

# The Implications of Unrealized Losses for Banks

*By W. Blake Marsh and Brendan Laliberte*

Since the Federal Open Market Committee (FOMC) began tightening monetary policy in March 2022, interest rates have risen across the yield curve. As a result, borrowing costs have increased for firms and households. Commercial banks have been affected, too. After amassing securities during the pandemic, banks saw rising interest rates erode the value of their securities portfolios by nearly \$600 billion, or about 30 percent of their capital holdings.

Declines in the value of a bank's securities portfolio—known as “unrealized losses” since they do not affect income—may pose consequences for banks and borrowers alike. In some cases, declines in the valuation of securities holdings in response to interest rate changes mechanically reduce key regulatory capital and liquidity ratios. Further, should banks need to sell the securities to generate income when their valuations are low, the unrealized losses will become realized losses, eroding capital buffers and possibly threatening the solvency of the bank. Lower capital can reduce the willingness of banks to lend, as solvency concerns increase debt and equity costs. Ultimately, lower securities valuations can increase loan prices and reduce loan growth.

In this article, we investigate how recent interest rate changes and banks' associated unrealized losses have affected bank decision-making. We find that unrealized losses have reduced bank liquidity and capital,

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potentially dampening loan growth through four channels. First, unrealized losses can increase equity costs as investors' perceptions of financial health deteriorate. Second, deterioration of financial strength combined with increased liquidity needs can increase debt funding costs. These increased equity and debt funding costs are likely to be passed on to borrowers as higher interest rates, potentially reducing loan demand. Third, unrealized losses can also make banks more reluctant to sell securities, creating liquidity demand that could limit future loan supply. Lower loan demand due to higher prices and lower loan supply due to higher funding costs could reduce total loan growth. Fourth, unrealized losses can dampen merger and acquisition (M&A) activity because potential buyers may be reluctant to purchase a bank holding securities in a deep loss position. Reduced M&A activity can result in a less effective banking system to the extent that it allows inefficiently run banks to continue operating. In this way, a slowdown in M&A activity can result in poorly allocated, or reduced, aggregate lending.

These channels highlight that unrealized losses can affect all types of banks irrespective of size, regulatory treatment, or funding access. Some channels, such as public equity or debt costs, most obviously affect large banks. Indeed, we show that public banks have taken steps to mitigate the balance sheet effects of unrealized losses, likely because they are more subject to the disciplining effects of investors. However, smaller community and non-public banks can also be affected by unrealized losses due to funding covenants, limited access to alternative liquidity sources, and the ability to market themselves as acquisition targets.

Section I provides background on standard securities accounting and the key market and regulatory features that create frictions for banks holding unrealized losses. Section II examines recent trends in securities valuations and how they have affected bank balance sheets. Section III discusses potential ways that security valuations can broadly affect bank behaviors.

## **I. Accounting for Changes in the Market Value of Banks' Securities Portfolio**

Unrealized losses can influence bank behaviors due in part to the way banks report securities on their financial statements. Table 1 illustrates a basic balance sheet, highlighting the two broad types of

*Table 1*  
Bank Balance Sheet Basics

Total assets	Total liabilities and equity
Cash	Deposits
Loans	Issued debt
Investment securities	Total book equity
Held-to-maturity (amortized cost)	Common stock
Available-for-sale (market value)	Retained earnings
Other (including trading securities)	Accumulated other comprehensive income (AOCI)

securities: trading securities and investment securities. Trading securities are intended to generate short-term gains and typically make up a small share of a bank's total securities holdings. Trading securities are routinely purchased and sold and are reported at market value on the balance sheet. Changes in their market value are reported as income, which affects total book equity through the retained earnings account. Investment securities, on the other hand, make up most of a bank's securities holdings. These securities typically have longer holding periods, and changes in their value are reported on the balance sheet differently depending on the bank's investment intentions.

Investment securities are designated on the balance sheet as either "held to maturity" (HTM) or "available for sale" (AFS). As the name suggests, HTM securities are those the bank does not intend to sell but instead expects to hold until they fully mature. AFS securities, on the other hand, are securities that the bank intends to hold for some time but may sell before maturity. HTM securities are reported at amortized cost on the balance sheet, and changes in their market value do not affect total assets or book equity. Instead, the reported value of HTM securities changes as their underlying discount or premium amortizes over time. AFS securities, on the other hand, are reported at market value. Changes in the market value of AFS securities—that is unrealized gains or losses—are reported in book equity as part of the accumulated other comprehensive income (AOCI) account.<sup>1</sup> Therefore, as the market value of AFS securities rises (falls), assets and book equity also rise (fall).

