

## EM Macro Navigator

# Inflation Idiosyncrasy

- **Resilient EM growth:** EM economies as a group are currently outgrowing DM economies by a significant margin (+4% ann. vs. 0% in DM, according to our CAIs). Activity remains particularly strong in Asia and (to a lesser extent) in CEEMEA, but is significantly weaker in LatAm. We expect the drag on growth from last year's tightening in global financial conditions and the rise in commodity prices to fade during 2023.
- **Past the peak in EM inflation:** Median inflation in EM economies has risen less than in DM economies and, driven by a fading contribution from energy and food prices, we expect headline inflation rates to decline significantly in most EMs over the course of 2023.
- **Significant divergence in EM inflation rates:** As important as the trends in EM inflation in aggregate has been the significant divergence in inflation rates between EMs. Part of this divergence is regional – with low average inflation in Asia, moderate inflation in LatAm, and high average inflation in CEEMEA – but much of it appears to reflect country-specific factors.
- **Monetary policy – One size doesn't fit all:** Significant inflation divergence implies the need for different monetary policy paths and market views. Our rate views are more hawkish relative to consensus and market pricing in China, Korea, Thailand, across most of the CEE economies, and in Mexico, whereas our views are more dovish relative to market pricing in Brazil and Indonesia. The recent US bank closures and consequent repricing of Fed rate expectations tilt risks in EM towards less hawkish policy in the near term, but with a higher-than-usual degree of uncertainty.

### Recommended Trades and Conviction Views

- **China:** Overweight A (onshore) and H (offshore) shares
- **EM Asia:** Short SGD/MYR, long USD-hedged Indonesia 5Y bonds
- **CEEMEA:** Overweight equities in Poland and CEE credits
- **LatAm:** Receive BRL DI Jan29s; short Peru vs long Chile 20y USD bonds

**Andrew Tilton**  
+852-2978-1802 | andrew.tilton@gs.com  
Goldman Sachs (Asia) L.L.C.

**Kamakshya Trivedi**  
+44(20)7051-4005 |  
kamakshya.trivedi@gs.com  
Goldman Sachs International

**Kevin Daly**  
+44(20)7774-5908 | kevin.daly@gs.com  
Goldman Sachs International

**Clemens Grafe**  
+44(20)7774-3435 |  
clemens.grafe@gs.com  
Goldman Sachs International

**Kenneth Ho**  
+852-2978-7468 | kenneth.ho@gs.com  
Goldman Sachs (Asia) L.L.C.

**Goohoon Kwon, CFA**  
+852-2978-0048 |  
goohoon.kwon@gs.com  
Goldman Sachs (Asia) L.L.C.

**Caesar Maasry**  
+1(212)902-8763 |  
caesar.maasry@gs.com  
Goldman Sachs & Co. LLC

**Andrew Matheny**  
+44(20)7051-6069 |  
andrew.matheny@gs.com  
Goldman Sachs International

**Alberto Ramos**  
+1(212)357-5768 |  
alberto.ramos@gs.com  
Goldman Sachs & Co. LLC

**Hui Shan**  
+852-2978-6634 | hui.shan@gs.com  
Goldman Sachs (Asia) L.L.C.

**Danny Suwanapruti**  
+65-6889-1987 |  
danny.suwanapruti@gs.com  
Goldman Sachs (Singapore) Pte

**Tadas Gedminas**  
+44(20)7051-6015 |  
tadas.gedminas@gs.com  
Goldman Sachs International

## Table of Contents

EM Macro Focus: Inflation Idiosyncrasy	3
Summary of GS EM Forecasts and Market Views	9
The EM Bookshelf: Recent GS EM Macro Research	15
Thematic Spotlight: Inflation and Monetary Policy in EM	18
China Post-Reopening Inflation Outlook: A Bottom-Up Approach	19
CEEMEA Outlook — Resilient Growth, Persistent Inflation, and Cross-Country Divergence	20
China's 'Zero-Covid' Exit: A Potential LatAm Entry Into Higher Growth Path	21
LATAM Views: Broad Spectrum of Monetary Stances on Display—From Hawkish Holds to Dovish Hikes	22
EM Chartpack	23
Data Monitor – EM Asia	27
Data Monitor – CEEMEA	31
Data Monitor – LatAm	35
Goldman Sachs EM Macro Research Team	38
Disclosure Appendix	39

## EM Macro Focus: Inflation Idiosyncrasy

The economic and asset price performance of EM economies remains impressive in aggregate: EM growth – *on average* – has been significantly stronger than DM growth, EM inflation has risen by less than DM inflation, and EM exchange rates have generally outperformed DM exchange rates over the past six months. But these averages mask significant cross-country differences across EM economies, especially in terms of inflation dynamics. This divergence contrasts with DM economies, where there has been no obvious break in cross-country inflation correlations.

In this *Macro Focus*, we discuss the economic outlook for EM economies, focusing in particular on the drivers and implications of cross-country inflation divergence.

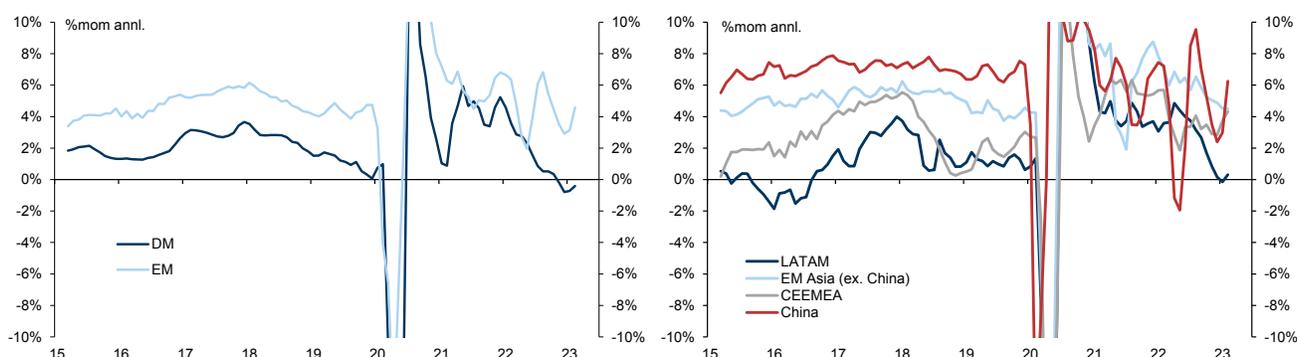
### Growth: EMs Outgrowing DMs by a Significant Margin, With Asia and CEEMEA Outperforming LatAm

**EM economies as a group are currently outgrowing DM economies by a significant margin.** [Exhibit 1](#) (LHS) displays our EM and DM aggregate *Current Activity Indicators* (CAIs) – EM growth is currently running at a 4% annualised pace and activity has been accelerating since late last year. By contrast, DM growth according to our CAIs is (marginally) in recessionary territory.

At a regional level, growth remains particularly strong across Asian EMs, aided by the rapid acceleration in Chinese growth since the end of its Zero Covid policy. Growth has also been relatively resilient in CEEMEA economies, but is significantly weaker in LatAm ([Exhibit 1](#), RHS).

#### Exhibit 1: EM Growth Has Remained Resilient, With Asia and CEEMEA Outperforming LatAm

GS Current Activity Indicators (CAI), 3-month moving average



Source: Goldman Sachs Global Investment Research

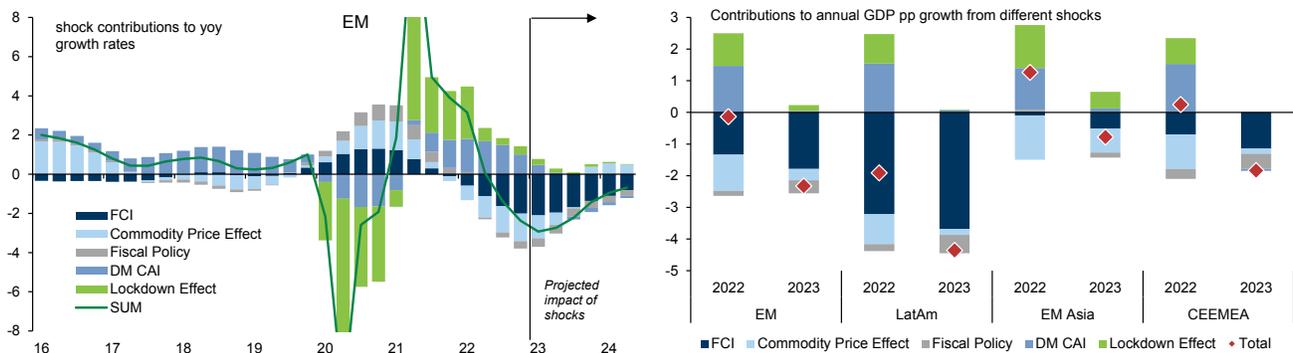
Much of this regional growth divergence can be explained by relatively standard economic impulses. In [Exhibit 2](#), we update our growth impulse analysis, which combines estimates of the impact of five factors on EM growth: (1) financial conditions; (2) commodity prices; (3) DM growth; (4) fiscal policy; and (5) the Covid-19 lockdowns.<sup>1</sup>

<sup>1</sup> Our growth impulse estimates cover 18 EM economies. A full description of the methodology, together with individual country estimates, can be found in "Post-COVID — The Trajectory of EM Growth", EM Macro Themes, 20 October 2020.

**Looking at EM growth in aggregate, our estimates imply that the drag on growth from last year’s tightening in global financial conditions and higher commodity prices will be at its greatest this quarter (2023Q1; Exhibit 2, LHS).** However, with global financial conditions and commodity prices both having eased since last October, the implied trough is shallower than previously appeared likely, and we expect the drag on growth to fade thereafter (implying stronger growth in 2023H2).

At a regional level (Exhibit 2, RHS), a key reason why LatAm is unusually weak is because the tightening in LatAm financial conditions has been unusually large due to more aggressive tightening by central banks and relatively stronger FX performance. Across Asia, by contrast, financial conditions have tightened to a lesser extent. Moreover, China’s re-opening is providing a large boost to growth for the region that is understated by unweighted regional averages, as the direct effects occur in the largest EM economy and the indirect effects from higher growth in China for other regions are likely to be meaningful<sup>2</sup>. Taken together, this should imply a more favourable growth backdrop in Asia this year than the baseline average estimates imply.

**Exhibit 2: Maximum Drag From FCI Tightening and Commodity Price Effects in Q1; LatAm More Severely Affected than Asia and CEEMEA**  
Contributions to yoy growth rates relative to trend from different shocks, unweighted regional averages



Source: Goldman Sachs Global Investment Research

In addition to being buffeted by global forces, country-specific factors also play a key role in shaping the economic outlook for many EM economies, including: South Africa (where a power supply crisis is dragging on activity), Turkey (unorthodox monetary policy and earthquake), and Russia (war and sanctions).

### **Inflation: Peaking in Aggregate, But Unusually Large Cross-Country Divergence**

**Median inflation in EM economies has risen less than in DM economies, despite a larger weighting of energy and food prices in EM inflation baskets (Exhibit 3, LHS).** In common with DM economies, headline inflation rates have also begun to decline in most EMs in recent months, owing primarily to base effects in energy and food prices.

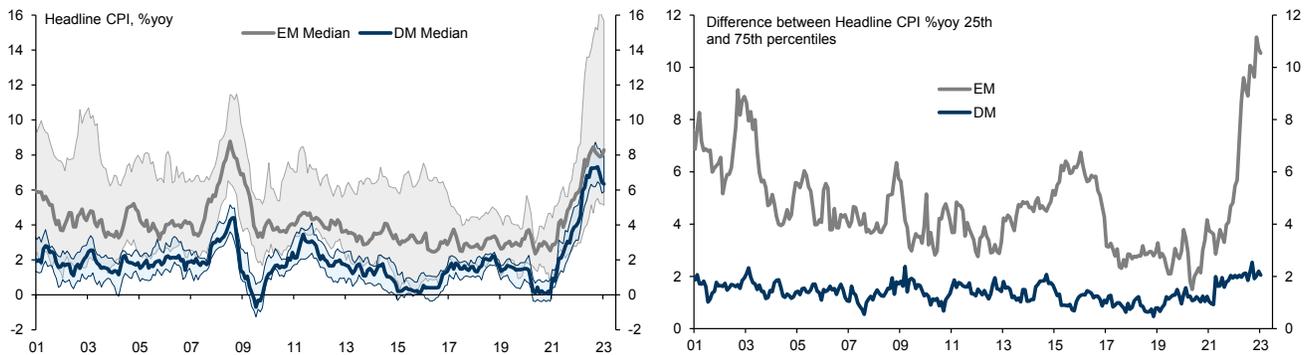
**At least as striking as the performance of EM inflation in aggregate has been the**

<sup>2</sup> We have discussed sensitivities to China re-opening more extensively in a number of region-wide pieces, and these are summarised in Global Economics Analyst, “The Boost to Global Growth and Inflation from China’s Reopening (Briggs/Kodnani).”

**divergence in inflation rates across EM economies.** The difference between the 25<sup>th</sup> and 75<sup>th</sup> percentile inflation rates for EM economies has reached levels not previously witnessed this century, whereas there has been no material increase in this gap for DMs<sup>3</sup> (Exhibit 3, RHS). Moreover, this measure of EM cross-country inflation dispersion excludes outliers – such as Argentina and Turkey. Measures that include these economies have increased further.

**Exhibit 3: No Common Trend for EM Inflation – Median EM Inflation Has Risen Less than DM, But EM Inflation Rates Have Diverged Significantly Across Countries**

Median and 25-75% quartiles of EM and DM headline inflation, based on the 28 EM and 15 DM economies in our forecast coverage;

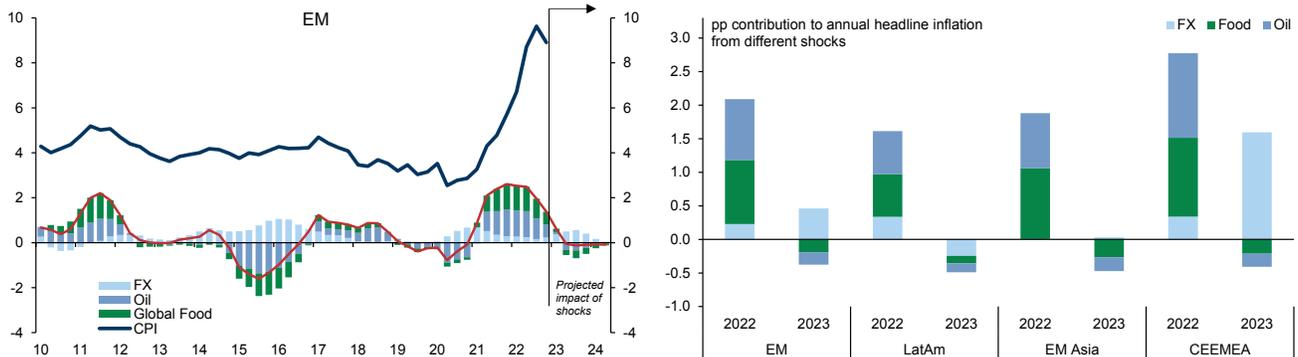


Source: Goldman Sachs Global Investment Research

**Looking ahead, we forecast that headline inflation rates will decline significantly over the course of 2023 across most EMs.** Based on our estimates of the contribution of changes in (1) oil prices, (2) food commodity prices and (3) exchange rate pass-through to EM inflation, we project forward the impact of these three factors on future inflation (Exhibit 4).<sup>4</sup> On the assumption that commodity prices and exchange rates evolve in line with forward pricing, the contribution from these sources has already peaked and will fall sharply across EM economies through 2023.

**Exhibit 4: Lower Commodity Prices Imply a Sharp Fall in the Contributions from Oil and Food Prices**

Headline CPI vs. projected impact on yoy inflation from different shocks, unweighted regional averages



Source: Goldman Sachs Global Investment Research, Haver Analytics

<sup>3</sup> This pattern of widening dispersion also holds true for EM core inflation, where in some economies the larger and more broad-based core inflation increases point to a more prolonged inflation overshoot (in LatAm and CEEMEA in particular).

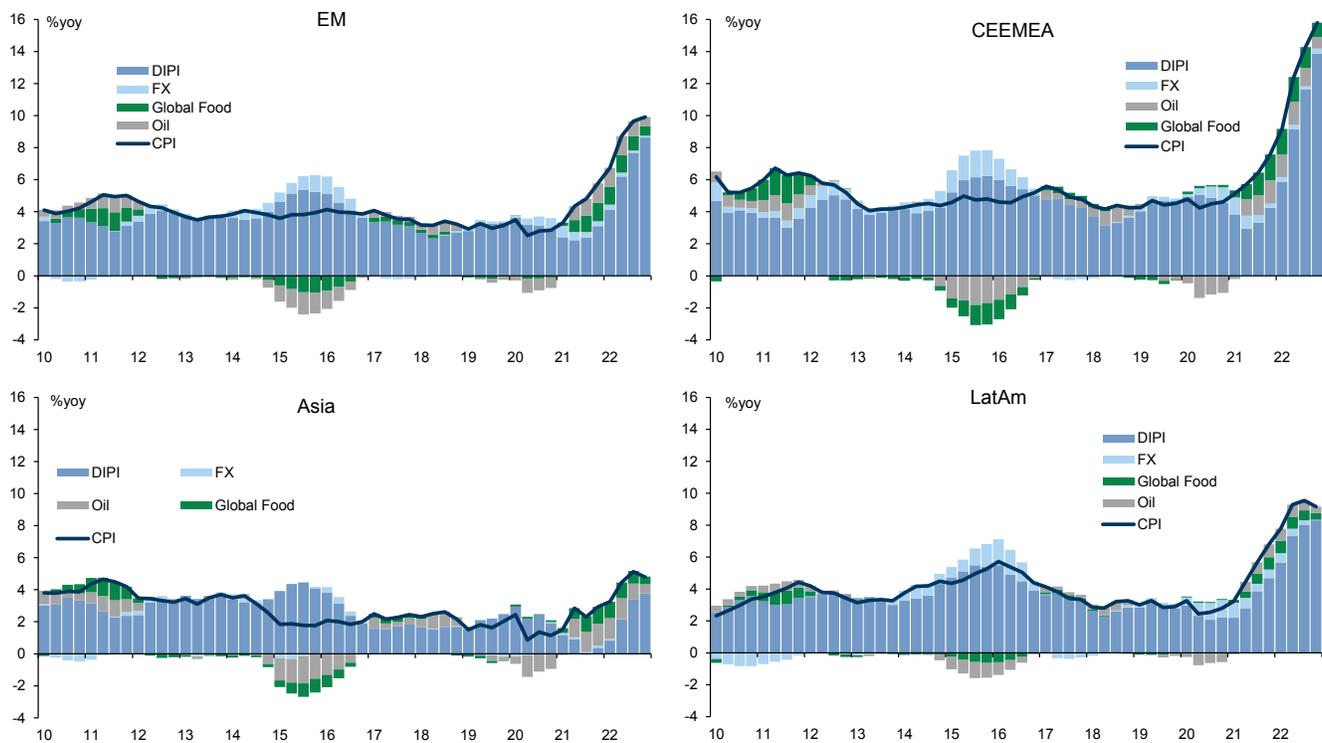
<sup>4</sup> Our estimates cover 24 EM economies in Asia, LatAm and CEEMEA. A full description of the methodology together with individual country estimates can be found in “Modelling EM Inflation — Domestic Weakness, But Commodities to Drive Headline Higher”, EM Macro Themes, 16 March 2021.

