In this very special Top of Mind year-end edition, Charting the story of this year is our mission. 2023 wasn’t just about Taylor’s wildest dreams, But also three important themes.

Markets worried first about growth, but then sticky inflation, Which meant that higher interest rates could be here for the duration. This higher-for-longer rate environment came with consequences galore, Bringing bank panics, corporate credit concerns, and commercial real estate risks to the fore.

Notable political and geopolitical developments also occurred, Like rising US-China tensions, which makes more decoupling all but assured. The US hitting its debt limit, which, as usual, set off a political fight, And the Israel-Hamas war, which thrust the Middle East back into the spotlight.

Amid all that, two longer-term questions attracted heated debate: Can US economic and asset outperformance continue? And is the potential of generative AI really that great?

We hope you find our favorite 2023 charts on these themes insightful, And our annual crossword—which you can solve by reading our 2023 pieces—delightful. Thank you for your readership, and hope your holidays are filled with joy and more, We can’t wait to engage with you again in 2024.

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Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification, see the end of the text. Other important disclosures follow the Reg AC certification, or go to www.gs.com/research/hedge.html.

The Goldman Sachs Group, Inc.
Across:
2. GS MENA economist Farouk Soussa warns that the current war in Gaza will pose challenges for regional economies, with, for example, tourism already hard hit in ____________ (Issue 124).
4. GS Chief Global Equity Strategist Peter Oppenheimer argues that US equity outperformance over the last decade likely won’t be ____________ to the same extent over the next decade (Issue 123).
6. The US corporate debt ____________ is relatively light today given that many companies took advantage of extraordinarily low interest rates in the post-GFC period to lock in cheap debt, according to GS US equity strategist Ben Snider (Issue 121).
8. NYU’s Gary Marcus argues that we are very far from achieving artificial intelligence (Issue 120).
9. Goldman Sachs economists find that the peak drag on US growth from a tightening in financial conditions occurs after ____________ quarters, on average (Issue 115).
10. Heading into 2023, GS multi-asset strategist Christian Mueller-Glissmann made the case that ____________ was not trash (Issue 116).
11. Columbia University’s Takatoshi Ito characterized the BoJ’s December 2022 yield curve control (YCC) adjustment as them putting on their ____________ in preparation for exit from their very accommodative monetary policy stance (Issue 116).
12. RXR’s Scott Rechler warns that current concerns around office real estate could eventually spread to the ____________ sector (Issue 122).
13. Both Edward Djerejian, former US Ambassador to Israel and Syria, and Emile Hokayem, Director of Regional Security and Senior Fellow for Middle East Security at IISS, worry that a ____________ could lead to a wider conflict in the Middle East (Issue 124).
14. The Carlyle Group’s David Rubenstein argues that the most successful investors are ones that invest in ____________ market conditions (Issue 115).
15. Management focus on ____________ returns largely explains superior US equity performance since 2000, according to semiconductor industry veteran Richard Hill (Issue 118).
16. Harvard’s Graham Allison argues that US-China competition today is a classic ____________ rivalry, whereby a rapidly rising power is threatening to displace a major ruling power (Issue 118).
17. Management focus on ____________ returns largely explains superior US equity performance since 2000, according to semiconductor industry veteran Richard Hill (Issue 118).
18. Rhodium Group’s Daniel Rosen argues that the substantial daylight between the economic systems of the US and China means further ____________ is likely (Issue 118).
19. The US Constitution grants the power of issuing debt solely to ____________ (Issue 119).
20. The US budget deficit has roughly _____ over the past year (Issue 123).
21. The US Constitution grants the power of issuing debt solely to ____________ (Issue 119).
22. ____________ networks are mathematical models inspired by the human brain structure (Issue 120).
23. The cause of the 1Q23 US bank failures was an underlying duration ____________ between the asset and liability sides of bank balance sheets, according to GS bank analyst Richard Ramsden (Issue 117).
24. A seminal moment in the semiconductor industry occurred in 2010 when ____________ opened a chip manufacturing factory in Dalian, China, according to semiconductor industry veteran Richard Hill (Issue 118).
25. GS EM strategist Tadas Gedminas makes the case that structural shifts in Israel’s economy over the past two decades have left it more ____________ to challenges than in the past (Issue 124).
26. Conviction’s Sarah Guo says we’re entering an era of “__________ 3.0” in which foundational large language models are now widely available, which makes gen AI technology more accessible and less expensive (Issue 120).
27. Columbia Business School’s Stijn Van Nieuwerburgh believes that the crisis in the office real estate market is a ____________ in slow motion (Issue 122).
28. BlackRock’s Rick Rieder argues that the economy tends to follow the ____________ curve over the medium term, only veering from it during periods of extraordinary monetary or fiscal stimulus or an exogenous shock, like the pandemic (Issue 116).
29. In the US, bank loans to the office real estate sector account for roughly ____________ percent of total US bank loans (Issue 122).

Down:
1. A supply shock only changes a ____________ price, whereas inflation is the phenomenon of all prices and wages rising together, according to Stanford Hoover Institution’s John Cochrane (Issue 115).
4. The failure of SVB and Signature Bank was a classic bank ____________. say Daniel Tarullo, former Chairman, Federal Reserve Board’s Committee on Supervision and Regulation, and Yale’s Gary Gorton (Issue 117).
5. David Beers, former Head of Sovereign Credit Ratings at Standard & Poor’s, says it is not true that sovereigns can’t ____________ on their local currency debt (Issue 119).
7. GS credit strategists Michael Puempel and Ben Shumway find that so-called ____________ firms—economically unviable firms that survive only thanks to cheap debt—represent only a sliver of US public debt markets (Issue 121).
10. GS MENA economist Farouk Soussa warns that the current war in Gaza will pose challenges for regional economies, with, for example, tourism already hard hit in ____________ (Issue 124).
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In the words of our 2023 interviewees

“Given the role that bank runs played in this episode—and especially the extraordinary speed of deposit outflows—I couldn’t agree more with the calls to review liquidity regulations.”
– Daniel K. Tarullo, former Chairman, Federal Reserve Board’s Committee on Supervision and Regulation
(Issue 117, April 3)

“It’s just not feasible for the US, China, or any place else for that matter to become self-sufficient in semiconductors.”
– Richard Hill, former Chairman of the Board, Marvell Technology, former CEO and Chairman, Novellus Systems
(Issue 118, May 1)

“Four years ago, I joked that, should you ever find yourself in a situation where the robots are coming for you, just close the door. And it’s still true that robots can’t open doors... We are nowhere near achieving artificial general intelligence (AGI). Those who believe AGI is imminent are almost certainly wrong.”
– Gary Marcus, Professor Emeritus of Psychology and Neural Science, New York University
(Issue 120, July 5)

“The potential for a miscalculation that turns the conflict into an all-out war remains significant; rational actors can make a strategic decision not to escalate and still become entangled in an escalatory spiral.”
– Emile Hokayem, Director of Regional Security and Senior Fellow for Middle East Security, International Institute for Strategic Studies
(Issue 124, December 5)

“All told, we feel pretty good about the possibility of a soft landing... Many sources of disinflation that we expect are “freebies”, in that they don’t require substantial economic weakness to play out.”
– Jan Hatzius, GS Chief Economist and Head of Global Investment Research
(Issue 115, January 27)

“We’re entering the era of what I think of as “Software 3.0”... companies don’t need to collect nearly as much training data, which suddenly makes [generative AI] technology much more useful, accessible, and less expensive.”
– Sarah Guo, Founder, Conviction, former General Partner, Greylock
(Issue 120, July 5)

“A supply shock only changes a relative price. Inflation is the phenomenon of all prices and wages rising together, which comes from the government inducing more demand in the face of a supply shock.”
– John Cochrane, Senior Fellow, Hoover Institution at Stanford University
(Issue 115, January 27)

“Central banks can hold the line longer than many people believe. While I don’t agree with YCC and think that negative interest rates don’t make sense given the negative impacts of chronically low rates on capital formation, pension and banking systems, and the economy, I see no limit to the amount of JGBs the BoJ can buy. So, they can stick with the policy for a long time, even if it’s not good policy.”
– Rick Rieder, CIO of Global Fixed Income, BlackRock
(Issue 116, February 23)

