Capital Markets Strategy

Essential inCights for the C-Suite

MUFG

The Fed's Policy Conundrum

Balancing Financial Stability, Inflation & Labor Markets

MAR 2023

“It was not a wave but a smooth rolling swell that seemed to come up from the deeps, as if something vast down there had stirred itself.”

John Banville, acclaimed author in his
2005 Booker-prize winning novel, *The Sea*

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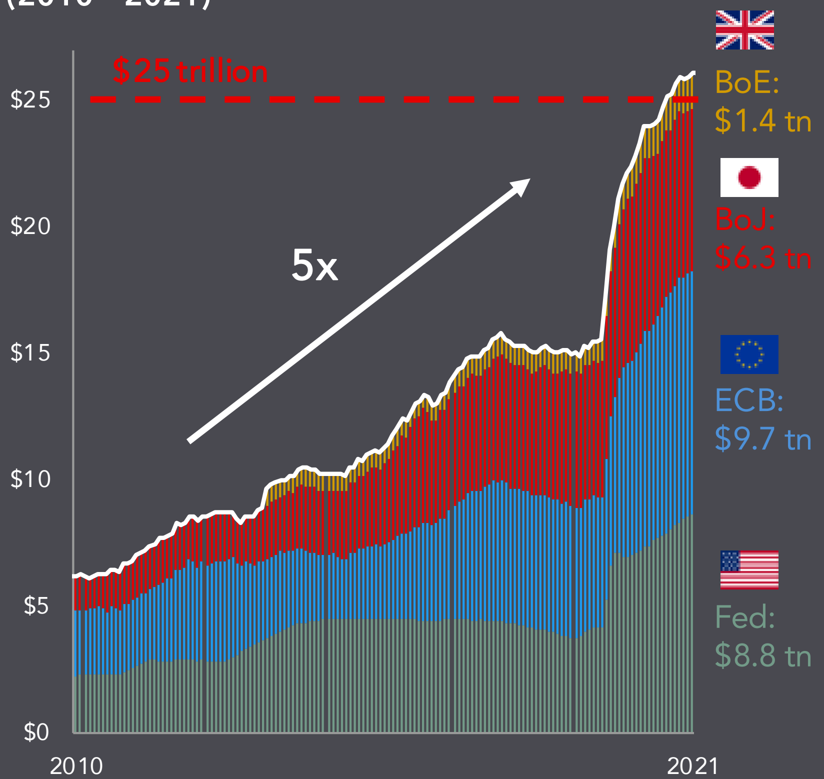
01. Financial System Intolerant of Higher Rates

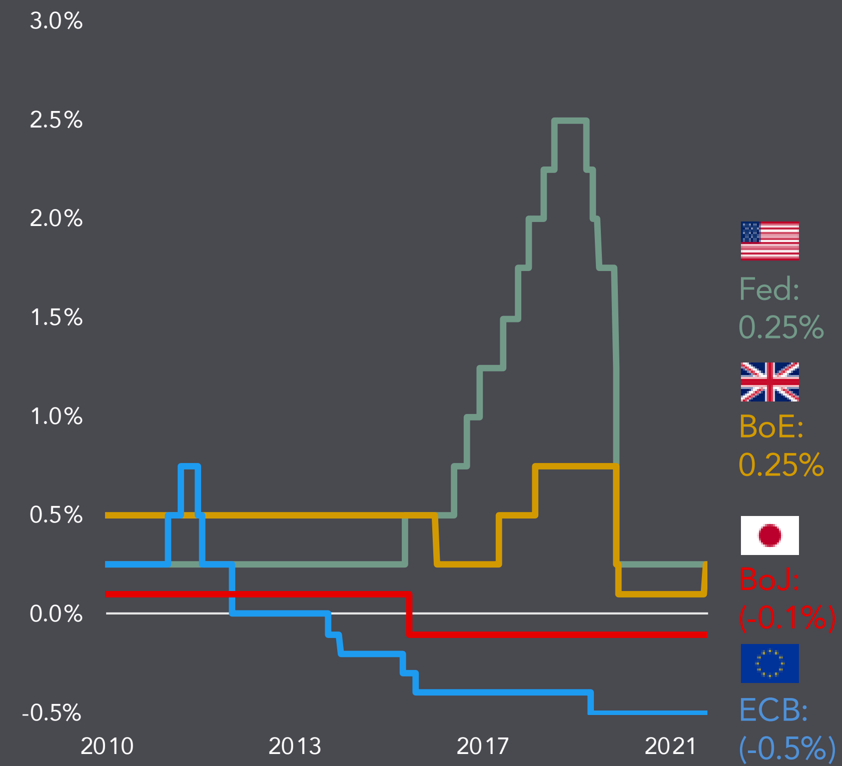
Decade of Extraordinary Monetary Easing

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)



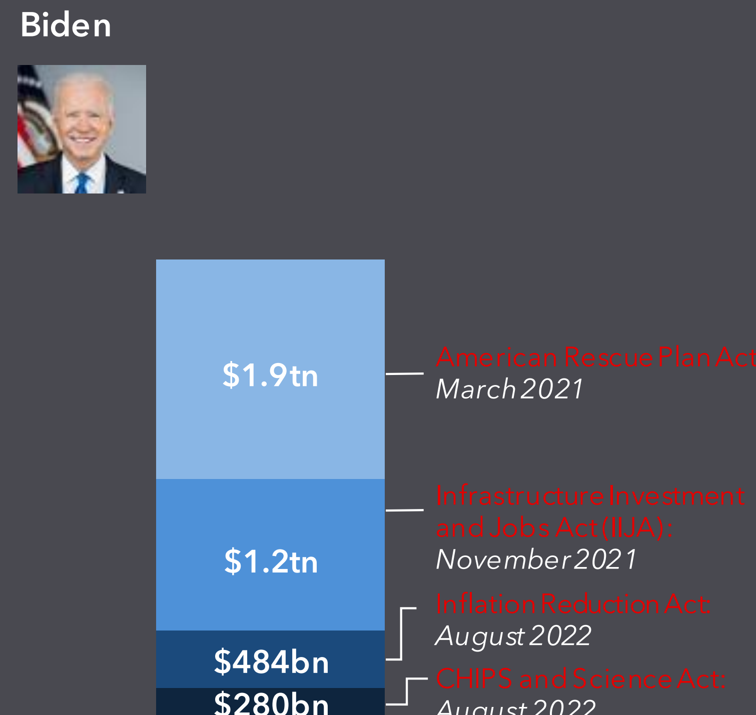
Global central bank policy rates (2010-2021)



Source: (1-2) Bloomberg. Data as of March 21, 2023. 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.



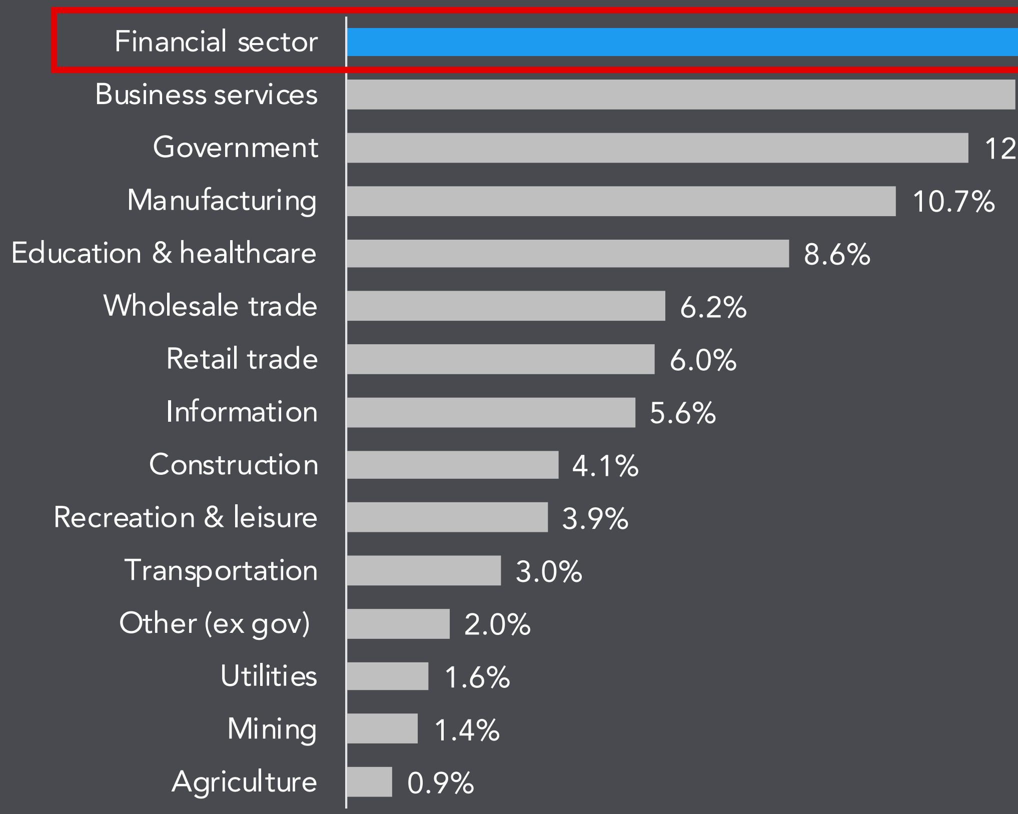
$5.4 trillion + **$3.9 trillion** = **$9.3 trillion**

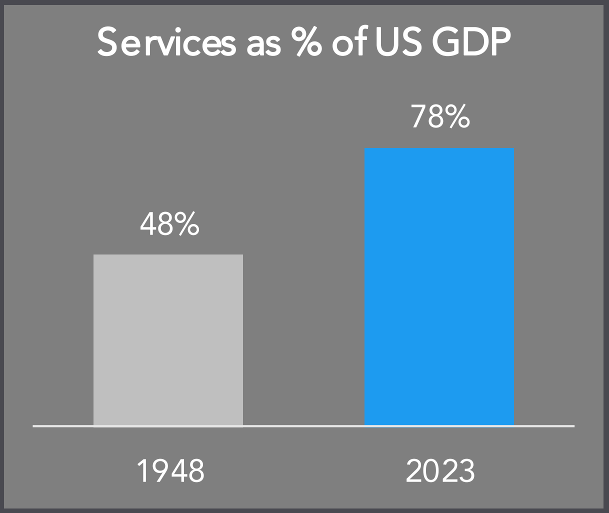
White House. US Congress. Investopedia "A breakdown of the fiscal and monetary responses to the pandemic". Note: Inflation Reduction Act does not include roughly $300 bn of deficit reduction provisions. The US Tax Cuts and Jobs Act was roughly $5tn, with roughly $1.5tn of deficit spending. Phase 4 represents 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.

Outsized US Financial System

Built over nearly four decades of outsourcing manufacturing and a largely symbiotic relationship with China, the services sector represents nearly 80% of US GDP. Following the 2008-9 GFC, an era of extraordinary policy easing drove explosive growth in the financial services sector, the nation's largest. Today, the US economy has arguably become hyper-financialized, with much of its growth built over a decade of secular stagnation (low GDP growth, low inflation, low rates).

Share of value added to US GDP by industry





Source: (1-2) Financial services includes finance, insurance, real estate, rental and leasing. World Bank. BEA.

Global Financial System Intolerant of 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. Given the long and bumpy road ahead, corporates would therefore be well advised to take advantage of episodic periods of stability to prefund financing needs and hedge FX and rate exposures. For banks, NIM compression, tighter lending standards and bank sector consolidation are likely to follow.

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)

Silicon Valley Bank: An Outlier Among Peers

Silicon Valley Bank was an outlier among its banking peers in terms of its business concentration mix, unusually large securities portfolio and outsized unrealized losses vis-à-vis its regulatory capital levels.

Unusually large bank, below more stringent TBTF regulatory threshold
16th largest US bank, but $210 bn assets below $250 bn "systemically significant" threshold

"Niche" business, heavily reliant on Tech / VC / life science
Non-traditional deposit base, low loan-to-deposit ratio

Large, non-traditional deposit funding base
Less than 10% of deposits from "stickier" domestic retail; largely tech / VC

Low loan-to-deposit ratio
Smaller lending book given tech / VC customer base; therefore larger securities portfolio

Large HTM investment portfolio
Investment portfolio heavily HTM, more vulnerable to mark-to-market in event of forced asset sales

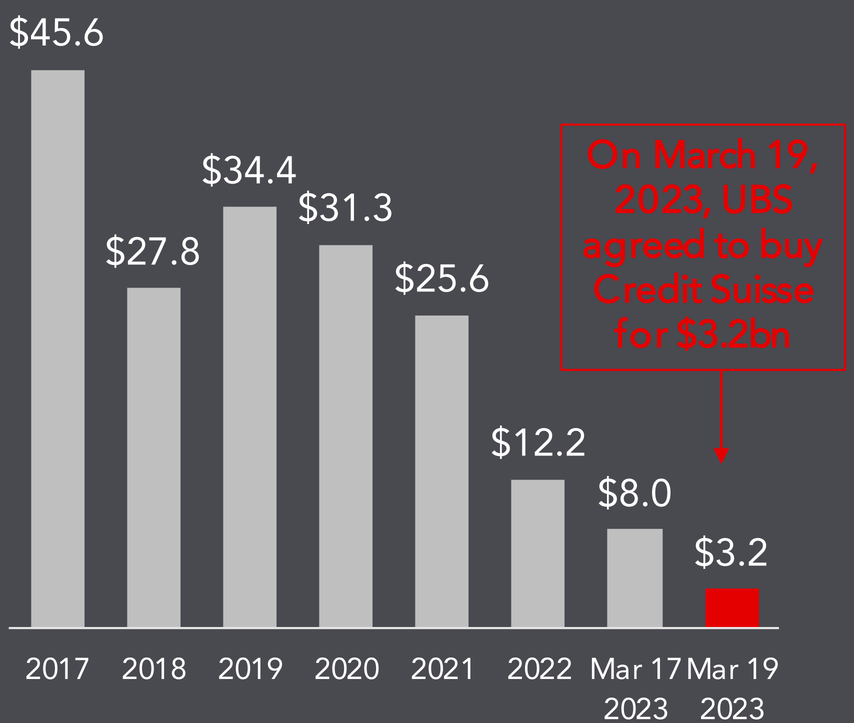
Unusually high exposure to rate risk in long duration portfolio
Large HTM portfolio in higher yielding, longer duration USTs & MBS over Fed reserves and T-Bills

Credit Suisse Deemed Too-Big-To-Fail

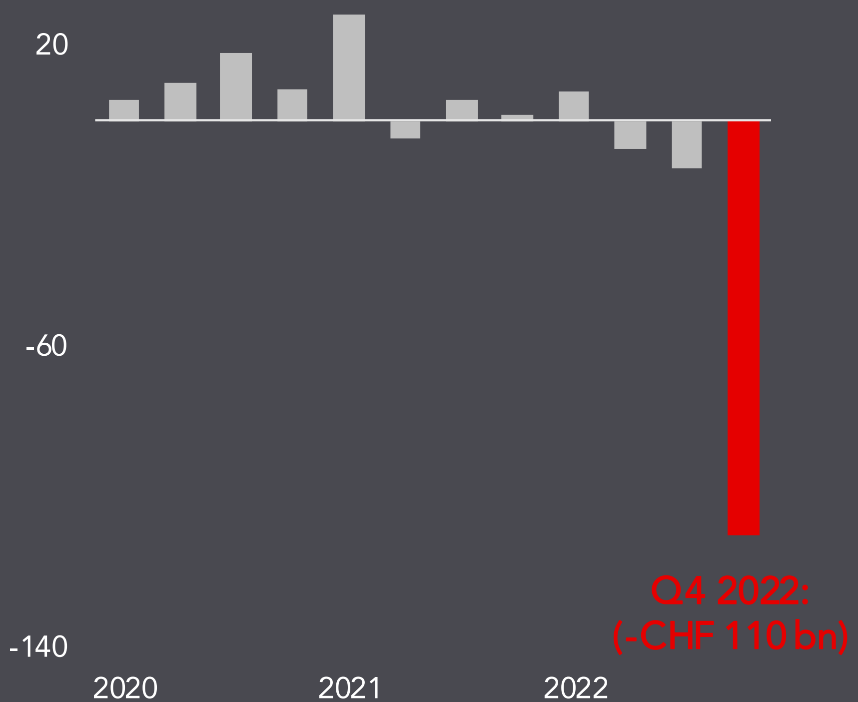
CREDIT SUISSE

Switzerland's largest bank, UBS, agreed to buy longtime rival Credit Suisse for $3.2 billion, 60% below the prior day's closing price, a staggering fall below its $45 billion equity value just five years ago. Following a series of significant mis-steps over recent years, the 166 year-old institution suffered from deposit and AUM flight in recent weeks, and a loss of confidence in the aftermath of SVB's insolvency. As part of the agreement, the SNB is offering liquidity assistance to UBS, while the government is also granting a guarantee for potential losses on CS assets.