Exhibit 5 displays our Domestic Inflationary Price Indices (DIPIs) for EM economies, which strip out the effects of changes in oil prices, global food commodity prices and exchange rates. Our DIPIs suggest that underlying inflation dynamics were running below central bank targets across most EMs until the end of 2021. However, there has been a significant divergence since then, with underlying inflationary pressures rising exceptionally sharply in CEEMEA economies through 2022, moderately in LatAm and not at all in Asian economies.

In a number of CEEMEA and LatAm economies there has been a broadening of price pressures away from energy and food costs and towards core goods and services. This broadening of price pressures has been accompanied by (and, in our view, likely caused by) a large increase in inflation expectations, both short- and medium-term, and by rising wage pressures. Consequently, while we believe that headline inflation has peaked across CEEMEA and LatAm, and will decline this year due to base effects in energy and food prices, it is nevertheless likely to remain higher for longer than previously appeared likely.

**Exhibit 5: Domestic Inflationary Pressures Have Risen Across EM, But they Are Especially Acute in CEEMEA**

Inflation decomposition to oil, food and FX shocks. DIPI - domestic inflationary pressures index



Source: Goldman Sachs Global Investment Research, Haver Analytics

**Accounting for the Cross-Country Divergence in EM Inflation**

In explaining cross-country divergence in EM inflation, we focus on three factors: i) a simple measure of demand-side pressures<sup>5</sup> and capacity constraints<sup>6</sup>(Exhibit 6, top left

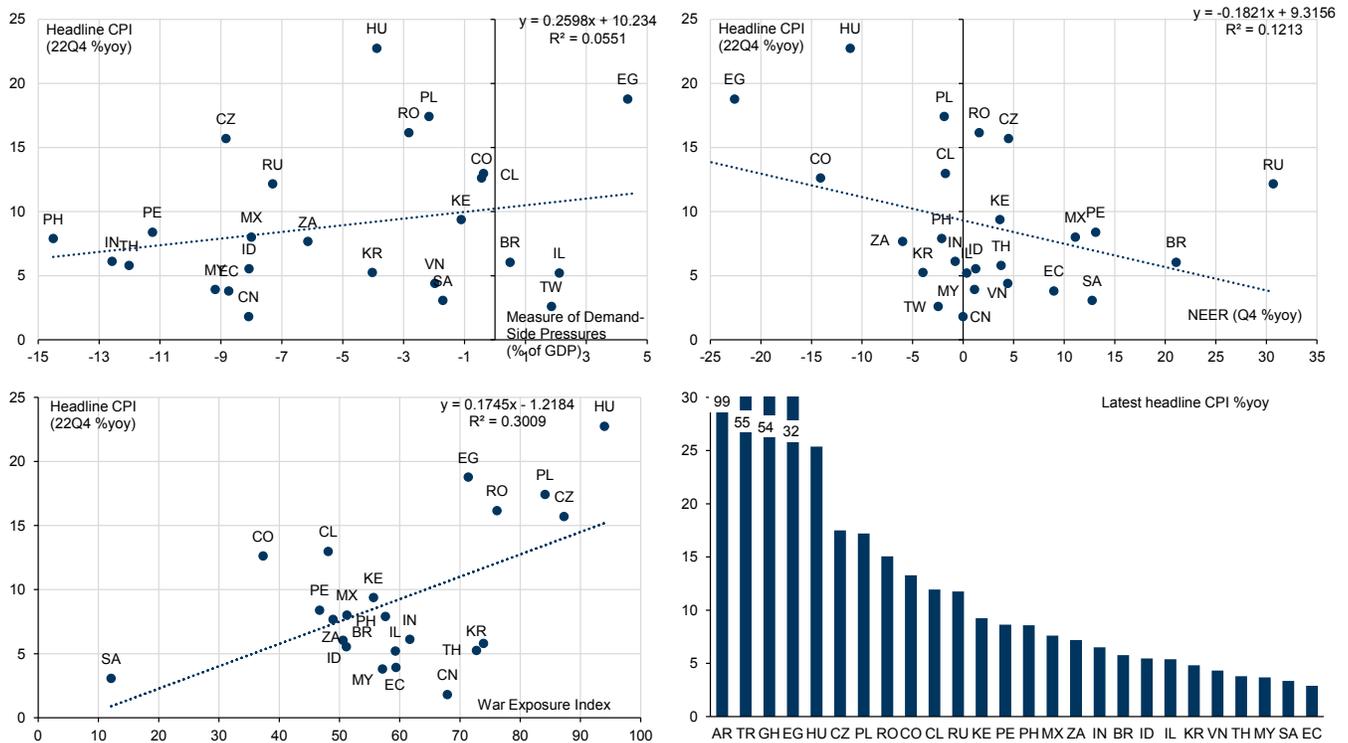
<sup>5</sup> We construct a demand-side pressure measure by calculating GDP recovery since the start of the pandemic, adjusted for pre-pandemic trend growth.

<sup>6</sup> Some of the capacity constraints reflected supply-chain disruptions (e.g., long delivery times, difficulty

panel), ii) exchange rate performance (Exhibit 6, top right panel), iii) economic exposure to the war in Ukraine<sup>7</sup> (Exhibit 6, bottom left panel). Each factor individually has some explanatory power, but neither gives a full account of the story. For example, in some places the economic exposure to the war in Ukraine helps account for higher inflation (as in the CEE), whereas relatively lower inflation in some LatAm economies is supported by stronger FX performance. Nevertheless, the range of inflationary outcomes is unusually wide across EM, rendering it much harder than usual to find a unifying theme and placing greater importance on country-specific factors.

**Exhibit 6: Cross-Country EM Inflation Partly Accounted For By Demand-Side Pressures, FX and Economic Exposure to the War in Ukraine**

Scatterplots of headline inflation in Q4 (%yoy) versus a measure of demand-side pressures (top left), FX (top right), and economic exposure to war index (bottom left). Latest %yoy headline inflation values in bottom right



Source: Goldman Sachs Global Investment Research

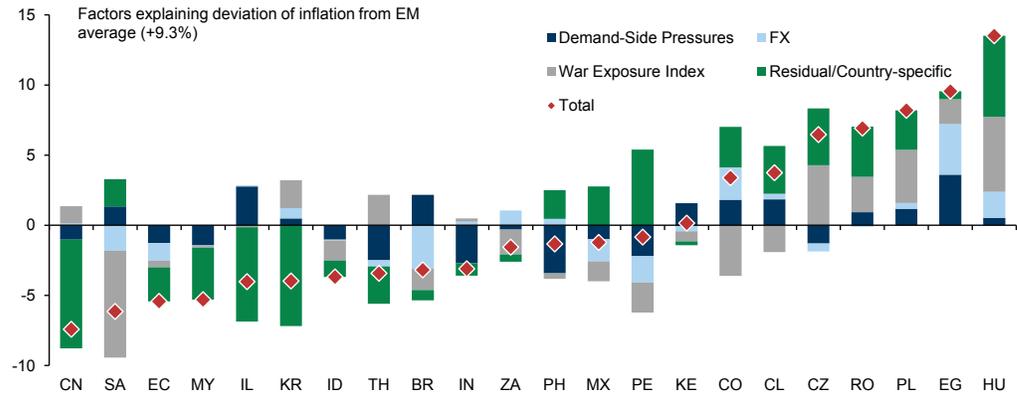
In an attempt to gauge the relative importance of these factors, we analyse in a stylised exercise the extent to which the three factors together explain inflation performance (measured as deviations from EM average of +9.3%yoy in 2022Q4) versus the extent to which country-specific factors dominate (Exhibit 7). In some economies, such as Brazil, India, South Africa and Egypt, we find that the three factors do a good job of capturing the relative inflation performance. By contrast, country-specific factors appear to play an outsized role in a number of key economies, such as China, Israel and Korea, where they are translating into relatively weaker inflation, whereas in countries like Peru and

sourcing key production components), which may not be well captured by a GDP-based measure. Given that we are now observing a significant easing in these disruptions (China in particular), this is likely to be a significant source of disinflation for a number of more exposed economies.

<sup>7</sup> We use a measure that takes into account direct trade exposure to Russia and Ukraine as a % of GDP, as well as composition of the trade. The more different the trade composition (i.e., if a country is importing goods and services that are primarily exported by Russia and Ukraine), the higher the exposure. For more details, see EM Macro Themes “Mapping Economic Exposures to Russia and Ukraine”.

Hungary, country-specific factors are driving inflation considerably higher.

**Exhibit 7: Country-Specific Factors Play an Outsized Role in China, Israel, Korea, Peru and Hungary**  
Relative contribution of factors in explaining EM inflation deviation from sample average (+9.3%)



Source: Goldman Sachs Global Investment Research

### Monetary Policy — One Size Doesn't Fit All

Significant inflation divergence implies the need for different monetary policy paths. Our rate views have typically been on the hawkish side across much of CEEMEA, but are more selective in LatAm and Asia. In particular, we have been more dovish in Brazil and Indonesia, where we also have trade recommendations to receive rates in the former and to go long IDR FX-hedged 5Y bonds in the latter. By contrast, our monetary policy and market views have been more hawkish than market pricing in China, Korea, Thailand, across most of the CEE economies, and Mexico.

The key recent financial market development has been the sharp repricing in global interest rate markets amid two significant bank closures in the US. The US two-year rate has fallen from 5.05% to 4.10%, with markets once again expecting Fed cuts before the end of the year. Our US economics team has changed their call for next week's Fed meeting from a 25bp hike to a pause, but see significant uncertainty both for the meeting and the policy path beyond.

From a macro perspective, tighter regional bank lending conditions (very US-centric) are likely to substitute for some degree of Fed monetary policy tightening (which would have more spillover into EM); this mix of tightening is therefore *relatively* more favourable for EM, though there is significant uncertainty about the absolute scale of the effect. In some cases, the negative risk sentiment shock may outweigh these effects, for example, by putting pressure on EM FX which may require a more hawkish response from the central banks in the near term. For now, until there is more confidence that further bank runs have been avoided, the risks tilt towards less EM tightening/easier policy, but with an exceptionally high degree of uncertainty.

**Kevin Daly** and **Tadas Gedminas**

## Summary of GS EM Forecasts and Market Views

We summarize our latest views by region below. The tables on pages 11-12 review our growth, inflation, policy rate, and FX forecasts, and page 13 summarizes our conviction market views by region and asset class.

**China's** policymakers have refocused on growth since the 20<sup>th</sup> Party Congress. The abandonment of Covid restrictions led to a large 'exit wave' of Covid which peaked around yearend, but mobility has already recovered rapidly and economic data are following suit. A notable easing in the regulatory stance on property and other industries, alongside continued easy macroeconomic policy, should also support growth in China this year. Following strong Jan-Feb economic data, particularly for services, we now expect 6.0% real GDP growth for the full year, and 6.5% on a Q4/Q4 basis, well above consensus forecasts. Growth is likely to be relatively consumer- and services-centric relative to past recoveries, reflecting the still-depressed state of contact-intensive sectors of the economy. We anticipate that reopening demand in the services sector will generate a moderate rise in core CPI inflation (to 1.9% yoy in Q4) from very low levels currently (0.6% yoy), with headline inflation higher but still below the PBOC's 3% target (more like a ceiling in practice). We do not expect reopening to cause significant problems for manufactured goods production—on the contrary, supply chain stresses appear to be easing—and labor market slack will take some time to absorb. This should leave policymakers a free hand to support the economy in 2023, though we expect a gradual unwind of stimulus, particularly on the fiscal side (with the augmented fiscal deficit shrinking by about 1.5pp this year from very elevated levels in 2022). The current account surplus is apt to gradually erode (to 1.5% of GDP this year) on soft export demand and a resumption of outbound tourism.

Elsewhere in **EM Asia**, we expect relatively sluggish growth in early 2022, as reopening boosts fade and the global industrial cycle bottoms out. Sequential growth should improve somewhat over the year as China's impulse spills over into the region (with a notable boost to southeast Asia later in the year and into 2024 as China's outbound tourism resumes), the drag from tighter global financial conditions ebbs, and the inventory overhang in the manufacturing sector is worked off. We believe inflation has peaked in most countries—and indeed central banks have begun to take credit for this, with Bank Indonesia and BNM opting to hold at their latest meetings. But we expect it to remain above central bank targets in much of South and Southeast Asia. In Korea, inflation is high but likely to decline further and the BoK also appears nearly at the end of its tightening campaign.

**Latin America's** near-term macro-outlook remains challenging. In 2023 we expect LatAm to undergo a transition from: (1) peak growth to sub-trend growth, (2) peak inflation to more moderate (but still significantly above target) levels, and (3) peak rates to slightly lower nominal policy rates by 2H2023, but with the monetary stance expected to remain in restrictive territory.

We expect a deceleration in Latam real GDP growth from 3.7% in 2022 to a below-trend 0.9% in 2023, given the vanishing impulse from reopening, restrictive financial

conditions, exigent credit conditions, tighter labor markets, diminished economic slack (output gaps in Chile and Colombia are in positive territory), softer external impulse to growth, and enduring political and policy uncertainty. On the positive side, growth in 2023 is set to be supported by the further drawdown of pent-up private spending, moderating inflation, well-bid commodity prices, near-/friend-shoring FDI inflows, and in places like Brazil, additional fiscal and quasi-fiscal stimulus. Inflation should moderate from 2H2022 multi-year highs but remain above target throughout 2023. Excluding Argentina and dollarized Ecuador, inflation among the five inflation-targeting economies (LA-IT5) should slide from a decade-high 7.9% in 2022 to a still-high 6.0% by end 2023, down to 3.8% in 2024.

LatAm central banks were among the early hikers and in most places are ready to reap the benefits of early action. Some central banks are still hiking (Colombia, Mexico), others are on hold (Brazil, Chile, Peru). Still, we expect regional central banks to be conservative given still above-target inflation, unanchored inflation expectations, and in several places inadequate fiscal policy support and heightened political, fiscal, and policy risk premia. We expect moderate rate cuts during 2H2023.

Growth continues to hold up relatively well across the majority of **CEEMEA** economies. According to our CEEMEA (ex-Russia) aggregate CAI, sequential growth in the region slowed from a 5% annualised pace in 2022H1 to 2% in 2022H2, but picked up to a 3% pace in early 2023. We are monitoring the implications from US regional banking stresses closely but, barring a significant escalation of these strains, the worst of the headwinds facing the CEEMEA region may have already passed: global financial conditions have eased since October, energy prices have fallen, and the prospects for global growth have improved. Reflecting these trends, our 2023 and 2024 growth forecasts are above consensus for the majority of CEEMEA economies.

We expect headline inflation rates to decline in CEEMEA during 2023, given the prospect of sharply negative contributions from energy and food inflation. However, underlying inflationary pressures appear stronger than in other regions, reflecting a broadening of price pressures away from energy and food costs, and towards core goods and services. There is also evidence of a destabilisation in inflation expectations (in price-setting behaviour, measures of long-term expectations, and wage growth). Consequently, our 2023 and 2024 inflation forecasts are above consensus and our rate views are more hawkish than market pricing for most CEEMEA economies. In addition to being buffeted by global forces, country-specific factors are also playing a critical role in shaping the economic outlook for many CEEMEA economies, including: South Africa (where a power supply crisis is dragging on activity), Israel (domestic politics), Turkey (unorthodox monetary policy and earthquake), Russia (war and sanctions), Egypt (balance of payments crisis), and Hungary (relief from previous BoP concerns). These idiosyncratic factors have already driven a significant divergence in CEEMEA asset prices this year, and we expect their importance to persist through 2023.

