 13 ABOUT HERE

Table 13 reports the results. Column (1) shows that TAGP expiration significantly reduces

[18]The FDIC's original TAG program expired on December 31, 2010, but Section 343 of the Dodd–Frank Act extended essentially identical unlimited coverage for non-interest-bearing transaction accounts through December 31, 2012. We therefore use December 31, 2012 as the relevant expiration date.

lending at more exposed banks, confirming that the shock is economically meaningful. The key result, however, is that this lending contraction has no detectable effect on one-year-ahead NPL or ROA. The reduced-form estimates are small and statistically insignificant, and the IV estimates in columns (3) and (5) are similarly close to zero.[19] This stands in sharp contrast to the GLBA and Basel III results, where shocks to parent internal funding capacity produce economically meaningful changes not only in lending, but also in realized risk and profitability.

This contrast is what makes the TAGP experiment especially valuable for identification. On its own, any one regulatory shock may admit alternative interpretations. Taken together, however, the three experiments deliver a much sharper causal design. GLBA provides a positive parent-side shock to internal funding capacity; Basel III provides a negative parent-side shock; and TAGP expiration provides a bank-level external funding shock that leaves the parent internal capital market largely unchanged. The first two show that when the parent's internal lending capacity changes, lending, risk, and profitability move together. The third shows that when external funding falls without disrupting the internal loan channel, lending falls but risk and profitability do not respond in the same way. The consistency of these three experiments, viewed jointly, is therefore crucial. It rules out the interpretation that our earlier findings are driven by generic funding stress or loan-volume effects alone, and instead supports the conclusion that internal loans are a distinct source of funding that affects not only the quantity of lending, but also its composition and risk.

VI. Internal Capital Allocation within BHCs: Bank *versus* Nonbank Subsidiaries

Sections IV–V show that internal loans from parent BHCs relax subsidiary funding constraints, leading to faster loan growth and higher short-run profitability, albeit with higher

[19] The first-stage F-statistic exceeds the conventional Stock and Yogo (2002) threshold. We also verify the null using the Anderson–Rubin test, which is robust to weak instruments. The AR p-values are 0.73 for NPL and 0.85 for ROA.

realized credit risk. A natural question is why banks do not rely on internal loans more systematically. The key reason is that internal liquidity and balance-sheet capacity are scarce at the consolidated level: every dollar lent internally to a bank subsidiary carries an opportunity cost for the parent.

A natural next step would be to model how a parent BHC optimally allocates scarce internal liquidity and balance-sheet capacity across affiliates, trading off marginal returns, risk, regulatory constraints, and strategic complementarities across business lines. While this question is central to the theory of internal capital markets in financial conglomerates, it is beyond the scope of this paper. A full efficiency analysis would require specifying the parent's objective function and constraints and measuring risk-adjusted investment opportunities across both bank and nonbank affiliates at a level of granularity that is unavailable.

In this section, we take the parent's internal allocation policy as given and focus on a narrower implication that is sufficient for our purposes. Many BHCs operate nonbank subsidiaries such as broker-dealers, asset managers, finance companies, and insurance units, which also draw on group resources. These affiliates often lack access to stable deposit funding and have strong incentives to rely on parent support.[20] Their presence can: (1) crowd out internal loans to commercial bank subsidiaries by raising the shadow cost of internal funds, and (2) discipline the bank's use of internal loans when they are granted, because internal funding is no longer perceived as abundant or guaranteed. We test these two predictions in turn.

A. Nonbank Presence and Internal Lending to Banks

We first examine whether nonbank operations are associated with lower internal lending to commercial bank subsidiaries. We estimate specifications analogous to Equation (2), replacing the main conditioning variable with one of: $\mathbf{1}_{NonbankSubsidiary}$, *Nonbank Subs Ratio*, or *Nonbank Asset Ratio*; which respectively, capture the presence, breadth, and scale of nonbank

[20] Nonbank affiliates can serve strategic roles within BHCs, including specialization, risk isolation, and operating under different regulatory regimes (e.g., Ashcraft (2005); Chen, Lee, Neuhann, and Saidi (2023); Houston, James, and Marcus (1997); Jiang, Matvos, Piskorski, and Seru (2020)).

operations (see Section III.B for definitions). The dependent variable is the indicator or intensity of internal loans. Intuitively, we test whether BHCs with larger nonbank footprints allocate less internal funding to their commercial bank subsidiaries. Table 14 reports the results.

TABLE 14 ABOUT HERE

Across specifications, the coefficients on nonbank presence and size are negative and statistically significant. Columns (1) and (4) show that simply having a nonbank subsidiary is associated with a lower likelihood and lower intensity of internal lending to bank subsidiaries. Columns (2) and (5) indicate that BHCs with more nonbank subsidiaries reduce internal lending to banks by more, and columns (3) and (6) show analogous effects when nonbank activity is measured by asset share. Economically, the estimates imply meaningful crowding out: internal funds are reallocated toward nonbank affiliates as their footprint expands, leaving less internal support for commercial banks, all else equal.

B. The Disciplinary Role of Nonbanks

Crowding out alone does not reveal whether nonbank affiliates improve or worsen the *consequences* of internal lending for bank behavior. On the one hand, reduced internal support could mechanically constrain bank credit supply. On the other, scarcity of internal funds can impose discipline: when internal liquidity must be "earned" against alternative uses within the group, banks may use internal loans more selectively, with tighter underwriting and better risk-adjusted returns. We test for this disciplining role by interacting internal-loan measures with nonbank presence/size in outcome regressions for loan performance and profitability:

$$Y_{i,t} = \beta \cdot \mathbf{1}_{NonbankSubsidiary\ i,t-1} \cdot \mathbf{1}_{Internal\ Loan\ i,t-1} + Controls_{i,t-1} + \phi_i + \phi_t + \epsilon_{i,t}. \quad (9)$$

We estimate analogous specifications for *Nonbank Subs Ratio* and *Nonbank Asset Ratio*, together with the continuous internal-loan proxy, with the same set of controls and fixed effects.

TABLE 15 ABOUT HERE

Table 15 supports the nonbank disciplinary argument. Columns (1) and (2) show that, conditional on receiving internal loans, bank subsidiaries in BHCs with nonbank affiliates experience lower subsequent NPL than internal-loan funded banks banks in single-bank groups. Quantitatively, having at least one nonbank subsidiary is associated with about a 1.2% ($= 0.014/1.123$) reduction in future NPL for an internal-loan funded banks bank relative to the baseline rate, and a one percentage point increase in the nonbank asset ratio corresponds to roughly a 15 bps decrease in NPL. Columns (3) and (4) indicate that these banks also exhibit stronger profitability. In particular, the significant coefficient of 0.084 implies that an internal-loan funded banks bank in a BHC with nonbanks has about a 3% higher ROA than an internal-loan funded banks bank in a single-bank BHC. Given the mean quarterly ROA of -2.9% for banks without nonbanks, this is a sizeable improvement. Finally, columns (5) and (6) show that BHC-level return on assets is higher when BHCs operate nonbank affiliates and maintain active internal loan markets. This pattern is consistent with the efficient deployment of scarce internal funds: nonbank activities simultaneously absorb internal liquidity and raise the hurdle rate for bank-level internal support.

Taken together, the results highlight a simple mechanism that complements our main findings. Nonbank affiliates raise the opportunity cost of internal funds and crowd out internal lending to banks on average. But conditional on internal funding, the same scarcity can discipline bank behavior, leading to more selective deployment of internal loans, lower realized credit losses, and stronger profitability. In this sense, nonbank operations can attenuate the risk-taking externality of internal loans documented in Sections IV–V, improving risk-adjusted outcomes within the bank and at the consolidated BHC level.

From a broader credit market perspective, these dynamics imply a quantity–quality tradeoff. While greater nonbank activity may reduce bank credit volume by crowding out internal support, it simultaneously improves the quality and performance of extended credit by hardening internal funding constraints. This section clarifies the equilibrium context for our earlier findings: while internal loans are powerful and flexible, their availability and efficacy

depend on the competition for scarce funds within the financial conglomerate.

VII. Internal Loans and Monetary Policy Transmission

We conclude our analysis by examining whether internal capital markets shape the bank lending channel of monetary policy. The preceding sections establish that internal loans are a flexible, low-friction funding backstop that can sustain loan growth when external or on-balance-sheet liquidity is limited. They also show that this support is episodic and depends on parent capacity as well as subsidiary allocation choices (e.g., toward nonbanks). These features imply that monetary policy shocks need not transmit uniformly across commercial banks: subsidiaries that can draw on parent funding at a given time may adjust lending and pricing less in response to policy tightening or easing.

A large literature studies the bank lending channel of monetary policy and the role of funding frictions, emphasizing the importance of bank balance-sheet strength and liability structure for credit supply responses (Bernanke and Blinder, 1992; Kashyap and Stein, 2000; Ivashina and Scharfstein, 2010; Drechsler et al., 2017). A smaller literature highlights that affiliation with a multi-bank holding company can smooth lending during policy tightening by reallocating funds internally (Houston et al., 1997; Campello, 2002; Ashcraft and Campello, 2006). Our contribution is to bring these strands together and — critically — clarify the dynamics at play by using direct measures of activity in internal capital markets in BHCs. In particular, our results in Sections III–VI show that BHC affiliation alone does not guarantee insulation. Indeed, most bank-quarters feature *no internal-loan support*, and internal funding is rationed by competing internal uses of funds (nonbank affiliates). We therefore test whether monetary transmission is attenuated when internal loans are actually extended.

We study major monetary-policy shifts over 1991–2023, focusing on episodes that fall within the "modern Fed era" of increased transparency (Lindsey, 2003). We define each event as the onset of a sequence of policy moves in the FOMC's target federal funds rate (the

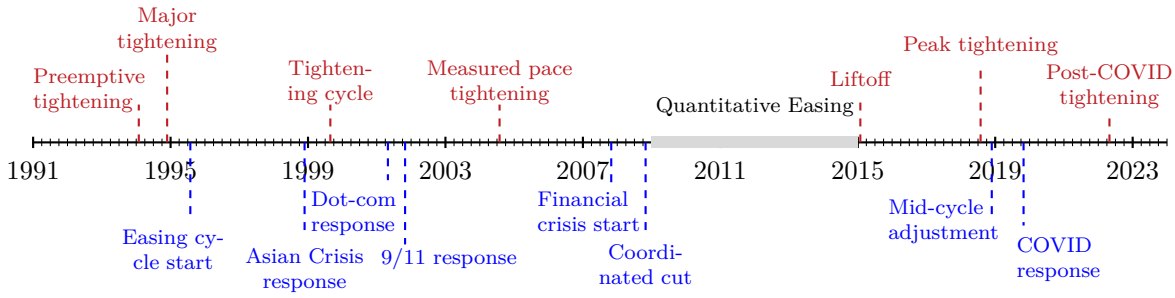


Figure 7. Monetary Policy Episodes. Timeline of the monetary policy events used in this section, defined as the first increase (tightening) or decrease (easing) in a sequence of changes in the FOMC's target federal funds rate. Tightening (easing) events are shown above (below) the timeline.

first hike in a tightening cycle or the first cut in an easing cycle). Figure 7 summarizes the set of events spanning conventional tightening/easing cycles, the crisis and early post-crisis period, normalization, and the pandemic episode.