Changes to the market value of AFS securities can also affect regulatory capital—a specialized equity measure defined by regulatory

accounting rules. Regulatory capital determines the minimum level of equity banks must hold to comply with regulatory rules. More specifically, advanced-approach banks—typically, very large banks—must report AOCI as part of regulatory capital. As is the case with book equity, this requirement causes regulatory capital to increase (decrease) as the market value of AFS securities rises (falls). Non-advanced-approach institutions—which are most banks—can opt out of this reporting requirement.<sup>2</sup> As a result, regulatory capital is typically unaffected by changes in the market value of securities.

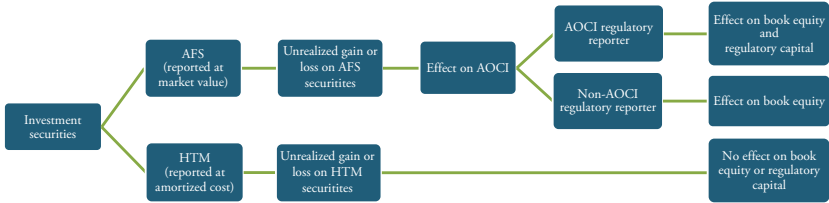
Figure 1 summarizes the effect of securities' unrealized gains and losses on both book equity and regulatory capital. As the figure shows, unrealized changes to the market value of HTM securities do not affect either assets, book equity, or regulatory capital. Instead, HTM securities are recorded at amortized cost on the balance sheet, and changes between reporting periods are due to changes in a security's amortized discount or premium.<sup>3</sup> Unrealized gains and losses on AFS securities affect total assets—because AFS securities are reported at market value—as well as book equity at all banks. Unrealized gains and losses also affect regulatory capital at large, advanced-approach banks through the AOCI account.

The dual classification system that differentiates AFS and HTM—and the system's treatment of unrealized gains and losses—is intended to make banks internalize the risk of interest rate changes affecting bank asset prices. HTM securities are intended to never be sold under any conditions. But banks may choose to sell AFS securities at any time, either to generate liquidity for other investment purposes or to realize gains that boost income. Thus, accounting rules that recognize unrealized gains and losses on securities in regulatory capital are designed to provide a more realistic picture of a bank's financial condition.

Importantly, banks are most likely to sell securities during times of stress, when both liquidity needs and borrowing costs are high. Banks that must sell securities at prices far below their fundamental values during times of stress might reduce credit availability or other intermediation activities, further hampering the real economy (Shleifer and Vishny 2010). Holding more capital against falling securities prices helps banks avoid solvency issues during downturns and increases the

Figure 1

Reporting Changes in the Market Value of Investment Securities Depends on Classifications and Regulatory Rules



Notes: Investment securities are part of total assets. Accumulated other comprehensive income (AOCI) records unrealized profits and losses on various financial transactions, including available-for-sale (AFS) securities. Unrealized gains and losses on held-to-maturity (HTM) securities are reported in notes on the balance sheet but are not reported on the balance sheet directly.

probability that the bank will continue to lend when credit demand is high but securities prices are low.

Although market value accounting is intended to more accurately represent the value of banks’ securities portfolios to investors and regulators, including market value changes in certain equity measures can also make bank capital more volatile (Barth, Landsman, and Wahlen 1995).<sup>4</sup> Capital volatility driven by changes in the market value of securities will require banks to hold larger equity buffers to ensure they do not fall below regulatory minimums when interest rates change.

In theory, banks can avoid equity volatility by reclassifying securities from AFS to HTM, which would leave equity measures unaffected. However, reclassification is generally restricted. Securities are classified upon acquisition and may not be reclassified due to changes in market conditions. Moreover, intentional and recurring sales of HTM securities are prohibited. Banks that do so may be forced to reclassify all current and future HTM securities as AFS. In this way, reclassifying securities is costly and encourages banks to accurately classify securities at acquisition.

In sum, unrealized losses affect bank balance sheets only because of accounting rules—that is, if securities were all reported at amortized cost, then unrealized losses would not affect securities reporting on the balance sheet. The argument against reporting unrealized losses on balance sheets is straightforward: if banks hold securities to maturity, then they will collect all the expected cash flows and the unrealized gain or loss will never be realized. Indeed, this is the rationale for reporting

HTM securities at amortized cost. However, if banks do not intend to hold the securities to maturity, recognizing the change in the securities' fair market value may more accurately represent a bank's financial health to regulators and investors.