Market capitalization of Credit Suisse, USD bn



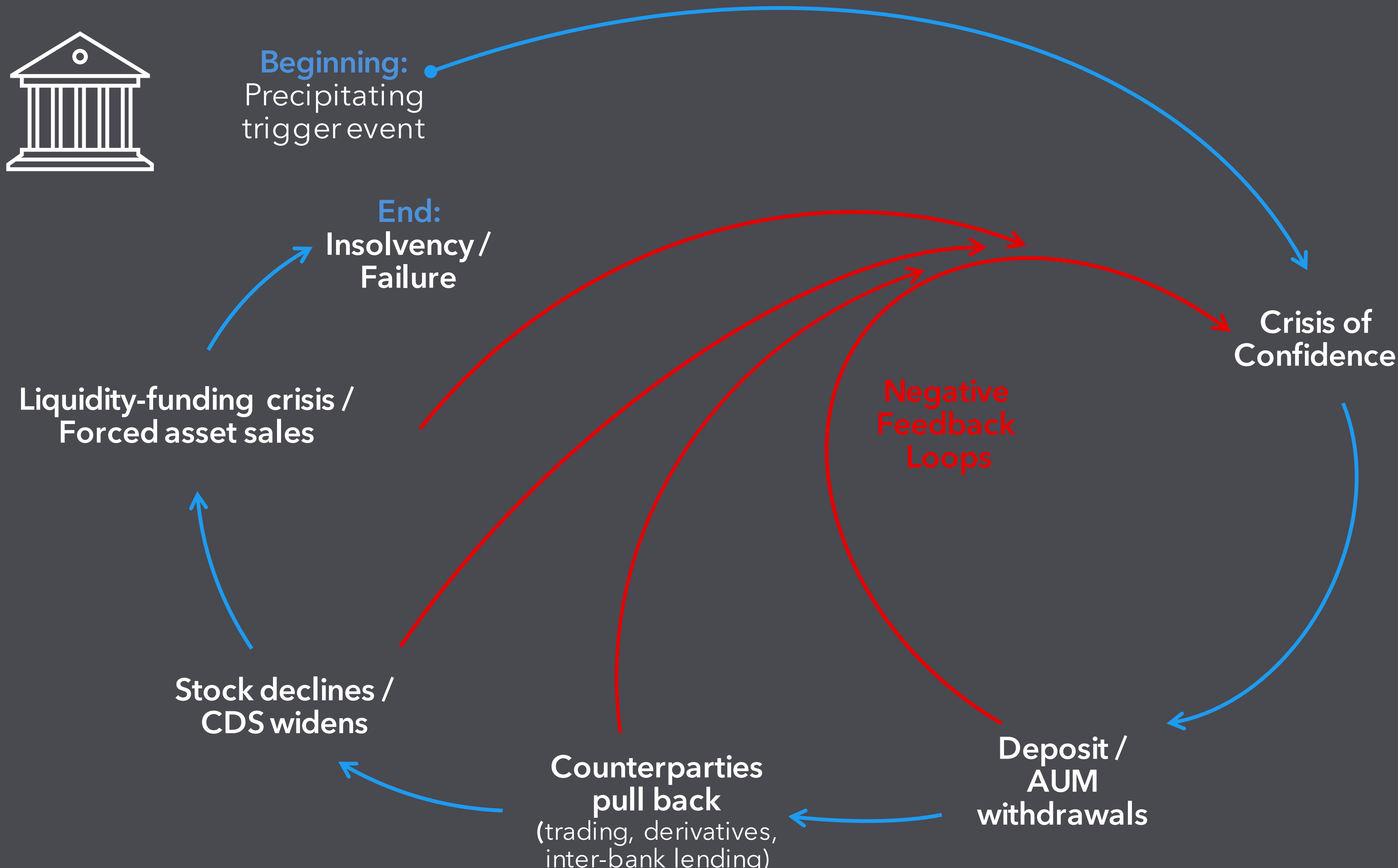
Credit Suisse, net new assets CHF bn



Source: (1-2) Bloomberg. Data as of March 21, 2023. Statista.

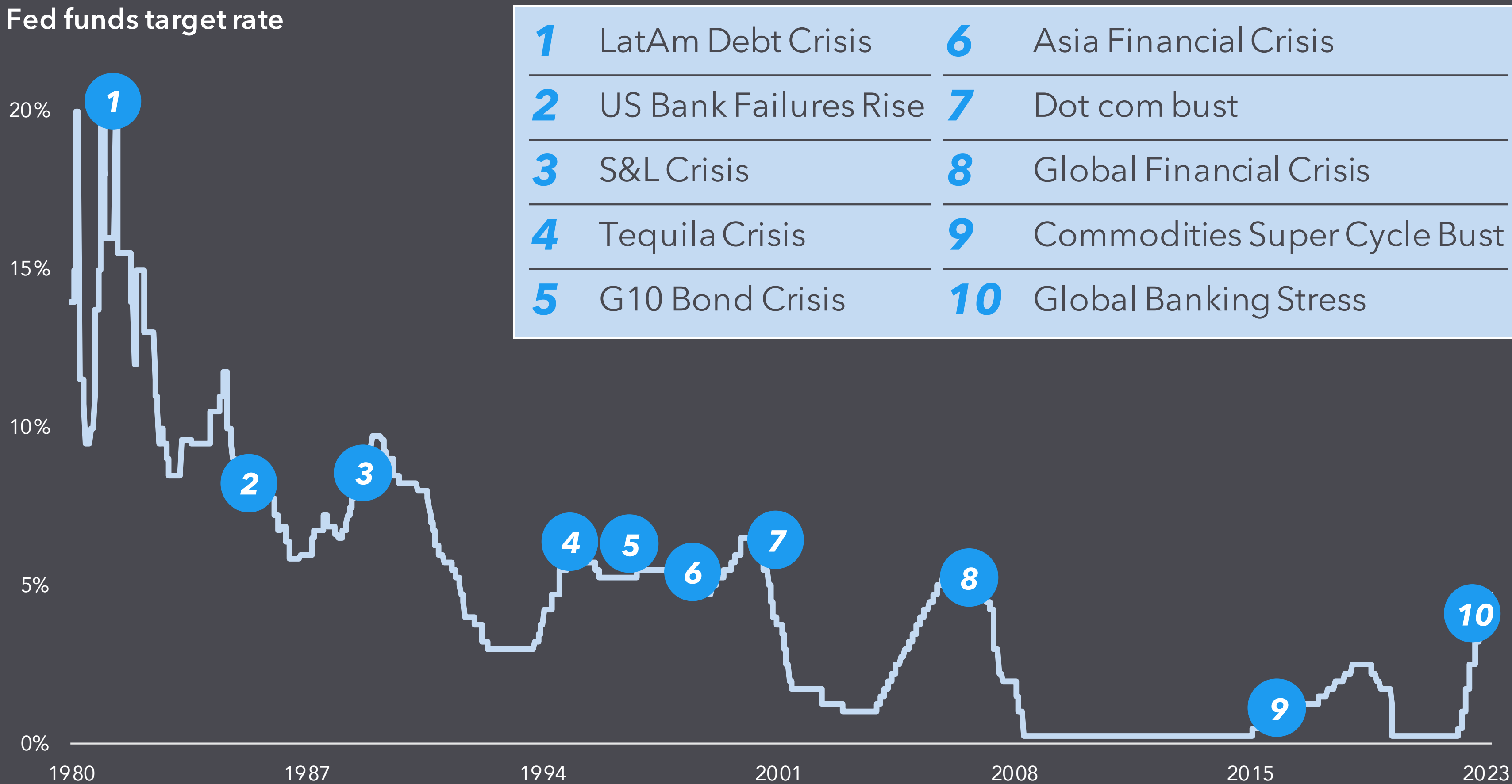
02. Financial Stability Concerns

Anatomy of a Bank Crisis: Negative Feedback Loops



Casualties of Fed Tightening

Every Fed tightening cycle of the last 40 years has claimed a large financial casualty, given the impact of US monetary policy on rates, currency markets and risk assets globally.

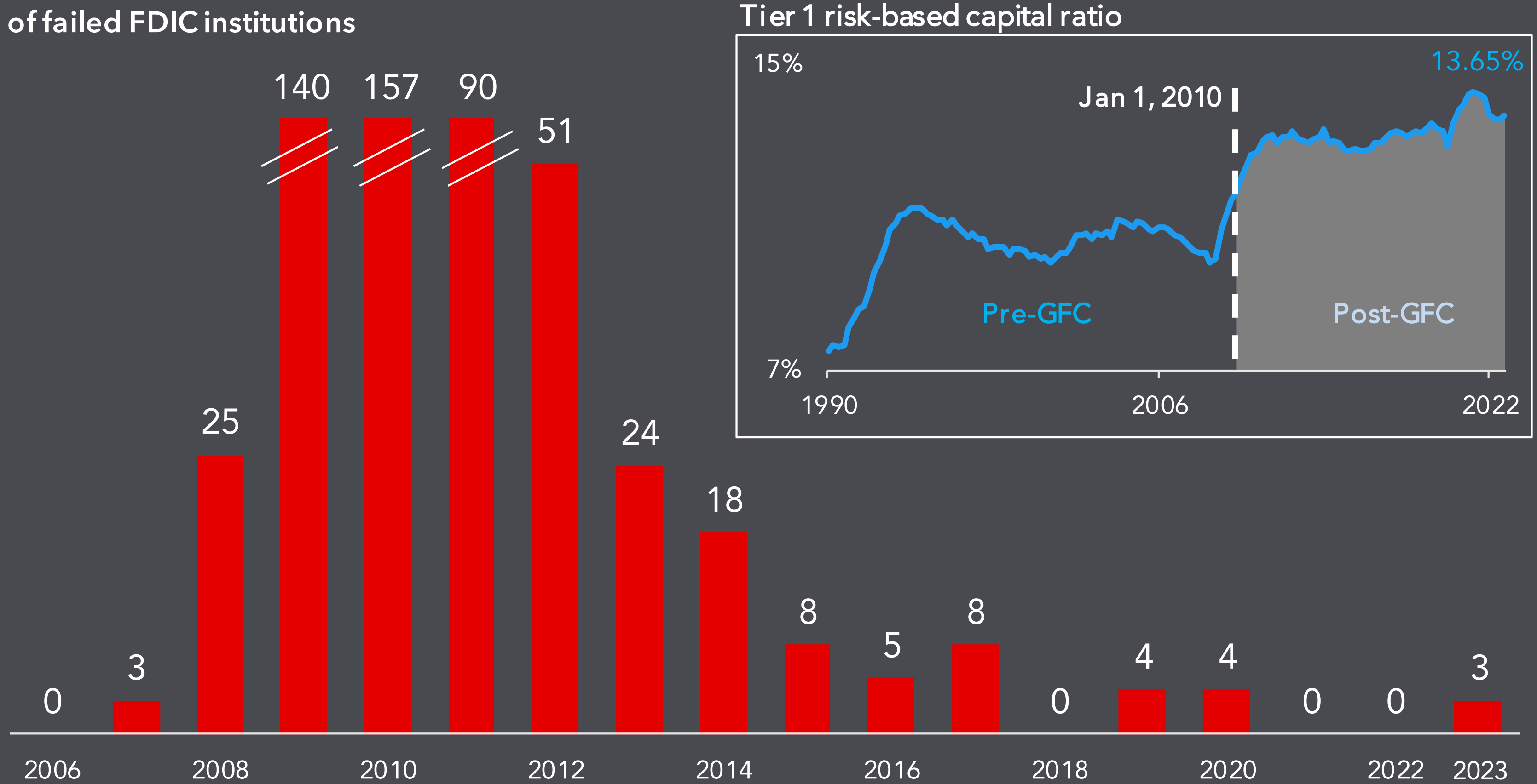


Source: (1) Bloomberg. Data as of March 20, 2023. Oxford Economics, "FOMC Faces a Difficult Decision" (March 20, 2023).

This is Not 2008

Following the Great Financial Crisis, banks globally increased both the quantum and quality of capital they hold. The Federal Reserve's 2022 stress test demonstrated that banks were well capitalized enough to meet regulatory requirements even under a "severely adverse scenario". While dozens of smaller regional banks may fail in 2023, the current fact pattern does <u>not</u> mirror the toxic asset, leverage and capital shortfall issues of 2008.

# of failed FDIC institutions

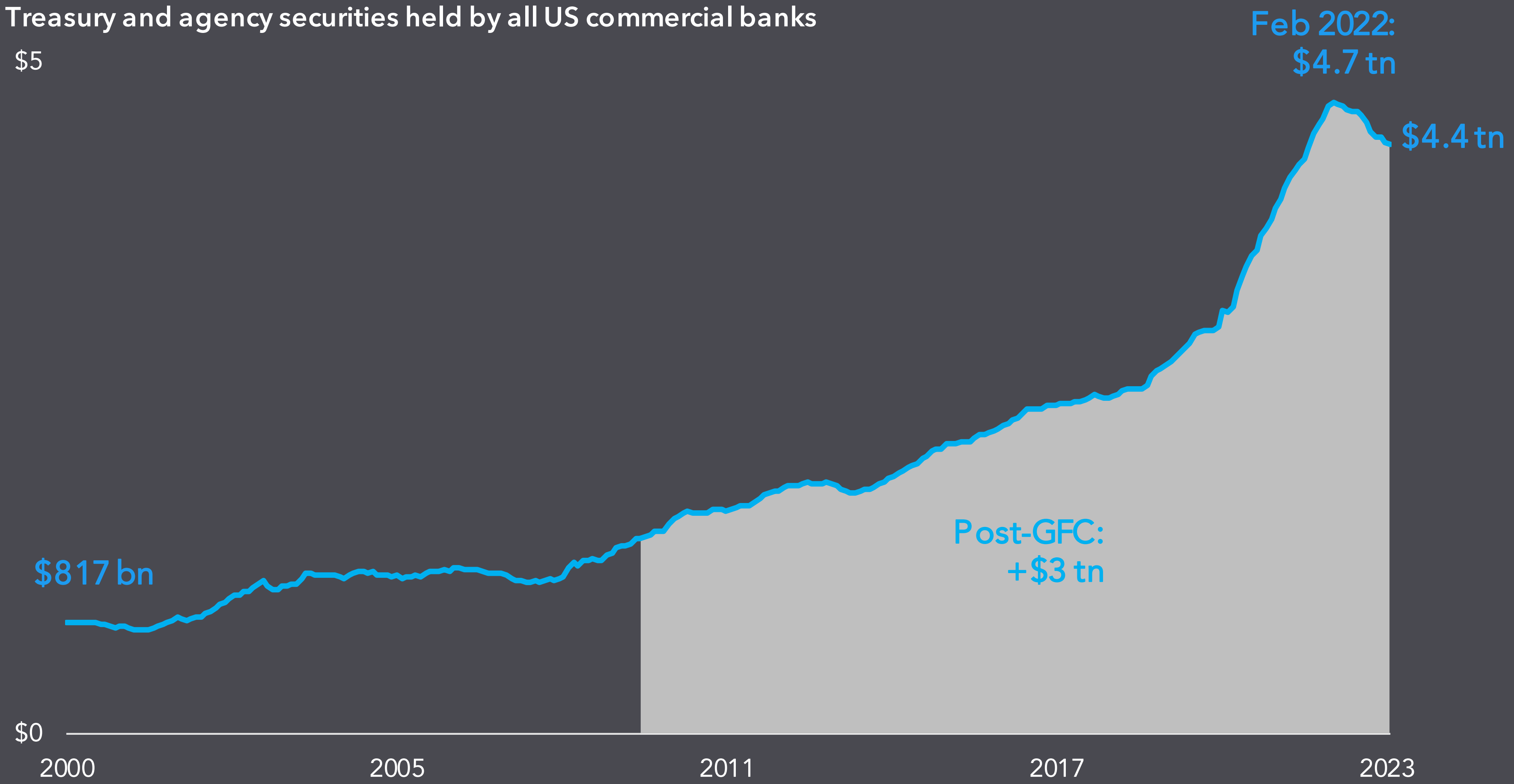


Source: (1-2) FDIC "Statistics at a Glance." Data as of December 31, 2022. Bloomberg.

