MUSINGS

MACRO AT A GLANCE

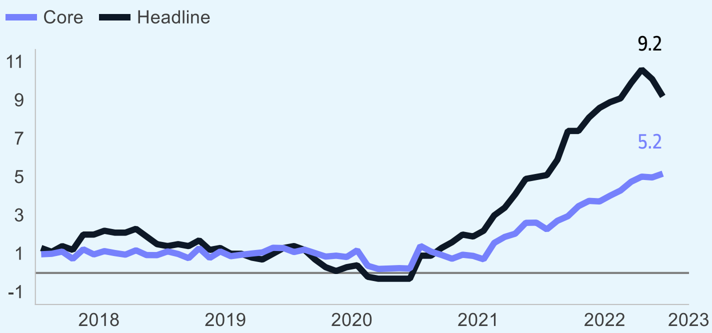
2023 Outlook - Ask ChatGPT? 2022 was a tumultuous year for financial markets amid soaring inflation and aggressive monetary tightening. The outlook in 2023 will likely remain dependent on one key datapoint: the rate of inflation. This year may also be a tipping point for the power of artificial intelligence (AI). The launch of ChatGPT—a chatbot that uses AI to respond to questions—has amplified the debate over potential productivity gains (with parts of research reports already being written by the tool) but also disruptive consequences across the economy and society. Unfortunately, when asked, “How will inflation evolve in 2023?”, ChatGPT displays the same limitations as human intelligence, responding with comments such as “inflation is a complex economic phenomenon” and “it can be difficult to predict with certainty”,[1] underscoring the importance of remaining humble in our outlook and agile in evolving our views based on incoming data.

The US labour market remains tight. Rebalancing of the tight labour market is a focal point of the Fed’s efforts to tame inflation and has some way to go. The employment component of the ISM manufacturing index increased and the pace of declines in new US job openings has slowed. Meanwhile, the economy added a solid 223,000 jobs in December and the unemployment rate returned to the pre-pandemic cycle low of 3.5%. That said, wage growth as measured by average hourly earnings is moderating, and labour force participation has improved slightly.

Core inflation in Europe moves higher. A fall in Euro area headline inflation on lower energy prices was accompanied by a rise in core inflation (see Chart) suggesting the hawkish outlook for ECB policy remains intact.

European core inflation moves higher

Annual Euro area inflation (%)



Source: Goldman Sachs Asset Management, Macrobond. As of December 2022.

The US labour market remains tight[2]

223K US jobs added in December 2022

3.5% US unemployment rate as of December 2022, down from 3.6% in November

4.4mn US jobs-workers gap based on the latest data, above the 2mn required to moderate inflation

Past performance does not guarantee future results, which may vary. The economic and market forecasts presented herein are for informational purposes as of the date of this presentation. There can be no assurance that the forecasts will be achieved. Please see additional disclosures at the end of this presentation. [1]Source: OpenAI ChatGPT: Optimizing Language Models for Dialogue, Goldman Sachs Asset Management. [2]Source: Macrobond, Goldman Sachs Asset Management and Goldman Sachs Global Investment Research as of December 6, 2022.

POLICY PICTURE

Stepping down but not back. Following front-loaded rate hikes in 2022, we think policymakers will step down the pace of tightening this year. But with inflation still well above its target, we don't expect central banks, including the Fed, to step back from the fight against inflation. A slower pace of tightening will likely be accompanied by a longer hiking cycle to a higher terminal rate (see Chart).

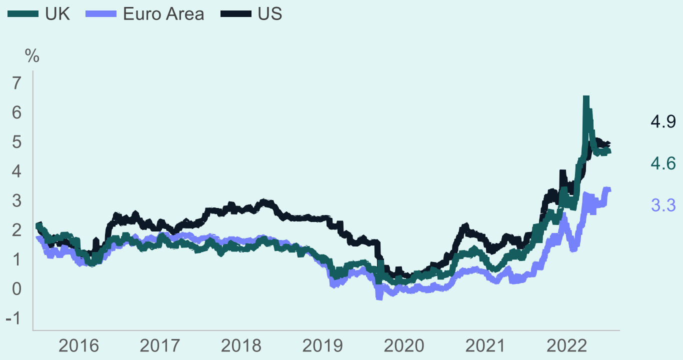
Data-dependent Fed. Minutes from the December Fed meeting stress incoming data will determine the size of future rate hikes; this preserves the potential for a further 50bps rate hike in February, though our current expectation is for a 25bps increase. Policymakers also welcomed recent softening in inflation but remarked that "substantially more evidence" was required.