To quantify differential responses, we estimate a stacked difference-in-differences design that compares banks with internal-loan access to banks without such access in event windows around each shock. We stack four quarters before and four quarters after each event s and estimate a collapsed pre/post specification in the spirit of Sun and Abraham (2021):

$$\begin{aligned} Y_{i,t} =& \beta_1 \cdot (Internal\ Loan_{i,t} \times Pre_MP_Shock_{s,t}) \\ &+ \beta_2 \cdot (Internal\ Loan_{i,t} \times Post_MP_Shock_{s,t}) \\ &+ \phi_i + \phi_s \times \phi_t + \epsilon_{i,s,t}. \end{aligned} \tag{10}$$

The outcome $Y_{i,t}$ is either loan growth, $\Delta \log(Loans)$, or *Mortgage Rates*, defined as the log of the average 15-year mortgage rate charged by bank i in quarter t. The indicators Pre_MP_Shock and $Post_MP_Shock$ equal one in the four quarters preceding and following event s, respectively. We interact these indicators with internal loan measures, both the existence and the intensity proxy. We include bank fixed effects ϕ_i and event-by-calendar-quarter fixed effects $\phi_{s\times t}$ to absorb common dynamics within each episode. As a control group, we use banks whose parent BHCs never provide internal loans over the sample. The

results are presented in Table 16.[21]

TABLE 16 ABOUT HERE

The tabulated results extend the internal capital market view of BHCs by showing that the relevant margin for monetary transmission is not organizational affiliation *per se*, but realized internal support at the subsidiary level. They also connect to the broader lending channel literature emphasizing that banks' funding frictions and liability structure shape credit supply responses to policy shocks. Putting together these findings with those of Section VI, our study suggests that the aggregate strength of monetary transmission depends on how parents allocate scarce internal resources across bank and nonbank affiliates.

In sum, internal capital markets can weaken the bank lending channel of monetary policy. Banks that can draw on internal funding from their parent BHCs adjust lending and pricing less in response to monetary tightening or easing, consistent with internal loans buffering funding shocks. This insight adds a layer to conventional views of monetary transmission: not only do bank-specific traits such as size and liquidity matter, but organizational form and access to intra-group reallocation also shape policy pass-through. Relatedly, Gelman, Goldstein, and MacKinlay (2024) show that diversified BHCs with substantial nonbank activities reduce the efficacy of monetary policy, especially in tightening environments; our evidence complements this result by tying the attenuation to realized internal lending flows within the conglomerate. A key policy implication is that assessing and communicating about monetary transmission may require tracking internal funding flows within large BHCs, since shifts in internal lending can dampen the pass-through of policy changes to bank credit supply.

[21] Because the Sun and Abraham (2021) stacked design is most transparent with a binary treatment, we use the internal-loan indicator in the main specification. Table B.6 in the appendix reports analogous two-way fixed effects results using both the binary and continuous measures, with similar conclusions.

VIII. Concluding Remarks

This paper studies internal loans from parent BHCs to their commercial bank subsidiaries and shows that these intragroup flows are a distinctive form of bank funding: legally debt, but economically closer to contingent capital support. Using novel regulatory data, we construct new measures of internal lending that capture both the presence and intensity of parent-to-bank loans. Across specifications with rich controls and fixed effects, internal loans lead to greater bank loan growth and higher short-run profitability, consistent with internal funding relaxing binding liquidity or funding constraints and enabling rapid credit supply expansion. We also show that internal lending is shaped by internal allocation: nonbank affiliates crowd out funding to banks on average but appear to discipline the use of internal loans when they are granted, and internal loans attenuate monetary policy transmission by smoothing lending and pricing responses around major policy shifts.

Our findings have implications for both research and policy. For researchers, they underscore the importance of measuring internal funding flows directly when studying BHCs, internal capital markets, and bank credit supply. An important direction for future research is to study the optimal allocation of scarce internal funds within financial conglomerates, across bank and nonbank affiliates, across states of the world, and under changing regulation.

For policymakers, our results stress the importance of intragroup funding channels that to date have been ignored. Because internal borrowing translates into higher external credit supply rather than liquidity hoarding, supervisors and macroprudential authorities that ignore this channel may misdiagnose the drivers of rapid loan growth and underestimate associated risk-taking, consistent with our evidence that internal-loan-funded expansion is followed by worse ex post loan performance. More broadly, realized parent support — rather than BHC affiliation alone — appears to be the relevant state variable for credit supply and pricing, implying that monetary policy transmission and stress-test projections can be distorted if they do not incorporate internal funding flows; in particular, we show that internal loans atten-

uate the bank-lending channel of monetary policy by dampening lending and mortgage-rate responses around major tightening/easing episodes. Finally, because internal funds are allocated across competing bank and nonbank affiliates, changes in conglomerate scope can shift both the quantity and quality of bank credit. Policies that abstract from internal loan markets may thus draw incomplete conclusions about BHC complexity, credit cycles, and resolvability.

REFERENCES

Acharya, Viral V., Nicola Cetorelli, and Bruce Tuckman, 2024, Where do banks end and NBFIs begin?, Technical report, Federal Reserve Bank of New York Staff Reports, no. 1119.

Ashcraft, Adam B, 2005, Are banks really special? New evidence from the FDIC-induced failure of healthy banks, *American Economic Review* 95, 1712–1730.

Ashcraft, Adam B, and Murillo Campello, 2006, Internal capital markets and the real effects of monetary policy, *Journal of Monetary Economics* 53, 1509–1531.

Bai, Jennie, Arvind Krishnamurthy, and Charles-Henri Weymuller, 2018, Measuring liquidity mismatch in the banking sector, *The Journal of Finance* 73, 51–93.

Benmelech, Efraim, Jennifer Dlugosz, and Victoria Ivashina, 2012, Securitization without adverse selection: The case of CLOs, *Journal of Financial Economics* 106, 91–113.

Berger, Allen N, and Christa HS Bouwman, 2009, Bank liquidity creation, *The Review of Financial Studies* 22, 3779–3837.

Berger, Allen N, and Robert DeYoung, 1997, Problem loans and cost efficiency in commercial banks, *Journal of Banking & Finance* 21, 849–870.

Bernanke, Ben S, and Alan S Blinder, 1992, The federal funds rate and the channels of monetary transmission, *American Economic Review* 82, 901–921.

Bliss, Robert R, and George G Kaufman, 2006, US corporate and bank insolvency regimes: An economic comparison and evaluation, *FRB of Chicago Working Paper* .

Callaway, Brantly, and Pedro HC Sant'Anna, 2021, Difference-in-differences with multiple time periods, *Journal of Econometrics* 225, 200–230.

Campello, Murillo, 2002, Internal capital markets in financial conglomerates: Evidence from small bank responses to monetary policy, *Journal of Finance* 57, 2773–2805.

Cetorelli, Nicola, and Linda S Goldberg, 2012a, Banking globalization and monetary transmission, *The Journal of Finance* 67, 1811–1843.

Cetorelli, Nicola, and Linda S Goldberg, 2012b, Follow the money: Quantifying domestic effects of foreign bank shocks in the great recession, *American Economic Review* 102, 213–218.

Cetorelli, Nicola, and Linda S Goldberg, 2012c, Liquidity management of US global banks: Internal capital markets in the great recession, *Journal of International Economics* 88, 299–311.

Cetorelli, Nicola, Michael G Jacobides, and Samuel Stern, 2021, Mapping a sector's scope transformation and the value of following the evolving core, *Strategic Management Journal* 42, 2294–2327.

Cetorelli, Nicola, and Saketh Prazad, 2024, The nonbank footprint of banks, *FRB of New York Staff Report* .

Chava, Sudheer, and Michael R Roberts, 2008, How does financing impact investment? The role of debt covenants, *The Journal of Finance* 63, 2085–2121.

Chen, Mary, Seung Jung Lee, Daniel Neuhann, and Farzad Saidi, 2023, Less bank regulation, more non-bank lending, *FEDS Working Paper* .

Degryse, Hans, Olivier De Jonghe, Sanja Jakovljević, Klaas Mulier, and Glenn Schepens, 2019, Identifying credit supply shocks with bank-firm data: Methods and applications, *Journal of Financial Intermediation* 40, 100813.

Drechsler, Itamar, Alexi Savov, and Philipp Schnabl, 2017, The deposits channel of monetary policy, *Quarterly Journal of Economics* 132, 1819–1876.

Gatev, Evan, Til Schuermann, and Philip E Strahan, 2009, Managing bank liquidity risk: How deposit-loan synergies vary with market conditions, *The Review of Financial Studies* 22, 995–1020.

Gelman, Michael, Itay Goldstein, and Andrew MacKinlay, 2024, Monetary policy in the age of universal banking, Technical report, Working Paper.

Hadlock, Charles J, and Joshua R Pierce, 2010, New evidence on measuring financial constraints: Moving beyond the KZ index, *The Review of Financial Studies* 23, 1909–1940.

Houston, Joel F., Christopher James, and David Marcus, 1997, Capital market frictions and the role of internal capital markets in banking, *Journal of Financial Economics* 46, 135–164.

Ivashina, Victoria, 2009, Asymmetric information effects on loan spreads, *Journal of Financial Economics* 92, 300–319.

Ivashina, Victoria, and David S Scharfstein, 2010, Bank lending during the financial crisis of 2008, *Journal of Financial Economics* 97, 319–338.

Jiang, Erica Xuewei, Gregor Matvos, Tomasz Piskorski, and Amit Seru, 2020, Banking without deposits: Evidence from shadow bank call reports, *NBER working paper* .

Kashyap, Anil K, and Jeremy C Stein, 2000, What do a million observations on banks say about the transmission of monetary policy?, *American Economic Review* 90, 407–428.

Khwaja, Asim Ijaz, and Atif Mian, 2008, Tracing the impact of bank liquidity shocks: Evidence from an emerging market, *American Economic Review* 98, 1413–42.