## II. Recent Trends in Banks' Securities Portfolios

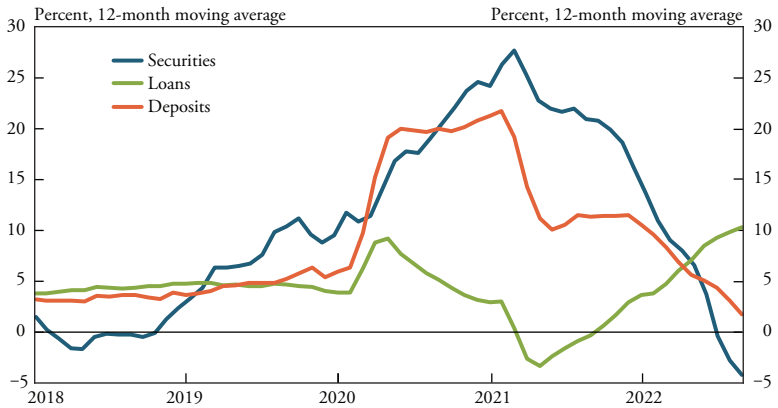
Bank balance sheets changed dramatically during the COVID-19 pandemic, making banks more vulnerable to rising interest rates. Chart 1 shows that deposits (orange line) increased rapidly at the onset of the pandemic, in part due to federal support programs that provided cash to businesses and consumers. Borrowers quickly increased their precautionary cash holdings by drawing down existing lines of credit, thereby increasing loan growth (green line) (Acharya and Steffen 2020). As the economy recovered, however, loan growth began to decline as firms and households, flush with cash, demanded fewer loans. Facing higher deposits and a dearth of safe investment options, banks began to rapidly accumulate securities (blue line).

Overall, banks have accumulated about \$2 trillion in new securities since the start of the pandemic, and securities now constitute about one-quarter of total assets at commercial banks, up from just over 20 percent at the end of 2019. Chart 2 shows that most of the securities acquired during the pandemic were agency mortgage-backed securities (MBS) and Treasury securities. These securities are frequently traded in deep secondary markets and are considered to have minimal credit risk: agency MBS are guaranteed by government-sponsored enterprises (GSEs), while Treasury securities are backed by the full faith and credit of the U.S. government. However, these securities are not free of interest rate risk—that is, the risk that valuations will drop sharply should market interest rates rise. As a result, a larger fixed-rate securities portfolio, even if it is composed of securities free of credit risk, makes bank balance sheets more sensitive to interest rate changes.

In addition to simply acquiring more securities, banks also purchased longer-maturity securities during the pandemic. Longer-maturity securities typically pay higher interest rates than shorter-term securities to compensate investors for risks such as inflation, the potential for rising rates, or, in the case of MBS, pre-payment risk. However, longer-maturity securities are also typically more sensitive to interest

Chart 1

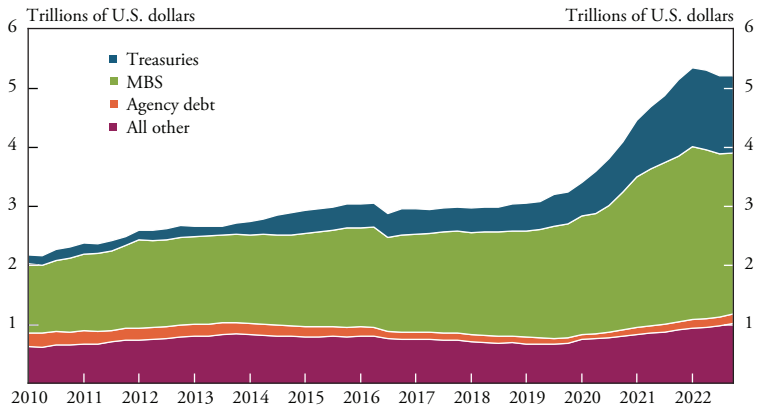
Banks Accumulated Securities as Deposits Swelled and Loan Growth Stagnated



Source: Board of Governors of the Federal Reserve System.

Chart 2

Most Securities Held by Banks Are Treasury or Agency MBS



Note: Chart shows total investment securities held by commercial banks measured at amortized cost.  
Source: FFIEC Call Reports.

rate changes than securities with shorter maturities, a concept known as duration risk.