BoJ convergence? Having been an outlier for much of 2022, the Bank of Japan (BoJ) appeared to take a step towards convergence with other central banks in December. The 10-year Japanese government bond yield target was widened from 0% +/- 25bps to +/- 50bps. Although the move was characterised as technical in nature, we think it suggests the yield curve control policy may be tweaked further or abandoned over the coming year. We also think the policy rate will be hiked into positive territory, likely at some point following the appointment of a new Governor in April.

China reopens. China has accelerated reopening of its economy domestically and for foreign visitors. Combined with easing of property sector regulations, we see moderate upside risks to our 2023 growth forecast of 5%. However, we think the growth rebound to be bumpy given the risk of rising cases, consumer caution and the absence of stimulus-driven excess savings (a key driver of the reopening growth impulse in other major economies).

Higher rate environment relative to pre-pandemic

Market-implied terminal policy rates (%)



Source: Macrobond, Bloomberg, Morgan Stanley. As of January 6, 2023.

"[...] economic activity appeared likely to expand in 2023 at a pace well below its trend growth rate...and the staff still viewed the possibility of a recession sometime over the next year as a plausible alternative to the baseline."

December 2022 Federal Open Market Committee (FOMC) Minutes

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NAVIGATING FIXED INCOME

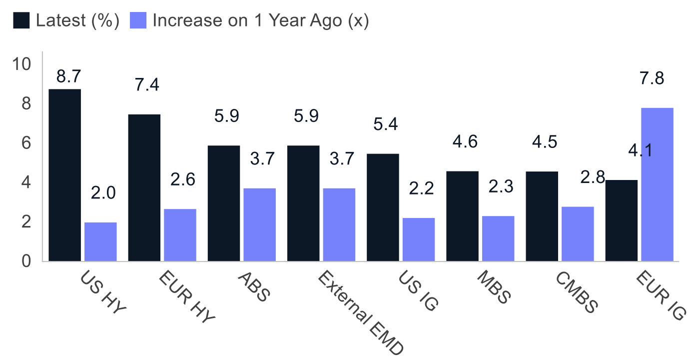
Bring On Bonds. In 2023, we think some—but not all—of last year's headwinds will begin to abate. We think there will be a slowdown in growth but also in inflation and the pace of monetary tightening. However, risks to our outlook are skewed in a negative direction, primarily because the timing and magnitude of improvement in inflation is uncertain. Black Swan events have also dominated in recent years. In 2020, it was the first global pandemic in 100 years and last year saw the onset of war in Europe. But amid mixed signals from economic data and high geopolitical volatility we believe one thing is clear: it is time to bring on bonds. We believe the sharp rise in yields in 2022 presents fixed income investors with the most attractive income and total return potential in more than a decade.

Quality First. Entering 2023, we see value in high quality short duration bonds where returns tend to turnaround before an end in the rate hiking cycle. We also think assets that stand to benefit from lower rate volatility appear attractive, namely, investment grade (IG) bonds and agency mortgage-backed securities (MBS). As evidence of normalizing inflation and improving growth becomes clearer, we think there will be an opportunity to add exposure to cyclical assets such as high yield credit and emerging market (EM) debt.

Stay Selective. We are in a new era for financial markets—one without easy policy to lift all assets. In our view, this is fertile ground for generating alpha through active security selection. We already see evidence of higher dispersion in fixed income markets which we expect to rise further as borrowers adapt to slower economic and earnings growth, as well as a higher-for-longer inflation and rate environment.

Attractive income potential post the 2022 yield reset

Fixed Income Spread Sector Yields (%)



Source: Macrobond, Goldman Sachs Asset Management. Based on data available as of January 6, 2023.