Lindsey, David E, 2003, A modern history of FOMC communication: 1975-2002, *FOMC Secretariat Special Studies* .

Meisler, Ron E., Christopher M. Dressel, Zahed A. Haseeb, and Matthew S. Lapata, 2010, Debt recharacterization in bankruptcy: Overview and developments, *Norton Journal of Bankruptcy Law and Practice* 29.

Rajan, Raghuram, Henri Servaes, and Luigi Zingales, 2000, The cost of diversity: The diversification discount and inefficient investment, *The Journal of Finance* 55, 35–80.

Rajan, Raghuram G, 1994, Why bank credit policies fluctuate: A theory and some evidence, *Quarterly Journal of Economics* 109, 399–441.

Scharfstein, David S, and Jeremy C Stein, 2000, The dark side of internal capital markets: Divisional rent-seeking and inefficient investment, *Journal of Finance* 55, 2537–2564.

Schwert, Michael, 2018, Bank capital and lending relationships, *The Journal of Finance* 73, 787–830.

Shin, Hyun-Han, and René M. Stulz, 1998, Are internal capital markets efficient?, *Quarterly Journal of Economics* 113, 531–552.

Stein, Jeremy C, 1997, Internal capital markets and the competition for corporate resources, *Journal of Finance* 52, 111–133.

Stock, James H, and Motohiro Yogo, 2002, Testing for weak instruments in linear IV regression, Technical report, National Bureau of Economic Research Cambridge, Mass., USA.

Strahan, Philip E., Eric Gilje, and Elena Loutskina, 2016, Exporting liquidity: Branch banking and financial integration, *The Journal of Finance* 71, 1159–1184.

Stulz, René M, Alvaro G Taboada, and Mathijs A van Dijk, 2022, Why are bank holdings of liquid assets so high?, Technical report, National Bureau of Economic Research.

Sufi, Amir, 2007, Information asymmetry and financing arrangements: Evidence from syndicated loans, *Journal of Finance* 62, 629–668.

Sun, Liyang, and Sarah Abraham, 2021, Estimating dynamic treatment effects in event studies with heterogeneous treatment effects, *Journal of Econometrics* 225, 175–199.

Whited, Toni M, and Guojun Wu, 2006, Financial constraints risk, *The Review of Financial Studies* 19, 531–559.

Table 1. Summary Statistics

This table presents summary statistics for the key variables used in our empirical analyses over the 1991:Q1–2023:Q1 period. The unit of observation is BHC–quarter level. The definitions of the variables, along with the sources and construction are provided in Appendix Table A.1.

	Mean	SD	Median	IQR	N
Internal Funding					
$\mathbf{1}_{InternalLoans}$	0.329	0.470	0.000	1.000	33,986
Internal Loans	0.007	0.027	0.037	0.080	33,986
Bank-Level Measures					
$\Delta log(Loans)$	0.024	0.059	0.014	0.038	40,272
NPL	0.011	0.019	0.006	0.010	40,272
Return on Bank Assets	–0.025	0.467	0.000	0.305	31,969
Asset Liquidity Ratio	0.210	0.168	0.171	0.173	40,272
Core Deposits	0.644	0.217	0.709	0.194	40,272
Bank Size	14.010	1.618	14.172	2.323	40,272
Tier 1 Capital Ratio	0.155	0.106	0.122	0.043	40,272
External Loans	0.605	0.204	0.657	0.191	40,272
BHC-Level Measures					
$\mathbf{1}_{NonbankSubsidiary}$	0.178	0.382	0.000	0.000	33,986
Nonbank Subs Ratio	0.079	0.221	0.000	0.000	33,986
Nonbank Asset Ratio	0.221	0.211	0.005	0.033	33,287
BHC Liquidity Ratio	0.191	0.117	0.167	0.132	33,986
BHC CET1 Ratio	0.123	0.061	0.114	0.043	33,287
BHC Size	14.989	1.590	14.743	2.031	33,852
BHC External Loans	0.702	0.571	0.672	0.172	33,494
Loan-Level Measures					
Facility Amount	0.032	0.345	0.004	0.137	108,266
Maturity	3.726	0.623	3.989	0.511	108,266
All in Drawn Spread	0.541	0.712	0.615	0.789	108,266
Rating Level	14.69	3.189	15.00	5.000	108,266
New Borrower (Count)	2.956	1.392	2.996	2.268	2,927
New Borrower Lending	5.993	11.382	1.847	6.417	2,904
Lead Arranger	0.378	0.485	0.000	1.000	51,239
Lender Share	0.170	0.238	0.083	.126	51,239
Lender HHI	0.136	0.168	0.080	0.113	51,239

Table 2. Factors Affecting Internal Lending

This table reports output from the estimation of Eq. (2). The dependent variable is $\mathbf{1}_{InternalLoans}$ across all specifications. Column (1) is estimated over a minimal specification of Eq. (2) that includes only the subsidiary bank characteristics. The specification for Column (2) includes parent BHC characteristics, without considering macroeconomic factors. Columns (3) through (5) are estimated under the complete specification with modifications in the inclusion of fixed effects. BHC–, time–(year-quarter–), and credit-rating–fixed effects are included as indicated. All variables are constructed as described in Appendix Table A.1. The unit of observation is a BHC–quarter. All coefficients are estimated over the 1991:Q1 to 2023:Q1 period using a logistic regression. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$\mathbf{1}_{InternalLoans}$				
	(1)	(2)	(3)	(4)	(5)
Bank Characteristics					
Asset Liquidity Ratio	–0.193***	–0.672***	–1.603***	–0.236***	–0.416***
	(0.055)	(0.093)	(0.102)	(0.128)	(0.131)
Core Deposits/Assets	–0.035***	–0.016***	–0.013***	–0.013**	–0.015**
	(0.005)	(0.005)	(0.006)	(0.006)	(0.007)
Bank Size	0.076***	0.012***	0.006***	0.027***	0.026**
	(0.008)	(0.002)	(0.002)	(0.010)	(0.010)
Tier 1 Capital Ratio	–0.514***	–2.758***	–1.526***	–2.437***	–2.749***
	(0.195)	(0.403)	(0.462)	(0.500)	(0.518)
BHC Characteristics					
BHC Size		1.421***	0.924***	1.039***	1.276***
		(0.156)	(0.189)	(0.261)	(0.271)
BHC CET1 Ratio		0.129***	0.256***	0.067***	0.158***
		(0.007)	(0.008)	(0.015)	(0.020)
Macroeconomic Factors					
GDP Growth Rate (log)			0.628**	0.246	
			(0.318)	(0.219)	
10Y Tsy Rate			0.234***	0.074***	
			(0.018)	(0.015)	
Fed Funds Rate (Overnight)			0.006***	0.017***	
			(0.001)	(0.006)	
VIX			0.421***	0.241***	
			(0.126)	(0.087)	
NBER Recession Flag			–0.077**	–0.030**	
			(0.033)	(0.012)	
Fixed Effects					
Credit Rating	Yes	Yes	Yes	Yes	Yes
BHC	No	No	No	Yes	Yes
Time	No	No	No	No	Yes
Observations	32,186	31,860	29,526	22,092	22,092
Pseudo R-squared	0.07	0.07	0.09	0.24	0.24

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 3. Impact of Internal Loans on Loan Growth

This table reports the output of Eq. (1). The dependent variable is $\Delta log(Loans)$, scaled by a factor of 100 across all specifications. All variables are constructed as described in Appendix Table A.1. Columns (1) and (2) report the results from a regression that includes only the time–(year-quarter–)fixed effects. Columns (3) and (4) present the results with both the BHC– and time–fixed effects. The unit of observation is a subsidiary-bank–quarter. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$100 \cdot \Delta log(Loans)$			
	(1)	(2)	(3)	(4)
$\mathbf{1}_{InternalLoans}$	0.107***		0.160***	
	(0.020)		(0.034)	
Internal Loans		1.968***		2.825***
		(0.317)		(0.634)
Controls				
Asset Liquidity Ratio	0.002	0.008	0.004	0.014
	(0.002)	(0.004)	(0.003)	(0.006)
Tier 1 Capital Ratio	-0.096*	-0.141	-0.121	-0.115
	(0.030)	(0.099)	(0.051)	(0.161)
Core Deposits	0.078	0.179	0.120	0.178
	(0.029)	(0.098)	(0.050)	(0.157)
Bank Size	-0.422*	-0.832*	-0.595*	-1.010*
	(0.133)	(0.224)	(0.167)	(0.294)
External Loans	-1.575	-1.968	-1.765	-2.189
	(0.709)	(0.856)	(0.828)	(0.774)
Fixed Effects				
BHC	No	No	Yes	Yes
Time	Yes	Yes	Yes	Yes
Observations	39,770	39,770	39,770	39,770
R-squared	0.12	0.12	0.44	0.44

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 4. Horserace of Internal Loans and Alternative Bank Liquidity Measures

This table reports the output of Eq. (1). The dependent variable is $\Delta log(Loans)$, scaled by a factor of 100 across all specifications. All variables are constructed as described in Appendix Table A.1. All regressions include BHC– and time–(year-quarter–)fixed effects. The unit of observation is a subsidiary-bank–quarter. All regressions are estimated over the 1991:Q1 to 2016:Q4 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$100 \cdot \Delta log(Loans)$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\mathbf{1}_{InternalLoans}$	0.235***	0.121**	0.144**	0.124**				
	(0.039)	(0.048)	(0.047)	(0.052)				
Internal Loans					2.400***	1.356*	1.801***	1.258*
					(0.557)	(0.629)	(0.279)	(0.673)
Bank Liquidity	0.683			0.122	0.685			0.110
	(0.539)			(0.208)	(0.539)			(0.252)
Demand Deposits		0.682		0.660		0.692		0.678
		(0.949)		(0.954)		(0.946)		(0.947)
HQLA			0.055	0.001			0.237	0.009
			(0.079)	(0.018)			(0.346)	(0.074)
Controls								
Tier 1 Capital Ratio	0.054**	–0.047***	0.054**	–0.047***	0.054**	–0.047***	0.053**	–0.047***
	(0.025)	(0.014)	(0.025)	(0.014)	(0.025)	(0.014)	(0.025)	(0.014)
Bank Size	0.292***	–0.127*	0.281***	–0.124*	0.292***	–0.128*	0.284***	–0.125*
	(0.074)	(0.064)	(0.073)	(0.065)	(0.074)	(0.064)	(0.072)	(0.068)
External Loans	–2.579*	-0.869*	–2.187	-0.928*	–2.573*	–0.859*	–2.217	–0.918*
	(1.467)	(0.494)	(1.453)	(0.463)	(1.471)	(0.493)	(1.447)	(0.467)
Fixed Effects								
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,536	28,242	30,536	28,242	30,536	28,242	30,536	28,242
R-squared	0.26	0.25	0.25	0.26	0.26	0.25	0.26	0.28