## GS Growth, Inflation, and Policy Rate Forecasts

		Growth (Real GDP)*			Inflation (CPI)*			Policy Interest Rate^		
		Latest	GS 2023	Cons 2023	Latest	GS 2023	Cons 2023	Latest	GS End-23	Cons End-23
Latam	Mexico	3.6	1.5 ▲	1.3	8.4	6.1 ▲	5.9	11.00	10.50 ▲	10.85
	Colombia	2.9	1.5	1.2	12.2	11.3 ▲	9.5	12.75	10.50 ▲	10.90
	Peru	1.7	1.7 ▼	2.1	8.3	6.6 ▲	5.8	7.75	6.50	6.15
	Chile	0.3	-0.7	-1.0	12.8	8.3	8.0	11.25	8.25	7.35
	Brazil	1.9	1.2	0.8	6.5	5.3 ▲	5.3	13.75	11.50	12.50
	Argentina	5.9	-1.7 ▼	0.0	88.0	100.8 ▲	95.0	-	-	-
CEEMEA	Poland	0.6	0.3 ▼	0.7	18.0	12.4 ▲	12.9	6.75	6.75	6.70
	Czech Rep.	0.1	0.8 ▲	-0.1	15.1	12.6 ▲	10.0	7.00	7.00	6.00
	Hungary	0.4	0.8 ▲	0.2	21.1	18.5 ▲	17.6	13.00	11.00	10.25
	Romania	4.6	2.8 ▲	2.2	15.3	10.9 ▼	10.3	7.00	7.00	6.90
	Russia	-3.7	0.0 ▲	-2.5	12.6	6.5	5.8	7.50	8.75	7.50
	Ukraine	-30.8	4.0 ▲	2.0	26.6	22.0	19.7	25.00	25.00	25.00
	Turkey	3.5	2.9 ▼	2.7	85.5	41.0 ▼	45.0	8.50	30.00	17.40
	South Africa	0.9	0.2 ▼	1.0	7.8	4.9	5.6	7.25	7.50 ▲	7.25
	Israel	2.8	3.2 ▲	3.0	5.1	4.7 ▲	3.7	4.25	4.50 ▲	4.05
Asia ex-Japan	China	2.9	6.0 ▲	5.3	2.1	2.2 ▲	2.4	2.00	2.00	-
	Korea	1.3	1.6 ▲	1.4	5.7	3.4	3.4	3.50	3.50	3.30
	Taiwan	-0.4	1.4	2.1	2.7	1.4	1.8	1.75	2.00	1.80
	Vietnam	5.9	5.8	6.0	4.3	4.4	3.8	6.00	6.00 ▼	6.60
	Thailand	1.4	3.3 ▼	3.7	6.0	2.8	2.8	1.50	2.50	1.95
	Malaysia	7.0	3.9 ▼	4.0	4.0	3.0 ▼	3.0	2.75	3.00 ▼	3.00
	India	4.4	6.0 ▲	5.7	6.8	5.5 ▼	5.4	6.50	6.50	6.60
	Indonesia	5.0	4.7 ▲	4.9	5.7	4.1	4.0	5.75	5.75	5.75
	Philippines	7.2	6.0 ▲	5.5	7.7	5.0	5.4	6.00	6.50 ▲	6.00
G3	US	0.9	1.8 ▲	0.8	6.3	4.6 ▲	4.0	4.63	5.38 ▲	5.15
	Euro Area	1.8	0.8 ▲	0.5	8.7	5.6 ▼	5.6	2.50	3.75 ▲	3.75
	Japan	0.4	1.0 ▼	1.2	4.4	2.5	2.1	-0.10	-0.10	0.00

\*The latest growth/inflation figures refer to the yoy growth of the latest quarter/month available; Annual average data are used for GS forecasts and consensus

^End of year forecasts and consensus for policy rates:

LATAM: Mexico: TdF bancario; Colombia: Overnight target rate; Peru: Central bank reference rate; Chile: Overnight target rate; Brazil: SELIC target rate;

CEEMEA: Poland: 7-day intervention rate; Czech Rep.: 2-week limit repo rate; Hungary: 2-week repo rate; Romania: one week repo rate;

Russia: CBR 1-week repo rate; Ukraine: Discount rate; Turkey: one week repo rate;

South Africa: Repo avg rate; Israel: discount rate;

AEJ: China: 7-day OMO rate; Korea: 7-day repo; Taiwan: rediscount rate; Thailand: 1-day repo; Vietnam: refinancing rate;

Malaysia: overnight policy rate; India: repo rate; Indonesia: 7-day reverse repo rate; Philippines: repo rate.

G3: US: Federal Funds Target Rate; Euro Area: ECB deposit facility rate; Japan: Policy deposit rate.

Red shading indicates GS forecast meaningfully above consensus, blue shading indicates below.

Up triangles indicate upward adjustments in GS forecasts since the last publication and vice versa.

Source: Goldman Sachs Global Investment Research, Bloomberg, Consensus Economics

## GS Exchange Rate Forecasts

		FX (against USD*)								GSDEER	GSFEER
		Spot 13-Mar	GS 3-month	Forward 3-month	GS 6-month	Forward 6-month	GS 12-month	Forward 12-month			
Latam	Mexico	18.9	18.8 ▼	19.0	18.5 ▼	19.3	18.3 ▼	20.0	19.2	19.8	
	Colombia	4771	5000	4832	4900	4923	4600	5103	2774	4495	
	Peru	3.80	3.90	3.81	3.90	3.83	3.80	3.86	3.06	4.40	
	Chile	806	775 ▼	811	775 ▼	820	770 ▼	831	640	856	
	Brazil	5.25	4.90 ▼	5.34	4.85 ▼	5.43	4.80 ▼	5.59	3.84	5.21	
	Argentina	201.8	230.0 ▲	246.7	260.0 ▲	304.0	340.0 ▲	425.7	--	--	
CEEMEA	Poland (v EUR)	4.68	4.65 ▼	4.76	4.60 ▼	4.81	4.60 ▼	4.89	4.37	4.89	
	Czech Rep. (v EUR)	23.8	23.8 ▼	24.0	24.0 ▼	24.2	24.5	24.5	31.2	27.7	
	Hungary (v EUR)	393	375 ▼	403	370 ▼	414	370 ▼	431	373	442	
	Romania (v EUR)	4.92	4.95	4.97	4.95	5.01	5.00	5.07	--	--	
	Russia	75.0	75.0	78.8	80.0	81.8	85.0	87.0	65.7	54.9	
	Ukraine	36.60	36.6	40.2	42.0	43.7	50.0	50.9	--	--	
	Turkey	18.96	19.00	19.96	21.00	21.39	22.00	24.37	9.16	16.15	
	South Africa	18.2	18.5 ▲	18.3	18.0 ▲	18.4	17.8 ▲	18.7	10.7	15.4	
	Israel	3.63	3.50	3.60	3.50	3.58	3.40	3.55	3.54	2.93	
Asia ex-Japan	China	6.85	6.80	6.84	6.70	6.80	6.50	6.75	5.17	6.38	
	Korea	1301	1250	1299	1230	1293	1220	1280	1237	1270	
	Taiwan	30.5	30.5	30.2	30.0	29.9	30.0	29.2	27.0	27.9	
	Thailand	34.5	33.5 ▼	34.3	32.5	34.0	32.0	33.5	33.3	35.5	
	Malaysia	4.48	4.30	4.45	4.25	4.43	4.20	4.37	3.23	4.25	
	India	82.3	83.0	82.8	82.0	83.3	82.0	84.3	75.1	78.8	
	Indonesia	15390	15500	15412	15300	15454	15000	15539	14256	13456	
	Philippines	55.0	56.0	55.1	55.5	55.2	55.0	55.4	57.2	68.4	
G3	Euro Area	1.07	1.02	1.08	1.02	1.08	1.10	1.09	1.20	1.23	
	Japan	133.0	132 ▼	132	125 ▼	131	125 ▼	127	97.0	117	

\*Poland, Czech Republic, Hungary, and Romania are expressed vs EUR.

Source: Goldman Sachs Global Investment Research, Bloomberg

# GS Conviction Views in EM

Source: Goldman Sachs Global Investment Research



RATES



FX



EQUITIES



CREDIT

LATAM

[Receive BRL Jan29 DI](#)

[Prefer Mexico over Brazil](#)

[Prefer Corporates in Brazil and Mexico](#)

[IG: Short Peru 20y USD bonds vs Long Chile 20y USD bonds](#)

[HY: Prefer Argentina to Ecuador](#)

CEEMEA

[Prefer Poland within CE-3](#)

[IG: See upside for CEE credits](#)

[HY: See more upside for Turkey than Nigeria](#)

CHINA

[Overweight H and A shares](#)

[IG: prefer long-dated China Property](#)

[HY: neutral on China property; prefer higher quality developers](#)

EM ASIA- EX-CHINA

[Long IDR 5Y bonds on a USD-hedged basis](#)

[Short SGD vs. MYR](#)

[Overweight Korea; Marketweight India and Taiwan; Underweight Indonesia](#)

[IG: adopt a barbell approach, prefer AA and BBB over A and shorter dated carry](#)

[HY: prefer Commodities; neutral on Frontier sovereign, Macau Gaming, India Renewables and China Property](#)

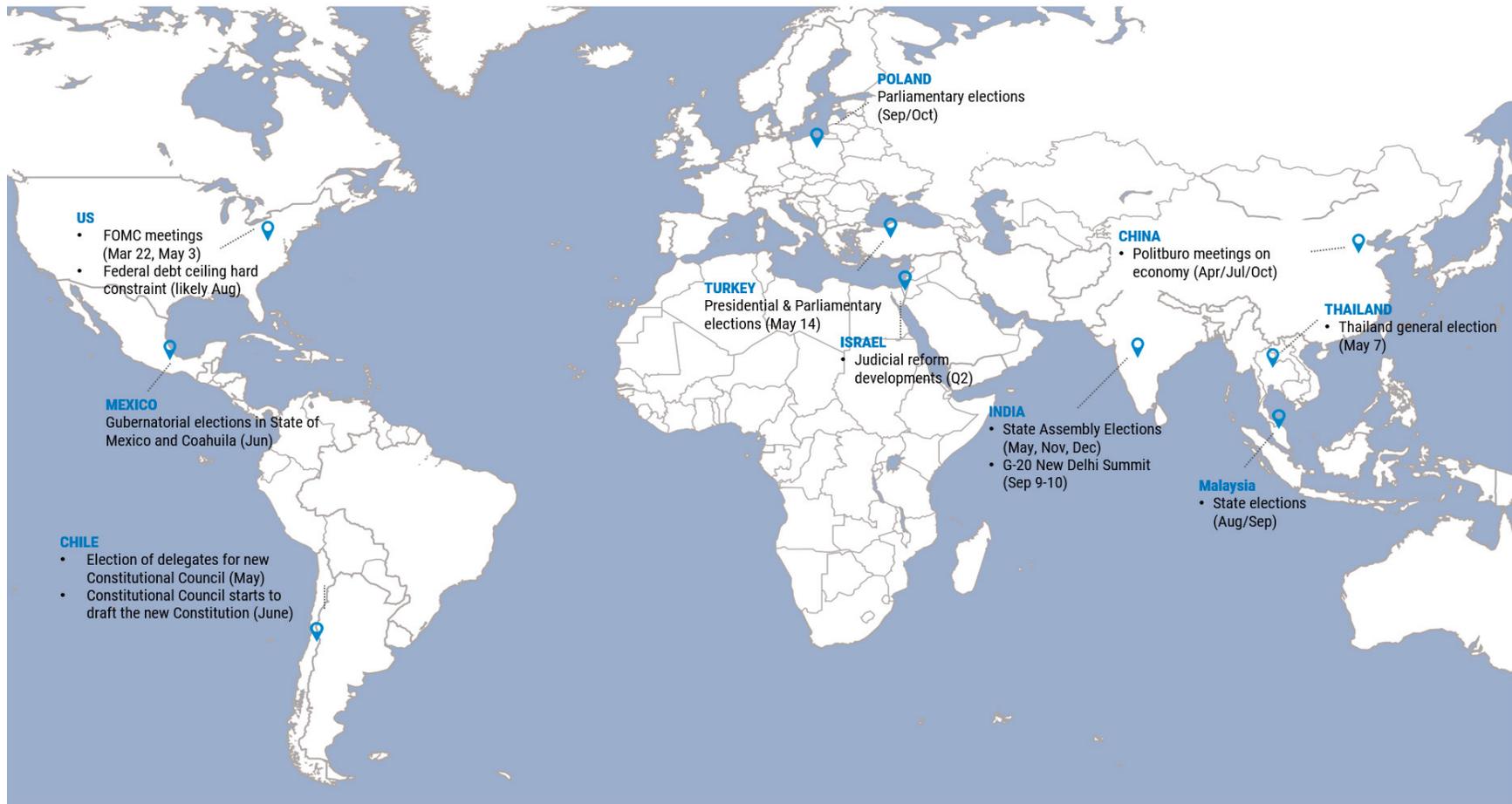
G3/GLOBAL

[Belly cheapen SFRZ3/M4/Z4 fly hedged w/ M4 1y MC call](#)

[Long EUR/SEK](#)

[Sell 3m2y delta-hedged straddles](#)

## Key upcoming events for EM investors



Source: Compiled by Goldman Sachs Global Investment Research

# The EM Bookshelf: Recent GS EM Macro Research



## EM/Global

- [Q4 2022 Sovereign Risk Score \(SRS\) Update: EM Fundamentals](#). Broadly Stable in Q4: *EM in Focus* (February 15)
- [The Boost to Global Growth and Inflation From China's Reopening](#): *Global Economics Analyst* (February 2)
- [Predicting Market-Relevant Inflation Surprises](#): *Global Economics Comment* (January 24)
- [China's reopening—how much of a lift to EM?](#): *EM Macro Navigator* (January 23)

## China

- [China: Assessing the implications of local governments' 2023 targets](#): *Asia in Focus* (February 17)
- [Population Aging, Pension System, and Individual Retirement Savings in China](#): *Asia Economics Analyst* (February 10)
- [China: Local government special bond, an increasingly important source of government financing](#): *Asia in Focus* (February 9)
- [FAQs on "excess savings" in China](#): *China Data Insights* (February 7)
- [China Post-Reopening Inflation Outlook: A Bottom-Up Approach](#): *Asia Economics Analyst* (February 3)



## Cross-asset

- [Carry Trades - Finding the Right Time & Place](#): *EM in Focus* (March 13)
- [A shifting growth-rates balance](#): *The EM Trader* (March 8)
- [What does the flow say?](#): *EM in Focus* (February 23)
- [Growth Moves Back into the Co-Pilot's Seat](#): *The EM Trader* (February 8)

## Rates/FX

- [EM FX—China Reopening vs US Rate Volatility](#): *Global Markets Daily* (March 7)
- [2022 Déjà Vu in February? Not quite](#): *The EM Trader* (February 22)
- [Push and Pull from the Cycle and the Fed](#): *EM Local Rates* (February 17)
- [Leaning into Rates Trades Amid the FX Market Volatility](#): *EM Asia FX/Rates Views* (February 12)
- [Can MXN outperformance extend?](#): *The EM Trader* (January 25)



### LatAm

- [Let It Rain: Argentina's Macroeconomic Challenges Ahead: \*Latin America Economics Analyst\*](#) (March 10)
- [Colombia: Gone With the Flow: Pension Reform Could Strain Government Funding: \*Latin America Economics Analyst\*](#) (February 24)
- [Ecuador: Political Challenges Just Got Bigger: \*Latin America Economics Analyst\*](#) (February 10)
- [China's 'Zero-Covid' Exit: A Potential LatAm Entry Into Higher Growth Path: \*Latin America Economics Analyst\*](#) (January 27)

### CEEMEA

- [South Africa — Downside Scenarios for the Rand: \*CEEMEA in Focus\*](#) (March 8)
- [CEEMEA Outlook — Resilient Growth, Persistent Inflation, and Cross-Country Divergence: \*CEEMEA Economics Analyst\*](#) (March 1)
- [Turkey—FX Liquidity Risks Ahead of the Elections: \*CEEMEA Economics Analyst\*](#) (March 1)
- [Growth Shedding — Estimating the Effects of South Africa's Power Supply Cuts: \*CEEMEA in Focus\*](#) (February 24)
- [January Data Continue to Point to Strong Underlying Inflation in CEE: \*CEEMEA in Focus\*](#) (February 22)
- [South Africa — Structural Downside, Higher Volatility and Lower Beta for the Rand: \*CEEMEA Economics Analyst\*](#) (February 17)
- [Kenya: Repricing of Local Yield Curve or Further Consolidation Would Ease Fiscal Financing Constraints: \*CEEMEA in Focus\*](#) (February 13)
- [Kenya: Fiscal Consolidation on Track for Debt to Peak in 2023: \*CEEMEA Economics Analyst\*](#) (February 1)



### Equities

- [Where to find growth in China?: \*China Strategy\*](#) (March 12)
- [Korea: Rising opportunities from corporate governance and shareholder proposals: \*Asia-Pacific Portfolio Strategy\*](#) (March 7)
- [Mar '23 pulse check: ERLI forecasts positive momentum of earnings revisions despite further negative revisions: \*Asia-Pacific Strategy: Earnings Revisions Leading Indicator \(ERLI\)\*](#) (March 3)
- [What do Asian equities need to regain their momentum?: \*Asia-Pacific Portfolio Strategy\*](#) (March 1)
- [Pivoting to E from PE as China recovers: \*China Musings\*](#) (February 20)
- [Feb '23 pulse check: ERLI forecasts earnings revisions momentum to improve despite further downgrades: \*Asia-Pacific Strategy: Earnings Revisions Leading Indicator \(ERLI\)\*](#) (February 9)
- [Asia Strategy Baskets: Position for a cyclical recovery amid the peak of tightening cycles: \*Asia-Pacific Portfolio Strategy\*](#) (February 3)
- [5 Bullets on EM Upside: \*EM in Focus\*](#) (February 2)

### Credit

- [Up In Quality In China Property Still Makes Sense: \*Asia Credit Trader\*](#) (March 4)
- [Mind the vol in a 'growth up, rates up' world: \*EM Sovereign Credit Monitor\*](#) (March 3)
- [LatAm Corps between yields and activity: \*EM in Focus\*](#) (February 28)
- [EM Local Bonds — A High-Sensitivity Regime: \*Global Markets Daily\*](#) (February 27)
- [Screening For Value In EM Corporates: \*EM in Focus\*](#) (February 22)
- [Lowering Our 2023 China Property HY Default Rate Forecast to 19%: \*Asia Credit Trader\*](#) (February 18)
- [Record issuance, macro tailwinds and pockets of value: \*EM Sovereign Credit Monitor\*](#) (February 6)
- [LatAm Credit: Convergence in divergence: \*EM in Focus\*](#) (February 3)



### EM Asia ex-China

- [ASEAN Central Banks' Liquidity Policies And Rates Market Implications: \*Asia Economics Analyst\*](#) (March 10)
- [Services export cushion for India's external balances: \*Asia in Focus\*](#) (March 5)
- [Indonesia: Ongoing Reforms Key to External Resilience Amid Global Net-Zero Shift: \*Asia Economics Analyst\*](#) (March 3)
- [Tracking the last reopening: \*Asia Views\*](#) (February 21)
- [Indian states: 'Catching-up' and 'veering away': \*Asia Economics Analyst\*](#) (February 19)
- [In Search of an Export Turnaround: \*Asia in Focus\*](#) (February 13)
- [India: Pre-election year budget ticks essential macro-prudential boxes: \*Asia in Focus\*](#) (February 2)
- [Hopping into the Year of the Rabbit: \*Asia Views\*](#) (February 1)



### Commodities

- [A Barrel in the Hand Is Worth Two in the Bush: \*Oil Analyst\*](#) (March 5)
- [Resolving the macro stalemate: \*Metal Views\*](#) (March 2)
- [Next leg higher pending on a firmer micro: \*Real Asset Investing\*](#) (February 20)
- [Products: Relief is temporary, underinvestment is permanent: \*Oil Insights\*](#) (February 19)
- [Seasonal squeeze supports near term upside: \*Iron Ore\*](#) (February 17)
- [Lowering Our Oil Price Forecast; Deficit Still Pending on China Reopening: \*Oil Analyst\*](#) (February 9)
- [Waiting on China: \*Metals Watch\*](#) (February 9)
- [Commodity markets lightly positioned for China reopening: \*Global Markets Daily\*](#) (January 23)

## Thematic Spotlight: Inflation and Monetary Policy in EM

---

This section provides one-page summaries for some of our recently published work. For this edition we highlight analysis related to inflation dynamics in EM and their implications for monetary policy.