Chart 3 shows that in their bid to increase asset yields, banks of all sizes increased the average maturity of their securities portfolios during the pandemic. Securities with maturity or repricing dates five or more years in the future climbed sharply at smaller community banks (orange line). Longer-maturity securities also increased materially at regional banks (green line), which already held more duration risk than their peers, and increased to a lesser degree at larger banks (blue line). More recently, shares of longer-duration securities have fallen toward pre-pandemic levels, but that decline likely represents lower valuations rather than a material reduction in duration risk.<sup>5</sup>

Larger shares of longer-maturity securities substantially increased duration risk for banks. Because these securities were purchased during the pandemic—when interest rates were near the effective lower bound and the Federal Reserve was purchasing both Treasury and agency MBS securities—their prices were near record highs when banks bought them. Subsequent monetary tightening and increasing interest rates have decreased the value of these securities, raising the likelihood that banks would incur losses in the future should they need to sell.

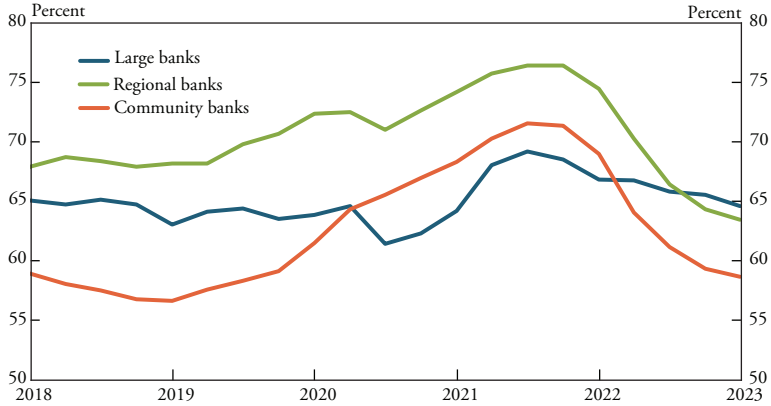
Indeed, Chart 4 shows that securities valuations fell precipitously as interest rates rose during 2022. By the end of 2022, unrealized losses on all securities were about 30 percent of aggregate Tier 1 bank capital. Unrealized losses on AFS securities, which affect book equity for all banks and regulatory capital for large banks, accounted for about 10 percent of Tier 1 capital in aggregate. These unrealized losses far exceed losses in recent past periods of rising rates (for example, during the policy tightening cycle from 2017 to 2019), increasing the chance that banks will have to curtail lending due to higher funding costs or binding capital constraints.

Notably, unrealized losses on HTM securities are larger than those on AFS securities, suggesting banks are strategically protecting their capital levels by increasing the relative level of HTM securities (Kim, Kim, and Ryan 2019). As noted previously, unrealized losses on AFS securities directly reduce regulatory capital for large banks, but changes in the value of HTM securities do not. Consequently, large banks have a greater



Chart 3

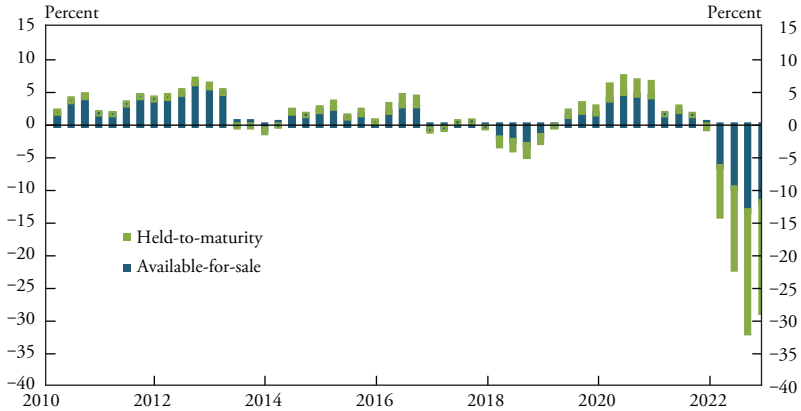
### Remaining Maturity of Commercial Bank Security Portfolios Has Increased



Notes: Chart shows share of securities, excluding non-pass-through MBS, with more than five years remaining until maturity or next repricing date. AFS securities are measured at fair value and reflect unrealized losses. Large banks have total assets over \$50 billion, regional banks have total assets between \$10 and \$50 billion, and community banks have total assets less than \$10 billion.  
Source: FFIEC Call Reports.