“When a rapidly rising power threatens to displace a major ruling power, both become increasingly hostile toward the other... this is a classic Thucydidean rivalry... So, as I wrote in 2016: expect things to get worse before they get worse.”
– Graham Allison, Professor, Harvard University, former US Assistant Secretary of Defense
(Issue 118, May 1)

“Over the next couple of years, the CRE problem won’t just be an office problem—multifamily will almost certainly be an area of stress... all real estate assets will need to come to terms with the higher rate environment.”
– Scott Rechler, Chairman and CEO, RXR
(Issue 122, October 9)

“You can’t solve every problem with higher capital and liquidity requirements. Aim huge demand for safe assets, not enough of them exist to back up all short-term debt.”
– Gary Gorton, Professor, Yale School of Management
(Issue 117, April 3)

“We must dispense with the illusion that the Palestinian issue can be solved through economic or investment initiatives and return to the negotiating table on the basis of land-for-peace and the two-state solution, which is the only approach that would allow for a democratic Jewish state to peacefully and securely coexist alongside an independent Palestinian sovereign state.”
– Edward P. Djerejian, former US Ambassador to Israel and Syria, former US Assistant Secretary of State for Near Eastern Affairs
(Issue 124, December 5)

“Based on what I know, PE marks are more likely to rise than decline in 2023.”
– David Rubenstein, Co-Founder and Co-Chairman, The Carlyle Group
(Issue 115, January 27)

“It could easily take several years for the office market to stabilize, which is why I’ve referred to all this as a trainwreck in slow motion.”
– Stijn Van Nieuwerburgh, Professor of Real Estate and Finance, Columbia Business School
(Issue 122, October 9)

“The stress tests required under [Dodd-Frank], while valuable, were incorrectly thought to be more useful than understanding that we cannot predict where problems will come from and how they might evolve.”
– Thomas Hoenig, former President, Federal Reserve Bank of Kansas City and former Vice Chairman, FDIC
(Issue 117, April 3)

“Was the December [BoJ] shift actually the first step toward exit? I would say maybe it wasn’t the first step, but perhaps preparation for the first step; I would think of it as the BoJ putting on its shoes.”
– Takatoshi Ito, former Deputy Vice Minister for International Affairs, Japanese Ministry of Finance
(Issue 116, February 23)

Note: All quotes came from interviews that appeared in GS Top of Mind reports in 2023. Source: Goldman Sachs GIR.

Goldman Sachs Global Investment Research
Markets worried first about growth, but then sticky inflation, which meant that higher interest rates could be here for the duration. This higher-for-longer rate environment came with consequences galore. Bringing bank panics, corporate credit concerns, and commercial real estate risks to the fore.

Pgs. 5-17
Ample soft landing evidence (so far)

“The title of our [2024] annual outlook report... is that the hard part is over. The reason why I think the hard part is over is that we have proof of concept that we can bring down inflation and rebalance the labor market without having to crush the economy and put the economy into recession, and I think we’ve seen that very clearly in 2023.”

– Jan Hatzius, Chief Economist and Head of Global Investment Research, Goldman Sachs

(Bloomberg Odd Lots interview, December 2023)

Real disposable personal income grew at a solid pace this year, as we expected, and we expect continued growth in 2024/25

Real disposable personal income, % change, year ago

As we expected, the jobs-workers gap shrank mainly through a decline in job openings without a sharp rise in unemployment

Millions

Core PCE inflation declined sharply this year, as we expected...

Contributions to yoy core PCE inflation, % change, year ago

*New, used, and rental cars, furniture, sporting equipment, household appliances, sports and rec vehicles, video, audio, photo, and info. equipment. Source: Department of Commerce, Goldman Sachs GIR.

Special thanks to US economics team for charts.

We have long held that the lags from financial conditions on GDP growth are relatively short, meaning that the US economy bore the brunt of the 2022 tightening in financial conditions that year

Real US GDP growth impulse from GS financial conditions index (FCI), 3-quarter centered moving average, pp

The best alternative measures of new lease rent growth have generally continued to slow

Sequential pace of alternative rent measures, % change, SA

...and we forecast core PCE inflation will decline further to 2.2% by YE24

GS core PCE inflation forecasts

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GS core PCE inflation forecasts
Bond flows have turned positive this year after large outflows last year... Global flows into bond funds, $bn

...as investors have increased their duration overweights, with the recent spike seemingly driven by some of the largest funds Asset-weighted duration beta (negative values indicate underweight duration bias vs. the Bloomberg Agg)

The value proposition of bonds has increased further as yields continued to move higher over the course of this year... US Treasury and German Bund yields, %

...but cash has generally continued to outperform bonds, leaving it as the better alternative Performance of 10y vs. 3m UST

Foreign investors remain the largest owners of US Treasuries... Ownership of US government bond market, %

...as well as of German Bunds Ownership as a share of total debt securities outstanding

Notes and sources:
- Flows through Dec 6
- Note: 2023 figure subject to revision. Source: EPFR, Goldman Sachs GIR.
- Source: Goldman Sachs GIR.
- Source: Bloomberg, Goldman Sachs GIR.
- Source: Haver Analytics, Goldman Sachs GIR.
- Source: Federal Reserve, Goldman Sachs GIR.
- Source: Bundesbank, Goldman Sachs GIR.
- Source: ECB.
...and JGBs are still in focus

The JGB market is the third largest sovereign bond market in the world

Government debt securities, $bn

- US
- China
- Japan
- UK
- France
- Germany

The BoJ owns roughly 50% of the JGB market and around 95% of bonds are held domestically

JGB outstanding by ownership, %

- Foreign investors
- Insurance and pension funds
- Depository financial institutions
- Bank of Japan
- General govt., incl. public pensions
- Other

Japanese bond market liquidity has recovered from poor conditions earlier in the year

Bloomberg Government Securities Liquidity Index

Source: Haver Analytics, Goldman Sachs GIR.

Source: Bloomberg, Goldman Sachs GIR.

Japanese investors have been the biggest foreign investors into DM sovereign bond markets, including US Treasuries

Major foreign holders of US Treasury Securities, $bn

Source: Haver Analytics, Goldman Sachs GIR.

Source: Bloomberg, Goldman Sachs GIR.

Foreign bonds are still relatively unattractive investments compared to JGBs as the cost of hedging FX exposure for Japanese investors has risen, though USTs have become somewhat less unattractive...

10y JGB yield compared to FX-hedged foreign bond yields for Japanese investors, %

- Current
- Feb 2023
- 1y Ago

More negative value denotes lower attractiveness for Japanese investors

Note: FX-hedged yield assumes that JPY-based investors hedge their foreign currency risk by selling the foreign currency forward. Assumes 1y rolling hedge. Source: Bloomberg, Goldman Sachs GIR.

Cumulative net acquisition of USTs by Japanese investors since 2016, ¥tn

Source: BoJ, Goldman Sachs GIR.
1882: BoJ is established in an effort to contain inflation.
1923: BoJ purchases earthquake bills from banks for cash to help facilitate recovery after Great Kanto earthquake.
1927: Build-up of bad debt related to the earthquake bills prompts major banking crisis.
1932-1936: Japan adopts expansionary fiscal and monetary policies to help economy recover after "Showa Depression".
1942: BoJ Act of 1942 is introduced, giving it greater authority to pursue monetary policy, but under guidance of the gov.
1973-1974: An oil shock and BoJ easing cause inflation in Japan to rise to 21%.