- In “[China Post-Reopening Inflation Outlook: A Bottom-Up Approach](#)” we analyzed the potential channels from reopening to higher inflation sector-by-sector, concluding that a moderate acceleration was most likely in 2023.
- Our latest “[CEEMEA Outlook](#)” dives into the inflation and growth outlook across the region, underlining the reasons for our above-consensus/above-market inflation forecasts in most economies.
- “[China’s ‘Zero-Covid’ Exit: A Potential LatAm Entry Into Higher Growth Path](#)” discusses the potential spillovers from China’s reopening to Latam growth and inflation.
- Across Latam, the responses of policymakers to the higher inflation environment are diverging, with some still hiking and others transitioning to “hawkish holds”, as we discuss in “[LATAM Views: Broad Spectrum of Monetary Stances on Display](#)”.

## China Post-Reopening Inflation Outlook: A Bottom-Up Approach

[China Post-Reopening Inflation Outlook: A Bottom-Up Approach](#)

- China's reopening is likely to generate a large positive growth impulse for the global economy. But it also raises the question whether China's reopening will lead to significant inflationary pressures both domestically and externally, as many other economies have experienced, potentially complicating major central banks' efforts to rein in inflation. While our top-down model suggests this is unlikely, uncertainties remain significant as the post-Covid recovery may differ from typical business cycles. In this note, we build a bottom-up model for China CPI and kick the tires on our post-reopening inflation outlook.
- Our bottom-up model consists of 19 CPI items under 6 categories: food, energy, durable goods, administered prices, reopening-sensitive sectors, and others. For food and energy, we expect inflation to decline from 2022 to 2023. For the former, this is due to China's pork supply cycle and Covid lockdown disruptions to food supply. For the latter, this is due to smaller oil price increases expected this year vs. last year and the incomplete transmission from oil prices to energy-related items in China's CPI basket. Together, we expect food and energy to lower headline CPI inflation by 30bp this year compared to last year.
- We expect inflation of durable goods prices and administered prices to pick up in 2023, but only modestly. For durable goods, normalizing global supply chains and softening upstream raw material prices should partially offset the inflationary pressure from firming demand after reopening. For administered prices (e.g., education services, medicine and medical services, and telecom services), by definition, government policies are put in place to cap the pace at which prices may increase. We forecast these two categories to contribute 10bp additional headline CPI inflation this year relative to last year in our baseline.
- Reopening-sensitive sectors represent the most upside risk to inflation in 2023. But even here there are constraints to how much they may add to headline CPI inflation this year. Tourism is likely to see a sharp acceleration in price inflation, but it only accounts for 1% of the CPI basket. Shelter has a much higher weight in the CPI basket (17%), but the property market faces structural challenges and policymakers are unlikely to unleash strong stimulus and allow for surging rent inflation. Overall, we expect reopening-sensitive sectors to increase headline CPI inflation by 40bp this year.
- Adding up all the pieces, we expect headline CPI inflation to rise from 2.0% in 2022 to 2.2% in 2023 and core inflation to increase from 0.9% to 1.6% on an annual average basis. On a Q4 2022 to Q4 2023 basis, the increase would be larger: from 1.8% yoy to 2.8% for headline and from 0.6% to 2.0% for core. We conduct a scenario analysis given the elevated uncertainty regarding the strength of China's post-reopening recovery. In the bull case where reopening-related sectors experience much higher inflation, our headline CPI inflation forecast would be 2.8% vs. 2.2% in the base case, still below the 3% target typically set by the government. Therefore, we only expect monetary policy to normalize gradually rather than to tighten sharply in 2023.

## CEEMEA Outlook — Resilient Growth, Persistent Inflation, and Cross-Country Divergence

[CEEMEA Outlook — Resilient Growth, Persistent Inflation, and Cross-Country Divergence](#)

- Despite facing severe economic headwinds in 2022 – from tighter financial conditions, higher energy prices, and weaker global activity – growth continues to hold up relatively well across the majority of CEEMEA economies. According to our CEEMEA (ex-Russia) aggregate CAI, sequential growth in the region slowed from a 5% annualised pace in 2022H1 to 2% in 2022H2, but picked up to a 3% pace in early 2023. The region continues to face material headwinds, but the worst of their effects may have already passed: global financial conditions have eased since October, energy prices have fallen, and the prospects for global growth have improved. Reflecting these trends, our 2023 and 2024 growth forecasts are above consensus for the majority of CEEMEA economies.
- Given the prospect of sharply negative contributions from energy and food inflation, we expect headline inflation rates to decline during 2023. However, underlying inflationary pressures appear stronger in most CEEMEA economies than in other regions, reflecting a broadening of price pressures away from energy and food costs, and towards core goods and services. There is also evidence of a destabilisation in inflation expectations (in price-setting behaviour, measures of long-term expectations, and wage growth). Given the evidence of strong underlying inflationary pressures, our 2023 and 2024 inflation forecasts are also above consensus and our rate views are more hawkish than market pricing for most CEEMEA economies.
- In addition to being buffeted by global forces, country-specific factors are also playing a critical role in shaping the economic outlook for many CEEMEA economies, including: South Africa (where a power supply crisis is dragging on activity), Israel (domestic politics), Turkey (unorthodox monetary policy and earthquake), Russia (war and sanctions), Egypt (balance of payments crisis), and Hungary (relief from previous BoP concerns). These idiosyncratic factors have already driven a significant divergence in CEEMEA asset prices this year, and we expect their importance to persist through 2023.

## China's 'Zero-Covid' Exit: A Potential LatAm Entry Into Higher Growth Path

[China's 'Zero-Covid' Exit: A Potential LatAm Entry Into Higher Growth Path](#)

- **China Exits 'Zero-Covid Policy' and Refocuses Policy on Growth.** Since we published the LatAm 2023 Macro Outlook in mid-Nov 2022 the most important development across EM has been China's sudden exit from the long-standing zero-Covid policy in tandem with a strong policy and regulatory focus on supporting growth. Already underpinning the mid-Nov LatAm 2023 outlook was the underlying assumption of China's reopening in 2Q2023 and a firm outlook for commodity prices. As such, the recent developments represent to a certain extent a pull-forward by two quarters of China growth dynamics we were already anticipating.
- **China's Reopening Estimated to Have Moderate Impact Across LatAm.** A panel VAR model and Global Input-Output Matrix estimates point to a moderate/mild impact on regional growth. However, since the main mechanism of transmission to LatAm of higher growth in China is through commodity prices (price-effect dominates the volume-effect on exports) and as GS's commodity outlook was already structurally very constructive ahead of the two most recent upward revisions to growth in China, we are not at this stage revising the growth outlook for the LA7 economies. Our current forecasts for LatAm 2023 growth remain above-consensus. The recent developments in China support these forecasts and in some places ease some of the downside risks that have developed recently.
- **LatAm Less Leveraged to China Household Consumption Than GFI.** We underscore that our VAR model estimates of a (moderate) China reopening impact across LatAm are likely biased to the upside (overestimated Betas) because the reopening demand shock and targeted policy support to property/platform businesses are likely to impact disproportionately household consumption rather than investment spending, and within consumption the demand for services (mostly non-tradables) rather than goods (tradables). The bias arises from the fact that LatAm is more leveraged to Chinese investment spending and exports than to household consumption; and in consumption, certainly more leveraged to the consumption of goods rather than services (the main spillovers from services is via energy demand).

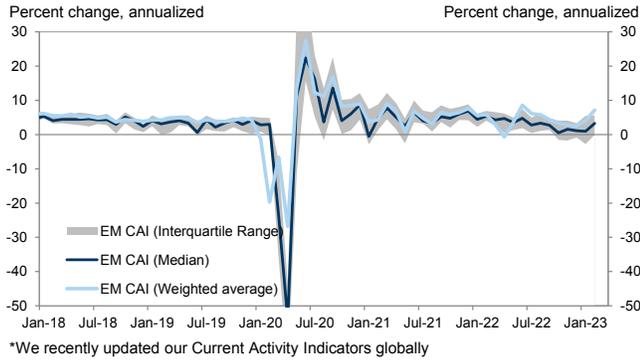
# LATAM Views: Broad Spectrum of Monetary Stances on Display—From Hawkish Holds to Dovish Hikes

[LATAM Views: Broad Spectrum of Monetary Stances on Display—From Hawkish Holds to Dovish Hikes \(Ramos\)](#)

- **1. Real Activity Has Been Softening.** Tighter domestic financial conditions, reduced slack (less room to grow given tight labor markets in several places, including Brazil and Mexico), and rapidly waning impulse from post-Covid activity normalization led to a significant deceleration of real GDP growth in LatAm during 4Q2022, particularly among the largest economies. The LA6 CAIs have been tracking in slightly negative territory since Oct-22. Real GDP is forecasted to have contracted in Argentina during 4Q2022 under the weight of very high inflation and growing micro and macro distortions, decelerated to around zero in Brazil, downshifted significantly in Peru (impacted by rising political and social noise), and more than halved to a below-trend pace in Mexico (from 0.9% qoq sa in 3Q2022 to 0.4% qoq sa in the 4Q2022). Chile provides the exception to the broader trend: real activity firmed in Q4, though from a very weak Q3, with a noticeable contribution from mining.
- **2. China’s Early Reopening Cushioning the LatAm Growth Outlook.** One of the most important recent developments across EM has been China’s sudden exit from the zero-Covid policy in tandem with a policy and regulatory focus on supporting growth. Underpinning the mid-Nov LatAm 2023 outlook was the assumption of China’s reopening in 2Q2023 and a firm outlook for commodity prices. Hence, the recent developments represent a pull-forward of China growth dynamics we were already anticipating. A panel VAR model and Global Input-Output Matrix estimates point to a moderate/mild impact on regional growth from the recent consumption/services skewed China growth revisions. Since the main mechanism of transmission to LatAm of higher growth in China is through commodity prices (price-effect dominates the volume-effect on exports) and as GS’s commodity outlook was already structurally very constructive ahead of the recent upward revisions to growth in China, we remain confident with our 2023 above-consensus growth forecasts. The recent developments in China and Europe support these forecasts and, in some places, eased downside risks that have developed recently (e.g., Peru and Colombia).
- **3. Inflation: Up by the Escalator Down by the Stairs.** Inflationary pressures across LatAm remain highly disseminated. Apart from Colombia, headline inflation is now descending from multi-year peaks reached during 2H2022. However, progress on core and services inflation has been much slower, as expected, given the drivers of the business cycle recovery and the usual downward stickiness of core prices. Core inflation reached in January fresh cyclical highs in Colombia and Peru and reaccelerated in Mexico. Headline and core surprised significantly to the upside in Chile. High double-digit wage pressures in places such as Chile and Mexico and tight labor markets (e.g., Brazil, Mexico) underpin our view of slow convergence of inflation to the targets.

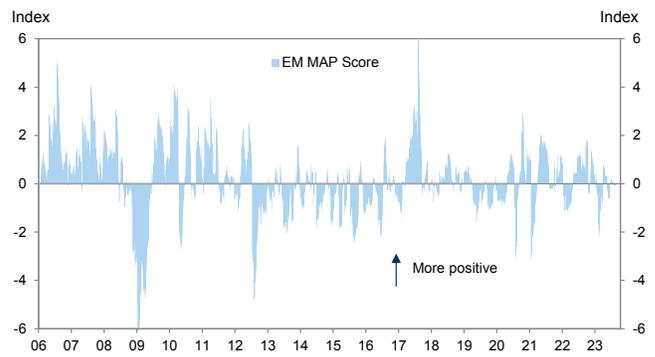
# EM Chartpack

**Exhibit 8: EM Current Activity Indicator**



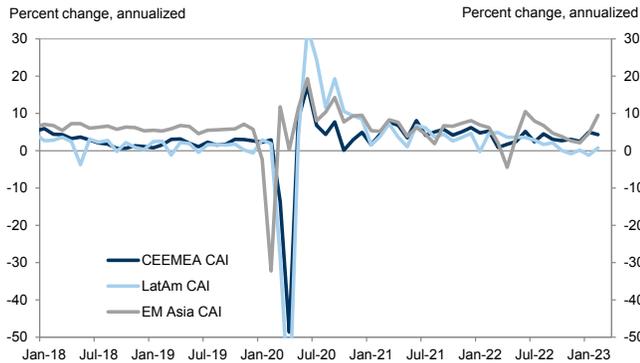
Source: Goldman Sachs Global Investment Research

**Exhibit 9: EM Growth Surprises**



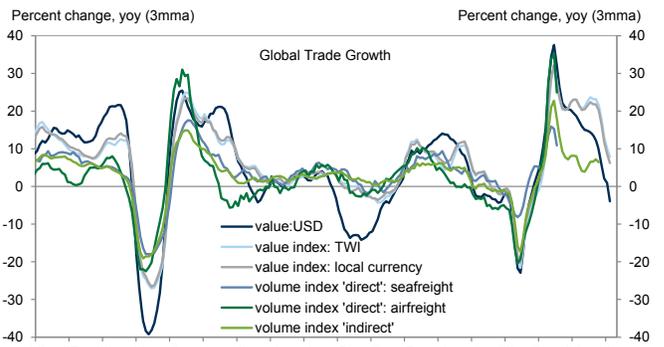
Source: Goldman Sachs Global Investment Research

**Exhibit 10: EM Regional CAIs**



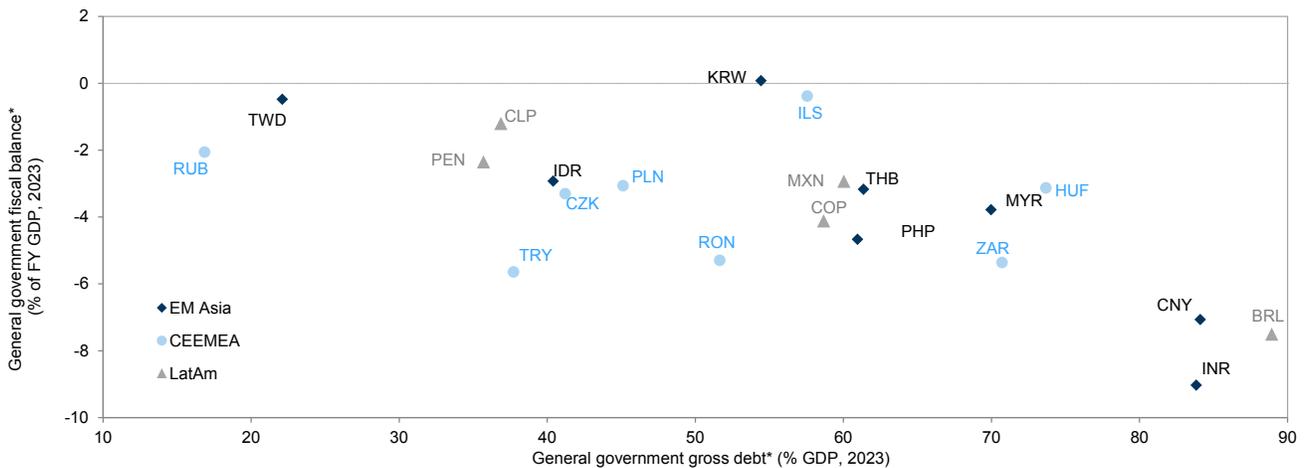
Source: Goldman Sachs Global Investment Research

**Exhibit 11: Global Trade Growth**



Source: CPB World Trade Monitor, Haver Analytics, Goldman Sachs Global Investment Research