Chart 4

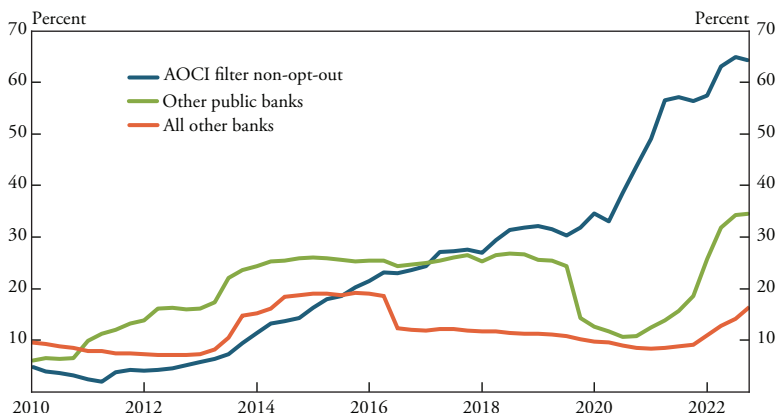
### Unrealized Losses on Securities Have Reached Record Highs



Note: Tier 1 capital has been adjusted to exclude unrealized changes in the value of AFS securities reported in AOCI.  
Source: FFIEC Call Reports.

Chart 5

## Banks Have Increasingly Relied on HTM Accounting to Minimize Equity Losses



Notes: AOCI reporters are banks that must report AFS market value changes recorded in AOCI as part of regulatory capital. Public banks are defined as those with any other bank holding company that has 1) a listed permanent company number (PERMCO) in the Federal Reserve Bank of New York's PERMCO-IDRSSD crosswalk, 2) a Committee on Uniform Securities Identification Procedures (CUSIP) number in the National Information Center's (NIC) bank structure database, or 3) are listed as Securities and Exchange Commission (SEC) filers in the NIC structure database. All other banks are banks that do not include AOCI in regulatory capital and are not public banks.

Source: FFIEC Call Reports.

incentive to classify securities as HTM on acquisition, minimizing the effect of changes in their market values on regulatory capital levels.

Chart 5 shows that banks have indeed classified more securities as HTM. Banks that cannot opt out of reporting AOCI in regulatory capital—necessarily, large banks (blue line)—now hold more than 60 percent of their total securities as HTM. Publicly traded banks that are not subject to reporting AOCI in regulatory capital also have incentives to classify securities as HTM, namely because unrealized losses on AFS securities reduce book equity for all banks. Debt and equity investors, such as Federal Home Loan Banks (FHLB), closely track book equity measures because investors' losses in the event of failure are lower if the bank holds more equity (see Berry 2022a, 2022b). More generally, better capitalized banks should receive more favorable equity and bond pricing because the risk of investor loss is lower. Consistent with these incentives, Chart 5 shows that HTM reporting at smaller public banks (green line) has been increasing since 2020. However, even small banks that do not have

public equity or debt issuances have increased HTM reporting (orange line) albeit to a much lesser extent than larger banks, possibly due to the negative effects of unrealized losses on FHLB borrowing.

Since the start of the pandemic, banks have sharply increased the size of their securities portfolios while also increasing the average maturity of their securities holdings. Many of these securities are issued or backed by the U.S. government, suggesting bank balance sheets have become safer from a credit risk perspective. However, longer-duration securities have made banks more exposed to interest rate risk.

### III. Potential Effects of Unrealized Losses on Bank Behavior

Unrealized losses have increased substantially since the pandemic due to both the sharp increase in interest rates and an increase in duration risk at banks. Whether these losses will influence bank behavior, though, is an open question. We assess the potential effects by discussing four channels through which unrealized losses might influence bank lending decisions: equity prices, debt prices, loan growth, and M&A activity.

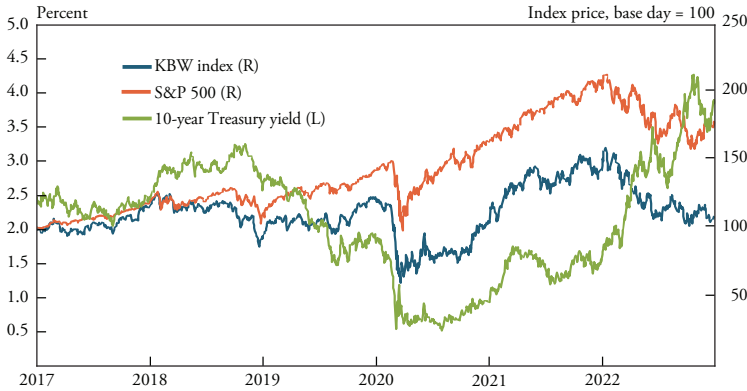
#### *Effect of unrealized losses on equity prices*