JGB yields: higher, but still low

Source: Bloomberg, BoJ, Reuters, various news sources, Goldman Sachs GIR.
Long history of US 10-year Treasury yields

- **Fed Chairman Volcker increased the fed funds rate to a peak of 20% in 1981 to get double-digit inflation under control**
- **1984: 13.9%**
- **1981: 15.8%**
- **Volcker hiked rates to restrain the economic recovery and ensure inflation would remain low**
- **Recession following oil shock**
- **Unexpected rate-hiking cycle as economic growth improved following 1991 recession**
- **Start of a rate-hiking cycle as inflation crept up with economy recovering from 2001 recession**
- **Fed tapering rate-hiking cycle**
- **Yields rise as the Fed continues to hike to combat high inflation**
- **Economic recovery from COVID underway**

Source: Global Financial Data, Inc., Federal Reserve Board, Haver Analytics, Goldman Sachs GIR.
1782-1913: "WILDCAT" BANKING AND FREQUENT CRISSES

Recessions and bank panics occur frequently. Between the 1830s and 1864, bank regulation is extremely lax and varies widely by state. Thereafter, a dual system evolves, with regulation and charting at the federal and state levels.

1782: The first chartered US bank opens to help finance the Revolutionary War.
1791-1811: First Bank of the USA effectively serves as the country’s first central bank. It holds gold and silver reserves and acts as a lender of last resort to state banks. It in 1811, the bank’s charter is allowed to expire amid political opposition to the perceived concentration of power at the federal level. Following a similar experience with another federal chart, banking is left entirely to the states.
1817: Bank runs lead to failures of several banks over the following years.
1837: The panic of 1837.
1838-44: The government faces new financing pressures during the Civil War. Congress establishes a single national currency. The Office of the Comptroller of the Currency is created to handle federal chartering, administer regular bank examinations, and collect data more frequently from banks.
1857: Overextension of banks to finance railroad construction.
1861: Panic occurs after a railroad company declares bankruptcy.
1873: Redress during post-Civil War boom leads to broad bank failures.
1901: Stock market crashes after short selling of Northern Pacific Railroad.
1907: A failed attempt by speculators to corner the market on a mining company’s stock leads to the collapse of the country’s third-largest trust company and a massive bank panic. These events provide the impetus for establishing a central bank.

1913-1980: NEW RULES, RESTRICTIONS, REPORTING

Bank regulation becomes more rigorous, particularly in the wake of the Great Depression. The Fed’s powers expand. Bank crises become far less frequent. Restrictions limit bank branching and activities, albeit with major loopholes.

1913: The Federal Reserve is established, with regulatory authority over national banks as well as any state banks that are members of the Fed.
1917: NYSE crashes, leading to a run on banks. Thousands of businesses fail.
1919: Stock market crashes and widespread bank failures.
1929-33: Great Depression. Stock market crashes and widespread bank failures.
1966: Interest-rate ceilings are applied to thrift institutions.
1978: International Banking Act applies domestic bank regulation to any foreign banks operating in the US.

1980s-PRESENT: REGULATORY SWINGS

Deregulation paves the way for the savings and loan (S&L) crisis. Relaxation of old rules enables industry consolidation. The 2008 crisis prompts a new wave of reforms. Along the way, regulation adjusts to increased securitization and globalization. In 2018, regulation eases again as parts of Dodd-Frank are rolled back.

Early 1980s: Restrictions on interstate banking are relaxed. Thrift institutions, under pressure from asset-liability mismatches, are permitted to expand their activities. International debt crises prompt capital adequacy requirements.
1994: Riegle-Neal Act removes remaining restrictions on interstate branching, opening the door for increased M&A.
1998: Gramm-Leach-Bliley Act removes the separation of commercial and investment banking established by Glass-Steagall.
2000: Commodity Futures Modernization Act removes most over-the-counter derivatives from the Commodity Futures Trading Commission.
2004: Basel II rules encourage banks to grow and diversify.
2017: Treasury Department releases recommendations for regulatory rollback.

*These restrictions were aimed at encouraging banks to provide credit to their communities rather than invest it with larger banks. They also sought to prevent banks from competing up the rates paid on deposits, which was thought to encourage riskier activity to compensate for the hit to profits. The ban on paying interest on demand deposits remained in effect until 1980.

March 2023: Banking stresses emerge, regulators intervene

Banking stresses emerge in the US and Europe. Silicon Valley Bank (SVB) and Signature Bank fail after rapid runs on deposits. Federal regulators enact emergency measures to shore up the banking system.

Mar 9: SVB’s stock crashes when the market opens. Shares of the four largest US banks also fall amid increased banking system concerns. Depositors at SVB begin rapidly pulling money out, attempting to withdraw $42bn throughout the day.

Mar 10: Shares of SVB are halted in the morning after a large premarket selloff. Shortly after, federal regulators announce they have taken control of SVB. At the time, SVB’s failure marks the second largest bank failure ever in the US. FDIC announces that insured deposits would be available Monday, March 13.

Mar 11: Tech startup who had deposits at SVB scramble to find alternate funding sources for payroll and daily operations.

Mar 12: Signature Bank becomes the second bank to fail and is shut by regulators. Federal Reserve, US Treasury, and FDIC announce emergency measures to stem deposit outflows and stabilize the banking system, including protecting uninsured depositors at SVB and Signature Bank and creating the Bank Term Funding Program (BTFP).

Mar 13: President Biden tells the nation that the banking system is safe, trying to restore confidence in the financial system. Shares of First Republic Bank as well as other regional banks continue to slide amid fears of contagion. The Fed launches a review of SVB’s failure.

Mar 14: Justice Dept and SEC reportedly begin investigations into SVB collapse. Shares of regional banks rally amid hope that the banking crisis may be contained.

Mar 15: Credit Suisse shares fall sharply and CDS widen. Overnight, Credit Suisse announces it will access up to CHF5bn from the Swiss National Bank to bolster its liquidity.

What’s happened since:

Late April: The Fed releases a report on SVB’s failure that says banking supervisors failed “to take forceful enough action” to address SVB’s problems. The FDIC releases a report faulting Signature Bank for poor management and insufficient risk pricing.

May: Federal regulators seize First Republic Bank—making it the second-largest bank by assets to fail in the US after Washington Mutual’s collapse in 2008—and announce the sale of most of its deposits and assets to JPMorgan Chase.

July: The Fed, OCC, and FDIC propose stricter bank capital rules in the US known as “Basel III Endgame” to ensure the stability of large banks.

Mar 16: US federal regulators announce that 11 banks have deposited roughly $3.8bn into First Republic Bank to shore up its liquidity. Federal Reserve data show that banks had borrowed $11.8bn from the BTFP. US Treasury Secretary Yellen says that the US banking system is “sound”. ECB raises rates by 50bp despite banking stress. ECB President Lagarde says the Euro area banking sector is resilient.

Mar 17: SVB’s parent company, SVB Financial, files for Chapter 11 bankruptcy protection. Credit Suisse and First Republic shares continue to fall as concerns remain high.

Mar 18: SVB begins talks to take over Credit Suisse in a deal facilitated by Swiss regulators, including the SNB, Swiss Federal Department of Finance, and FINMA.

Mar 19: UBS agrees to take over Credit Suisse for over $3bn. The SNB announces up to CHF20bn of additional liquidity assistance to both UBS and CS to support the deal. As part of the deal, Credit Suisse’s CHF15.8bn in AT1s bonds will be completely written down by FINMA. FDIC announces deal to sell 40 branches of Signature Bank.

Mar 20: First Republic Bank shares rise over 30% amid increasing optimism about the banking system. US Treasury Secretary Yellen says regulators could protect deposits at other banks if needed.

Mar 21: First Republic Bank shares rise over 30% amid increasing optimism about the banking system. US Treasury Secretary Yellen says regulators could protect deposits at other banks if needed.

Mar 22: Fed raises rates by 25bp. Chair Powell says the US banking system is “sound and resilient” and that “all deposits’ savings and the banking system are safe”. Shortly after, US Treasury Secretary Yellen says she has “not considered or discussed anything having to do with blanket insurance or guarantees of deposits”.

Mar 23: First Citizens acquires all of SVB’s deposits, loans, and branches. FDIC agrees to provide First Citizens with a $35bn loan and share any losses or gains on SVB’s commercial loans.

Source: Wall Street Journal, various news sources, Goldman Sachs GIR.
Stress in the banking system has subsided since the turmoil in March—bank deposit outflows have stabilized from the large outflows seen in the peak weeks of stress and usage of Fed facilities has declined, though remains above the pre-March levels as banks use the facilities for inexpensive funding. And bank lending growth has stopped declining, although lending growth remains slower than it was before March.

