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

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Abstract

Leveraging unique regulatory data on internal fund flows between bank holding companies (BHCs) and their subsidiaries, this paper investigates the role of internal loans as an underexplored source of liquidity for commercial banks. Unlike traditional deposits, internal loans serve as asset-like liabilities that offer banks a stable funding alternative. Our results show that banks with access to internal funding engage more aggressively in the syndicated lending market, originating larger loans with longer maturities and lower spreads while expanding relationships with new, marginal — often financially constrained — borrowers. Although these bank subsidiaries exhibit higher non-performing loan ratios, the aggregate impact of internal loans on performance is positive. We also show how internal capital allocation decisions differ between bank and nonbank subsidiaries, with nonbanks receiving increasingly preferential treatment over time. Our findings underscore the critical importance of internal capital markets in shaping bank behavior and influencing credit access in the economy while undermining the transmission of monetary policy.

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Abstract

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I. Introduction

Researchers and policy-makers often treat commercial banks and bank holding companies (BHCs) as monolithic entities, overlooking the active internal capital markets within financial institutions. While large amounts of funds flow daily between BHCs and their subsidiary banks, traditional analyses of bank liquidity ignore intra-firm loans. Unlike external funding sources such as deposits, internal loans from a parent BHC act as asset-like liabilities for their subsidiary banks, exerting critical influence on bank liquidity, lending capacity, and overall performance. This channel has been understudied and our paper addresses this gap.

Earlier studies have noted the workings of internal capital markets in banking. Cetorelli and Goldberg (2012a,b,c), for example, show that global banks use internal funds to buffer foreign operations, making them more resilient than standalone domestic banks. Strahan et al. (2016) look at internal fund transfers between branches of the same commercial bank following liquidity windfalls. In contrast to these studies on liquidity transfers across commercial banks within a BHC, we focus on internal capital flows from parent BHCs to their bank and nonbank subsidiaries. To our knowledge, our paper is the first to leverage regulatory data explicitly measuring intra-BHC loan flows. This allows us to investigate the workings of internal loans within complex financial conglomerates, shedding new light on how headquarters coordinate the direction of funds inside the BHC and the consequences of their choices on dimensions ranging from bank risk and profitability, to the expansion of credit to new borrowers, all the way to resource allocation across different types of subsidiary institutions.

Our unique dataset combines unconsolidated parent-only financial statements from the Federal Reserve FR Y-9LP filings (which detail capital flows between BHCs and all of their subsidiaries) with commercial bank regulatory reports (FFIEC Call Reports) from 1991 to 2023. Our findings reveal three key characteristics of internal BHC loans. First, internal loans are prevalent across BHCs of all sizes, as depicted in Figure 1. Large BHCs (assets over $50 billion) are the most active: on average, 82% of large BHCs extended loans to bank

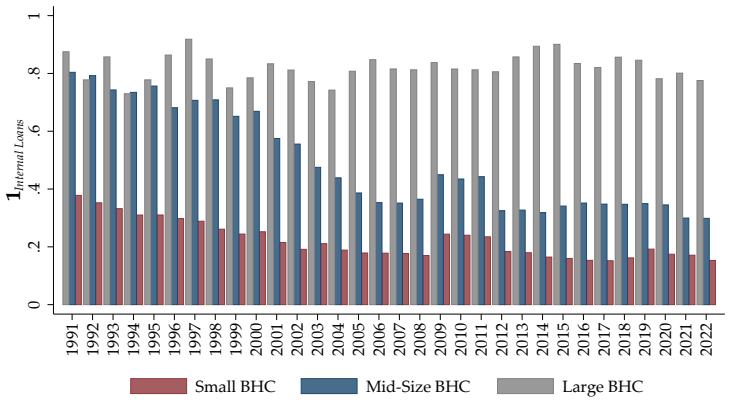


Figure 1. The Proportion of Internal Lending across BHCs. This plot depicts the share of commercial bank subsidiaries with an active internal loan from the parent bank holding company, as reported in FR Y-9LP filings, averaged across each year in the sample. The y-axis is the annual cross-sectional average of binary variable $\mathbf{1}_{InternalLoans}$ that takes the value of 1 for BHCs with an outstanding internal loan to their commercial bank subsidiaries, and zero for the others. 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.

subsidiaries in a given quarter over the past three decades. Mid-sized and small BHCs lend funds internally less frequently, though these institutions temporarily increased internal lending during crisis periods such as the 2007–2009 global financial crisis (GFC). Second, in terms of scale, internal loans typically constitute approximately $2 \sim 4\%$ of a bank subsidiary's total assets, with the ratio declining at the onset of recessions but surging during severe crises; supported by government programs such as the Troubled Asset Relief Program (TARP) and Paycheck Protection Program (PPP). Third, internal loans to bank subsidiaries consistently carry higher costs compared to those charged to nonbank affiliates. Notably, while both loan rates generally move in tandem and decline during recessions, the rate spread widens during expansions. As we document below, this pattern is evidence that BHCs subsidize internal credit to nonbank subsidiaries during economic booms by charging higher rates to their commercial bank subsidiaries. Before turning to formal tests, we first reveal the factors influencing a bank's likelihood of borrowing internally from its parent. Internal loans, similar to external loans, are jointly determined by demand (the subsidiary bank's needs for liquidity) and supply (the parent BHC's capacity to provide funds). A key distinction is that borrowing from a parent does not impose the same market discipline on the bank as

external debt; such as demand deposits. With this in mind, we analyze internal factors that reflect the characteristics of the subsidiary banks and parent BHCs — alongside external macroeconomic conditions — to identify drivers of internal loan origination.

Our test results show that banks with weaker liquidity and capital positions have a significantly higher likelihood of seeking internal loans. For illustration, a one-standard deviation drop in a bank's liquid-asset ratio or core deposit ratio corresponds to a $1 \sim 2$ percentage point increase in the probability of receiving an internal loan. Similarly, banks with lower capitalization (lower Tier 1 ratios) rely more heavily on parent loan funding, aligning with the expectation that external capital constraints push them toward internal sources. On the supply side, BHCs with higher liquidity capacity — such as those with substantial liquid assets or stronger balance sheets — are more likely to extend internal loans to subsidiary banks.

External economic conditions also play a role in intra-BHC lending: the likelihood of internal lending rises with higher short-term and long-term interest rates as well as heightened stock market volatility. In other words, when external funding becomes more expensive or economic uncertainty intensifies, banks increasingly seek liquidity from their parent BHCs. During downturns, parent BHCs face more stringent capital and liquidity constraints, hence have limited capacity to provide internal loans, which moderates intra-BHC lending.

We use two complementary variables to capture the presence and intensity of internal lending from BHCs to their bank subsidiaries: a variable indicating any internal loan and a continuous measure of internal loan amounts scaled by bank assets. Using these measures, we examine how internal loans influence bank lending behavior, loan terms, borrower relationships, subsequent loan performance, and overall bank performance.

Our first set of tests focuses on whether internal funding translates into greater loan origination to external borrowers. We find that banks receiving internal loans exhibit significantly higher loan growth in the subsequent quarter compared to banks without internal funding. Economically, when a bank obtains an internal loan from its parent, its external loan portfolio

grows about 7% faster in the next quarter than it would without parent funding. The within-bank estimate (comparing a bank to itself in periods with *versus* without internal loans) implies a 64 basis point increase in the bank's annual loan growth rate, a substantial boost given the sample's average of about 10.5%. Notably, banks obtaining larger internal loans expand lending even more significantly: those at the $75th$ percentile of the internal-loan-to-assets distribution expand their lending by 9.4% more per year than those at the $25th$ percentile. Quantitatively, each additional percentage point of bank assets financed through internal loans corresponds to roughly a 1.2 percentage point increase in annual loan growth. These findings underscore internal funding as a crucial driver of banks' credit supply to the economy.

Second, we observe that internal loans are associated with poorer subsequent loan performance. Banks that receive internal funding experience a significant uptick in future non-performing loan (NPL) ratios, averaging 2 basis points higher in the year following the internal loan compared to banks without internal funding. Given the sample average NPL ratio of 1.1%, this shows a substantial deterioration in asset quality. The combined findings of loan growth and performance indicate that while internal funding boosts loan growth, it also heightens credit risk, reflecting a classic risk–return trade-off.

Third, we analyze how internal funding affects the terms of loans and the nature of borrower relationships using granular loan-level data. Controlling for borrower characteristics by comparing the same borrowers receiving loans from banks with and without internal funding, we find that internally funded banks tend to issue larger loans, with loan size increasing proportionally to the amount of internal funding available. These banks also offer loans with longer maturities and lower interest spreads than loans made by banks without internal support. More strikingly, banks backed by internal funding are more likely to establish new lending relationships — reaching borrowers previously unserved and often more financially constrained (e.g., with lower credit ratings and limited alternative credit access). This indicates that internal capital allows banks to expand credit access, venturing into lending to riskier or previously untapped customers.

Lastly, our analysis reveals that, despite poorer loan performance, internal lending ultimately enhance overall bank performance. Using within-BHC estimations, we find that banks experience an approximately 16 basis points (bps) increase in their return on assets (ROA) in the quarter following receipt of an internal loan from their parent BHC. Economically, each additional percentage point of bank assets funded by internal loans corresponds to roughly a 3.4 percentage point increase in annual ROA. These results suggest that internal funding, despite the associated credit risks, significantly enhances overall bank profitability. This provides a rationale for BHCs to engage in internal lending to their commercial bank subsidiaries.

To help establish a causal relationship between internal funding and bank outcomes, we exploit a regulatory shift as an exogenous constraint on BHCs' ability to extend internal loans. Specifically, we exploit the Basel III capital and liquidity reforms announced by the Basel Committee in December 2010. A central feature of this reform was the introduction of a rigorous Common Equity Tier 1 (CET1) capital requirement, increasing from 2% under Basel II to 4.5% of risk-weighted assets. This policy change, which was largely unanticipated by banks, created a natural experiment: BHCs with CET1 ratios below the new 4.5% threshold became capital-constrained, restricting their capacity to downstream funds, whereas better-capitalized BHCs were comparatively unaffected. We show that following the Basel III announcement, constrained BHCs sharply reduced internal lending to their subsidiary banks relative to unconstrained peers.

Using this quasi-exogenous shock, we implement an instrumental variable difference-in-differences strategy to isolate the impact of internal loan availability, comparing banks affiliated with below-threshold *versus* above-threshold BHCs before *versus* after the announcement. Our findings confirm that the availability of internal loans critically influences banks' lending capacity and risk-taking behavior. When parent BHCs were forced to cut back internal lending, their subsidiary banks significantly scaled down new loan origination and became more cautious in borrower selection, leading to fewer non-performing loans subsequently. These banks also experienced lower ROA once internal funding was curtailed.

Next, we examine the competition for internal capital between bank and nonbank subsidiaries within BHCs. In recent decades, BHCs have greatly expanded their nonbank operations such as broker-dealers and asset managers (Acharya et al., 2024). Unlike banks, which can leverage deposits for liquidity, nonbank subsidiaries generally lack funding sources, intensifying their demand for internal capital from parent companies (Jiang et al., 2020). Our analysis reveals that nonbank affiliates increasingly compete with commercial banks for internal loans. BHCs with nonbank subsidiaries are less likely to allocate internal loans to bank subsidiaries and do so at lower levels. Notably, BHCs with larger nonbank operations tend to reduce internal lending to their banks to an even greater extent. More importantly, internal loan costs are markedly higher for banks than for nonbanks affiliates within the same BHC, with cost disparities widening during booms.

Finally, beyond the microeconomic effects on individual banks, our analysis sheds light on the broader macroeconomic role of internal capital markets in monetary policy transmission. Examining major monetary policy shifts between 1994 and 2023, we find banks with access to internal liquidity buffers exhibit lower sensitivity to monetary shocks. During policy tightening, these banks contract their lending less and moderate the pass-through of interest rate increases to borrowers. Conversely, during easing cycles, banks with internal liquidity support neither expand lending as aggressively nor reduce loan rates as extensively as their peers. These findings imply that the traditional bank lending channel of monetary policy is partially offset by internal BHC funding.

Our paper makes a direct contribution to the literature on the internal capital markets of financial intermediaries. Earlier studies, such as Houston et al. (1997) and Campello (2002), do not observe any internal capital flows *per se* and instead rely on indirect proxies. For instance, Houston et al. (1997) infer internal capital market activity by measuring the sensitivity of loan growth at subsidiary banks to the holding company's cash flow, assuming that internal capital markets exist. Campello (2002) uses an indicator for BHC affiliation to study the differential responses of affiliated and non-affiliated banks to monetary policies. In con-

trast, we leverage novel regulatory data that tracks the exact dollar amount of internal loans between holding companies and their subsidiaries over three decades. This rich dataset allows us to demonstrate that mere affiliation with a BHC does not guarantee internal funding access. Critically, we document significant fluctuations in internal capital flows and variations across BHC sizes. Approximately one-third of bank-quarters in our sample feature non-zero internal loans, underscoring the situational and variable nature of internal capital markets.

