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TOP of MIND

CENTRAL BANK DIVERGENCE: ROOM TO RUN?

Resilient US growth and a series of upside US inflation surprises to start the year have led markets to now expect the Fed to cut interest rates later and more gradually than most G10 central banks. So, how far could central bank divergence run? ECB's former Chief Economist Peter Praet, UC Berkeley's Maurice Obstfeld, and GS GIR's Jan Hatzius all expect some near-term divergence between the Fed and most G10 central banks, though they somewhat disagree on its extent and duration: Praet sees US election uncertainty as providing good reason for the Fed to maintain a hawkish tilt, Obstfeld thinks US economic strength in itself could lead the Fed to diverge from others more than anyone currently expects, but Hatzius argues that the US is less of an economic outlier than most people think, limiting divergence ahead. We then assess the implications for economies and markets, with GS strategists seeing limited room to price in more divergence with the exception of US traded inflation, but think that more meaningful divergence than expected could keep the Dollar stronger for longer.

"The divergence currently priced into markets of only around 1.5 Fed cuts vs. around three ECB cuts this year seems reasonable given differences in growth... beyond the growth differences, the Fed has good reason to maintain a hawkish bias over the coming months given the upcoming US elections.

- Peter Praet

I wouldn't be surprised if the Fed actually delivered only one or even no cuts this year given the strength of the US economy... [so] the Fed could diverge from other central banks even more than anyone currently expects.

- Maurice Obstfeld

We estimate that US growth is running only modestly above its now-higher potential growth. From that perspective, the US doesn't look much different from other G10 economies... [and] the broader picture shows a reasonably well-synchronized inflation cycle across the major economies.

- Jan Hatzius"

WHAT'S INSIDE

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Macro news and views

We provide a brief snapshot on the most important economies for the global markets

US

Latest GS proprietary datapoints/major changes in views

- No major changes in views.

Datapoints/trends we're focused on

- Fed policy; we expect the Fed to cut rates by 25bp in July and proceed with cuts at a quarterly pace thereafter.
- Core PCE inflation, which we expect to fall to 2.7%yoy by Dec 2024 on further rebalancing in the auto, housing rental, and labor markets, and converge toward 2% in 2025.
- US primary deficit, which we expect to slightly decline over the next few years, though a large deficit will likely remain over the medium term regardless of the election outcome.
- Immigration, which we expect to moderate this year, on net, but remain above the pre-pandemic trend.

Japan

Latest GS proprietary datapoints/major changes in views

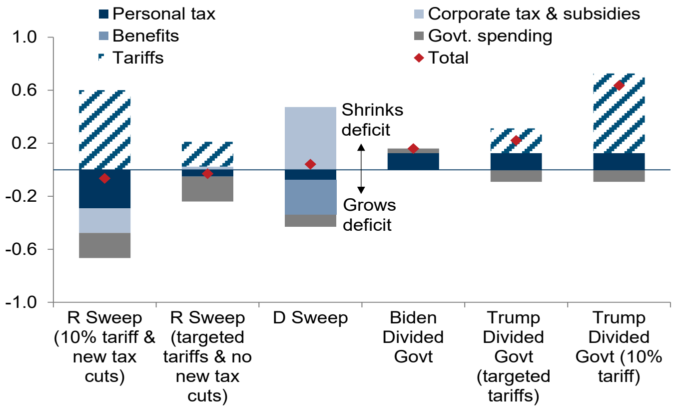
- We recently revised our forecast for the BoJ terminal policy rate, which we think will roughly equal the nominal neutral rate, and now expect the BoJ to raise rates by 0.25pp semiannually to a policy rate range of 1.25-1.5% in 2027.

Datapoints/trends we're focused on

- Japanese core CPI, which we expect to remain above the BoJ's 2% target until mid-2025.
- Japanese growth, which entered negative territory in Q1, though we expect a strong rebound in Q2 on the back of a recovery in consumption and capex.