Time to bring on bonds

16% US IG bonds that mature in 2023 and 2024, implying limited near-term refinancing needs[1]

1.2% US high yield default rate, well below the long term average of 4.5%[2]

$24bn The stock of negative yielding debt at the end of 2022, down from over $10tn at the start of the year[3]

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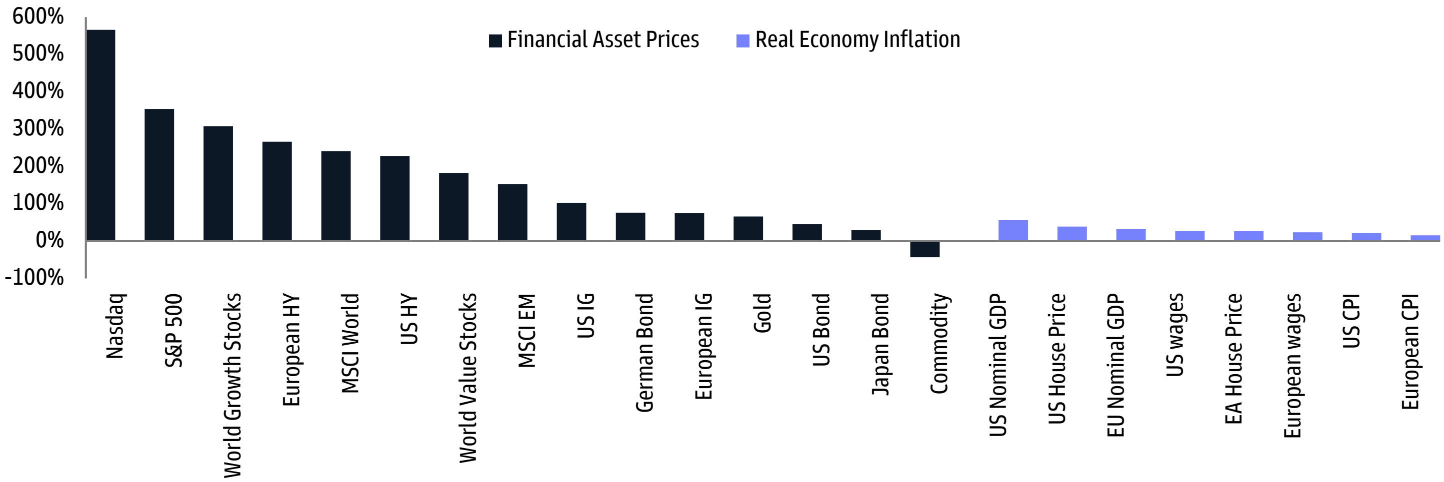
2022 IN SHORT: THE RETURN OF 'REAL' ECONOMY INFLATION

Pre-pandemic: Financial assets—boosted by easy monetary policies—outpaced 'real' economy inflation

