FEDERAL RESERVE BANK OF KANSAS CITY | 2Q 2023

Bank Capital ANALYSIS

A horizontal comparison of capital adequacy

Bank Capital Analysis Semiannual Update

By Sabrina Pellerin

November 15, 2023

The Bank Capital Analysis provides a horizontal comparison of capital adequacy among banking organizations of varying size and complexity.

While banks of all size groups entered the pandemic with stronger capital ratios than prior to the 2007-2008 financial crisis, the trend in leverage ratios at the largest banks had started flattening and even declining prior to the pandemic. Chart 1 shows leverage capital trends over time for U.S. banking organizations. Balance sheet growth stemming from pandemic policy responses put immediate downward pressure on the weighted average tier 1 leverage ratio for all U.S. banking groups, though the ratio has sustained an increasing trend across community and regional banks and has remained flat for large banks since year-end 2021. U.S. G-SIBs' experienced a more recent increase in its weighted average tier 1 leverage ratio, increasing 41 basis points year-over-year, to 7.11 percent as of year-end 2022, but remains below leverage capital ratios for large (8.97 percent), regional (9.49 percent) and community (10.44 percent) banking organizations, as shown in Table 1.

As of June 30, 2023, the weighted average supplementary leverage ratio (SLR), also known as the Basel III leverage ratio, for U.S. G-SIBs increased 7 basis points to 6.01 percent since year-end 2022 (Table 1).[1] The trend has been increasing since reaching a low of 5.59 percent in the first half of 2022 (Chart 1). The weighted average Basel III leverage ratio across foreign G-SIBs declined over this period and remains lower than that of U.S. GSIBs with the exception of Asian GSIBs (Table 1). For additional analysis on factors driving changes in the SLR, see the Supplement to this document.

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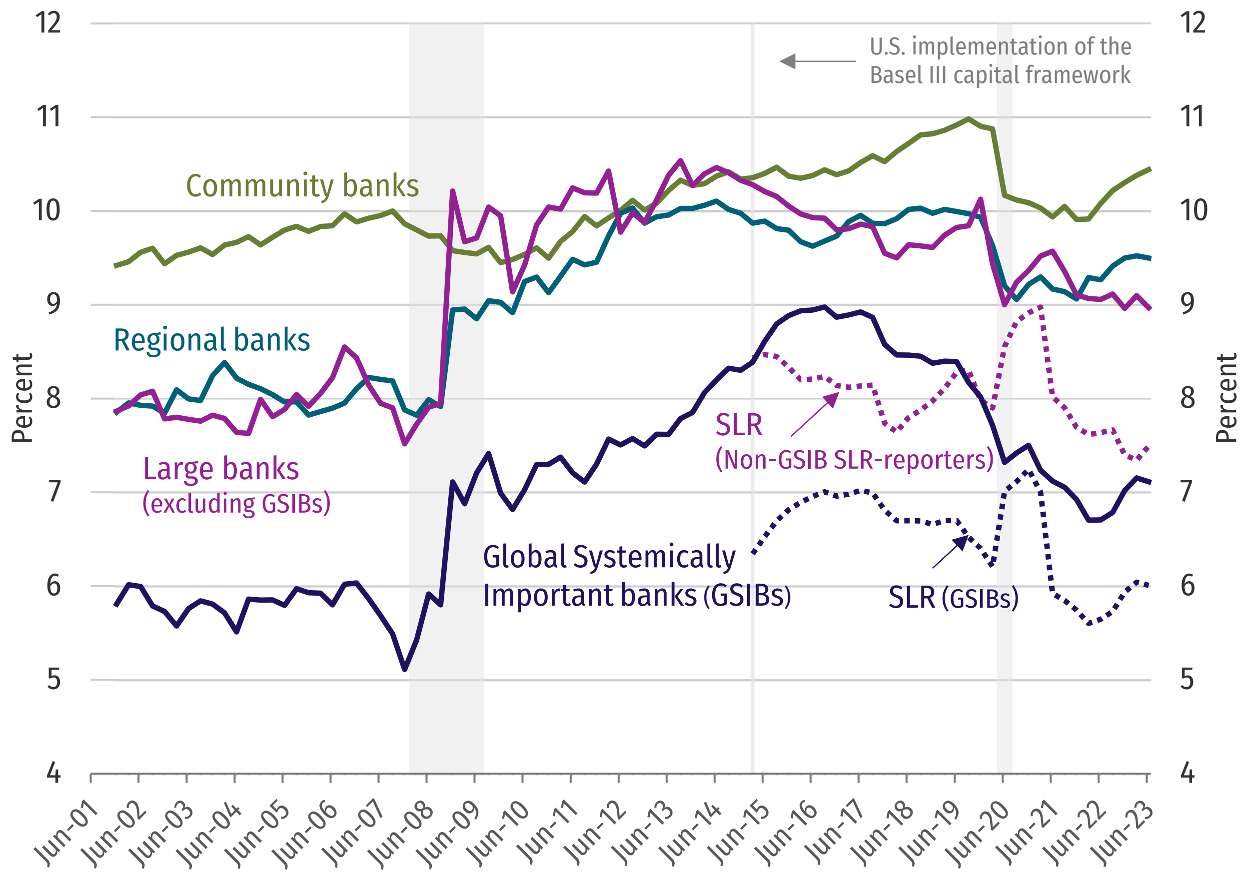
[1] Total leverage exposure, the denominator of the SLR, includes certain off-balance sheet exposures in addition to on-balance sheet assets. The tier 1 leverage ratio does not include off-balance sheet items, which are negligible for all but the largest banking organizations. As such, the SLR can also be compared to the tier 1 leverage ratio for smaller banking organizations. For more information on the Bank Capital Analysis, see: [Understanding the Bank Capital Analysis - Federal Reserve Bank of Kansas City (kansascityfed.org).](kansascityfed.org)

