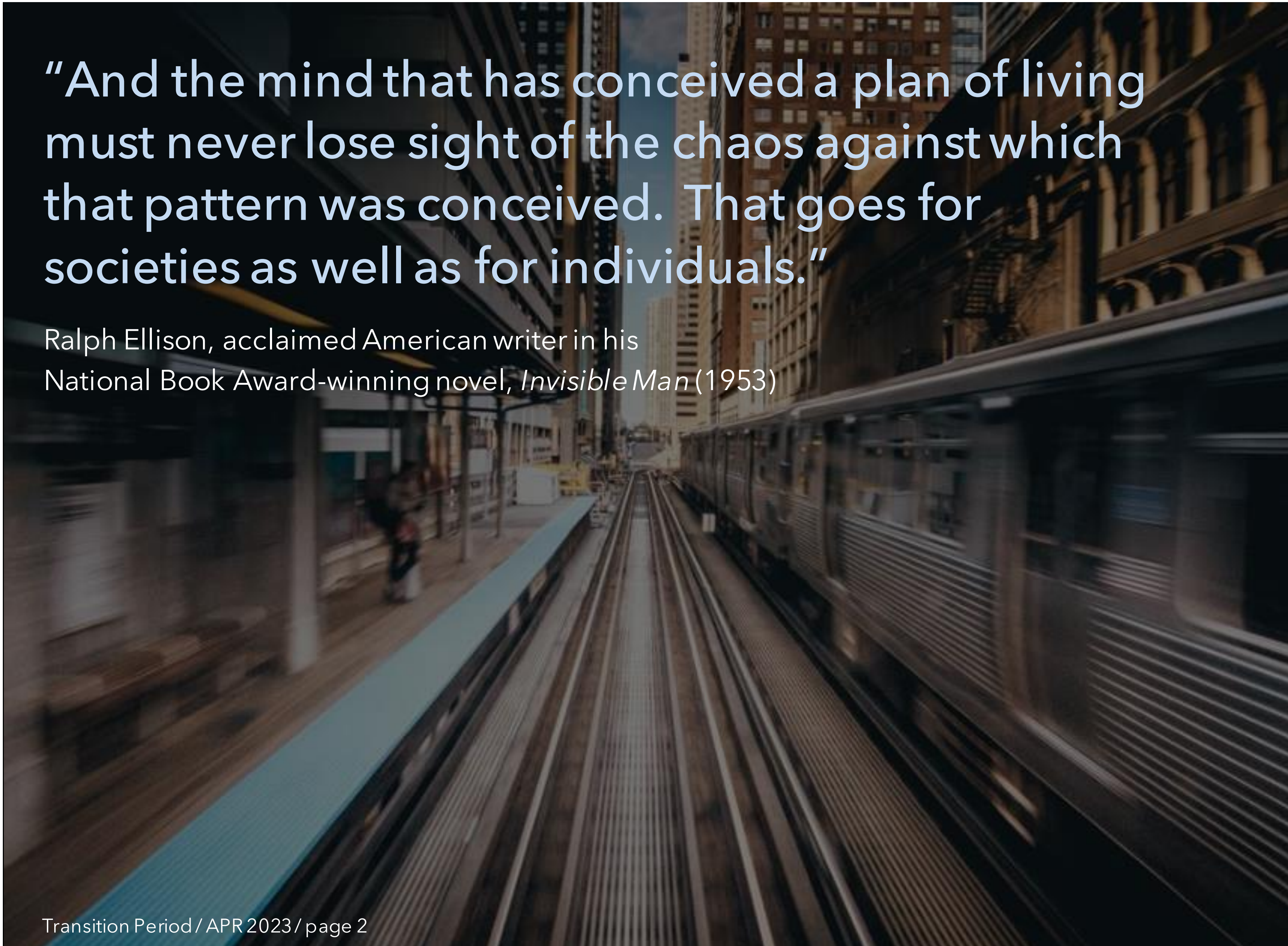
Capital Markets Strategy

Essential inCights for the C-Suite

Transition Period

The Impact of Tighter Financial Conditions on the Economy & Markets

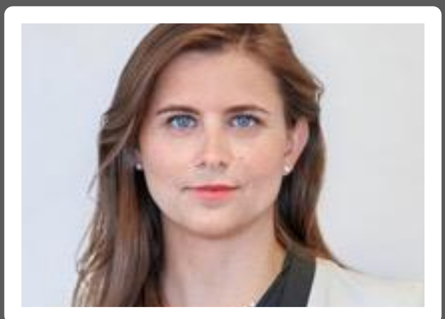
APR 2023

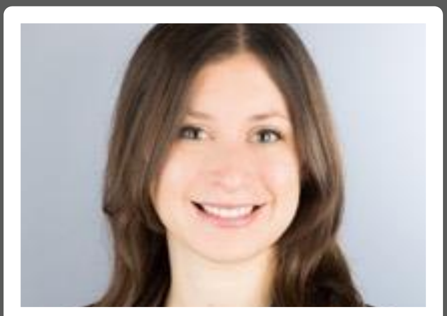


“And the mind that has conceived a plan of living must never lose sight of the chaos against which that pattern was conceived. That goes for societies as well as for individuals.”

Ralph Ellison, acclaimed American writer in his National Book Award-winning novel, *Invisible Man* (1953)

Global Corporate & Investment Banking
Capital Markets Strategy Team





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Transition Period

	From…	To
1.	Extraordinary Easing	Accelerated Tightening
2.	Goods Disinflation	Services Disinflation
3.	Price Stability	Financial stability
4.	Small Banks	Big Banks
5.	Fed Tightening	Private Sector Tightening
6.	Soft Landing	Hard Landing
7.	Rate & Duration Risk	Recession & Credit Risk
8.	Growth Deceleration	Global Recovery
9.	Demand Constrained World	Supply Constrained World
10.	The "Great Moderation"	Higher Structural Volatility

Appendix: The World's 100 Largest Banks

Introduction

2022: The Orchestrated Slowdown

- Synchronized global policy tightening.
- Over 85% of global central banks (> 90 in aggregate) raising rates at same time.
- "Double tightening" from Fed (rate increases + balance sheet QT)
- Global markets take their cue from rates markets
- Cash outperforms stocks and bonds

2023: Transition Period

- Monetary policy operates with 12-18 month lag
- Divergence between contracting manufacturing sector & resilient services
- Central bank tightening baton passed to private sector (banks, markets)
- Consumer & services sector slow, high frequency data weakens, recession ensues
- Interest rate risk of 2022 evolves into progressive credit risk in 2023

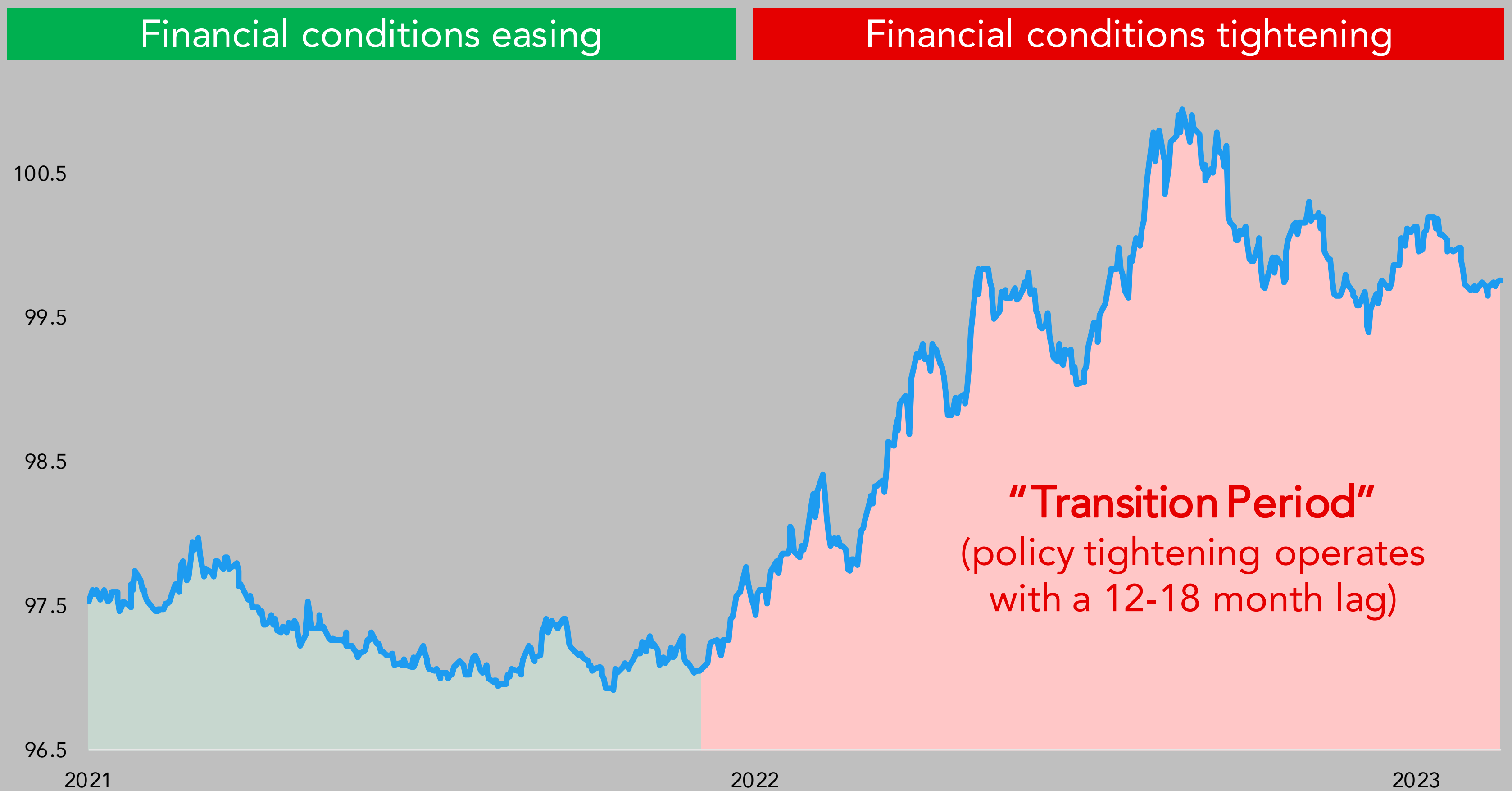
2024: Asynchronous Global Recovery

- Differentiation in recovery across geographies and industries
- Lagging credit defaults & bankruptcies peak; restructuring & recovery follow
- Recovery in some sectors (i.e., commercial real estate) will lag
- Broad-based & more sustainable global recovery as year progresses
- Markets rally in advance of the economic recovery

Impact of Tighter Financial Conditions Takes Time

We are currently in a "transition period." After 15 years of low interest rates, the impact of tighter financial conditions will evolve over 6 to 12 to 18 months, with variance by sector.

US financial conditions



Source: (1) Bloomberg. Data as of April 24, 2023. GS US financial conditions index.

Markets Bounce Back From Difficult 2022

Annual relative total returns, USD markets

Worst total returns in 100 years

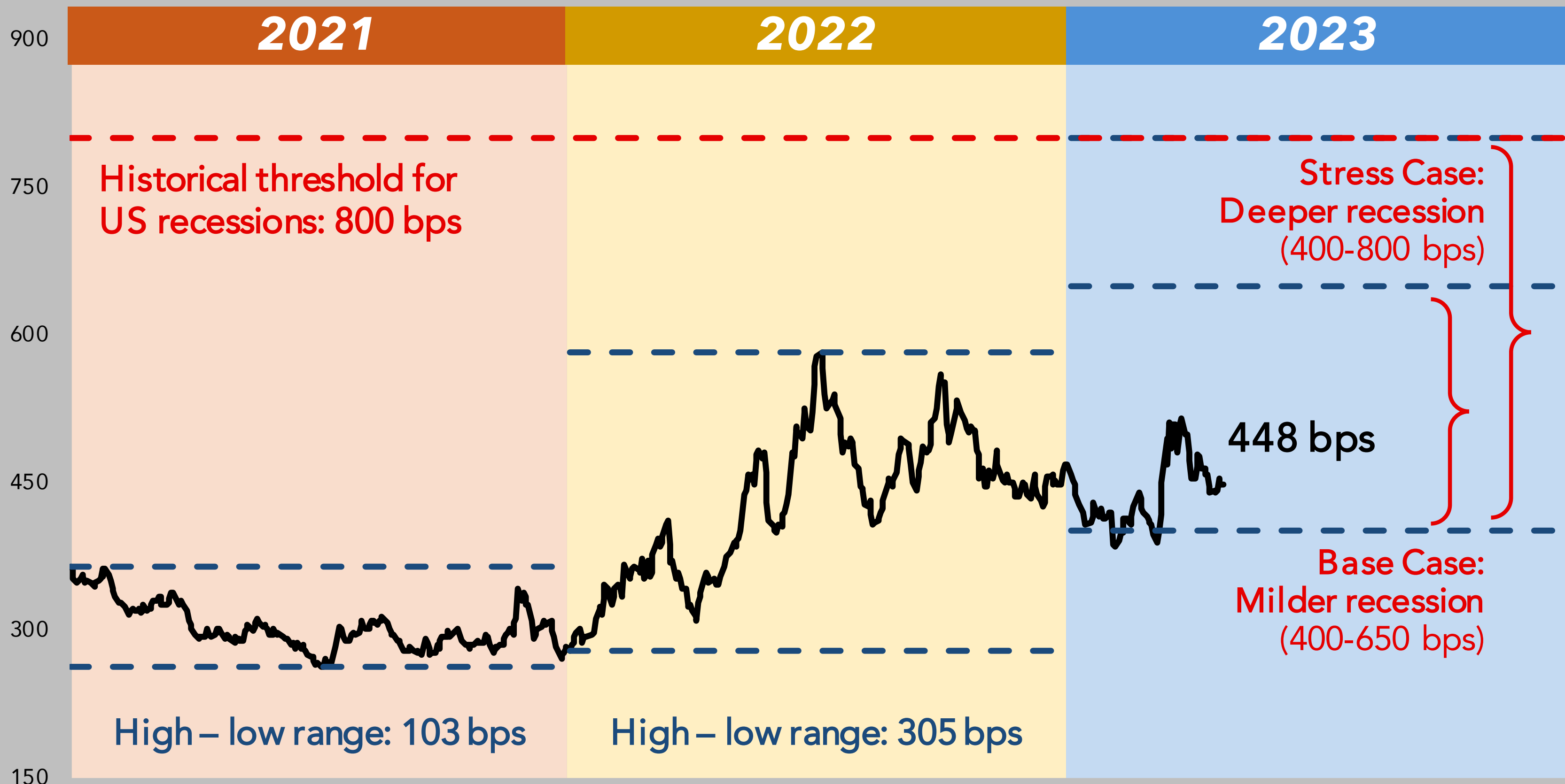
2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Q1 2023
S&P 500 32.4%	S&P 500 13.7%	Munis 3.6%	High Yield 17.5%	S&P 500 22.3%	Munis 1.0%	S&P 500 31.5%	S&P 500 18.4%	S&P 500 28.7%	Loans (-0.6%)	**S&P 500 7.5%**
High Yield 7.4%	Munis 9.8%	Mortgages 1.5%	S&P 500 12.0%	EM Sov 10.0%	Mortgages 1.0%	High Yield 14.4%	High Grade 9.8%	Loans 5.4%	Munis (-9.0%)	**High Yield 3.7%**
Loans 5.4%	High Grade 7.5%	S&P 500 1.4%	Loans 10.4%	High Yield 7.5%	US Gov't 0.8%	EM Sov 14.3%	US Gov't 8.2%	High Yield 5.4%	High Yield (-11.2%)	**High Grade 3.4%**
Mortgages (-1.4%)	EM Sov 7.3%	US Gov't 0.8%	EM Sov 9.5%	High Grade 6.5%	Loans 0.6%	High Grade 14.2%	High Yield 6.2%	Munis 1.8%	Mortgages (-11.9%)	**Loans 3.2%**
High Grade (-1.5%)	Mortgages 6.1%	EM Sov 0.6%	High Grade 6.0%	Munis 5.4%	High Grade (-2.2%)	Loans 8.7%	Munis 5.3%	High Grade (-1.0%)	US Gov't (-12.9%)	**US Gov't 3.1%**
Munis (-2.9%)	US Gov't 6.0%	Loans 0.1%	Mortgages 1.7%	Loans 4.6%	High Yield (-2.3%)	Munis 7.7%	EM Sov 4.8%	Mortgages (-1.2%)	High Grade (-15.4%)	**Munis 2.8%**
US Gov't (-3.3%)	High Yield 2.%	High Grade (-0.6%)	US Gov't 1.1%	Mortgages 2.4%	S&P 500 (4.4%)	US Gov't 7.0%	Mortgages 4.1%	US Gov't (-2.4%)	S&P 500 (-18.1%)	**Mortgages 2.5%**
EM Sov (-5.8%)	Loans 1.8%	High Yield (-4.6%)	Munis 0.4%	US Gov't 2.4%	EM Sov (-4.6%)	Mortgages 6.5%	Loans 3.5%	EM Sov (-2.6%)	EM Sov (-18.3%)	**EM Sov 2.0%**

Source: (1) CreditSIghts. Bloomberg. Data as of March 31, 2023. BAML, S&P LSTA. Bloomberg EM Sov is USD EM Sovereign BBB & lower index.

Impressive Resilience, but Cycle Turn Underway

The resilience of the economy and markets to higher costs of capital has thus far been impressive. Historically, HY spreads gap above 800 bps during recessions. At current levels, the market is indicating very little stress or concern, though we expect this to change in the months ahead as the default cycle has already begun its turn. HY spreads remain vulnerable to gap risk.

USD HY OAS



Source: (1) Bloomberg. Data as of April 24, 2023.

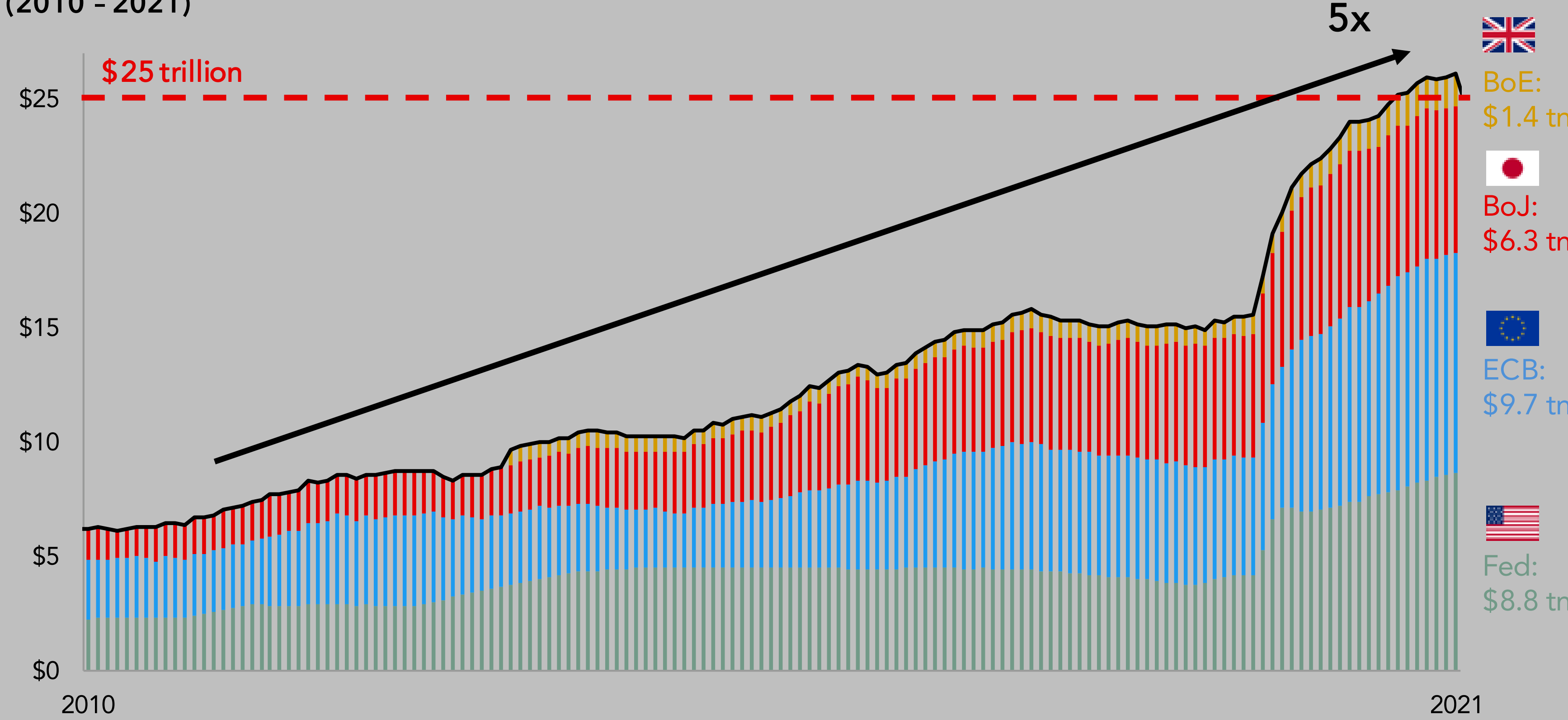
01

From Extraordinary Easing…
to Accelerated Tightening

Decade of Extraordinary Monetary Easing

During the post GFC decade of extraordinary monetary easing, also known as the era of "easy money," big 4 central bank balance sheets surged 5x to above $25 trillion, US ZIRP held rates at 0% while Europe experimented with a decade of negative policy rates. At the peak in 2020, the total value of globally negative yielding securities had reached close to $20 trillion.

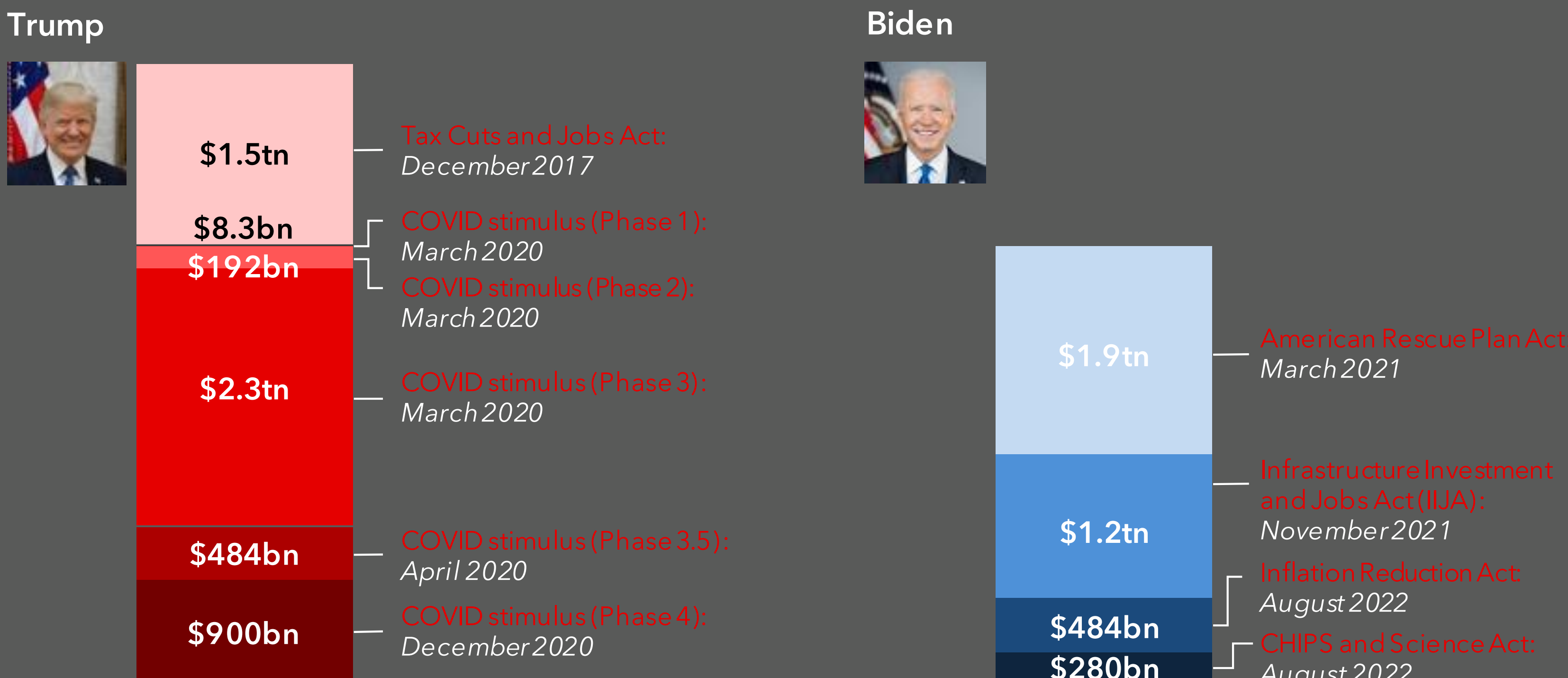
Total balance sheet assets, USD tn (2010 – 2021)



Source: (1-2) Bloomberg. Data through end of 2021. BoE. ECB is deposit facility rate.