The Backdrop: Explosion of Financial Assets

As the Fed's Balance Sheet surged to nearly $9 trillion by 2021, financial assets across the US economy grew at rates well in excess of GDP growth for more than a decade. Bank securities portfolios ballooned accordingly.

Treasury and agency securities held by all US commercial banks

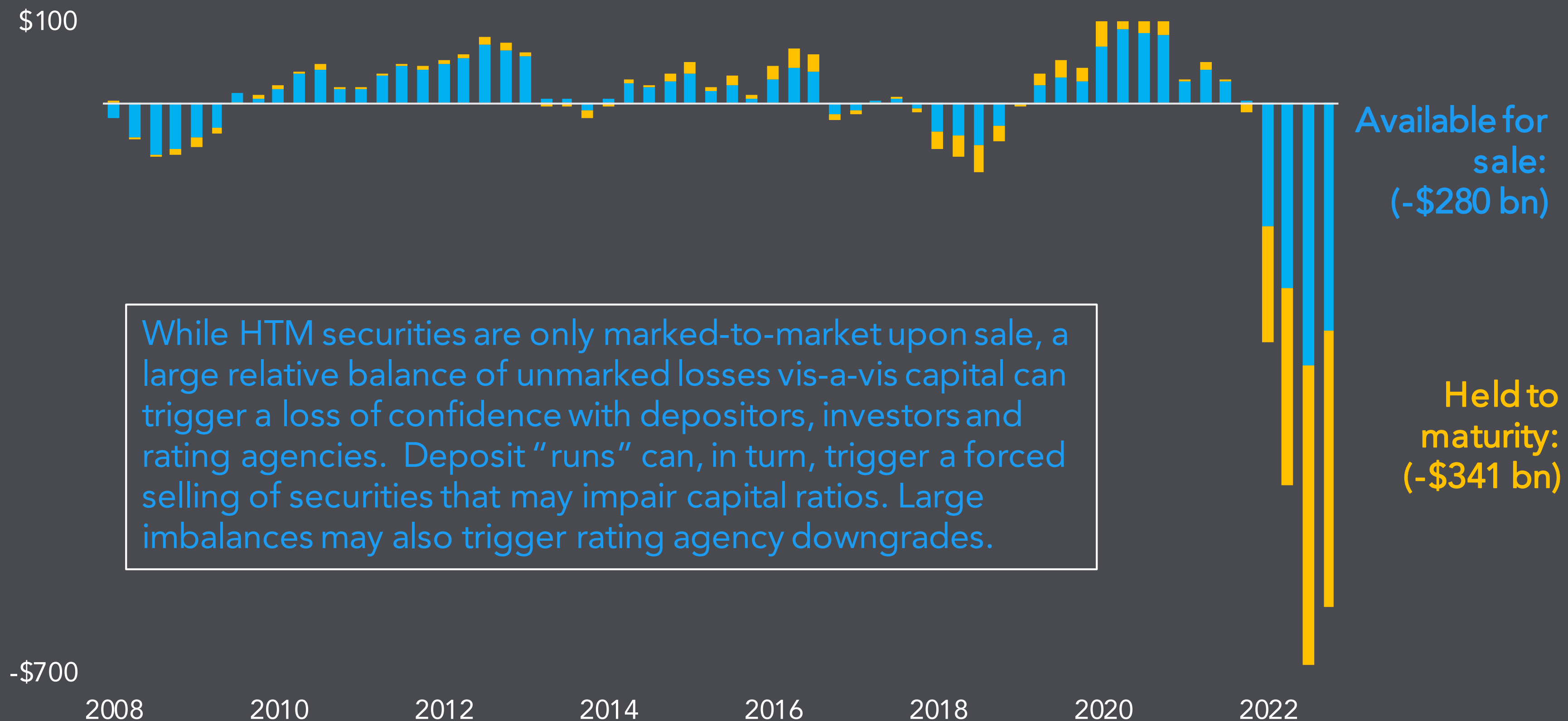


Source: (1) Federal Reserve.

The Trigger: $620 Bn of Unrealized Losses

The difference between bond portfolio book values and market values poses significant risks for banks. As interest rates rise and credit spreads widen, US bank sector unrealized losses have risen from just $8 bn at the end of 2021 to over $620 bn in Q4 2022 (including $341 bn HTM and $280 bn of AFS securities spread across 4,706 FDIC insured banks).

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

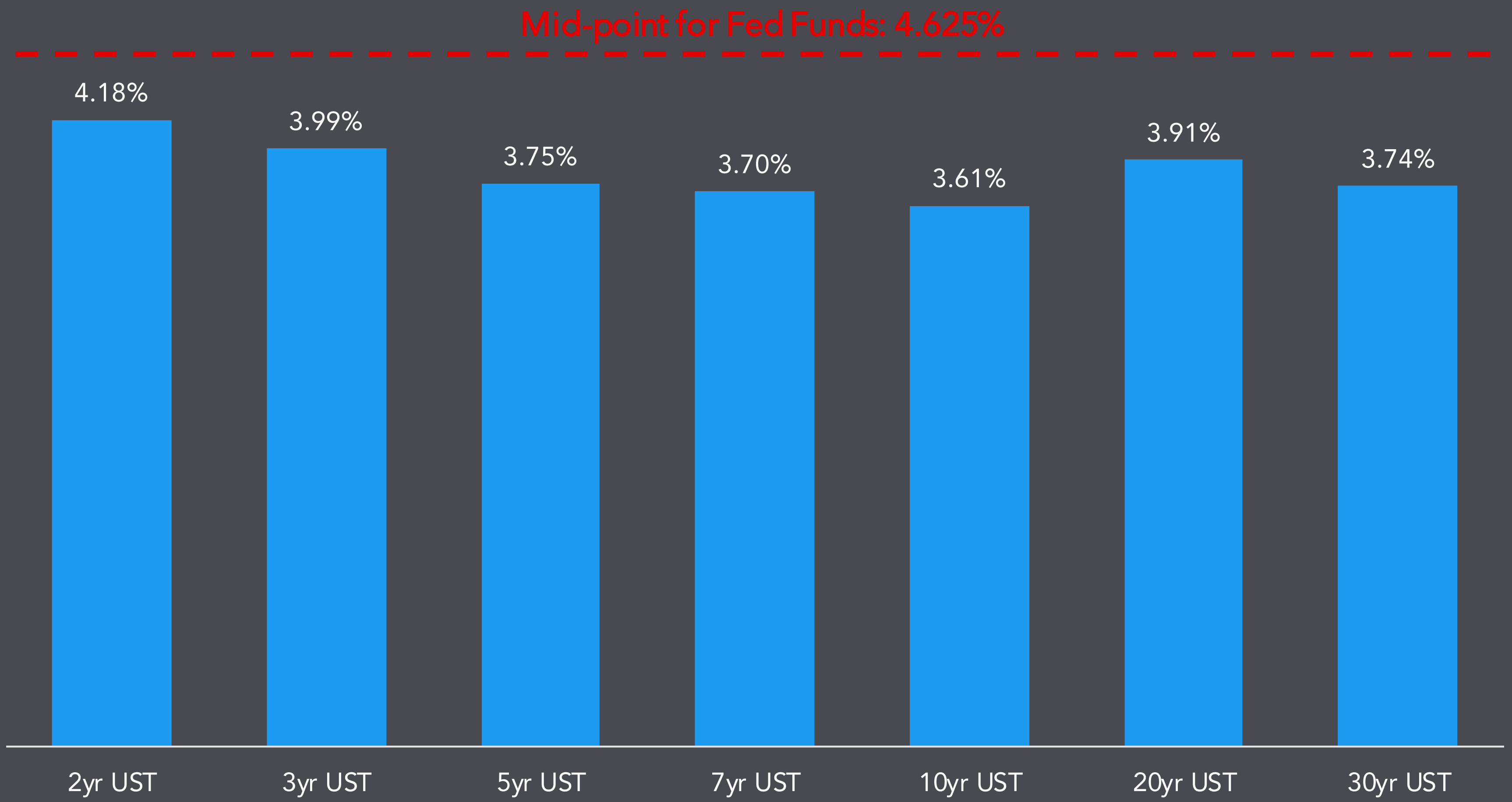


While HTM securities are only marked-to-market upon sale, a large relative balance of unmarked losses vis-a-vis capital can trigger a loss of confidence with depositors, investors and rating agencies. Deposit "runs" can, in turn, trigger a forced selling of securities that may impair capital ratios. Large imbalances may also trigger rating agency downgrades.

Source: (1) FDIC. Bloomberg. Data as of Q4 2022 (latest available).

Financial Stability A Greater Concern than Inflation

As evidenced by the entire 2s-30s UST yield curve trading below Fed Funds, the market believes that financial stability has 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.

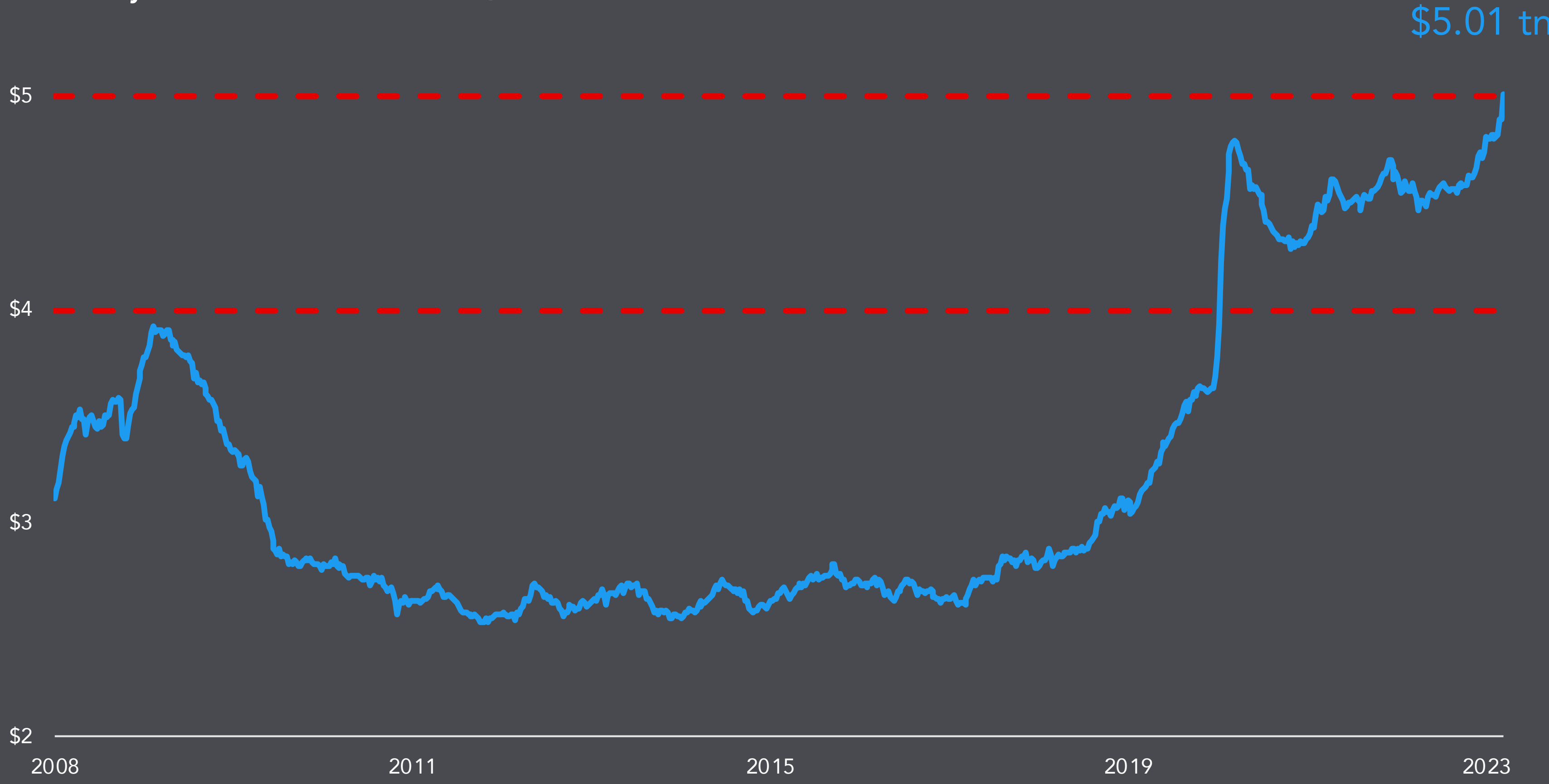


Source: (1) Bloomberg. Data as of March 21, 2023.

US Money Market Fund Balances Surge

Following SVB's insolvency and broader financial stability concerns, US money market fund balances surged above $5 trillion, eclipsing previous highs reached during the GFC and COVID crises. More specifically, flows into money market funds increased by over $100 billion since SVB's collapse, and more than $400 billion since the Fed's tightening cycle began one year ago.

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 March 21, 2023.

03. Gov't & Regulatory Response

Global Bank Sector Stability Initiatives

In Congressional testimony, US Treasury Secretary Yellen initially indicated that backstops for uninsured depositors will only be put in place if regulators deem it necessary to protect the financial system. Despite industry requests to raise the FDIC deposit limit for two or more years, Congressional action to increase FDIC deposit guarantees appears unlikely at this time. Secretary Yellen has subsequently hinted at unilateral Treasury action if needed.