In more recent research, Cetorelli and Goldberg (2012a,b) study cross-border internal capital markets between US commercial banks and their foreign branches, while Strahan et al. (2016) study internal flows between branches within the same commercial bank. Such internal flows are typically less frictional due to their legal and regulatory simplicity. For example, unlike subsidiaries, branches are, by definition, not financed through equity and thus are legally the same entity as the commercial bank. Most critically, branches cannot fail independently and internal loans between branches of the same commercial bank are subject to minimal (close to none) regulatory interference. In our paper, the internal capital market differs significantly. Bank subsidiaries and their BHCs are legally distinct entities; they can fail independently from the rest of the organization, being subject to separate and different insolvency regimes (see Bliss and Kaufman, 2006).

Our work also contributes to an emerging literature on banks' exposure to nonbanks. Most recently, Acharya et al. (2024) argue that banks have increased their nonbanking footprints through increased funding of non-banking financial institutions. Cetorelli et al. (2021) find that banks adapted their core banking and increasingly expanded into newer activities in the 1992–2006 period. Cetorelli and Prazad (2024) investigate the nonbank exposure of BHCs and find that liquid asset holdings of banks reduce when assimilating nonbanking activities into their structure. While work on this front primarily focuses on the long-term fragility of the financial system, we uncover immediate consequences of reduced credit access to the real economy through banks when nonbanks compete for liquidity within the same BHC structure.

II. Data and Variable Construction

A. Data

The core of our data comes from the Federal Reserve FR Y-9LP filings, which provide granular, disaggregated parent-level financial information for BHCs. Although these data are available from 1981, we focus on the 1991–2023 period due to limited coverage and reporting changes in the 1980s. To keep consistent standards over time, we include BHCs that meet the evolving size thresholds for required Y-9LP filing throughout our sample period. The reporting threshold was raised from $500 million to $1 billion in March 2015 and then further to $3 billion in September 2018. We restrict our sample to BHCs meeting these threshold increases, hence maintaining uniformity in reporting standards over time.

A critical feature of Y-9LP filings is that they itemize all transactions with subsidiaries and affiliates. In particular, parent BHCs report the outstanding loans to their bank and nonbank subsidiaries as separate line items, which we detail in the next subsection. We exploit these entries to measure internal lending flows. We merge the parent-level Y-9LP data with subsidiary-level data and other regulatory data using the Federal Reserve's identifier, RSSD-DID. For each BHC in each quarter, we obtain data on its commercial bank subsidiaries from the Call Reports (FFIEC 031/041) — including bank asset size, (external) loans, deposits, capital ratios, and performance metrics. We also obtain the BHC's financial data from FR Y-9C filings (e.g, total assets and regulatory capital ratios), and the BHC's organizational structure data from FR Y6 filings (e.g, identification and information about nonbank subsidiaries). This merged dataset allows us to view a given BHC–bank pair from both perspectives: the parent's internal loan outflow and the subsidiary bank's receipt of that inflow, alongside the bank's own financial condition and outcomes. We also integrate macroeconomic indicators (interest rates, stock market volatility, etc.) into our data to capture external conditions each quarter. Those indicators come 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 provide detailed information on syndicated loan deals, including loan terms (amount, maturity, interest spread) together with the identities of lenders and borrowers. We link DealScan loans to borrower financials (from Compustat using the linking table provided by Schwert (2018)) and to lender characteristics using standard matching techniques (see, e.g., Chava and Roberts (2008)).[1] We restrict the sample to loans made by U.S. bank lenders. This loan-level dataset is used to compare loans made by banks with and without internal funding in the same deal or to the same borrower, as described shortly.

Our final sample covers 33,986 BHC-quarter observations that represent 386 unique BHCs over the 1991−2023 period. This sample size is comparable to other studies using data from BHC filings over similar periods (e.g., Stulz et al., 2022).

B. Variable Construction

B.1. Measures of Internal Lending

We define two key variables that capture the presence and intensity of internal loans originating from BHCs. The first measure is a binary indicator, $\mathbf{1}_{InternalLoans}$, that equals 1 if a BHC provided has an active internal loan to its bank subsidiaries in a quarter, and 0 otherwise. Essentially, it identifies when a bank subsidiary is actively receiving parent funding.

The second measure is the continuous internal loan ratio, denoted *Internal Loan*, which equals the total dollar amount of credit (loans, notes, bonds, etc.) that the parent BHC extends to its bank subsidiaries in a given quarter, scaled by the total assets of those bank subsidiaries. This information is reported quarterly in Schedule PC-A of the Y-9LP (Item 1.b.(1), BHCP 0533) and reflects intra-BHC debt funding flowing to banks. The scaling by bank assets expresses the internal funding as a percentage of the bank segment's size.

Both variables are constructed at the BHC-quarter level. In our analysis, we use these

[1] Schwert (2018) provides the link up to April 2020. We use a fuzzy-matching algorithm with manual checks to extend the link to 2023. We make our updated linked data available upon request.

internal lending measures either as dependent variables (when studying the determinants of internal lending) or as key independent variables (when studying the effects of internal loans on bank outcomes). By using both a dummy and a continuous ratio, we can capture the extensive and intensive margins of internal funding.

B.2. Measures of Bank Lending Outcomes and Performance

To gauge the impact of BHC loans, we track several outcome variables at the bank level. The first is bank loan growth, $\Delta log(Loans)$, defined as the logarithm of current quarter loans outstanding, divided by the one-quarter lagged loans outstanding for commercial bank subsidiaries of the BHC. Here, loans refer to a combination of commercial and industrial loans, real estate loans, and consumer loans. In regressions, we scale this variable by 100 so that coefficients can be interpreted as percentage-point changes. Our second outcome is loan performance, NPL, measured by the ratio of the non-performing loan balance (nonaccrual loans and loans past due 90+ days) to total loans, in percentage terms. This reflects the credit quality of the bank's loan portfolio. Bank loan growth and NPL are critical indicators: the former captures credit expansion, and the latter subsequent asset performance or loan defaults.

We track the financial performance of banking subsidiaries through a third outcome variable, *Return on Bank Assets*. This variable captures the returns that a BHC effectively earns from its loans to bank subsidiaries. We compute it as the parent's share of the bank subsidiaries' undistributed earnings (essentially, the net income of subsidiaries that is not paid out as dividends to the parent), scaled by the total assets of bank subsidiaries. Intuitively, this is akin to bank subsidiaries' ROA, but from the parent's perspective. We derive this from disaggregated income data in Schedule PI of the Y-9LP (Item 7.a, BHCP 3156). Because the Y-9LP income items are reported on a year-to-date basis, we convert them to quarterly flows. The resulting *Return on Bank Assets* is expressed as a percentage per quarter. It serves as a proxy for the short-term profitability of the bank segment of the BHC. In periods where a bank is unprofitable (net losses), this measure can be negative.

In addition to these BHC-level and bank-level variables, we consider alternative liquidity measures for comparison in some tests. These include the bank's asset-side liquidity creation index (from Berger and Bouwman (2009)), the stock of High-Quality Liquid Assets (HQLA) held by the bank (cash, Treasuries, and agency MBS, cf. Stulz et al. (2022)), and the volume of demand deposits (stable deposit funding that can hedge liquidity needs, cf. Gatev et al. (2009)). We also use the BHC's consolidated asset-side liquidity mismatch index from Bai et al. (2018) as a measure of the parent's liquidity supply capability. These variables let us compare internal loans against other forms of liquidity in terms of how effectively they support bank lending. We will introduce these as needed in Section IV.

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

Beyond bank-level lending outcomes, we also use DealScan loan-level data to construct the following measures to assess loan contract terms and borrower characteristics. *Facility Amount* is the size of a loan facility (or tranche) in a syndicated deal, measured in dollars and scaled by the lending bank's assets. *Maturity* is the number of months to maturity of the tranche at the time of issuance, on a log scale. *All in Drawn Spread* is the interest basis point spread over the base rate plus annual fees, which we also use in log form for our analysis. Lower values of the all-in spread indicate cheaper loan pricing for the borrower. We also observe each borrower's credit rating level — an ordinal score where a higher number corresponds to a better S&P rating, with 24 for AAA down to 1 for D or unrated. A lower rating score or the absence of a rating can proxy for a more constrained borrower.

To identify new lending relationships, we flag loans where the borrower has no prior loan from the given bank in our data (i.e., the first time the bank lends to that firm). *New Borrower Count* measures the number of first-time borrowers of a given bank in a given quarter who did not have a prior syndicated lending relationship with the bank. *New Borrower Lending* is the sum of the bank's shares of each syndicated loan originated towards these first-time borrowers in each quarter. These loan-level variables enable us to compare how

banks with and without internal lending differ in the size, maturity, and pricing of loans they extend, and whether they are more likely to lend to new — potentially riskier — borrowers.

Lastly, we construct variables at the deal (package) level to measure the extent of risk-sharing among lenders within a syndicate. *Lead Arranger* is a binary variable that equals 1 if a bank serves as lead arranger in the deal and 0 if it is solely a participant. *Lender Share* is the logarithm of the fraction of the total deal amount allocated to a given bank. *Lender HHI* quantifies the concentration of lenders within a syndicated loan package using the Herfindahl−Hirschman Index (HHI). For each package p with N lenders, each lender denoted l, we compute it as follows: $LenderHHI_p = \sum_{l=1}^{N}(LenderShare_{l,p}^{\$})^2$. Here, $Lender\,Share^{\$}$ is calculated by multiplying the percentage share (as provided in the data) by the total deal amount. This index captures the distribution of lending shares, highlighting the degree of concentration and, by extension, the risk-sharing dynamics among syndicate members.

B.4. Measures of Internal Lending Competition (Bank *versus* Nonbank)

We also examine the impact of competition from nonbank subsidiaries on internal lending. To explore this dynamic, we introduce conditioning variables that reflect the relative prominence of nonbank subsidiaries within the BHC's organizational structure. The first variable, $\mathbf{1}_{NonbankSubsidiary}$, is a binary indicator that equals 1 if a BHC has at least one nonbank subsidiary in a given quarter and 0 if it has none. The second variable, *Nonbank Subs Ratio*, measures the relative scale of nonbank subsidiaries. We compute this as the number of nonbank subsidiaries in a quarter divided by the total number of subsidiaries (both bank and nonbank) reported by the BHC for that quarter. Finally, *Nonbank Asset Ratio* captures the relative size of nonbank subsidiaries. This variable is calculated as one minus the ratio of banking assets to total BHC assets.

B.5. Control Variables

We account for multiple factors that may influence banks' decisions to borrow internally from their parent BHCs, as well as their lending activities and loan performance outcomes. At the bank level, we consider the following control variables: *Asset Liquidity Ratio*, calculated as the sum of cash and balances due from depository institutions, securities, federal funds and repurchase agreements, and trading account assets (minus pledged securities), scaled by total assets; *Core Deposits*, comprising checking, savings, and small time deposits, scaled by total assets; *Tier 1 Capital Ratio*, defined as the sum of Common Equity Tier 1 capital and Additional Tier 1 capital, scaled by risk-weighted assets; and *Bank Size*, measured as the logarithm of total assets. At the BHC level, we control for *BHC Size*, measured as the logarithm of total assets and *BHC CET1 Ratio*, the ratio of the BHC's Common Equity Tier 1 capital to its risk-weighted assets.

We also include quarterly macroeconomic controls to capture broader economic conditions. These include the GDP Growth Rate, expressed in logarithmic terms; the 10-Year Treasury Yield, representing long-term interest rates; the Federal Funds Rate, reflecting short-term interest rates; and VIX, measured as its closing level to proxy for market volatility.