Too Much Fiscal Stimulus

Over a five year period, the US government passed nearly $10 trillion of fiscal stimulus into law. While large portions of the COVID-era stimulus were needed, the build up of excess liquidity in the system has undoubtedly contributed to today's inflation and financial stability challenges.



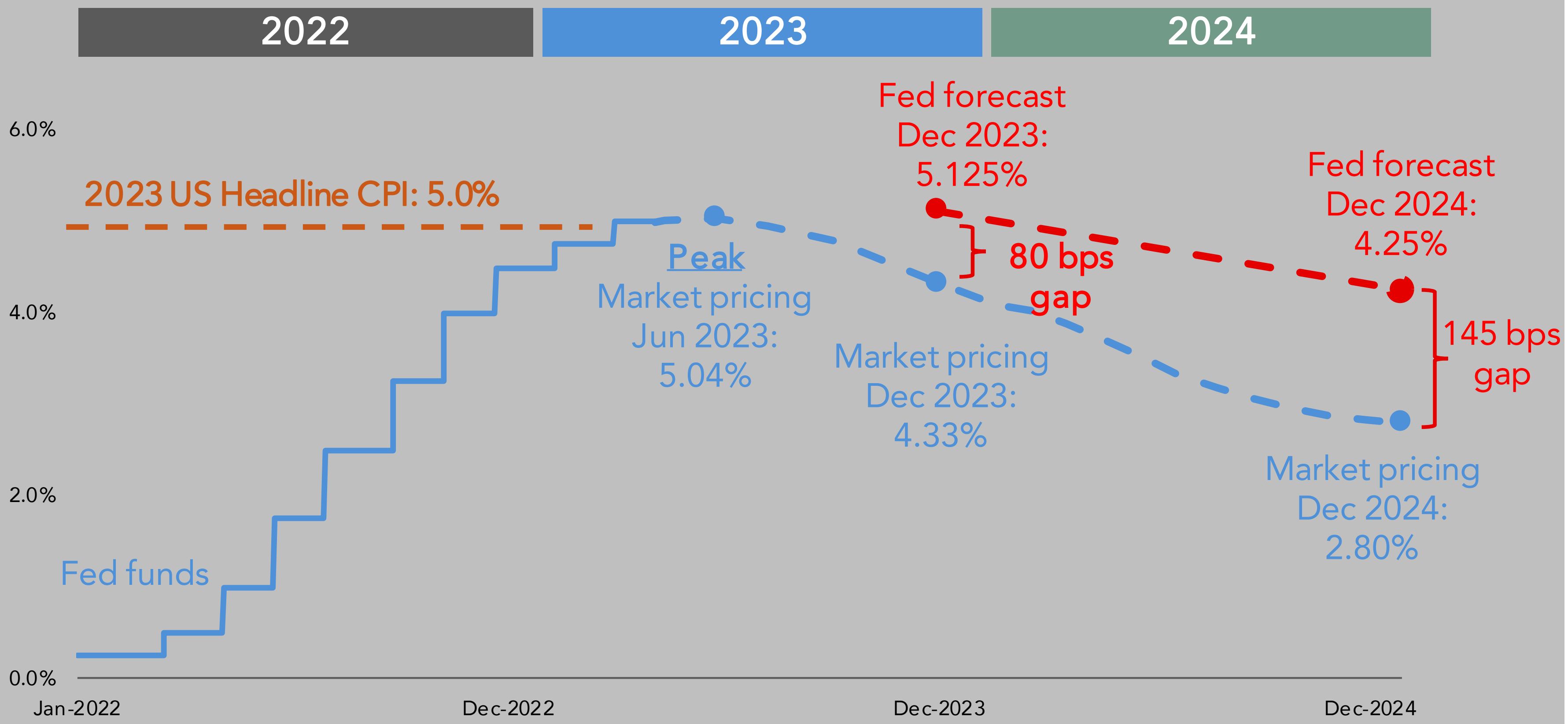
$5.4 trillion + **$3.9 trillion** = **$9.3 trillion**

White House. US Congress. Investopedia "A breakdown of the fiscal and monetary responses to the pandemic". Note: Inflation Reduction Act does not include roughly $300 bn of deficit reduction provisions. The US Tax Cuts and Jobs Act was roughly $5tn, with roughly $1.5tn of deficit spending. Phase 4 represents the Consolidated Appropriations act of 2021 which included $900bn of stimulus. IIJA was partially paid for - CBO confirmed offsets are $180bn (from unclaimed COVID relief, proceeds from spectrum auctions, and expected economic growth return from infrastructure investment). Total new spending is $635bn, IRA spending is designed to be offset by minimum tax on large corporations, tax on stock buybacks, and funding for IRS enforcement and collection. Combined with savings from healthcare provisions, CBO estimates the IRA lowers government deficits by $237bn over the next 10 years.

The Ambiguity of Sufficiently Restrictive

With the fastest tightening cycle in 40 years, and the "ambiguity of sufficiently restrictive" given that monetary policy operates with a 12-18 month lag, the risk of policy error remains high. Looking to 2023, the Fed and markets are finally aligned on forecasts for the Fed's terminal rate (5.125% area), but diverge on expectations for the 2H of 2023

Fed funds rate and market pricing



Source: (1) Bloomberg. Data as of April 26, 2023. WIRP Screen through Jan 2024. Feb 2024 – Dec 2024 data based off of SOFR Pricing Model. MUFG Derivatives Team. US headline CPI data is as of March 2023. US core PCE data is as of March 2023.

Not Your Typical Tightening Cycle

Historically, the Fed is slow to raise rates in a tightening cycle, and very rapid in reducing them in an easing cycle. Recognizing that financial sector stress as a critical unknown variable, it is quite possible that the Fed may "pause" in 2023 for longer than anticipated, commence reducing rates later than markets currently expect, but then reduce Fed Funds more rapidly than current Fed forecasts and markets expect by YE 2024.

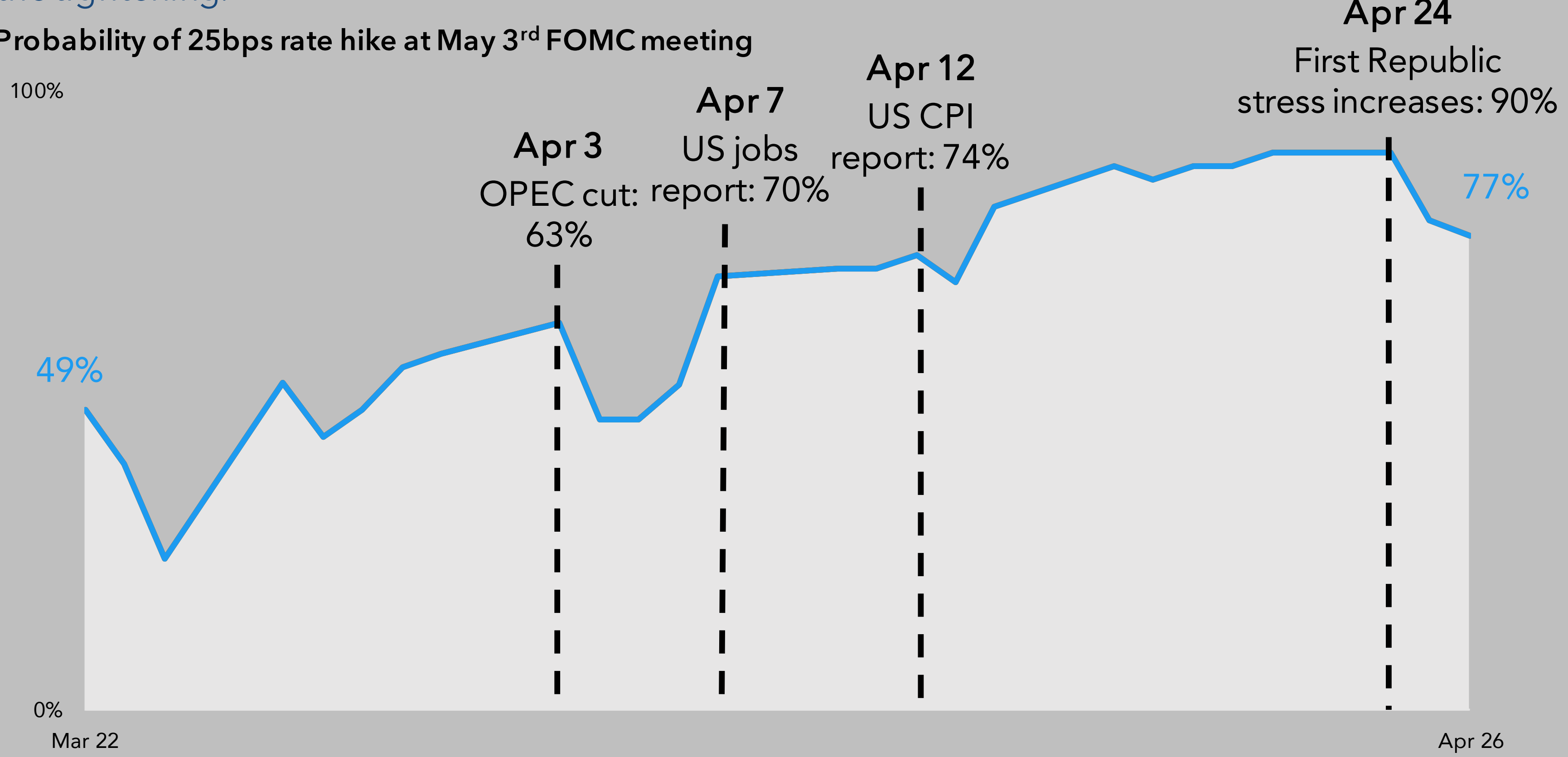
	Policy TIGHTENING	Policy EASING
Historical Fed Cycles (Last 40 years)	**Slow pace** • 25 bps per meeting	**Rapid rate cuts** • 25-50 bps + per meeting
Current Cycle (2022-23)	**"Double tightening"** • 25-75 bps / meeting • Balance sheet QT ($90 bn / month)	**Modest easing expected** • Fed: Forecasting 4.25% Fed Funds YE 2024 • Market: Pricing 2.80% Fed Funds YE 2024

Key Question: If bank sector stabilizes, will the Fed delay start of easing cycle later than expected, but then cut rates more rapidly than anticipated in 2024?

Approaching the End of the Cycle

Following the bank stress of early March, markets began contemplating (and pricing) whether the Fed tightening cycle was complete. Several recent developments – stabilizing bank sector, OPEC production cuts, a strong US jobs report and "sticky" services inflation – have since reinforced the notion that at least one more rate hike is likely. While the Fed is clearly approaching the end of the cycle, the baton has now been passed to the private sector (banks and financial markets) to continue the tightening.

Probability of 25bps rate hike at May 3rd FOMC meeting



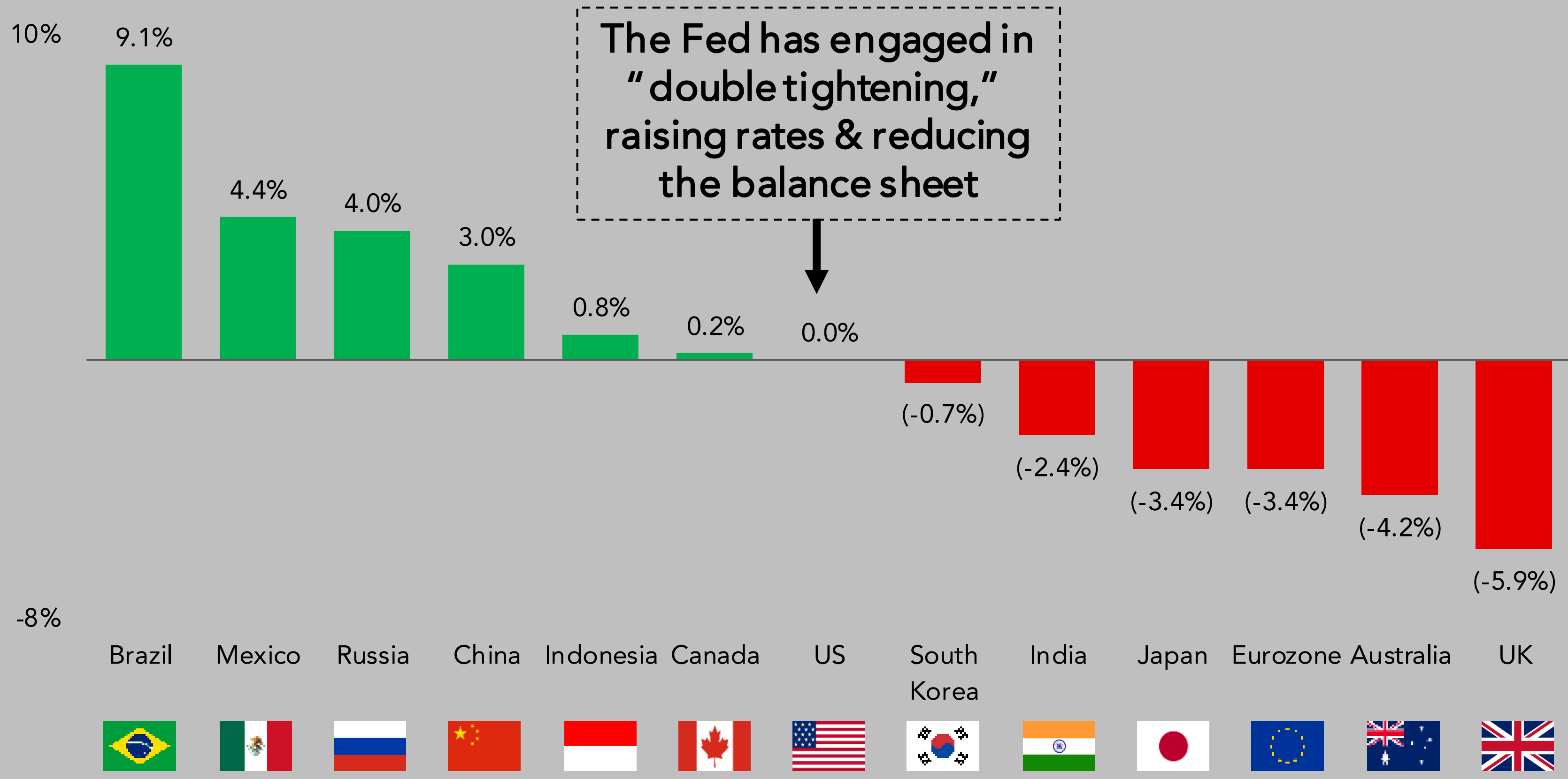
Source: (1) Bloomberg. Data as of April 26, 2023.


02
From Goods Disinflation…
to Services Disinflation

Divergent Progress in Reducing Inflation

Last year, more than 85% of global central banks engaged in synchronized monetary policy tightening. However, the magnitude of tightening and success in reducing inflation has varied. Notably for markets, the Fed is much closer to the end of its cycle than the ECB and BOE.

Difference between policy rate and inflation

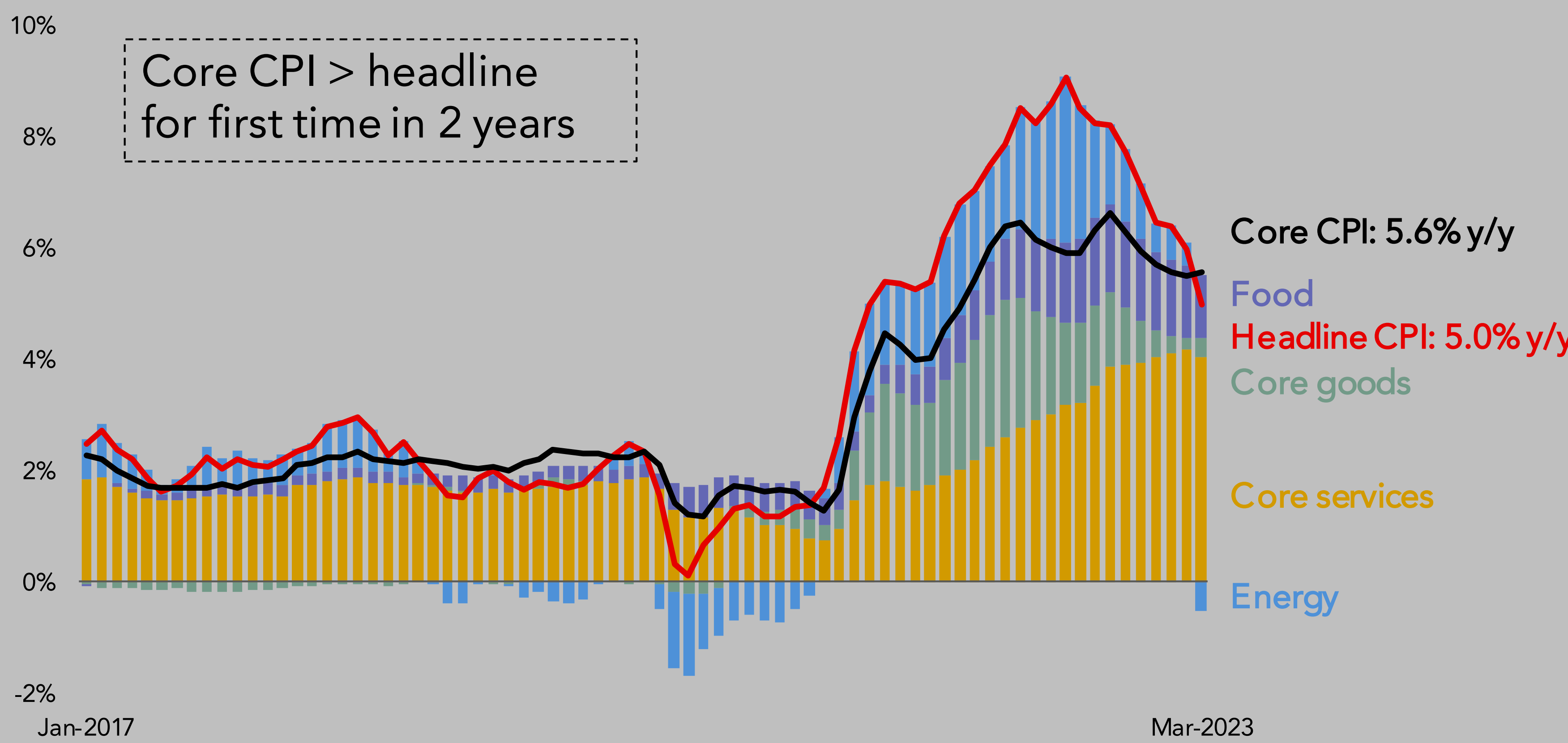


Source: (1) Bloomberg. Data as of April 24, 2023. China is 1 year LPR Rate. India is reverse repo rate.

Core Inflation > Headline for First Time in 2 Years

US headline inflation rose 0.1% m/m in March and 5.0% y/y, as energy prices fell by (-3.5%) and food at home prices declined by (-0.3%) on the month. Core prices increased 0.4% m/m and 5.6% y/y, the first time in over two years that core came in above the headline level.

Breakdown of CPI by components

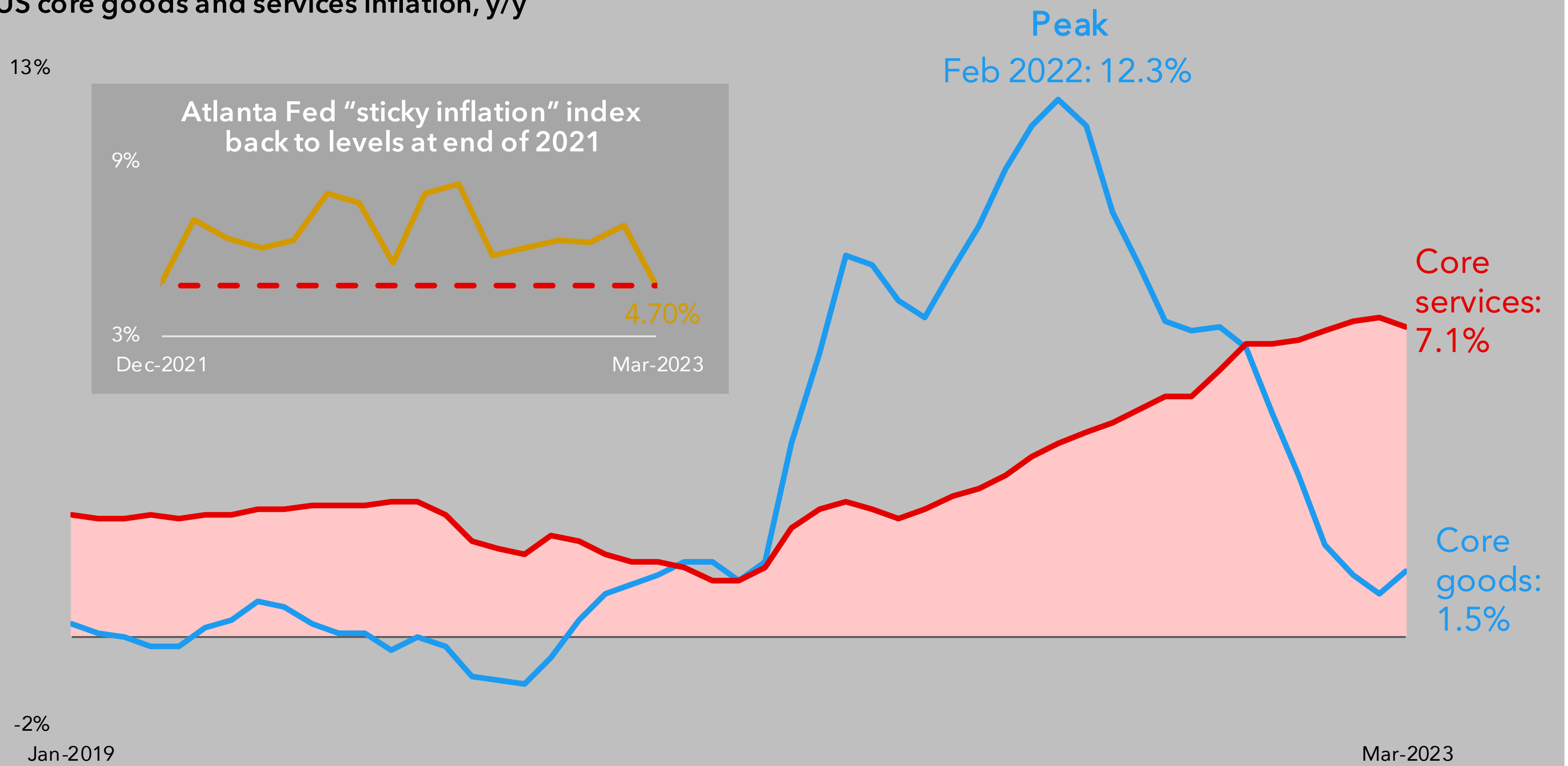


Source: (1) Bloomberg. Data as of April 24, 2023.

Nonlinear Progression in Services Disinflation

After steadily rising since August 2021, core services inflation declined in March to 7.1% y/y vs. 7.3% in February. Core goods inflation broke its trend of the past six months and increased to 1.5% y/y vs. 1% in February. While disinflation trends are firmly in-place, "sticky" services inflation suggests the journey to the Fed's 2% target will be non-linear.