Selected Recent Policy Initiatives for Bank Sector

MAR 10 California Department of Financial Protection & Innovation (DFPI) takes possession of Silicon Valley Bank, appointing the FDIC as receiver, and precipitating the 2nd largest US bank failure in history

MAR 11 FDIC initiates the first of two "failed" auctions for SVB, and subsequently moves to examine breakup solutions for the bank's assets

MAR 12 FDIC provided a "systemic risk exception" protecting all uninsured depositors at SVB and Signature Bank

Fed announces discount window will accept collateral at "par value" (vs. mark-to-market), as well as new Bank Term Funding Program (BTFP) for depository institutions (up to 1 year, collateral at par, 1 yr OIS + 10 bps)

MAR 16 US banking regulators coordinate with 11 large US banks to provide $30 bn of uninsured deposits for First Republic Bank (investors, however, still seeking a capital announcement)

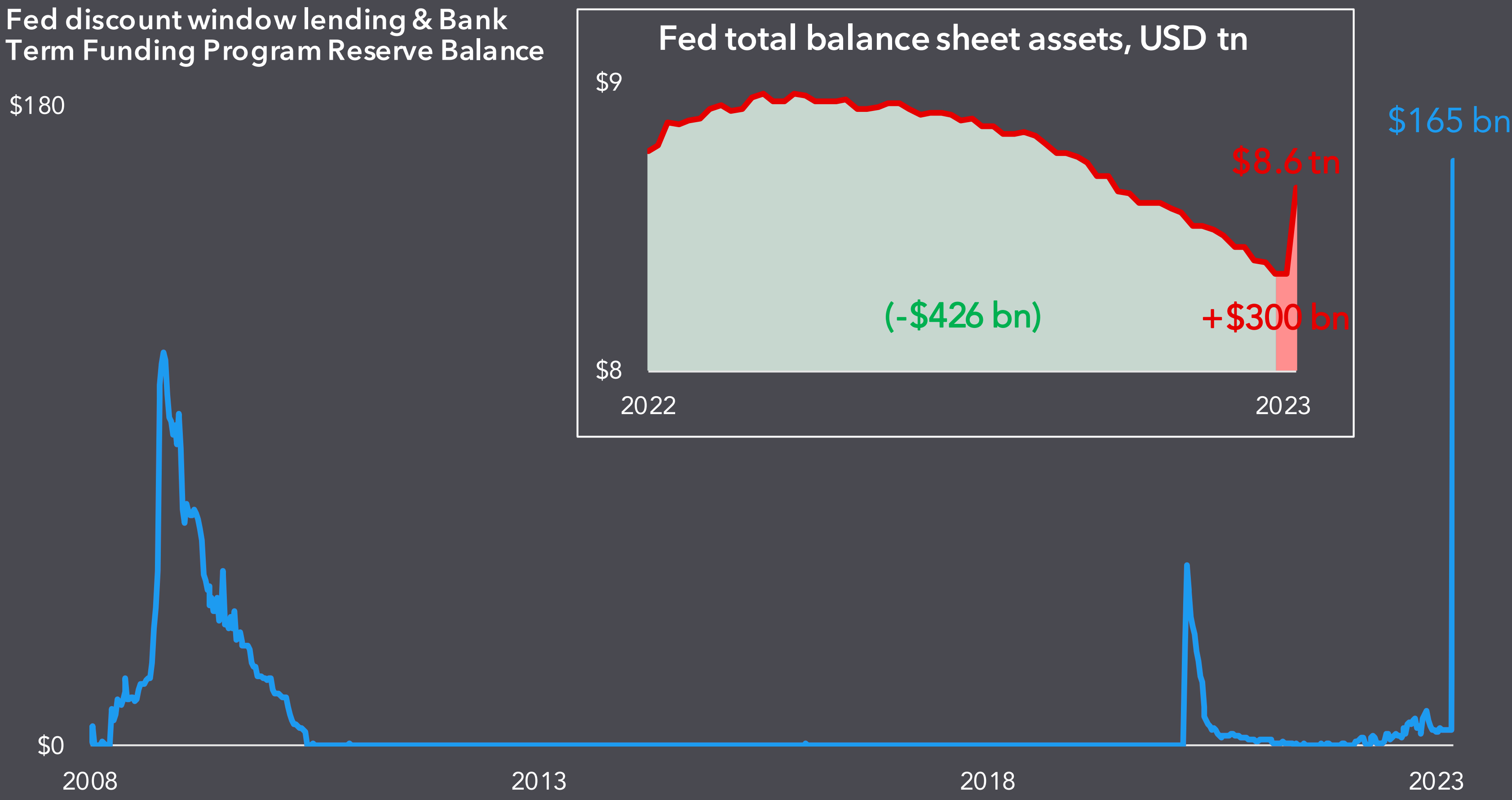
MAR 19 Swiss government, SNB and regulators facilitate UBS $3.2 bn takeover of long-time rival and banking giant, Credit Suisse (with coordinated liquidity and loss guarantees)

The Fed, BOC, BOE, BOJ, ECB and SNB announced an expansion of the size and frequency of US Dollar swap arrangements to ensure dollar liquidity as needed

Unwinding QT

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 lending & Bank Term Funding Program Reserve Balance



Source: (1-2) Federal Reserve. Bloomberg. Data as of March 21, 2023.

Clarity on European Bank Resolutions

Due to the public use of funds in the CS rescue, Swiss banking authorities made a decision to wipe-out $17 bn of CS AT1 bonds as part of the deal with UBS. This, in turn, sparked a massive selling contagion wave across European bank capital markets that prompted European regulatory authorities to clarify their policy stance in an attempt to restore market calm and confidence.

The Single Resolution Board, the European Banking Authority and ECB Banking Supervision welcome the comprehensive set of actions taken yesterday by the Swiss authorities in order to ensure financial stability…

Additional Tier 1 is and will remain an important component of the capital structure of European banks.

In particular, common equity instruments are the first ones to absorb losses, and only after their full use would Additional Tier 1 be required to be written down…

Single Resolution Board

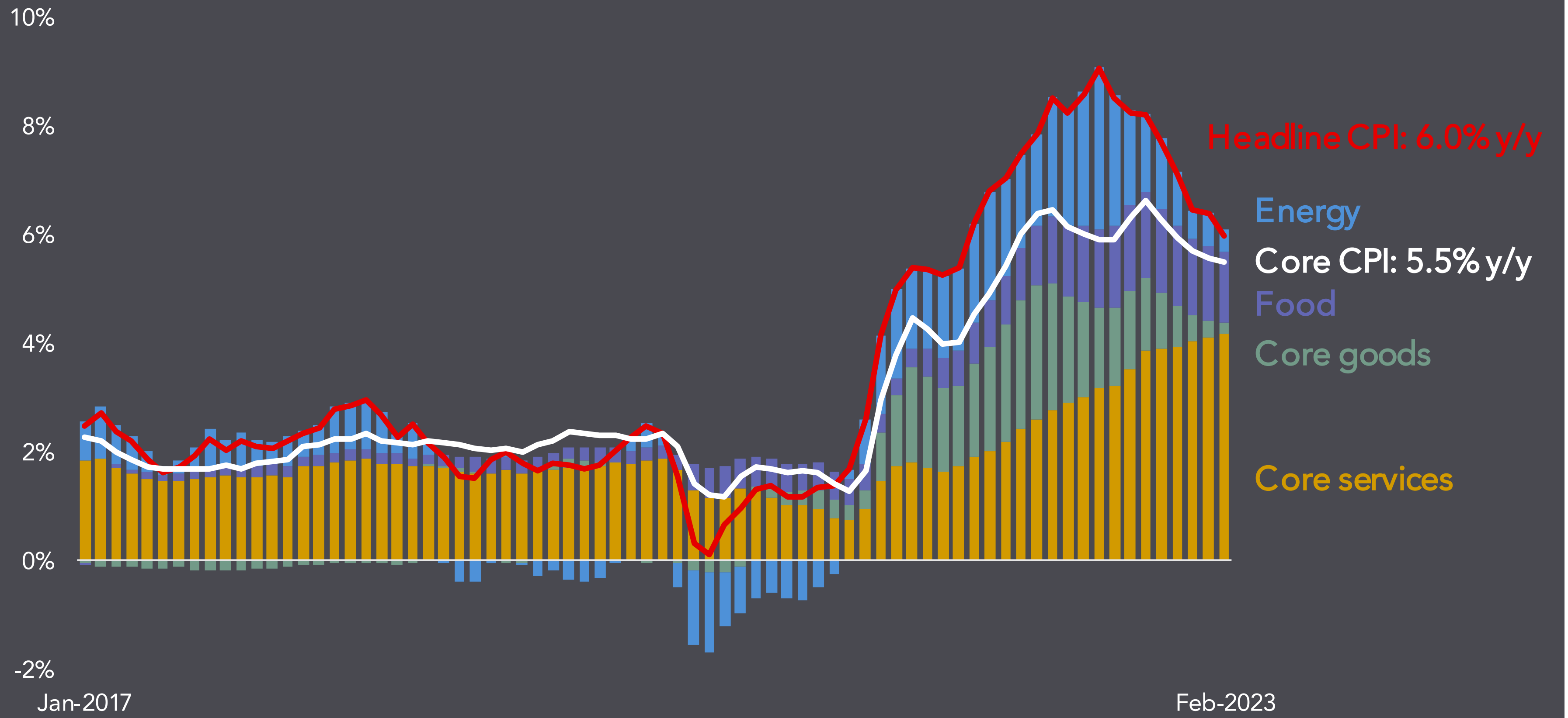
Source: Europe's Single Resolution Board.

04. Elevated & Sticky Inflation

US Inflation Still Elevated

US headline inflation rose 0.4% m/m in February and 6.0% y/y, both in line with consensus estimates. Excluding food and energy, core CPI rose 0.5% and 5.5% on a m/m and y/y basis, respectively, a touch stronger than expected. A 0.8% jump in shelter accounted for most of the headline increase, with higher food, recreation, furniture and airline fares also adding to the gain.

Breakdown of CPI by components

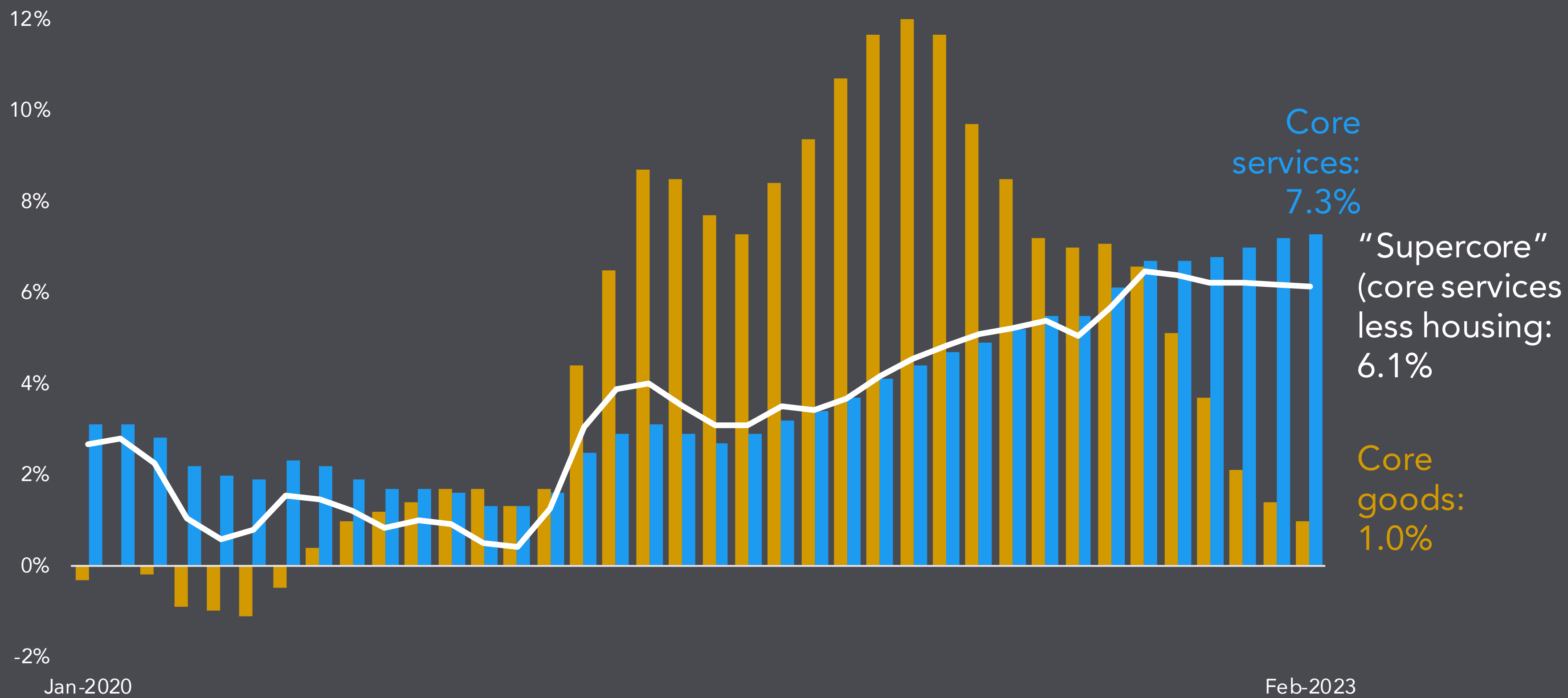


Source: (1) Bloomberg. Data as of March 21, 2023.

Nonlinear Progression in Services Disinflation

Core goods inflation declined in February for the 6th consecutive month to 1.0% on a year over year basis, reaching it's lowest level since September 2020. In contrast, core services inflation continued to rise, reaching 7.3% in February following an 8.1% y/y increase in shelter. The Fed's closely watched "supercore" (core services ex-shelter) has remained "sticky" since November and is still high at 6.1%.

US core goods, services and "supercore" inflation, y/y



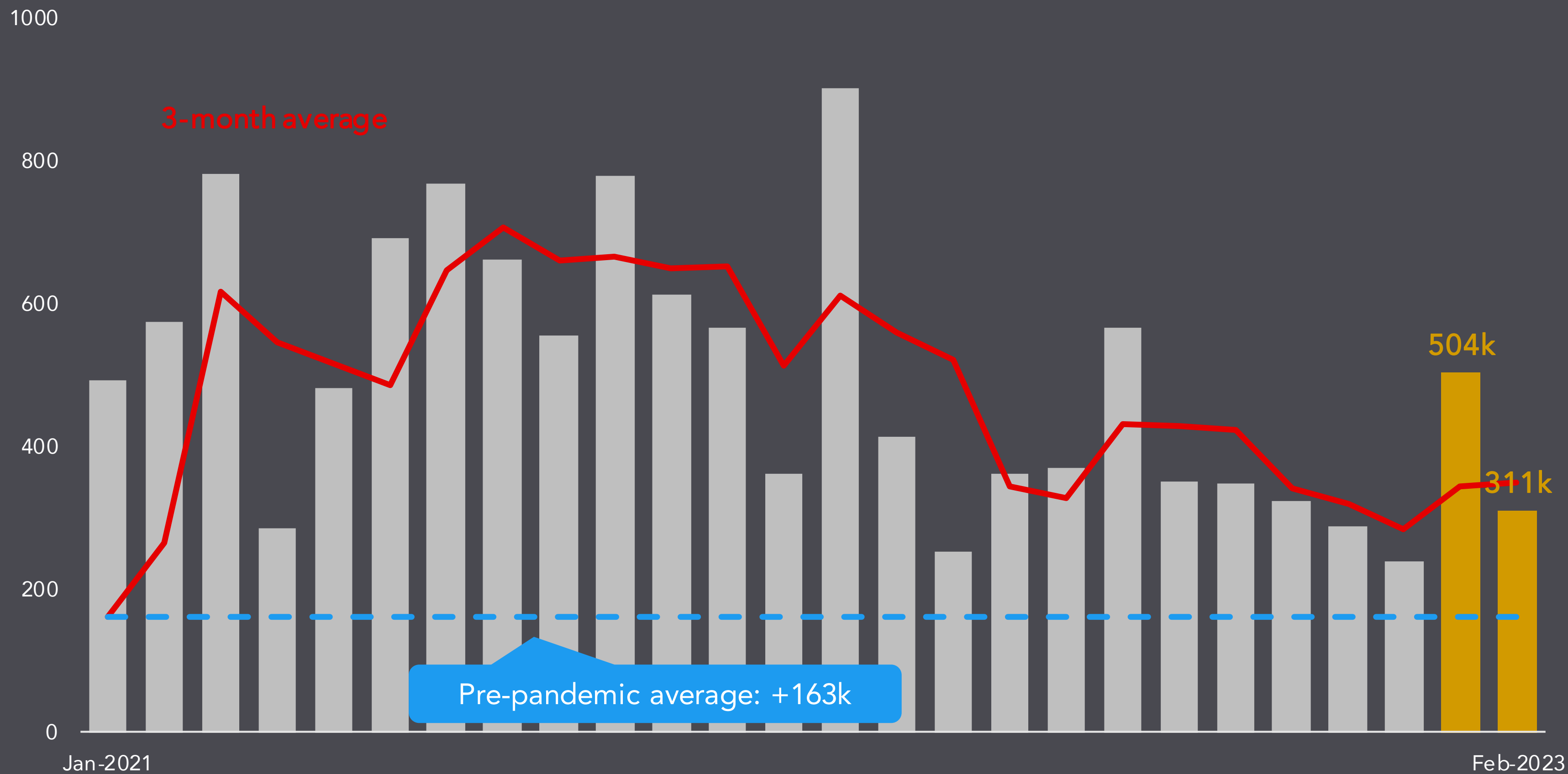
Source: (1) Bloomberg. Data as of March 21, 2023. Goods is commodities less food and energy commodities. Services is less energy. Supercore is less energy and housing. NSA.