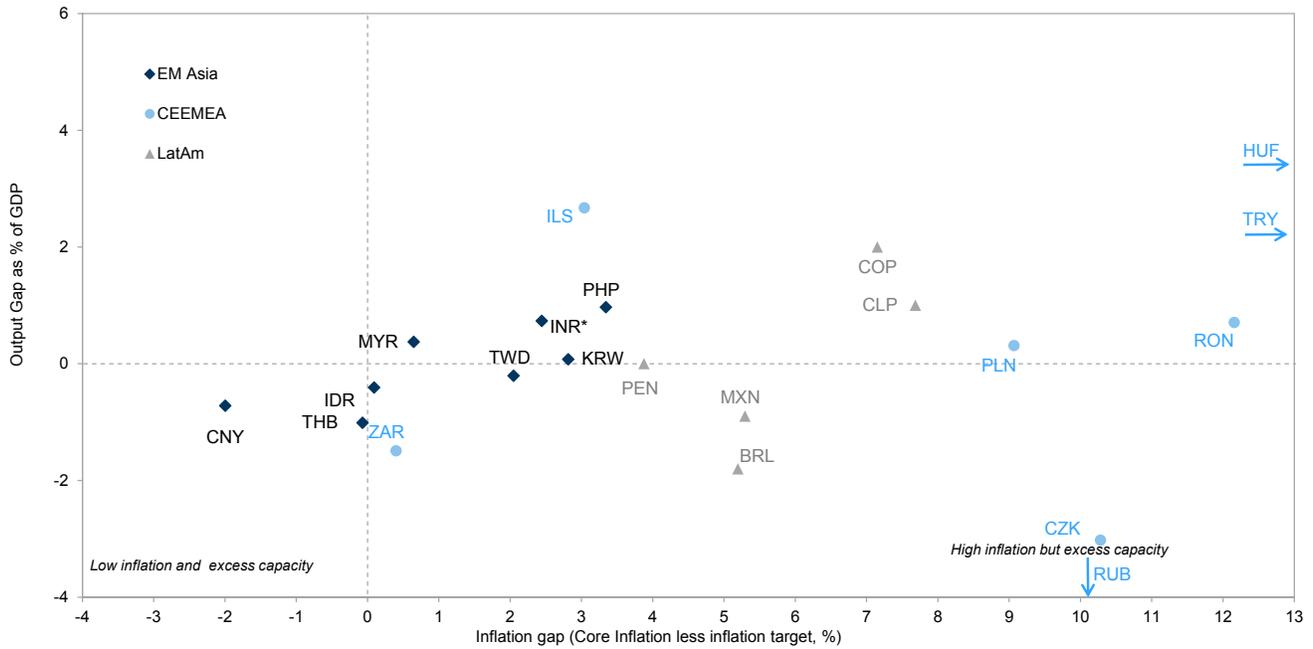
**Exhibit 12: EM Government Debt/Deficits**



\*General government fiscal balance and general government debt based on October IMF estimations;  
China general government balance based on GS estimates of China effective on-budget fiscal balance and government special bond issuance in 2023

Source: IMF, Goldman Sachs Global Investment Research

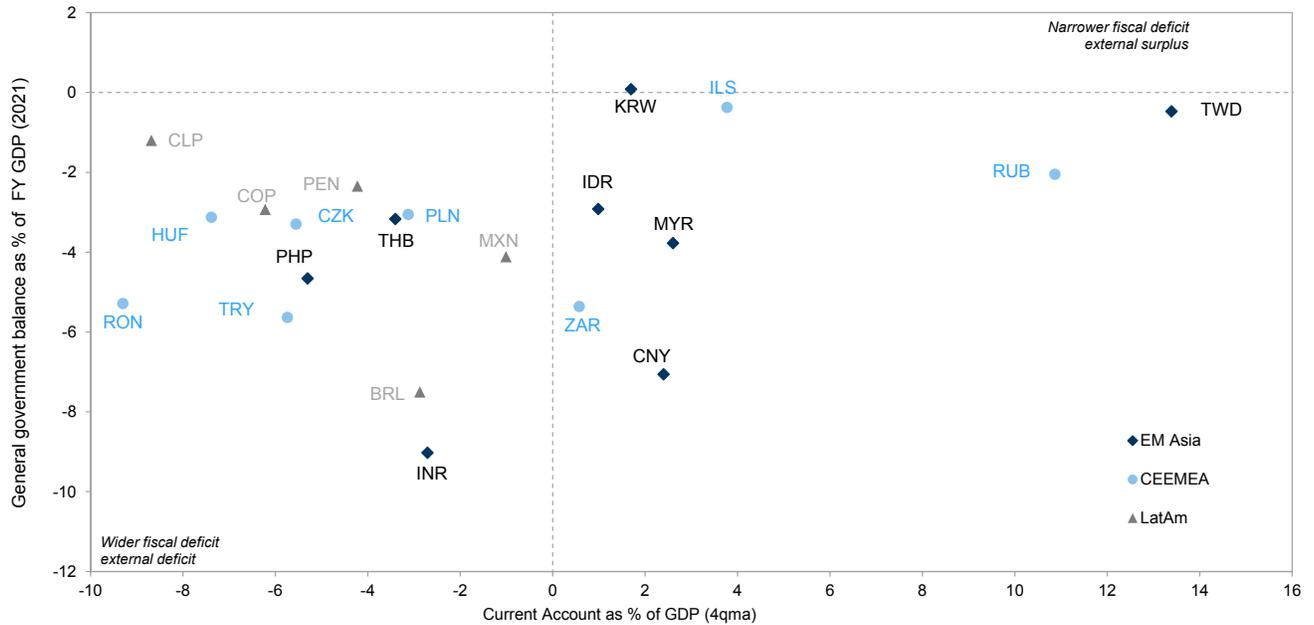
Exhibit 13: EM Output Gap vs Inflation Gap



Note: China inflation target of 3% more like a ceiling in practice; we use target of 2.25% here.  
 Output gap is calculated based on latest GDP release  
 \*Headline CPI used for India inflation gap

Source: Haver Analytics, Goldman Sachs Global Investment Research

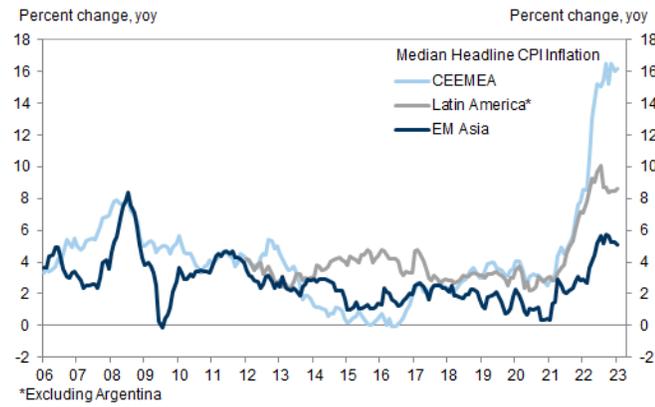
Exhibit 14: EM Fiscal vs External Balance



Notes: Fiscal year for Thailand ends in September.  
 China general government balance based on GS estimates of China effective on-budget fiscal balance and government special bond issuance in 2021

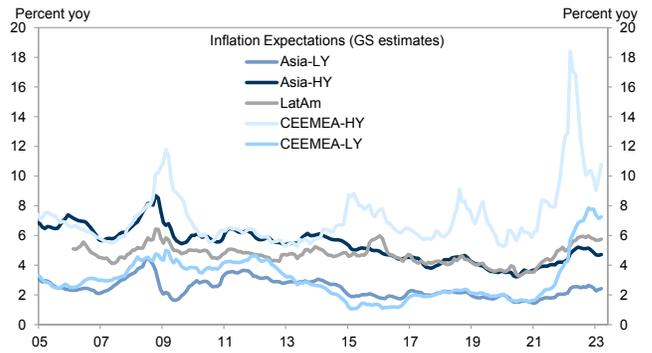
Source: Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 15: EM Inflation by Region**



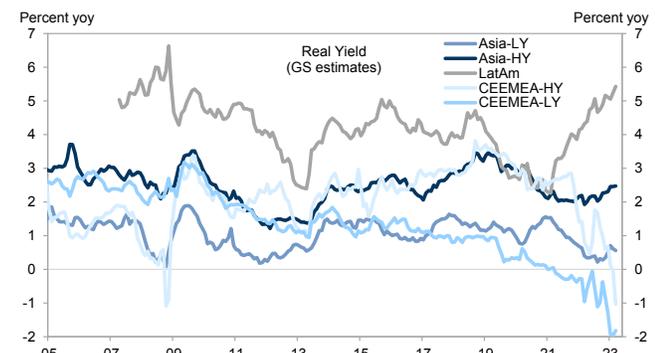
Source: Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 16: EM Inflation Expectations**



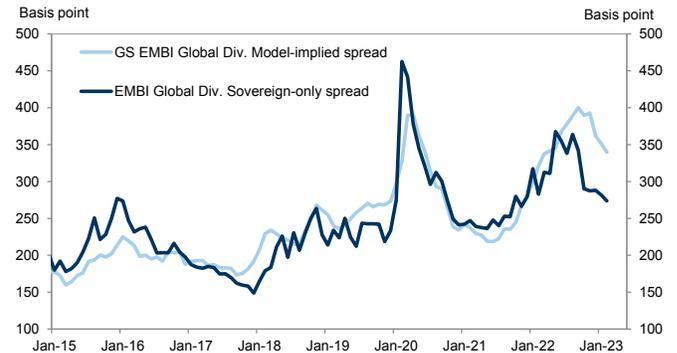
Source: Goldman Sachs Global Investment Research

**Exhibit 17: EM Real Yields**



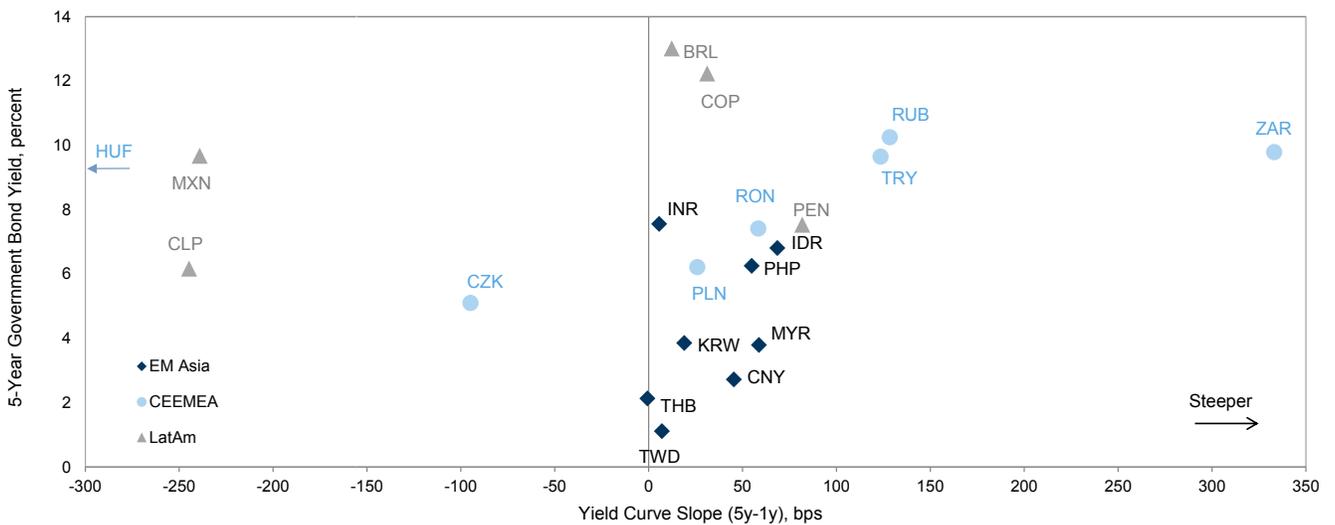
Source: Goldman Sachs Global Investment Research

**Exhibit 18: Sovereign Bond Spreads**



Source: Goldman Sachs Global Investment Research, Datastream

**Exhibit 19: EM Yield Curves**



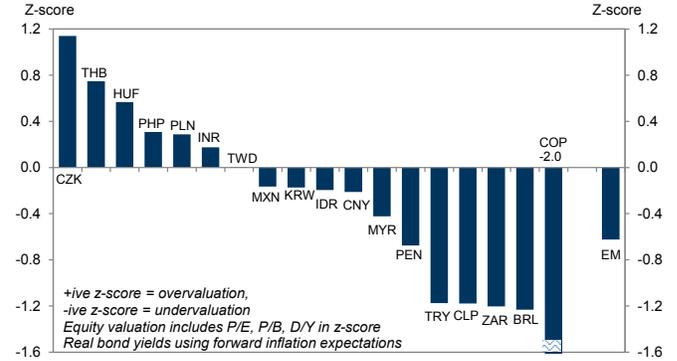
Source: Goldman Sachs Global Investment Research

Exhibit 20: EM Financial Conditions



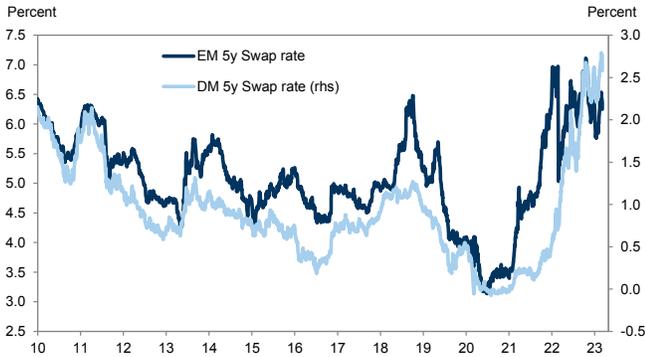
Source: Goldman Sachs Global Investment Research

Exhibit 21: EM Cross Asset Valuation



Source: FactSet, Datastream, Goldman Sachs Global Investment Research

Exhibit 22: EM Swap Rates



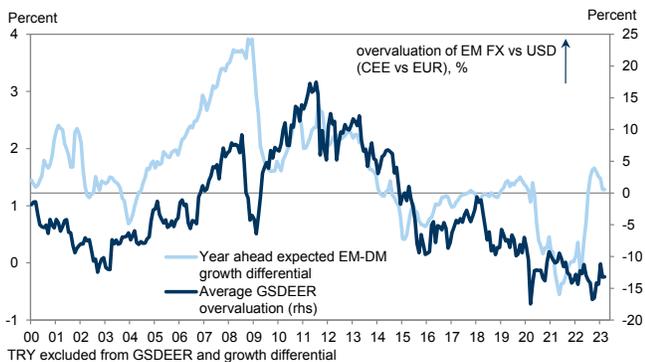
Source: Goldman Sachs Global Investment Research

Exhibit 23: High-Yield Credit Spreads



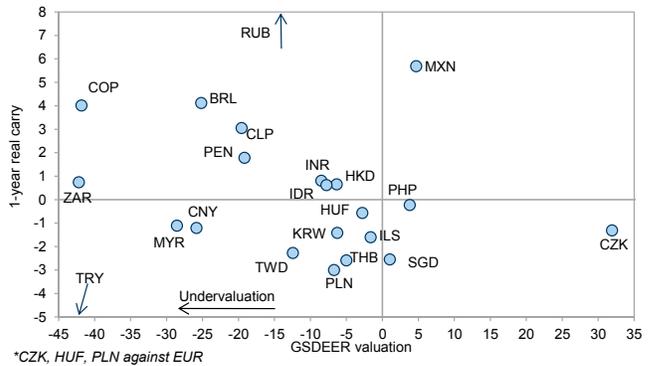
Source: Goldman Sachs Global Investment Research, Datastream, ICE-BAML

Exhibit 24: EM FX Valuation



Source: Consensus Economics, Goldman Sachs Global Investment Research

Exhibit 25: EM FX Carry vs. Valuation

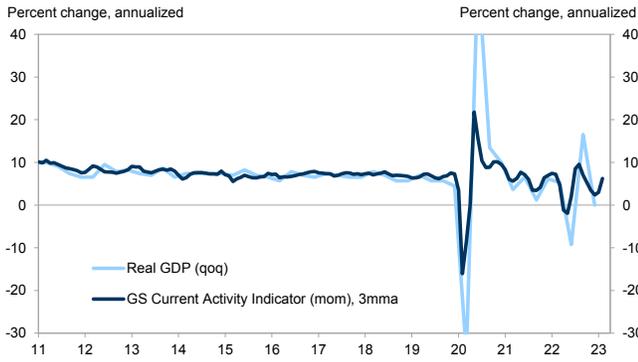


Source: Consensus Economics, Goldman Sachs Global Investment Research

For the exclusive use of GIULIA.LORIA@COMMUNITY.IT

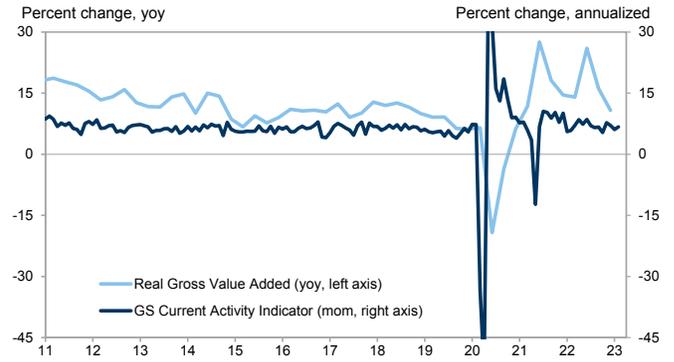
# Data Monitor – EM Asia

**Exhibit 26: China Activity Growth**



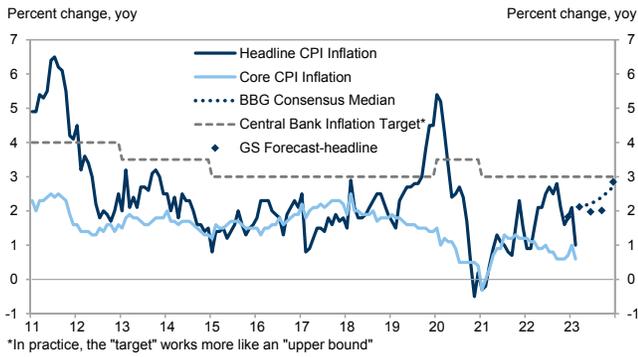
Source: Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 27: India Activity Growth**



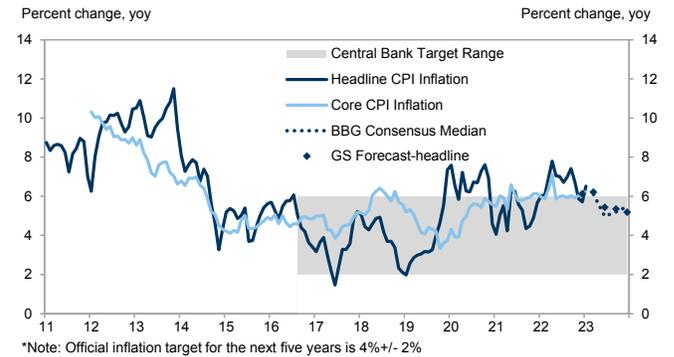
Source: Haver Analytics, CEIC, Goldman Sachs Global Investment Research