Chart 1
SLR and Tier 1 Leverage Ratio
U.S. banking organizations by supervisory portfolio group (% weighted average)



Notes: Tier 1 capital as a percent of total leverage exposure (for SLR) and as a percent of average total assets (for Tier 1 Leverage ratio). SLR reported only by banking organizations that generally have assets greater than $250 billion or on-balance sheet foreign exposures above $10 billion. Portfolio groups are established by the federal banking agencies and reflect the group banking organizations were in as of August 29, 2023.
Sources: Federal Reserve Y-9C Reports, FFIEC Call Reports, and S&P Global Market Intelligence LLC.

Table 1
Capitalization Ratios
U.S. Global Systemically Important Banks (G-SIBs) and Large, Regional, and Community Banking Organizations[i]

	Tier 1 Capital[ii] ($Billions)	Total Assets[iii] ($Billions)	Risk-Weighted Assets[iv] ($Billions)	Leverage Exposure[v] ($Billions)	Tier 1 Risk-Based Capital Ratio[vi] (Percent)	Tier 1 Leverage Ratio[v] (Percent)	SLR[v] (Percent)	Goodwill and Other Intangibles[vii] ($Billions)	Deferred Tax Assets[viii] ($Billions)	Price-to-Book Ratio[ix]	Price-to-Adjusted Tangible Book Ratio[ix]
U.S. G-SIBs											
Bank of America Corporation	219	3,123	1,639	3,642	13.33	7.05	6.00	71	14	0.90	1.35
Bank of New York Mellon Corporation	23	430	164	326	14.04	5.69	7.04	19	0	0.96	2.08
Citigroup Inc.	176	2,424	1,234	2,944	14.24	7.23	5.97	24	29	0.47	0.66
Goldman Sachs Group, Inc.	109	1,571	684	1,955	15.90	6.99	5.56	8	6	1.01	1.17
JPMorgan Chase & Co.	263	3,868	1,707	4,493	15.38	6.92	5.84	56	6	1.48	1.90
Morgan Stanley	78	1,165	450	1,419	17.44	6.74	5.53	24	2	1.55	2.17
State Street Corporation	15	295	114	241	13.57	5.81	6.43	9	1	1.06	1.95
Wells Fargo & Company	153	1,876	1,251	2,218	12.25	8.28	6.91	28	0	0.97	1.18
U.S. G-SIBs ($ Total, % Weighted Average)	**1,036**	**14,753**	**7,242**	**17,236**	**14.30**	**7.11**	**6.01**	**239**	**61**	**0.99**	**1.62**
European and Canadian G-SIBs											
Banco Santander (Spain)	94	1,944	689	1,961	13.70		4.79	21	33	0.59	1.27
Barclays (UK)	77	1,969	428	1,504	17.91		5.10	11	9	0.40	0.57
BNP Paribas (France)	118	2,916	761	2,626	15.53		4.50	10	6	0.63	0.73
Crédit Agricole Group (France)	122	2,619	650	2,173	18.81		5.58	21	10	NA	NA
Deutsche Bank (Germany)	63	1,420	392	1,349	16.08		4.70	8	9	0.31	0.42
Group BPCE (France)	77	1,646	503	1,520	15.22		5.03	6	6	NA	NA
HSBC (UK)	146	3,041	860	2,498	16.96		5.80	12	10	0.95	1.09
ING Bank (Netherlands)	60	1,124	353	1,235	17.12		4.89	1	2	0.88	0.93
Royal Bank of Canada (Canada)	69	1,431	445	1,628	15.39		4.20	14	6	1.74	2.10
Société Générale (France)	67	1,723	420	1,589	15.84		4.19	10	5	0.33	0.42
Standard Chartered (UK)	40	839	249	845	16.21		4.80	6	1	0.57	0.69
Toronto Dominion (Canada)	71	1,421	414	1,561	17.22		4.60	16	5	1.57	2.15
UBS (Switzerland)	93	1,679	557	1,678	16.76		5.56	8	10	0.75	0.94
UniCredit (Italy)	60	921	322	1,022	18.59		5.76	2	13	0.68	0.90