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 the histogram in Appendix Figure B.2. 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

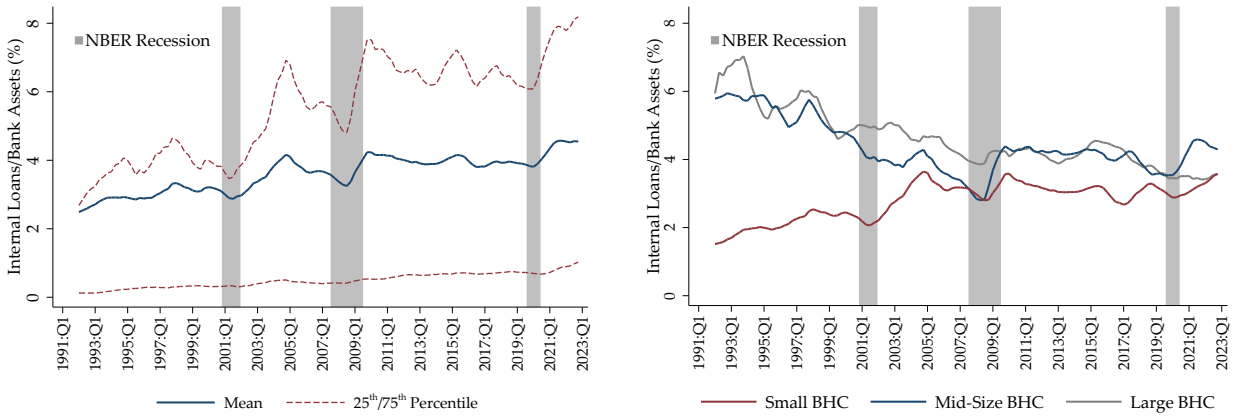
quarter, reflecting the heavy losses banks incurred in the late 2000s; excluding crisis periods, this measure is generally near zero or slightly positive. On the DealScan side, the average syndicated loan in our matched sample has a deal size equal to about 1.5% of the lending bank's assets, a maturity 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.

III. Preliminary Analysis of Internal Bank Loans

A. Institutional Background

Internal loans represent an important channel for BHCs to inject liquidity into their banking subsidiaries while maintaining regulatory capital flexibility. Unlike equity injections, internal loans do not reduce the BHC's consolidated Tier 1 capital under Basel III or weaken its position in Comprehensive Capital Analysis and Review (CCAR) stress tests. Additionally, internal loans are reversible, allowing the BHCs to recover liquidity without being penalized in the event that they become undercapitalized. Finally, while dividend distributions from equity injections may be prohibited under Prompt Corrective Action (PCA) and Federal Reserve oversight, internal loans can continue generating interest income to the BHC.[2] Compared to external deposits, internal loans from parent BHCs offer a more stable and cost-effective funding source. Deposits are subject to market fluctuations, regulatory constraints, and competition, making them less predictable. In contrast, internal loans bypass certain capital and collateral requirements, particularly under Section 23A of the Federal Reserve Act, allowing subsidiary banks to access liquidity more efficiently (Federal Reserve Board, 2021).

[2]The equity injection dynamics presented in Appendix B.1 validates the above premise. Few BHCs inject equity into their banking subsidiaries — in stark contrast to the rich dynamics depicted for internal loans. Further, internal equity injections are concentrated among the largest BHCs and immediately following crises.



(A) Internal Loans: Share of Bank Assets

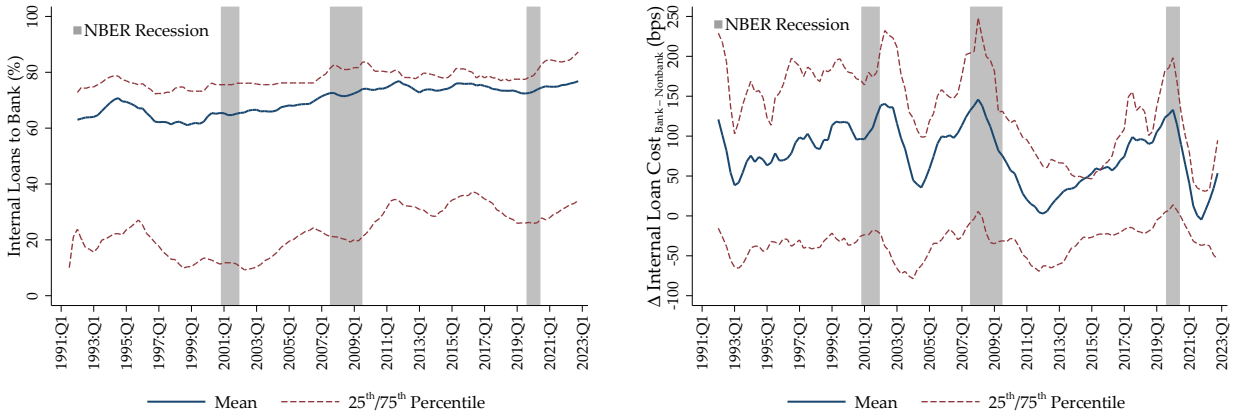
(B) Internal Loans: By BHC Size

Figure 2. The Intensity of Internal Lending. This figure depicts the quarterly evolution of the stock of internal loans from the parent bank holding company (Internal Loans to Bank) to its commercial bank subsidiaries, as reported in FR Y-9LP filings over the sample period. Panel A presents the average total quarterly lending to commercial bank subsidiaries of the BHC as a percentage of the subsidiary bank's total assets (in blue), along with the 25^{th} and 75^{th} percentile of the distribution (in red). Panel B presents the mean series, but dissected by the BHC's size: red for small BHCs (with assets less than \$5 billion), blue for mid-sized BHCs (with assets between \$5 billion and \$50 billion) and grey for large BHCs (with assets more than \$50 billion). The shaded bars represent the NBER quarterly recession indicators.

B. Depicting the Dynamic Nature of Internal Loans

We first provide a series of visual representations of the salient characteristics of internal loans from BHCs to their banking subsidiaries. These figures present a first look at the understudied dynamics of internal capital markets within the BHC structure. Figure 1 showed that internal loans are prevalent across the size spectrum, albeit with differences.

The intensity of internal loans is illustrated in Figure 2. On average, internal loans constitute anywhere from 2% to just over 4% of a bank's assets throughout the sample period (Panel A), with a slightly lower ratio when measured as a percentage of BHC assets (see Appendix Figure B.3). Across both measures, internal lending declines at the onset of recessions but surges significantly during severe crises, likely supported by government programs such as the Troubled Asset Relief Program (TARP) and Paycheck Protection Program (PPP). Panel B dissects these lending dynamics by BHC size, revealing that while recession-driven fluctuations occur across all BHCs, they are most pronounced for small and mid-sized institutions. Additionally, whereas small BHCs initially engaged in less internal lending, this



(A) Banks' Share of Internal Loans

(B) Banks' Cost of Internal Loans

Figure 3. The Share of Internal Lending to Bank Subsidiaries. This figure depicts quarterly distribution of commercial bank subsidiaries' share of total internal loans to both bank and nonbank subsidiaries, and their associated costs in relative terms, for each quarter for the sample period of 1991:Q1 to 2023:Q1. Panel A represents the share of internal loans on the intensive margin and includes only those BHCs in each quarter that lend to *both* their bank and nonbank subsidiaries. Panel B presents the mean of the cost spread between banks and nonbanks (in blue) and the 25th and 75th percentile of this distribution in each quarter. The shaded bars in both panels represent the NBER quarterly recession indicators.

disparity disappeared post-GFC, with lending behavior converging across BHC sizes.

The final dimension we investigate is the relative allocation of internal lending between bank and nonbank subsidiaries. Figure 3 illustrates the distribution of internal loans between these two subsidiary types. Panel A focuses on BHCs that lend to both bank and nonbank subsidiaries, showing that banks receive approximately 60–75% of internal loans, with the remainder allocated to nonbank subsidiaries. However, not all BHCs lend internally to nonbank subsidiaries — Appendix Figure B.4 accounts for this, revealing that, unconditionally, over 90% of internal loans are directed toward bank subsidiaries.

Panel B provides context on the relative *costs* associated with these internal loans, which we approximate as the quarterly interest income from banks and nonbanks to the BHC, scaled by the previous quarter's internal loans to each category of subsidiaries. This plot depicts the spread between the rates charged to commercial bank and nonbank subsidiaries. While both rates broadly follow the same time series patterns, the cost spread between bank and nonbank subsidiaries widens during expansionary periods — a trend that persists even into

the depths of recessions. Notably, the quarterly changes in the costs (and levels) of internal loans to banks and nonbanks exhibit a strong and statistically significant negative correlation of –0.23 (–0.25) over recessionary periods within BHCs. Further, we show in Appendix Figure B.6 that internal loans to bank subsidiaries consistently carry higher costs than those charged to nonbank affiliates. This suggests that when a BHC's ability to supply liquidity is constrained, its bank and nonbank subsidiaries compete directly for internal funding. The observed pattern implies that BHCs subsidize internal credit to nonbank subsidiaries during economic expansions by charging higher rates to their commercial bank affiliates.

C. Driving Factors of Internal Loans

What drives a bank subsidiary to borrow from its parent BHC? This descriptive analysis sets the stage for understanding which banks use internal loans and under what conditions, providing context for the outcome tests that follow. We estimate a logistic regression where the dependent variable is $\mathbf{1}_{InternalLoan}$:

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

The independent variables include a rich set of bank characteristics ($\mathbf{\Pi}^{Bank}$) and parent BHC characteristics ($\mathbf{\Pi}^{BHC}$), all measured in the prior quarter t–1, as well as macroeconomic variables (**Macro**) measured in contemporaneous quarter t. We also include BHC fixed effects, time (year-quarter) fixed effects, and credit rating group fixed effects (to capture differences in banks' external creditworthiness) in most specifications. This approach allows us to isolate within-BHC variation in internal funding decisions, controlling for unobserved heterogeneity.

TABLE 2 ABOUT HERE

The results, presented in Table 2, confirm several intuitive patterns. Focusing first on subsidiary bank conditions, we find that banks with poorer liquidity are significantly more likely to tap internal funding. For example, the coefficient of −0.193 on *Asset Liquidity Ratio*

suggests that a one standard deviation drop in this liquidity ratio (about 11.7%) is associated with approximately a 2.2% ($= 0.117 \times 0.193$) increase in the likelihood of an internal loan. Similarly, a lower proportion of core deposits (stable funding) is associated with a higher chance of borrowing internally: a one standard deviation (47.4%) decrease is associated with a 1.66% ($= 0.474 \times 0.035$) increase in the likelihood of borrowing internally. 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 parent support. In contrast, larger banks (in asset size) are somewhat more likely to receive internal loans.

Turning to parent BHC factors, we observe that a parent's own liquidity and capital positions influence internal lending supply. Although not shown in the table for brevity, specifications including BHC-level variables (e.g., parent liquidity ratio, parent capital ratio) indicate that better-capitalized and more liquid BHCs are more willing and able to extend loans to their banks. This aligns with the idea that parent companies act as "central liquidity providers" when they have the capacity to do so.

Regarding macroeconomic conditions, the regression confirms that tighter monetary conditions and higher risk aversion coincide with more internal borrowing. Higher short-term interest rates (the federal funds rate) and higher long-term interest rates (10Y Treasury Yield) are associated with an increased likelihood of internal loans, as is higher stock market volatility (VIX). These results support the view that internal loans serve as a substitute liquidity source when external funding is costly or uncertain. We also include indicators for recession periods, and find that (controlling for other factors) recessions per se do not significantly predict internal loans — it is more about the specific financial conditions during those times. One caveat is that severe recessions may constrain the parent: indeed, our earlier finding was that during the acute phase of crises, internal lending may be limited by parent capital strains — we will explore this via the Basel III shock in Section V.

Our first set of results paints a picture in which demand-constrained banks (low liquidity,

low deposits, low capital) and capable parents (high liquidity/capital) form the typical internal loan pairing, especially under adverse external conditions. This is consistent with an internal capital market allocating funds to where they are needed most within the BHC.

IV. Internal Loans and Bank Outcomes

We now assess how internal loans from parent companies affect banks' lending activity and loan performance. We do so controlling for factors discussed in the previous section under the following panel regressions model:

$$Y_{i,t} = \beta_1 \cdot Internal\ Loan_{i,t-1} + Controls_{i,j,t-1} + \phi_j + \phi_t + \epsilon_{i,t}, \tag{2}$$

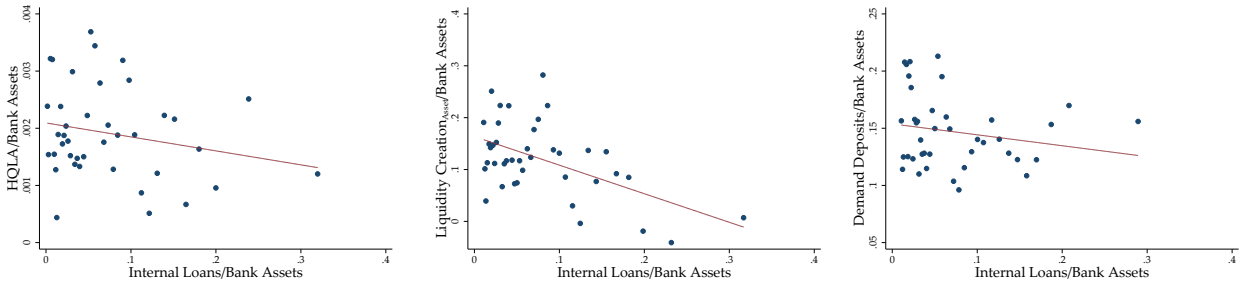
where $Y_{i,t}$ represents an outcome for bank i, belonging to BHC j, in quarter t, such as loan growth, loan performance, lending relationship, bank's risk appetite, or bank performance, constructed and defined in Section II.B. The main independent variables are the internal lending indicator variable, $\mathbf{1}_{InternalLoan}$ (alternatively, the continuous variable for internal lending intensity, *Internal Loan*) lagged by one quarter. Control variables include lagged bank and BHC characteristics which we discussed in the previous section and used in Equation (1). We include BHC fixed effects ϕ_j and time fixed effects ϕ_t in our tests. This within-BHC estimation effectively compares bank subsidiaries' outcomes in periods when they receive internal loans to outcomes when they do not, controlling for time effects and BHC idiosyncrasies.