**Exhibit 28: China Inflation**



Source: Goldman Sachs Global Investment Research, Bloomberg, PBOC

**Exhibit 29: India Inflation**



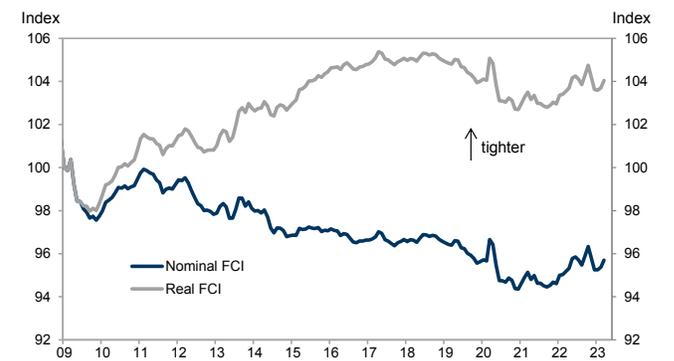
Source: Goldman Sachs Global Investment Research, Haver Analytics, Bloomberg, RBI

**Exhibit 30: China Financial Conditions**



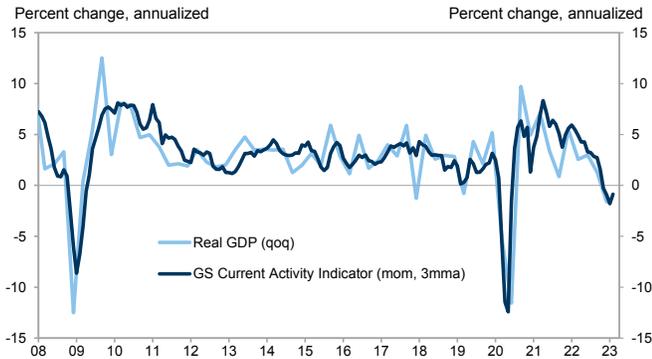
Source: Goldman Sachs Global Investment Research

**Exhibit 31: India Financial Conditions**



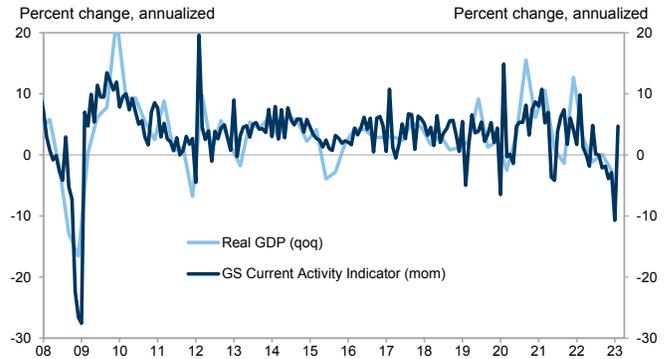
Source: Goldman Sachs Global Investment Research

**Exhibit 32: Korea Activity Growth**



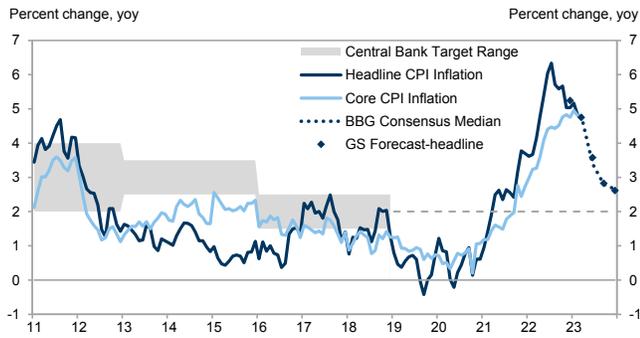
Source: Goldman Sachs Global Investment Research, Haver Analytics, CEIC

**Exhibit 33: Taiwan Activity Growth**



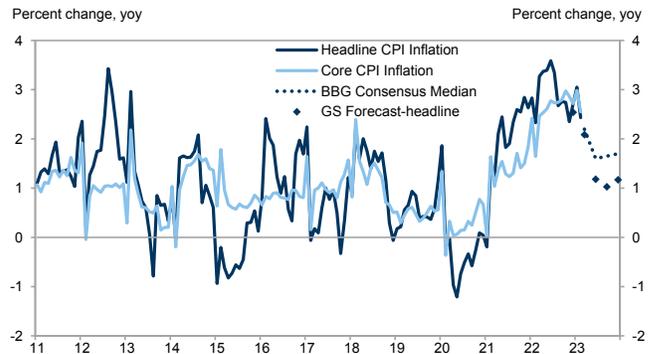
Source: Goldman Sachs Global Investment Research, Haver Analytics, CEIC

**Exhibit 34: Korea Inflation**



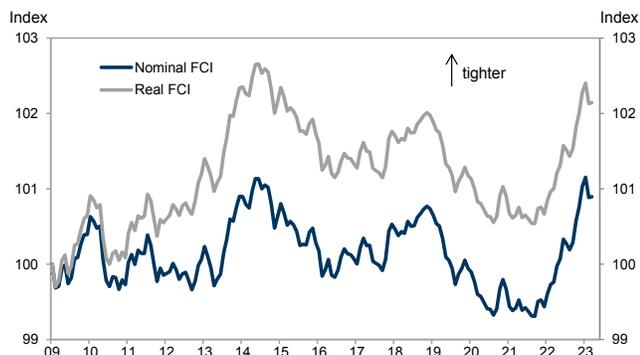
Source: Goldman Sachs Global Investment Research, Haver Analytics, Bloomberg, BOK

**Exhibit 35: Taiwan Inflation**



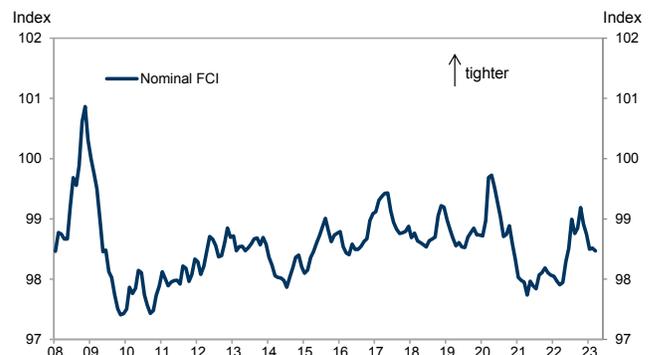
Source: Goldman Sachs Global Investment Research, Haver Analytics, Bloomberg

**Exhibit 36: Korea Financial Conditions**



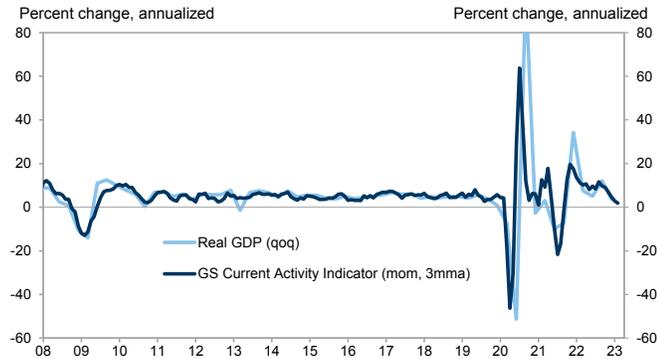
Source: Goldman Sachs Global Investment Research

**Exhibit 37: Taiwan Financial Conditions**



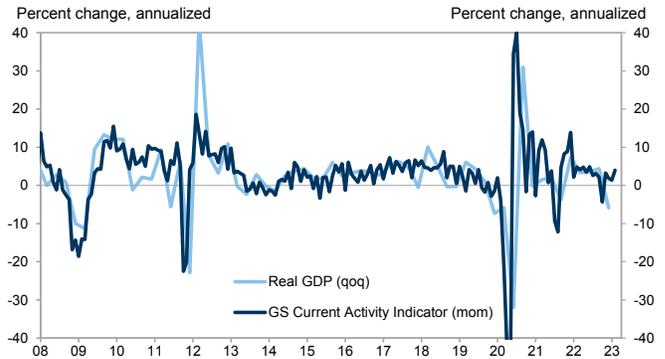
Source: Goldman Sachs Global Investment Research

**Exhibit 38: Malaysia Activity Growth**



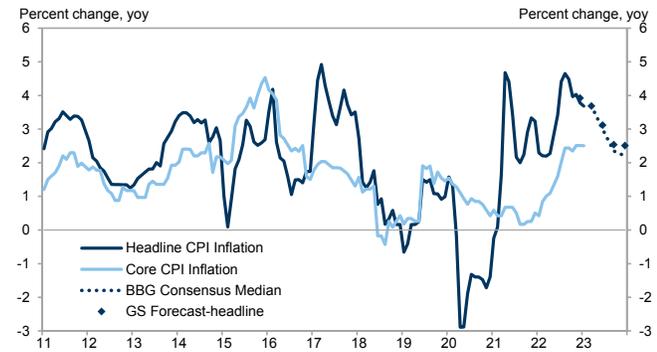
Source: Goldman Sachs Global Investment Research, Haver Analytics, CEIC

**Exhibit 39: Thailand Activity Growth**



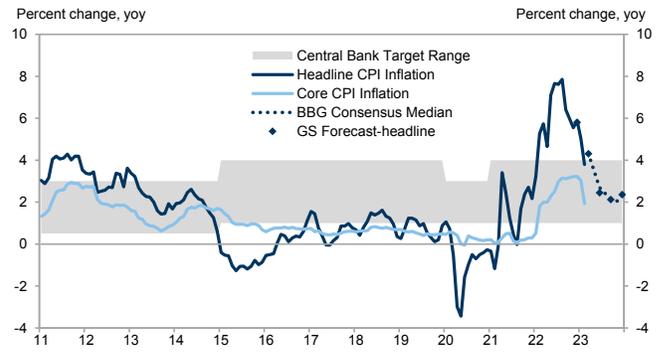
Source: Goldman Sachs Global Investment Research, Haver Analytics, CEIC

**Exhibit 40: Malaysia Inflation**



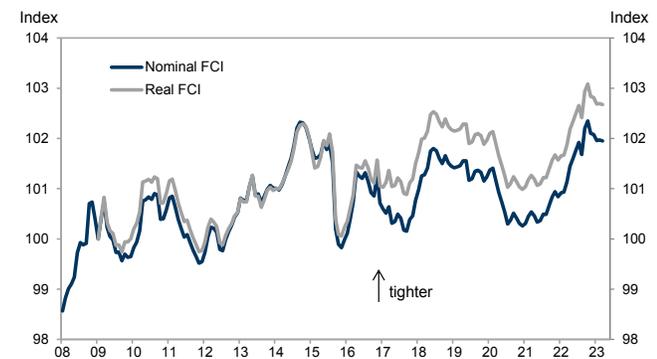
Source: Goldman Sachs Global Investment Research, Haver Analytics, Bloomberg

**Exhibit 41: Thailand Inflation**



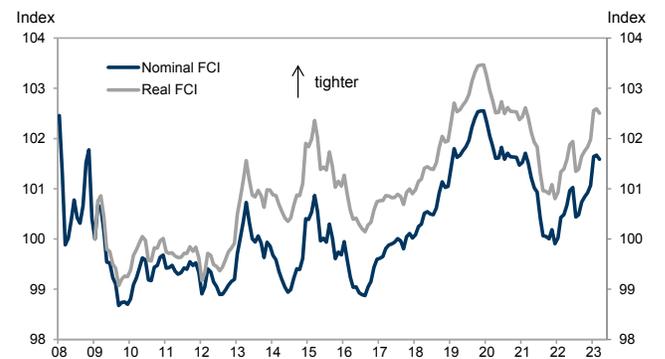
Source: Goldman Sachs Global Investment Research, Haver Analytics, Bloomberg, BOT

**Exhibit 42: Malaysia Financial Conditions**



Source: Goldman Sachs Global Investment Research

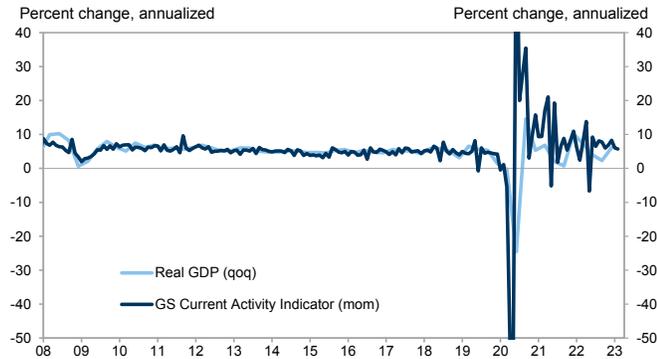
**Exhibit 43: Thailand Financial Conditions**



Source: Goldman Sachs Global Investment Research

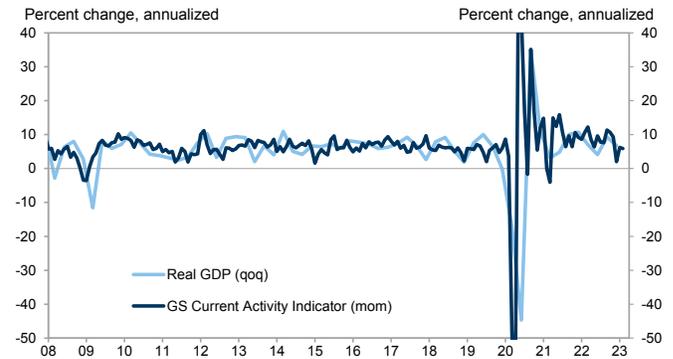
For the exclusive use of GIULIA.LORIA@COMMUNITY.IT

**Exhibit 44: Indonesia Activity Growth**



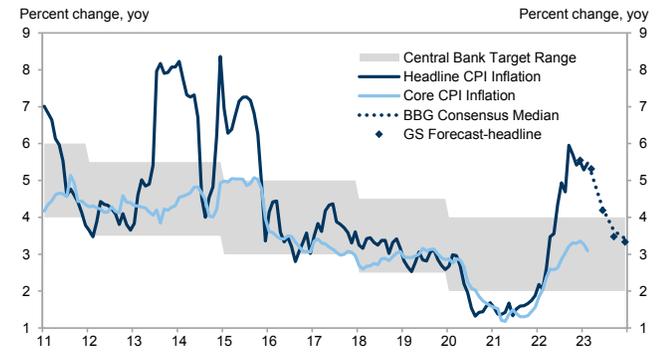
Source: Goldman Sachs Global Investment Research, Haver Analytics, CEIC

**Exhibit 45: Philippines Activity Growth**



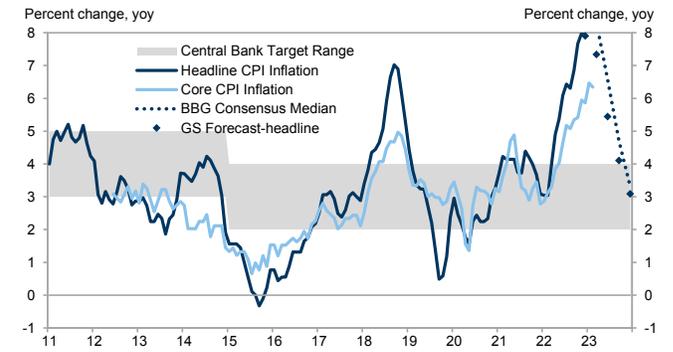
Source: Goldman Sachs Global Investment Research, Haver Analytics, CEIC

**Exhibit 46: Indonesia Inflation**



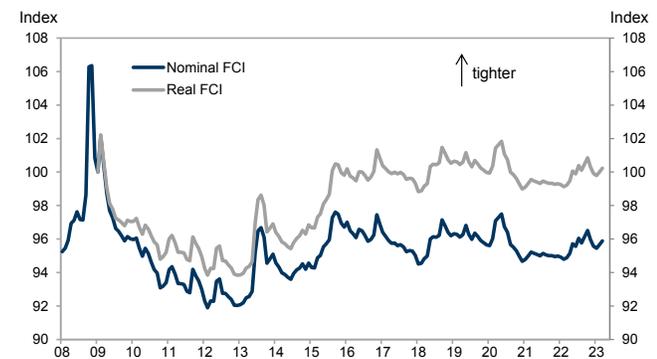
Source: Goldman Sachs Global Investment Research, Haver Analytics, Bloomberg, BI

**Exhibit 47: Philippines Inflation**



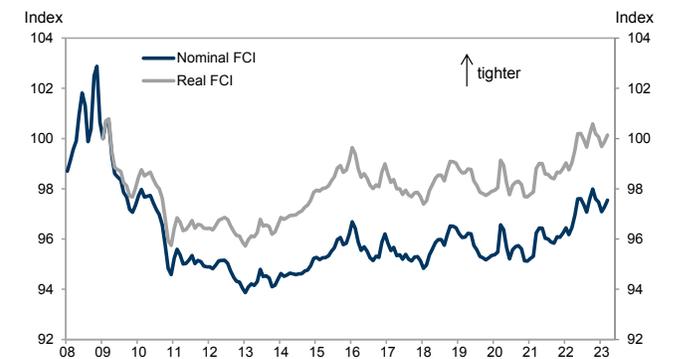
Source: Goldman Sachs Global Investment Research, Haver Analytics, Bloomberg, BSP

**Exhibit 48: Indonesia Financial Conditions**



Source: Goldman Sachs Global Investment Research

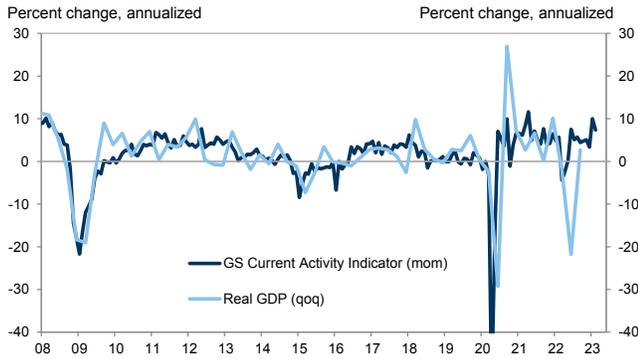
**Exhibit 49: Philippines Financial Conditions**