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 5. Impact of Internal Loans on Loan Performance

This table reports the output of Eq. (1). The dependent variable is the one-year forward NPL, scaled by a factor of 100 across all specifications. All variables are constructed as described in Appendix Table A.1. Columns (1) and (2) report the results from a regression that includes only the time–(year-quarter–)fixed effects. Columns (3) and (4) present the results with both the BHC– and time–(year-quarter–)fixed effects. The unit of observation is a subsidiary-bank–quarter. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$100 \cdot NPL$			
	(1)	(2)	(3)	(4)
$\mathbf{1}_{InternalLoans}$	0.013***		0.020***	
	(0.003)		(0.006)	
Internal Loans		0.370***		0.690***
		(0.114)		(0.161)
Controls				
Asset Liquidity Ratio	–0.169***	–0.317***	–0.380***	–0.503***
	(0.058)	(0.105)	(0.075)	(0.107)
Tier 1 Capital Ratio	0.019	0.959***	0.510***	0.980***
	(0.057)	(0.136)	(0.078)	(0.114)
Core Deposits	–1.019***	–2.501***	–0.669***	–0.998***
	(0.069)	(0.158)	(0.095)	(0.141)
Bank Size	0.039***	0.042***	0.075***	0.106***
	(0.001)	(0.002)	(0.006)	(0.008)
External Loans	0.512***	0.658***	0.364***	0.527***
	(0.022)	(0.041)	(0.033)	(0.047)
Fixed Effects				
BHC	No	No	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes
Observations	38,349	38,349	38,349	38,349
R-squared	0.33	0.33	0.53	0.53

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 6. Loan-Level Impact of Internal Loans

This table reports the output of the loan-level estimation in Eq. (3). The dependent variables are as follows: in columns (1) and (2), *Facility Amount*, which is the size of the tranche, scaled by the lender's assets; in columns (3) and (4), *Maturity*, which is the logarithm of the loan tenor in months; in columns (5) and (6) the *All in Drawn Spread* which is the logarithm of the raw value; in columns (7) and (8), *Rating Level*, which is a rank-ordering of the S&P credit rating with the highest (AAA) set to 24 and the lowest (D) set to 1. All other variables are constructed as described in Appendix Table A.1. The unit of observation is a loan. BHC–, borrower–, time– and borrower-time–fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	Facility Amount		*Maturity*		*All In Drawn Spread*		*Rating Level*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\mathbf{1}_{InternalLoans}$	0.032**		0.160***		–0.002***		–0.070**	
	(0.013)		(0.084)		(0.001)		(0.036)	
Internal Loans		0.021***		1.205**		–0.036***		–0.950***
		(0.007)		(0.515)		(0.012)		(0.265)
Controls								
Asset Liquidity Ratio	0.029***	0.030***	–1.510**	–1.630***	0.414**	0.431**	29.443***	29.748***
	(0.008)	(0.008)	(0.605)	(0.600)	(0.189)	(0.189)	(4.167)	(4.163)
Tier 1 Capital Ratio	0.012	0.011	–5.351*	–6.353**	0.139**	0.116*	13.198***	12.964***
	(0.096)	(0.113)	(3.038)	(3.075)	(0.063)	(0.063)	(1.713)	(1.736)
Core Deposits	–0.001*	–0.001**	0.190***	0.193***	0.001	0.001	0.053**	0.054**
	(0.001)	(0.001)	(0.056)	(0.056)	(0.001)	(0.001)	(0.025)	(0.025)
Bank Size	–0.003***	–0.003***	–0.471***	–0.506***	-0.007	-0.003	6.804***	6.758***
	(0.001)	(0.001)	(0.095)	(0.096)	(0.011)	(0.011)	(0.347)	(0.342)
External Loans	0.000	0.000	–0.146***	–0.155***	0.000	-0.000	0.087***	0.087***
	(0.000)	(0.001)	(0.039)	(0.039)	(0.001)	(0.001)	(0.017)	(0.017)
Fixed Effects								
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time	No	No	No	No	No	No	Yes	Yes
Borrower × Time	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Observations	107,921	107,921	106,679	106,679	102,252	102,252	107,547	107,547
R-squared	0.34	0.34	0.40	0.40	0.93	0.93	0.06	0.06

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 7. Internal Loans and Banking Relationships

This table reports the output of Eq. (1). The dependent variable in columns (1) and (2) is *New Borrowers (Count)*, which is the total number of first-time borrowers corresponding to a given bank in each quarter; and in columns (3) and (4) is *New Borrower Lending*, which is the total of the share contributed by the bank in each quarter in loans to these new borrowers. All other variables are constructed as described in Appendix Table A.1. The unit of observation is a bank–quarter. BHC– and time–(year-quarter–)fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	New Borrowers (Count)		*New Borrower Lending*	
	(1)	(2)	(3)	(4)
$\mathbf{1}_{InternalLoans}$	0.101***		0.631***	
	(0.031)		(0.218)	
Internal Loans		0.640***		10.984***
		(0.215)		(4.030)
Controls				
Asset Liquidity Ratio	–2.330***	–2.380***	–23.798***	–22.993***
	(0.295)	(0.293)	(4.616)	(4.590)
Tier 1 Capital Ratio	–2.644***	–2.787***	–51.473***	–50.800***
	(1.007)	(0.996)	(8.508)	(8.495)
Core Deposits	–0.023	–0.019	0.430**	0.386**
	(0.017)	(0.017)	(0.176)	(0.178)
Bank Size	0.744***	0.751***	–0.735	–0.847
	(0.042)	(0.042)	(0.531)	(0.538)
External Loans	–0.066***	–0.070***	0.166	0.224
	(0.018)	(0.018)	(0.252)	(0.256)
Fixed Effects				
BHC	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes
Observations	2,875	2,875	2,855	2,855
R-squared	0.84	0.84	0.60	0.60

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 8. Internal Loans and Banking Relationships: Borrower Characteristics

This table reports the output of Eq. (1). The dependent variables signifying borrower constraint in columns (1) and (2) are measures of firm financial constraint: *Hadlock-Pierce* is the size-age index drawn from Hadlock and Pierce (2010), while *Whited-Wu* is the index drawn from Whited and Wu (2006). The dependent variable in column (3) is *Implied Vol.*, which is the option-implied volatility of the firm's traded stock. All other variables are constructed as described in Appendix Table A.1. The unit of observation is a loan. BHC–, borrower-credit-rating–, borrower– and time–(year-quarter–)fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	Hadlock-Pierce	*Whited-Wu*	*Implied Vol.*
	(1)	(2)	(3)
$\mathbf{1}_{InternalLoans}$	0.011	0.000	0.010
	(0.025)	(0.003)	(0.007)
New Borrower	0.127***	0.011***	0.019***
	(0.023)	(0.003)	(0.007)
$\mathbf{1}_{InternalLoans} \times$ *New Borrower*	0.141***	0.014***	0.023***
	(0.023)	(0.003)	(0.007)
Controls			
Asset Liquidity Ratio	0.071	0.008	0.007
	(0.067)	(0.011)	(0.017)
Tier 1 Capital Ratio	–0.079	–0.070	–0.217**
	(0.384)	(0.059)	(0.093)
Core Deposits	0.003	0.001	–0.000
	(0.006)	(0.001)	(0.002)
Bank Size	0.030***	–0.001	0.001
	(0.011)	(0.002)	(0.003)
External Loans	0.000	–0.001	0.001
	(0.004)	(0.011)	(0.001)
Fixed Effects			
BHC	Yes	Yes	Yes
Rating	Yes	Yes	Yes
Borrower	Yes	Yes	Yes
Time	Yes	Yes	Yes
Observations	27,296	28,013	23,597
R-squared	0.28	0.29	0.56

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 9. Internal Lending and Loan-level Risk Sharing

This table reports the output of the loan-level estimation in Eq. (3). The dependent variables are as follows: in columns (1) and (2), *Lead Arranger*, which is a binary variable that is set to one for lenders identified as lead arrangers, and zero otherwise; in columns (3) and (4), *Lender Share*, which is the logarithm of the fractional share of the loan facility committed by a given lender; in columns (5) and (6) the *Lender HHI*, which is a facility level measure of the Herfindahl-Hirschman Index of all lenders' share in the facility; and in columns (7) and (8), *Originate to Hold*, which is a binary variable that takes the value of one if a loan is likely retained in the lender's balance sheet, following the approach of Benmelech et al. (2012). All other variables are constructed as described in Appendix Table A.1. The unit of observation is a loan. BHC– and borrower-time–fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	Lead Arranger		*Lender Share*		*Lender HHI*		*Originate to Hold*	
	(1)	(2)	(3)	(4)	*(5)*	*(6)*	(7)	(8)
$\mathbf{1}_{InternalLoans}$	0.039***		0.028**		0.017***		0.010**	
	(0.010)		(0.014)		(0.006)		(0.004)	
Internal Loans		0.295***		0.364***		0.056*		0.076**
		(0.074)		(0.088)		(0.032)		(0.032)
Controls *Asset Liquidity Ratio*	5.165***	3.347***	1.241	0.738	–1.267**	–1.525***	0.729*	0.604
	(1.090)	(0.896)	(1.088)	(1.008)	(0.548)	(0.552)	(0.392)	(0.387)
Tier 1 Capital Ratio	–2.340***	–2.907***	–4.361***	–3.804***	0.264	0.286	–0.313*	–0.263
	(0.359)	(0.282)	(0.507)	(0.522)	(0.212)	(0.211)	(0.186)	(0.185)
Core Deposits	0.033***	0.010**	0.01	0.011	–0.008	–0.008	0.007**	0.006*
	(0.005)	(0.004)	-0.007	-0.008	(0.006)	(0.006)	(0.003)	(0.003)
Bank Size	0.161***	–1.048***	–0.157*	–0.167**	–0.339***	–0.318***	–0.029***	–0.029***
	(0.008)	(0.064)	(0.086)	(0.084)	(0.109)	(0.106)	(0.006)	(0.006)
External Loans	0.007*	0.009**	0.031***	0.035***	0.002	0.002	–0.006*	–0.005*
	(0.004)	(0.003)	(0.006)	(0.006)	(0.003)	(0.003)	(0.003)	(0.003)
Fixed Effects								
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower x Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	175,105	175,105	43,418	43,418	41,646	41,646	68,351	68,351
R-squared	0.48	0.48	0.72	0.72	0.79	0.79	0.71	0.71