European and Canadian G-SIBs ($ Total, % Weighted Average)	**1,209**	**25,233**	**7,285**	**23,846**	**16.59**		**5.07**	**147**	**126**	**0.65**	**0.92**
Asian G-SIBs											
Agricultural Bank of China Limited (China)	372	5,244	2,997	5,479	12.42		6.80	4	22	0.44	0.48
Bank of China Limited (China)	339	4,286	2,503	4,591	13.56		7.39	4	9	0.40	0.42
China Construction Bank (China)	404	5,275	3,016	5,531	13.39		7.30	3	17	0.42	0.44
Industrial and Commercial Bank of China (China)	490	6,021	3,343	6,333	14.67		7.74	4	15	0.43	0.45
Mitsubishi UFJ FG (Japan; JPY, Local GAAP)	111	2,680	895	2,184	12.37		5.07	10	2	0.71	0.78
Mizuho FG (Japan; JPY, Local GAAP)	72	1,841	511	1,624	14.00		4.40	4	2	0.59	0.65
Sumitomo Mitsui FG (Japan; JPY, Local GAAP)	86	1,969	556	1,685	15.40		5.07	6	1	0.62	0.67
Asian G-SIBs ($ Total, % Weighted Average)	**1,874**	**27,316**	**13,821**	**27,428**	**13.56**		**6.83**	**36**	**68**	**0.44**	**0.48**
U.S. banking organizations by size group ($ Total, % Weighted Average)											
G-SIBs	1,036	14,753	7,242	17,236	14.30	7.11	6.01	239	61	0.99	1.62
LBOs[x] (>$100B, excluding GSIBs)	397	4,505	3,429		11.58	8.97	7.49	119	34		
RBOs ($10B - $100B)	265	2,832	2,141		12.40	9.49		67	5		
CBOs (<$10B)	285	2,746	1,631		13.38	10.44		18	14		

Sources: Federal Reserve Y-9C Reports, FFIEC Call Reports, FFIEC 101 Reports, and S&P Global Market Intelligence LLC.

[i] G-SIBs: The Financial Stability Board (FSB) publishes the list of Global Systemically Important Banks (G-SIBs) each November. The June 30, 2023, Bank Capital Analysis uses the list of G-SIBs released on November 21, 2022. The list included eight U.S. banking organizations and 22 non-U.S. organizations and is available on the FSB's website: www.fsb.org, but the BCA table excludes Credit Suisse, which failed on March 19, 2023, and was subsequently acquired by existing foreign GSIB, UBS. Note that the other groups of U.S. banks reflect the supervisory portfolios of the federal banking agencies as of August 29, 2023. Data sources: FR Y-9C and S&P Global Market Intelligence LLC for U.S. G-SIBs and S&P Global Market Intelligence LLC for foreign G-SIBs. Large Banking Organizations (LBO): Banking organizations greater than $100 billion, excluding G-SIBs and subsidiaries of G-SIBs and non-U.S. banks. There are 16 bank holding companies included in the LBO group. Data source: FR Y-9C. Regional Banking Organizations (RBO): Generally, banking organizations between $10 and $100 billion, excluding subsidiaries of G-SIBs, non-U.S. banks and LBOs. There are 97 bank holding companies and four depository institutions with no holding company included in the RBO group. Data source: FR Y-9C (FFIEC Call Report for RBOs with no holding company). Community Banking Organizations (CBO): Banking organizations less than $10 billion, excluding subsidiaries of G-SIBs, non-U.S. banks, LBOs and RBOs. There are 3,843 depository institutions included in the CBO group. Data source: FFIEC Call Report, as banking organizations less than $3 billion in assets do not report the FR Y-9C.