Source: Goldman Sachs Global Investment Research

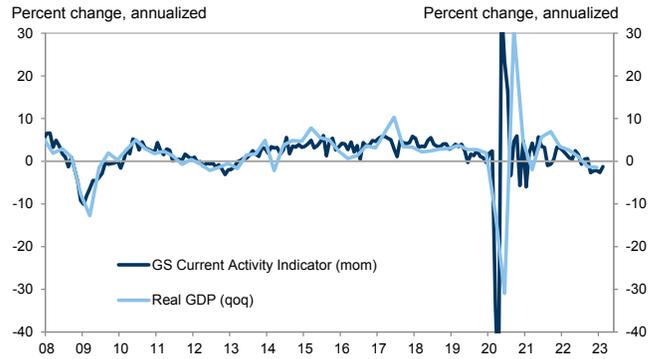
# Data Monitor – CEEMEA

**Exhibit 50: Russia Activity Growth**



Source: Goldman Sachs Global Investment Research

**Exhibit 51: Czech Republic Activity Growth**



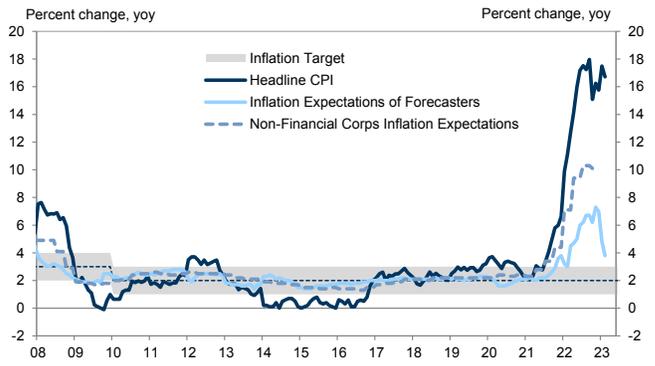
Source: Goldman Sachs Global Investment Research

**Exhibit 52: Russia Inflation**



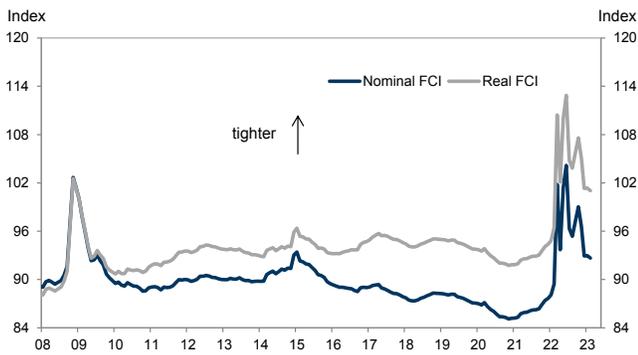
Source: Goldman Sachs Global Investment Research, Haver Analytics

**Exhibit 53: Czech Republic Inflation**



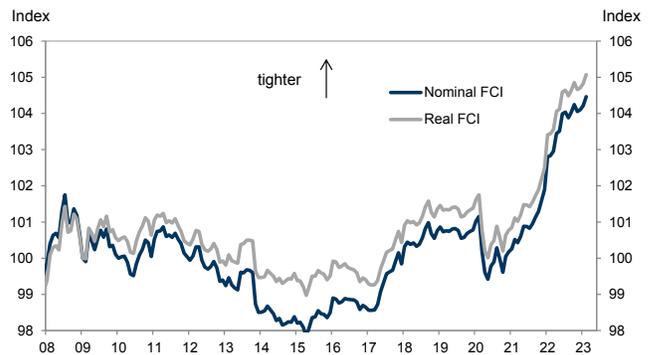
Source: Goldman Sachs Global Investment Research, Haver Analytics

**Exhibit 54: Russia Financial Conditions**



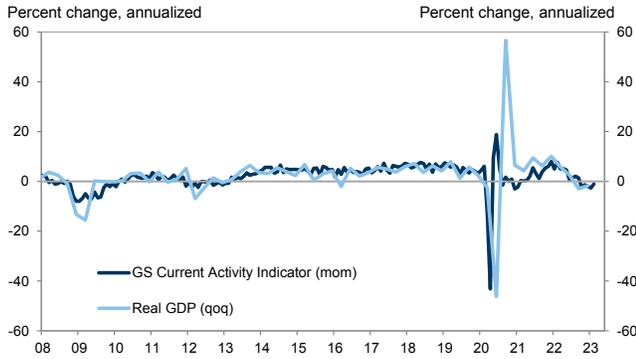
Source: Goldman Sachs Global Investment Research

**Exhibit 55: Czech Republic Financial Conditions**



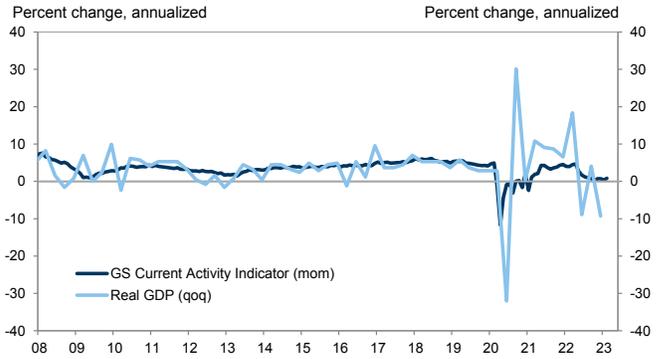
Source: Goldman Sachs Global Investment Research

**Exhibit 56: Hungary Activity Growth**



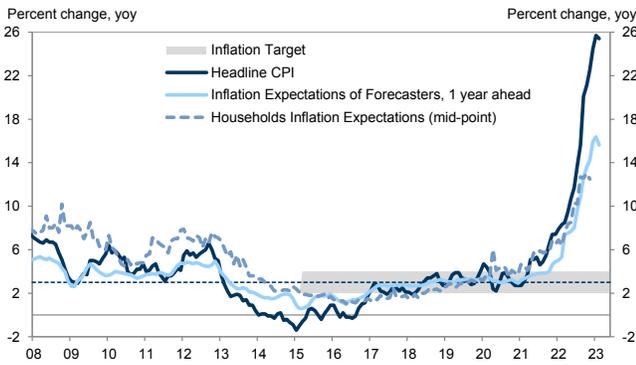
Source: Goldman Sachs Global Investment Research

**Exhibit 57: Poland Activity Growth**



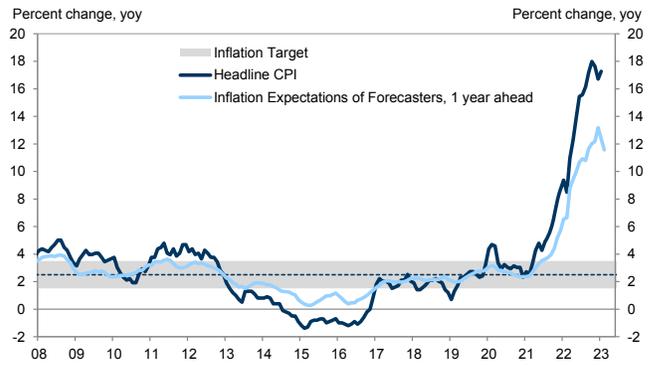
Source: Goldman Sachs Global Investment Research

**Exhibit 58: Hungary Inflation**



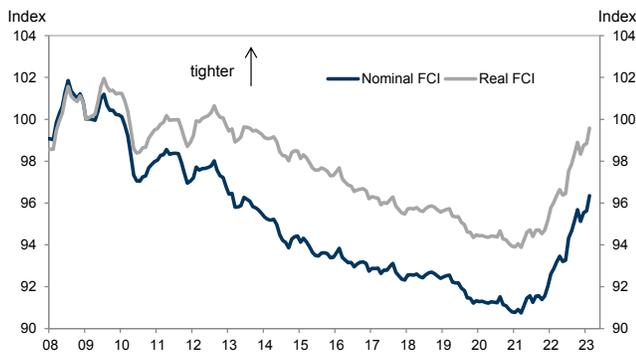
Source: Goldman Sachs Global Investment Research, Haver Analytics

**Exhibit 59: Poland Inflation**



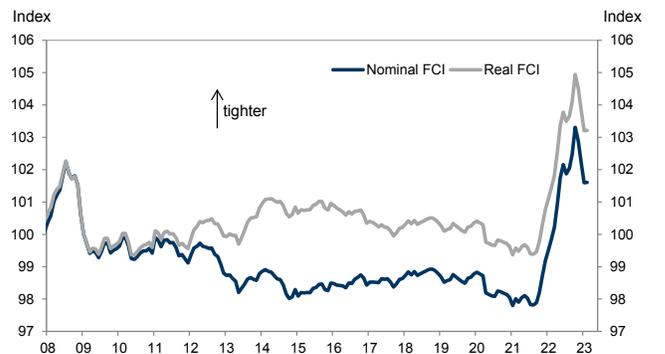
Source: Goldman Sachs Global Investment Research, Haver Analytics

**Exhibit 60: Hungary Financial Conditions**



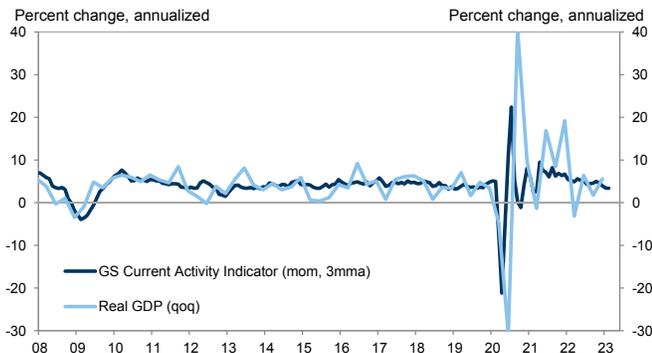
Source: Goldman Sachs Global Investment Research

**Exhibit 61: Poland Financial Conditions**



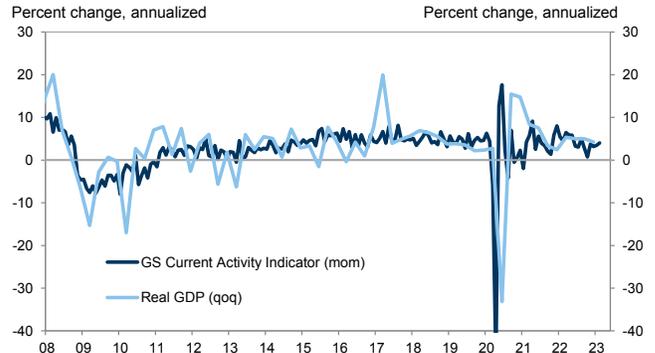
Source: Goldman Sachs Global Investment Research

**Exhibit 62: Israel Activity Growth**



Source: Goldman Sachs Global Investment Research

**Exhibit 63: Romania Activity Growth**



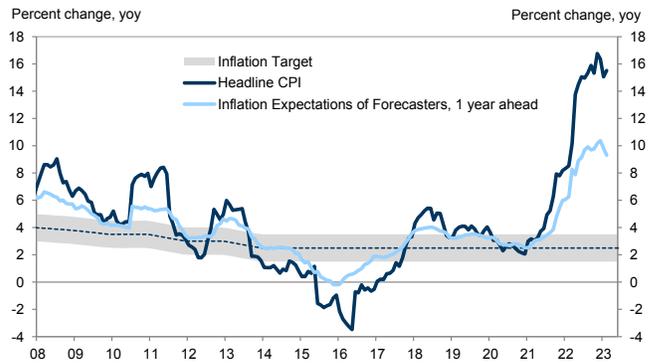
Source: Goldman Sachs Global Investment Research

**Exhibit 64: Israel Inflation**



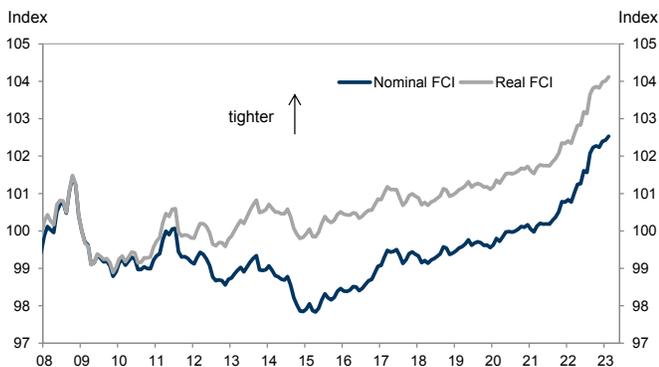
Source: Goldman Sachs Global Investment Research, Haver Analytics

**Exhibit 65: Romania Inflation**



Source: Goldman Sachs Global Investment Research, Haver Analytics

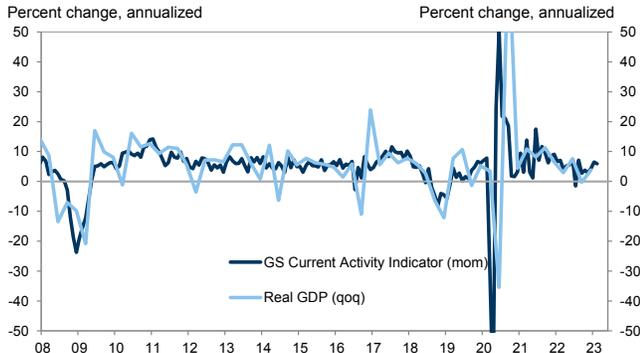
**Exhibit 66: Israel Financial Conditions**



Source: Goldman Sachs Global Investment Research

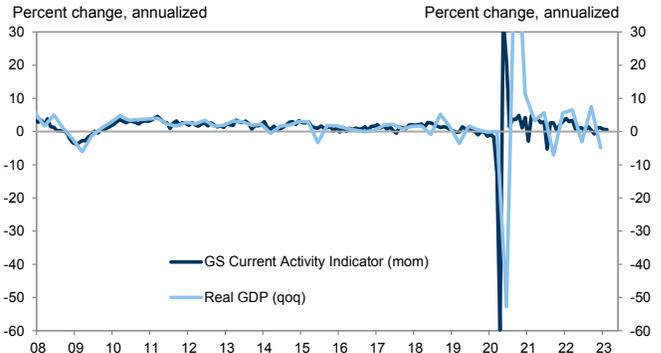
For the exclusive use of GIULIA.LORIA@COMMUNITY.IT

**Exhibit 67: Turkey Activity Growth**



Source: Goldman Sachs Global Investment Research

**Exhibit 68: South Africa Activity Growth**



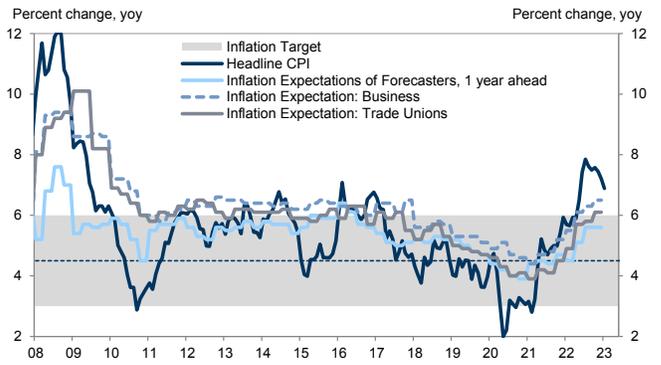
Source: Goldman Sachs Global Investment Research

**Exhibit 69: Turkey Inflation**



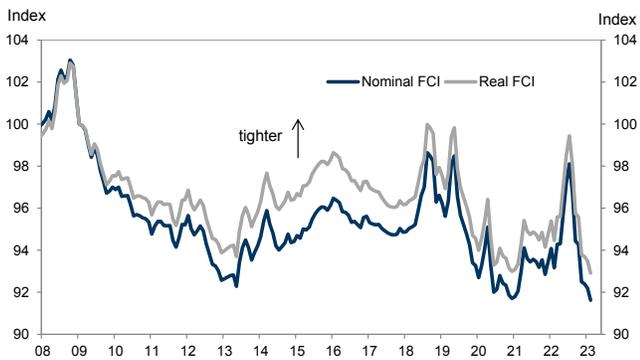
Source: Goldman Sachs Global Investment Research, Haver Analytics

**Exhibit 70: South Africa Inflation**



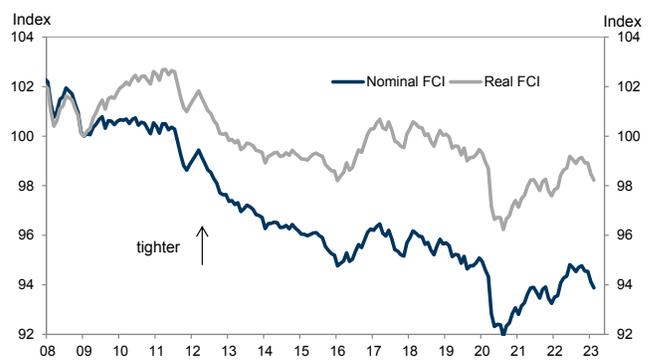
Source: Goldman Sachs Global Investment Research, Haver Analytics

**Exhibit 71: Turkey Financial Conditions**



Source: Goldman Sachs Global Investment Research

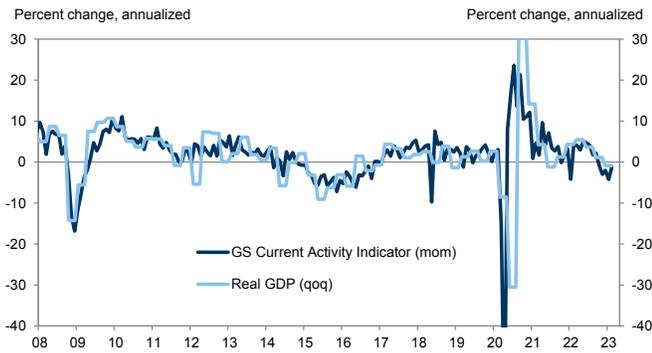
**Exhibit 72: South Africa Financial Conditions**