Deposit outflows at US banks have stabilized following the consecutive weeks of decline in March...

Weekly change in deposits at US banks, $bn

Usage of the Fed’s Discount Window has fallen back to near zero levels, although banks have continued to use the Bank Term Funding Program (BTFP)

Federal Reserve facility usage, $bn

Since the deposit outflows seen in March, banks have responded by paying higher yields on deposits to prevent renewed outflows

Deposit yield and Fed funds rate, %

Note: Industry total deposits yield calculated based on US domestic deposit interest income. Data as of 3Q23.

Source: Morningstar, Goldman Sachs GIR.

Source: Federal Reserve, Goldman Sachs GIR.

Source: Haver Analytics, Goldman Sachs GIR.

Bank lending growth has stopped declining, although lending growth remains slower than it was at the start of the year

12-week annualized change in bank lending*, %

Nominal bank lending growth slowed from -10% to ~2% annualized since the start of the year

*Sum of real estate, C&I, and consumer loans. The week of Mar 22 is adjusted by $60bn for divestment of loans from a bank in receivership to nonbank institutions that aren’t included in the H.8. Mergers & acquisitions occasionally cause jumps.

Source: Haver Analytics, Goldman Sachs GIR.

Special thanks to GS equity research analyst James Yaro, GS Chief US Economist David Mericle, and GS structured product strategist Vinay Viswanathan.
**Which US banks are subject to which regulatory requirements?**

<table>
<thead>
<tr>
<th>Category</th>
<th>Category I</th>
<th>Category II</th>
<th>Category III</th>
<th>Category IV</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thresholds</strong></td>
<td>US G-SIBs</td>
<td>≥$700bn in assets or ≥$75bn in cross-jurisdictional activity</td>
<td>≥$250bn in assets or ≥$100bn in assets and ≥$75bn weighted short-term wholesale funding, nonbank assets, or off-balance-sheet exposure</td>
<td>$100bn to $250bn in assets</td>
<td>$50bn to $100bn in assets</td>
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<tr>
<td><strong>Banks</strong></td>
<td>BAC, BK, C, GS, JPM, MS, STT, WFC</td>
<td>NTRS</td>
<td>COF, SCHW, PNC, USB, TFC</td>
<td>ALLY, AXP, CFG, DFS, FITB, HBAN, KEY, MTB, RF</td>
<td>CMA, SNV, RJF, ZION</td>
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<tr>
<td><strong>G-SIB surcharge</strong></td>
<td>TLAC</td>
<td>Countercyclical capital buffer Countercyclical capital buffer</td>
<td>Countercyclical capital buffer</td>
<td>Under Basel III Endgame as currently proposed, these banks would be subject to the countercyclical capital buffer</td>
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<tr>
<td><strong>Capital</strong></td>
<td>Required to recognize elements of AOCI in regulatory capital</td>
<td>Required to recognize elements of AOCI in regulatory capital</td>
<td>May opt out of recognizing AOCI in regulatory capital</td>
<td>May opt out of recognizing AOCI in regulatory capital</td>
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<tr>
<td><strong>Advanced (except for US Intermediate Holding Companies) and Standardized Approach to calculating risk-based capital ratios</strong></td>
<td>Under Basel III Endgame as currently proposed, the Advanced Approach would be substituted for an &quot;expanded risk-based approach&quot; to calculating risk-weighted assets</td>
<td>Standardized Approach to calculating risk-based capital ratios</td>
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<td><strong>Under Basel III Endgame as currently proposed, CET1 requirements would increase ~19% for Category I and II banks, and ~6% for Category III and IV banks</strong></td>
<td>Stress Capital Buffer</td>
<td>Stress Capital Buffer</td>
<td>Stress Capital Buffer</td>
<td>Stress Capital Buffer</td>
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<tr>
<td><strong>Stress testing</strong></td>
<td>Annual company run stress tests</td>
<td>Annual company run stress tests</td>
<td>Company run stress tests every other year</td>
<td>Company run stress tests every other year</td>
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<td>Annual CCAR</td>
<td>Annual CCAR</td>
<td>Annual CCAR</td>
<td>CCAR every other year</td>
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<td>Annual capital plan submission</td>
<td>Annual capital plan submission</td>
<td>Annual capital plan submission</td>
<td>Annual capital plan submission</td>
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<tr>
<td><strong>Leverage</strong></td>
<td>Enhanced SLR</td>
<td>SLR</td>
<td>SLR</td>
<td>Under Basel III Endgame as currently proposed, these banks would be subject to SLR</td>
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<td></td>
<td>US leverage ratio</td>
<td>US leverage ratio</td>
<td>US leverage ratio</td>
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<tr>
<td><strong>Liquidity</strong></td>
<td>Full LCR</td>
<td>Full LCR</td>
<td>Full LCR for banks w/ ≥$75bn weighted short-term wholesale funding, reduced LCR for &lt;$75bn (85% of full)</td>
<td>Reduced LCR for banks with $50bn-$75bn in weighted short-term wholesale funding (70% of full LCR), no LCR for &lt;$50bn</td>
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<td>Full NSFR</td>
<td>Full NSFR</td>
<td>Full NSFR for banks w/ ≥$75bn weighted short-term wholesale funding, reduced NSFR for &lt;$75bn (85% of full)</td>
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<td><strong>Resolution planning</strong></td>
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</tbody>
</table>

Source: Federal Reserve, Department of Treasury, Congressional Research Service, Goldman Sachs GIR (original published version here).

**Which global banks are considered systemically important?**

Financial Stability Board/Basel Committee on Banking Supervision’s Nov 2023 global list of G-SIBs by additional common equity capital requirement as a % of risk-weighted assets (effective beginning Jan 1, 2025).

Update: Compared with the list of G-SIBs published in 2022, three banks have moved to a higher bucket: China Construction Bank, Agricultural Bank, and UBS, from bucket 1 (1.0%) to bucket 2 (1.5%). Bank of Communications has moved above the threshold for G-SIB designation, to bucket 1; Credit Suisse has moved below the threshold for G-SIB designation; Unicredit is no longer designated a G-SIB.

Source: Financial Stability Board, Goldman Sachs GIR.
Default rates among HY-rated US non-financial corporations have continued to rise and are now near historical averages. Issuer-weighted annual default rate for HY-rated US non-financial corporations, %

Note: Default rate for IG-rated US non-financial corporations is 0%. Source: Moody’s, Goldman Sachs GIR.

Fundamentals for both US IG and HY bond issuers remain relatively healthy as net profit margins have increased over recent years...

Net margins for the median HY and IG-rated US non-financial corporation, %

Note: Data is annual, 2023 is as of Q3. Source: FactSet, Goldman Sachs GIR.

Interest coverage ratios for the median HY and IG-rated US non-financial corporation, %

Note: Data is annual, 2023 is as of Q3. Source: FactSet, Goldman Sachs GIR.

However, we continue to see signs of distress in the leveraged loan market, which has seen a larger increase in interest expenses amid the higher rate environment...

Weighted-average coupon for HY-rated USD bond and leveraged issuers by category of debt capital structure, %

Source: Bloomberg, Goldman Sachs GIR.

...and 2023 is still on track to be the third most severe default year in history for leveraged loans, with the pace of defaults likely to remain elevated.

Cumulative notional value of defaulted loans by year, $bn

Source: PitchBook LCD, Goldman Sachs GIR.

Special thanks to GS credit strategists Sienna Mori and Spencer Rogers for charts.
...but leveraged loans still one to watch

High-yield bonds continue to face distress levels in line with those of a typical late-cycle backdrop...

Aggregate face value of distressed high-yield bonds, $bn

Note: Distressed bonds are classified as those trading at spreads >1000; data as of 11/30/2023.
Source: ICE BAML Distressed Index, Goldman Sachs GIR.

...while leveraged loan distress levels remain elevated relative to non-recessionary periods

Total outstanding value of distressed leveraged loans, $bn

Note: Distressed loans are classified as those trading at prices<80; data as of 11/30/2023.
Source: Pitchbook LCD, Goldman Sachs GIR.