05. Structurally Tight Labor Markets

Nonfarm Payrolls Still Above Expectations

US labor markets remain strong, though some softening at the edges has begun. February nonfarm payrolls exceeded consensus expectations once again coming in at +311k vs. the expected 225k, driven by job gains in services sectors. The pace of job growth pushed the three-month average to 351k, well above the pre-pandemic average of 163k.

US nonfarm payrolls, monthly change, thousands

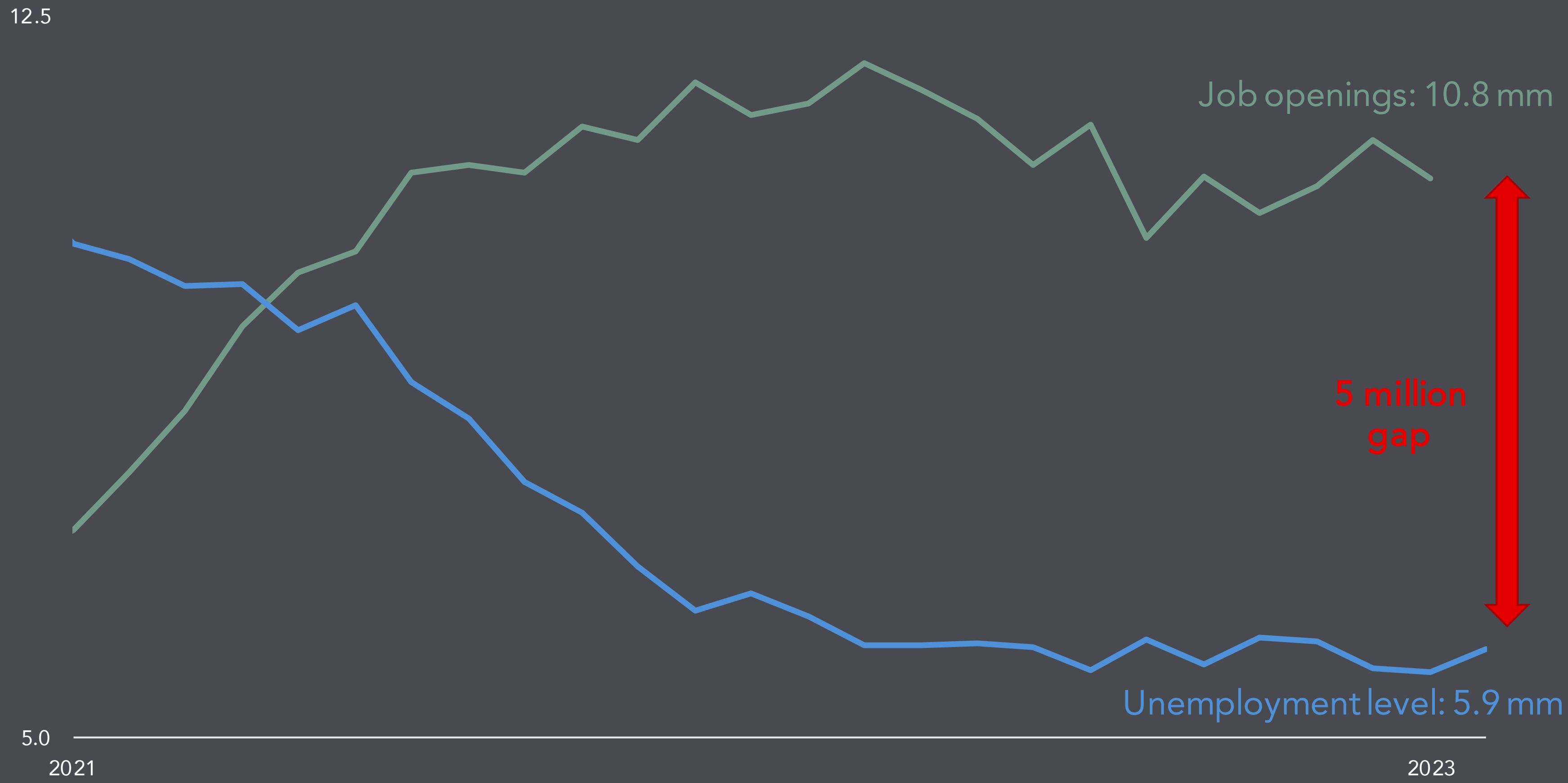


Source: (1) Bloomberg. Data as of March 21, 2023.

Job Openings Nearly Double Unemployed

Although job openings declined (-3.6%) in January to 10.8 million, they are still more than double the historical average. The ratio of unemployed per job opening fell modestly to 1.9, but remains well above the 1.0 ratio associated with a well balanced labor market.

US job openings vs. unemployment level, millions



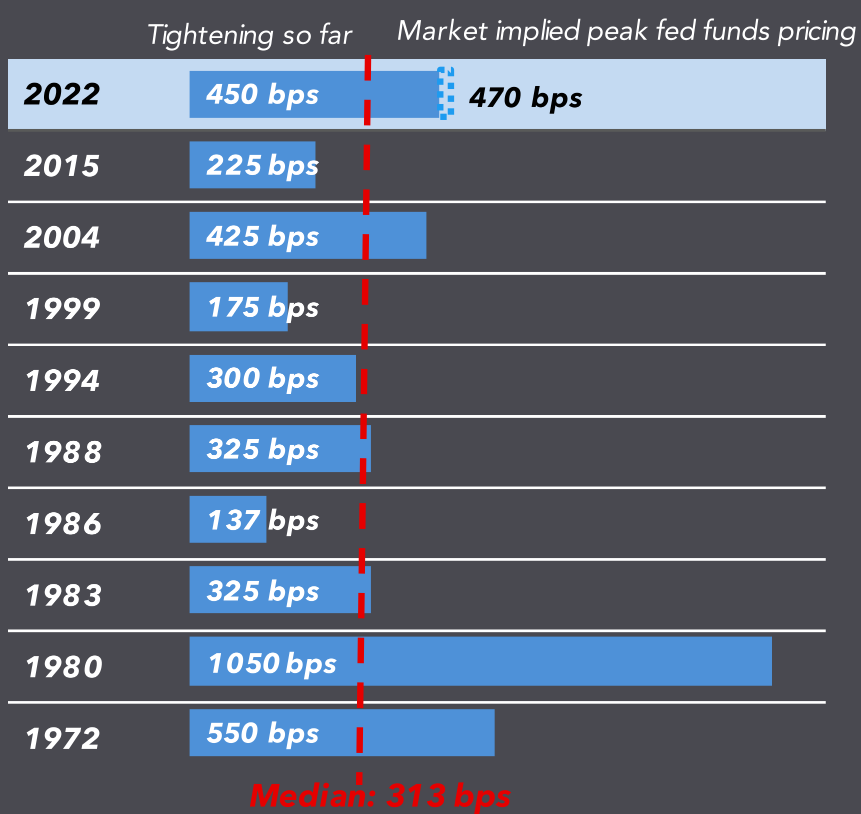
Source: (1) Bloomberg. Data as of March 21, 2023. Labor Department.

06. The "Ambiguity" of Sufficiently Restrictive

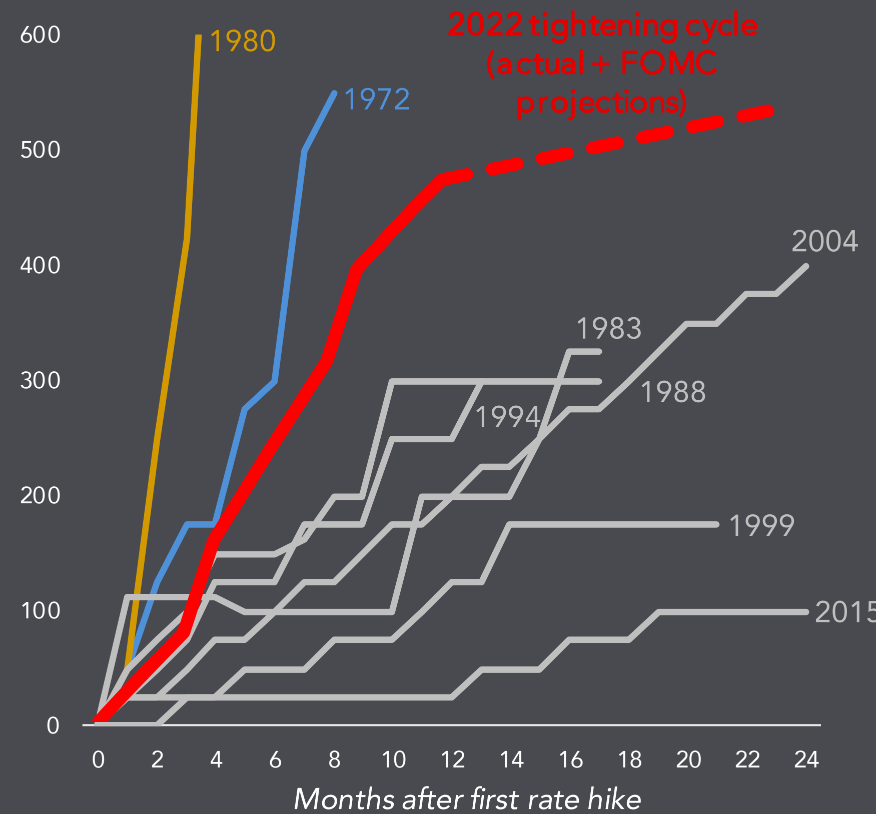
Impact of Fed Tightening Has Just Begun

One year ago, Fed policy rates were at 0% and the Federal Reserve was still expanding its balance sheet via quantitative easing. Despite a late start, the Fed has embarked on its fastest rate hiking cycle since Volker in 1980, while simultaneously reducing its balance sheet by nearly $100 bn per month.

Magnitude of tightening, bps (entire cycle)



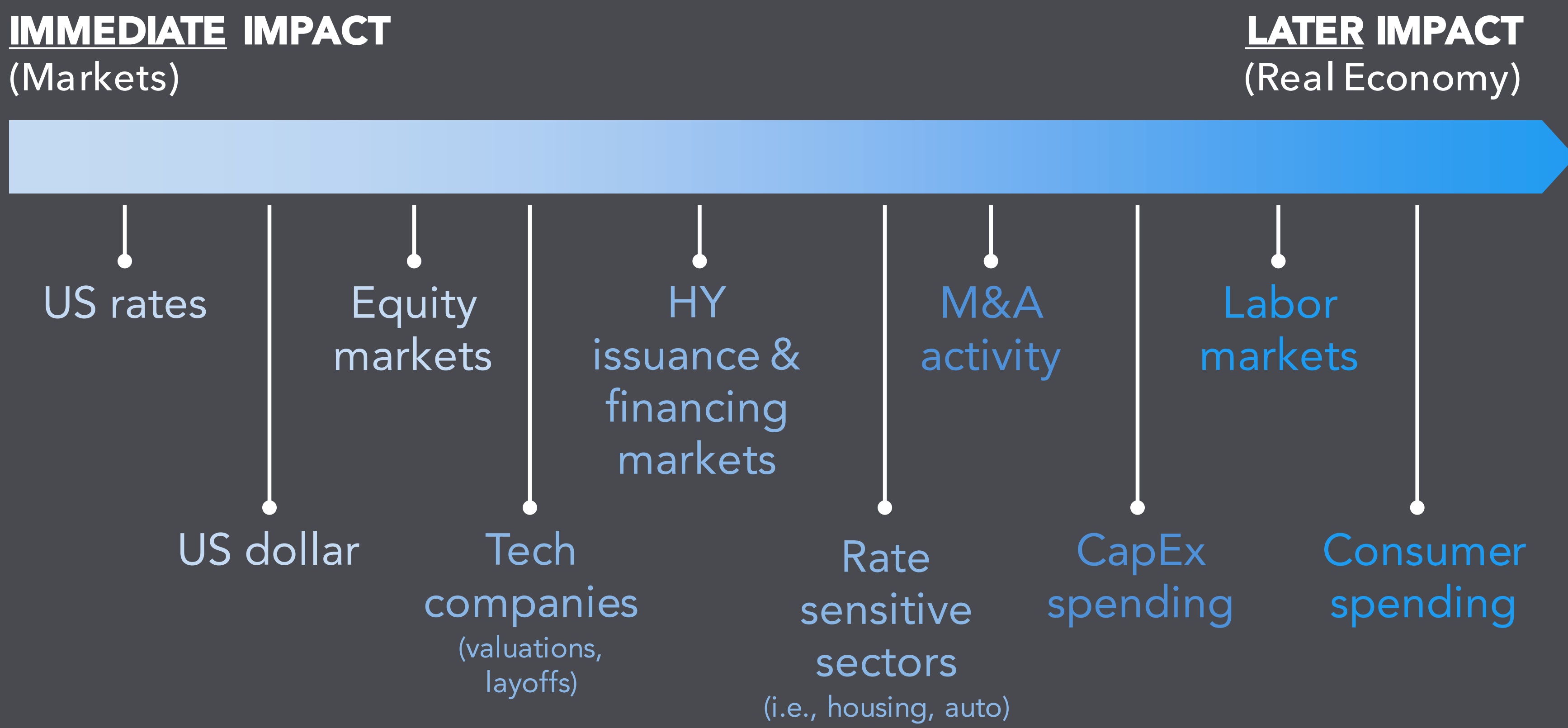
Pace of tightening, bps (entire cycle)



Source: (1) Bloomberg. Federal Reserve. Start rate is upper bound. 2022 hiking cycle is data as of September 2022 Fed meeting. Bloomberg. Data as of March 21, 2023. X-axis is months after the first rate hike, 2022 tightening cycle dash line is Fed projections.

Monetary Policy Operates with a Lag

Historically, monetary policy tightening operates with a lag, typically 12-18 months. With nearly 85% of global central banks tightening in 2022, and the Fed raising rates last year at the fastest pace in 40 years, we expect much of the impact of this tightening to be felt in 2023. While the impact on markets tends to be rapid, the ripple effects to the real economy take longer.

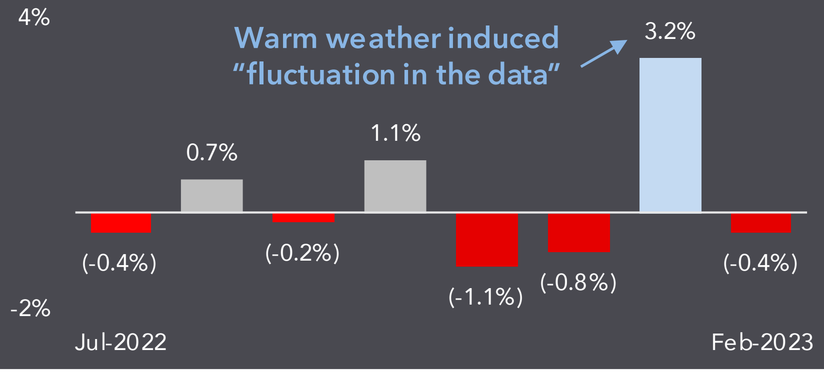


"Data Dependent" Policy Poses Challenges

The Fed's "data dependent" policy course has been made more challenging by "fluctuations in the data," the "non-linear progression" of certain data (i.e., 2 steps forward, 1 step back), the lagging signaling powers of certain data (i.e., unemployment rates, default rates) and low participation rates in many labor and economic surveys (i.e., JOLTS).