A. The Impact of Internal Loans on Bank Loan Growth

The first outcome we examine is commercial banks' ability to transform internal loans from their parent BHCs into external loans. We do so by employing our measure of quarterly loan growth, $\Delta log(Loans)$ as the dependent variable in Equation (2). The results are reported in Table 3.

TABLE 3 ABOUT HERE

Columns (1) and (2) report the estimates with only year-quarter fixed effects, while columns (3) and (4) also include BHC fixed effects to exploit within-BHC variation. Focusing on the results in column (3), the coefficient on the internal-loan indicator $\mathbf{1}_{InternalLoan}$ is positive and statistically significant. The estimate of 0.160 implies that when a bank receives an internal loan, its loan growth in the next quarter is 6.7% (= 0.160/2.405) higher compared to when it does not receive internal loans. This is a large effect, indicating a powerful pass-through from internal liquidity to lending. It translates to roughly an additional 64 bps of annual loan growth relative to the sample average. In column (4), where the continuous internal loans ratio is used instead, we again see a positive and significant impact. The coefficient of 2.825 suggests that banks that receive a larger infusion (relative to assets) experience proportionally greater loan growth. Evaluated between the $75th$ and $25th$ percentile of internal loan ratio, the difference is about 9.4% in annual loan growth. Put differently, each 1% of assets in internal loans leads to roughly a 0.3 percentage point higher quarterly growth rate (a 1.2% higher annualized growth). These magnitudes underscore the fact that internal loans are largely transformed into external loans. Control variables behave as expected, but the internal loan effect remains robust across specifications. In all, internal loans appear to directly fuel lending expansion. The magnitude of the relationship (in proportional terms) suggests that internal funds act like an "injection" that banks quickly deploy into loan markets. This finding highlights internal liquidity as a key determinant of credit supply.An important question is how internal loan funding compares to other sources of liquidity in supporting loan growth. Banks can also create liquidity by selling assets or drawing down cash. Chiefly, they can rely on stable liability sources like demand deposits. We therefore conduct a horse-race between internal funding and these alternatives. We introduce three additional variables into Equation (2): banks' asset-side liquidity creation measure (Berger and Bouwman, 2009), their stock of high-quality liquid assets (HQLA) comprised of their cash, US Treasuries and agency mortgage-backed securities (Stulz et al., 2022), and their



(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 liquidity measures at the bank- and BHC-levels. Panel A plots the relation between banks' stock of internal loans and their high quality liquid assets (see also Stulz et al. (2022)); Panel B depicts the relation between banks' internal loan stock and their asset-side liquidity creation following the measure of Berger and Bouwman (2009); and Panel C depicts this same relation against the banks' stock of demand deposits. 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.

stock of demand deposits (Gatev et al., 2009). We then assess their relative contributions to loan growth alongside *Internal Loans*.

Before re-estimating our models, we depict the correlation between internal loans and other bank liquidity metrics. We do this in Figure 4. The graphs in the figure reveal that internal loans act as possible substitutes for asset-based liquidity. Banks on the lower end of HQLA exhibit increased internal loan borrowings (Panel A), as do banks with a lower ability to generate asset-side liquidity (Panel B) and those with lower levels of liquidity hedges in the form of demand deposits (Panel C). These patterns align with our earlier findings: internal loans flow where bank liquidity is low and parent liquidity is high.[3]

When including additional liquidity sources in Equation (2), we find that internal loans remain a strong predictor of loan growth. The coefficients on internal loans are only modestly altered, implying that loans from parent BHCs have an effect above and beyond what the bank could achieve using its on-balance-sheet liquidity. Among the alternatives, HQLA also

[3]We also characterize the impact of asset-side liquidity measures on commercial banks' likelihood of borrowing internally in Appendix Table B.1. The results show similar dynamics as those depicted in the figure above, with bank-level liquidity measures acting as possible substitutes, while BHC-level liquidity measures negatively impact the ability of subsidiaries to borrow internally.

positively correlate with loan growth, but the effect of internal loans is quantitatively larger. This suggests that internal BHC funding is a unique and potent source of liquidity, not easily replaceable by other means. During stress times, a bank with dwindling HQLA or deposits can still grow loans if it receives internal funds — a scenario we will revisit in Section VII. In short, while banks do use their own liquid assets and stable liabilities to support lending, parent-provided liquidity stands out as a critical and flexible supplement.

TABLE 4 ABOUT HERE

B. 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. The dependent variable is the bank's one-year forward NPL. We note that the scaling variable is total loans of the bank, meaning that reported variation automatically accounts for the growth in loan portfolios (cf. Rajan (1994), and Berger and DeYoung (1997)).

Table 5 shows that internal funding 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

We show above that the credit growth fueled by internal loans is accompanied by a notable deterioration in loan performance. But why do internally-funded banks generate more NPLs? In the next subsection, we turn to granular loan-level data and explore the mechanism.

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

The preceding set of results show that internal funding boosts loan quantity but harms average loan quality. To dig deeper, we turn to loan-level evidence to identify which loans drive these outcomes. In particular, we examine whether internally funded banks lend to different types of borrowers, under different terms compared to other banks. A challenge in making such comparisons is controlling for borrower characteristics — high-risk borrowers might naturally get larger or more expensive loans, and they might choose to borrow from certain banks. We address this by using a within-borrower comparison approach that resembles the identification strategy employed by Khwaja and Mian (2008). We look at syndicated loan deals or sets of loans where the same borrower obtains credit from multiple banks in the same quarter and study how loan characteristics differ depending on whether a lending bank has internal funding (backed by BHC-loans) or not. Although identification relying on multi-bank firms alone has come under debate for credit supply shocks (see Degryse et al. (2019)), our goal is to tease out differential behavior on lenders, and that remains unaffected by their critique.

C.1. Loan Terms and Borrower Characteristics

Our empirical design for this section includes borrower-quarter fixed effects so that we compare side-by-side loan contracts to the same borrower within a given quarter. We modify Equation 2 to accommodate this change in the following form:

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

where $Y_{i,j,l,t}$ represents the loan-level outcome of a syndicated loan facility l, the subscripts i and j denote the lead bank and borrower of loan l respectively. $\phi_{j,t}$ is the two-way borrower–quarter fixed effect. We consider a sample where borrowing firms have at least two different loans in the same quarter, and one (or more) of these loans is originated by a lead lender bank that receives internal loans and at least one other loan originated by a bank without internal

funding.[4] Essentially, we test within the borrower-quarter grouping, whether the lending banks had internal loans available at that time, and see how that relates to loan terms.

TABLE 6 ABOUT HERE

The results are reported in Table 6. Column (1) shows that banks with internal BHC loans make bigger loans than their peers without internal funding — this is further corroborated by risk-sharing results in Section IV.D below. Across all loans, banks with internal funding make loans that are on average approximately twice as large (relative to the bank size) than those made by banks not receiving parent funds, holding borrower constant. Columns (3) and (4) show that loans extended by BHC loan-funded banks have maturities approximately 2∼3 months longer, on average, than loans made by other banks to the same borrower. Longer maturities indicate the lender is willing to lock up funds for a greater period, potentially increasing risk exposure to the borrower's credit over time. Columns (5) and (6) show that internally funded banks charge significantly lower spreads to borrowers than other banks do. The difference in the all-in drawn spread is of the order of 5∼10 basis points lower. These more favorable terms could reflect a willingness to accept lower spreads in order to attract new corporate clients. Naturally, one important question is whether this comes at the cost of tapping into less creditworthy segments of the market. The results in the last two columns speak to this question. The coefficients reported show that the borrowers of loans originated by internally funded banks are less creditworthy.

These loan-level findings are in line with our bank-level inferences. Internally supported banks use their liquidity to offer bigger, longer-term loans at cheaper rates, which is attractive to borrowers, especially the credit-constrained, riskier ones. These findings jointly reconcile with the increase in non-performing loan levels reported in Section IV.B. On the flip side, they also suggest improved access to credit for borrowers on the margin — an idea that we explore more rigorously in the next subsection.

[4]We verify that imposing this restriction does not materially alter our sample and that the resulting sample characteristics resemble those of the original sample. We provide a comparison in Appendix Table B.4.

C.2. New Lending Relationships

Next, we gauge the emergence of new bank–borrower relationships in the syndicated loan market. We use a panel of syndicated loan deals collapsed at the bank-quarter-level, tracking lending relationships over time. We define two variables measuring the expansion of loan portfolios on the extensive margin: (i) *New Borrowers (Count)*, defined as the total number of first-time borrowers corresponding to a given bank in each quarter; and (ii) *New Borrower Lending*, defined as the total shares of loans contributed to new borrowers by the bank in each quarter.[5] We use these as dependent variables in Equation (2) and report results in Table 7.

TABLE 7 ABOUT HERE

We find that internally funded banks lend to one additional borrower each year, or a 12% annual increase in the number of new borrowers for such banks. Further, they also increase the dollar amount of loans to new borrowers by 10%. This aligns with the notion that internal loans embolden banks to extend credit beyond their established customer base, venturing into new relationships that might be riskier or more informationally opaque.

These results suggest a positive real effect of internal liquidity — banks with internal funding from their BHC parents act on the extensive margin of lending activity by establishing new lending relationships. We further investigate whether internal loans amplify banks' ability to extend new credit to constrained firms. We use three measures to proxy the borrowing firms' constraint: the financial constraint indices proposed by Hadlock and Pierce (2010) and Whited and Wu (2006), and the option-implied stock volatility. We employ a difference-in-differences specification as below:

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

[5] We aggregate shares where the bank serves as a lead arranger or a deal participant.

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 ABOUT HERE

Table 8 presents the results. The estimates in columns (1) and (2) demonstrate that loan recipients in these newly created relationships, on average, exhibit higher levels of financial constraints across both measures. Further, the coefficients on the interacted terms reveal that when banks have access to internal loans from their parent BHCs, they establish new relationships with firms that are significantly more constrained relative to other borrowers and also borrowers from banks that do not have access to such internal loans. Similarly, column (3) indicates that new borrowers from internally funded banks have higher option-implied volatility compared to those establishing new relationships with banks that lack such access.

Our findings in this section indicate that internal funding enables banks to compete more aggressively in lending markets: they can win deals by offering better terms and can broaden their client reach. This suggests a positive externality of internal capital markets — improving credit availability and terms for borrowers who might otherwise face tighter credit. However, it comes with the negative internality of higher risk concentration for the bank.

D. The Impact of Internal Loans on Risk-Sharing

We next examine the impact of internal funding on banks' risk-taking behavior. We do so with a focus within syndication structures that offer richer information than the across-loan comparisons. When banks originate syndicated loans, they do so alongside other banks, distributing portions of the loan to mitigate risk (Sufi, 2007). A bank concerned about risk exposure might sell down or syndicate out part of the loan. Conversely, a bank more willing to bear risk might retain a larger share or even act as the lead arranger who takes on lead responsibilities and a larger allocation. We hypothesize that banks with internal liquidity may feel more confident in retaining credit risk, leading to less risk-sharing.

Using DealScan data on syndicated loans, we define a set of measures for each lender's role and share in loan syndicates: an indicator for whether the bank is a lead arranger on the loan (*Lead Arranger*), the fractional exposure of the bank to the deal (*Lender Share*), and a lender Herfindahl Index measuring how concentrated the syndicate is from that lender's perspective (*Lender HHI*). We then estimate within-syndicate regressions with borrower-quarter fixed effects to see how a bank's internal funding relates to these outcomes.