US core goods and services inflation, y/y

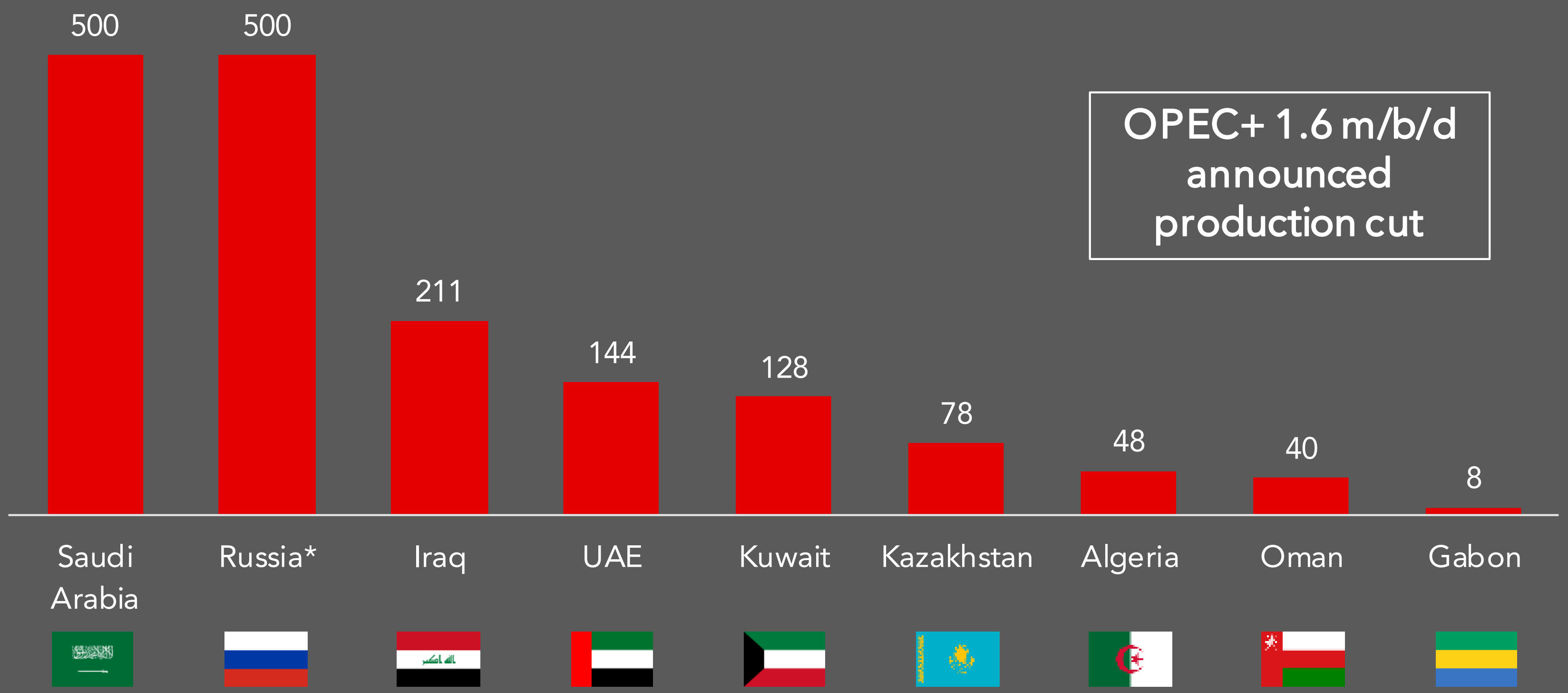


Source: (1-2) Bloomberg. Data as of April 24, 2023. Goods is commodities less food and energy commodities. Services is less energy. Sticky inflation index sorts components of the CPI into either flexible or sticky (slow to change) categories based on the frequency of their price adjustment.

OPEC Cut Complicates Inflation Fight

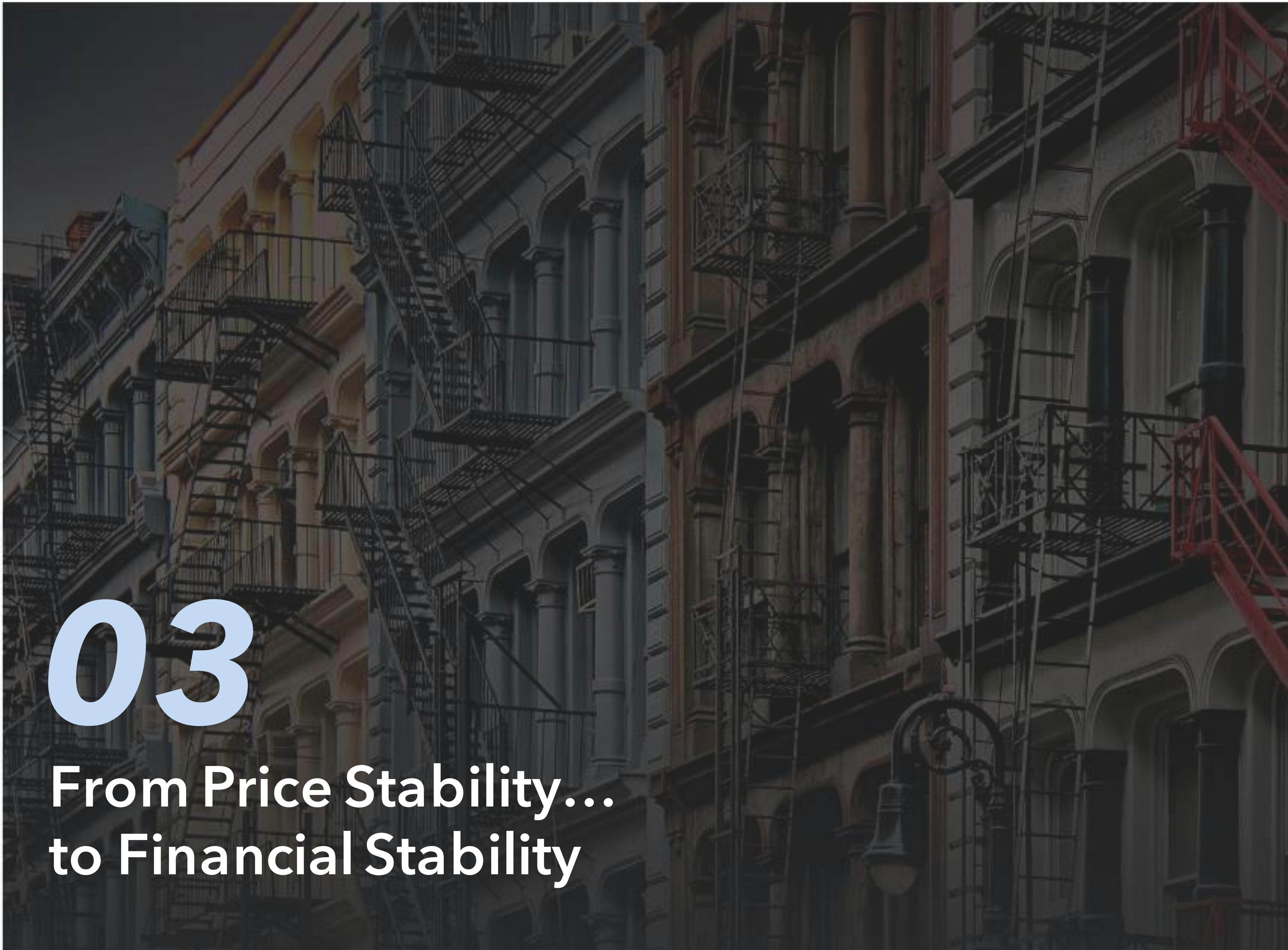
Just as they did in October, OPEC responded to the financial market tightening of March with a surprise 1.6 m/b/d production cut in April, complicating the inflation fighting mandate of the Fed and other central banks. According to Bloomberg's "SHOK" model, each sustained $5 increase in oil prices translates to a 0.2 point increase in CPI.

OPEC+ production cuts by country, thousands barrels per day



**Includes 500k pre-announced plan cut from Russia*

Source: (1) Reuters, "OPEC+ Announces Surprise Oil Output Cuts" (April 2, 2023). Voluntary cuts start from May and last until the end of 2023.



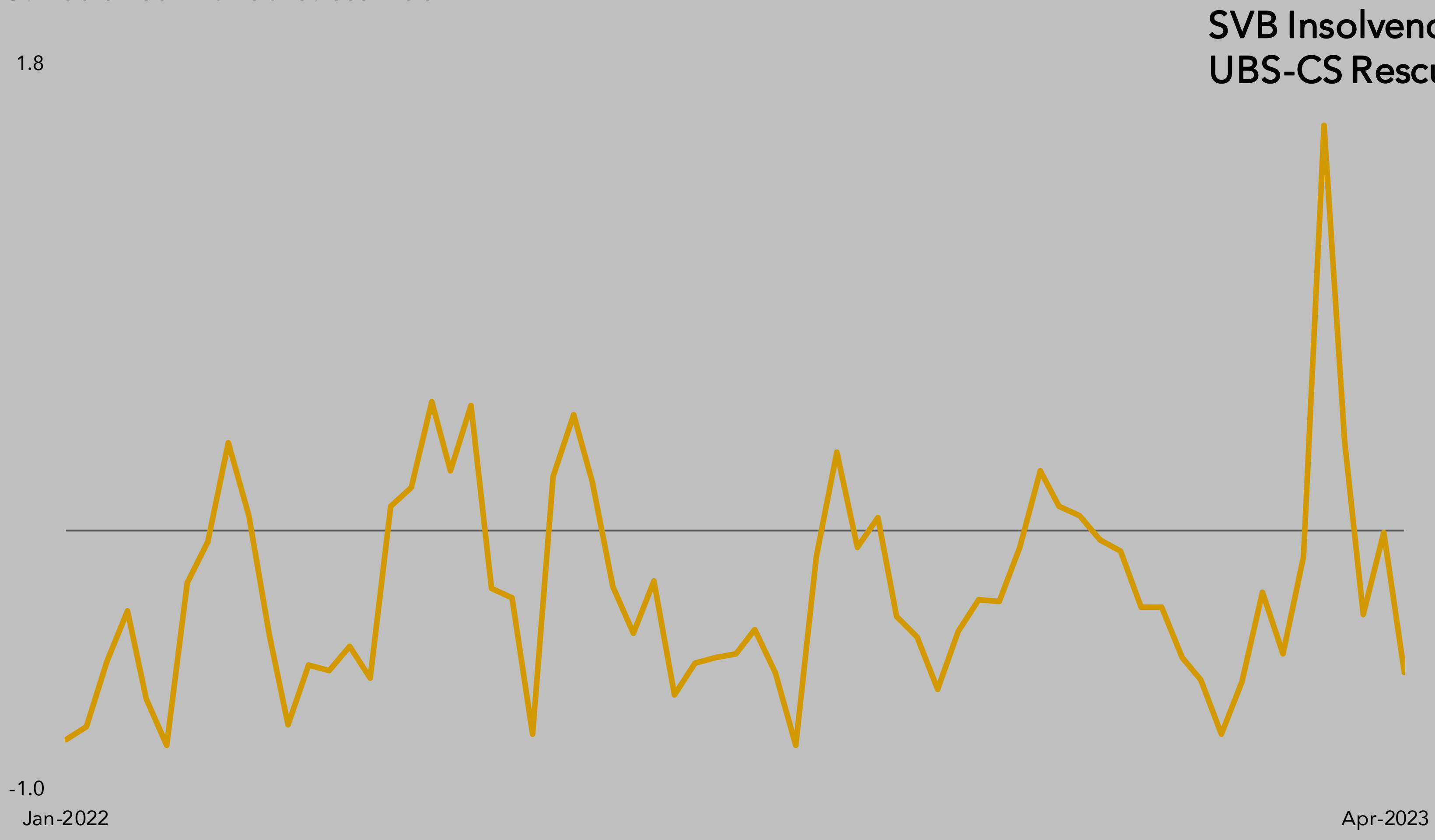
03

From Price Stability…
to Financial Stability

Banking System Stress

As a swift regulatory response and ample central bank liquidity have restored confidence in the banking system, measures of financial stress have improved since mid-March, but remain vulnerable.

St. Louis Fed financial stress index

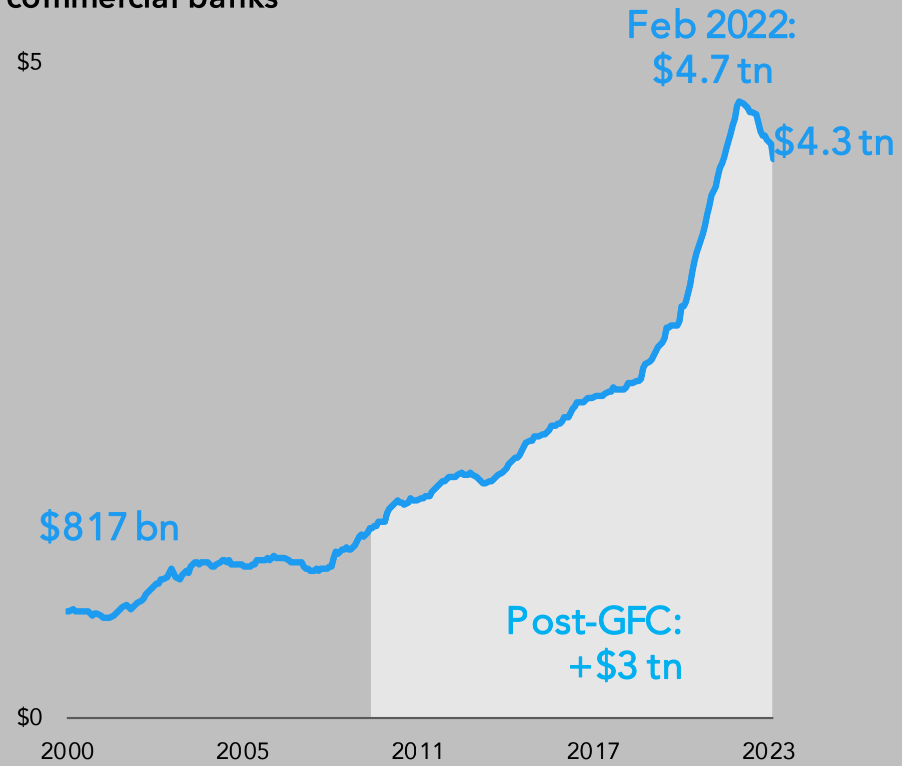


Source: (1) Bloomberg. Data as of April 24, 2023. Federal Reserve.

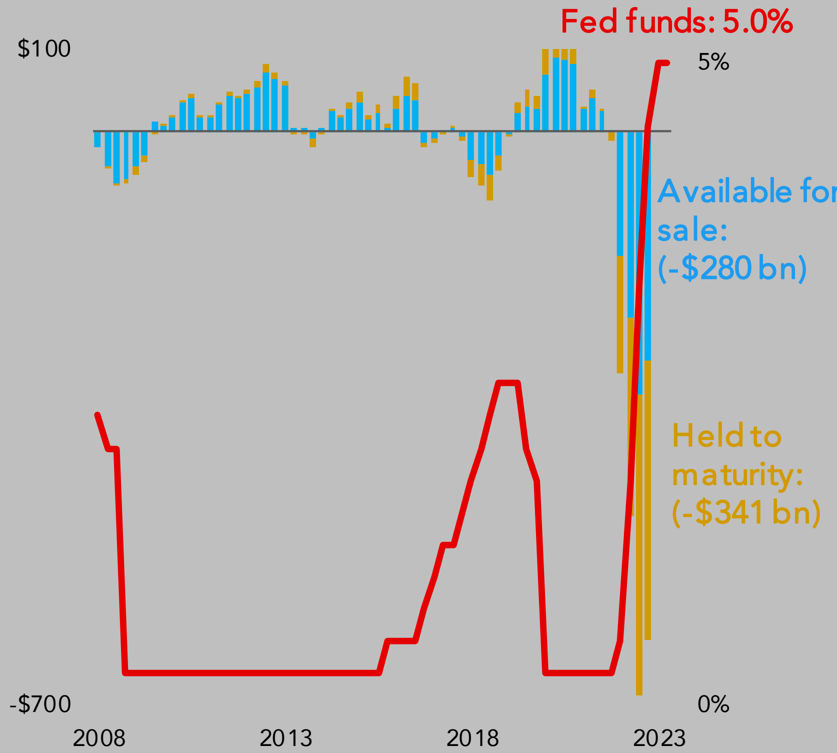
The Backdrop: Financial Assets Grew Faster than Real Economy

Following the post GFC decade of extraordinary monetary easing, financial asset growth significantly outpaced the real economy, creating imbalances as banks built unusually large, long-duration securities portfolios. As interest rates rose and credit spreads widened, US bank sector unrealized losses rose from just $8 bn at the end of 2021 to over $620 bn in Q4 2022.

Treasury and agency securities held by all US commercial banks



Unrealized gains (losses) on securities held by FDIC insured institutions



Source: (1) Federal Reserve. Data as of April 24, 2023. (2) FDIC. Bloomberg. Data as of Q4 2022 (latest available).

The Trigger:
Financial System Intolerant to Higher Rates

Only one year into policy tightening, the US and global financial system has already shown itself to be intolerant of higher interest rates. For banks, NIM compression, tighter lending standards and bank sector consolidation are likely to follow. We expect more episodic financial sector "event risk" in the months ahead.

UK Pension - Gilt Crisis
(Sep 23, 2022)

Crypto-currencies / FTX
(Nov 7, 2022)

Silvergate Capital Corp
(Mar 8, 2023)

Silicon Valley Bank
(Mar 10, 2023)

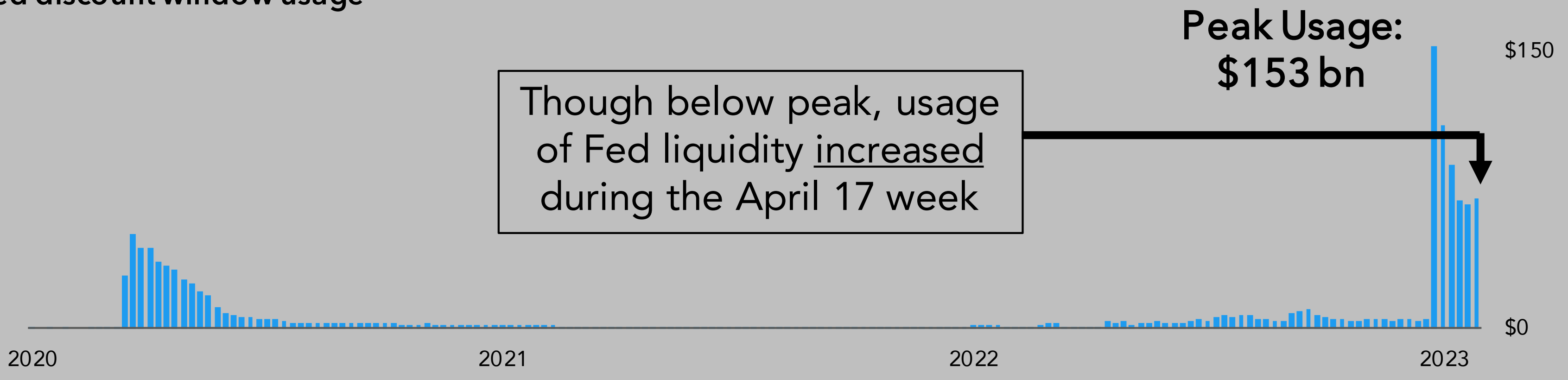
Signature Bank
(Mar 12, 2023)

Credit Suisse
(Mar 19, 2023)

Fed Liquidity to Mitigate Deposit Outflows

Four months of Fed QT were unwound in the week following SVB's bankruptcy as bank usage of the Fed's Discount Window facility surged to a new record high and regulators announced a new Bank Term Funding Program (BTFP). The Fed also announced it would allow securities eligible as collateral for Discount Window liquidity at 100% of par value (vs. mark-to-market haircut), in line with the terms of BTFP.

Fed discount window usage



Fed Bank Term Funding Program (BTFP) usage

Source: (1-2) Federal Reserve. Bloomberg. Weekly Balance as of latest Wednesday level (April 19, 2023).

What to Watch in the Bank Sector?

1. ***Regional bank deposit outflows***
(75-85% of smaller regional bank funding)

2. ***Unrealized gains (losses) in securities portfolio***
(AFS and HTM portfolio vis-à-vis TCE)

3. ***Bank usage of Fed liquidity facilities***
("real time" indicator of liquidity stress)

4. ***Interbank funding markets***
(indicator of system "confidence")

5. ***Bank stock prices and CDS***
(indicator of investor confidence, earnings and economic outlook)

6. ***Increases in loan loss provisions***
(indicator of expected consumer and business sector credit stress)

7. ***Tightening in bank lending conditions***
(indicator of credit flow to real economy)

8. ***Changes in bank regulatory policy***
(increased stress testing, stronger liquidity requirements, cost of capital implications)

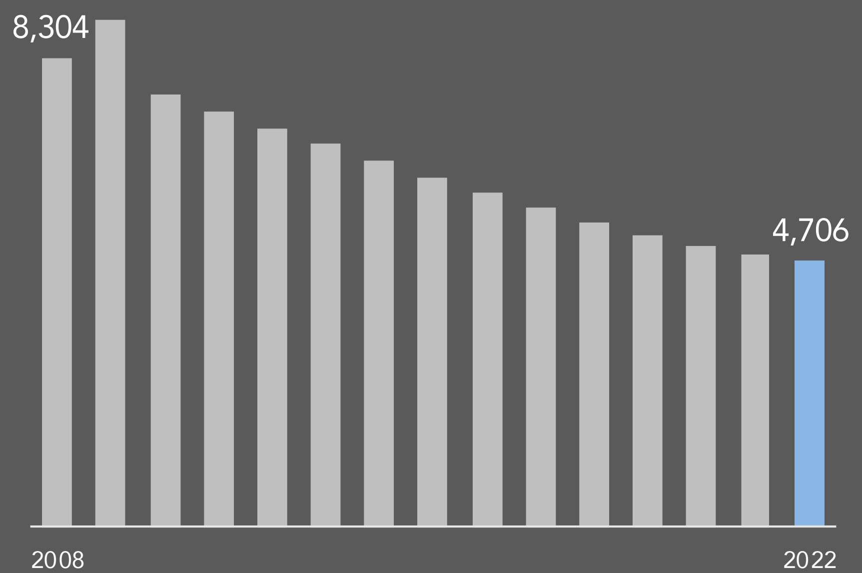
04

From Small Banks…
to Big Banks

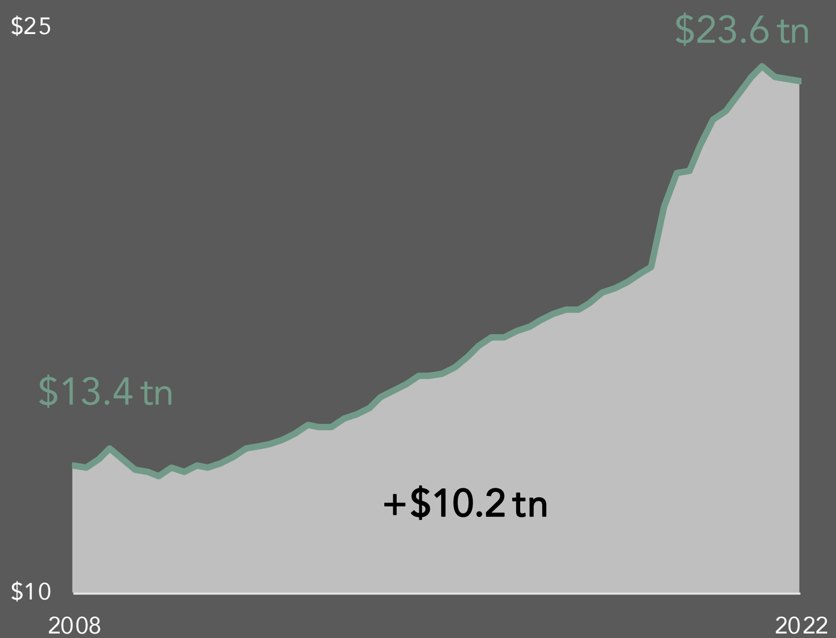
Further Bank Sector Consolidation Anticipated

Since the 2008-9 GFC, the number of US banks has dropped by nearly half, while total banking system assets have nearly doubled.