Source: Goldman Sachs Global Investment Research

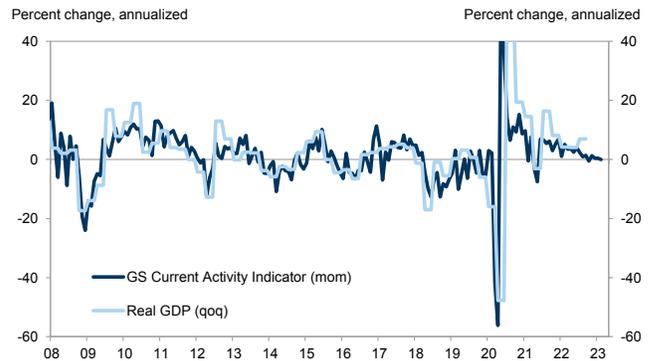
# Data Monitor – LatAm

**Exhibit 73: Brazil Activity Growth**



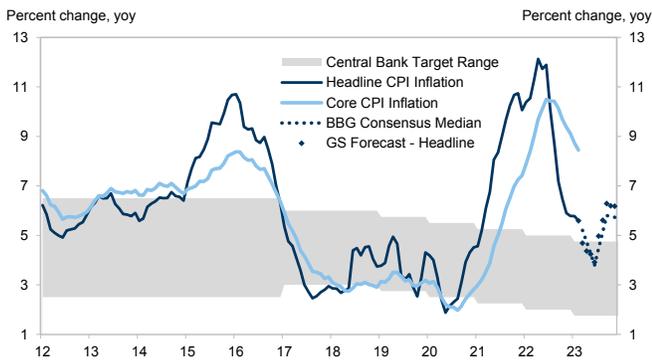
Source: Goldman Sachs Global Investment Research

**Exhibit 74: Argentina Activity Growth**



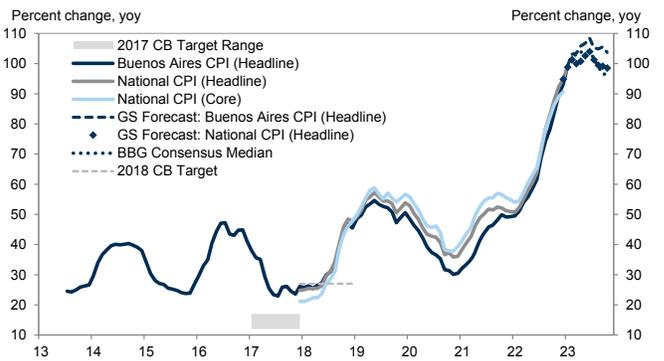
Source: Goldman Sachs Global Investment Research

**Exhibit 75: Brazil Inflation**



Source: Bloomberg, Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 76: Argentina Inflation**



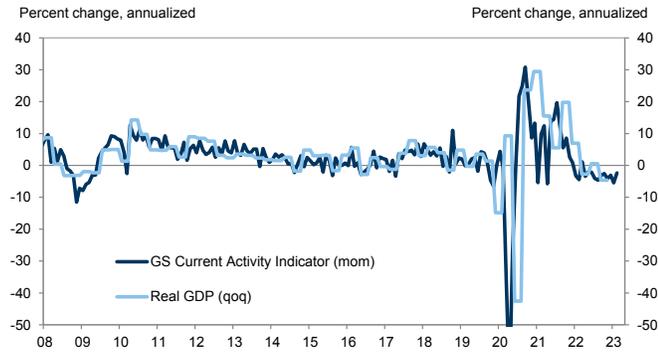
Source: Bloomberg, Goldman Sachs Global Investment Research

**Exhibit 77: Brazil Financial Conditions**



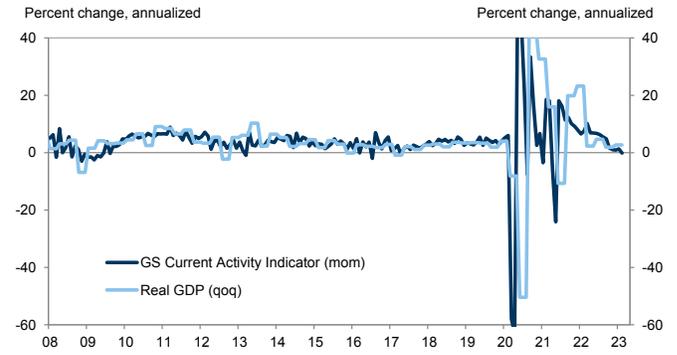
Source: Goldman Sachs Global Investment Research

**Exhibit 78: Chile Activity Growth**



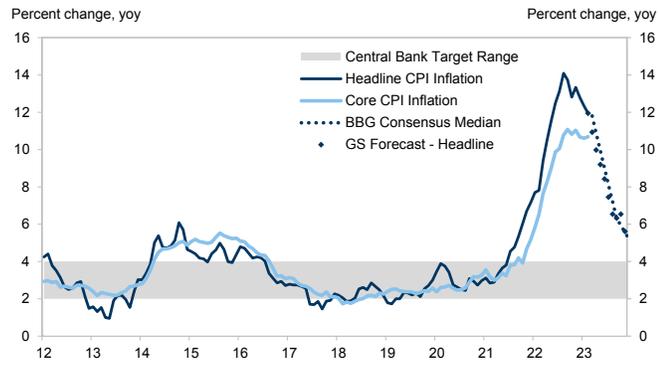
Source: Goldman Sachs Global Investment Research

**Exhibit 79: Colombia Activity Growth**



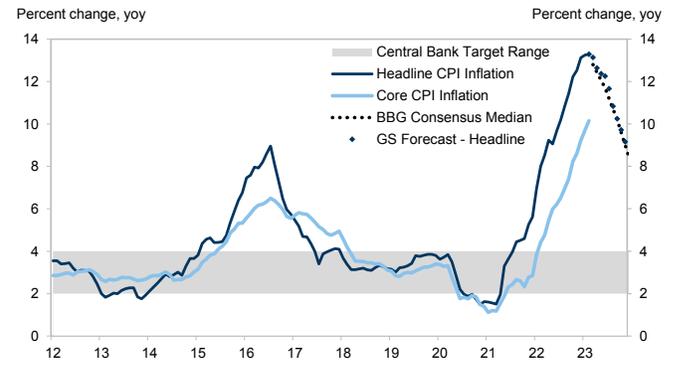
Source: Goldman Sachs Global Investment Research

**Exhibit 80: Chile Inflation**



Source: Haver Analytics, Goldman Sachs Global Investment Research, Bloomberg

**Exhibit 81: Colombia Inflation**



Source: Haver Analytics, Goldman Sachs Global Investment Research, Bloomberg

**Exhibit 82: Chile Financial Conditions**



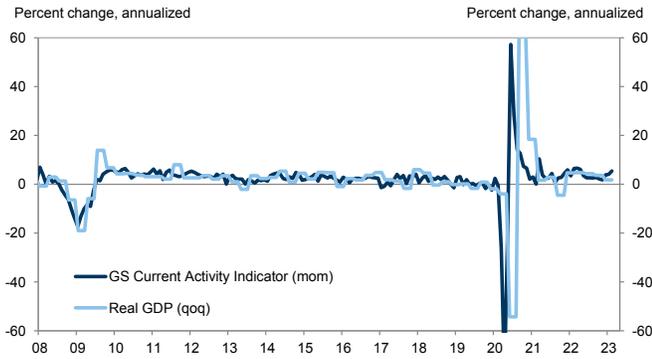
Source: Goldman Sachs Global Investment Research

**Exhibit 83: Colombia Financial Conditions**



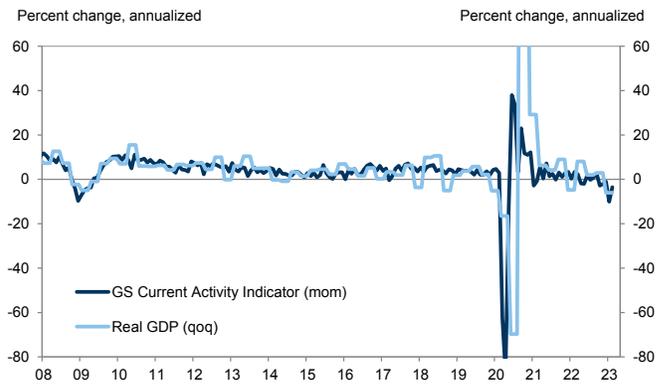
Source: Goldman Sachs Global Investment Research

**Exhibit 84: Mexico Activity Growth**



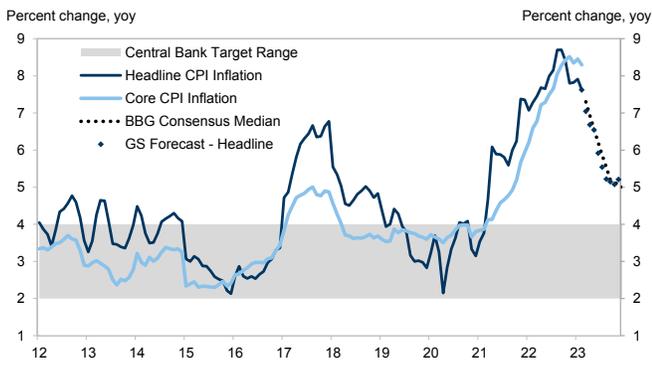
Source: Goldman Sachs Global Investment Research

**Exhibit 85: Peru Activity Growth**



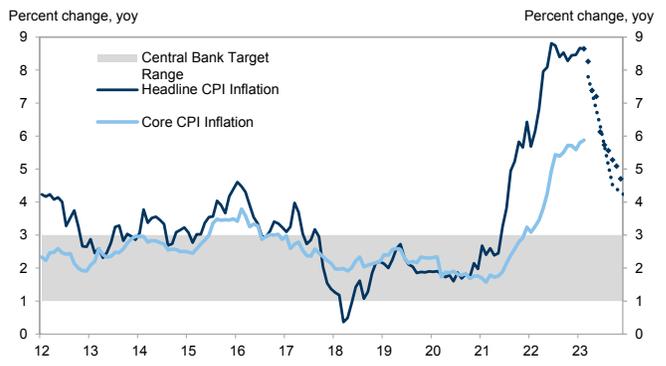
Source: Goldman Sachs Global Investment Research

**Exhibit 86: Mexico Inflation**



Source: Haver Analytics, Goldman Sachs Global Investment Research, Bloomberg

**Exhibit 87: Peru Inflation**



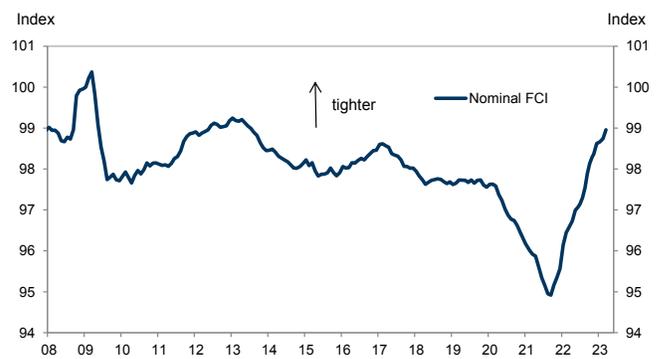
Source: Haver Analytics, Goldman Sachs Global Investment Research

**Exhibit 88: Mexico Financial Conditions**



Source: Goldman Sachs Global Investment Research

**Exhibit 89: Peru Financial Conditions**



Source: Goldman Sachs Global Investment Research

# Goldman Sachs EM Macro Research Team



## ECONOMICS

### Latin America

Alberto Ramos  
Sergio Armella  
Santiago Tellez  
Renan Muta

### CEEMEA

Kevin Daly  
Clemens Grafe  
Andrew Matheny  
Farouk Soussa  
Tadas Gedminas  
Bojosi Morule  
Basak Edizgil

### Asia ex-Japan

Andrew Tilton  
Goohoon Kwon  
Hui Shan  
Danny Suwanapruti  
Irene Choi  
Santanu Sengupta  
Jonathan Sequeira  
Lisheng Wang  
Maggie Wei  
Xinquan Chen  
Rina Jio  
Deepak Narendranath  
Yuting Yang



## MARKETS

### EM Strategy

Kamakshya Trivedi  
Caesar Maasry  
Nathan Fabius  
Sara Grut  
Ian Tomb  
Davide Crosilla  
Teresa Alves  
Jolene Zhong

### Equity Strategy (Asia ex-Japan)

Timothy Moe  
Kinger Lau  
Si Fu  
Sunil Koul  
Alvin So  
John Kwon  
Amorita Goel  
Kevin Wang

### Credit Strategy (Asia ex-Japan)

Kenneth Ho  
Chakki Ting

### Commodities

Jeffrey Currie  
Samantha Dart  
Nicholas Snowdon  
Daan Struyven  
Callum Bruce  
Sabine Schels  
Yulia Grigsby  
Romain Langlois  
Daniel Sharp  
Hongcen Wei  
Aditi Rai  
Annalisa Schiavon

# Disclosure Appendix

## Reg AC

We, Andrew Tilton, Kamakshya Trivedi, Kevin Daly, Gooheon Kwon, CFA, Alberto Ramos, Hui Shan, Danny Suwanapruti and Tadas Gedminas, 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.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

## Disclosures

### Regulatory disclosures

#### Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; for equity securities, market making and/or specialist role. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage.

**Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with subject company, public appearances and trading securities held by the analysts.

#### Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of Global Investment Research of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Brazil:** Disclosure information in relation to CVM Resolution n. 20 is available at <https://www.gs.com/worldwide/brazil/area/gir/index.html>. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** This information is being provided to you for information purposes only and is not, and under no circumstances should be construed as, an advertisement, offering or solicitation by Goldman Sachs & Co. LLC for purchasers of securities in Canada to trade in any Canadian security. Goldman Sachs & Co. LLC is not registered as a dealer in any jurisdiction in Canada under applicable Canadian securities laws and generally is not permitted to trade in Canadian securities and may be prohibited from selling certain securities and products in certain jurisdictions in Canada. If you wish to trade in any Canadian securities or other products in Canada please contact Goldman Sachs Canada Inc., an affiliate of The Goldman Sachs Group Inc., or another registered Canadian dealer. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 951-A, Rational House, Appasaheb Marathe Marg, Prabhadevi, Mumbai 400 025, India, Corporate Identity Number U714140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. **Japan:** See below. **Korea:** This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New Zealand:** Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: <https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html>. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. **Singapore:** Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

**European Union and United Kingdom:** Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment

recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at <https://www.gs.com/disclosures/europeanpolicy.html> which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

**Japan:** Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan Type II Financial Instruments Firms Association, The Investment Trusts Association, Japan, and Japan Investment Advisers Association. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

## Global product; distributing entities

Goldman Sachs Global Investment Research produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or [contatogoldmanbrasil@gs.com](mailto:contatogoldmanbrasil@gs.com). Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou [contatogoldmanbrasil@gs.com](mailto:contatogoldmanbrasil@gs.com). Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165VV); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

**European Economic Area:** GSI, authorised by the PRA and regulated by the FCA and the PRA, disseminates research in the following jurisdictions within the European Economic Area: the Grand Duchy of Luxembourg, Italy, the Kingdom of Belgium, the Kingdom of Denmark, the Kingdom of Norway, the Republic of Finland and the Republic of Ireland; GSI - Succursale de Paris (Paris branch) which is authorised by the French Autorité de contrôle prudentiel et de résolution ("ACPR") and regulated by the Autorité de contrôle prudentiel et de résolution and the Autorité des marchés financiers ("AMF") disseminates research in France; GSI - Sucursal en España (Madrid branch) authorized in Spain by the Comisión Nacional del Mercado de Valores disseminates research in the Kingdom of Spain; GSI - Sweden Bankfilial (Stockholm branch) is authorized by the SFSA as a "third country branch" in accordance with Chapter 4, Section 4 of the Swedish Securities and Market Act (Sw. lag (2007:528) om värdepappersmarknaden) disseminates research in the Kingdom of Sweden; Goldman Sachs Bank Europe SE ("GSBE") is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research in the Federal Republic of Germany and those jurisdictions within the European Economic Area where GSI is not authorised to disseminate research and additionally, GSBE, Copenhagen Branch filial af GSBE, Tyskland, supervised by the Danish Financial Authority disseminates research in the Kingdom of Denmark; GSBE - Sucursal en España (Madrid branch) subject (to a limited extent) to local supervision by the Bank of Spain disseminates research in the Kingdom of Spain; GSBE - Succursale Italia (Milan branch) to the relevant applicable extent, subject to local supervision by the Bank of Italy (Banca d'Italia) and the Italian Companies and Exchange Commission (Commissione Nazionale per le Società e la Borsa "Consob") disseminates research in Italy; GSBE - Succursale de Paris (Paris branch), supervised by the AMF and by the ACPR disseminates research in France; and GSBE - Sweden Bankfilial (Stockholm branch), to a limited extent, subject to local supervision by the Swedish Financial Supervisory Authority (Finansinspektionen) disseminates research in the Kingdom of Sweden.

## General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by Global Investment Research. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (<https://www.sipc.org>).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

We and our affiliates, officers, directors, and employees will from time to time have long or short positions in, act as principal in, and buy or sell, the securities or derivatives, if any, referred to in this research, unless otherwise prohibited by regulation or Goldman Sachs policy.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is focused on investment themes across markets, industries and sectors. It does not attempt to distinguish between the prospects or performance of, or provide analysis of, individual companies within any industry or sector we describe.

Any trading recommendation in this research relating to an equity or credit security or securities within an industry or sector is reflective of the investment theme being discussed and is not a recommendation of any such security in isolation.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors.

Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at <https://www.theocc.com/about/publications/character-risks.jsp> and [https://www.fiadocumentation.org/fia/regulatory-disclosures\\_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018](https://www.fiadocumentation.org/fia/regulatory-disclosures_1/fia-uniform-futures-and-options-on-futures-risk-disclosures-booklet-pdf-version-2018). Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

**Differing Levels of Service provided by Global Investment Research:** The level and types of services provided to you by Goldman Sachs Global Investment Research may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to <https://research.gs.com>.

Disclosure information is also available at <https://www.gs.com/research/hedge.html> or from Research Compliance, 200 West Street, New York, NY 10282.

© 2023 Goldman Sachs.

**No part of this material may be (i) copied, photocopied or duplicated in any form by any means or (ii) redistributed without the prior written consent of The Goldman Sachs Group, Inc.**