[ii] Tier 1 capital is common equity capital less goodwill, certain other intangible assets, disallowed deferred tax assets (DTAs), plus additional qualifying tier 1 capital components. Advanced approaches (Category I and II) banking organizations, generally those above $700 billion in assets, must include most effects of accumulated other comprehensive income (AOCI), such as unrealized gains and losses on available-for-sale securities, in tier 1 capital, while non-advanced approaches organizations may neutralize the effects of most components of AOCI in tier 1 capital. Tier 1 capital is the numerator of the Tier 1 Risk-Based Capital Ratio, which uses risk-weighted assets (RWA) in the denominator, and of the Tier 1 Leverage and SLR. Note that regulatory capital measures are based on principles agreed to by the Basel Committee on Banking Supervision (BCBS) and implemented by regulators in member countries. In the U.S., capital requirements are established by the three Federal banking agencies. U.S. regulations include standardized approaches and advanced approaches. The requirements for Board-regulated institutions are in 12 CFR 217. The general phase-in period for the capital rules in the U.S. was 2014-2018. The phase-in period may differ for non-U.S. G-SIBs. The regulatory capital data for non-U.S. G-SIBs may be transitional or fully phased-in, depending upon data availability.

[iii] Total assets as reported in regulatory financial statements, which are subject to jurisdictional accounting standards.

[iv] In the U.S., advanced approaches banks calculate RWA and risk-based ratios using the standardized and advanced approaches and use the lower of the two ratios (the higher RWA amount).

[v] Leverage Ratios and Leverage Exposure: In the U.S., but not in other BCBS member countries, all banking organizations must report the Tier 1 Leverage Ratio (tier 1 capital/average assets for the leverage ratio). U.S. Category I, II and III banking organizations must also calculate the SLR, known outside the U.S. as the Basel III Leverage Ratio. The minimum required Basel III Leverage Ratio is 3 percent for G-SIBs and Category I-III organizations, and the BCBS leverage framework requires a buffer above the minimum Basel III Leverage Ratio for G-SIBs. In the U.S., the buffer, referred to as the enhanced SLR, is 2 percentage points for the holding company and 3 percentage points for the insured depository institution. The denominator of the SLR, called total leverage exposure, is a broader measure than the denominator for the Tier 1 Leverage Ratio. Total leverage exposure adjusts regulatory balance sheet assets for derivatives exposure, securities financing exposure and commitments. All G-SIBs report total leverage exposure using the same reporting form (Pillar 3 Report). U.S. G-SIBs report the SLR ratio in the FR Y-9C and the SLR details in the FFIEC 101 report. S&P Global Market Intelligence LLC reports the fully phased-in Basel III leverage ratio. In response to the COVID-19 pandemic, SLR-reporting U.S. banking organizations were temporarily permitted to exclude on-balance sheet amounts of U.S. Treasury securities and deposits at Federal Reserve Banks from the calculation of leverage exposure, the denominator of the SLR, starting with June 30, 2020 financials through March 31, 2021 (see Board of Governors' April 14, 2020 Interim Final Rule available here). Jurisdictions in other countries also temporarily permitted the exclusion of central bank deposits from the Basel III leverage ratio, but the exclusion is not reported similarly across foreign G-SIBs and the effective dates differ. More detail is available here.

[vi] This ratio measures tier 1 capital to RWA.

[vii] Goodwill and other intangibles, such as deposit intangibles, purchased credit card relationships and nonmortgage servicing assets.

[viii] DTAs are the amounts by which taxes payable in future periods may be decreased due to temporary timing differences. DTAs may also include carryforwards of unused tax losses and carryforward of unused tax credits and are net of any valuation allowance.

[ix] Median price-to-book ratios and price-to-adjusted book ratios are used instead of averages for comparative groups. The price-to-book ratio is price as a percent of book value per share. Book value is calculated using financial period end common equity and common shares outstanding values. The price-to-adjusted tangible book ratio is calculated using financial period end tangible common equity (common equity is adjusted for goodwill, other intangibles and DTAs) and common shares outstanding values. Price-to-book ratios for the Chinese G-SIBs reflect H-shares. Data are not available for the Credit Agricole Group and Group BPCE.

[x] The SLR reported for the LBO group is the weighted average SLR for five of the 16 LBOs (U.S. Bancorp, The PNC Financial Services Group, Inc., Capital One Financial Corporation, Truist Financial Corporation, and Northern Trust Corporation) that are required to report the SLR.

Bank Capital Analysis: *Supplemental*

A horizontal comparison of capital adequacy

This supplement to the Bank Capital Analysis Report provides additional data and insights on factors influencing capital adequacy, such as changes to regulatory requirements and shareholder distributions.