TABLE 9 ABOUT HERE

As shown in Table 9, banks with access to internal loans are significantly more likely to act as lead arrangers in syndicates and therefore bear the bulk of the risk exposures (see Sufi (2007), and Ivashina (2009)). Additionally, these banks hold larger shares of the loans they originate. We also observe that syndicates involving an internal-loan bank tend to be more concentrated, meaning risk is not as widely spread among participant lenders. The combination of these findings indicates a lower degree of risk-sharing when internal liquidity is present. Banks with parent support seem willing to hold more of the credit risk themselves, perhaps trusting that they have a liquidity backstop or simply pursuing higher returns by not fully syndicating out the loan. This behavior is directly linked to the increased risk in their portfolios that we documented earlier (higher NPLs).

Our fixed-effect strategy ensures this is a within-borrower-quarter comparison, that is, among the group of banks lending to a given firm in a given quarter, those with internal funding keep more of their originated loans than those without, indicating that it is not about borrower risk, but BHC-funded banks propensity to lend more.

Taken together, the results of this and the prior section consistently point to increased risk-taking by banks that have internal capital to draw on. They extend more and cheaper credit, venture into new lending relationships, and share less of the risk with syndicate participants. This combination can elevate their risk exposure substantially. We interpret this as evidence that internal loans come with lower monitoring and oversight compared to external funding

sources such as deposits. Indeed, internal debt is not subject to market scrutiny or deposit insurance premiums in the same way, spelling moral hazard behavior within the BHC network.

Our findings thus far lead one to question whether loan-funded banks' behaviors negatively affect their entire business groups. The parent BHC presumably prices internal loans it gives and oversees the subsidiary's activities. The question then is whether risk-taking behaviors by commercial bank subsidiaries affect overall BHC performance. We examine this issue in turn.

E. The Impact of Internal Loans on Bank Performance

Shifting focus from risk-taking, we analyze how internal lending affects a bank's financial performance. As defined in Section II.B, our measure *Return on Bank Assets*, *ROA*, captures the net income generated by the bank subsidiary, as retained within the BHC, relative to the bank's assets. We estimate a BHC-level specification of Equation 2 with *ROA* as the dependent variable, including the same controls and fixed effects as before.

TABLE 10 ABOUT HERE

The results, shown in Table 10, indicate significant performance gains associated with internal loans. In the within-BHC specification in column (3), the coefficient implies that when BHCs make internal loans, subsidiary banks' next quarter *ROA* is about 16 bps higher. Since the sample mean of *ROA* is –2.5% per quarter, this is an economically large improvement. The coefficient on the continuous treatment variable in column (4) similarly shows that for each one percentage of bank assets funded internally, *ROA* rises by 3.4 percentage points. These performance benefits are statistically significant and hold controlling for other factors.

Notably, the average performance of banks not receiving internal loans was weak — many had near-zero or negative returns in our sample, which includes crisis years. Internal funding often arrives when a bank is under liquidity pressure. The infusion enables the bank to extend more credit or maintain lending that it might have otherwise cut, generating additional interest income. Although some of those loans may go bad later (hence higher NPLs), in the

short run they contribute interest revenue that lifts profits. Moreover, internal loans could help a bank avoid fire-selling assets or contracting lending in a way that would hurt its franchise and earnings. This immediate boost to ROA explains why BHCs are willing to provide internal loans despite the evidence on lower borrower quality and subsequent loan underperformance. From the parent's perspective, it might be rational to accept some future credit losses in exchange for stabilizing or improving a subsidiary's performance now; especially if that subsidiary might otherwise fail or significantly underperform without support.

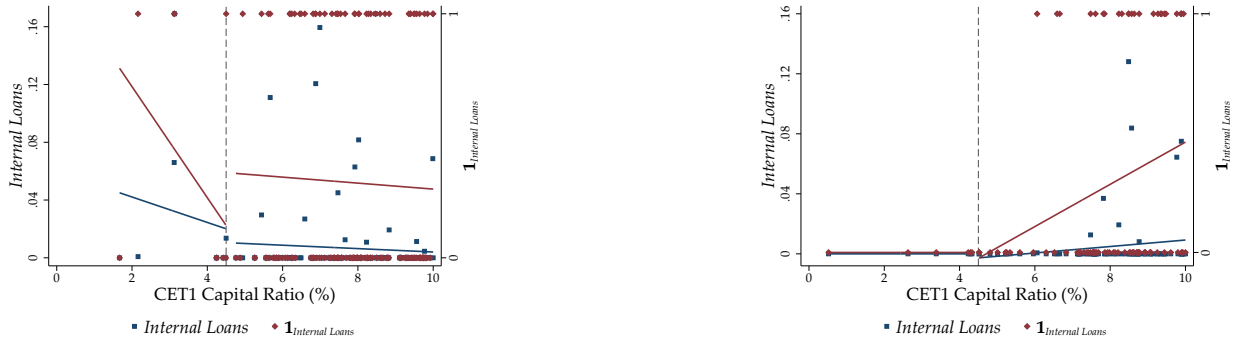
Our findings align with internal capital market theory: headquarters (BHC) reallocates capital to divisions (banks) where the marginal return is high. The improved ROA suggests those marginal returns were indeed high for receiving banks, consistent with the parent making a value-enhancing transfer. In fact, it points to parent BHCs actively monitoring and targeting internal loans to where they yield performance gains. This resonates with the literature on conglomerate internal capital allocation (e.g., Stein (1997), and Shin and Stulz (1998)).

In sum, internal loans significantly improve bank profitability in the short run, rationalizing why such intra-firm transfers occur and continue. This interplay of improved returns and heightened risk underpins the dual nature of internal capital markets in banking: they are a source of strength and flexibility, but may facilitate risk propagation if not carefully managed.

V. Plausibly Exogenous Shock to Internal Lending

The results in Section IV establish robust associations between internal loans and various outcomes. To bolster a causal interpretation, we exploit a quasi-exogenous shock that affected BHCs' ability to extend internal loans to their subsidiaries: the announcement of the Basel III capital requirements. This event serves as a quasi-natural experiment to see how a forced reduction in internal lending impacts banks.

The Basel III reforms were first announced in December 2010 by the Basel Committee on Banking Supervision in response to systemic fragility exposed during the 2007–2009 cri-



(A) 2009:Q4 **(B)** 2010:Q4

Figure 5. Internal Lending around Basel III Announcement. This figure depicts the distribution of internal funding across BHCs with common equity tier 1 (CET1) capital ratio lying in the range between 0 and 10% at two distinct points in time across the announcement of the CET1 ratio threshold under Basel III. Panel A plots this distribution as of 2009:Q4, one year before the rule announcement in November 2010. Panel B plots the distribution in the quarter of the rule announcement, i.e., 2010:Q4. In both figures, the blue squares depict the level of internal loans from BHCs to their commercial bank subsidiaries, while the red diamonds represent the binary variable $\mathbf{1}_{InternalLoan}$. The lines of the same color represent the linear fit of the scatter plot separated into regions below, and above, the critical threshold of 4.5%.

sis. The 2010 announcement set the groundwork for stricter capital and liquidity standards, including the introduction of the Common Equity Tier 1 (CET1) ratio, which was unprecedented in its focus on high-quality capital. This ratio required BHCs to maintain a minimum CET1 capital of 4.5% of risk-weighted assets, a significant increase from the 2% required under Basel II. The Federal Reserve and other regulators adopted the Basel III framework with phased implementation starting in 2013, with full compliance by 2015.

With the 2010 announcement, BHCs had to balance the need to maintain higher reserves of CET1 capital against their traditional role as internal liquidity providers to subsidiaries. The constraints on capital allocation reduced their flexibility in extending internal loans, prioritizing compliance with regulatory minimums to avoid penalties. We demonstrate that the 2010 announcement was a sizable shock to BHCs' internal lending behavior by mapping out the internal lending outcomes against their CET1 ratio compliance in Figure 5. The plot in Panel A depicts both the internal lending decision ($\mathbf{1}_{InternalLoan}$) and the level of this internal lending (*Internal Loan*) for individual BHCs whose CET1 ratio was between 0% and 10% in 2009:Q4 (one year prior to Basel III). As the plot indicates, BHCs across the capital ratio spec-

trum made internal loans to their subsidiary banks within this range of CET1 ratios. Panel B presents a similar plot but in 2010:Q4 (when Basel III was announced). The plot shows that BHCs below the minimum CET1 threshold of 4.5% immediately cut down on lending internally to their subsidiary banks. The response was plausibly tied to BHCs shrinking their balance sheets in light of Basel III rules' adoption, a response that is in line with anecdotal evidence from the time.[6] This sudden and sharp breakdown of internal lending revealed by the figure indicates that the rule announcement spurred BHCs to immediately reevaluate their internal lending to reach the mandated capital threshold, thereby avoiding costly future fines.

The striking dynamics in the above figure provide the setting for our identification strategy. We employ an instrumental variable (IV) design within a tightly defined time window from 2010:Q1 to 2011:Q3, capturing the quarters around the Basel III rule announcement. We opt for the IV approach, since anecdotal evidence from the time points to a decline in credit demand, with the economy still recovering from the financial crisis.[7] This presents an endogeneity challenge with the weakened credit demand itself reducing commercial banks' demand for internal loans from parent BHCs. Our instrument isolates the effect of the Basel III regulatory constraints on BHCs' internal lending ability, to then trace out the resulting effect on subsidiary banks' loan origination and performance.

To do so, we exploit exogenous variation in capital constraints induced by Basel III and instrument for internal lending responses using BHCs' exposure to the 4.5% Common Equity Tier 1 (CET1) capital requirement. Specifically, we measure this exposure through the variable *Basel III Exposure*, which equals one for BHCs with CET1 ratios below 4.5% in the quarters following the rule announcement (based on 2010:Q4 levels), and zero otherwise. To ensure a valid counterfactual, we restrict the sample to BHCs with CET1 ratios of up to 10%.[8] We verify robustness using alternative cutoffs at 8% and 12%.

[6] E.g., "Basel Report Shows Banks Have Way to Go to Meet Capital Rules," *New York Times*, Dec 16, 2010.

[7] E.g., "Dollar to Stay Weak on Credit Demand," *Bloomberg*, Oct 20, 2010; and "Banks Are Lending, but Pace Falls Shy," *Wall Street Journal*, May 3, 2011.

[8] BHCs well above this threshold were unlikely to face meaningful Basel III constraints, while a lower threshold would majorly include banks additionally constrained by pre-existing capital conservation buffer

We capture BHCs' response to the 2010 rule announcement through two alternate measures. The first, $\mathbf{1}_{InternalLoanCuts}$, is a binary variable set to one for BHCs that ceased internal lending immediately following the announcement. The second, $\Delta InternalLoan$, captures the magnitude of changes in internal lending across successive quarters. These variables serve as dependent variables in the first stage of the IV regression and *Basel III Exposure* serves as the instrument. In the second stage, we use their fitted values to estimate the causal effect of internal loans on bank lending and performance outcomes, instrumented through the Basel III shock. The subsidiary-bank–quarter level specifications take the following form:

$$\upsilon_{i,t} = \beta \cdot Basel\ III\ Exposure_{j,t} + Controls_{i,j,t-1} + \phi_j + \phi_t + \epsilon_{i,t} \tag{5}$$

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

where $\upsilon_{i,t}$ represents either $\mathbf{1}_{InternalLoanCuts}$ or $\Delta Internal\ Loan$ 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. By exploiting the quasi-exogenous variation in capital constraints imposed by Basel III, our IV framework ensures that we isolate the causal impact of internal loan adjustments on bank lending and performance, driven by the quasi-exogenous changes in regulatory requirements, rather than the broader post-crisis credit conditions. The results are reported in Table 11.

TABLE 11 ABOUT HERE

Columns (1) and (2) represent a simple, OLS-based test of the dynamics depicted in Figure 5, where we estimate the impact of the Basel III rule announcement on internal lending outcomes within BHCs. Our coefficient estimates indicate that BHCs facing regulatory constraints significantly cut down on their likelihood of approving internal loans to subsidiary banks relative to their non-constrained counterparts following the rule announcement. The

restrictions, which limit dividends and discretionary payments even in the absence of Basel III.

coefficient in column (1) points to a 1.9 percentage point decline in the likelihood of internal loans within such BHCs compared to the pre-period average of 27.3% for the restricted sample. Column (2) presents the results for the continuous treatment analog, which reveals a 78.7% (= 0.048/0.061) additional reduction in the level of internal loans for constrained banks in the post-period compared to the pre-period mean of 0.061, or 6.1% of the asset base.

We test the impact of the Basel III-induced sharp decrease in internal loans on bank lending behavior and performance in the remaining columns through the IV specification. The F-statistic across specifications is close to or above 80, well above conventional thresholds for weak instruments. The results of these analyses reveal that with a cutback to internal loans spurred by the announcement of the capital requirements, banks originated significantly fewer loans in the subsequent quarters, contributing to a decline in loan growth (columns (3) and (4)). Further, loans originated by subsidiary banks of constrained BHCs on the back of the exogenous decline in internal lending exhibited better performance with lower levels of non-performing loans (columns (5) and (6)). However, the banks also posted lower returns on their assets following the scaling back of internal lending (columns (7) and (8)).