# of US FDIC Insured Banks



Total bank assets, USD tn



Expectations for US Bank Sector Consolidation:

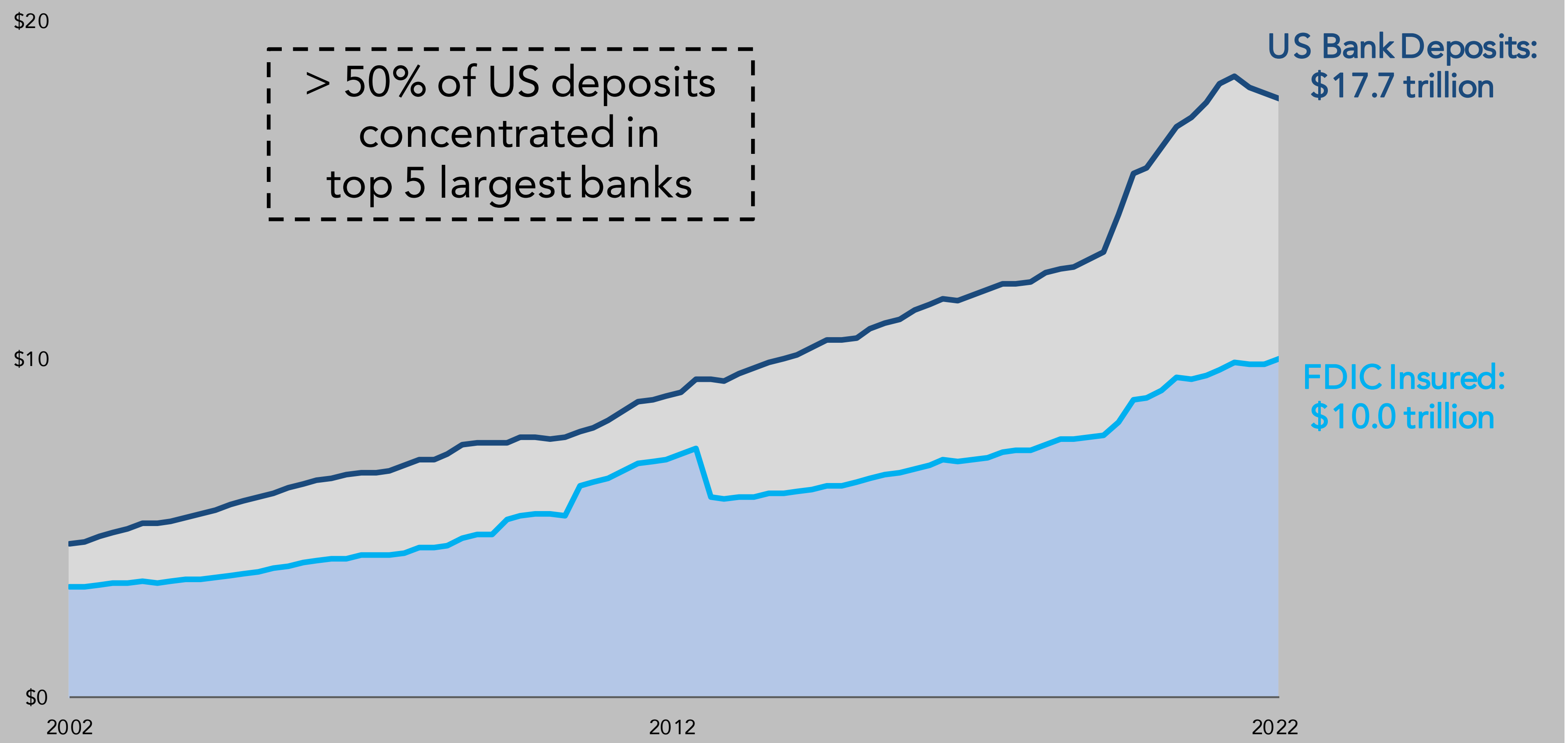
- **Near term (1-2 years):** Slow pace expected (regulatory approval and portfolio mark-to-market)
- **Medium term (3-5 years):** Significant pace of consolidation (tighter liquidity standards, deposit outflows and higher cost of capital challenging small bank business model)

Source: (1-2) FDIC. Bloomberg. Data as of April 24, 2023.

Structural Challenge: 45% of US Deposits Not Insured

$10 trillion of the $17.7 trillion of deposits (~55%) across approximately 4,700 US banks are insured by the FDIC

US domestic bank deposits, USD tn

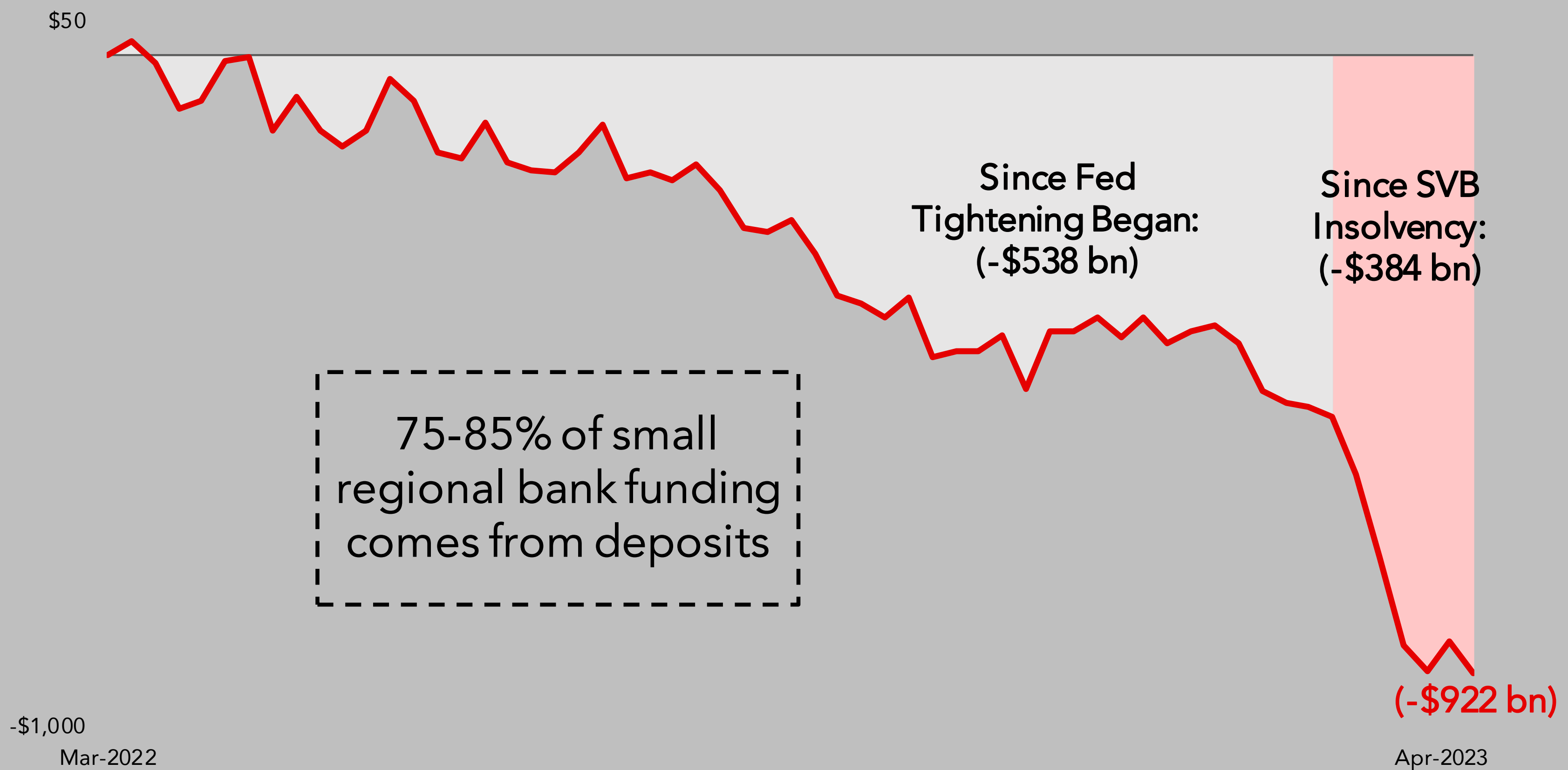


Source: (1-2) FDIC. Federal Reserve. Bank Balance Sheet Deposits includes domestic office deposits only. Bloomberg. Data as of April 24, 2023.

Historic Pace of Bank Deposit Outflows

US bank deposit outflows exceeded $500 bn in first 12 months of the current Fed tightening cycle as USTs offered more attractive yields than bank deposits. Since the SVB bank failure, deposit outflows accelerated to nearly $400 bn in less than two months, largely from smaller banks into larger banks and MMFs.

Cumulative change in commercial bank deposits since start of Fed tightening cycle (March 2022), USD bn

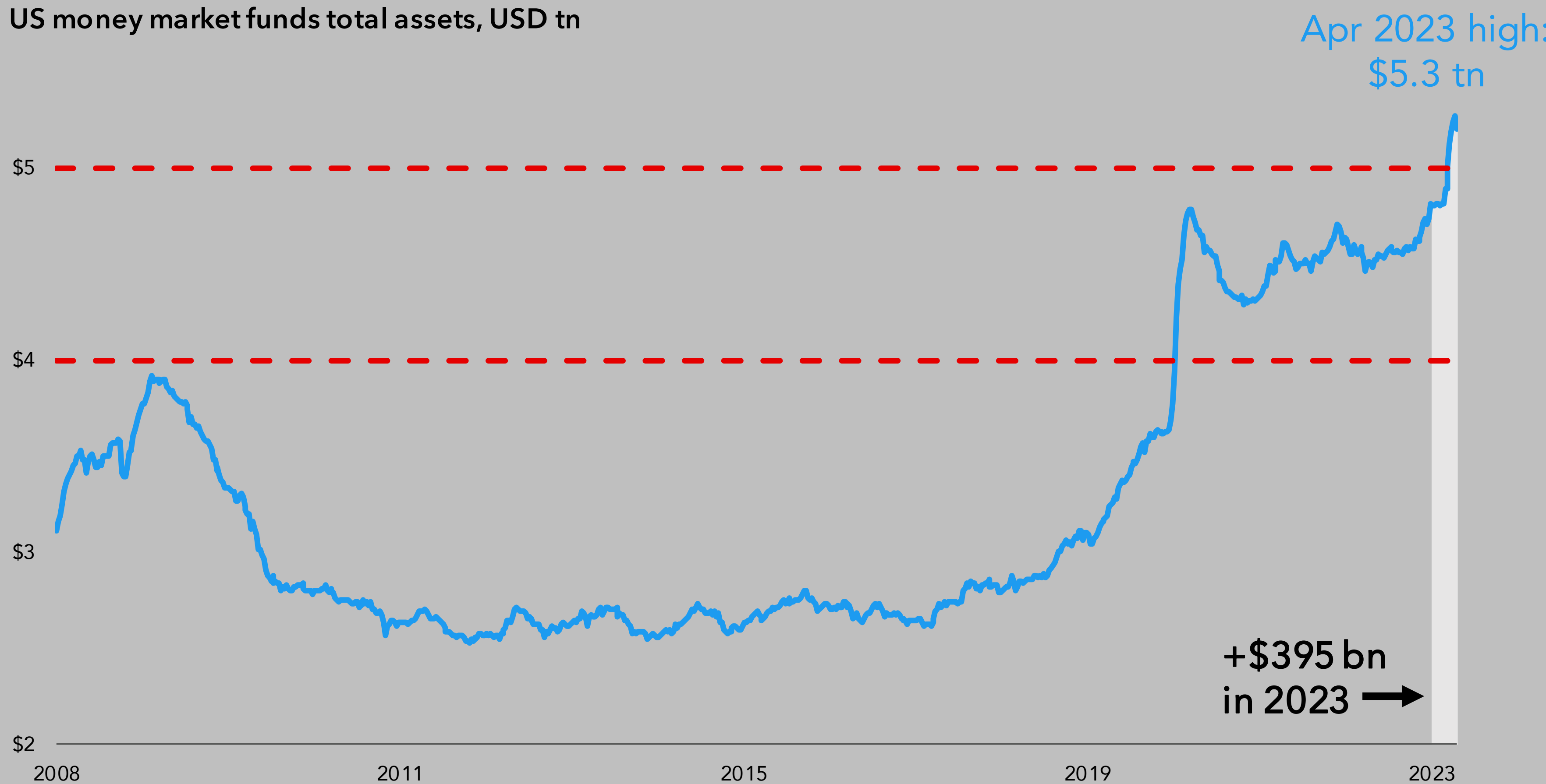


Source: (1) Federal Reserve. Torsten Slok, Apollo. Bloomberg. Data as of April 24, 2023. Seasonally adjusted. Includes both large and small banks.

US Money Market Fund Balances Elevated

Following SVB's insolvency and broader financial stability concerns, US money market fund balances surged to a record $5.3 trillion, eclipsing previous highs reached during the GFC and COVID crises. More specifically, flows into money market funds increased by nearly $400 billion since the beginning of 2023.

US money market funds total assets, USD tn



Source: (1) FT, "US money market funds: cash is king amid banking turmoil" (March 19, 2023). Bloomberg. Data as of April 24, 2023.

05

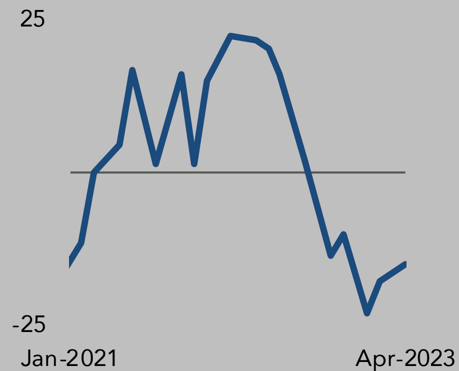
From Fed Tightening…
to Private Sector Tightening

Bank Lending Squeeze Has Begun

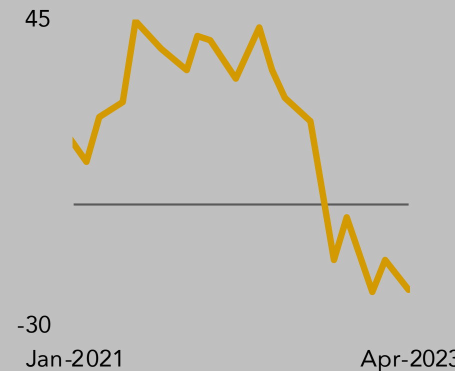
In March, the Fed's banking conditions survey showed loan demand had declined for the fifth consecutive period, with broad-based contraction across multiple sectors.

Total bank loan volume index

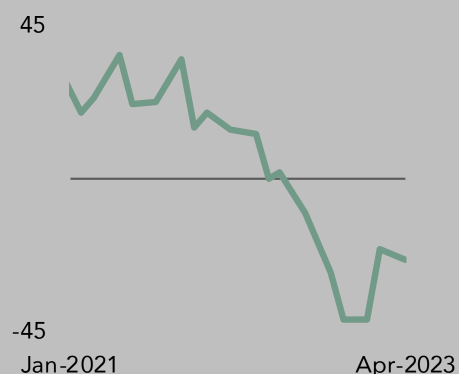
Commercial & industrial loan volume index



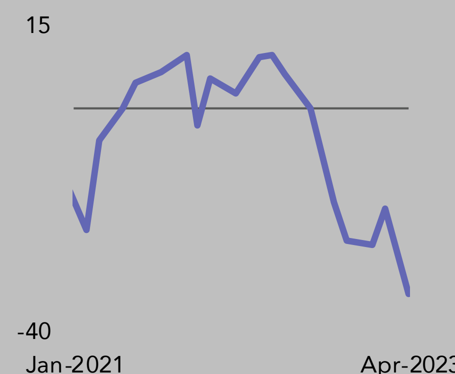
Commercial real estate loan volume index



Residential real estate loan volume



Consumer loan volume

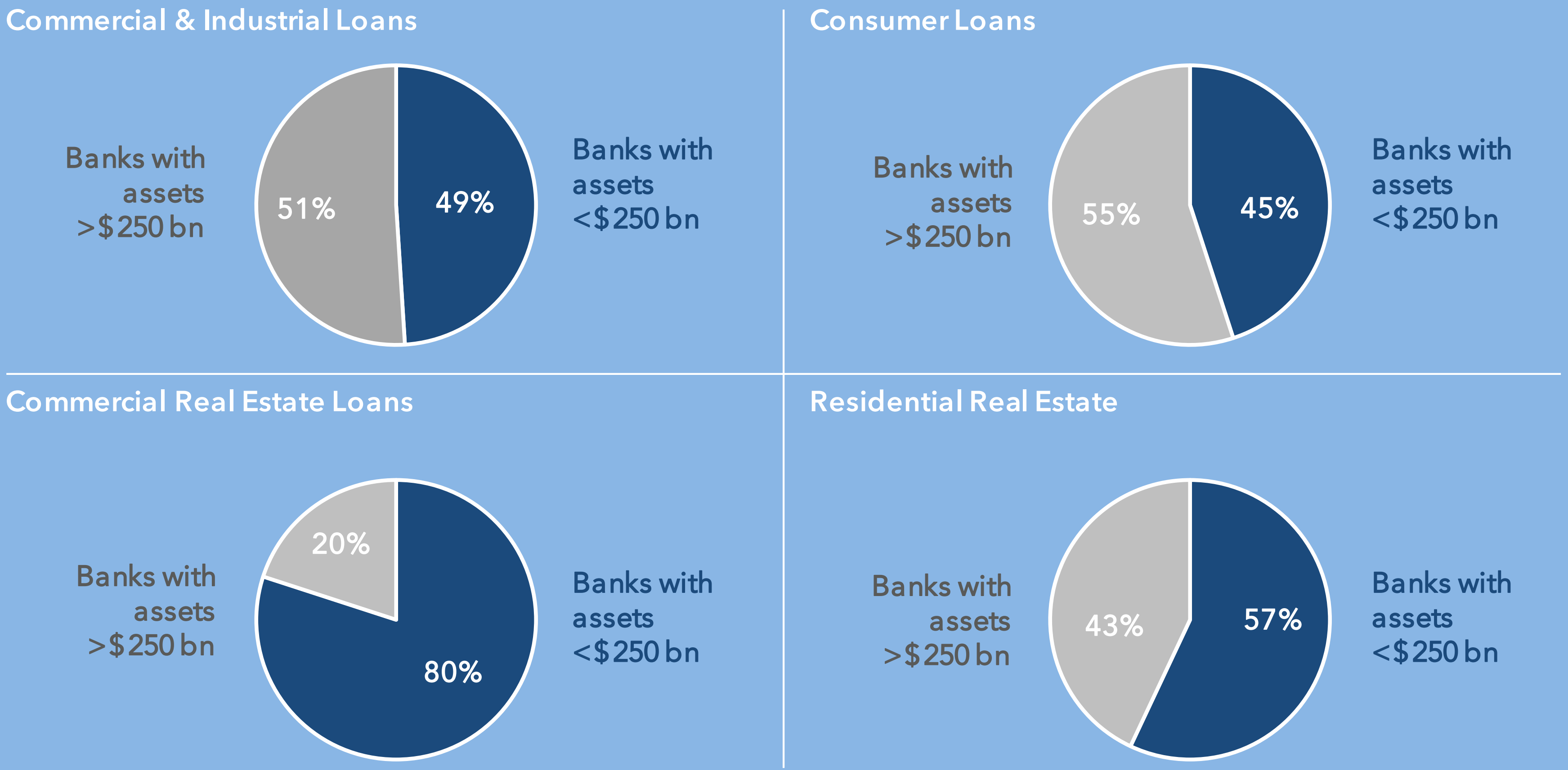


Source: (1-5) Federal Reserve Bank of Dallas. Banking Conditions Survey. Data collected March 21–29, and 71 financial institutions responded to the survey.

Role of Small Banks in the US Economy

Small, regional banks in the US (<$250 bn of assets) are critical sources of credit for the US economy, accounting for nearly 50% of consumer and industrial sector loans and nearly 60% and 80% of residential and commercial real estate loans, respectively.

% of loans by category from small (<$250 bn in assets) vs. large banks

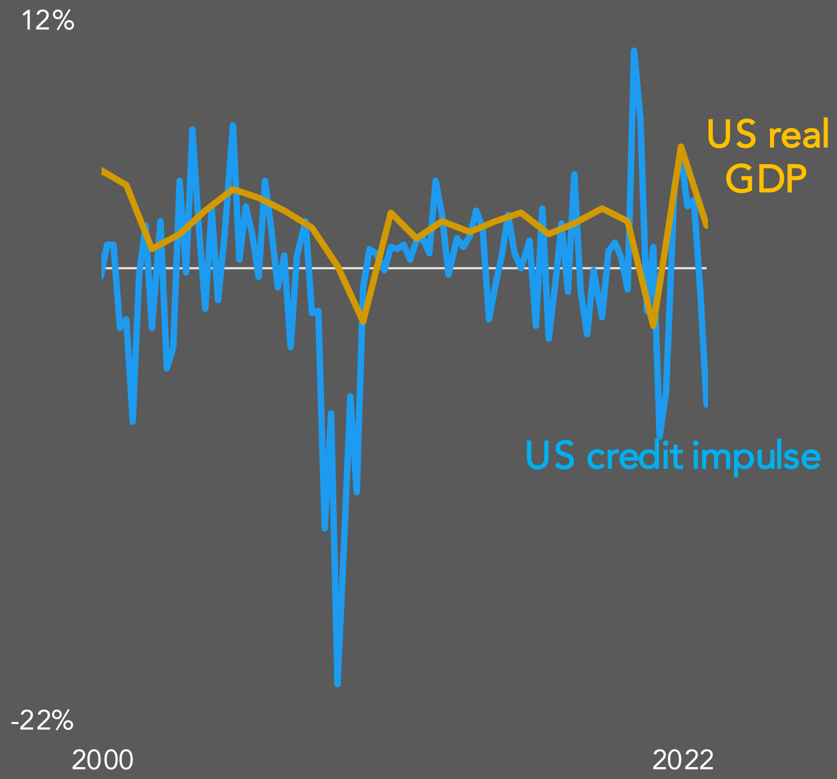


Source: (1-4) FDIC. BCA Research. Commercial real estate includes multi-family residential, construction & land development, and farmland real estate loans. Residential real estate includes single-family real estate loans. Data as of Q4 2022. Includes all FDIC-insured institutions (Commercial Banks and Savings Institutions).

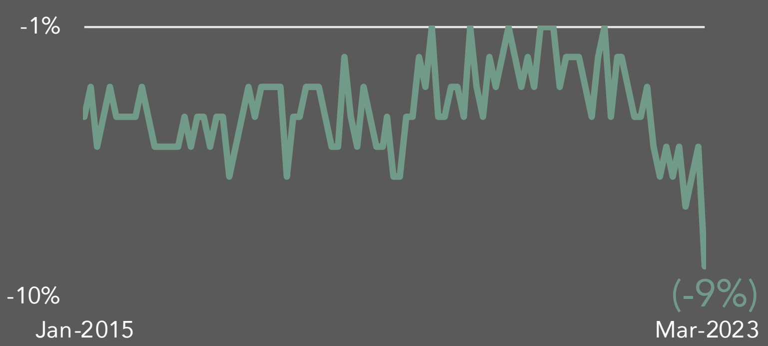
Access to Credit Tightening for Small Business

Tighter financial conditions and GDP growth are closely linked. In the March NFIB survey, 9% of US small business owners reported having a harder time securing their latest loan compared to previous attempts. Further, 9% of business owners also expect tougher credit conditions in the three months ahead, matching the highest levels in a decade.