Unrealized losses can reduce the total market value of a bank, thereby lowering equity prices. Typically, when benchmark interest rates rise, deposit costs increase slowly, while loan rates increase more rapidly, allowing banks to generate higher earning margins (Driscoll and Judson 2013). By that logic, higher interest rates should typically boost bank equity prices because profitability is expected to improve. Chart 6 shows this is generally true historically, but the relationship broke down in 2022, when bank equity prices moved lower while interest rates rose. In particular, the chart shows the recent path of bank equity prices, as captured by the KBW bank equity index, against yields on 10-year Treasury securities—a common benchmark interest rate that has historically tracked unrealized gains and losses closely.<sup>6</sup> On net, bank equity prices (blue line) declined about 30 percent in 2022, while interest rates (green line) and unrealized losses climbed.

One reason for the more persistent declines in bank equities could be lower asset valuations resulting from unrealized losses. Declines in

## Chart 6

## Bank Equity Prices Fell More Sharply as Interest Rates Rose



Note: Data are through December 13, 2022.  
Source: Bloomberg.

securities prices lower total firm value, and market equity prices typically decline in turn. Lower valuations also reduce bank liquidity by reducing the amount of cash that can be raised in a sale or reducing the amount of collateral that can be pledged in a repo transaction. This makes the bank riskier, all else equal, and should raise the cost of equity. As costs rise, banks will have to issue a greater number of shares to generate the same level of new equity should the bank need to recapitalize itself.

### *Effect of unrealized losses on debt costs*

Lower securities prices increase the risk of losses to holders of bank debt should the bank be forced to liquidate when asset prices are low.<sup>7</sup> Declining securities prices make banks more reluctant to sell securities at a loss, increasing demand for debt funding at banks as unrealized losses rise. Lower securities valuations also provide less collateral at market value for banks to use when raising secured funding, possibly enhancing liquidity strains. Debt investors will require a higher return to offset both increased insolvency risk and greater funding demand, thereby increasing interest rates on bank debt.<sup>8</sup>

Chart 7 shows interest rate spreads on bank debt compared with similarly rated corporate debt issued by non-financial firms. Both

higher-rated (blue line) and lower-rated (green line) investment-grade banks have seen their debt funding costs rise in 2022 relative to the cost of funding at similarly rated non-financial firms. Interest rate spreads at higher-rated banks have increased more than 20 basis points above those of high quality, non-financial firms, while interest rates at lower-rated investment-grade banks have peaked more than 60 basis points above similarly rated non-financial firms. Notably, the increase in interest rates in 2022 has been associated with a widening gap between spreads on the lower-rated investment-grade banks and their higher-rated peers, possibly reflecting increased liquidity and credit risks at lower-rated banks.

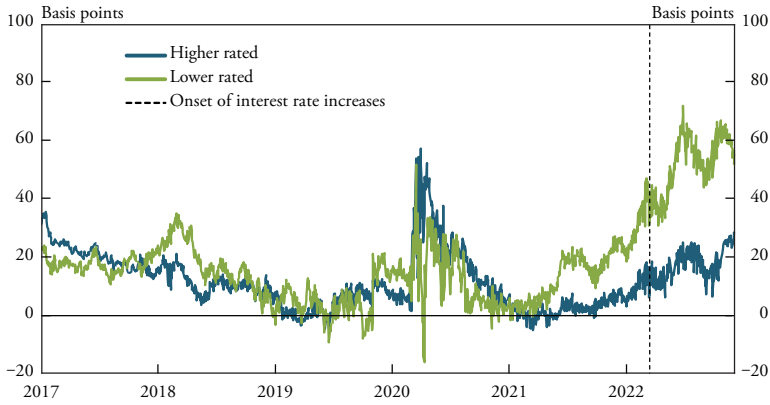
### *Effect of unrealized losses on loan growth*

Although lower securities prices alone do not imply any effect on lending, they may have indirect consequences on loan growth through lower equity and bond prices. For example, lower securities prices may make a bank reluctant to sell their securities (and thus realize the unrealized loss), forcing them to make fewer new loans or raise external funding to accommodate new loan growth. If banks opt to raise new external funding to support such a balance sheet expansion, expenses will increase as liabilities expand. New lending that increases the size of the balance sheet may also require banks to hold additional capital to meet regulatory minimums at a larger asset size, increasing equity funding demand. Due to these potential costs, banks may elect to slow loan growth rather than increase their expenses and capital buffers.