- In the first half of 2020, as the impact of the COVID-19 pandemic drove unemployment rates to record highs and created widespread economic instability, the Federal Reserve and U.S. government took numerous emergency actions to support continued market functioning and provide relief to those affected by the pandemic. As a result of these policies and a flight to quality, deposits surged, and bank balance sheets grew rapidly – predominantly in liquid assets.
- Asset growth slowed to 2.9 percent year-over-year (YoY) as of June 30, 2023, across all banking organizations, with GSIBs experiencing a 0.1 percent YoY increase in assets and non-GSIBs increasing assets by 7.2 percent YoY.[2] Bank balance sheets remain inflated, collectively having grown 31.6 percent since year-end 2019, but the composition has changed as conditions have evolved.
    - In 2020, following the onset of the COVID-19 pandemic, the largest banks experienced most of their asset growth in cash held as reserves and in U.S. Treasury securities; while community and regional banking organizations had most of their growth in small business loans tied to the Paycheck Protection Program (PPP).
    - In 2021, banks across all portfolio groups grew their securities portfolios as PPP loans were forgiven and loan demand remained weak.
    - Over the last year ending June 30, 2023, higher interest rates and stronger loan demand led to declining securities growth (-4.8 percent YoY). Banks used excess cash built up in 2020 and increased borrowings (60.2 percent YoY) to fund loan growth (11.3 percent YoY) as deposits declined (-0.49 percent YoY), reversing trends seen early in the pandemic.
    - Since year-end 2019, community, regional and large banking organizations (CBOs, RBOs and LBOs, respectively) have experienced the largest percentage of their asset growth ($2.6 trillion) in loans (64.1 percent), followed by securities (24.1 percent). GSIBs' asset growth since year-end 2019 ($3.0 trillion) is mostly in cash (25.0 percent, 67.1 percent of which is held as reserves), securities (24.5 percent, 75.1 percent of which is in U.S. Treasuries) and trading assets (18.3 percent) (Chart S.1).
- Banks across all portfolio size groups collectively reduced securities balances by 7.1 percent YoY, but still hold 42.2 percent ($1.4 trillion) more securities as of June 30, 2023, than at year-end 2019. Increased holdings were primarily in longer-dated maturities, extending portfolio duration and exposing banks to heightened interest rate risk. Rapidly rising interest rates have led to historically high unrealized losses in banks' available-for-sale (AFS) securities portfolios. As of June 30, 2023,

[2] GSIB asset growth would have been slightly negative YoY without JPMorgan Chase's acquisition of the majority of the assets (approximately $173 billion of loans and $30 billion of securities) of First Republic Bank, which failed on May 1, 2023.

aggregate unrealized losses on AFS securities across CBOs, RBOs and LBOs stood at $163.8 billion, representing 17.5 percent of tier 1 capital.[3] While not reflected in regulatory capital ratios for these size groups, these unrealized losses are part of GAAP equity and have therefore weighed on banks' tangible common equity (TCE) ratios (Chart S.2). In contrast, GSIBs must recognize unrealized gains and losses on AFS securities in regulatory capital (in accumulated other comprehensive income, or AOCI).[4] The change in AOCI over the rising rate period from 2022 through the first half of 2023 amounted to a combined decline in common equity across the GSIBs of approximately $58.6 billion (5.7 percent of tier 1 capital).[5]

- To mitigate the impact on regulatory capital, G-SIBs began shifting the composition of their securities portfolio away from AFS and towards held-to-maturity (HTM) securities even prior to the rising rate cycle. As of June 30, 2023, GSIBs collectively held 65.3 percent of their securities in HTM securities—*up from 31.3 percent at year-end 2019*—compared to 38.2 percent, 27.3 percent, and 16.3 percent for LBOs, RBOs, and CBOs, respectively (Chart S.3). Notably, LBOs, and to a lesser extent RBOs and CBOs, have significantly increased the percentage of securities held as HTM over the rising rate cycle because unrealized losses on AFS securities do affect GAAP equity. While unrealized losses on HTM securities do not affect either GAAP equity or regulatory capital, they amounted to $226.7 billion (21.9 percent of tier 1 capital) across the GSIBs and $61.2 billion (6.5 percent of tier 1 capital) for all other U.S. banking organizations, as of June 30, 2023.[6]
- To allow for continued financial market intermediation as balance sheets expanded due to COVID-19 pandemic relief efforts, the largest banking organizations were permitted to temporarily exclude U.S. Treasuries and deposits held at Federal Reserve Banks ("reserves") from the leverage exposure measure of the SLR.[7] This exclusion collectively decreased leverage exposure by $2.4 trillion (18 percent) for U.S. G-SIBs and boosted their SLR to a peak of 7.25 percent as of December 31, 2020.[8] After the rule expired (on March 31, 2021), the SLR trended downward as growth in leverage

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[3] Calculated as fair value less amortized cost, which does not reflect tax effects.