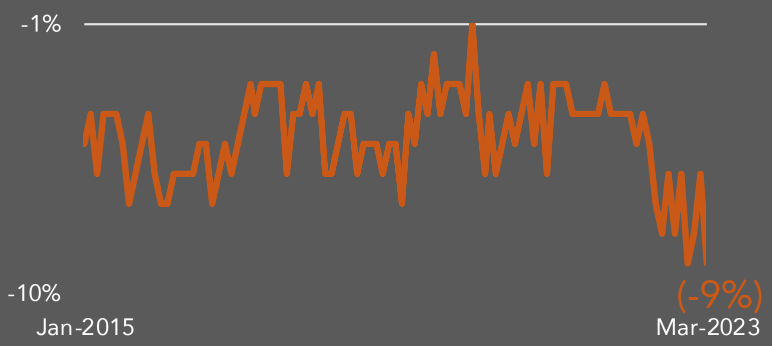
US credit impulse and real GDP (y/y)



Small business credit conditions (loan availability vs. 3 months ago)



Expectations for credit conditions

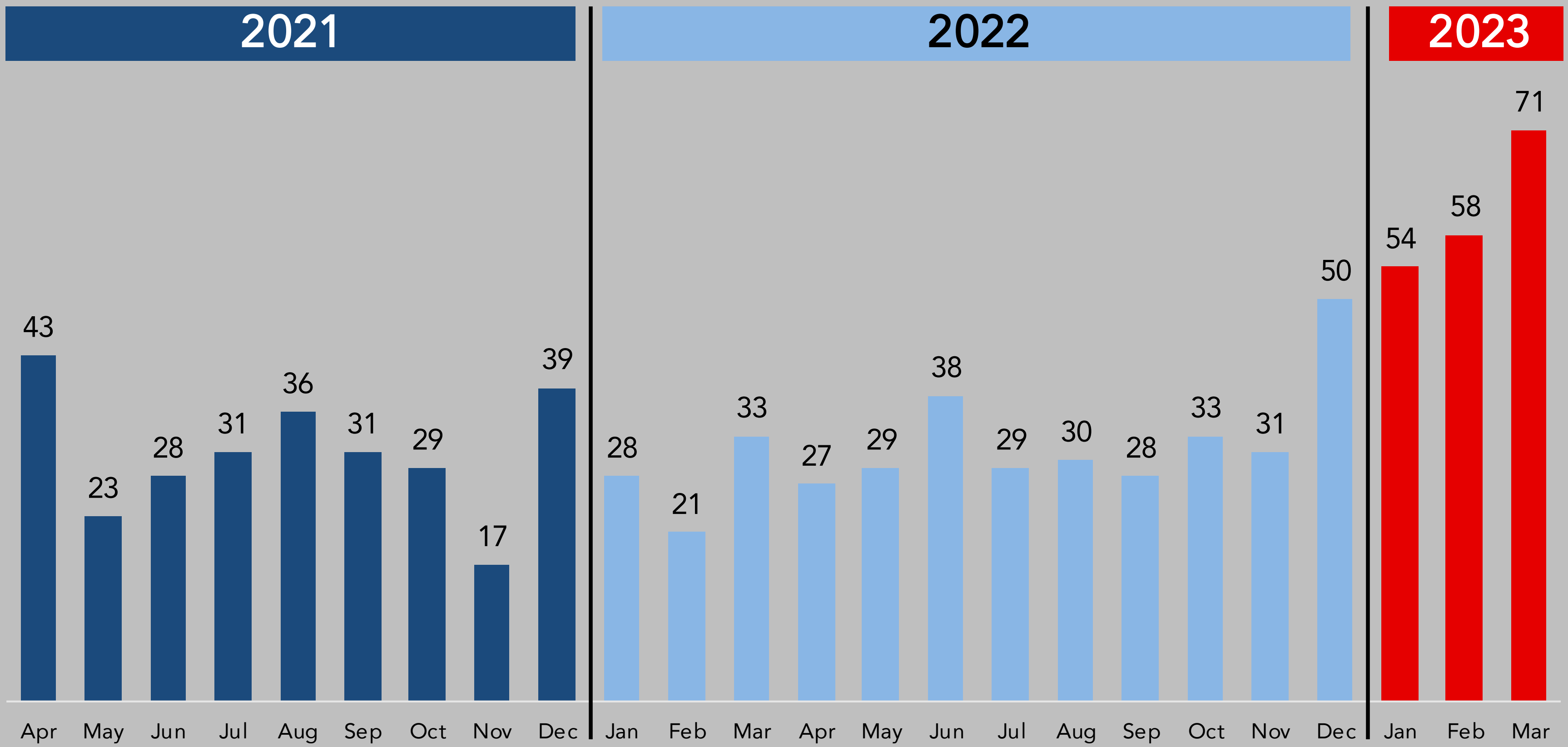


Source: (1-3) Bloomberg. Data as of April 24, 2023.

US Bankruptcy Filings Rising

As credit conditions tighten, US bankruptcy filings have begun to increase sharply in 2023

US bankruptcy filings by month

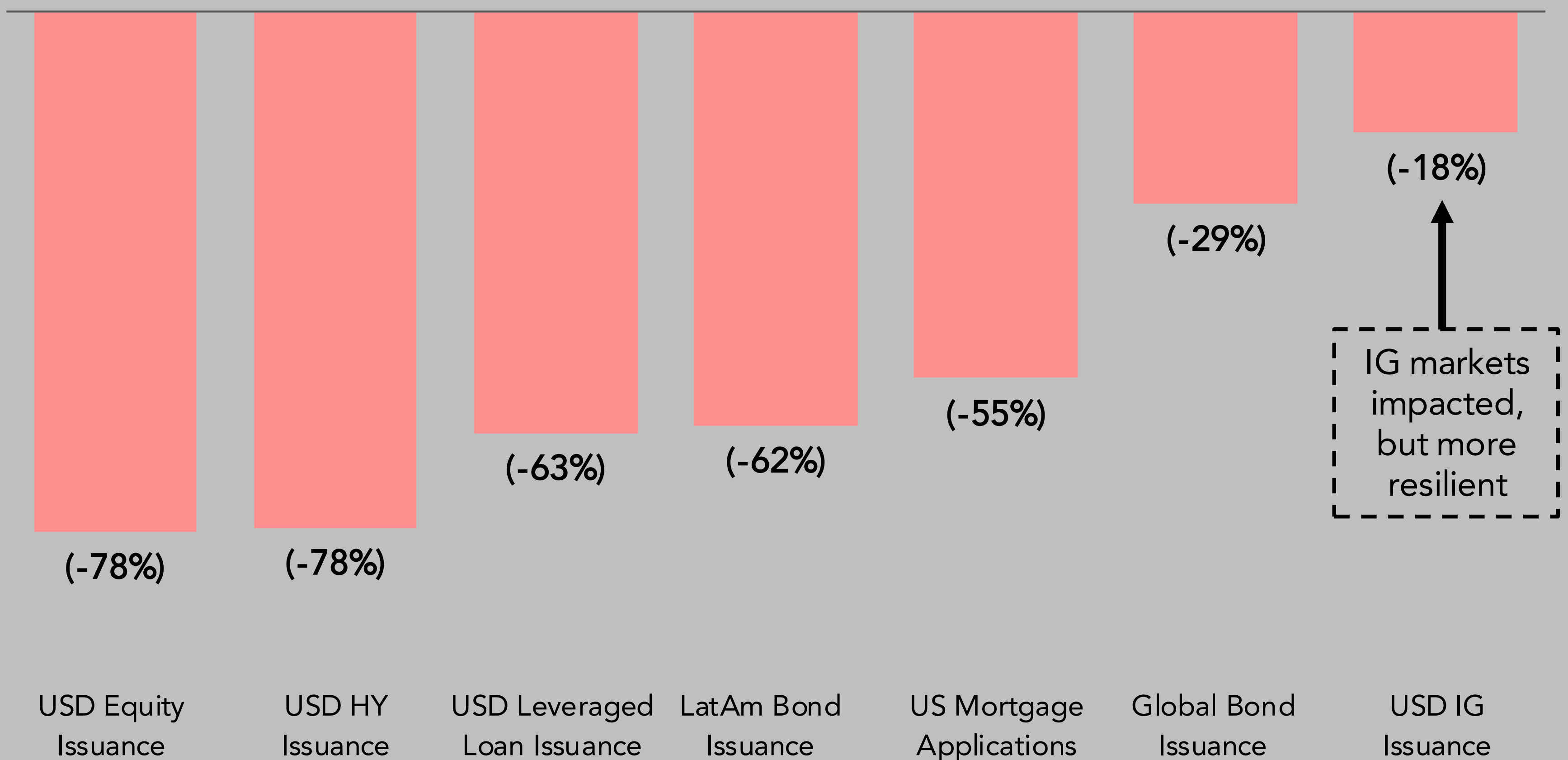


Source: (1) S&P Global Market Intelligence – covered US companies that announced a bankruptcy between April 2021 and March 31, 2023. Coverage is limited to public companies or private companies with public debt where either assets or liabilities at the time of the bankruptcy filing are greater than or equal to $2 million, or private companies where either assets or liabilities at the time of bankruptcy filing are greater than or equal to $10 million.

Issuance Volumes Down Sharply Since Fed Tightening Began

Capital markets issuance volumes were down sharply in 2022 following accelerated Fed tightening and elevated geopolitical risk. This lower pace of new issue activity has continued into 2023 YTD.

2022 full year issuance volumes (y/y)

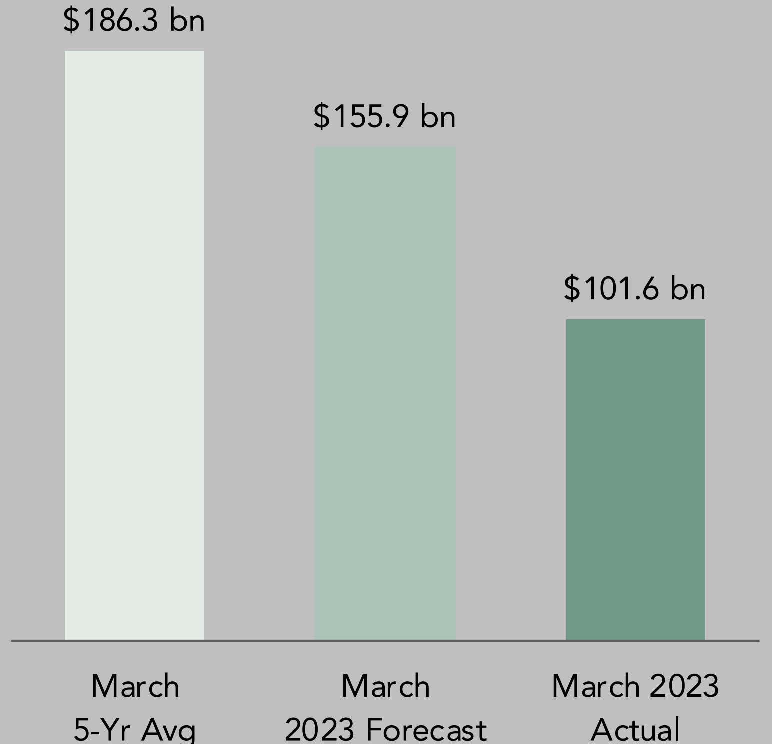


Source: (1) MUFG Capital Markets. DCM. ECM. FT. Bloomberg. Reuters.

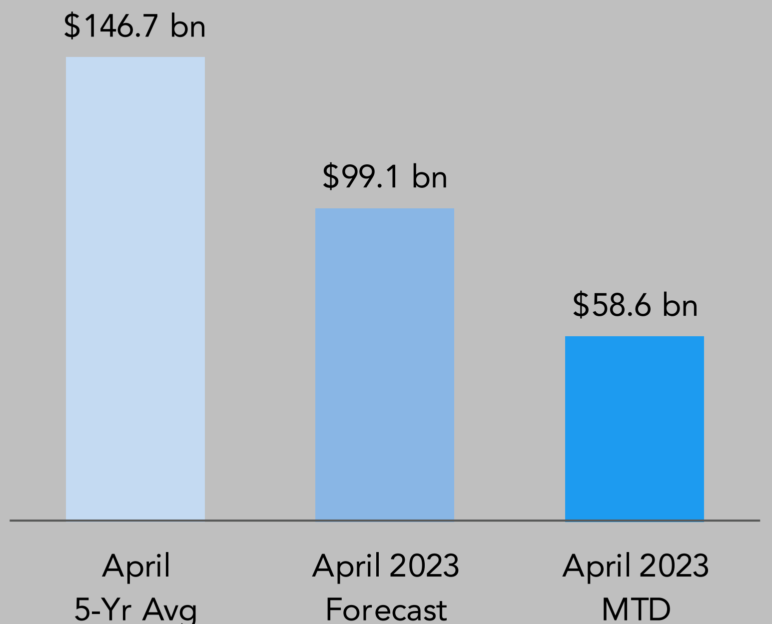
March-April IG Volumes Down

Unlike Europe and Asia, the US is a more capital markets-based economy, as opposed to bank-based (in terms of primary sources of credit). Though more resilient than bank lending data, capital markets issuance is also squeezing tighter. Following concerns around bank sector stress in March and economic data in April, IG new issuance volumes are running well below expectations.

March 2023 IG Issuance



April 2023 IG Issuance



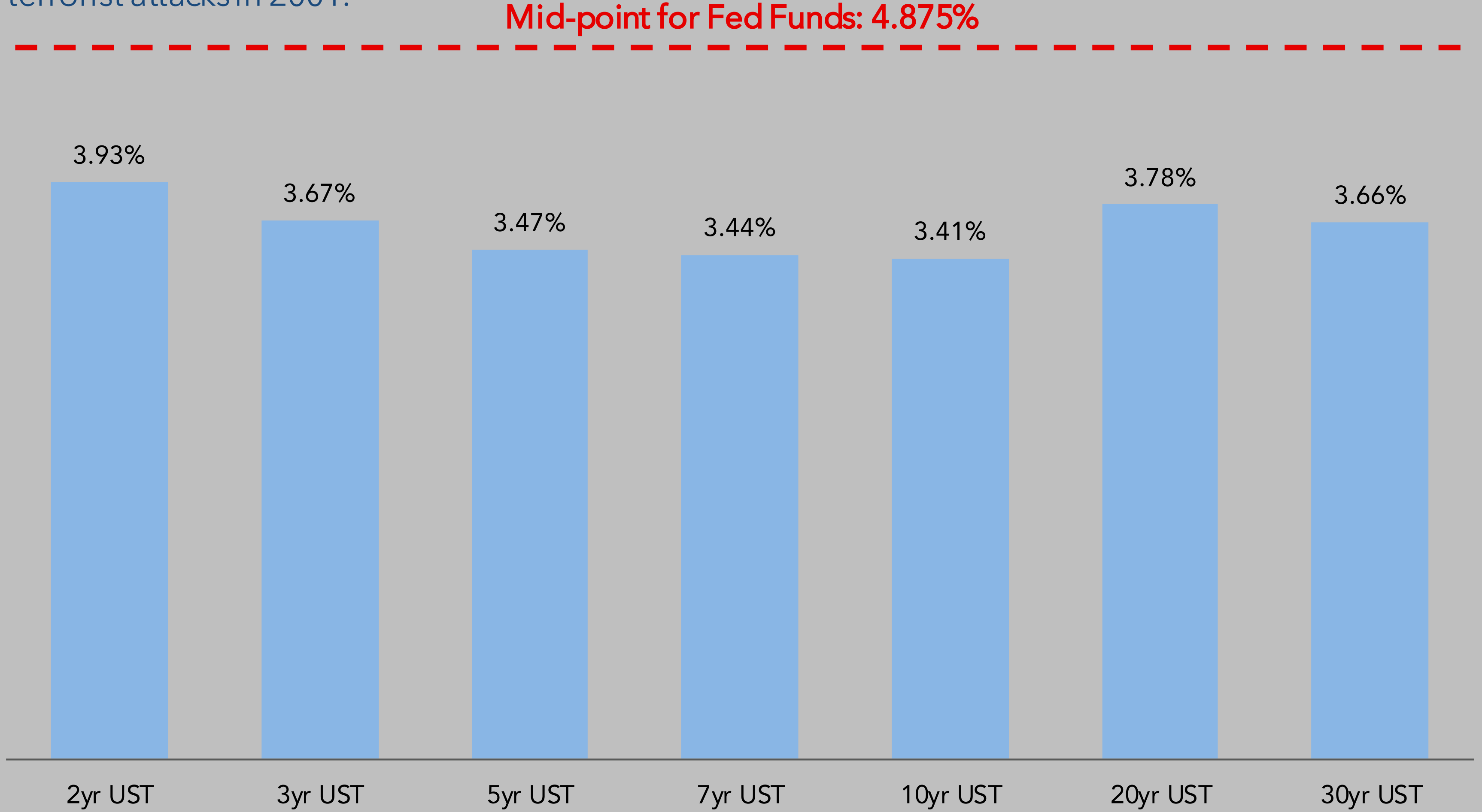
Source: (1-2) Credit Flow Research. Data through April 25, 2023.

06

From Soft Landing…
to Hard Landing

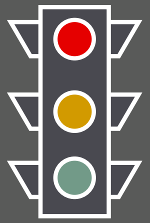
Recession Risk Supplanting Inflation Fears

As evidenced by the entire 2s-30s UST yield curve trading below Fed Funds, the market believes that financial stability and recession risk have become a greater concern than inflation. In fact, in the week following SVB's bankruptcy, 2-5 yr UST yields declined by the most in a single week since the 9/11 terrorist attacks in 2001.



Source: (1) Bloomberg. Data as of April 26, 2023.

The Recession May <u>Not</u> be Shallow



The US economy has thus far been impressively resilient to Fed rate increases. However, given the scale of bank sector stress and financial market conditions tightening, we are now concerned that the forthcoming recession may not be as shallow as previously anticipated. Importantly, some indicators like "yield curve inversion" have been reliable "leading" indicators, while others such as labor market data have historically been "lagging" indicators.

- Consumer price inflation
- Producer price inflation
- Inflation expectations
- Consumer confidence
- Leading economic indicators
- Manufacturing outlook
- PMI manufacturing
- ISM subcomponents (orders to inventory ratio)
- Rate volatility
- Inverted yield curves
- Financial conditions
- Cash / bonds outperforming equities
- Auto sales
- Mortgage rates
- New & existing home sales
- Equity market correction
- Financial & bank stocks
- Bank & financial sector spreads
- C&I bank loans
- Interbank lending markets
- Industrial metal prices
- CCC sector leverage
- Small business optimism
- CEO & business confidence

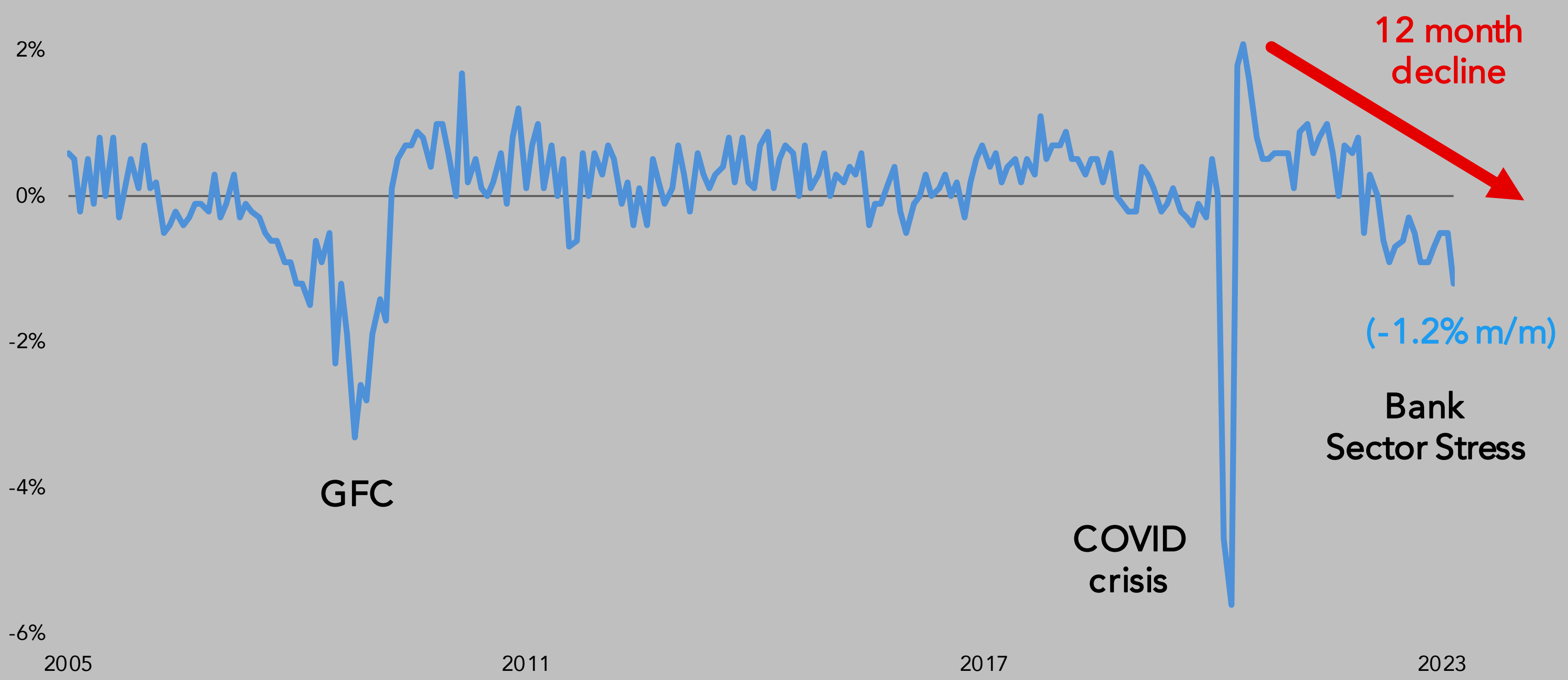
- Economic surprise index
- Retail sales
- ISM services
- ISM new orders
- Credit card balances
- Building permits
- Business spending & capex
- Corporate earnings & margins
- Liquid assets / ST liabilities
- Durable goods
- Fed bond distress indices
- IG & HY spreads
- IG & HY fund flows
- Corporate leverage
- Equity volatility

- Unemployment rate
- Job openings
- Jobless claims
- Wages
- ISM business employment
- Housing prices
- Consumer savings
- Consumer leverage
- Corporate balance sheets
- Corporate default rates
- Interest coverage ratios

Leading Indicators Signaling 2H Recession

In March, the Conference Board's Leading Economic Index (LEI) fell for its 12th consecutive month to reach 108.4, 8.0% below its December 2021 peak. The LEI tracks 10 economic indicators including consumer expectations for business conditions, interest rates, manufacturer's orders, and employment statistics. In March, 8 of the 10 subcomponents contracted, indicating broad-based weakness and elevated 2023 recession risk.

Conference Board Leading Economic Index (LEI), m/m

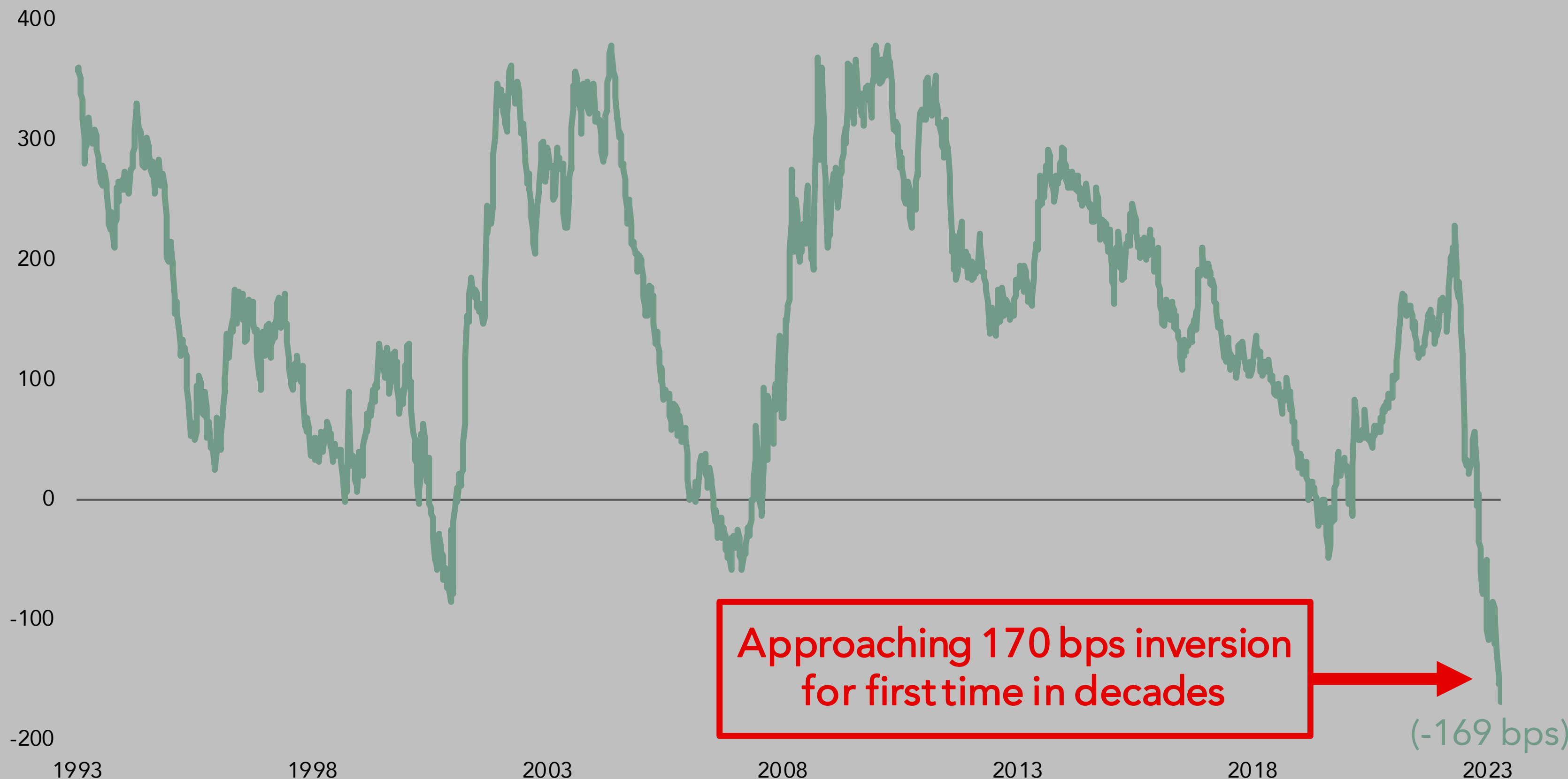


Source: (1) Bloomberg. Data as of April 24, 2023.