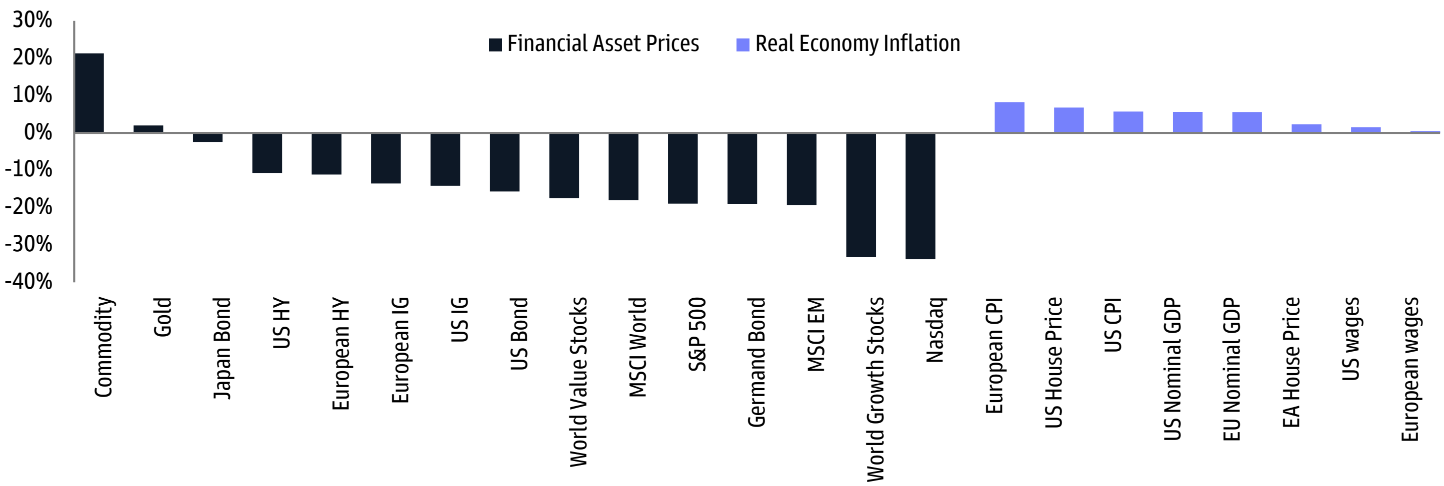
Total return performance in local currency, Jan 2009 – Feb 2020



Source: Datastream, STOXX, Haver Analytics, FRED, Goldman Sachs Global Investment Research. As of February 2020.

2022: 'Real' economy inflation outstripped financial asset returns similar to the high rate era of 1973 and 1983

Total return performance in local currency, 2022



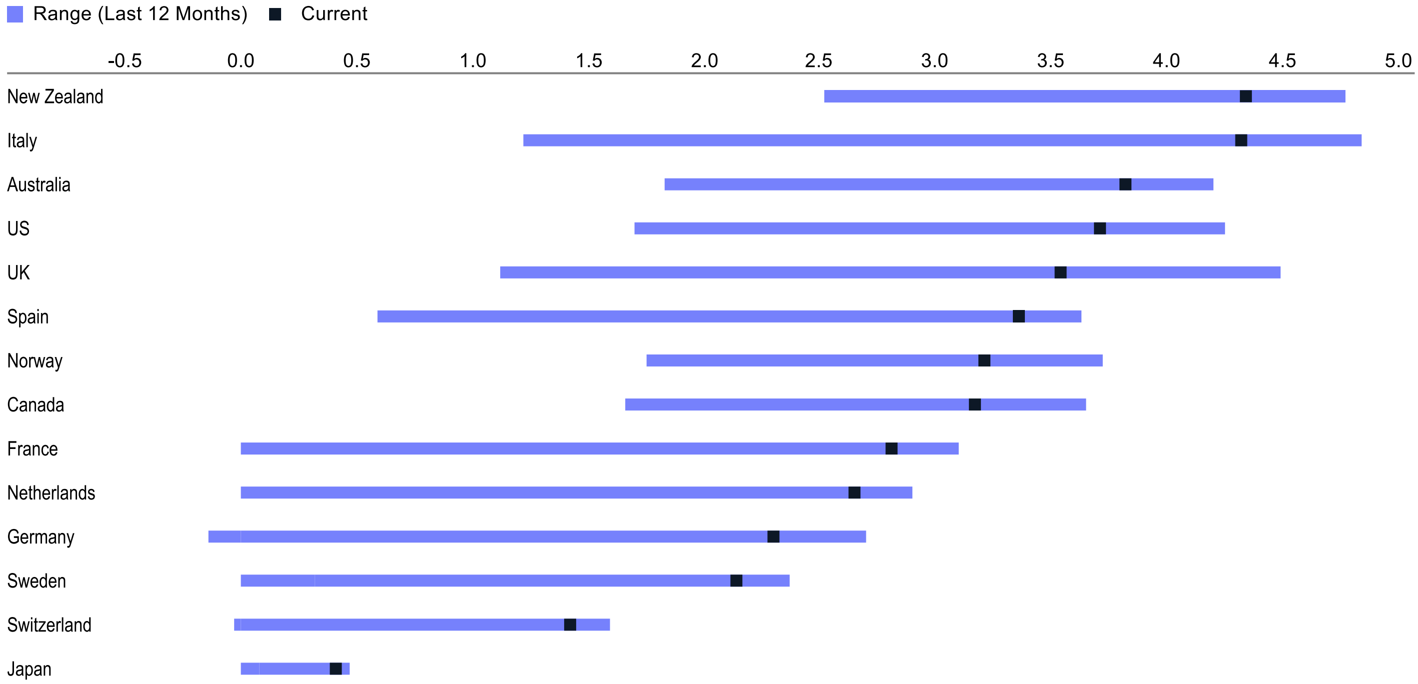
Source: Datastream, STOXX, Haver Analytics, FRED, Goldman Sachs Global Investment Research. Based on data released since January 1, 2022.