[4] Applies only to Category I and II banks (eight G-SIBs and Northern Trust). All other banks can elect to exclude on an ongoing basis unrealized gains and losses in the calculation of regulatory capital ratios. Unrealized losses are estimated as fair value less amortized cost, which does not reflect tax effects. On July 27, 2023, the Board of Governors, jointly with the FDIC and OCC, released a proposal that would modify large bank capital requirements. The proposal imposes additional requirements on banks with assets over $100 billion, such as no longer permitting Category III and IV firms from opting out of reporting unrealized losses in regulatory capital and making Category IV firms subject to the SLR, among many other proposed changes.

[5] Unrealized losses on AFS securities are not reported in bank regulatory reports as a separate line item in AOCI and are one among several components impacting GSIB AOCI, but make up a considerable portion of the changes to AOCI in recent periods. The gross unrealized loss on AFS securities (i.e. the fair value less amortized cost) was $37.6 billion as of June 30, 2023 (does not reflect tax effects accounted for in AOCI).

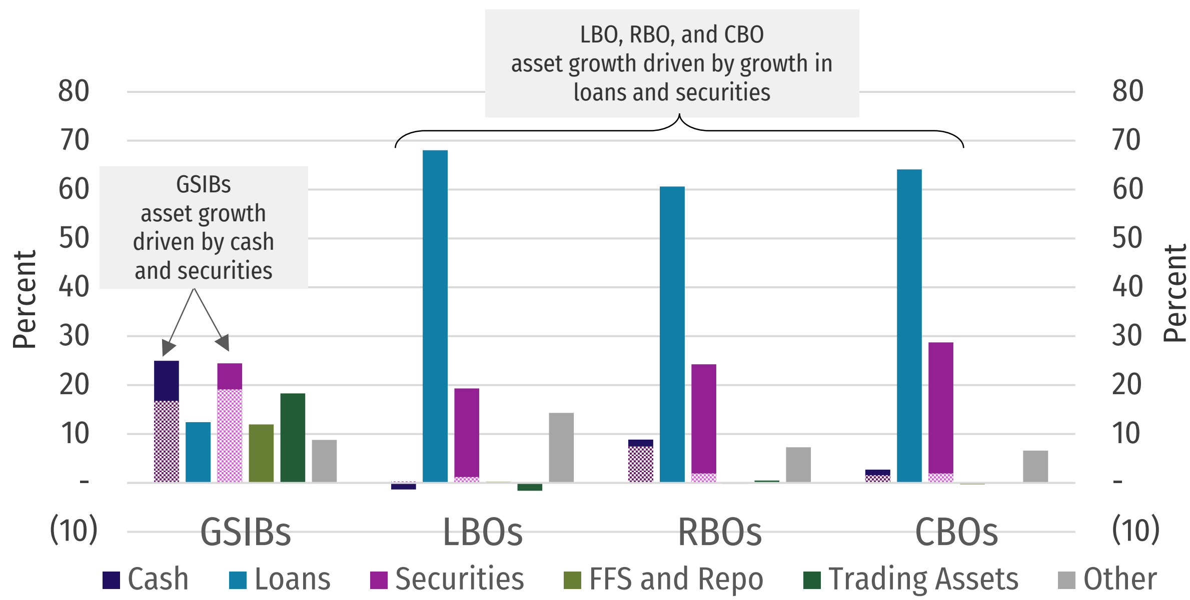
[6] Calculated as fair value less amortized cost, which does not reflect tax effects.

[7] The relief applied to Category I, II and III firms—those required to report the SLR—and was effective from June 30, 2020, to March 31, 2021.

[8] As of December 31, 2020, U.S. G-SIBs' cash held as reserves and U.S. Treasury securities had increased by $885 billion in aggregate from a 2017-2019 average starting point.