Yield Curve Signaling Hard Landing

The 3m-10 year yield curve, one of the Fed's preferred signals of US recession risk, is currently trading at its most deeply inverted level in decades

3m – 10 year UST curve



Source: (1) Bloomberg. Data as of April 26, 2023.

History Suggests "Hard Landing" Risk High

Looking back at the 12 Fed tightening cycles in the post-WWII era, the Fed only avoided a "hard landing" on three occasions (mid-1960s, 1983, and 1994). Historically, recessions have been more likely to follow tightening cycles when the total rate increases were larger and when initial and peak inflation were higher.

US rate cycles and recession periods

Tightening Cycle	Total bps hiked	Peak inflation rate	Hard or soft landing?
1954 - 1957	227 bps	3.7%	Hard
1958 – 1960	305 bps	3.6%	Hard
1964 – 1966	**210 bps**	**3.8%**	**Soft**
1968 – 1969	500 bps	6.2%	Hard
1972 – 1974	850 bps	12.3%	Hard
1977 – 1980	1,040 bps	14.8%	Hard
1980 – 1981	790 bps	11.0%	Hard
1983 – 1984	**250 bp**	**4.8%**	**Soft**
1988 – 1989	300 bps	5.2%	Hard
1994 – 1995	**300 bps**	**3.0%**	**Soft**
1999 – 2000	175 bps	3.8%	Hard
2004 – 2006	425 bps	4.7%	Hard

Source: (1) Oxford Economics, "What History Tells us About Rate Hikes and Recession Risk" (May 9, 2022). 2017-2018 tightening cycle not included because interrupted by exogenous COVID shock.

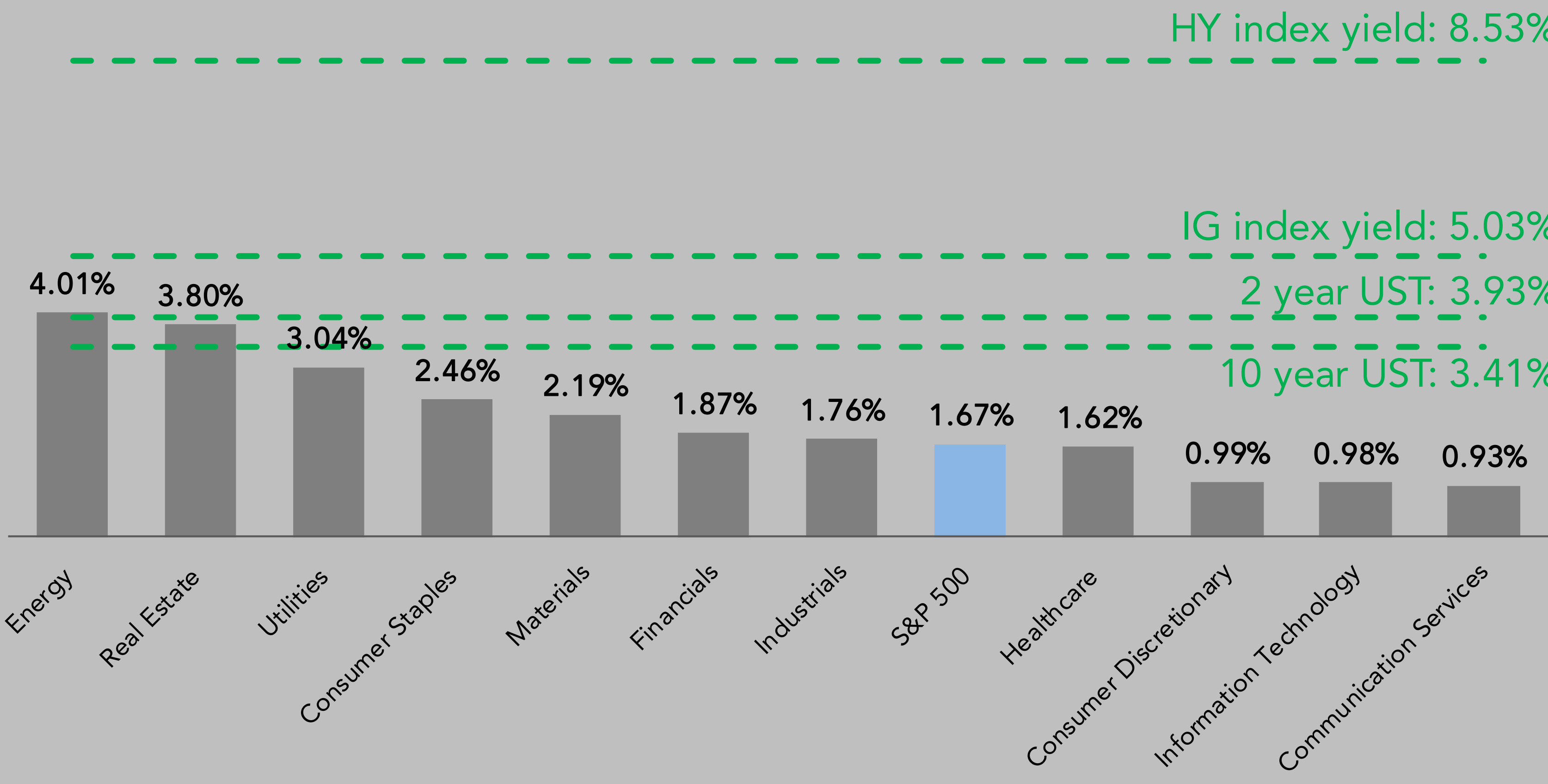
07

From Rate and Duration Risk…
to Recession and Credit Risk

Bond Markets Still Offering Attractive Yields

Compared to one year ago, the higher corporate bond yields in today's market offer attractive income for investors, as well as cushion to weather volatility. In fact, the additional yield between bond markets and S&P 500 dividend yields are at their widest level since 2007.

S&P 500 dividend yields by sector



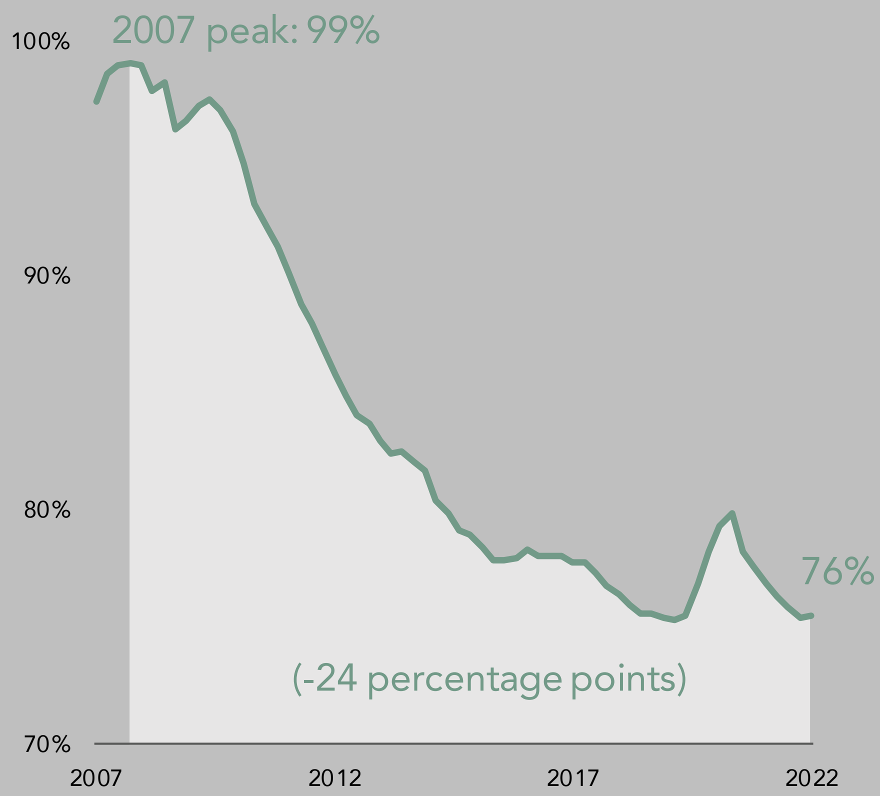
Source: (1) Bloomberg. Data as of April 26, 2023. Dividend yields are Bloomberg trailing 12 month dividend yields as of April 21, 2023.

Strong Balance Sheets with "Pockets of Stress"

Just before the financial crisis in 2007, US household debt to GDP reached a peak of 99%. Today, after significant deleveraging, US household debt to GDP stands at 76%. Similarly, in the COVID recovery period, investment grade corporates reduced leverage while extending debt maturities.

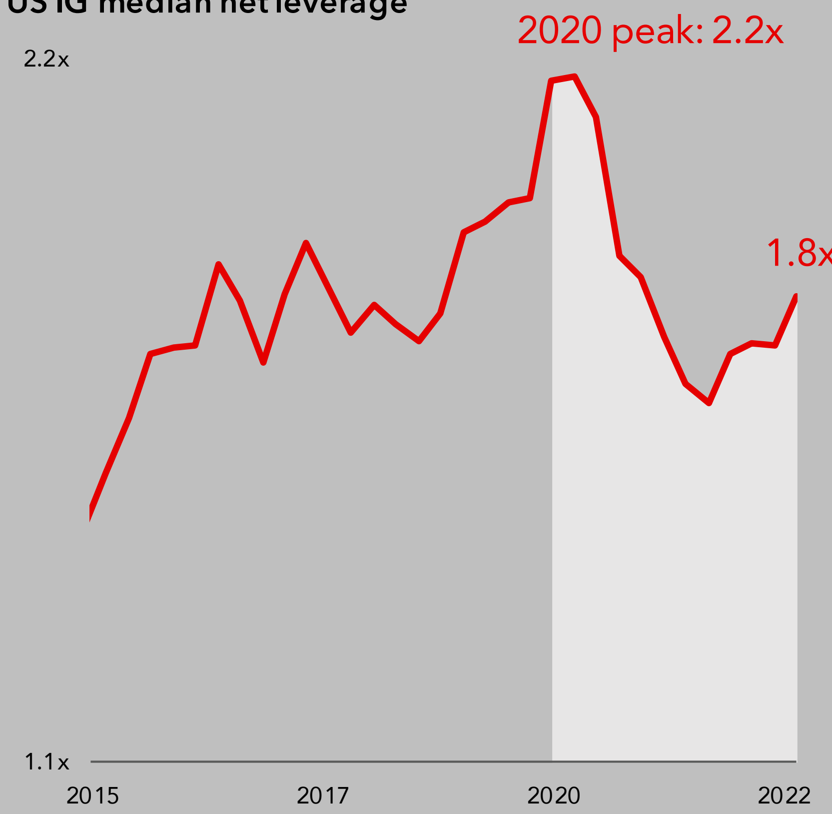
Consumer Balance Sheet

US household debt to GDP



Corporate Balance Sheet

US IG median net leverage

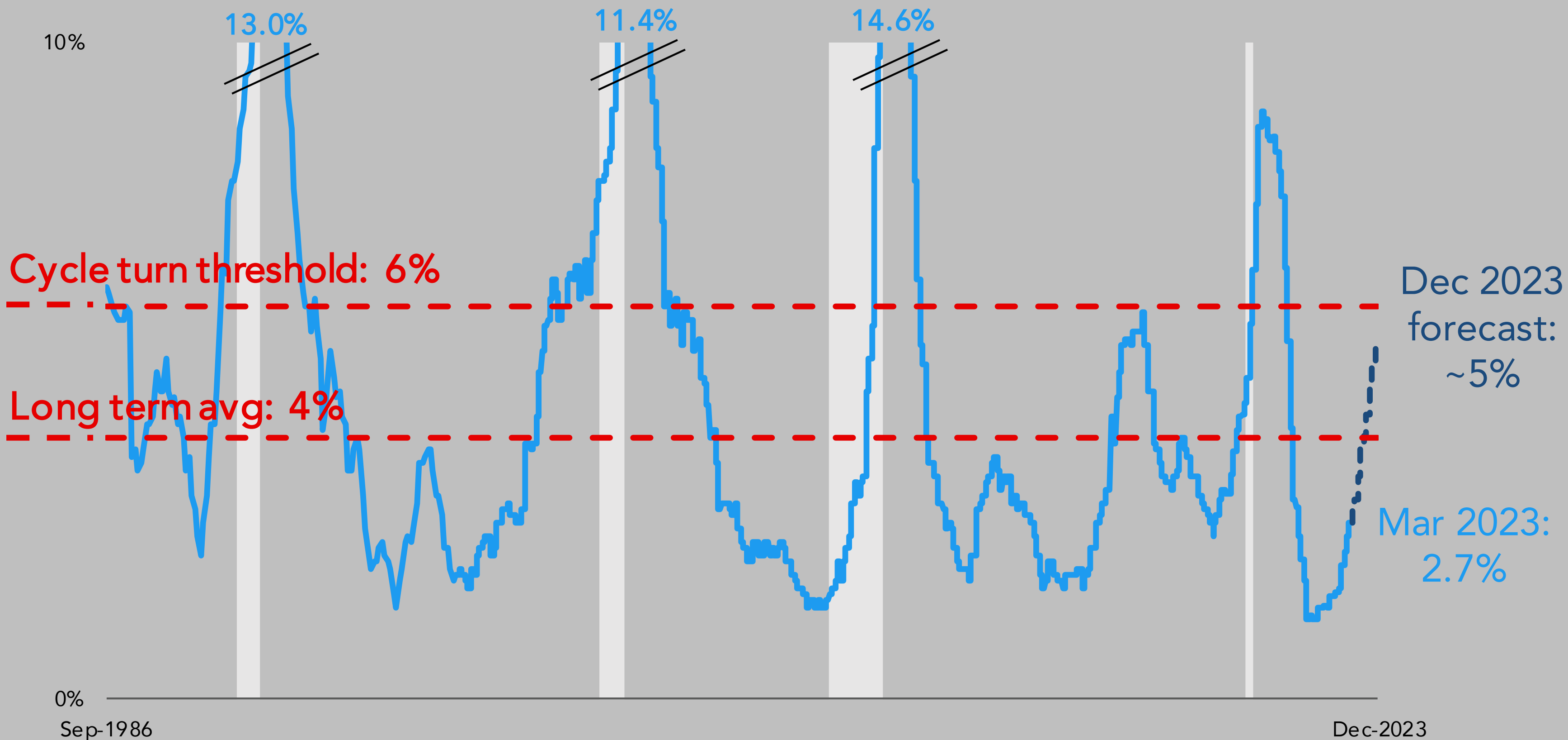


Source: (1) IIF. Global Debt Monitor. Data through Q4 2022. (2) CreditSights. BAML Index. Data through Q4 2022.

The Credit Cycle Has Begun to Turn

Currently, fundamentals in the USD credit market are much stronger than they have typically been in the months preceding a recession, but the credit cycle has begun to turn. Historically, default rates have been a lagging indicator during recessionary periods and rise quickly above 6% when the economy (and then credit cycle) turns. In the year ahead, default rates are likely to rise up into the 4-5 % range, with peak defaults in the cycle occurring as late as 2H 2024 or early 2025.

US speculative grade default rate

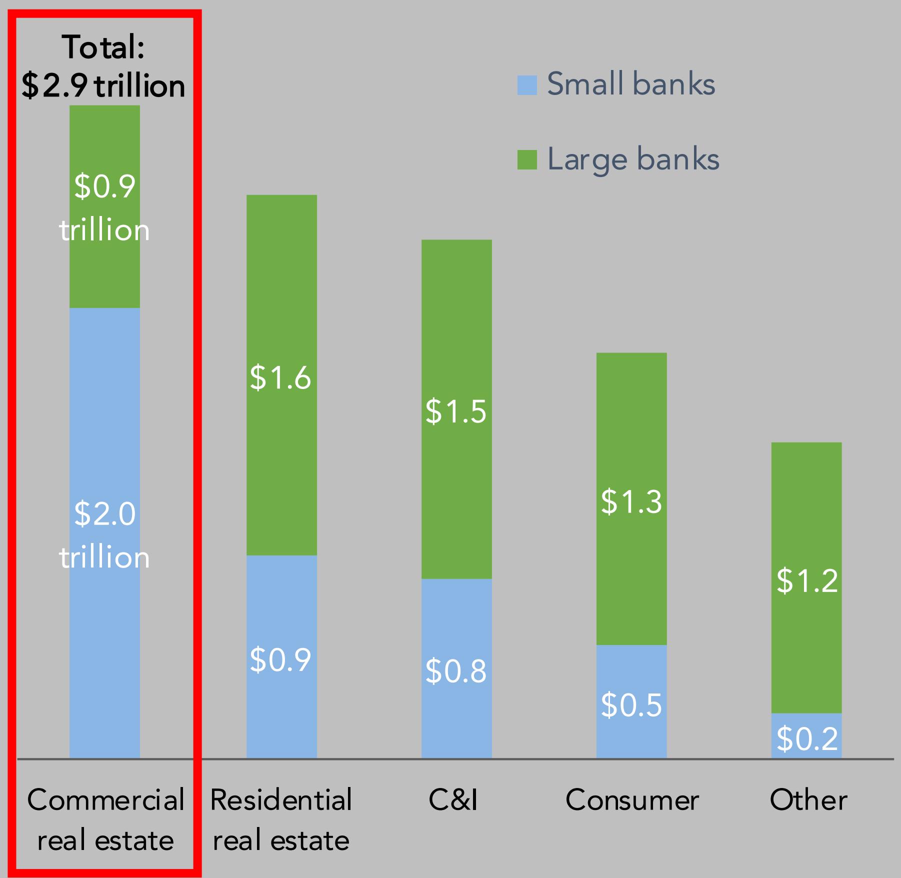


Source: (1) Moody's. Data as of April 24, 2023. Default rate is trailing 12 months US speculative grade default rate.

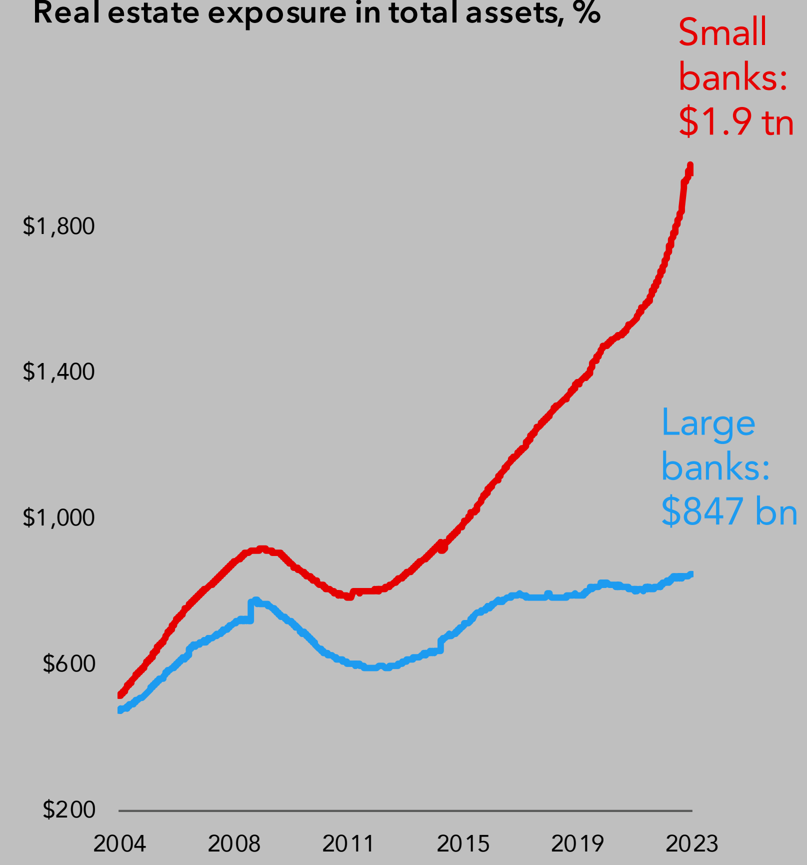
Outsized CRE Exposure for Small Banks

Of the $4.5 trillion of loans on small banks' balance sheets, commercial real estate loans are by far the largest component, accounting for nearly $2 trillion. Smaller US banks account for roughly one third of deposits and around 70% of lending to the commercial property sector.

US bank loans, USD tn



Real estate exposure in total assets, %

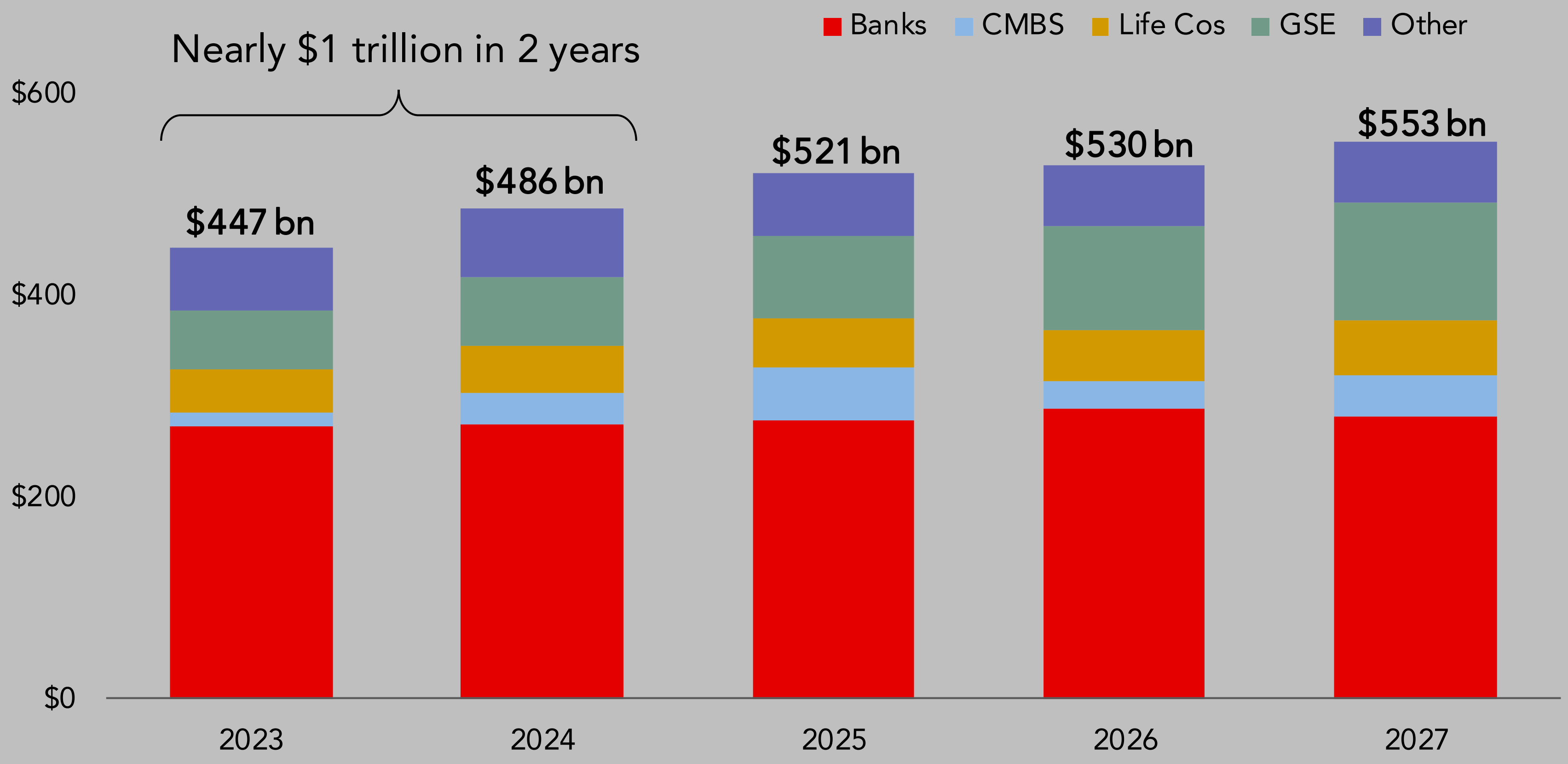


Source: (1) Oxford, "Economic cost of banking stress still to come" (March 21, 2023). (2) FRED. Assets and Liabilities of Commercial Banks in the US – H.8. Tables 6 & 8. Data as of April 24. 2023.