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 10. Impact of Internal Lending on Bank Performance

This table reports the output of Eq. (1). The dependent variable is *Return on Bank Assets* across all specifications. All variables are constructed as described in Appendix Table A.1. Columns (1) and (2) report the results from a regression that includes only the time–(year-quarter–)fixed effects. Columns (3) and (4) present the results with both the BHC– and time–fixed effects. The unit of observation is a BHC–quarter. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	100·*Return on Bank Assets*			
	(1)	(2)	(3)	(4)
$\mathbf{1}_{InternalLoans}$	0.187***		0.162***	
	(0.062)		(0.062)	
Internal Loans		2.655***		3.380***
		(0.854)		(1.084)
Controls				
Asset Liquidity Ratio	1.280***	1.265***	1.407***	1.482*
	(0.449)	(0.424)	(0.487)	(0.789)
Tier 1 Capital Ratio	–7.445***	–7.459***	–7.729***	–10.852***
	(1.477)	(1.507)	(1.560)	(2.150)
Core Deposits	0.019	0.019	0.011	0.133**
	(0.020)	(0.021)	(0.021)	(0.056)
Bank Size	–0.002	0.003	–0.050	–0.128*
	(0.025)	(0.026)	(0.040)	(0.074)
External Loans	0.030	0.029	0.041	0.127*
	(0.034)	(0.040)	(0.035)	(0.067)
Fixed Effects				
BHC	No	No	Yes	Yes
Time	Yes	Yes	Yes	Yes
Observations	31,146	31,146	31,146	31,146
R-squared	0.07	0.07	0.16	0.16

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 11. Identification under Financial Services Modernization Act: FHC Conversion

This table reports the output of Eq. (5) and Eq. (6) using conversion to a Financial Holding Company (FHC) under the Gramm-Leach-Bliley Act as an instrument. Columns (1) and (2) present the results from an OLS estimation of Eq. (5), while the subsequent columns present the results from the IV regressions in Eq. (5) and Eq. (6). The dependent variables are denoted in the specific columns. All variables are constructed as described in Appendix Table A.1. The F-statistics corresponding to the Cragg-Donald Wald test for weak instruments (Stock and Yogo, 2002) are included in Panel B. The unit of observation is a subsidiary-bank–quarter. BHC– and quarter–fixed effects are included as indicated. All regressions are estimated over the relevant sample period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$\mathbf{1}_{InternalLoans}$	*Internal Loans*	$100 \cdot \Delta \log(Loans)$		$100 \cdot NPL$		$100 \cdot Return\ on\ Assets$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Parent FHC Adoption	0.190***	0.016***						
	(0.003)	(0.001)						
$\widehat{\mathbf{1}_{InternalLoan}}$			0.097**		0.004***		0.048**	
=Parent FHC Adoption			(0.029)		(0.001)		(0.024)	
$\widehat{\text{Internal Loans}}$				10.925***		0.163***		0.153**
=Parent FHC Adoption				(1.153)		(0.013)		(0.072)
Controls								
Asset Liquidity Ratio	-0.791	0.535*	1.160	-2.952	-0.080	0.021	1.984	1.918*
	(10.689)	(0.211)	(0.997)	(7.413)	(0.141)	(0.155)	(1.264)	(1.154)
Tier 1 Capital Ratio	-0.172	0.006	0.136	0.276	-0.009	-0.009	-0.038*	-0.034*
	(0.214)	(0.005)	(0.137)	(0.342)	(0.006)	(0.006)	(0.022)	(0.020)
Core Deposits	-72.421	0.486	-34.311*	-114.390*	-1.405	-1.000	4.156*	3.916*
	(83.212)	(4.974)	(13.077)	(41.139)	(0.874)	(0.894)	(2.352)	(2.209)
Size	-0.053*	0.001	-0.027**	-0.140*	-0.001	0.000	-0.000	-0.000
	(0.021)	(0.007)	(0.009)	(0.046)	(0.001)	(0.001)	(0.000)	(0.000)
Loans	0.158	0.005**	-0.068	-0.170*	-0.006***	-0.005**	0.011	0.014**
	(0.071)	(0.001)	(0.048)	(0.065)	(0.002)	(0.002)	(0.009)	(0.007)
Fixed Effects								
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3548	3548	3548	3548	3548	3548	3455	3455
R-squared	0.868	0.958						
F-Stat			21.29	46.06	21.29	46.06	51.46	71.37

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 12. Identification under Basel III Capital Requirement

This table reports the output of Eq. (5) and Eq. (6). Columns (1) and (2) present the results from an OLS estimation of Eq. (5), while the subsequent columns present the results from the IV regressions in (5) and Eq. (6). The dependent variables are denoted in specific columns. All variables are constructed as described in Appendix Table A.1. The F-statistics corresponding to the Cragg-Donald Wald test for weak instruments (Stock and Yogo (2002)) are included in Panel B. The unit of observation is a subsidiary-bank–quarter. BHC–, and quarter–fixed effects are included as indicated. All regressions are estimated over the 2010:Q1 to 2011:Q3 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$\mathbf{1}_{InternalLoans}$	*Internal Loans*	$100 \cdot \Delta log(Loans)$		$100 \cdot NPL$		$100 \cdot Return\,on\,Bank\,Assets$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Basel III Exposure	–0.019***	–0.048***						
	(0.004)	(0.000)						
$\widehat{\mathbf{1}_{InternalLoanCuts}}$			–0.091***		–0.155***		–1.522**	
=Basel III Exposure			(0.008)		(0.027)		(0.600)	
$\widehat{\Delta Internal Loan}$				–1.796**		–1.051***		–6.653***
=Basel III Exposure				(0.658)		(0.072)		(2.014)
Controls								
Asset Liquidity Ratio	–0.689**	–1.762	–12.680	–59.779	16.781	–7.596	6.718**	–2.022
	(0.016)	(0.962)	(8.212)	(50.305)	(3.410)	(1.468)	(2.006)	(6.378)
Tier 1 Capital Ratio	–0.025	–0.844	0.065	–0.099	–0.359	0.061*	–4.364	–2.294
	(0.029)	(0.451)	(0.083)	(0.410)	(0.098)	(0.005)	(3.096)	(15.315)
Core Deposits	0.017	0.146	5.485	109.947	14.609	18.206**	–2.967	5.806
	(0.005)	(0.050)	(18.509)	(119.182)	(6.172)	(1.065)	(3.190)	(15.204)
Bank Size	–0.008	0.483	–0.010**	–0.063	0.016**	0.005	0.137	–0.672
	(0.023)	(0.155)	(0.003)	(0.044)	(0.001)	(0.002)	(0.091)	(2.506)
External Loans	–0.026	–0.188	–0.077	–0.525	–0.043	–0.075	2.031	–29.971
	(0.005)	(0.081)	(0.048)	(0.444)	(0.037)	(0.013)	(1.254)	(81.292)
Fixed Effects								
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	249	249	367	356	367	356	263	259
R-squared	0.89	0.78						
F-Stat			116.88	79.59	116.88	79.59	155.84	89.78

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 13. Bank-Level Liquidity Shock: TAGP Expiration

This table reports the output of Eq. (7) and Eq. (8) using the expiration of the FDIC's Transaction Account Guarantee Program (TAG) on December 31, 2012 as an exogenous subsidiary-level deposit shock. Column (1) presents the reduced-form OLS results, while the subsequent columns present reduced-form and IV results. The dependent variables are denoted in the specific columns. *TAG Exposure* is the bank's wholesale funding share (one minus core deposits to total deposits), measured at 2012:Q2. Post equals one after 2012:Q4. The F-statistics corresponding to the Cragg-Donald Wald test for weak instruments (Stock and Yogo, 2002) and Anderson-Rubin p-values are reported for the IV estimates. The sample spans 2012:Q1–2014:Q2. The unit of observation is a subsidiary-bank–quarter. Bank– and quarter–fixed effects are included as indicated. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$100 \cdot \Delta \log(Loans)$	$100 \cdot NPL$		$100 \cdot Return\ on\ Assets$	
	(1)	(2)	(3)	(4)	(5)
Post × *TAGP Exposure*	−0.878***	0.017		2.191	
	(0.183)	(0.049)		(11.581)	
$\widehat{\Delta \log(\text{Loans})}$			−0.014		−1.785
= *Post*× *TAGP Exposure*			(0.040)		(9.437)
Controls					
Asset Liquidity Ratio	−1.045	−0.764	−0.764	58.225	58.225
	(2.541)	(0.684)	(0.684)	(158.503)	(158.503)
Tier 1 Capital Ratio	−1.363	8.826***	8.826***	286.559**	286.559**
	(1.915)	(0.515)	(0.515)	(119.580)	(119.580)
Core Deposits	−7.312	−20.343***	−20.343***	−479.610	−479.610
	(5.490)	(1.477)	(1.477)	(342.493)	(342.493)
Size	0.001	0.082***	0.082***	6.032	6.032
	(0.076)	(0.020)	(0.020)	(4.737)	(4.737)
Loans	0.998	1.365***	1.365***	31.274	31.274
	(0.727)	(0.196)	(0.196)	(45.422)	(45.422)
Fixed Effects					
Bank	Yes	Yes	Yes	Yes	Yes
Quarter	Yes	Yes	Yes	Yes	Yes
Observations	3,284	3,284	3,284	3,277	3,277
R-squared	0.017	0.113		0.003	
F-Stat			23.58		23.58
AR p-value			[0.73]		[0.85]

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 14. Bank vs. Nonbank Internal Lending Allocations