Special thanks to GS credit strategist Michael Puempel for data and guidance.
While some sectors of commercial real estate (CRE) have held up relatively well, prices have fallen for the office sector... Median sales price per square foot by property type, $:

Vacancy rates by CRE sector, %:

Overall CRE transaction volumes have contracted, with transaction volumes for office falling to multi-year lows... Total CRE transaction volumes, $bn:

30+ day delinquency rates by property type, %:

And refinancing needs for CRE borrowers are set to remain high, with roughly $1.2tn in maturities coming due over 2024 and 2025... Annual maturity wall on CRE loans by lender group, $bn:

Special thanks to GS structured product strategist Vinay Viswanathan for charts.
...with banks still the most exposed

Who owns the debt in US commercial real estate?

<table>
<thead>
<tr>
<th>Category</th>
<th>Ownership Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank/depository institutions</td>
<td>50%</td>
</tr>
<tr>
<td>Commercial mortgage-backed securities (CMBS)</td>
<td>16%</td>
</tr>
<tr>
<td>Government/Agency pools</td>
<td>13%</td>
</tr>
<tr>
<td>Insurance companies</td>
<td>13%</td>
</tr>
<tr>
<td>REITs</td>
<td>5%</td>
</tr>
<tr>
<td>Pensions</td>
<td>1%</td>
</tr>
<tr>
<td>Real Estate Investment Trusts (REITs)</td>
<td>5%</td>
</tr>
<tr>
<td>Pensions</td>
<td>1%</td>
</tr>
</tbody>
</table>

Note: Debt ownership shares calculated based on Federal reserve Flow of Funds data by summing commercial mortgages and multifamily residential mortgages for each category, data as of 3Q23; data for REITs as of 2Q23, reflecting latest data available. Source: Federal Reserve Board, Haver Analytics, various research sources, Goldman Sachs GIR.

**Banks/depository institutions** include US-chartered depository institutions, foreign banking offices in the US, banks in US-affiliated areas, and credit unions. They own **50%** of all CRE debt.

**Commercial mortgage-backed securities (CMBS)** include asset-backed securities (ABS) and agency and GSE-backed mortgage pools. They own **16%** of all CRE debt.

CMBS loans are secured by a first-position mortgage on a commercial property. They are typically offered by commercial banks, conduit lenders, and investment banks, and once they are issued are packaged and sold to other investors, including asset managers, banks, hedge funds, and private equity firms.

Several different types of CMBS loans exist: (1) Conduit, which are diversified pools of mortgages on commercial properties; (2) Single-asset, single-borrower (SASB), which are secured by one large loan or a portfolio of assets owned by the same borrower; (3) Agency, which are CMBS and pass-through securities issued primarily by Fannie Mae or Freddie Mac and backed by multifamily mortgages; (4) CRE collateralized loan obligations (CLOs), which are pools of mortgages typically secured by transitional properties in need of short-term bridge financing. CRE CLOs are actively managed, and asset managers can add/remove loans from the portfolio during the reinvestment period.

**Government/Agency pools** include federal, state, and local governments, as well as government sponsored enterprises (GSEs). They own **13%** of all CRE debt. Federal, state, and local governments own 2%, and GSEs (who own only multifamily residential) own the remaining 11%.

**Insurance companies** include property-casualty and life insurance companies. They own **13%** of all CRE debt.

Commercial mortgages represent a significant portion of US insurers’ investment portfolios, with life insurance companies owning the bulk of commercial mortgage loans held by insurance companies.

**Real Estate Investment Trusts (REITs)** own **5%** of all CRE debt.

A REIT is a company that owns and, typically, operates income-producing real estate or related assets. A REIT does not develop real estate properties to resell them, but rather buys and develops properties primarily to operate them as part of its investment portfolio. Two main types of REITs exist: (1) equity REITs, which invest in commercial properties and whose incomes are mainly generated from the rental incomes on their holdings; (2) mortgage REITs, which provide financing for income-producing real estate by purchasing or originating mortgages and earning income from the interest on these.

REITs registered with the SEC and publicly traded on an exchange are known as **publicly traded REITs**. SEC-registered but not publicly traded REITs are known as **non-traded REITs**. Private REITs are real estate funds or companies that are exempt from SEC registration and whose shares don’t trade on exchanges.

**Pensions** includes private pension funds and state and local government employee retirement funds. They own **1%** of all CRE debt.
Notable political and geopolitical developments also occurred,

Like rising US-China tensions, which makes more decoupling all but assured,

The US hitting its debt limit, which, as usual, set off a political fight,

And the Israel-Hamas war, which thrust the Middle East back into the spotlight.
US-China relations: on the mend?

“We have to ensure that competition does not veer into conflict. And we also have to manage it responsibly—that competition. That’s what the United States wants and what we intend to do.”
- President Biden, November 2023

“China is ready to be a partner and friend of the United States... The fundamental principles that we follow in handling China-U.S. relations are mutual respect, peaceful coexistence and win-win cooperation.”
- President Xi, November 2023

"I’ve made clear with President Xi that we seek competition, not conflict... I’m committed to work with China where we can advance American interests and benefit the world... Make no mistake: as we made clear last week, if China threatens our sovereignty, we will act to protect our country. And we did.”
- President Biden, February 2023

"We seek competition, but not conflict or confrontation... Everything that has happened in the last week and a half is, we believe, very consistent with our stated approach.”
- Kamala Harris, US Vice President, February 2023 on Chinese balloon incident

“One of my greatest worries about the future is that we fall behind Communist China. The fact of the matter is—the danger posed by our dependence on China is dire.”
- Kevin McCarthy, US House Speaker, January 2023

“We don’t seek to block China from its role as a major power, nor to stop China—or any other country, for that matter—from growing their economy or advancing the interests of their people. But we will defend and strengthen the international law, agreements, principles, and institutions that maintain peace and security, protect the rights of individuals and sovereign nations, and make it possible for all countries—including the United States and China—to coexist and cooperate.”
- Antony Blinken, US Secretary of State, May 2022

“The National Defense Strategy is clear-eyed about our main competitors. And that starts with the People’s Republic of China... the PRC is the only country with both the will and, increasingly, the power to reshape its region and the international order to suit its authoritarian preferences. So let me be clear: we will not let that happen.”
- Lloyd Austin III, US Secretary of Defense, December 2022

“Western countries, led by the U.S., have implemented all-round containment, encirclement and suppression against us, bringing unprecedentedly severe challenges to our country's development... In the face of fierce international competition, we must carve out new tracks for development, create new momentum and develop new strengths.”
- President Xi, March 2023

“The Chinese and American economies have benefited from each other's development... China and the United States can and should cooperate, and there is great potential for Sino-US cooperation.”
- Li Qiang, Premier of China, March 2023

"In this case the United States’ perception and views of China are seriously distorted. It regards China as its primary rival and the most consequential geopolitical challenge... This is like the first button in a shirt being put wrong and the result is that the US-China policy has entirely deviated from the rational and sound track.”
- Qin Gang, Foreign Minister of China, March 2023

“China will work with the US to find a way of promoting peaceful co-existence and mutually beneficial cooperation. We hope the US side will embrace a more open and inclusive approach when viewing China’s development, work with us to manage differences in a spirit of equality and mutual respect, and adhere to the principles of coordination, cooperation and stability in bilateral ties.”
- Wang Yi, Director of the Office of the Central Foreign Affairs Commission, February 2023

"China does not shy away from or fear competition, but we oppose using competition to define the entire China-US relationship.”
- Mao Ning, spokesperson for China’s Foreign Ministry, February 2023

Source: The White House, South China Morning Post, Various new sources, Goldman Sachs GIR.

The People's Republic of China (PRC) displaces the Nationalist government as the ruling party of Mainland China. The US sides with the Nationalist government, setting the stage for decades of tense US-China relations.

- 1949: Establishment of the PRC.
- 1954: First Taiwan Strait Crisis.
- 1958: Second Taiwan Strait Crisis.
- 1963: US scales back economic aid to Taiwan, citing the growth and stability of Taiwan's economy.
- 1969: Conflict breaks out between China and the Soviet Union over their eastern border, motivating the Nixon Administration to improve relations with China to isolate the Soviet Union. The US Navy stops making regular patrols of the Taiwan Strait under the Nixon Doctrine.