These results underscore the validity of our long-term analyses in Section IV and establish that the availability of internal loans is key to banks' lending abilities and risk appetites. They provide evidence that in the absence of such internal loans, banks tend to be more cautious in selecting their borrowers, with fewer of these loans becoming non-performing. The associated decline in return performance highlights that banks face a mutually exclusive choice between seeking profits and minimizing the risk of their loan portfolios.

VI. Competition for Internal Loans: Bank *versus* Nonbank Subsidiaries

In the preceding sections, we have demonstrated the importance of internal loans from parent BHCs as a source of commercial bank liquidity. Such internal loans enhance banks'

loan origination capacity and improve their returns, while also increasing credit access to more borrowers, albeit at the cost of riskier loan portfolios. In this section, we explore how nonbank subsidiaries within the same BHC compete for internal loans, and how that competition affects the allocation of internal capital and the outcomes for banks.

Nonbank subsidiaries, such as broker-dealers, asset management arms, finance companies, or insurance units, perform targeted functions within BHCs that often provide strategic benefits like regulatory arbitrage or risk isolation. For example, a BHC might channel certain activities into nonbank entities to reduce regulatory burdens on the overall organization given lighter regulation on nonbanks (Chen et al., 2023; Houston et al., 1997) or to segregate higher-risk ventures (as suggested by Ashcraft, 2005). These nonbank entities do not have access to low-cost deposit funding, prompting them to have a stronger need to seek internal funding from parent BHCs (see Jiang et al., 2020).

We investigate how the presence and growth of nonbank subsidiaries influences BHCs' internal loan allocations to their commercial bank subsidiaries. The stylized facts of internal lending in Section III point to a direct competition: internal liquidity is a scarce resource that the parent allocates between its bank and nonbank subsidiaries. We employ a regression scheme comparable to that depicted in Eq. (1) where we set the conditioning variable to one of $\mathbf{1}_{NonbankSubsidiary}$, *Nonbank Subs Ratio*, or *Nonbank Asset Ratio*, which quantify the presence, breadth, and size of nonbank operations within a BHC and are constructed in Section II.B. The dependent variable is alternatively set to $\mathbf{1}_{InternalLoans}$ or *Internal Loan*. Table 12 reports the results of the estimations. Essentially, we test whether BHCs with more or larger nonbank operations allocate less internal funding to their commercial bank subsidiaries.

TABLE 12 ABOUT HERE

We find negative and significant coefficients across all specifications, indicating that nonbank subsidiaries do indeed compete away internal loans from banks. Specifically, columns (1) and (4) suggest that even the existence of a single nonbank subsidiary is associated with

a lower likelihood and amount of internal loans going to bank subsidiaries. Columns (2) and (5) indicate that this effect is modulated by the relative number of nonbank subsidiaries, and BHCs with more nonbank subsidiaries reduce internal lending to bank subsidiaries to a greater extent. Finally, columns (3) and (6) point to analogous effects based on the relative size of bank and nonbank subsidiaries. These effects are both statistically and economically significant. For example, having any nonbank subsidiary might reduce the probability of a bank getting internal funds by 14 percentage points and cut the loan-to-assets ratio by a meaningful amount, all else equal. Thus, nonbank affiliates crowd out bank affiliates in internal capital allocation. The parent's finite resources — whether due to capital or liquidity constraints — are split: the more goes to nonbanks, the less goes to banks.

Finally, we consider how this internal capital competition impacts bank outcomes. One might suspect that if banks receive less internal support because nonbanks are drawing funds, those banks might lend less or face more constraints. On the other hand, the reduced internal funding could also impose discipline on banks, as they can't take funding for granted. To explore this, we examine whether the competition from nonbanks affects the outcomes of banks that do receive internal loans. In other words, does competition from nonbanks alter the impact of internal loans on a bank's loan performance and profitability? We extend our earlier specification for loan performance (NPL) and bank performance (ROA) by including an interaction between internal loan variables and nonbank presence variables, as shown below:

$$Y_{i,t} = \beta \cdot \mathbf{1}_{NonbankSubsidiary\ i,t-1} \cdot \mathbf{1}_{Internal\ Loan\ i,t-1} + Controls_{i,t-1} + \phi_i + \phi_t + \epsilon_{i,t}. \quad (7)$$

TABLE 13 ABOUT HERE

The results in Table 13 suggest that nonbank subsidiaries impose discipline on internally funded bank subsidiaries. Columns (1) and (2) show that internally funded banks that are in BHCs with nonbank subsidiaries have lower subsequent NPLs than internally funded banks without nonbank competition. Quantitatively, having at least one nonbank subsidiary is

associated with about a 1.2% (= 0.014/1.123) reduction in future NPLs for an internally funded bank compared to the baseline NPL rate), and a one percentage increase in the nonbank asset ratio yields roughly a 15 bps decrease in NPLs. This suggests that when a commercial bank knows it has to "share" the parent's resources with nonbank siblings, it lends more cautiously, resulting in fewer bad loans.

Columns (3) and (4) indicate that these banks also observe better performance; the significant coefficient of 0.084 indicates that an internally funded bank in a BHC with nonbanks has a 3% higher ROA than an internally funded 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 BHCs' overall return on assets is also higher when they have *both* nonbank operations and an active internal loan market. This likely reflects diversification and efficient allocation: the BHC is getting good performance out of both segments and using internal capital where it yields the best return.

These findings suggest a somewhat paradoxical outcome: although nonbank subsidiaries compete for internal funds and constrain the amount of internal support commercial bank subsidiaries receive, their presence appears to make the bank subsidiaries that do get internal loans use those funds more efficiently (fewer NPLs, higher ROA). In essence, the competition imposes a form of market discipline within the organization. It prevents commercial banks from overusing internal loans or taking it for granted, which can lead to wasteful risk-taking. Instead, bank managers knowing that internal capital is precious (because the parent could deploy it to nonbanks) may invest it in safer and more productive loans. This disciplined behavior leads to better loan outcomes and performance for the bank.

From a broader perspective, our results indicate that the expansion of nonbank activities within BHCs has a mixed impact on credit in the economy. On one hand, nonbanks siphon off some internal liquidity that might otherwise bolster bank lending — this could reduce the volume of bank credit available to businesses and consumers. On the other hand, the limited

internal funds that banks receive in such diversified BHCs are utilized more prudently, leading to healthier loan portfolios. In other words, credit may be scarcer but higher in quality.

In summary, an active internal capital market within a BHC means banks and nonbanks effectively compete for the parent's funds. This competition can limit bank lending but also enforce discipline on bank risk-taking. The net effect on the broader economy can be complex. Our evidence that nonbank expansion can negatively affect traditional bank credit supply through crowding out internal funds confirms the concern raised in the introduction, albeit with the nuance that it might simultaneously improve credit outcomes in terms of performance. From a policy or regulatory standpoint, regulators might need to consider how rules on internal capital allocation or support across affiliates could influence this balance between credit quantity and quality. For example, in a crisis, should regulators restrict internal transfers to nonbanks to ensure banks keep lending? Or conversely, should they allow flexibility because nonbank activities (like broker-dealers) might be crucial to market functioning? Our findings provide empirical footing for such discussion.

VII. Internal Loans and Monetary Policy Transmission

We end our analysis examining the role of internal capital markets in monetary policy transmission. To do so we first identify periods of significant monetary policy shifts between 1991 and 2023. This identification is based on large changes in the stance of monetary policy and clear Federal Reserve communications around those changes. While an extensive body of literature explores the bank lending channel of monetary policy (Bernanke and Blinder, 1992; Kashyap and Stein, 2000; Drechsler et al., 2017), comparatively little attention has been given to how organizational structures, such as being part of a BHC with internal capital resources, influence banks' responses to monetary shocks. Internal capital markets within BHCs have the potential to shield subsidiary banks from liquidity shocks, thereby moderating the impact of monetary policy (Houston et al., 1997; Campello, 2002). In earlier

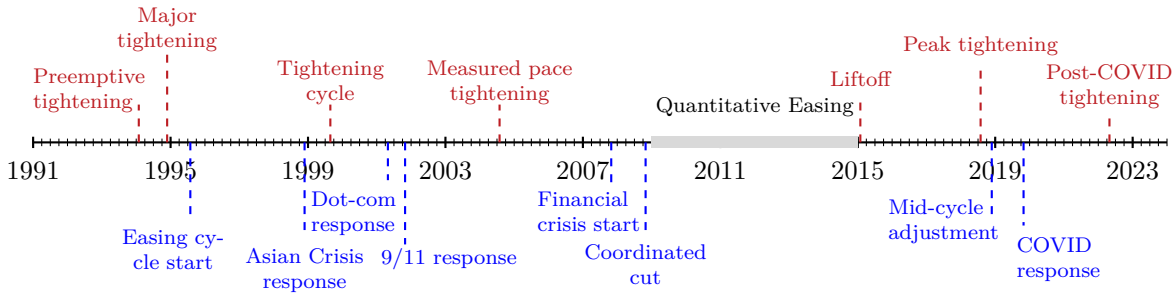


Figure 6. Monetary Policy Shocks. This figure depicts the major monetary policy shocks between 1991:Q1 and 2023:Q1 employed in our analyses. Events associated with tightening of the monetary policy are indicated in red and above the timeline, while those associated with easing are presented in blue and below the timeline. These events represent the first in a series of successive increases or decreases in the FOMC's target federal funds rate.

work, Ashcraft and Campello (2006) argue that the internal market enables subsidiaries to sustain lending during periods of monetary tightening, especially when parent BHCs have access to external capital markets, suggesting a demand-driven dampening of policy effects. In contrast to the existing literature, our findings in previous sections indicate that the affiliation with BHCs does not guarantee a bank will receive internal loans — note that a majority of bank-quarters see no internal loan support. This challenges the assumption that internal capital markets uniformly insulate banks from policy tightening. Instead, it may be conditional on whether the parent actually provides support at that time.

We focus our analysis on the supply-side response to monetary policy shocks from post-1994 events, aligning with the "modern" Fed era characterized by enhanced transparency (Lindsey, 2003). We examine episodes representing different monetary regimes: conventional policy (1994–2008), financial crisis intervention (2007–2009), unconventional policies (2009–2015), normalization (2015–2019), and the pandemic response (2020–2023). This variety allows for a study of how internal capital markets function under varying environments.

Figure 6 illustrates the key monetary policy events we consider. We define each event as the onset of a series of rate moves in the Federal Open Market Committee's (FOMC's) target federal funds rate.[9] For example, the event could be the first rate hike in a tightening

[9]Obtained from the Board of Governors of the Federal Reserve System — Open Market Operations: https://www.federalreserve.gov/monetarypolicy/openmarket.htm

cycle, or the first cut in an easing cycle. These dates are well-known shock points: the Fed's surprise tightening in February 1994, the aggressive cuts starting September 2007, the QE announcement in November 2008, the first post-crisis hike in December 2015, etc. The idea is to capture a clean shock to rates that banks had limited time to anticipate, then track how banks with and without internal loan access differ in their subsequent lending adjustments.

Our empirical model for this section interacts the periods before and after the monetary policy shock with an indicator of internal loan availability. We essentially compare banks reliant on internal loans *versus* those that are not, before *versus* after a policy shock, controlling for common time effects and bank characteristics. We include shock-event-quarter fixed effects to isolate the policy impact in each episode. Specifically, we employ a stacked difference-in-differences estimation focusing on four quarters before and after each shock s, adapting the approach of Sun and Abraham (2021) with collapsed pre- and post-treatment periods:

$$\begin{aligned} Y_{i,t} =& \beta_1 \cdot (Internal\ Loan_{i,t} \times Pre_MP_Shock_{s,t}) \\ &+ \beta_2 \cdot (Internal\ Loan_{i,t} \times Post_MP_Shock_{s,t}) \\ &+ \phi_i + \phi_s \times \phi_t + \epsilon_{i,s,t}. \end{aligned} \tag{8}$$

The outcome variable $Y_{i,t}$ is either $\Delta \log(Loans)$ or *Mortgage Rates*, the latter being the logarithm of the average 15-year mortgage rate across all subsidiaries of BHC i in quarter t. The dummy variable $Post_MP_Shock$ (Pre_MP_Shock) is equal to one during the four quarters following (preceding) each shock and zero during the four quarters prior (after). These terms are interacted with $Internal\ Loan_{i,t}$, which captures the availability of internal loans to commercial bank subsidiaries. The control group for this estimation is the set of never-treated BHCs, i.e., those that have never had internal loans throughout the sample.[10] $\phi_s \times \phi_t$ is the shock-event-quarter fixed effect.