This table reports output from Eq. (1), where the conditioning variable $\chi_{i,t}$ is set to to either the binary variable, $\mathbf{1}_{NonbankSubsidiary}$; the continuous variable *Nonbank Subs Ratio*, or *Nonbank Asset Ratio*. The dependent variable in columns (1) through (3) is $\mathbf{1}_{InternalLoans}$ where the coefficients are estimated through logistic regression, and in columns (4) through (6), it is *Internal Loans* and an ordinary least squares estimation. All variables are constructed as described in Appendix Table A.1. The unit of observation is a BHC–quarter. BHC– and quarter–fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$\mathbf{1}_{InternalLoans}$			*Internal Loans*		
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbf{1}_{NonbankSubsidiary}$	–0.140***			–0.002***		
	(0.017)			(0.000)		
Nonbank Subs Ratio		–0.112***			–0.004***	
		(0.029)			(0.001)	
Nonbank Asset Ratio			–0.051***			–0.002**
			(0.013)			(0.001)
Controls						
BHC Liquidity Ratio	–0.831***	–0.883***	–0.985***	–0.015***	–0.015***	–0.013***
	(0.078)	(0.073)	(0.078)	(0.002)	(0.002)	(0.003)
BHC CET1 Ratio	1.665***	1.625***	1.585***	0.017***	0.017***	0.020***
	(0.222)	(0.212)	(0.205)	(0.003)	(0.003)	(0.005)
BHC Size	0.307***	0.308***	0.320***	0.007***	0.007***	0.003***
	(0.011)	(0.011)	(0.010)	(0.001)	(0.001)	(0.000)
BHC External Loans	0.038***	0.037***	0.042***	0.000	0.000	–0.007***
	(0.006)	(0.005)	(0.006)	(0.001)	(0.001)	(0.001)
Model	Logit			OLS		
Fixed Effects						
BHC	Yes	Yes	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes	Yes	Yes
Observations	31,864	31,864	31,621	31,864	31,864	31,621
(Pseudo) R-squared	0.24	0.24	0.23	0.46	0.46	0.46

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 15. Nonbank Internal Loan Allocations and Bank Performance

This table reports output from Eq. (1), where the key independent variable is the interacted term $\mathbf{1}_{NonbankSubsidiary} \times \mathbf{1}_{InternalLoans}$. The dependent variables are $\Delta log(Loans)$, one-year forward NPL, *Return on Bank Assets* and *Return on BHC Assets*. All variables are constructed as described in Appendix Table A.1. The unit of observation is a BHC–quarter. BHC– and quarter–fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	$100 \cdot NPL$		100·*Return on Bank Assets*		100·*Return on BHC Assets*	
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbf{1}_{InternalLoans}$	0.003**	0.015*	0.063***	0.050*	0.009	0.008
	(0.001)	(0.008)	(0.018)	(0.024)	(0.007)	(0.008)
$\mathbf{1}_{InternalLoans} \times \mathbf{1}_{NonbankSub}$	–0.014***		0.084**		0.022**	
	(0.002)		(0.037)		(0.010)	
$\mathbf{1}_{NonbankSub}$	–0.027**		0.053*		0.016*	
	(0.009)		(0.031)		(0.010)	
$\mathbf{1}_{InternalLoans} \times$ *Nonbank Asset Ratio*		–0.145***		0.119***		0.089***
		(0.038)		(0.040)		(0.026)
Nonbank Asset Ratio		–0.101***		0.038		0.045**
		(0.032)		(0.035)		(0.020)
Controls						
BHC Liquidity Ratio	–0.113	–0.077	–0.244***	0.383***	0.176***	0.181***
	(0.102)	(0.102)	(0.062)	(0.114)	(0.062)	(0.041)
BHC CET1 Ratio	–1.441***	–1.564***	–0.589***	–1.033***	–1.102**	–0.623***
	(0.201)	(0.204)	(0.127)	(0.211)	(0.433)	(0.111)
BHC Size	0.161***	0.165***	–0.038***	0.006	–0.007	–0.028***
	(0.019)	(0.020)	(0.012)	(0.023)	(0.006)	(0.007)
BHC External Loans	0.199***	0.205***	–0.017***	0.024	–0.007	–0.001
	(0.020)	(0.020)	(0.006)	(0.015)	(0.005)	(0.005)
Fixed Effects						
BHC	Yes	Yes	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,492	24,374	30,903	30,821	31,141	30,312
R-squared	0.64	0.64	0.18	0.20	0.27	0.54

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table 16. Internal Loans and Monetary Policy Transmission

This table reports output from Eq. (10), where the key independent variables are $\mathbf{1}_{InternalLoans} \times Pre(Post)_MP_Shock$. The dependent variable in columns (1) and (3) is $100 \cdot \Delta log(Loans)$, while in columns (2) and (4), it is *Mortgage Rates*. Columns (1) and (2) incorporate only monetary policy events associated with tightening, whereas columns (3) and (4) incorporate only the events associated with easing. All variables are constructed as described in Appendix Table A.1. The unit of observation is a BHC–quarter. BHC– and shock×event-quarter–fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	Rate Increase		**Rate Decrease**	
	$100 \cdot \Delta log(Loans)$	*Mortgage Rates*	$100 \cdot \Delta log(Loans)$	*Mortgage Rates*
	(1)	(2)	(3)	(4)
$\mathbf{1}_{InternalLoans} \times Pre_MP_Shock$	0.066***	0.007	–0.012	–0.019***
	(0.021)	(0.006)	(0.024)	(0.005)
$\mathbf{1}_{InternalLoans} \times Post_MP_Shock$	0.023***	–0.012***	–0.111***	–0.016***
	(0.006)	(0.003)	(0.022)	(0.003)
Controls				
Asset Liquidity Ratio	0.347	0.755***	–0.318	–2.161***
	(0.297)	(0.281)	(0.362)	(0.506)
Tier 1 Capital Ratio	–6.633***	4.355***	2.675	–49.282***
	(1.137)	(0.984)	(2.875)	(8.550)
Core Deposits	0.005***	0.006***	0.002	–0.036***
	(0.001)	(0.000)	(0.002)	(0.007)
Bank Size	–0.034***	0.019***	–0.007*	–0.052***
	(0.009)	(0.004)	(0.004)	(0.014)
External Loans	0.016***	0.001*	0.013**	–0.002
	(0.002)	(0.001)	(0.006)	(0.003)
Fixed Effects				
BHC	Yes	Yes	Yes	Yes
Shock × Event-Quarter	Yes	Yes	Yes	Yes
Observations	15,948	6,196	18,036	4,916
R-squared	0.11	0.41	0.16	0.81

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Appendix A Variables Definitions and Sources

Table A.1. Variable Construction

Variable	Construction	Source
Banking Assets	Total Assets of Commercial Bank Subsidiaries of BHC	Call reports
Bank Size	$ln(1 + BankingAssets)$	Call reports
Internal Loans	Total Loans & receivables from banking subsidiary (to BHC), scaled by banking assets	FR Y-9LP
$\mathbf{1}_{InternalLoans}$	1 for BHC-quarters within non-zero Internal Loans	
$\Delta InternalLoans$	Change in Internal Loans from quarter $t-1$ to t, scaled by $t-1$ assets	
$\Delta log(Loans)$	Logarithm of current quarter loans outstanding, minus the logarithm of one-quarter lagged loans outstanding	Call reports
NPL	One-year forward Non-Performing Loans scaled by prior quarter outstanding loans	Call reports
Return on Bank Assets	Parents' share of bank subsidiary's income, scaled by one quarter lagged banking assets	FR Y-9LP
Asset Liquidity Ratio	The sum of cash & balances due from depository institutions, securities, fed funds & repos, trading account assets; less pledged securities	FR Y-9C
Tier 1 Capital Ratio	Basel 3 Regulatory Common Equity Tier-1 Capital Ratio	Call reports
Core Deposits	Checking, savings, and smalltime deposits, scaled by total banking assets	Call reports
External Loans	Total outstanding loans on the commercial bank's balance sheet, scaled by total assets	Call Reports
BHC Size	ln(BHC Total Assets)	FR Y-9C
Bank Liquidity	Asset-side liquidity creation	Berger and Bouwman (2009)
HQLA	Sum of bank cash holdings, US Treasuries, US government and government-sponsored agency obligations, and GSE mortgage-backed securities	Call reports
Demand Deposits	Noninterest-bearing Demand Deposits scaled by Total Assets	Call Reports
Asset-side LMI	Asset-side liquidity of BHC used in the Liquidity Mismatch Index	Bai, Krishnamurthy, and Weymuller (2018)
GDP Growth Rate (log)		FRED
10Y Tsy Rate	10 year on-the-run treasury rate	FRED
Fed Funds Rate (Overnight)	Effective Federal Funds Rate, averaged over quarter	FRED
NBER Recession Flag		FRED
VIX	VIX close on last day of quarter	FRED
$\mathbf{1}_{CET1 \leq 4.5}$	Set to one for BHCS with Common Equity Tier 1 Capital Ratio $\leq 4.5\%$ in 2010:Q4 and zero for those with values $> 4.5\%$ in the same quarter	FR Y-9C
Basel III Exposure	One for BHCs with CET1 ratios below 4.5% in the quarters following the rule announcement (based on 2010:Q4 levels), and zero otherwise	FR Y-9C
$\mathbf{1}_{InternalLoanCuts}$	One for BHCs that ceased internal lending immediately following the announcement	FR Y-9LP
$\Delta InternalLoan$	Prior quarter's internal loan minus the current quarter's internal loan	FR Y-9LP
$\mathbf{1}_{NonbankSubsidiary}$	Set to one if at least one active subsidiary is classified as Nonbank	NIC (FR Y-6)
Nonbank Subs Ratio	Number of active nonbank subsidiaries/number of active banking subsidiaries	NIC (FR Y-6)
Nonbank Asset Ratio	One minus ratio of banking assets to parent's assets on parent-only balance sheet	FR Y-9LP
Facility Amount	Size of the given tranche, denominated in U.S. Dollars, scaled by the lending BHC's banking assets	WRDS-Reuters' Dealscan
Maturity	Logarithm of number of months to maturity of the tranche, at the time of issuance	WRDS-Reuters' Dealscan
All in Drawn Spread	Logarithm of the spread of the loan plus any annual (or facility) fee paid by the borrower	WRDS-Reuters' Dealscan
Rating Level	Ordinal ranking of the borrower's S&P Credit rating in each quarter taking maximum value of 24 for $AAA-$ and minimum value of 1 for SD	WRDS-Reuters' Dealscan

Appendix B Additional Figures and Tables

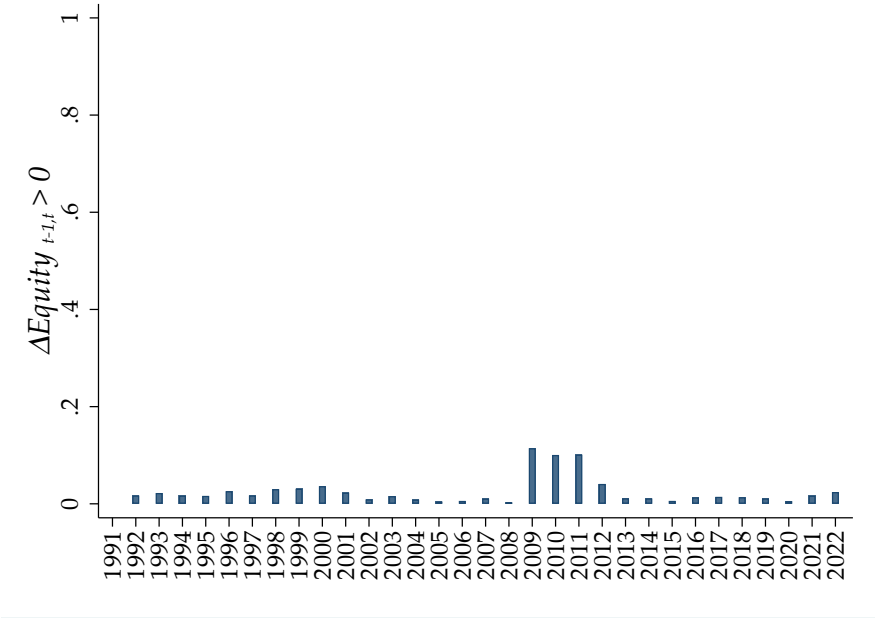


Figure B.1. Internal Equity Injection across BHCs. This plot depicts the share of commercial bank subsidiaries that demonstrate a positive change in equity investment from the parent bank holding company compared to the prior year, as reported in FR Y-9LP filings, averaged across each year in the sample. The y-axis is the annual cross-sectional average of binary variable $\mathbf{1}_{EquityInjection}$ that takes the value of 1 for BHCs with a (positive) change to their equity holdings in their commercial bank subsidiaries, and zero for the others.