1971–1978: Rapprochement

Tensions between the US and China begin to ease, and the two countries take steps towards full normalization of relations.

- 1971: China invites US table tennis team to visit Beijing.
- 1972: US President Nixon visits China and meets with Chairman Mao.
- 1975: US President Ford visits China to discuss normalization of relations, although no progress is made.
- 1976: Deaths of Mao Zedong and Zhou Enlai further set back progress on US-China relations.
- 1977: US President Carter assumes office and sends US Secretary of State Vance to China to re-start negotiations on relationship normalization.
- 1978: After months of negotiations, the US and China issue a joint communique that establishes full diplomatie relations. The US agrees to recognize the PRC as the only government of China and ends official relations with the Nationalist government in Taiwan.

1979–2016: Establishment of Full Diplomatic Ties

The US and China normalize diplomatic and trade relations, although tensions continue to flare periodically.

- 1979: US and China grant each other temporary most favored nation (MFN) tariff status. Deng Xiaoping visits the US.
- 1989: Temporary pause in bilateral relations following Tiananmen Square incident.
- 1990: US and China sign the Shanghai Communiqué, setting the stage for an improving official relationship.
- 1995: Third Taiwan Strait Crisis.
- 1997: Chinese President Jiang Zemin visits the US, marking China's first formal head of state to visit the US.
- 1998: US-China relations resume following meeting of US President Clinton and Chinese Premier Li. 
- 2011: US Secretary of State Hillary Clinton announces US “pivot” to Asia. US increases its military presence in Asia, which is met by Chinese criticism.
- 2014: US and China announce a joint climate initiative, both pledging to reduce carbon emissions.
- 2015: China develops multiple artificial islands in the South China Sea, despite US warnings.

Source: US State Department, Council on Foreign Relations, Columbia University, PIIE, various news sources.
2017-2020: TRUMP-ERA TRADE WARS, ESCALATING TENSIONS

Trump Administration enacts Chinese tariffs, kicking off a tit-for-tat trade war that eventually ends with a Phase 1 trade deal. Political tensions continue to rise despite trade deal.

Mar 2018: The US releases an official report stating that China has conducted unfair trade practices relating to technology, intellectual property, and innovation. Trump orders 25% tariffs on steel imports and 10% on aluminum from all suppliers including China.


Jan 2019: US announces financial fraud charges against Huawei CFO, Meng Wanzhou.


Aug 2019: US labels China a currency manipulator after the yuan weakens significantly.

Jul 2020: The US orders China to close its consulate in Houston, Texas, citing espionage and intellectual property theft. China retaliates by closing the US consulate in Chengdu.

2021-PRESENT: EXPANDED US HARD LINE ON CHINA

Biden expands Trump-era hard line on China and tensions continue to escalate. US shoots down suspected Chinese spy balloon, igniting fresh concerns about the direction of the US-China relationship.

Mar 2021: Biden Administration officials meet with Chinese officials for the first time, reflecting disagreements on both sides. Biden Administration maintains Trump-era tariffs on Chinese imports and blacklists five Chinese companies, including Huawei, citing national security concerns.

Feb 2022: US imposes diplomatic boycott on Beijing Olympics over the Chinese government’s human rights abuses. Chinese officials say the US is trying to "provocative confrontation."

Oct 2022: US announces restrictions on exports of advanced computing chips and related equipment to China. The restrictions also apply to foreign companies that use any US-made tools and software. Chinese Foreign Ministry spokesperson says the USA "will only hurt and isolate itself" with the restrictions.

Nov 2023: US shoots down a suspected Chinese spy balloon, Secretary of State Blinken cancels his trip to China, China condemns the US’ actions, claiming the balloon was a civilian craft.

2021-2023: SHORT HISTORY OF US-CHINA RELATIONS

What's happened since:

May 2023: Chinese Foreign Minister meets with US Ambassador to China in the first high-level US-China meeting since the balloon incident.

July 2023: Blinken travels to Beijing and meets with Xi, they agree to continue further progress on the bilateral relationship.


Oct 2023: US further tightens export controls on advanced chips.

Nov 2023: Biden and Xi meet in San Francisco amidst the APEC Summit. Both highlight the importance of bilateral relations and agree to further cooperation in certain areas.
**US and China: two big economies...**

The US’, or China’s, economy is larger, depending on measure

![Graph showing difference in GDP between US and China](Image)

China grew faster than the US over the last several decades

![Graph showing GDP growth comparison between US and China](Image)

The US has long been a net importer, and China a net exporter

![Graph showing trade balance between US and China](Image)

China exports significantly more high-tech products than the US

![Graph showing high-technology exports between US and China](Image)

The US was a larger recipient of foreign direct investment (FDI) than China in 2022, for the second consecutive year

![Graph showing FDI net inflows between US and China](Image)

The demographic breakdowns of the US and China continue to look quite similar

![Population by age group for US and China](Image)
The US and China are one of each other’s main trading partners and the value of US exports and imports to and from China has steadily risen over the last two decades. Trade in goods and services between the US and China, $bn

US agricultural exports to China reached a record high in 2022 and the US imported large amounts of electronic equipment and machinery from China.

Jobs in the US and China rely on their trading partnership and expansion of US and Chinese multinational corporations.

A large number of US companies derive a significant portion of their revenues from China.

No. of major Apple supplier facilities breakdown by domicile

...and investment flows between the US and China have also decreased in recent years as bilateral tensions have escalated.

US-China investment flows, $bn

Selected US companies’ revenue exposure to China in 2022

...and rely on manufacturing facilities in Mainland China, though recently some have tried to diversify their supply chain away from Mainland China given increased geopolitical tensions.
US companies doing business in China continue to be affected by US-China tensions...

% of member companies that responded yes/no to the question “has your company’s business with China been affected by US-China tensions?” (2018-22) and “have US-China tensions impacted your business in China?” (2023) ...and many have continued to respond by altering their strategies

% of member companies that reported taking each action “due to the impact of tensions”

Localizing more production, services, or IP in China than we normally would consider in order to access local sales opportunities
Developing new supply chains for China-specific, US-specific, or other region-specific businesses
Shifting away from certain industry or customer segments in China
Investing fewer resources in China
Pursuing joint ventures with Chinese entities that we would not normally consider in order to access local sales opportunities
Not significantly altering company’s strategy
Investing more resources in China

...and more firms have become pessimistic on the five-year outlook

% of member companies on their view of the “five-year outlook for business in China”

...though more firms have or are planning to move operations out

% of member companies answering each to “has your company moved or does it plan to move any operations out of China?”

Source for all exhibits: US-China Business Council’s 2022 Member Survey conducted in June 2022 and 2023 Member Survey conducted in June-July 2023; survey draws from a pool of 117 member companies; majority of respondents (2/3) have operated in China for more than 20 years.
A large majority of Americans continue to view China unfavorably...
Shares indicating how US respondents view China (May 1 and November 1 2023 data)

A majority of Americans continue to believe that the US and China should work together to reduce bilateral tensions...
US share reporting that the US and China should work together to reduce the below tensions (2022 figures from survey conducted 1/2-1/3/22, 2023 figures as of Oct 23)

Chinese consumers view foreign companies' decisions to exit China as being primarily driven by geopolitical considerations...
China internet-using share reporting why they believe foreign companies are exiting China (survey conducted 6/1-6/6/22)

...yet other factors trump geopolitical considerations as the main drivers of Chinese demand for foreign goods and services
China internet-using share reporting the importance of each when choosing to buy foreign goods/services (survey conducted 6/30-7/6/22)

...as do a large majority of Chinese...
Shares indicating how Chinese respondents view the US (May 1 and November 1 2023 data)

Source: Morning Consult’s US-China Relations Barometer, Goldman Sachs GIR.
**US Debt Limit, $tn**

- **Republican President**
- **Democratic President**

**Fast Facts:**
- In 1917, Congress established limits on the amount of debt that can be accumulated on individual forms of debt (e.g., separate caps on bonds and bills).
- In 1939, Congress consolidated the limits on specific forms of debt into one aggregate debt limit, setting the first federal debt limit at $45bn.
- Since then, the debt limit has increased around 90 times and has been suspended eight times (grey shaded areas).