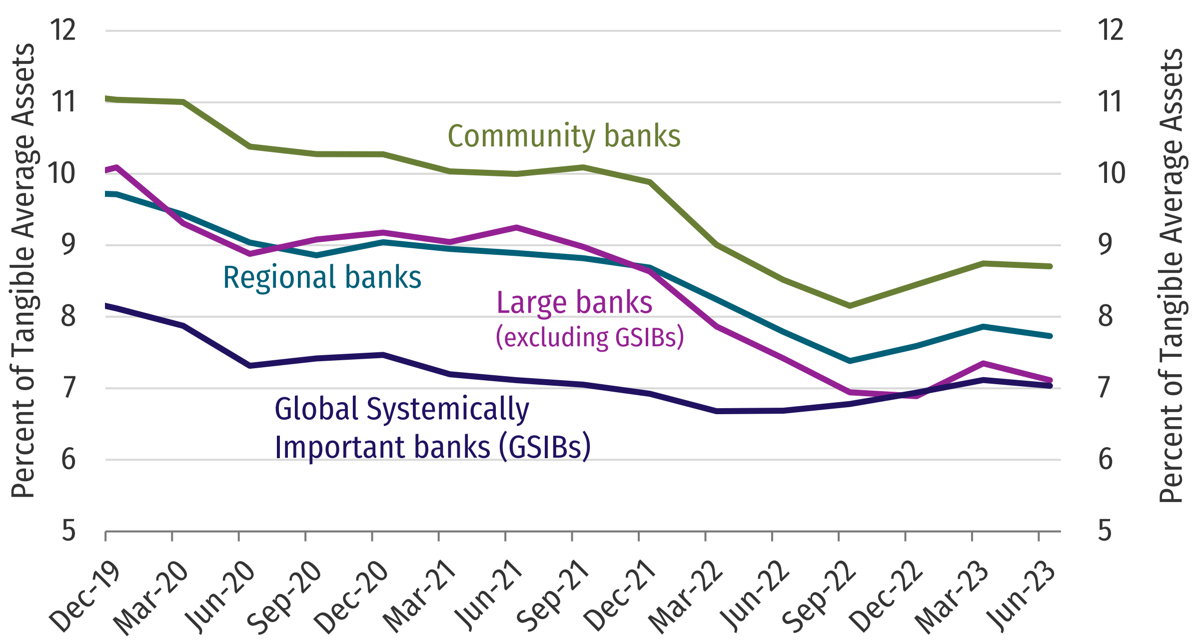
exposure outpaced capital formation. This trend reversed in the first half of 2023 with leverage exposure growth turning negative and tier 1 capital growing at 5.7 percent YoY, increasing GSIBs' weighted average SLR to 6.0 percent (Chart S.4). GSIBs' shareholder payout ratio declined to 65.7 percent as of June 30, 2023, down from pre-pandemic highs that exceeded 100 percent of net income throughout 2019 and into 2020, driven by a continued reduction in share repurchases.

Chart S.1
Asset Utilization by Bank Portfolio Group
Change in balance sheet component as a percentage of the change in assets, December 31, 2019, to June 30, 2023



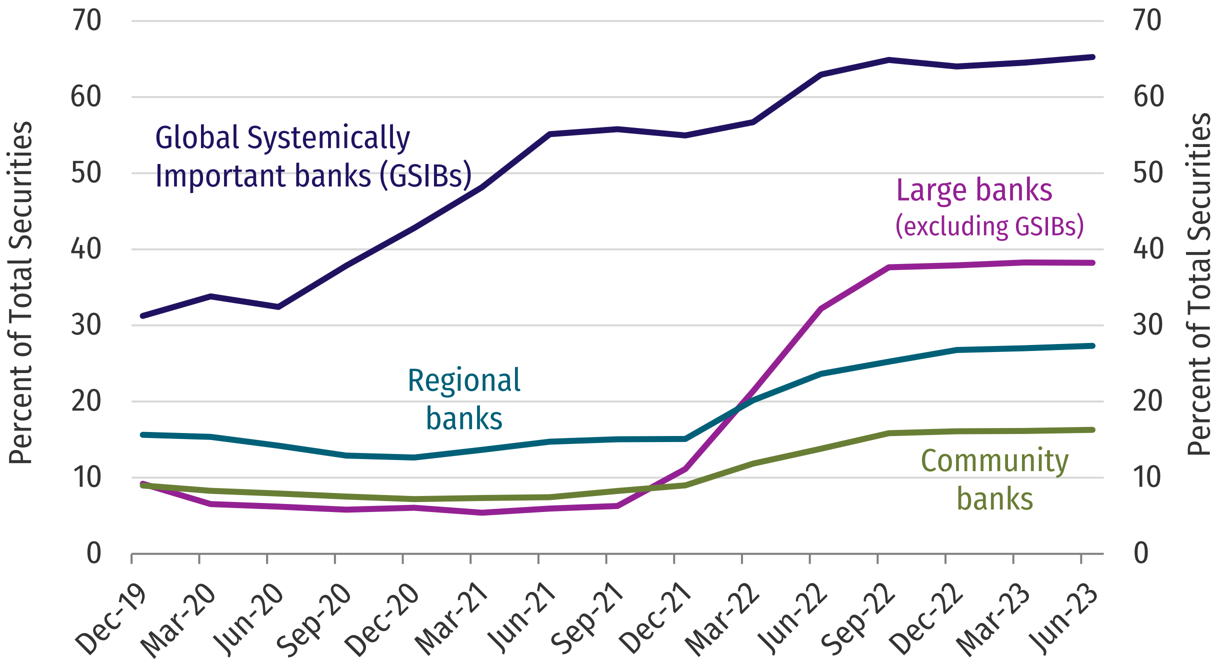
Notes: The shaded portion of Cash represents the increase in cash held as reserves. The shaded portion of Securities represents the increase in U.S. Treasury Securities.
Sources: Federal Reserve Y-9C Reports for G-SIBs, LBOs and RBOs and FFIEC Call Reports for CBOs.