CENTRAL BANK SNAPSHOT

	Interest Rate Policy	Balance Sheet Policy	Outlook	Our outlook relative to market-implied pricing
Fed	Federal funds rate: 4.25-4.5% Prior changes: December 2022 (+50bps) November 2022 (+75bps) September 2022 (+75bps) July 2022 (+75bps) June 2022 (+75bps) May 2022 (+50bps) March 2022 (+25bps)	The monthly pace of net asset purchases was reduced from November 2021 and ended in March 2022. Since June 2022, the Fed has engaged in balance sheet runoff which include monthly caps of $60 billion in US Treasuries and $35 billion in agency MBS. Balance sheet size: 38% of GDP	We expect a 25bps hike at both the February and March meeting but acknowledge risks are skewed towards more tightening unless the labour market begins to loosen and the easing in inflation pressures turn more broad-based. . Expected terminal rate: 4.75%-5.0%	Neutral
ECB	Deposit facility rate: 2.0% Prior changes: December 2022 (+50bps) Oct 2022 (+75bps) Sept 2022 (+75bps) July 2022 (+50bps), the first hike since 2011	At the December 2022 meeting, the Governing Council announced the start of its balance sheet unwind for March 2023. The decline will amount to EUR 15bn per month on average until the end of the second quarter of 2023 and its subsequent pace will be determined over time. The anti-fragmentation tool, the Transmission Protection Instrument (TPI), unveiled in July 2022 will be used to ensure monetary policy is transmitted smoothly across all euro area countries. Balance sheet size: 70% of GDP	We expect at least two further 50bps rate hikes in February and March, followed by either another 50bps rate hike in May or two 25bps rate rises in May and June. Expected terminal rate: 3.5%.	Hawkish
BoE	Bank Rate: 3.5% Prior changes: December 2022 (+50bps) November 2022 (+75bps) September 2022 (+50bps) August 2022 (+50bps) June 2022 (+25bps) May 2022 (+25bps) March 2022 (+25bps) February 2022 (+25bps) December 2021 (+15bps)	In September/October 2022, the BoE temporarily purchased long-dated UK gilts and postponed active gilt sales; in November 2022 the BoE commenced active sales and an unwind of the temporary purchases. Balance sheet size: 50% of GDP	We expect a few additional hikes in H1 2023. Expected terminal rate: around 4.5%.	Slightly hawkish
BoJ	Policy deposit rate: -0.10% Prior changes: January 2016, when the Bank introduced its negative interest rate policy (NIRP) 10-year JGB yield target: ~0%, with tolerance band of -/+50bp (yield curve control policy)	Following the December 2022 meeting, the BoJ has stepped up their defence of the new +0.5% YCC upper band by significantly increasing regular and ad-hoc Japanese Government Bond purchases along the yield curve. Targets for ETF, corporate bond and other risk asset purchases remain in place but in practice there have been limited recent buying. Balance sheet size: 132% of GDP	The recent widening of the yield curve control band suggests this policy may be tweaked further or abandoned over the coming year. We also think there is a high likelihood of a rate rise and departure from NIRP.	Hawkish

Source: Goldman Sachs Asset Management. As of January 3, 2023. The economic and market forecasts presented herein are for informational purposes as of the date of this presentation. There can be no assurance that the forecasts will be achieved. Please see additional disclosures at the end of this presentation.