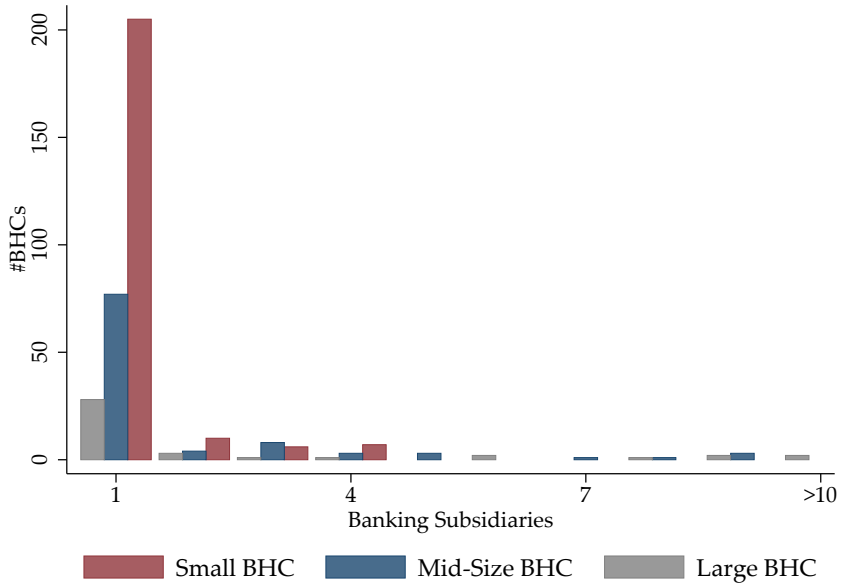


Figure B.2. Distribution of Banking Subsidiaries in the BHC Structure. This plot depicts the histogram of the number of banking subsidiaries within the BHC structure in our sample. The y-axis presents the number of BHCs corresponding to the number of subsidiaries depicted on the x-axis. The grey bars represent the annual average for large BHCs with assets >50 billion, while the blue and red bars represent the corresponding value for small (with assets ≤5 billion) and mid-size (with assets between $5 and $50 billion), respectively.

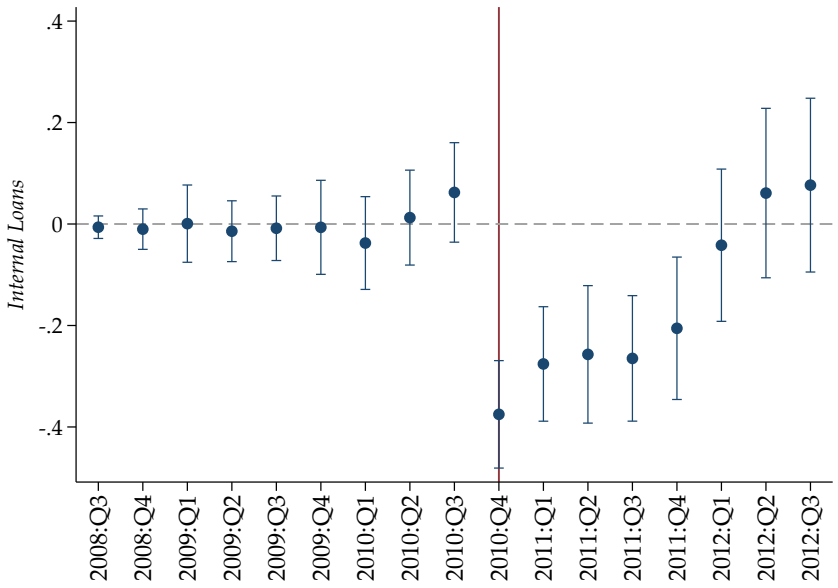


Figure B.3. Evolution of Internal Loans around Basel III. This plot depicts the quarterly coefficients on the interaction terms from a two-way fixed effects regression of internal loans on on quarter indicators interacted with an indicator for constrained banks (CET1 $\leq$ 4.5%) estimated with BHC– and year-quarter–fixed effects. The vertical bars represent 95% confidence intervals.

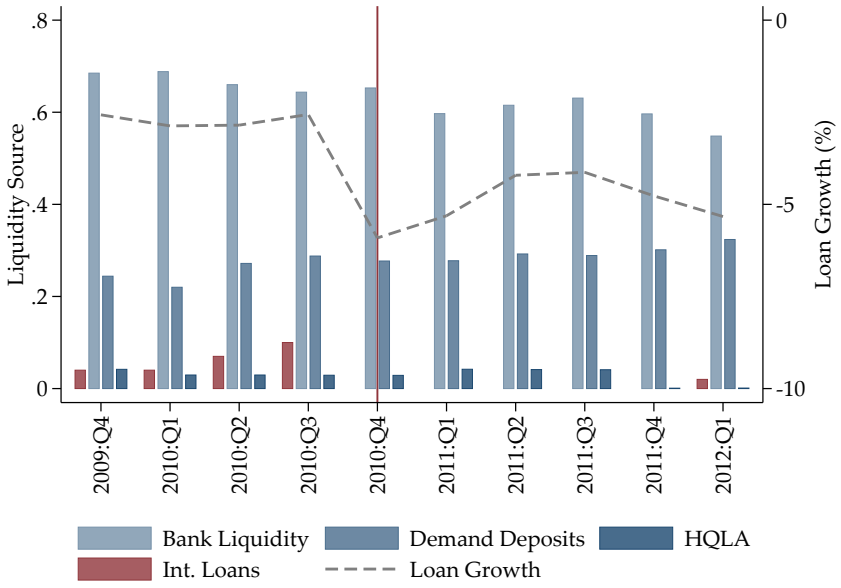


Figure B.4. Illustrative Joint Dynamics: Internal Liquidity and External Loans. This figure plots the joint evolution of key liquidity sources — bank liquidity, demand deposits, and high-quality liquid assets (bars) — alongside external loan growth (dashed line) for a representative mid-sized bank (Community Bank) that was Tier 1 constrained at the time of the Basel III announcement. The vertical red line marks the announcement quarter, 2010:Q4.

Table B.1. Impact of Internal Loans on Loan-Type Growth

This table reports the output of Eq. (1) using loan-type outcomes. The dependent variables are C&I loan growth, CRE loan growth, and consumer loan growth (as constructed in Appendix Table A.1). Columns (1), (3), and (5) use $\mathbf{1}_{Internal\ Loans}$, while Columns (2), (4), and (6) use the continuous *Internal Loans* measure. The unit of observation is a subsidiary-bank–quarter. All regressions include BHC and time (year-quarter) fixed effects and are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	100· C&I Loan Growth		100· CRE Loan Growth		100· Consumer Loan Growth	
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbf{1}_{Internal\ Loans}$	0.420***		0.707***		0.168***	
	(0.144)		(0.205)		(0.037)	
Internal Loans		1.686***		3.075**		0.176*
		(0.230)		(1.547)		(0.094)
Controls						
Asset Liquidity Ratio	-622.633	-633.925	1657.893	1682.253	-1689.634	-1684.353
	(899.797)	(896.296)	(2157.784)	(2120.181)	(1690.470)	(1694.814)
CET1 Ratio	-2.667	-2.580	-2.448	-2.600	-2.683	-2.719
	(1.725)	(1.613)	(1.332)	(1.365)	(1.731)	(1.730)
Core Deposits	237.779	227.500	69.286	84.180	-25.809	-22.048
	(175.174)	(159.396)	(70.170)	(77.207)	(106.359)	(103.167)
Bank Size	0.048	0.048	-0.034	-0.036	-0.043	-0.043
	(0.044)	(0.046)	(0.095)	(0.095)	(0.056)	(0.056)
Loans/Assets	-1.854	-1.806	-1.430	-1.522	-1.101***	-1.122***
	(1.219)	(1.177)	(0.728)	(0.760)	(0.275)	(0.279)
Fixed Effects						
BHC	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39,770	39,770	39,770	39,770	39,770	39,770
R-squared	0.02	0.01	0.01	0.01	0.02	0.02

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table B.2. Impact of Internal Loans on Liquid Asset Growth and Allocation Outcomes