Chart S.2
Tangible Common Equity (TCE) Ratio by Bank Portfolio Group



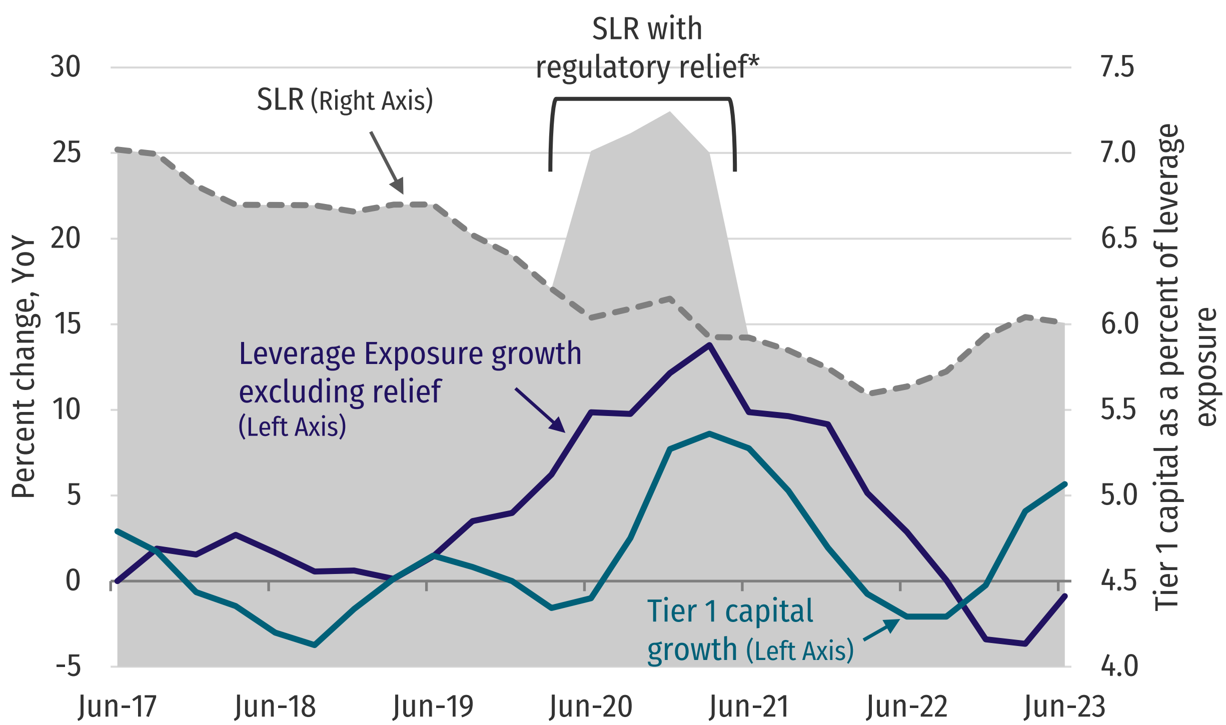
Notes: The TCE is the ratio of tangible common equity to tangible average assets.
Sources: Federal Reserve Y-9C Reports for G-SIBs, LBOs and RBOs and FFIEC Call Reports for CBOs.

Chart S.3
HTM Securities by Bank Portfolio Group



Sources: Federal Reserve Y-9C Reports for G-SIBs, LBOs and RBOs and FFIEC Call Reports for CBOs.

Chart S.4
SLR Component YoY Growth (U.S. G-SIBs)



*The Federal Reserve's temporary rule to exclude reserves and U.S. Treasury securities from the leverage exposure measure of the SLR applied from 2Q 2020 to 1Q 2021.
Sources: Federal Reserve Y-9C Reports and FFIEC Call Reports.