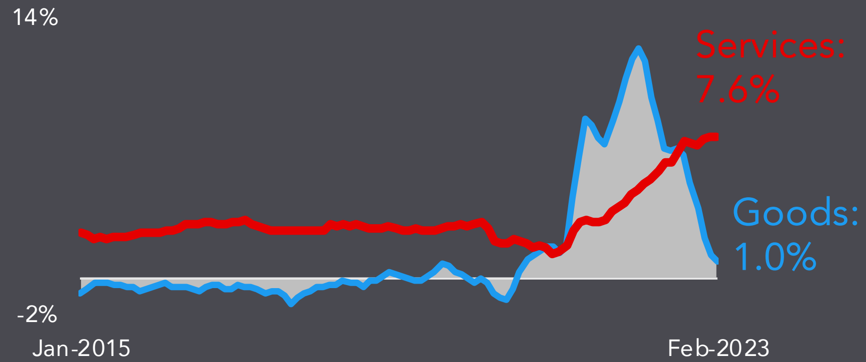
Data with high fluctuations

US retail sales, m/m



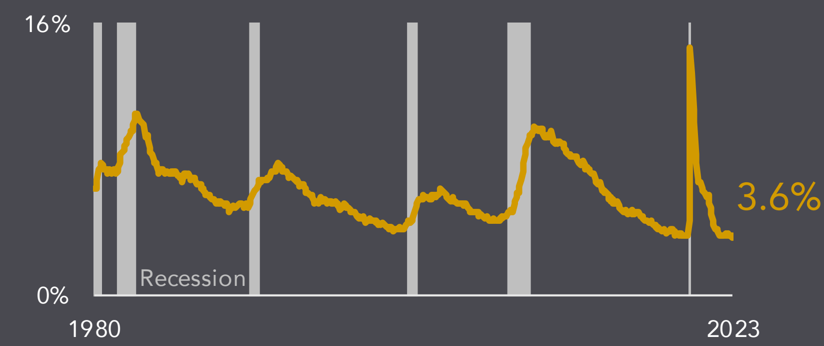
Data with "sticky" and "nonlinear" progression

US goods and services inflation, y/y



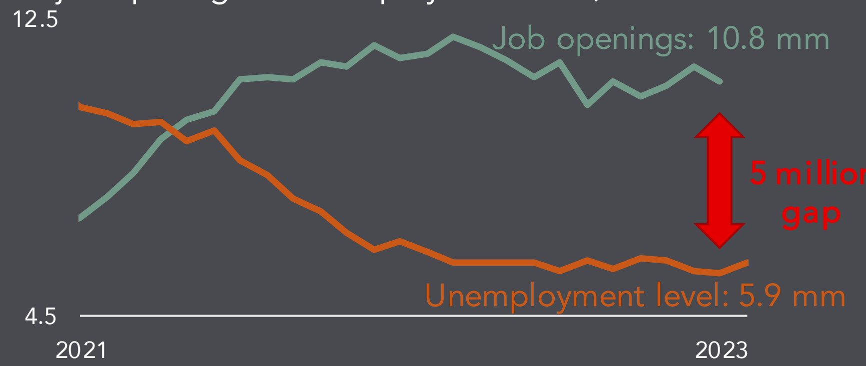
Data with lagging signaling powers

US unemployment rate



Data with low participation rates

US job openings vs. unemployment level, millions

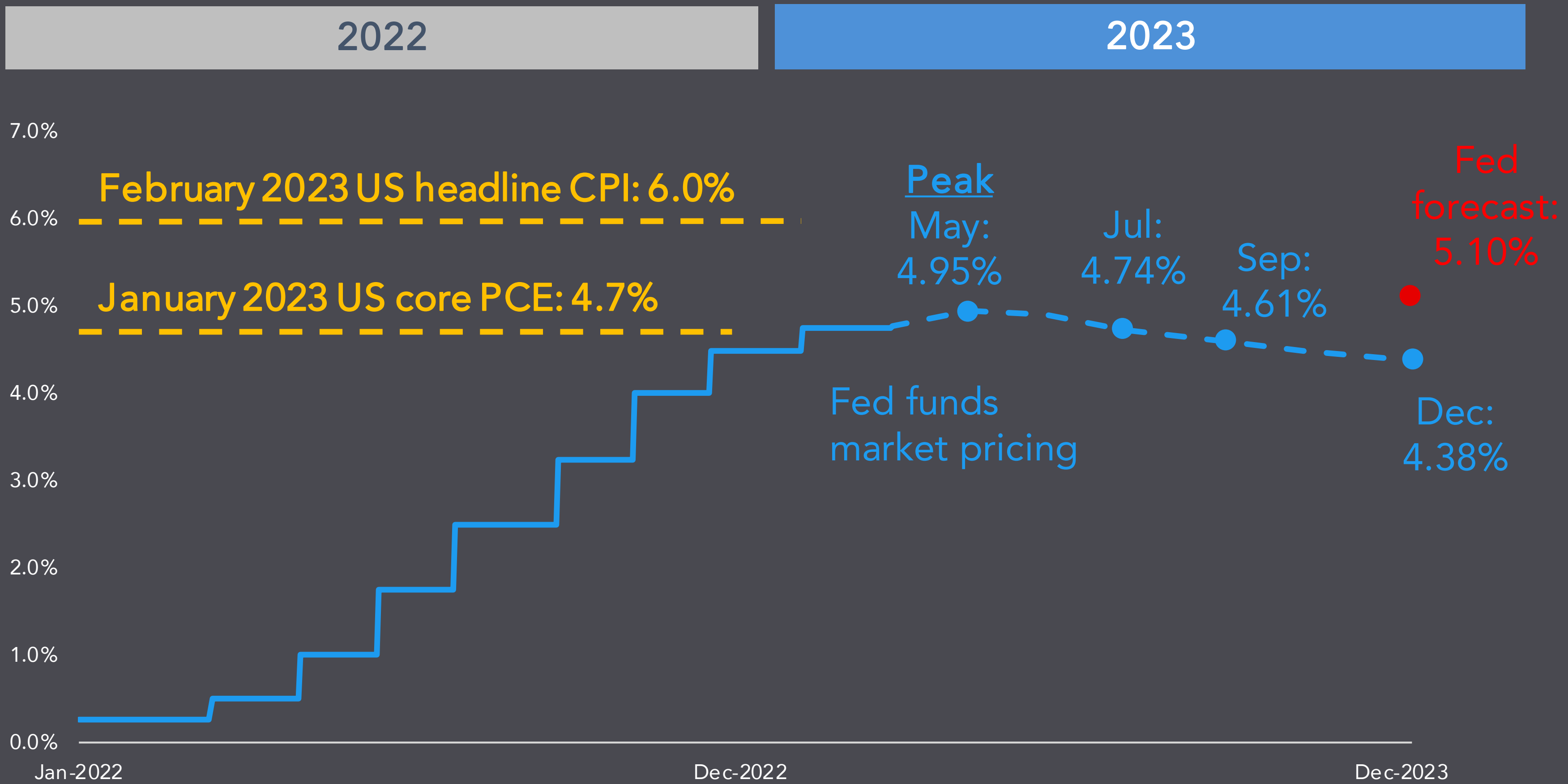


Source: (1-4) Bloomberg. Data as of March 21, 2023. Goods inflation is commodities less food and energy commodities.

Sufficiently Restrictive?

The Fed's benchmark policy rate is still negative in real terms (i.e., below the rate of inflation), and well below levels implied by the Taylor Rule framework, both of which suggest that Fed policy is not yet sufficiently restrictive.

Fed funds rate and market pricing



Source: (1) Bloomberg. Data as of March 21, 2023. WIRP Screen.

07. Recession May Have Already Begun

Did the Recession Start on Friday, March 10?

We have updated the "traffic light" matrix of US recession signals from our "Mixed Signals" publication in July. Importantly, some indicators like "yield curve inversion" have been reliable "leading" indicators, while others such as labor market data have historically been "lagging" indicators.

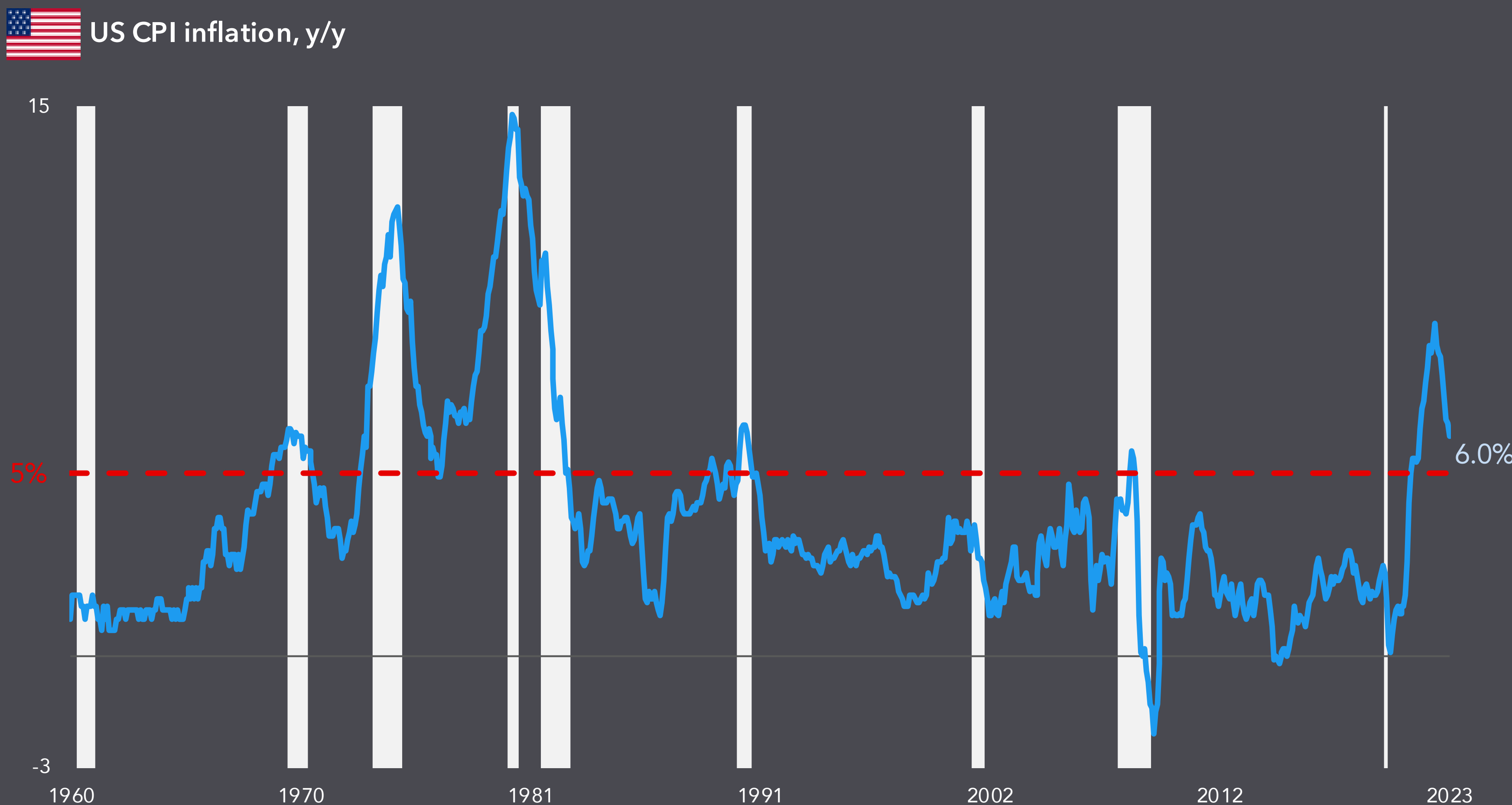
- Consumer price inflation
- Producer price inflation
- Inflation expectations
- Consumer confidence
- Leading economic indicators
- Manufacturing outlook
- PMI manufacturing
- ISM subcomponents (orders to inventory ratio)
- Rate volatility
- Inverted yield curves
- Financial conditions
- Cash / bonds 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
- 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
- Cyclical stocks (US defensives)
- Oil and energy prices

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

Inflation Threshold for US Recessions

Going back to 1950, every time headline US inflation has risen above 5%, an accelerated tightening cycle and US recession have followed.



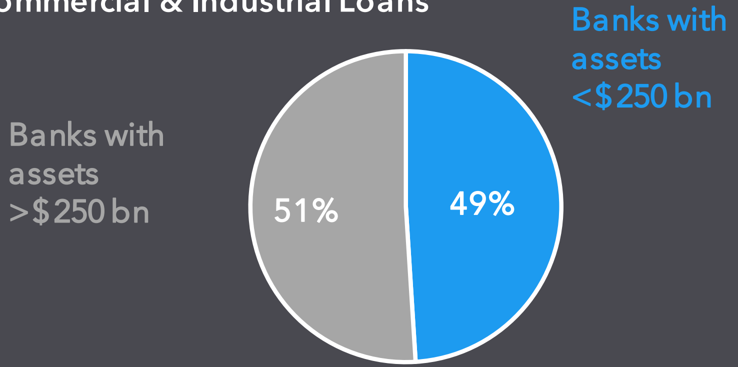
Source: (1) Bloomberg. Data as of March 21, 2023.

Role of Small Banks in the US Economy

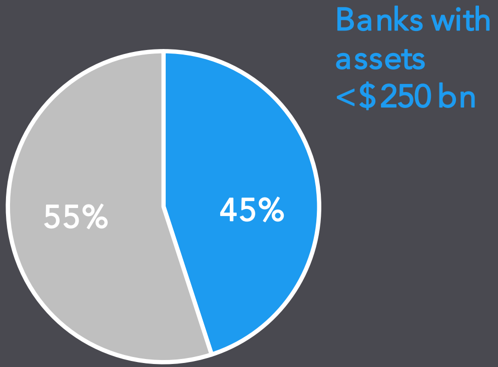
Small, regional banks in the US (<$250 bn of assets) are critical sources of credit for the US economy, accounting for nearly 50% of consumer and industrial sector loans and nearly 60% and 80% of residential and commercial real estate loans, respectively.

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

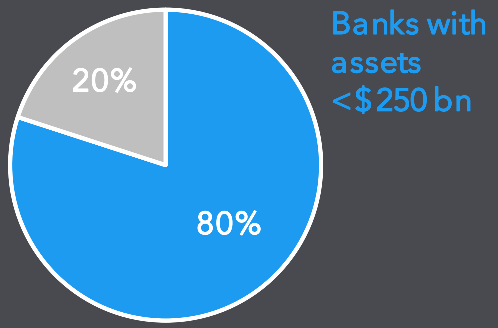
Commercial & Industrial Loans



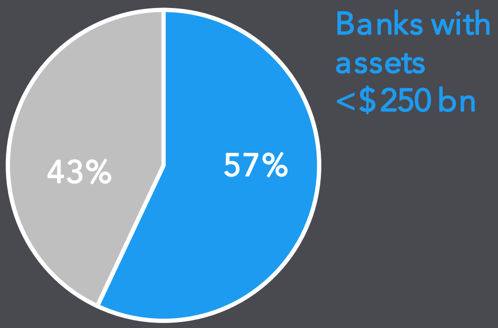
Consumer Loans



Commercial Real Estate Loans



Residential Real Estate



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).