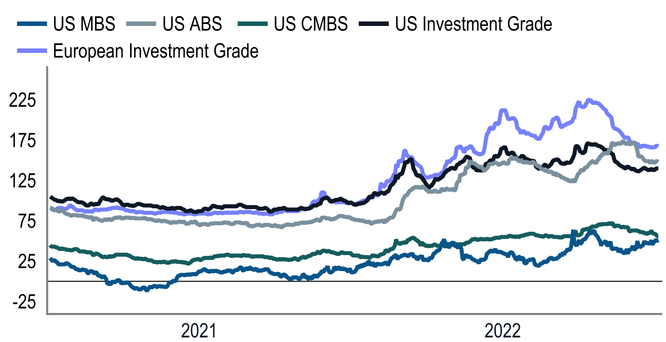
10-YEAR SOVEREIGN BOND YIELDS (%)



Source: Goldman Sachs Asset Management, Macrobond. As of January 6, 2023.

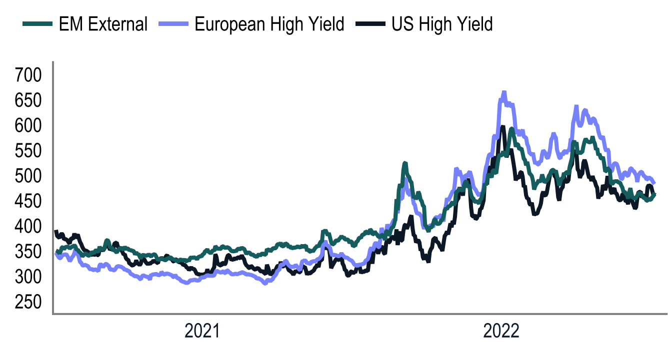
FIXED INCOME SECTOR SPREADS

Investment Grade and Securitized Spreads (bps)



Source:: Macrobond. ICE BoAML indices. As of January 5, 2023.

High Yield and Emerging Market Spreads (bps)



Source: Macrobond. ICE BoAML indices. As of As of January 5, 2023.

PAST MUSINGS

[MUSINGS — December 16, 2022]

[MUSINGS — December 9, 2022]

[MUSINGS — December 2, 2022]

[MUSINGS — November 18, 2022]

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The indices referenced herein have been selected because they are well known, easily recognized by investors, and reflect those indices that the Investment Manager believes, in part based on industry practice, provide a suitable benchmark against which to evaluate the investment or broader market described herein. The exclusion of "failed" or closed hedge funds may mean that each index overstates the performance of hedge funds generally.

Sector Spread Indexes

US Investment Grade Corporates: ICE BofAML US Corporate Index

US High Yield Corporates: ICE BofAML US Corporate High Yield Index

European Investment Grade Corporates: ICE BofAML Euro Corporate Index

European High Yield Corporates: ICE BofAML Euro High Yield Index

ABS: ICE BofAML US Fixed Rate Asset-Backed Securities Index

MBS: ICE BofAML US Agency Mortgage-Backed Securities Index

CMBS: ICE BofAML US Fixed Rate Commercial Mortgage-Backed Securities Index

EM External Debt: J.P. Morgan, EMBI Global Diversified Face Constrained Index

Past performance does not guarantee future results, which may vary. The value of investments and the income derived from investments will fluctuate and can go down as well as up. A loss of principal may occur.

Abbreviations: US Federal Reserve (Fed), European Central Bank (ECB), Bank of England (BoE), Bank of Japan (BoJ), Swiss National Bank (SNB), Central Bank of Sweden (Riksbank), Reserve Bank of New Zealand (RBNZ), Central Bank of Norway (Norges Bank) Bank of Canada (BoC), Reserve Bank of Australia (RBA), Quantitative Easing (QE), Quantitative Tightening (QT), Pandemic Emergency Purchase Program (PEPP), Consumer price index (CPI), producer price index (PPI), developed markets (DM), emerging markets (EM), Japanese Government Bond (JGB).

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