On average, loan growth in 2022 was robust, implying unrealized losses did not constrain overall lending in any meaningful way. However, across all banks, the share of unrealized losses is correlated with slower loan growth, suggesting that banks with fewer unrealized losses expanded loan growth more than their peers with more unrealized losses. Indeed, Chart 8 shows that unrealized losses had a negative correlation with loan growth during the last year. The horizontal axis shows the average ratio of unrealized losses on AFS securities to Tier 1 capital based on percentiles. The vertical axis shows average loan growth for banks with losses to Tier 1 capital in those percentile bins. Although this correlation does not necessarily imply that unrealized losses dampened lending, other researchers have found similar relation-

Chart 7

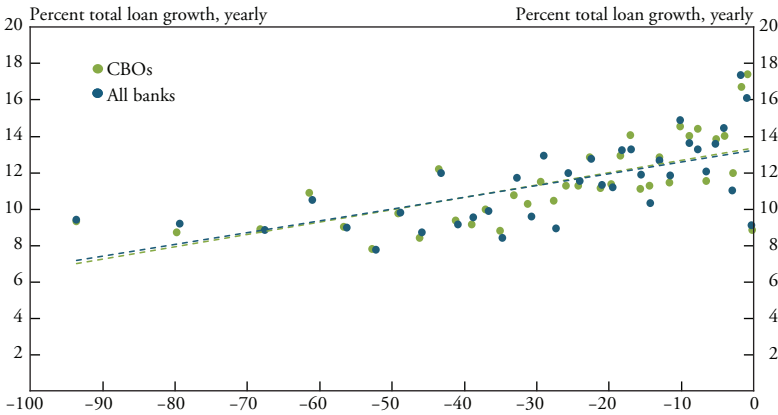
Bank to Non-Financial Firm Debt Spreads Have Increased



Notes: “Higher rated” refers to bank bonds rated between AA+ and A-. “Lower rated” refers to bank bonds rated between BBB+ and BBB-. Data are through Dec 9, 2022.  
Source: Bloomberg.

Chart 8

Average Loan Growth Is Lower for Banks with Larger Unrealized Losses



Note: Chart shows average of percentiles for unrealized AFS losses to Tier 1 capital (less the numerator for AOCI filter removed banks) on the x-axis and average loan growth by AFS loss bin on the y-axis.  
Sources: FFIEC Call Reports and authors’ calculations.

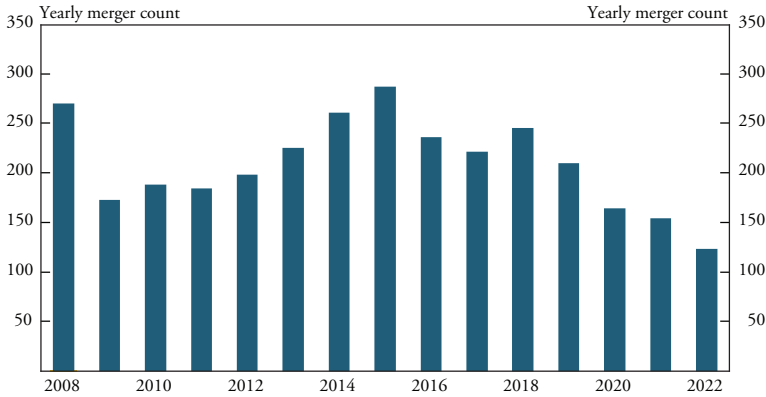
ships between mark-to-market losses and lending (see, for example, De Marco 2019).

### *Effect of unrealized losses on mergers and acquisitions*

Unrealized losses could also reduce M&A activity through two channels. First, because unrealized losses reduce firm value, they are also likely to reduce the premiums paid by acquiring institutions. These lower premiums could, in turn, reduce the number of banks available for sale. Sellers will be less likely to solicit offers if they believe that asset prices are temporarily depressed or if they feel they can hold their securities to maturity and realize interest income that potential buyers may be overly discounting. Second, potential buyers may be wary of institutions with large unrealized losses because they increase bank liquidity and default risk. In other words, investors may be reluctant to purchase institutions with large unrealized losses if they are concerned that those losses might be realized in the future.

Recent commentary from bankers suggests that unrealized losses have indeed depressed M&A activity (Rocha 2022). Chart 9 shows that unassisted merger activity has fallen considerably since 2020 compared with annual averages since 2008. Moreover, the trend seems to be worsening: merger activity in 2022 fell about 20 percent compared with 2020 and more than 40 percent compared with pre-pandemic averages.