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

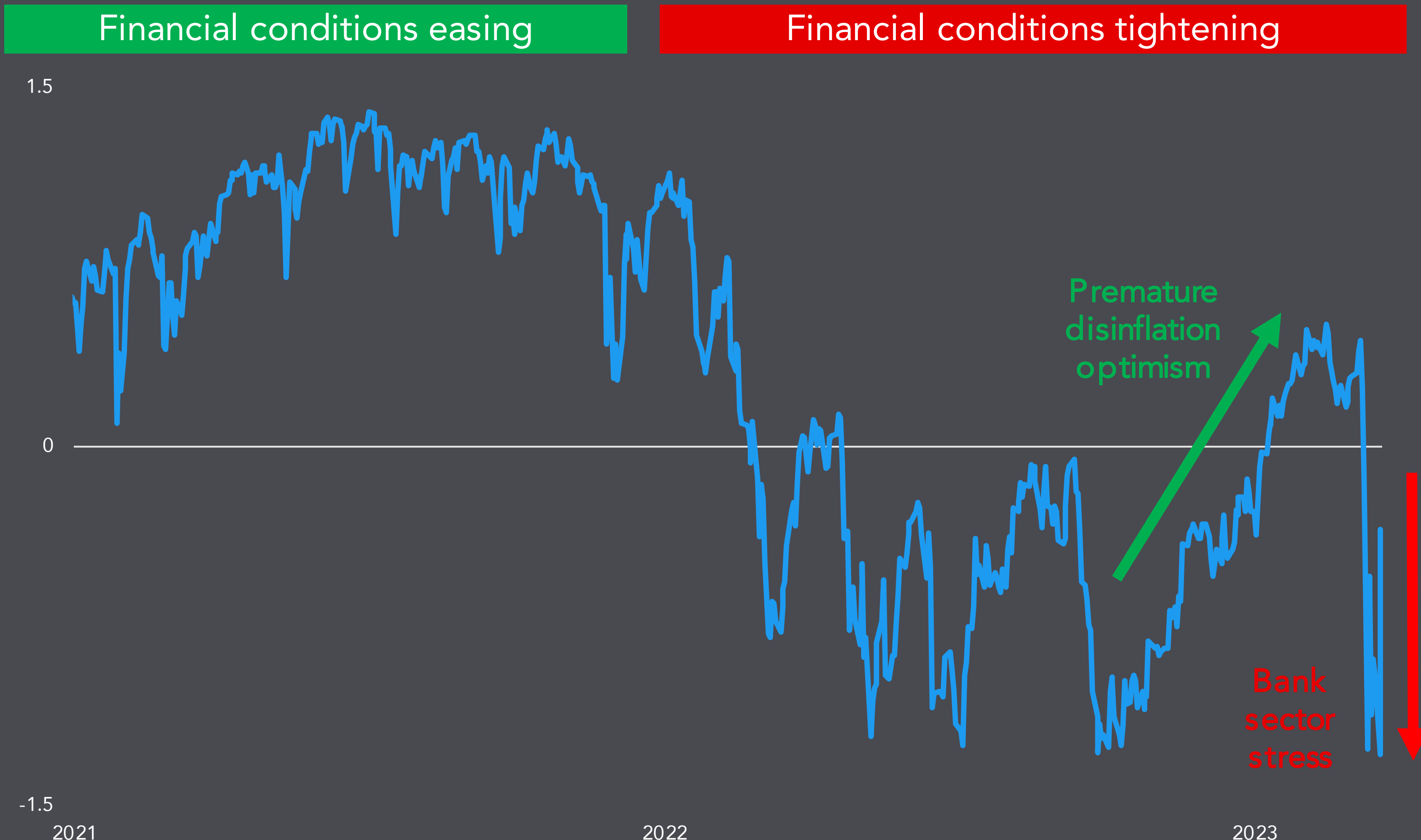
Tightening Cycle	Total bps hiked	Peak inflation rate	Hard or soft landing?
1954 - 1957	227 bps	3.7%	Hard
1958 – 1960	305 bps	3.6%	Hard
1964 – 1966	**210 bps**	**3.8%**	**Soft**
1968 – 1969	500 bps	6.2%	Hard
1972 – 1974	850 bps	12.3%	Hard
1977 – 1980	1,040 bps	14.8%	Hard
1980 – 1981	790 bps	11.0%	Hard
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.

08. Tightening Financial Market Conditions

Financial Conditions Have Tightened Sharply

US financial conditions



Source: (1-2) Bloomberg. Data as of March 21, 2023.

Financial & Bank Sector Conditions Tightening

Following SVB's insolvency, US financial and banking sector conditions moved to their tightest levels since March 2020

Issuance:

$0 Amount of IG and HY USD issuance in the week of March 13. First ever $0 IG week in March.

+4% YTD Y/Y HY issuance

(-10%) YTD Y/Y IG issuance

(-14%) YTD Y/Y ABS issuance

(-52%) YTD Y/Y Lev Loan issuance

Pricing:

+34 bps IG spreads since March 1

+97 bps HY spreads since March 1

+35 bps HY YTW since March 1

Fund Flows:

(-$2.5 bn) Leverage Loan outflows in March

(-$3.4 bn) IG outflows in March

(-$3.7 bn) HY outflows in March

Volatility:

+10% FX volatility since March 1

+23% Equity volatility since March 1

+45% Oil volatility since March 1

+46% Rate volatility since March 1

Lending:

44% % of lenders tightening C&I loan standards for small institutions (vs. typical recession threshold of 10%)

45% % of lenders tightening C&I loan standards for large / medium institutions (vs. typical recession threshold of 20%)

6.97% Avg 30 yr mortgage rate vs. 4.53% one year ago

Bank Sector:

+22 bps TED spread inter-bank lending rate since March 1 (3M Libor less 3M T-bills)

+42 bps FRA-OIS interbank lending rate since March 1 (lending rate less overnight risk free rate)

$165 bn Weekly utilization of Fed Discount Window & BTFP for week ending March 15 (new record)

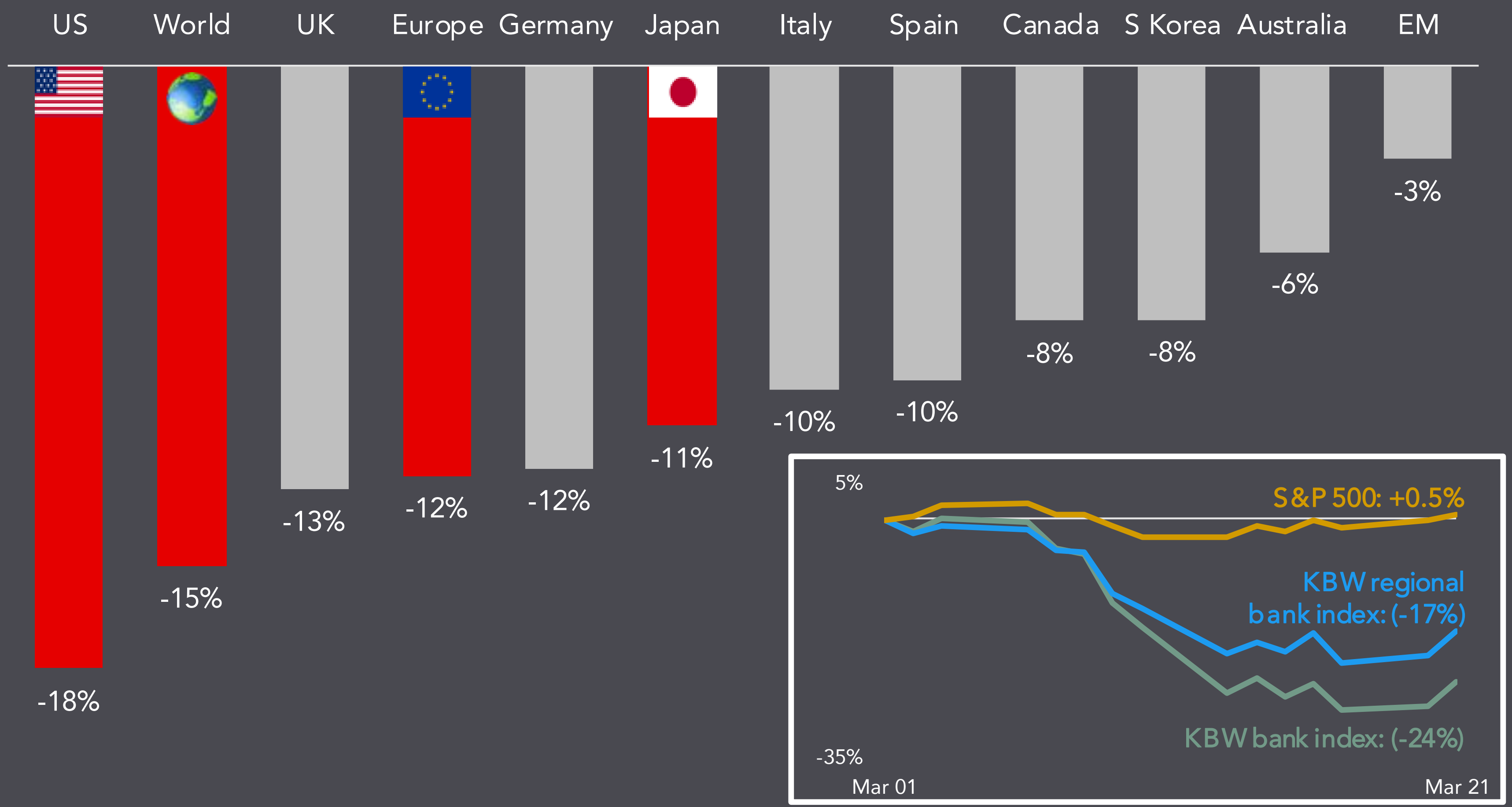
(-24%) KBW bank index performance since March 1

Source: (1) CFR. IFR. Lipper Fund Flows. Bloomberg. Data as of March 21, 2023. Outflows are cumulative since the week ending February 23.

Global Banking Sector Tightening

US regional bank indices have significantly under-performed their global peer group since early March, which in turn will have implications for financial stability and credit function in the broader economy. For banks, NIM compression, tighter lending standards and bank sector consolidation are likely to follow.

Bank equity indices, performance since March 1, 2023



Source: (1-2) Bloomberg. Data as of March 21, 2023.

European Bank Capital Costs Surge

European Additional Tier 1 (AT1) debt yields (YTW) nearly doubled since bank sector stress accelerated earlier this month, and 5x higher since the global tightening cycle and Ukraine war began a year ago. Given the size of this market ($270 bn), its critical role in the European bank regulatory architecture, and the outsized role of banks as a provider of credit in Europe, the repricing and potential long-term damage of this market represents a significant tightening of European financial conditions.

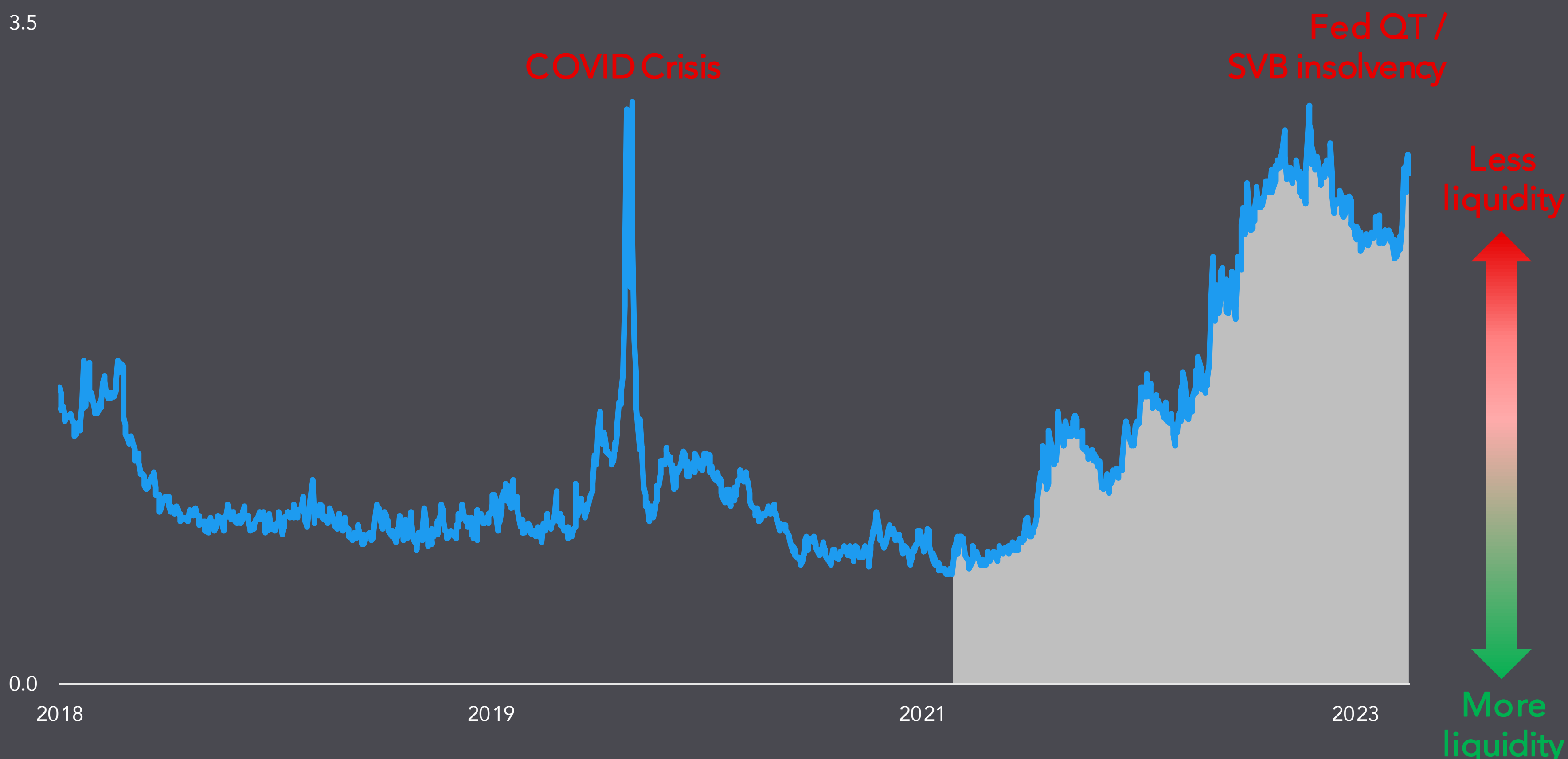
European Bank CoCo index, yield to worst

Source: (1) Bloomberg. Data as of March 21, 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.

US government securities liquidity index

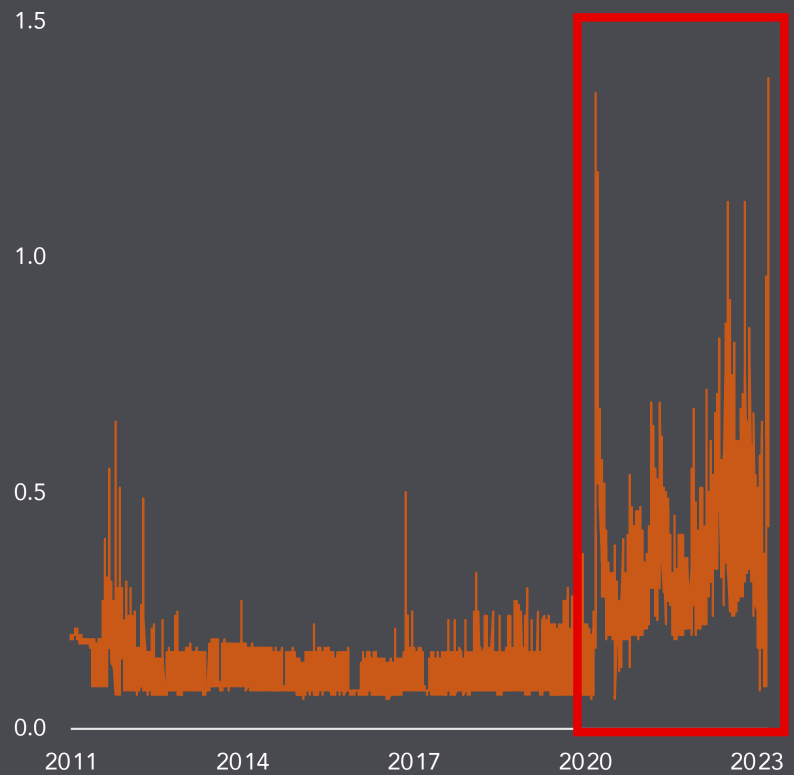


Source: (1) Bloomberg. Data as of March 21, 2023.