[10]The Sun and Abraham (2021) approach requires units to be "fully" treated in order to isolate treatment and control groups, precluding the use of our continuous treatment variable *Internal Loans*. We present an analogous two-way fixed effects estimation in Appendix Table B.6 using both the binary and continuous treatment, with both yielding similar interpretations.

TABLE 14 ABOUT HERE

The results reported in Table 14 highlight the role of internal loans in mitigating banks' responses to monetary shocks. In episodes of monetary tightening (columns (1) and (2)), banks with access to internal loans contract their new lending significantly less than banks without such access. In other words, when the Fed raises rates, ordinary banks typically pull back lending due to higher funding costs and reduced loan demand. But banks that can draw on internal capital do not cut their lending as much — the drop in loan origination is milder for them. Additionally, these internally funded banks have smaller increases in mortgage lending rates charged to borrowers following the tightening. This suggests they pass through less of the policy rate hike to their customers, likely because the parent's funding softens the need to raise loan rates to attract funds. During monetary easing episodes (columns (3) and (4)), there is a symmetric but subtler effect: banks with internal loan support exhibit more muted expansions in lending and less reduction in mortgage rates compared to other banks.

These results underscore two key implications. First, internal capital markets within BHCs help smooth subsidiary banks' lending behavior across monetary cycles. Essentially, internal liquidity acts as a buffer and dampens banks' sensitivity to external interest rate shocks. Second, this smoothing effect implies that monetary policy efficacy is partially offset by the presence of internal loans, as parent BHCs support their subsidiaries irrespective of the broader policy stance. It calls for policymakers to take into account BHC internal lending activity when designing and communicating policy.

In sum, internal capital markets can weaken the bank lending channel of monetary policy. Banks that are part of well-capitalized BHCs with internal resources do not respond as strongly to monetary policy tightening or easing. This insight adds a layer to the conventional wisdom: not only do bank-specific traits like size and liquidity matter for monetary transmission (small or illiquid banks are more affected, as in Kashyap and Stein, 2000), but organizational form (being in a multi-entity BHC with internal reallocation ability) also matters.

VIII. Concluding Remarks

Our study provides new insights into the critical role of loans within BHCs and its implications for bank lending, risk-taking, and regulatory oversight. By leveraging data from the Federal Reserve FR Y-9LP filings, we introduce new measures of internal loans, capturing both the presence and intensity of these intra-BHC financial flows. Our findings reveal that internal loans serve as a strategic liquidity tool for BHCs, allowing them to support their banking subsidiaries during periods of economic stress or heightened regulatory pressure. Bank subsidiaries that receive internal loans exhibit enhanced loan origination ability over crisis and non-crisis periods. This flexibility, however, comes with trade-offs, as increased internal lending is associated with elevated risk-taking and poorer loan performance at recipient banks.

Our empirical analysis shows that internal lending not only boosts short-term lending growth but also spurs new lending relationships. These effects are tempered by higher incidences of non-performing loans, larger syndicated loan exposures, and greater concentration of risk on banks' balance sheets. The evidence suggests that internal loans are a double-edged sword, providing essential liquidity support while simultaneously encouraging riskier lending practices, likely driven by moral hazard or reduced market discipline within BHC networks.

The results of this study have significant implications for policymakers and regulators. First, the strategic use of internal loans highlights the importance of monitoring intra-firm financial flows, especially in times of economic uncertainty or during regulatory changes. Second, the observed risk-taking behavior calls for a nuanced understanding of internal capital markets within BHCs and their role in amplifying or mitigating systemic risks. Regulators should consider the balance between enabling BHCs to provide internal liquidity support and preventing excessive risk-taking that could undermine financial stability.

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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. (1). The dependent variable is $\mathbf{1}_{InternalLoans}$ across all specifications. Column (1) is estimated over a minimal specification of Eq. (1) 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. (2). 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. (2). 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***	0.284**	0.144**	0.260***				
	(0.039)	(0.114)	(0.047)	(0.054)				
Internal Loans					2.400***	5.574***	1.801***	0.639***
					(0.557)	(1.711)	(0.279)	(0.120)
Bank Liquidity	0.683			0.510	0.685			0.872
	(0.539)			(0.436)	(0.539)			(0.626)
Demand Deposits		0.735		0.624		0.647		0.738
		(1.483)		(1.539)		(1.516)		(1.490)
HQLA			0.055	0.185			0.237	0.866
			(0.079)	(0.128)			(0.346)	(0.760)
Controls								
Tier 1 Capital Ratio	0.054**	0.024	0.054**	0.021	0.054**	0.023	0.053**	0.019
	(0.025)	(0.026)	(0.025)	(0.025)	(0.025)	(0.026)	(0.025)	(0.025)
Bank Size	0.292***	0.350***	0.281***	0.358***	0.292***	0.350***	0.284***	0.370***
	(0.074)	(0.101)	(0.073)	(0.102)	(0.074)	(0.101)	(0.072)	(0.102)
External Loans	–2.579*	–4.442**	–2.187	–4.843**	–2.573*	–4.433*	–2.217	–5.016**
	(1.467)	(2.142)	(1.453)	(2.177)	(1.471)	(2.149)	(1.447)	(2.173)
Fixed Effects								
BHC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,536	21,784	30,536	21,526	30,536	21,784	30,536	21,526
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. (2). 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 x 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. (2). 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. (4). The dependent variable 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. 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*	
	(1)	(2)	(3)	(4)	*(5)*	*(6)*
$\mathbf{1}_{InternalLoans}$	0.039***		0.028**		0.017***	
	(0.010)		(0.014)		(0.006)	
Internal Loans		0.295***		0.364***		0.056*
		(0.074)		(0.088)		(0.032)
Controls						
Asset Liquidity Ratio	5.165***	3.347***	1.241	0.738	–1.267**	–1.525***
	(1.090)	(0.896)	(1.088)	(1.008)	(0.548)	(0.552)
Tier 1 Capital Ratio	–2.340***	–2.907***	–4.361***	–3.804***	0.264	0.286
	(0.359)	(0.282)	(0.507)	(0.522)	(0.212)	(0.211)
Core Deposits	0.033***	0.010**	0.010	0.011	–0.008	–0.008
	(0.005)	(0.004)	(0.007)	(0.008)	(0.006)	(0.006)
Bank Size	0.161***	–1.048***	–0.157*	–0.167**	–0.339***	–0.318***
	(0.008)	(0.064)	(0.086)	(0.084)	(0.109)	(0.106)
External Loans	0.007*	0.009**	0.031***	0.035***	0.002	0.002
	(0.004)	(0.003)	(0.006)	(0.006)	(0.003)	(0.003)
Fixed Effects						
BHC	Yes	Yes	Yes	Yes	Yes	Yes
Borrower x Time	Yes	Yes	Yes	Yes	Yes	Yes
Observations	175,105	175,105	43,418	43,418	41,646	41,646
R-squared	0.48	0.48	0.72	0.72	0.79	0.79

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. (2). 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 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)	
$\Delta\widehat{Internal Loan}$				–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 12. Bank vs. Nonbank Internal Lending Allocations

This table reports output from Eq. (2), 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 13. Nonbank Internal Loan Allocations and Bank Performance

This table reports output from Eq. (2), 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)
$\mathbf{1}_{NonbankSubsidiary}$	–0.027**		0.053*		0.016*	
	(0.009)		(0.031)		(0.010)	
Nonbank Asset Ratio		–0.101***		0.038		0.045**
		(0.032)		(0.035)		(0.020)
$\mathbf{1}_{NonbankSubsidiary} \times \mathbf{1}_{InternalLoans}$	–0.014***		0.084**		0.022**	
	(0.002)		(0.037)		(0.010)	
Nonbank Asset Ratio $\times \mathbf{1}_{InternalLoans}$		–0.145***		0.119***		0.089***
		(0.038)		(0.040)		(0.026)
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 14. Internal Loans and Monetary Policy Transmission

This table reports output from Eq. (8), 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 the 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	
$\Delta log(Loans)$	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/Assets	Checking, savings, and smalltime deposits, scaled by total banking 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
Asset-side LMI	Asset-side liquidity of BHC used in the Liquidity Mismatch Index	Bai, Krishnamurthy, and Weymuller (2018)
Unused Commitments	Total Unused Commitments, scaled by BHC Assets	FR Y-9C
Letters of Credit	Notional Amount of Financial Standby Letters of Credit, scaled by BHC Total Assets	FR Y-9C
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
Post Basel 3	Set to one for 2011:Q1 to 2011:Q3 and zero for 2010:Q1 to 2010:Q3	
$\mathbf{1}_{NonbankSubsidiary}$	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 (log)	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

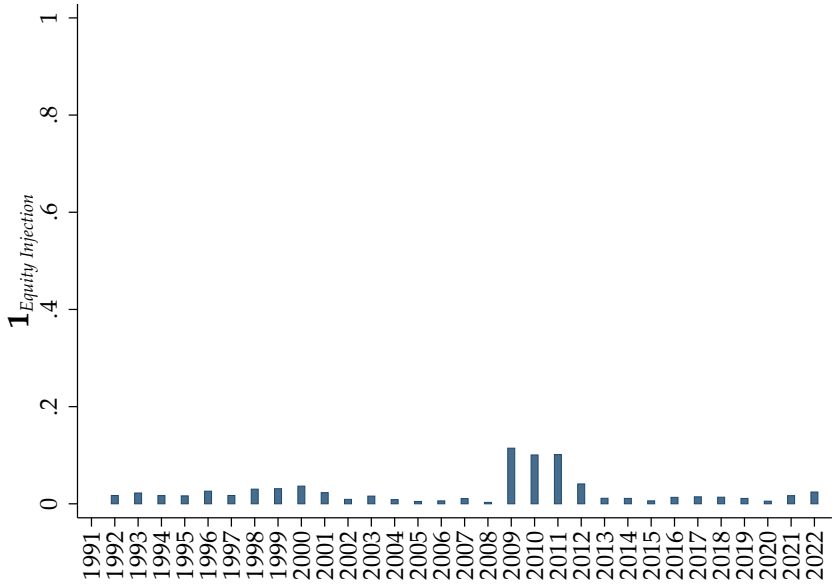


Figure B.1. Internal Equity Injection across BHCs. This plot depicts the share of commercial bank subsidiaries with an equity injections from the parent bank holding company, as reported in FR Y-9LP filings, averaged across each year in the sample. The y-axis is the annual cross-sectional average of 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.

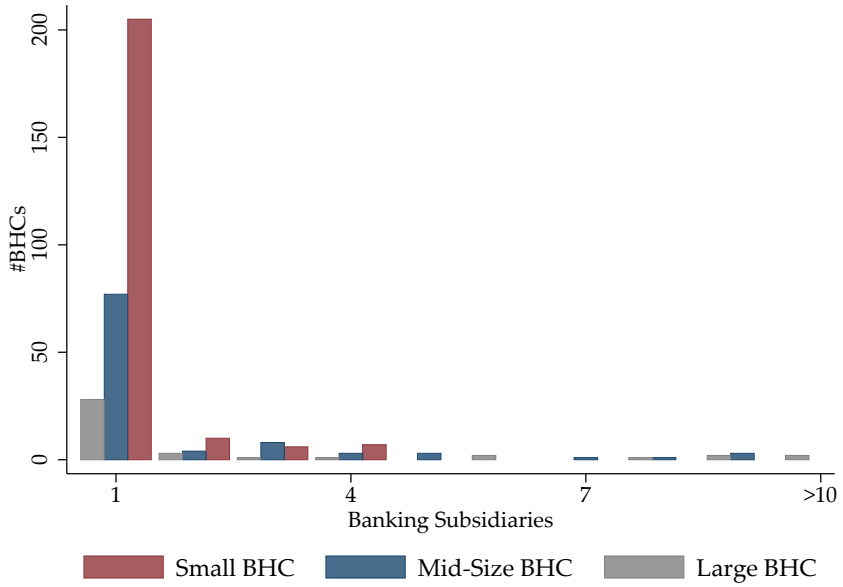


Figure B.2. Distribution of Banking Subsidiaries in the BHC Structure. This plot depicts the histogram of the number of banking subsidiaries within the BHC structure in our sample. The y-axis presents the number of BHCs corresponding to the number of subsidiaries depicted on the x-axis. The grey bars 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.