CRE Maturity Wall Nearly $1 Trillion

Small banks are the largest lenders to the commercial real estate sector. Over the next 18 months, the commercial real estate (CRE) maturity wall is close to $1 trillion in size, with the percentage held by banks estimated at nearly 60%. Refinancing risk has thus become a formidable issue in light of higher rates, a more discriminating late cycle investor base, return-to-office rates running at 40-60% nationally and peak to trough CRE price decline estimates approaching 20-30%.

Maturing loans by lender type, USD bn

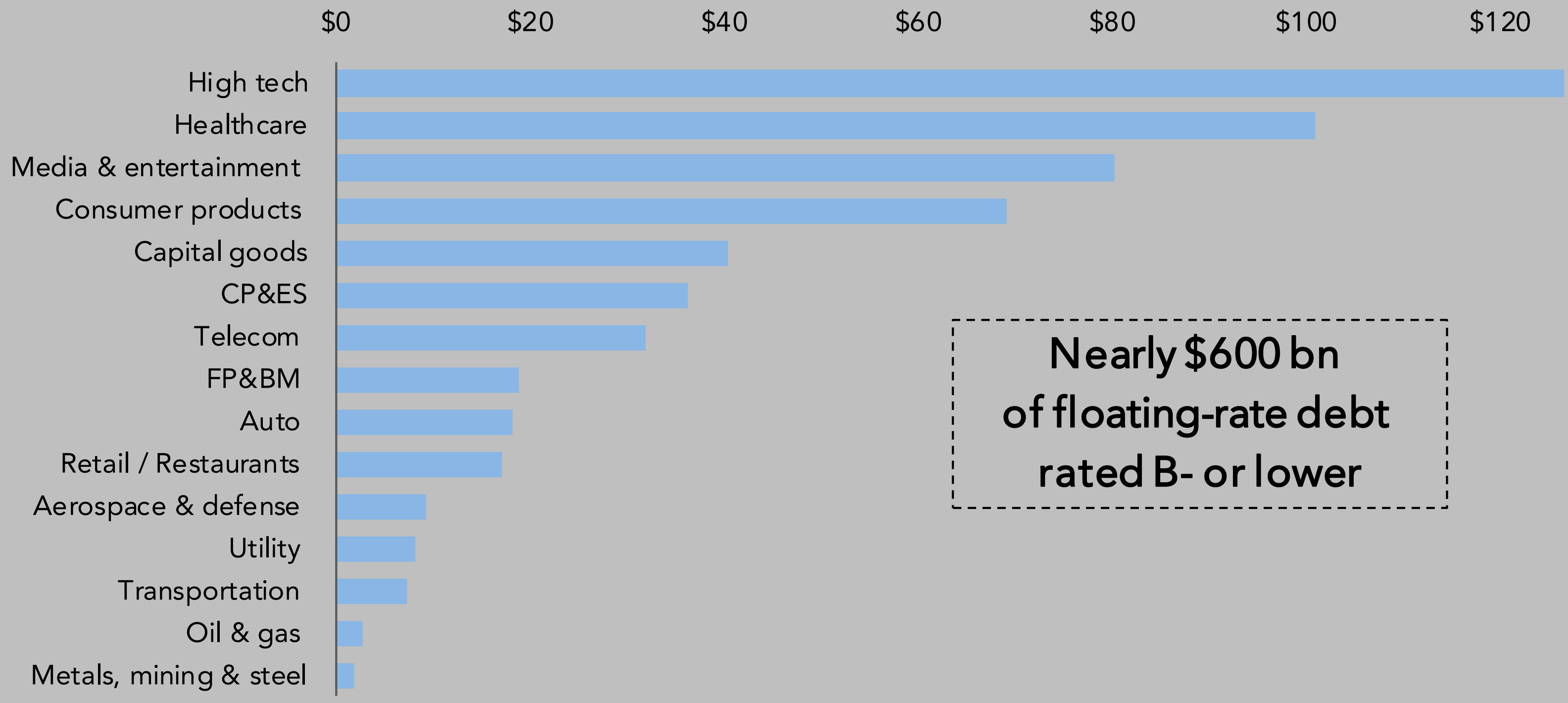


Source: (1) Trepp, "Commercial Mortgage Universe Grows 9.4% in Q3 2022; Multifamily Universe Tops $2 Trillion" (December 2022).

Lower Rated Floating-Rate Debt

In addition to the commercial real estate sector, another potentially vulnerable area for credit markets is the large amount of lower-rated floating rate debt against the backdrop of rates that have moved rapidly higher. According to a study by S&P, there is roughly $570 bn of outstanding non-financial corporate floating rate debt at the B- or lower level. Further, this debt is heavily concentrated in consumer or high tech dependent sectors.

US nonfinancial corporate floating rate debt outstanding, B- and below, USD bn



Source: (1) S&P Global, "Credit Conditions North America Q2 2023 – Coalescing Stresses" (March 28, 2023). Foreign currencies are converted to USD on the respective report period date. Includes bonds, loans and revolving credit facilities that are rated by S&P Global Ratings. CP&ES is chemicals, packaging and environmental services. FP&BM is forest products and building materials.

08

From Growth Deceleration…
to Global Recovery

Synchronized Global Slowdown in 2023

GDP growth forecasts, y/y

Region / country	2022	2023	
North America			
Mexico	3.1%	1.5%	↓
US	2.1%	0.9%	↓
Canada	3.4%	(-0.3%)	↓
Eurozone	**3.5%**	**0.8%**	
Ireland	12.2%	2.3%	↓
Spain	5.5%	1.8%	↓
Netherlands	4.5%	1.6%	↓
Italy	3.8%	0.8%	↓
France	2.6%	0.5%	↓
Germany	1.9%	0.3%	↓
Finland	2.1%	(-0.2%)	↓
Other Europe			
Norway	3.2%	1.3%	↓
Turkey	5.6%	1.0%	↓
Denmark	3.8%	0.6%	↓
UK	4.1%	0.3%	↓
Switzerland	2.1%	0.3%	↓
Russia	(-2.1%)	0.2%	↑
Poland	5.3%	(-0.3%)	↓
Sweden	2.7%	(-0.5%)	↓
Czech Republic	2.5%	(-0.7%)	↓

Region / country	2022	2023	
APAC	**3.2%**	**3.8%**	
China	3.0%	5.5%	↑
India	6.7%	4.8%	↓
Philippines	7.6%	3.9%	↓
Indonesia	5.3%	3.9%	↓
Vietnam	8.0%	3.0%	↓
Australia	3.7%	1.6%	↓
Japan	1.0%	0.6%	↓
South Korea	2.6%	0.5%	↓
Singapore	3.7%	0.4%	↓
New Zealand	2.2%	(-0.6%)	↓
LatAm	**3.9%**	**0.7%**	
Brazil	3.0%	0.5%	↓
Colombia	7.5%	(-0.5%)	↓
Chile	2.5%	(-1.0%)	↓
Argentina	5.2%	(-2.0%)	↓
MENA	**5.3%**	**2.2%**	
Sub-Saharan Africa	3.6%	2.7%	↓
UAE	7.9%	2.4%	↓
Saudi Arabia	8.7%	1.6%	↓
South Africa	2.0%	0.6%	↓

Source: (1) Oxford Economics. Data as of April 24, 2023.

Sustainable Recovery More Likely in 2024

GDP growth forecasts, y/y

Region / country	2023	2024
North America		
Canada	(-0.3%)	1.3%
Mexico	1.5%	1.2%
US	0.9%	0.4%
Eurozone	**0.8%**	**1.0%**
Ireland	2.3%	2.5%
Spain	1.8%	1.3%
Netherlands	1.6%	1.1%
Finland	(-0.2%)	1.0%
Italy	0.8%	0.9%
Germany	0.3%	0.8%
France	0.5%	0.8%
Other Europe		
Poland	(-0.3%)	3.0%
Turkey	1.0%	2.4%
Czech Republic	(-0.7%)	2.3%
Russia	0.2%	1.8%
Denmark	0.6%	1.7%
Switzerland	0.3%	1.7%
UK	0.3%	1.3%
Norway	1.3%	1.2%
Sweden	(-0.5%)	1.0%

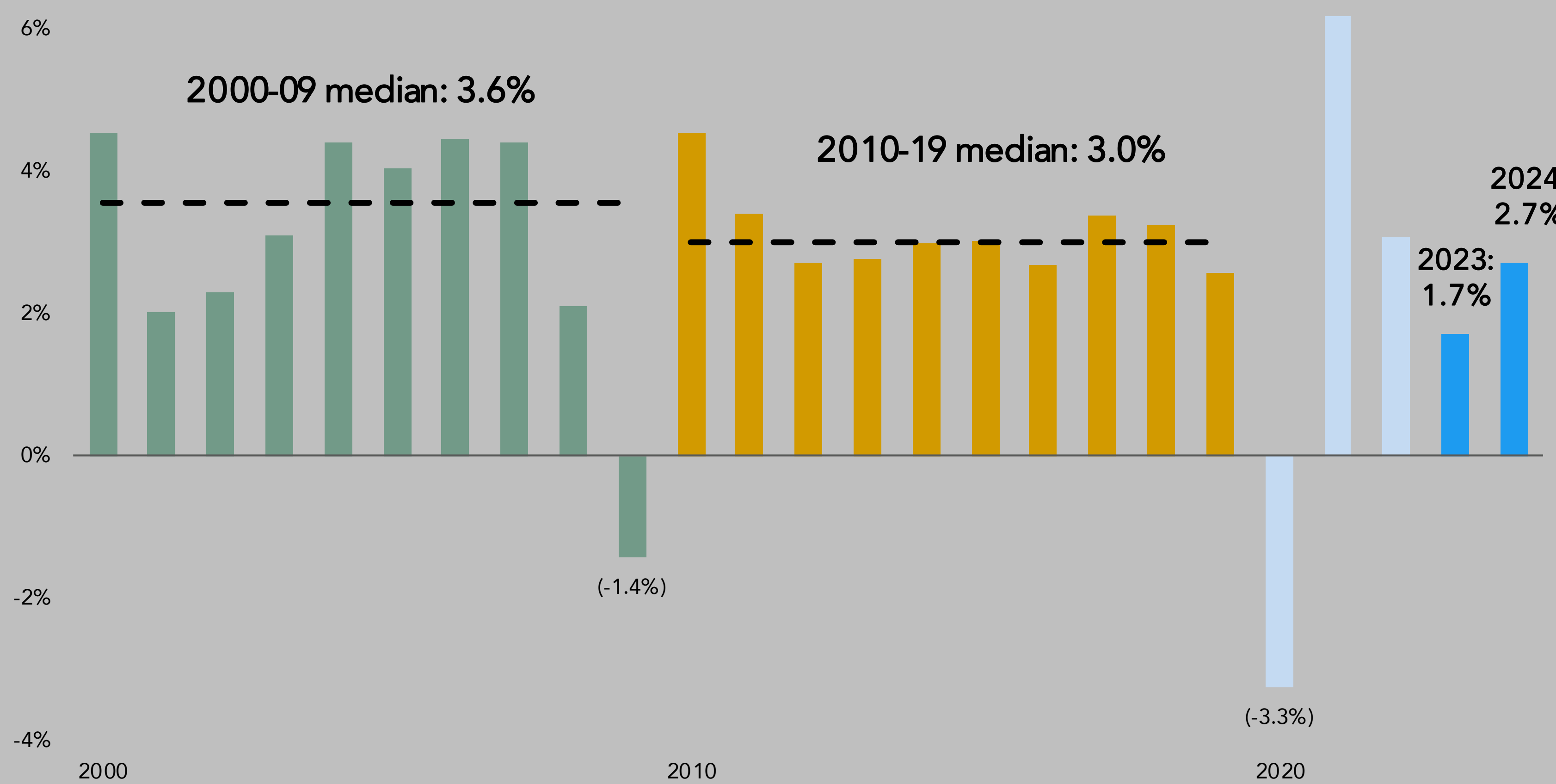
Region / country	2023	2024
APAC	**3.8%**	**4.0%**
India	4.8%	6.3%
Vietnam	3.0%	4.9%
Indonesia	3.9%	4.8%
Philippines	3.9%	4.7%
China	5.5%	4.6%
New Zealand	(-0.6%)	2.9%
Singapore	0.4%	2.6%
South Korea	0.5%	2.1%
Australia	1.6%	1.6%
Japan	0.6%	1.1%
LatAm	**0.7%**	**2.1%**
Argentina	(-2.0%)	2.7%
Chile	(-1.0%)	2.4%
Brazil	0.5%	2.0%
Colombia	(-0.5%)	0.5%
MENA	**2.2%**	**2.9%**
UAE	2.4%	4.1%
Sub-Saharan Africa	2.7%	3.0%
Saudi Arabia	1.6%	2.7%
South Africa	0.6%	1.1%

Source: (1) Oxford Economics. Data as of April 24, 2023.

Global Recovery Unlikely to Be Strong

In the new macro supercycle, global growth may be closer to the 3% range than the 3.5 - 4% range during peak China and EM growth of earlier years.

Global GDP growth, y/y



Source: (1) Oxford Economics. Bloomberg. 2023 and 2024 forecast is World Bank. Data as of April 18, 2023.

Global Recovery Unlikely to Be Strong

By historical standards, the post-COVID global recovery is likely to be an anemic one due to a confluence of pre-existing headwinds, many of which accelerated during COVID. In the new macro-supercycle, global growth may be closer to the 3% range than the 3.5 - 4% range during peak China and EM growth of earlier years.

Headwinds Driving Structurally Lower Global Growth

- ***Smaller global growth engines*** (lower US & China growth)
- ***Structurally lower growth in China*** (pivot to CCP and state, debt & demographics, low productivity)
- ***Aging demographics*** (US, China, Europe, UK, Japan)
- ***Smaller fiscal and monetary policy toolkit*** (excessive post GFC & COVID stimulus)
- ***Structurally higher inflation*** (labor & housing shortages, deglobalization, energy transition, tight commodity markets)
- ***COVID's long shadow, scars*** (small business, lower income demographics)
- ***More vulnerable EM economies*** (COVID damage, high debt burdens, commodity risk)
- ***New era of higher geopolitical friction*** (US-China rivalry, multi-polar conflict)

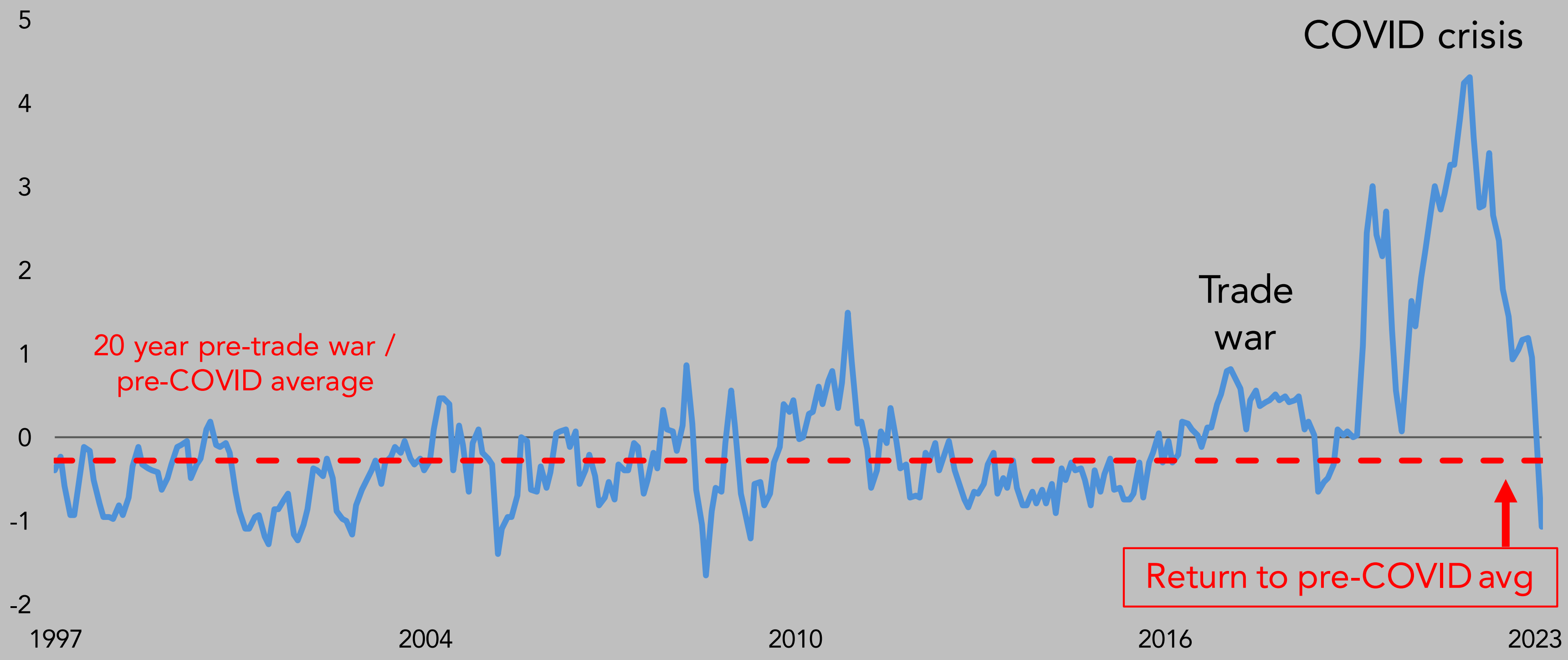
09

From Demand Constrained World…
to Supply Constrained World

Restructuring of Global Supply Chains

Nearly three years after the COVID-19 crisis began, the February reading of the Fed's Global Supply Chain Pressure index returned to its pre-COVID average, having declined in seven of the prior 10 months. The index, which reached its peak period of dislocation in December 2021, examines 27 transportation and manufacturing-related variables in global supply chains across seven large trading economies (US, China, Europe, UK, Japan, South Korea and Taiwan).

New York Fed global supply chain pressure index



Source: (1) Bloomberg. New York Fed index based on data from the Bureau of Labor Statistics; Harper Petersen; Baltic Exchange; IHSMarkit; ISM; Haver Analytics; Bloomberg; NY Fed researchers' calculations. Index is normalized such that zero indicates that the index is at its average value with positive values representing how many standard deviations the index is above this average and negative values the opposite. Data updated as April 24, 2023.

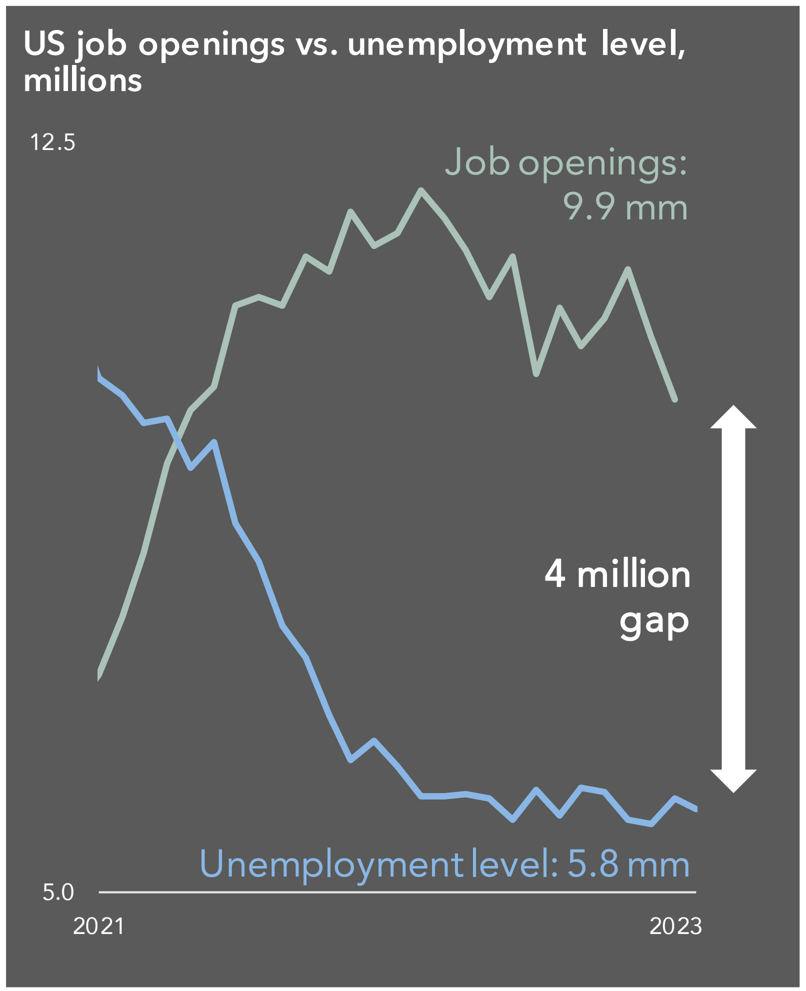
“Structural” Shortfalls in Labor Markets

Structural challenges in labor markets are likely to be a persistent theme for many years, with implications for inflation, corporate capex spending & profit margins

More COVID-related

- COVID fears
- COVID visa / travel restrictions
- COVID behavior changes
- Elevated consumer savings
- Child & elderly care challenges
- Accelerating baby boomer retirements
- Aging demographics
- Skillset gaps
- Low immigration
- Technology disruption

More STRUCTURAL



Source: (1) Bloomberg. Data as of April 24, 2023.

Persistent & Structurally Higher Inflation

Even as inflation declines from the peaks of mid-2022, several pervasive megatrends are likely to drive persistent and structurally higher inflation in the new macro supercycle compared to the "Great Moderation" of the last 40 years.