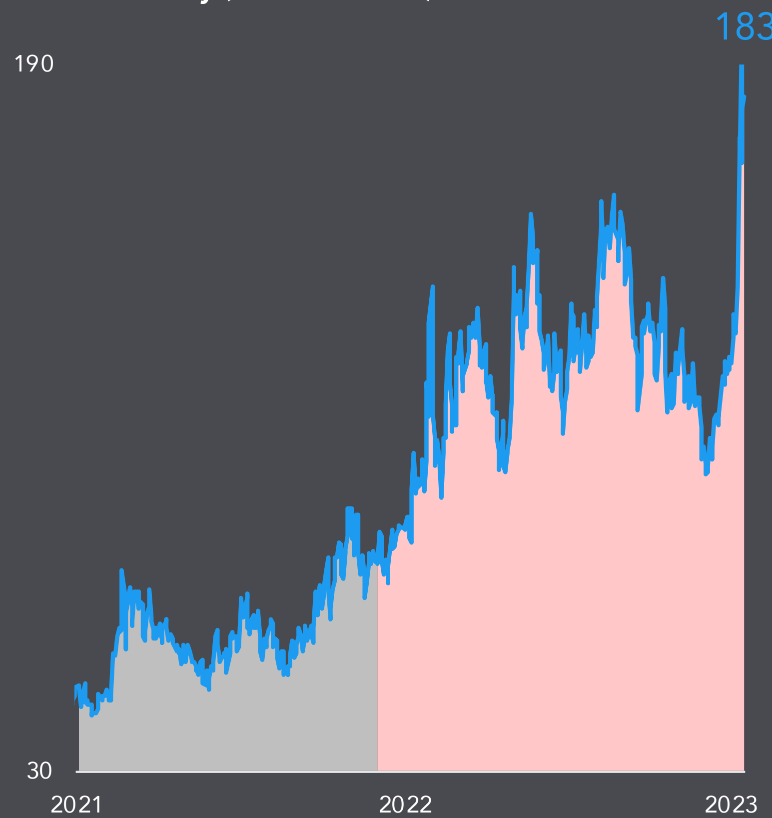
Lower Liquidity Exacerbating Surge in Rate Volatility

With bid-ask spreads widening across all maturities since Fed QT began, the MOVE interest rate volatility index has risen to its highest levels since 2008. Following SVB's insolvency, 2 year UST yields plunged on Monday March 13 by the largest amount since 1982, having soared above 5% on hawkish Powell testimony only a few days earlier.

Bid-ask spread in 30 year UST bonds, bps



Rate volatility (MOVE index)

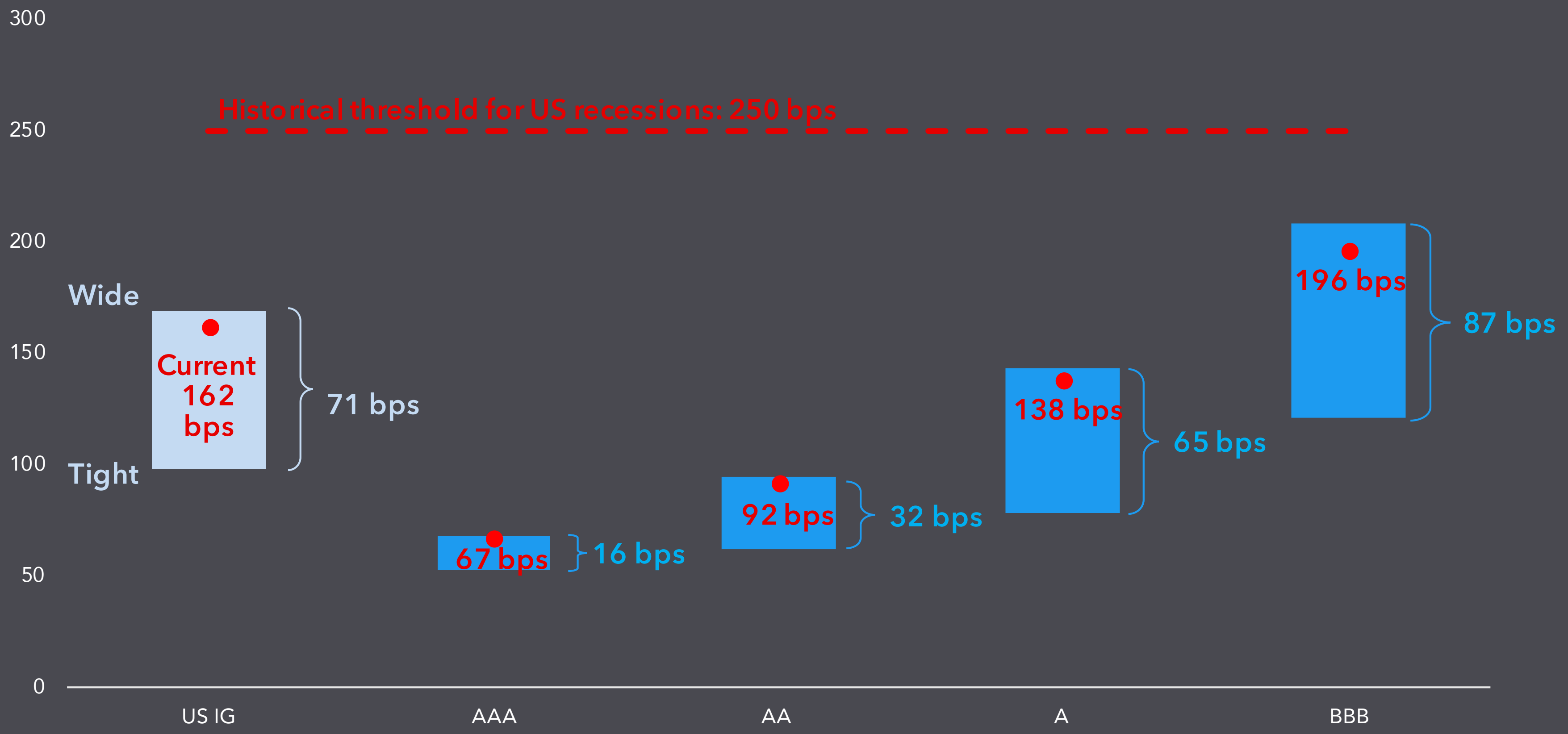


Source: (1-2) Bloomberg. Data as of March 21, 2023.

USD IG Credit Spreads Repricing Wider

Credit spreads do not like volatility. While USD IG corporate credit spreads have been more resilient than HY, they have nonetheless widened ~ 35 bps (vs close to 100 bps for HY) since early March. Should financial stability deteriorate further, IG corporate spreads could move markedly wider in the direction of their historic US recession threshold of 250 bps.

USD IG spread ranges in current cycle from tight to wide by rating

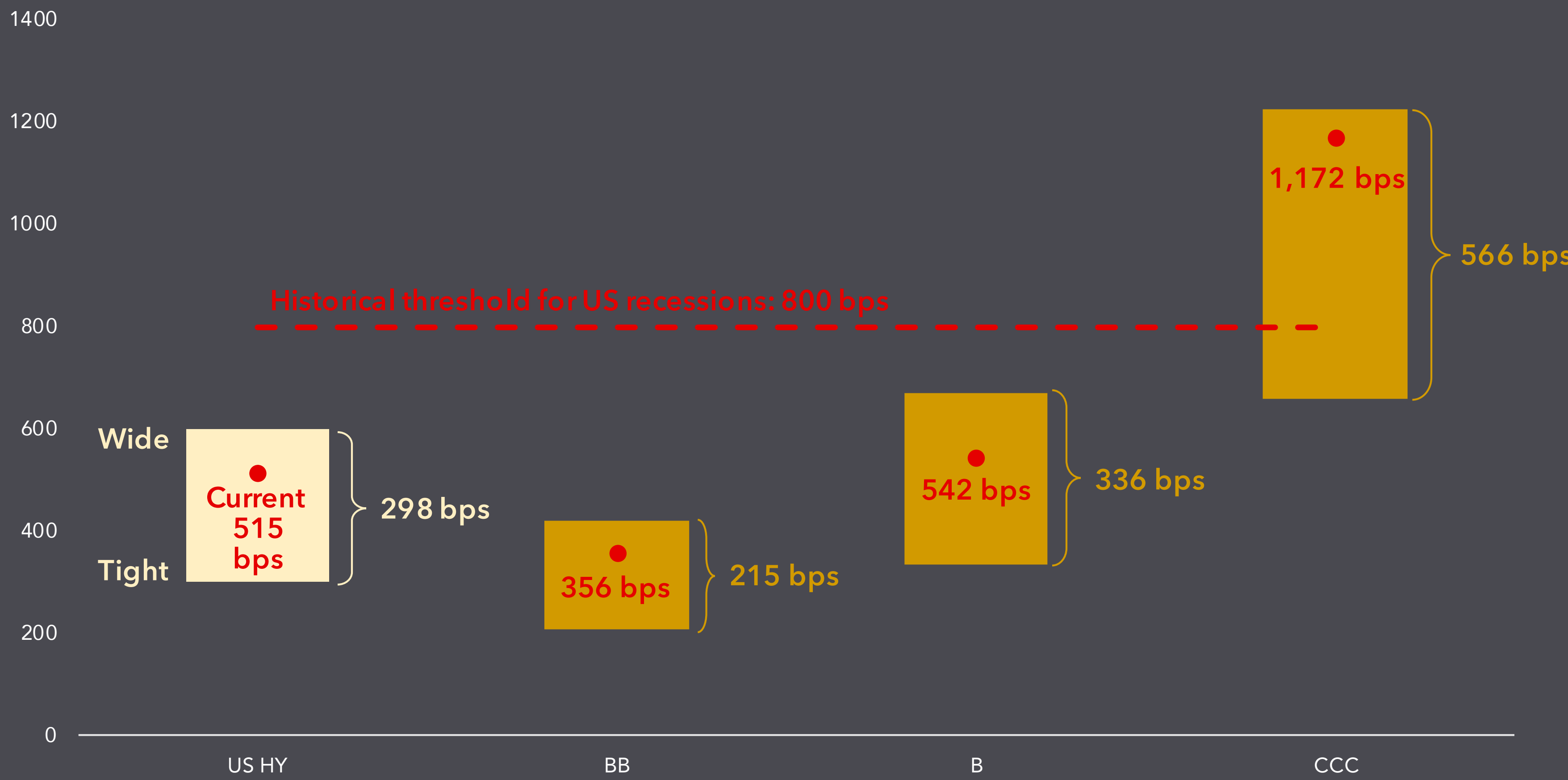


Source: (1) CreditSights "Idiosyncratic vs. Systemic: Road Ahead for Credit". "Current cycle" tight on Dec 28 2021, wides on Oct 20, 2022 for IG and July 5, 2022 or HY.

USD HY Spreads Too Tight for Fundamentals

While strong balance sheets and manageable maturity walls should keep HY spreads below the historic 800 bps threshold for US recessions, we believe HY spreads are highly vulnerable to financial stability and recession risks as the year progresses.

USD HY spread ranges in current cycle from tight to wide by rating

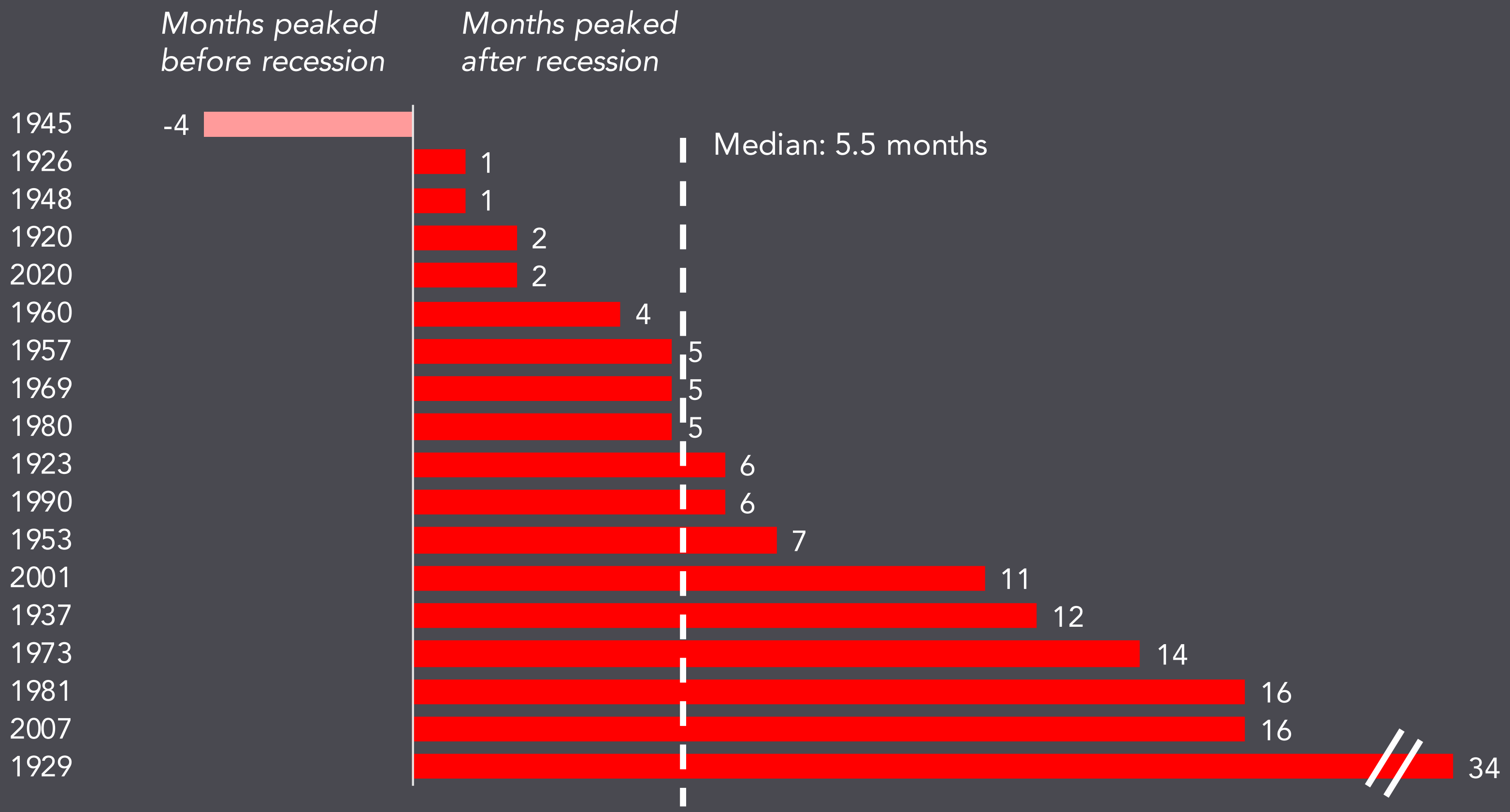


Source: (1) CreditSights "Idiosyncratic vs. Systemic: Road Ahead for Credit". "Current cycle" tight on Dec 28 2021, wides on Oct 20, 2022 for IG and July 5, 2022 or HY.

Spreads Rarely Peak in Advance of Recessions

In nearly 20 US recessions over the last 100 years, USD corporate credit spreads peaked BEFORE the recession on only one occasion. On average, spreads typically hit the wides about 5-7 months after the start of the recession. As such, we believe the strong tightening in spreads over recent months is likely not sustainable, with gap-out risk on spreads increasing in the 2H of 2023.

# of months after recession starts to spread peak



Source: (1) Capital Economics, "We Think US Corporate Bond Spreads Will Widen Again" (December 12, 2022). Shiller, NBER, Bloomberg, Refinitiv. Spreads are derived using the OAS of ICE BofA (2000-today) or Moody's seasoned Baa-rated US corporate bond yield (1962-1999) or the NBER US yields on lowest rating corporate bonds (1920-1961).

**“Welcome to the Hotel California…
You can check out any time you like,
But you can never leave.”**

Concluding lyrics to iconic song “Hotel California” by the Eagles

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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

Hailey has over a decade of Wall Street experience, including three years as a Consumer Sector Specialist in Equity Sales and nine years as a Capital Markets Strategist. Hailey is also a member of MUFG's Inclusion & Diversity Council and has devoted years to participating in and developing Wall Street recruiting programs.

Education

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

Personal

In March 2020, Crain's New York Business Magazine named Hailey one of the "Rising Stars in Banking and Finance".

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Experience

Stephanie has spent over five years as a Capital Markets Strategist. She is an active member of the University of Michigan recruiting team and is also focused on the diversity recruiting effort at MUFG. At her prior firm, Stephanie was a part of the Americas Women's Network Junior Council.

Education

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

Personal

Stephanie is actively involved in NYC's iMentor program, mentoring high school students with their journey to college graduation.

MUFG's Capital Markets Strategy Team

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