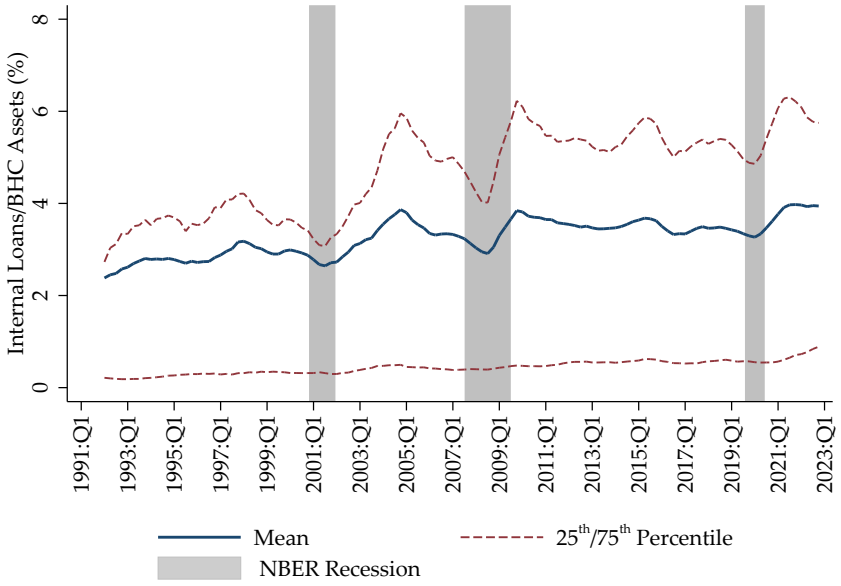


Figure B.3. The Intensity of Internal Lending. This figure depicts the quarterly evolution of the stock of internal loans from the parent bank holding company (Internal Loans to Bank) to its commercial bank subsidiaries, as reported in FR Y-9LP filings over the sample period. Panel A presents the average total quarterly lending to commercial bank subsidiaries of the BHC as a percentage of the BHC's total assets (in blue), along with the 25^{th} and 75^{th} percentile of the distribution (in red). The shaded bars represent the NBER quarterly recession indicators.

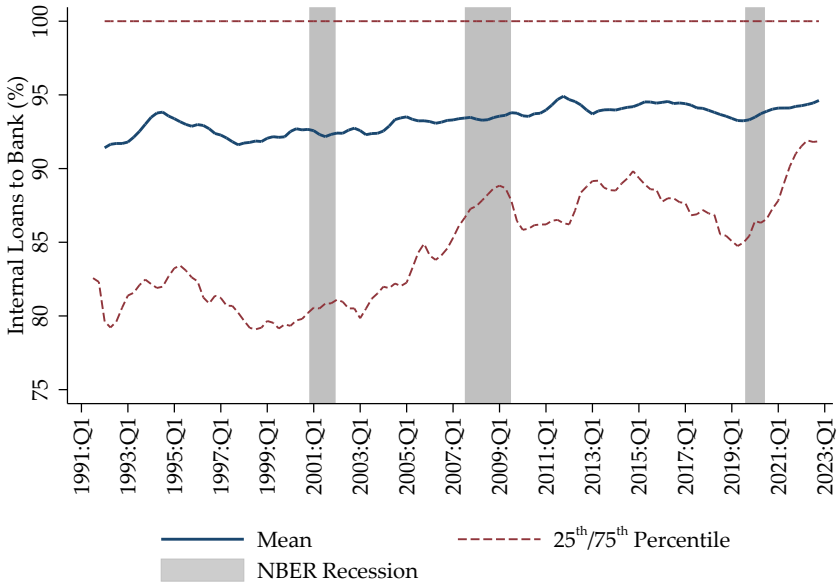


Figure B.4. The Share of Internal Lending to Bank Subsidiaries. This figure depicts quarterly distribution of commercial bank subsidiaries' share of total internal loans to both bank and nonbank subsidiaries in each quarter for the sample period of 1991:Q1 to 2023:Q1, for the full sample including BHCs which make no internal loans to their nonbank subsidiaries. The blue line represents the mean of this share across all BHCs in the quarter and the red line depicts the 25^{th} and 75^{th} percentile of its distribution. The shaded bars in both panels represent the NBER quarterly recession indicators.

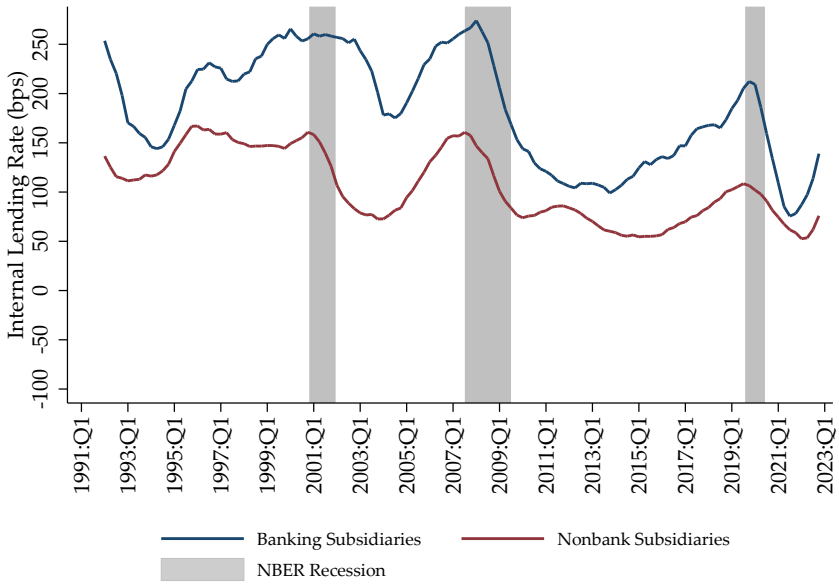


Figure B.5. Internal Loan Costs

Figure B.6. Cost of Internal Funding. This figure depicts the costs associated with internal lending (in basis points) to bank and nonbank subsidiaries of BHCs and the spread between them, averaged over all BHCs in each quarter over the sample of 1991:Q1 to 2023:Q1. The blue line denotes this imputed cost of internal loans for bank subsidiaries, while the red lien denotes the cost for nonbank subsidiaries.The shaded bars in both panels represent the NBER quarterly recession indicators.

Table B.1. Internal Lending and Bank Liquidity

This table reports output from the estimation of Eq. (1). The dependent variable is $\mathbf{1}_{InternalLoans}$ 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. Columns (1) and (2) include measures of bank-level liquidity and are estimated over 1991:Q1 through 2016:Q1. Column (3) includes a BHC-level liquidity measure and is estimated over 2003:Q1 through 2016:Q4. Column (4) includes liquidity measures at both levels and is estimated over 2003:Q1 through 2016:Q4. 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.

	$\mathbf{1}_{InternalLoans}$			
	(1)	(2)	(3)	(4)
Bank Liquidity				
HQLA	0.023***			0.008*
	(0.005)			(0.004)
Bank Liquidity		0.015***		0.010
		(0.001)		(0.011)
BHC Liquidity				
Asset-Side LMI			–0.014***	–0.013***
			(0.004)	(0.004)
Fixed Effects				
Credit Rating	Yes	Yes	Yes	Yes
BHC Characteristics	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes
Observations	19,094	19,094	11,001	11,001
Pseudo R-squared	0.237	0.238	0.180	0.194

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

Table B.2. Impact of Internal Loans on Loan Growth: BHC Size

This table reports output from the estimation of Eq. (2). 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) present the results on a restricted sample of the largest BHCs (with assets more than $50 billion). Columns (3) and (5) (alternately, (4) and (6)) present the results on the restricted sample of mid-sized BHCs (assets between $5 and $50 billion) and small BHCs (with assets less than $5 billion), respectively. 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	
	$100 \cdot \Delta log(Loans)$					
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbf{1}_{InternalLoans}$	0.436		0.157***		0.410*	
	(0.550)		(0.035)		(0.231)	
Internal Loans		8.367*		7.290***		6.435***
		(3.924)		(0.767)		(1.518)
Controls						
Asset Liquidity Ratio	43.851***	44.487***	10.000**	9.997**	7.026***	7.062***
	(12.015)	(12.001)	(4.129)	(4.128)	(2.337)	(2.337)
Tier 1 Capital Ratio	1.657***	1.651***	1.351***	1.342***	0.919***	0.919***
	(0.408)	(0.407)	(0.197)	(0.197)	(0.106)	(0.106)
Core Deposits	–1.006	–1.062	0.159	0.162	0.424***	0.423***
	(0.708)	(0.708)	(0.288)	(0.288)	(0.154)	(0.154)
Bank Size	–1.143	–1.204	–11.161***	–11.163***	–6.182***	–6.178***
	(1.538)	(1.542)	(1.644)	(1.641)	(1.030)	(1.029)
External Loans	–0.581	–0.543	–0.219	–0.209	–1.332***	–1.327***
	(0.800)	(0.795)	(0.369)	(0.369)	(0.197)	(0.197)
Fixed Effects						
BHC	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2449	2449	7988	7988	18460	18460
R-squared	0.344	0.344	0.417	0.417	0.448	0.448

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

Table B.3. Impact of Internal Loans on Loan Performance: BHC Size

This table reports output from the estimation of Eq. (2). The dependent variable is 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) present the results on a restricted sample of the largest BHCs (with assets more than \$50 billion). Columns (3) and (5) (alternately, (4) and (6)) present the results on the restricted sample of mid-sized BHCs (assets between \$5 and \$50 billion) and small BHCs (with assets less than \$5 billion), respectively. 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	
	$100 \cdot NPL$					
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbf{1}_{InternalLoans}$	0.317***		0.081***		0.065***	
	(0.116)		(0.018)		(0.020)	
Internal Loans		0.477		1.689***		0.306**
		(0.970)		(0.480)		(0.136)
Controls						
Asset Liquidity Ratio	1.062	1.231*	–1.861***	–1.900***	0.166	0.149
	(0.666)	(0.692)	(0.598)	(0.601)	(0.191)	(0.191)
Tier 1 Capital Ratio	–10.397**	–9.616*	7.852***	8.614***	2.562***	2.531***
	(4.915)	(4.906)	(1.907)	(1.993)	(0.545)	(0.544)
Core Deposits	–0.472***	–0.478***	–0.080***	–0.072***	0.036***	0.035***
	(0.088)	(0.088)	(0.026)	(0.026)	(0.010)	(0.010)
Bank Size	–9.331***	–9.194***	–0.041	–0.036	0.058***	0.058***
	(1.226)	(1.221)	(0.034)	(0.033)	(0.019)	(0.019)
External Loans	0.205***	0.222***	0.001	0.007	–0.026**	–0.027**
	(0.063)	(0.061)	(0.023)	(0.023)	(0.011)	(0.011)
Fixed Effects						
BHC	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,450	2,450	7,988	7,988	18460	18460
R-squared	0.72	0.72	0.79	0.79	0.62	0.62

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

Table B.4. 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.C.

	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.5. Impact of Internal Loans on Bank Performance: BHC Size

This table reports output from the estimation of Eq. (2). The dependent variable is *Return on Bank Assets*, scaled by a factor of 100 across all specifications. All variables are constructed as described in Appendix Table A.1. Columns (1) and (2) present the results on a restricted sample of the largest BHCs (with assets more than $50 billion). Columns (3) and (5) (alternately, (4) and (6)) present the results on the restricted sample of mid-sized BHCs (assets between $5 and $50 billion) and small BHCs (with assets less than $5 billion), respectively. 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·*Return on Bank Assets*					
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbf{1}_{InternalLoans}$	0.274		0.219***		0.140*	
	(0.207)		(0.046)		(0.078)	
Internal Loans		3.665***		4.160**		6.028**
		(1.338)		(2.028)		(2.370)
Controls						
Asset Liquidity Ratio	0.718	1.080	0.620	1.138	2.204***	2.251**
	(0.664)	(1.122)	(1.101)	(2.019)	(0.724)	(1.128)
Tier 1 Capital Ratio	-6.104	-2.585	-7.257***	-14.058**	-9.129***	-11.297***
	(4.196)	(6.639)	(2.669)	(6.199)	(2.111)	(2.765)
Core Deposits	-0.027	0.114	-0.009	0.212*	0.011	0.172**
	(0.046)	(0.105)	(0.051)	(0.110)	(0.027)	(0.069)
Bank Size	0.045	-0.122	-0.137**	-0.181	0.002	-0.199*
	(0.072)	(0.129)	(0.061)	(0.187)	(0.051)	(0.105)
External Loans	0.164**	0.242**	0.061	0.040	0.030	0.166*
	(0.080)	(0.096)	(0.065)	(0.131)	(0.049)	(0.089)
Fixed Effects						
BHC	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2420	2420	7874	7874	17941	17941
R-squared	0.038	0.130	0.017	0.121	0.012	0.110

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

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.