**Note:** Grey bars indicate periods when the debt ceiling was suspended.

**Source:** Bipartisan Policy Center, Haver Analytics, White House History, US Senate, Goldman Sachs GIR.

- **June 1946:** Congress lowers the debt limit to $275bn following the end of World War II; it remains unchanged for the next eight years.
- **April 1979:** A delay in raising the debt limit, compounded by processing errors, led the Treasury to miss timely payment on maturing bills.
- **1957:** During a delay in raising the debt limit, the US Air Force ceased to pay its bills for a short period of time.
- **September 1985:** Treasury uses “extraordinary measures” for the first time to allow the government to continue meeting its federal obligations after the US reaches the debt limit.
- **1995:** Debt ceiling dispute leads to non-passage of the federal budget, sparking a lengthy government shutdown.
- **G.W. Bush**
- **Clinton**
- **Obama**
- **Biden**
- **Trump**

**Timeline Events:**
- **June 2023:** Days before the debt limit deadline, US lawmakers pass the “Fiscal Responsibility Act,” which suspends the debt limit until January 2025.
- **January 2023:** US hits debt limit and begins using “extraordinary measures” to meet its obligations.
- **February 2013:** For the first time, policymakers address the debt limit by passing a temporary measure instead of a numerical increase.
- **August 2011:** During the most disruptive debt limit episode in history, S&P downgrades the US’ credit rating from AAA to AA+, citing political brinkmanship and fiscal trajectory as the reasons for the downgrade.
Geopolitical tensions, which take many different forms, are difficult to measure. One proxy for assessing the geopolitical environment is the news-based Geopolitical Risk Index developed by economists from the Federal Reserve Board.

**1985-Present**
Geopolitical Risk Index, 2019=100

**1900-Present**
Geopolitical Risk Index, 2019=100

Note: The index from 1985 on counts the number of articles in 11 US, UK, and Canadian newspapers mentioning phrases related to geopolitical tensions. The index from 1900 on performs the same analysis using the archives of three newspapers, the New York Times, the Wall Street Journal, and the Financial Times. The choice of newspapers for both indices implies a measure of geopolitical risk as covered by the Anglo-Saxon press. See here for more information.

Source: Dario Caldara & Matteo Iacoviello, Federal Reserve Board, Goldman Sachs GIR.
...as the Israel-Hamas war continues...
with escalation potentially impacting oil...
GS GIR economists estimate the impact a $10/bbl rise in Brent crude oil prices would have on inflation and GDP growth across major economies and regions. Their key findings are below.

**A $10/bbl increase in oil prices would have moderate impacts on inflation, with generally larger impacts across EMs than DMs...**

Effect of a $10/bbl increase in Brent oil prices on headline inflation, pp

![Graph showing the effect of a $10/bbl increase in Brent oil prices on headline inflation across major economies and regions.](image)

**...as well as modest negative impacts on growth, though net oil exporters such as Canada and some Latin American economies would see a positive impact**

Effect of a $10/bbl increase in Brent oil prices on GDP, %

![Graph showing the effect of a $10/bbl increase in Brent oil prices on GDP across major economies and regions.](image)

Amid all that, two longer-term questions attracted heated debate:

Can US economic and asset outperformance continue?

And is the potential of generative AI really that great?
While US equities have outperformed non-US equities over the past decade, historically, the performance of US versus non-US equities has rotated over time.

5-year rolling average of annualized monthly relative return of S&P 500 vs. World ex. US equity index (Worldscope), %

Source: Bloomberg, Worldscope, Goldman Sachs GIR.

On an annual basis, US equities have outperformed non-US equities in most years since the end of the Global Financial Crisis (GFC).

Annual relative return of S&P 500 vs. World ex. US equity index (Worldscope), %

Source: Bloomberg, Worldscope, Goldman Sachs GIR.
The US’ market cap eclipses that of other major regions...

Market capitalization, $tn

- US
- Europe
- Asia

...and trade near the top of their historical valuation range

12m P/E multiple

- 75th percentile
- Median
- Current
- 10th - 90th percentile

Note: Granolas are 11 of the largest European companies by market cap—GSK, Roche, ASML, Nestle, Novartis, Novo Nordisk, L’Oréal, LVMH, AstraZeneca, SAP, and Sanofi.

Source: FactSet, Goldman Sachs GIR.

And on net, Europe has outgrown the US in the post-pandemic cycle

Annualized EPS growth, %

- SXXP
- S&P 500
- SXXP with US sector composition

Price return performance and 12m forward EPS, STOXX 600 vs. S&P 500 (in local currency terms)

...though there is more to the story
The US has long had the highest GDP in the world, and it has more than doubled since 2000, marking the second largest GDP growth after China...

Nominal GDP, $bn

Source: The World Bank, Goldman Sachs GIR.

...as well as high levels of labor productivity, which has increased by close to 40% since 2000

Labor productivity (GDP per hour worked in 2022 USD*)

*Converted using purchasing power parity.
Source: Conference Board, Goldman Sachs GIR.

...and the US ranks high in global innovation, although the US’ ranking in the Global Innovation Index fell from second to third this year

Global Innovation Index

*Index begins in 2013.
Note: Indicates an economy’s capacity for and success in innovation, measured by innovation input (elements of the economy that enable and facilitate innovative activities) and innovation output (the result of innovative activities within the economy).
Source: Global Innovation Index, Goldman Sachs GIR.

The US also has the largest sovereign bond market in the world and it has grown by over 450% since 2000...

Government debt securities, $bn

Source: Haver Analytics, Goldman Sachs GIR.

...and the largest equity market capitalization in the world, which has grown by over 250% in the last 20 years and is now almost five times larger than that of the next largest market

Total equity market capitalization per economy, $bn

Source: Bloomberg, Goldman Sachs GIR.

The US remains well positioned...
After its launch in November 2022, OpenAI's ChatGPT became the fastest application to surpass 100mn users. Number of months taken to surpass 100mn users

Source: Company data, Yahoo Finance, Goldman Sachs GIR.

And following ChatGPT’s launch, interest in artificial intelligence increased and remains high. Google search trends

Source: Google Trends (https://www.google.com/trends), Goldman Sachs GIR.

Company management focus on opportunities from AI also increased and remains high. Mentions of “AI” in selected companies’ earnings calls

Note: Includes mentions of “AI” in analyst/journalist questions. Source: Company data, Statista, Goldman Sachs GIR.

However, the key beneficiaries of AI adoption have not pushed aggregate index valuation to the extreme level of the Dot Com Boom. Aggregate vs. median S&P 500 NTM P/E dislocation

Source: Compustat, Goldman Sachs GIR.
...amid more developments in the field
For those who still don't know what AI is!

**Artificial Intelligence (AI)** is the science of creating intelligent machines. AI is a broad concept that encompasses several different subfields, including machine learning, natural language processing, neural networks, and deep learning.

**Machine learning** is a subfield of AI that focuses on developing models and algorithms to help computers improve their performance through experience. Large amounts of data are fed into a computer, which then discovers patterns in that data and uses it to make predictions and decisions. There are three major types of machine learning models: (1) supervised machine learning, which uses labeled datasets to train models, (2) unsupervised machine learning, which uses algorithms to analyze unlabeled datasets, and (3) semi-supervised machine learning algorithms, which sit between the first two.

**Transformer models** are machine learning models designed to process sequences of elements. The premise of the model is an attention mechanism, which enables the model to learn and understand the relationship between words in a sentence.

**Neural networks** are a subfield of machine learning. They are mathematical models inspired by the human brain structure. Each neuron, or node, of the network takes an input, performs a computation, and creates an output. If the output of any individual node is above a specified threshold value, the node is activated and sends data to the next layer of the network. One of the best-known neural networks is Google’s search algorithm.

**Deep learning** is neural networks with three or more layers. Deep learning differs from “classical” machine learning by the type of data it works with and methods by which it learns. While machine learning algorithms leverage more structured, labeled data to make predictions, deep learning doesn’t necessarily require a labeled dataset, and it’s less dependent on human interaction. Deep learning is used in many applications, such as speech recognition and autonomous driving.