Overall, unrealized losses reduce the value of banks' assets and erode their capital levels. Higher bank risk can lead to higher equity and debt funding costs and lower profitability. Increased riskiness can encourage banks to limit their balance sheet growth, possibly by reducing the amount of new lending. Because both asset growth and profitability can be strained when risk is high, the ability of a bank to market itself to potential buyers will also be impaired. Reduced merger activity can increase banking system inefficiencies, leading to less productive lending by banks and less efficient economic investment.

*Chart 9***Commercial Bank Mergers Slowed in 2022**

Note: Chart shows number of banks, thrifts, and holding companies involved in mergers that did not receive FDIC assistance per year.

Source: National Information Center.

## Conclusion

Rising interest rates have reduced asset prices substantially in the last year, including prices of securities held on bank balance sheets. Unrealized losses reduce a bank's total value and may negatively influence capital and other financial ratios, with broader implications for banks and the economy.

We discuss four ways that declining securities valuations may influence bank behavior. First, higher unrealized losses threaten the solvency of the bank, increasing firm risk and driving up equity funding costs. Second, the inability or reluctance of banks to sell securities in loss positions can increase debt usage, further raising funding costs. Debt investors can also drive up funding costs as they demand higher spreads to compensate for increased insolvency risk. Third, as funding costs increase, banks may raise the cost of lending or tighten lending standards because they are reluctant to sell securities to generate loanable funds. And fourth, banks with large unrealized losses may be reluctant to market themselves for acquisition if they believe underwater securities have temporarily depressed offer prices. Similarly, bank buyers may be reluctant to engage in acquisitions if they are wary of the risks underwater securities pose to acquisition targets.



Our analysis has implications for both monetary policymakers and bank regulators. As unrealized losses increase, lending constraints can tighten, reducing economic growth—and potentially motivating monetary policymakers to adjust their policy stance. Bank regulators, on the other hand, may face growing concerns about bank risk as interest rates rise. Current accounting practices may not fully account for those risks, suggesting regulators may need to reassess how interest rate risk is publicly disclosed. Accounting rules that properly recognize interest rate risk may better align bank decisions with both shareholder and regulatory goals, ensuring greater financial system stability in the process.

## Endnotes

<sup>1</sup>More technically, the unrealized gain or loss is the difference between a security's market value and its amortized cost. That is, the unrealized gain or loss accounts for changes in a security's market value after amortizing any premiums or discounts.

<sup>2</sup>Advanced-approach banks are those that are subsidiaries of global systemically important bank holding companies or subsidiaries of other advanced-approach institutions, use advanced-approach regulations to calculate regulatory capital, or are considered Category II institutions for systemic risk purposes. See Federal Financial Institutions Examination Council (2022) for additional details. Less than 1 percent of banks report AOCI as part of regulatory capital.

<sup>3</sup>Current expected credit losses (CECL) accounting rules, which banks will broadly adopt in 2023, require periodic assessments of fair value losses on HTM securities due to impairment. If an HTM security's fair value declines below amortized cost due primarily to firm-specific credit factors, the unrealized loss is reported in retained earnings, reducing book equity.

<sup>4</sup>Market value accounting also has potential drawbacks, including encouraging asset sales should prices fall below fundamental values. Commentors have pointed to market value accounting as a proximate cause of the decline in asset values during the global financial crisis. For a discussion of that debate, see Laux and Leuz (2010).

<sup>5</sup>The breakdown of securities by maturity date is only available at fair value for AFS securities. This means that changes in the share of securities with maturity greater than five years can be related to both shifts in the portfolio to shorter-maturity securities or changes in market value due to interest rate changes. Given that the amortized cost of securities only fell slightly in 2022, as shown in Chart 2, lower market prices are likely driving the decline in the share of securities maturing in five or more years, shown near the tail end of the series in Chart 3. Similarly, the pandemic-era increase could be due to securities held prior to 2020 repricing higher as rates fell.

<sup>6</sup>The correlation between the 10-year Treasury rate and a weekly series of unrealized gains and losses from the Federal Reserve's H.8 release was 0.92 between 2018 and March 2022, when the series was discontinued.

<sup>7</sup>Bond holders typically receive more protections should a bank fail than equity investors. However, losses are possible for debt holders should a bank fall into receivership.

<sup>8</sup>The Federal Reserve's Bank Term Funding Program (BTFP), introduced on March 12, 2023, has the potential to mitigate some of these negative effects by allowing participants to borrow against their security holdings at par value, alleviating the need for realized losses via sales and improving liquidity by boosting collateral value (Board of Governors of the Federal Reserve System 2023).

Although this facility is likely to decrease some of the negative effects discussed here, particularly in regard to liquidity, it is unlikely to fully offset all of the channels discussed.

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