This table reports the output of Eq. (1) using liquid-asset and balance-sheet allocation outcomes. The liquid-asset dependent variables are (i) $100 \cdot \Delta(Cash)/Assets_{t-1}$, (ii) $100 \cdot \Delta(Securities)/Assets_{t-1}$, and (iii) $100 \cdot \Delta(Cash+Securities)/Assets_{t-1}$. Columns (1), (3), and (5) report specifications using $\mathbf{1}_{Internal\ Loans}$, while Columns (2), (4), and (6) use the continuous *Internal Loans* measure. The allocation outcomes in columns (7) through (9) are $\Delta Loans/Assets_{t-1}$, $\Delta Cash/Assets_{t-1}$, and $\Delta Securities/Assets_{t-1}$. The key independent variable for the allocation outcomes is the lagged internal-loan inflow scaled by lagged assets, $\Delta Internal\ Loans_{t-1}/Assets$ (lagged one quarter). All regressions include BHC and time (year-quarter) fixed effects and are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	Panel A: Liquid Asset Growth						**Panel B:** Allocation Outcomes		
	$100 \cdot \Delta Cash$		$100 \cdot \Delta Securities$		$100 \cdot (\Delta Cash + Securities)$		$\Delta Loans$	$\Delta Cash$	$\Delta Securities$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\mathbf{1}_{Internal\ Loans}$	0.001		0.002		0.002				
	(0.004)		(0.003)		(0.003)				
Internal Loans		0.298		0.067		0.162			
		(0.268)		(0.075)		(0.144)			
$\Delta Internal\ Loans_{t-1}$							0.242**	0.059	0.013
							(0.117)	(0.044)	(0.044)
Controls									
Asset Liquidity Ratio	357.207	357.716	133.855	133.936	164.730	165.031	–3.247**	–6.129**	1.890
	(236.876)	(237.273)	(83.928)	(83.934)	(124.622)	(124.819)	(0.518)	(0.721)	(0.802)
CET1 Ratio	-0.468	-0.453	-0.257**	-0.254**	-0.303	-0.295	–4.600*	0.261	–0.352
	(0.343)	(0.331)	(0.117)	(0.114)	(0.189)	(0.182)	(1.390)	(0.940)	(1.650)
Core Deposits	51.614	50.476	4.164	3.969	20.231	19.569	–0.146	–0.113*	–0.032
	(40.646)	(40.252)	(23.429)	(23.437)	(41.511)	(41.520)	(0.079)	(0.030)	(0.054)
Bank Size	-0.008	-0.008	-0.011	-0.011	-0.020	-0.020	–1.650**	–0.407**	–0.316
	(0.011)	(0.011)	(0.009)	(0.009)	(0.013)	(0.013)	(0.241)	(0.075)	(0.132)
Loans/Assets	-0.011	-0.015	-0.011	-0.012	-0.055*	-0.057*	–0.024	0.015	0.022
	(0.051)	(0.053)	(0.027)	(0.027)	(0.032)	(0.033)	(0.055)	(0.022)	(0.053)
Fixed Effects									
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37,830	37,830	37,830	37,830	37,830	37,830	28,516	28,486	28,486
R-squared	0.072	0.072	0.027	0.027	0.032	0.032	0.199	0.043	0.042

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table B.3. Internal Lending and Bank Liquidity

This table reports output from the estimation of Eq. (2). The dependent variable is *InternalLoans* across all specifications. All variables are constructed as described in Appendix Table A.1. Regressions are estimated over varying periods depending on the availability of measures. All specification are estimated over 1991:Q1 through 2016:Q1 Credit-rating–, BHC–, and year-quarter–fixed effects are included in all specifications. The unit of observation is a BHC–quarter. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	InternalLoans			
	(1)	(2)	(3)	(4)
HQLA	–1.529**			–1.990*
	(0.626)			(1.149)
Bank Liquidity		–0.035**		–0.039
		(0.016)		(0.017)
Demand Deposits			–0.018**	–0.010**
			(0.007)	(0.005)
Fixed Effects				
Credit Rating	Yes	Yes	Yes	Yes
BHC	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes
Observations	22,523	22,523	22,523	22,523
Pseudo R-squared	0.15	0.17	0.17	0.21

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table B.4. Impact of Internal Loans on Lending Outcomes: BHC Size Breakdown

This table reports output from the estimation of Eq. (1). The dependent variables are $100 \cdot \Delta \log(Loans)$, $100 \cdot NPL$, and $100 \cdot$*Return on Bank Assets*. All variables are constructed as described in Appendix Table A.1. Columns (1)–(3) present the results on a restricted sample of the largest BHCs (with assets more than $50 billion). Columns (4)–(6) present the results on the restricted sample of mid-sized BHCs (assets between $5 and $50 billion). Columns (7)–(9) present the results on the restricted sample of small BHCs (with assets less than $5 billion).The unit of observation is a BHC–quarter. BHC–, and quarter–fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	> $50b			$5b–$50b			< $5b		
	$100 \cdot \Delta \log(Loans)$	$100 \cdot NPL$	$100 \cdot RoA$	$100 \cdot \Delta \log(Loans)$	$100 \cdot NPL$	$100 \cdot RoA$	$100 \cdot \Delta \log(Loans)$	$100 \cdot NPL$	$100 \cdot RoA$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Internal Loans	8.367*	0.477	3.665***	7.290***	1.689***	4.160**	6.435***	0.306**	6.028**
	(3.924)	(0.970)	(1.338)	(0.767)	(0.480)	(2.028)	(1.518)	(0.136)	(2.370)
Controls									
Asset Liquidity Ratio	44.487***	1.231*	1.080	9.997**	–1.900***	1.138	7.062***	0.149	2.251**
	(12.001)	(0.692)	(1.122)	(4.128)	(0.601)	(2.019)	(2.337)	(0.191)	(1.128)
Tier 1 Capital Ratio	1.651***	–9.616*	–2.585	1.342***	8.614***	–14.058**	0.919***	2.531***	–11.297***
	(0.407)	(4.906)	(6.639)	(0.197)	(1.993)	(6.199)	(0.106)	(0.544)	(2.765)
Core Deposits	–1.062	–0.478***	0.114	0.162	–0.072***	0.212*	0.423***	0.035***	0.172**
	(0.708)	(0.088)	(0.105)	(0.288)	(0.026)	(0.110)	(0.154)	(0.010)	(0.069)
Bank Size	–1.204	–9.194***	–0.122	–11.163***	–0.036	–0.181	–6.178***	0.058***	–0.199*
	(1.542)	(1.221)	(0.129)	(1.641)	(0.033)	(0.187)	(1.029)	(0.019)	(0.105)
External Loans	–0.543	0.222***	0.242**	–0.209	0.007	0.040	–1.327***	–0.027**	0.166*
	(0.795)	(0.061)	(0.096)	(0.369)	(0.023)	(0.131)	(0.197)	(0.011)	(0.089)
Fixed Effects									
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,449	2,450	2,420	7,988	7,988	7,874	18,460	18,460	17,941
R-squared	0.344	0.72	0.130	0.417	0.79	0.121	0.448	0.62	0.110

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.

Table B.5. Syndicated Loan Sample

This table presents summary statistics for the key outcome variables in our loan-level analyses. Full sample refers to the sample of syndicated loans data matched to our base sample drawn from regulatory data at the BHC-quarter level. The filtered sample denotes the subsample where we impose the restriction that each borrower should have at least two loans in a quarter as described in Section IV.D.

	Mean	SD	Median	IQR	N
Full sample					
Deal Amount	928.6	1052.3	500	1,075	197,196
Facility Amount	449.6	523.6	245	519	197,196
Rating Level	14.5	3.4	14	5	197,196
Maturity	46.8	22.1	52	27	197,196
All in Drawn Spread	216.7	709.1	190	150	197,196
Restricted sample					
Deal Amount	930.0	1046.0	500	1,070	121,383
Facility Amount	446.0	517.2	250	519	121,383
Rating Code	14.6	3.2	14	5	121,383
Maturity	47.7	21.3	54	24	121,383
All in Drawn Spread	216.4	135.5	200	150	121,383

Table B.6. Internal Loans and Monetary Policy Transmission

This table reports output from the equation $Y_{i,t} = \beta_1 \cdot Internal\ Loan_{i,t} + \beta_2 \cdot Post_MP_Shock_{s,t} + \phi_i + \phi_s \times \phi_t + \beta_3 \cdot Internal\ Loan_{i,t} \times Post_MP_Shock_{s,t} + \epsilon_{i,s,t}$. The conditioning variable is set to either the binary variable, $\mathbf{1}_{InternalLoans}$ or the continuous treatment variable, *Internal Loans*. The dependent variable in columns (1), (2), (5) and (6) is $100 \cdot \Delta log(Loans)$, while in columns (3), (4), (7) and (8), it is *Mortgage Rates*. Columns (1) through (4) incorporate only monetary policy events associated with tightening, whereas columns (5) through (8) incorporate only the events associated with easing. All variables are constructed as described in Appendix Table A.1. The unit of observation is a BHC–quarter. BHC– and shock×event-quarter–fixed effects are included as indicated. All regressions are estimated over the 1991:Q1 to 2023:Q1 period. Robust standard errors, reported in parentheses, are dual–clustered by BHC and quarter.

	Rate Increase				**Rate Decrease**			
	$100 \cdot \Delta log(Loans)$		*Mortgage Rates*		$100 \cdot \Delta log(Loans)$		*Mortgage Rates*	
	(1)	(2)	(3)	(4)	*(5)*	*(6)*	(7)	(8)
$\mathbf{1}_{InternalLoans}$	0.175		–0.008		0.050		–0.023	
	(0.249)		(0.016)		(0.098)		(0.025)	
Internal Loans		1.123		–0.252		1.059		–0.976
		(1.404)		(0.430)		(1.338)		(1.284)
$\mathbf{1}_{InternalLoans} \times Post_MP_Shock$	0.470***		–0.025***		–0.299***		–0.031***	
	(0.134)		–0.004		(0.099)		(0.010)	
Internal Loans × *Post_MP_Shock*		1.346***		–0.115***		–1.308***		–0.338**
		(0.246)		(0.022)		–0.234		(0.089)
Controls								
Asset Liquidity Ratio	–5.598	3.423	–0.410	0.148	–4.728	4.745	–0.105***	3.247
	(7.120)	(5.603)	(1.702)	(0.993)	(7.392)	(7.453)	(0.025)	(2.536)
Tier 1 Capital Ratio	–4.106***	–0.433	0.200	–0.499	–5.831***	–2.056	0.191	0.368
	(1.431)	(0.451)	(0.318)	(3.537)	(1.568)	(5.432)	(0.155)	(0.298)
Core Deposits	0.008	0.030	0.010	0.010	0.175***	0.218***	0.007**	0.023
	(0.038)	(0.040)	(0.011)	(0.010)	(0.038)	(0.062)	(0.003)	(0.013)
Bank Size	–0.191**	–0.127	–0.003	–0.021	–0.109	–0.028	–0.005	0.198***
	(0.077)	(0.112)	(0.022)	(0.036)	(0.078)	(0.118)	(0.003)	(0.038)
External Loans	0.167***	0.183***	–0.028**	–0.031**	0.036	0.045	–0.011***	–0.037**
	(0.039)	(0.042)	(0.013)	(0.015)	(0.040)	(0.050)	(0.003)	(0.015)
Fixed Effects								
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shock × Event-Quarter	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,495	15,850	6,060	6,184	17,590	17,845	4,802	4,909
R-squared	0.10	0.13	0.91	0.91	0.24	0.24	0.94	0.94

Statistical significance is indicated as follows: *** p <0.01, ** p <0.05, * p <0.1.