**Natural Language Processing (NLP)** is a subfield of AI focused on giving computers the ability to understand text and spoken word in a similar manner to human beings. NLP uses computational linguistics combined with statistical, machine learning, and deep learning models to enable computers to understand human language. It does so using two techniques: (1) syntactic analysis, which identifies the structure and relationship between words in sentences, and (2) semantic analysis, which focuses on the meaning of the words and their context in the sentence. Google Translate is one example of NLP technology in the real world; chatbots like Siri and Alexa also rely on NLP.

**Large language models (LLM)** are a type of machine learning model that are trained on large amounts of unlabeled data using self-supervised learning or semi-supervised learning to perform NLP tasks. LLMs use deep neural networks to generate outputs. ChatGPT is the most well-known example of an LLM.

Source: IBM, Goldman Sachs GIR.
Special thanks to GS equity research analysts for graphic. Original version published in Americas Technology: Generative AI – Part I: Laying out the investment framework.
Summary of our key forecasts

**Global Growth**

- **Globally**, we expect real GDP growth of 2.6% in 2022, reflecting inflections from strong real household income growth, a recovery in manufacturing activity, and a start to rate cuts in many economies.
- The global current accounts will return to deficit in 2023.
- **In the US**, we expect real GDP growth of 2.0% in 2022, reflecting ongoing fiscal and monetary stimulus, a recovery in manufacturing activity, and a start to rate cuts in the first half of 2023.
- **In the Euro area**, we expect real GDP growth of 1.5% in 2022, reflecting a recovery in manufacturing activity, and a start to rate cuts in the first half of 2023.
- **In China**, we expect real GDP growth of 5.0% in 2022, reflecting a recovery in manufacturing activity, and a start to rate cuts in the first half of 2023.
- **In Japan**, we expect real GDP growth of 0.5% in 2022, reflecting a recovery in manufacturing activity, and a start to rate cuts in the first half of 2023.
- **In India**, we expect real GDP growth of 7.0% in 2022, reflecting a recovery in manufacturing activity, and a start to rate cuts in the first half of 2023.
- **In the UK**, we expect real GDP growth of 2.5% in 2022, reflecting a recovery in manufacturing activity, and a start to rate cuts in the first half of 2023.

**Inflation**

- **Global Core inflation** is expected to peak at 2.7% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 1.2% in the fourth quarter of 2023.
- **In the US**, core inflation is expected to peak at 3.1% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 2.0% in the fourth quarter of 2023.
- **In the Euro area**, core inflation is expected to peak at 3.5% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 1.5% in the fourth quarter of 2023.
- **In China**, core inflation is expected to peak at 2.5% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 1.0% in the fourth quarter of 2023.
- **In Japan**, core inflation is expected to peak at 1.0% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 0.5% in the fourth quarter of 2023.
- **In the UK**, core inflation is expected to peak at 3.0% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 2.0% in the fourth quarter of 2023.

**Interest Rates**

- **US Fed Funds Rate** is expected to peak at 2.25% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 1.00% in the fourth quarter of 2023.
- **Euro Area Main Refinance Rate** is expected to peak at 1.50% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 0.50% in the fourth quarter of 2023.
- **BoE Base Rate** is expected to peak at 5.00% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 3.00% in the fourth quarter of 2023.
- **BoJ Interest Rate** is expected to peak at 0.10% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 0.00% in the fourth quarter of 2023.
- **RBA Cash Rate** is expected to peak at 0.75% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 0.35% in the fourth quarter of 2023.
- **RBA Cash Rate** is expected to peak at 0.75% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 0.35% in the fourth quarter of 2023.

**Markets**

- **US Equity Market** is expected to decline by 10% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 5% in the fourth quarter of 2023.
- **Euro Area Equity Market** is expected to decline by 15% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 10% in the fourth quarter of 2023.
- **UK Equity Market** is expected to decline by 20% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 15% in the fourth quarter of 2023.
- **Japanese Equity Market** is expected to decline by 25% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 20% in the fourth quarter of 2023.
- **Chinese Equity Market** is expected to decline by 30% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 25% in the fourth quarter of 2023.

**Currency**

- **US Dollar** is expected to strengthen by 5% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 10% in the fourth quarter of 2023.
- **Euro Area Currency** is expected to strengthen by 10% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 15% in the fourth quarter of 2023.
- **UK Currency** is expected to strengthen by 15% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 20% in the fourth quarter of 2023.
- **Japanese Currency** is expected to strengthen by 20% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 25% in the fourth quarter of 2023.
- **Chinese Currency** is expected to strengthen by 25% in the fourth quarter of 2022, reflecting the impact of higher energy prices, and then moderate to 30% in the fourth quarter of 2023.

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Crossword from pg. 2 of this report:

- EGYPT
- BURDEN
- SHOES
- N
- DIFFICULT
- NS
- CONGRESS
- EUR
- SOFTWARE
- DEMOGRAPHIC
- EL
- REPEATED
- GENERAL
- CASH
- T
- I
- U
- T
- C
- R
- DOUBLE
- MUL
- RESILIENT
- MIT
- TRAINWRECK
- TG
- C
- THREE
# Glossary of GS proprietary indices

## Current Activity Indicator (CAI)

GS CAIs measure the growth signal in a broad range of weekly and monthly indicators, offering an alternative to Gross Domestic Product (GDP). GDP is an imperfect guide to current activity: In most countries, it is only available quarterly and is released with a substantial delay, and its initial estimates are often heavily revised. GDP also ignores important measures of real activity, such as employment and the purchasing managers’ indexes (PMIs). All of these problems reduce the effectiveness of GDP for investment and policy decisions. Our CAIs aim to address GDP’s shortcomings and provide a timelier read on the pace of growth.


## Dynamic Equilibrium Exchange Rates (DEER)

The GSDEER framework establishes an equilibrium (or “fair”) value of the real exchange rate based on relative productivity and terms-of-trade differentials.


## Financial Conditions Index (FCI)

GS FCIs gauge the “looseness” or “tightness” of financial conditions across the world’s major economies, incorporating variables that directly affect spending on domestically produced goods and services. FCIs can provide valuable information about the economic growth outlook and the direct and indirect effects of monetary policy on real economic activity.

FCIs for the G10 economies are calculated as a weighted average of a policy rate, a long-term risk-free bond yield, a corporate credit spread, an equity price variable, and a trade-weighted exchange rate; the Euro area FCI also includes a sovereign credit spread. The weights mirror the effects of the financial variables on real GDP growth in our models over a one-year horizon. FCIs for emerging markets are calculated as a weighted average of a short-term interest rate, a long-term swap rate, a CDS spread, an equity price variable, a trade-weighted exchange rate, and—in economies with large foreign-currency-denominated debt stocks—a debt-weighted exchange rate index.


## Goldman Sachs Analyst Index (GSAI)

The US GSAI is based on a monthly survey of GS equity analysts to obtain their assessments of business conditions in the industries they follow. The results provide timely “bottom-up” information about US economic activity to supplement and cross-check our analysis of “top-down” data. Based on analysts’ responses, we create a diffusion index for economic activity comparable to the ISM’s indexes for activity in the manufacturing and nonmanufacturing sectors.

## Macro-Data Assessment Platform (MAP)

GS MAP scores facilitate rapid interpretation of new data releases for economic indicators worldwide. MAP summarizes the importance of a specific data release (i.e., its historical correlation with GDP) and the degree of surprise relative to the consensus forecast. The sign on the degree of surprise characterizes underperformance with a negative number and outperformance with a positive number. Each of these two components is ranked on a scale from 0 to 5, with the MAP score being the product of the two, i.e., from -25 to +25. For example, a MAP score of +20 (5;+4) would indicate that the data has a very high correlation to GDP (5) and that it came out well above consensus expectations (+4), for a total MAP value of +20.
Disclosure Appendix

Reg AC

We, Allison Nathan, Jenny Grimberg, and Ashley Rhodes, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm’s business or client relationships.

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