Mega-Trends Driving Structurally Higher Inflation
Structural labor shortages
Under-supplied housing markets
Energy transition
ESG's acceleration
De-globalization
Restructuring global supply chains
Resurgent commodities supercycle
US-China structural rivalry

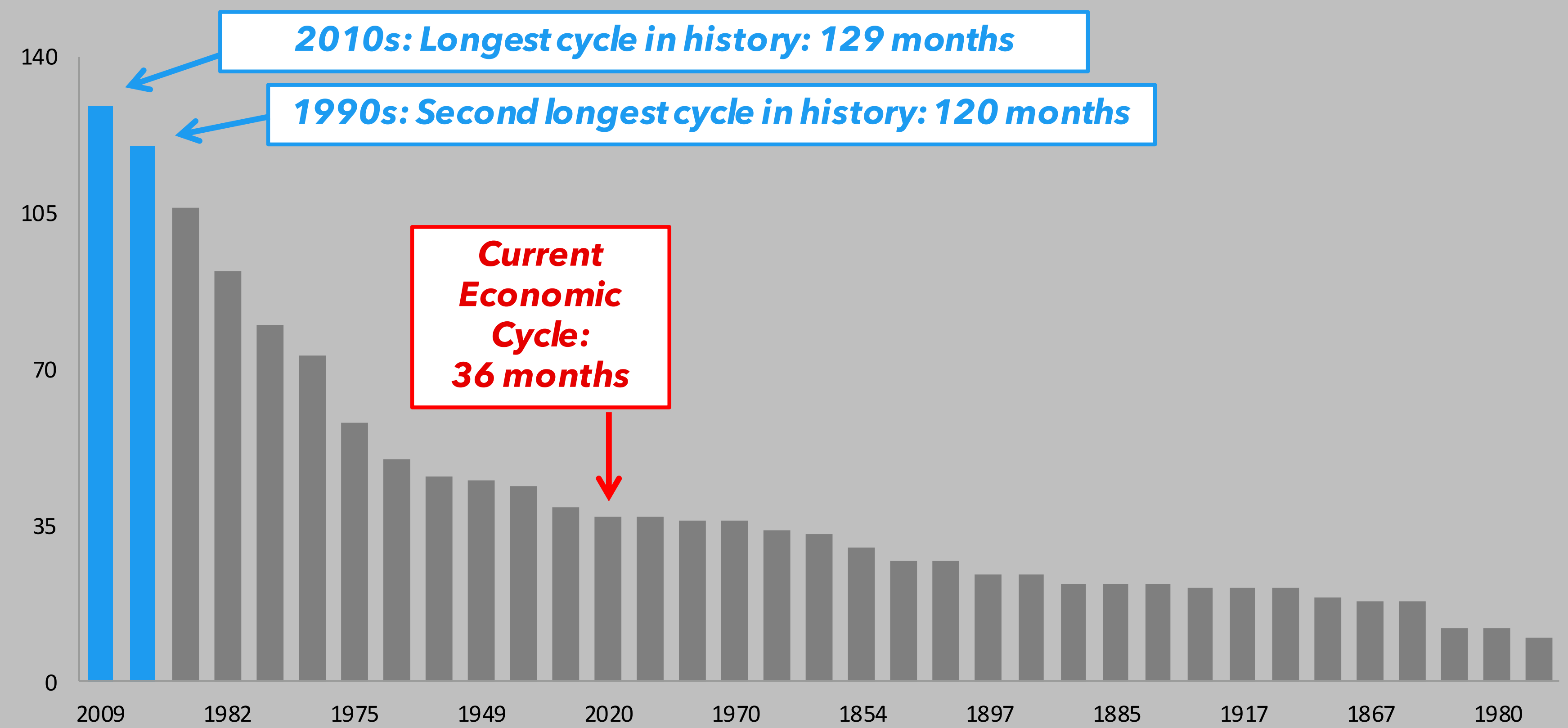
10

From the "Great Moderation"… to Higher Structural Volatility

Shorter Economic Cycles

The two longest US economic cycles occurred during the "Great Moderation" of the last 40 years. More effective central bank inflation policy and improved business management of supply chains were important contributors to the length of recent cycles. In the new macro supercycle, however, business cycles are likely to be shorter and more vulnerable.

35 US recoveries since 1854

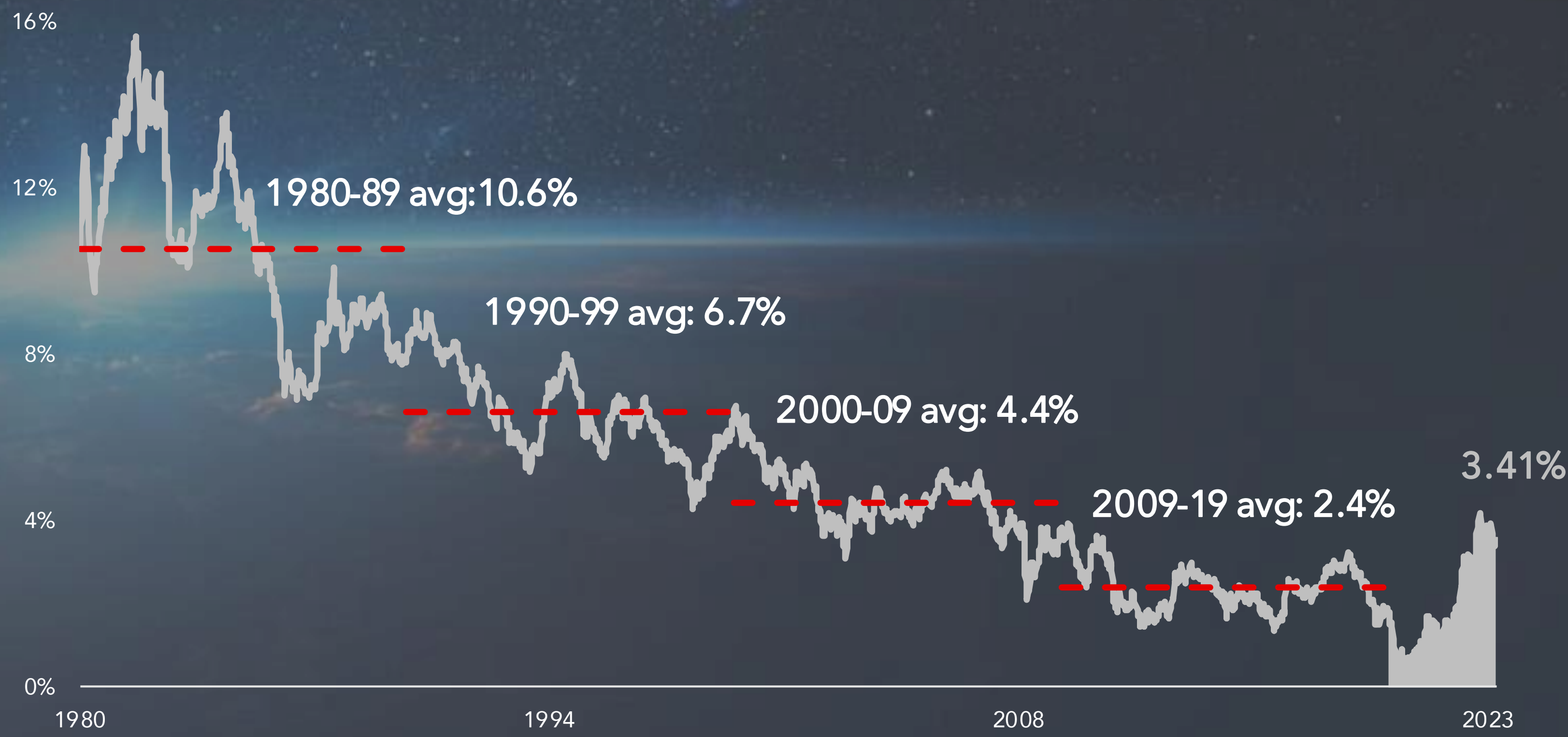


Source: (1) The National Bureau of Economic Research. Length of US recoveries as of April 2023.

Regime Change for Rates

The 40 year bull market for bonds has ended. So too has the post GFC extraordinary period of Fed zero interest rate policy, or ZIRP (2008-2015, 2020-2022), and Europe's negative rates policy regime (2012-2022). Looking ahead, we expect US rates to trade in a new regime of elevated term premium that is modestly higher than the post GFC period, though likely below the levels of the decade prior to the GFC.

10 year UST



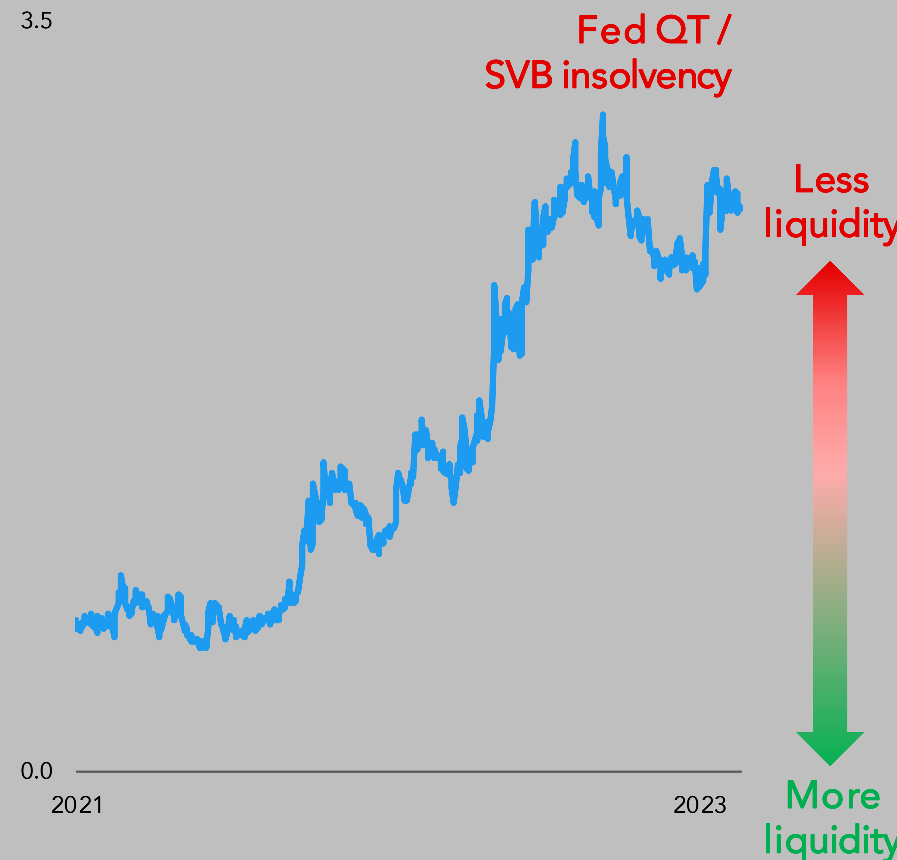
Source: (1-2) Bloomberg. Data as of April 26, 2023.

Sharp Decline in Treasury Market Liquidity

Liquidity in the $24 trillion US Treasury market has declined to its lowest levels since the 2008 financial crisis, and 5x worse than a year ago. Given the central role of US rates in a dollar-based global financial system, the implications for global markets and banks has been formidable.

2 year UST 60-day realized volatility

US government securities liquidity index

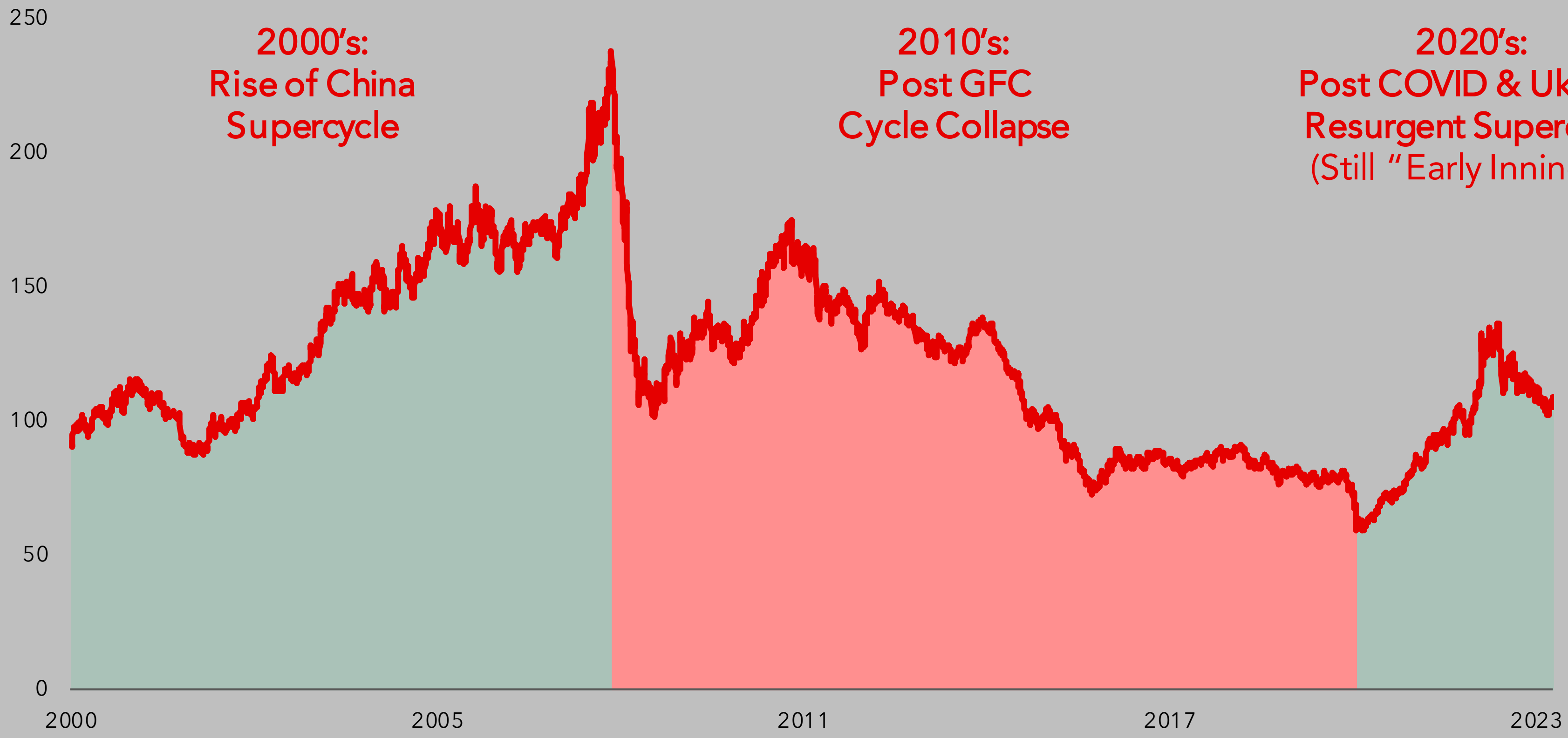


Source: (1-2) Bloomberg. Data as of April 24, 2023.

Resurgent Commodity Supercycle

Commodity supercycles are relatively rare events. According to MUFG's Head of Commodities Research, Ehsan Khoman, we are in the early stages of a new, supply constrained commodities supercycle that, despite near term demand side headwinds, is likely to last a decade. Key drivers of the supply constrained thesis include: de-globalization, energy transition, regulatory dynamics, labor shortages, investor demands and years of structural under-investment.

Bloomberg commodities index



Source: Bloomberg. Data as of April 24, 2023.

Appendix:
The World’s
100 Largest Banks

The World's 100 Largest Banks

Rank	Bank	Total assets, USD bn
1	Industrial & Commercial Bank of China	5,743
2	China Construction Bank Corp.	5,017
3	Agricultural Bank of China	4,919
4	Bank of China	4,192
5	JPMorgan Chase	3,666
6	Bank of America	3,051
7	MUFG	2,968
8	HSBC	2,865
9	BNP Paribas	2,850
10	Credit Agricole	2,543

Rank	Bank	Total assets, USD bn
11	Citigroup	2,417
12	Postal Savings Bank of China	2,040
13	Sumitomo Mitsui Financial Group	2,007
14	Mizuho Financial Group	1,909
15	Bank of Communications	1,884
16	Wells Fargo	1,881
17	Banco Santander	1,854
18	Barclays	1,824
19	Japan Post Bank	1,720
20	UBS	1,679

Source: S&P Global Market Intelligence, "The world's 100 largest banks, 2023" (April 17, 2023). Total assets are as of December 31, 2022. UBS includes financial data for the pending acquisitions of Credit Suisse Group AG.

The World’s 100 Largest Banks (Cont’d)

Rank	Bank	Total assets, USD bn
21	Groupe BPCE	1,636
22	Société Générale	1,589
23	Royal Bank of Canada	1,544
24	TD Bank	1,525
25	China Merchants Bank	1,470
26	Goldman Sachs	1,442
27	Deutsche Bank	1,429
28	Industrial Bank	1,344
29	China Citic Bank Corp.	1,239
30	Shanghai Pudong Development Bank	1,184

Rank	Bank	Total assets, USD bn
31	Morgan Stanley	1,180
32	Crédit Mutuel Group	1,180
33	Lloyds Banking Group	1,058
34	China Minsheng Banking Corp.	1,052
35	Intesa Sanpaolo SpA	1,043
36	ING Groep NV	1,034
37	The Bank of Nova Scotia	1,030
38	UniCredit SpA	917
39	China Everbright Bank Co. Ltd.	913
40	NatWest Group PLC	868

Source: S&P Global Market Intelligence, “The world’s 100 largest banks, 2023” (April 17, 2023). Total assets are as of December 31, 2022. UBS includes financial data for the pending acquisitions of Credit Suisse Group AG.

The World's 100 Largest Banks (Cont'd)

Rank	Bank	Total assets, USD bn
41	Bank of Montreal	859
42	Commonwealth Bank of Australia	837
43	Standard Chartered PLC	820
44	La Banque Postale	797
45	Ping An Bank Co.	772
46	Banco Bilbao Vizcaya Argentaria	762
47	The Norinchukin Bank	753
48	State Bank of India	695
49	Canadian Imperial Bank of Commerce	691
50	National Australia Bank	680

Rank	Bank	Total assets, USD bn
51	US Bancorp	675
52	Rabobank	672
53	DZ BANK	670
54	ANZ Group Holdings	670
55	Westpac Banking Corp.	653
56	Nordea Bank	636
57	CaixaBank SA	604
58	Sberbank of Russia	566
59	KB Financial Group Inc.	558
60	PNC Financial Services Group Inc.	557

Source: S&P Global Market Intelligence, "The world's 100 largest banks, 2023" (April 17, 2023). Total assets are as of December 31, 2022. UBS includes financial data for the pending acquisitions of Credit Suisse Group AG.

The World's 100 Largest Banks (Cont'd)

Rank	Bank	Total assets, USD bn
61	Resona Holdings Inc.	557
62	Truist Financial Corp.	555
63	DBS Group Holdings Ltd.	554
64	Danske Bank A/S	541
65	Hua Xia Bank Co. Ltd.	540
66	Shinhan Financial Group Co.	537
67	China Guangfa Bank Co.	529
68	Sumitomo Mitsui Trust Holdings Inc.	517
69	Commerzbank AG	510
70	Bank of Beijing Co.	491

Rank	Bank	Total assets, USD bn
71	Capital One Financial Corp.	455
72	Hana Financial Group Inc.	452
73	Itaú Unibanco Holding SA	440
74	Oversea-Chinese Banking Corp.	418
75	NongHyup Financial Group Inc.	417
76	Bank of Jiangsu Co.	411
77	The Bank of New York Mellon	406
78	ABN AMRO Bank NV	406
79	Bank of Shanghai	405
80	Woori Financial Group	382

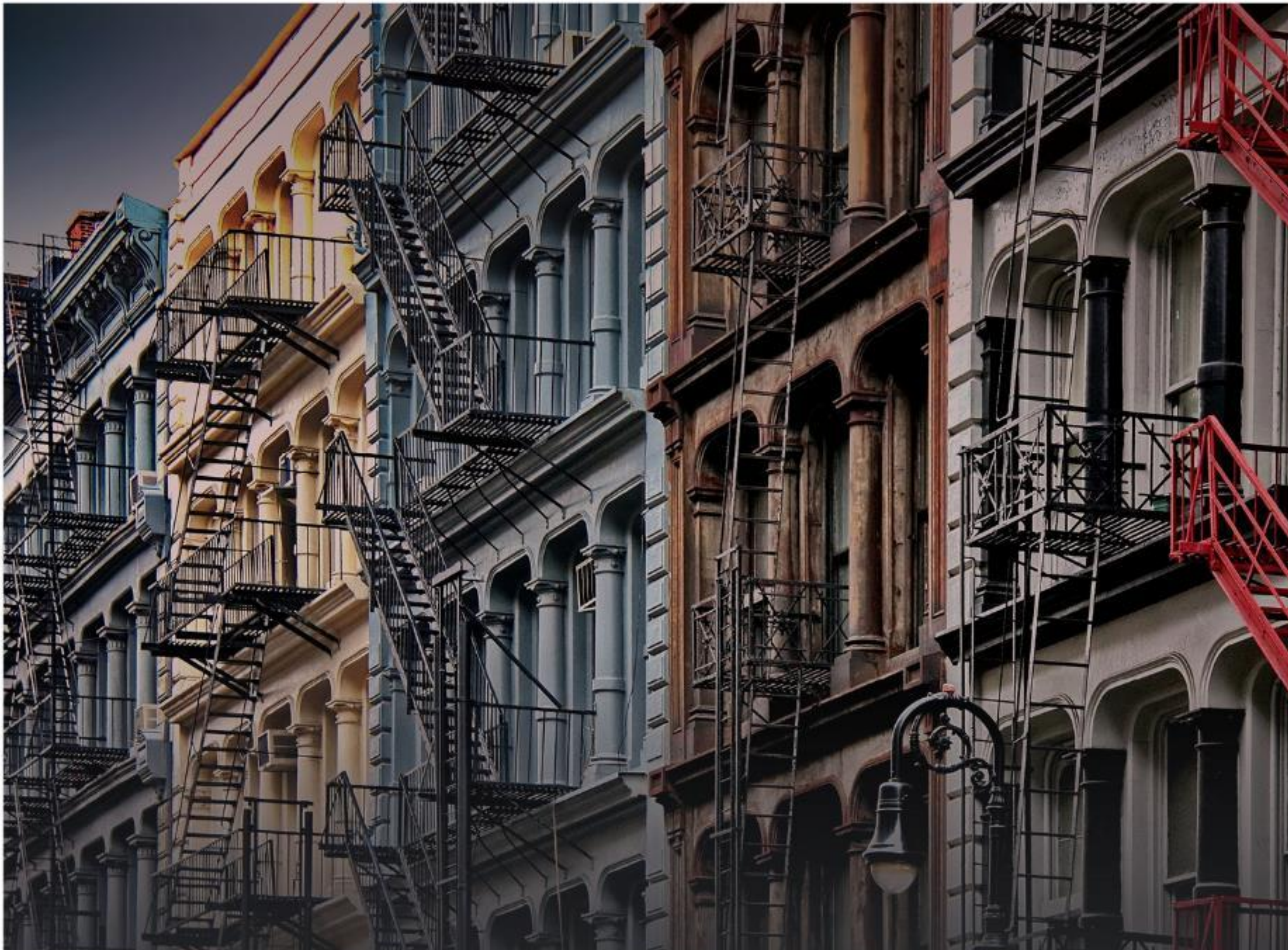
Source: S&P Global Market Intelligence, "The world's 100 largest banks, 2023" (April 17, 2023). Total assets are as of December 31, 2022. UBS includes financial data for the pending acquisitions of Credit Suisse Group AG.

The World's 100 Largest Banks (Cont'd)

Rank	Bank	Total assets, USD bn
81	KBC Group NV	380
82	China Zheshang Bank	380
83	Banco do Brasil SA	380
84	United Overseas Bank	376
85	Nomura Holdings Inc.	373
86	Landesbank Baden-Württemberg	346
87	Erste Group Bank AG	346
88	Industrial Bank of Korea	343
89	Bank of Ningbo	343
90	Banco Bradesco	340

Rank	Bank	Total assets, USD bn
91	Skandinaviska Enskilda Banken AB	339
92	VTB Bank PJSC	335
93	Svenska Handelsbanken AB	331
94	DNB Bank ASA	329
95	Qatar National Bank (QPSC)	324
96	National Bank of Canada	314
97	Macquarie Group Ltd.	313
98	Nationwide Building Society	312
99	Raiffeisen Gruppe Switzerland	304
100	First Abu Dhabi Bank PJSC	302

Source: S&P Global Market Intelligence, "The world's 100 largest banks, 2023" (April 17, 2023). Total assets are as of December 31, 2022. UBS includes financial data for the pending acquisitions of Credit Suisse Group AG.



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Role

Tom Joyce is a Managing Director and Capital Markets Strategist within MUFG's global capital markets and investment banking business. Based in New York, Tom heads a team that creates customized analytical content for multi-national S&P 500 companies. His team provides in depth analysis on the impact of economic, political, public policy and regulatory dynamics on the US credit, foreign exchange, rates and commodities markets.

Experience

Tom has over 25 years of Investment Banking experience in New York, London, Hong Kong, and San Francisco. Over the last 15 years, Tom created and built the Capital Markets Strategy role, advising corporate C-Suite executives (Boards, CEOs, CFOs, and Treasurers) on the pervasive macro forces driving markets. Tom also presents at dozens of corporate events each year including Board meetings, CEO ExCo sessions, CFO and Treasury off-sites, corporate leadership events and conferences.

Education

Tom's educational background includes a year of study at Oxford University from 1991 - 1992, a Bachelor of Arts in Political Science from Holy Cross College in 1993, and a MBA from Kellogg Business School, Northwestern University in 2000.

Personal

Tom resides in New Canaan, CT with his wife and four sons, where he serves on the Board of Trustees of the New Canaan Library as well as the Holy Cross College President's Council.

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Experience

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Hailey graduated with honors from the University of Michigan's Ross School of Business with a BBA and a minor in International Studies.

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Stephanie graduated with honors from the University of Michigan's Ross School of Business with a BBA .

Personal

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MUFG's Capital Markets Strategy Team

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