US fiscal outlook: election-dependent

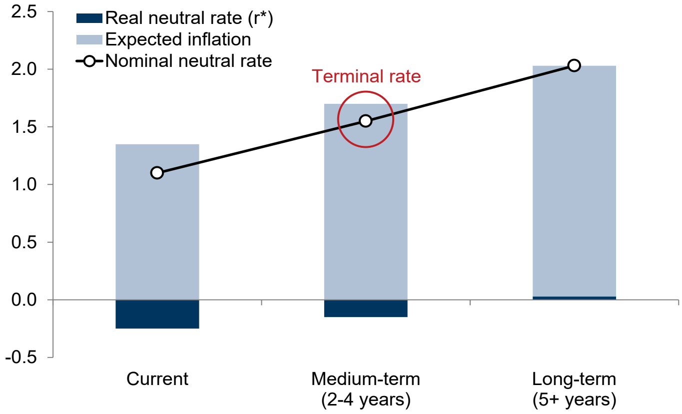
Hypothetical fiscal effect by scenario (2025-29 avg), % of GDP



Source: Goldman Sachs GIR.

Japan: a rising nominal neutral rate

Nominal neutral rate, GS forecast, %



Source: Goldman Sachs GIR.

Europe

Latest GS proprietary datapoints/major changes in views

- No major changes in views.

Datapoints/trends we're focused on

- ECB policy; we expect the ECB to begin cutting rates in June and proceed with subsequent cuts at a quarterly pace, for a total of three cuts in 2024 and four in 2025.
- BoE policy; we expect the BoE to deliver two consecutive rate cuts starting in June before slowing to a quarterly pace.
- Euro area growth, which has resumed after five quarters of stagnation and which we expect to rise to 0.8%yoy in 2024 amid improving manufacturing activity and ECB cuts.
- Disinflation process, which remains broadly on track in both the Euro area and the UK.

Emerging Markets (EM)

Latest GS proprietary datapoints/major changes in views

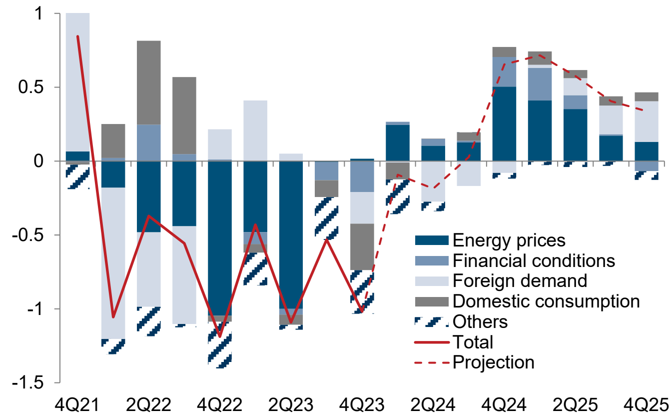
- No major changes in views.

Datapoints/trends we're focused on

- China growth; we expect new US tariffs on Chinese EVs, solar cells & lithium-ion batteries—the "New Three" drivers of high-quality growth in China—to have only limited near-term impact and expect above-consensus 5.0% GDP growth in 2024 amid export strength and ongoing policy easing.
- India's high-value services exports, which we expect to continue growing over the next few years, solidifying India's status as the new services factory of the world.
- EM easing cycle, which we expect to broaden in 2H24, though EM rate cuts are somewhat conditional on Fed cuts.

Euro area: a (gradual) recovery in industrial activity

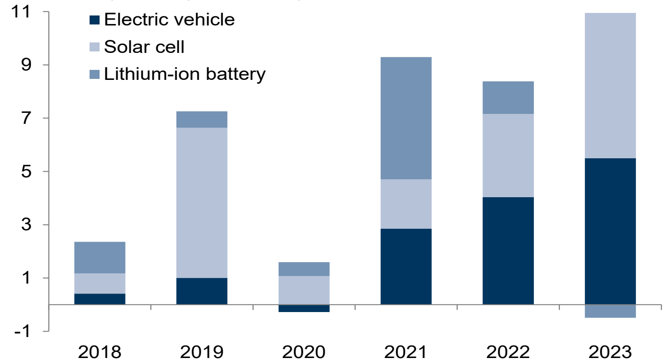
Contribution to EMU9 industrial production growth, % qoq



Source: Haver Analytics, Goldman Sachs GIR.

China's "New Three" exports: a small but rising growth boost

Impact on real GDP growth from total value-added of "New Three" exports by sector, bp



Source: Goldman Sachs GIR.

Central bank divergence: room to run?

Although last week's cooler US inflation data was welcome news for markets, resilient US growth and a series of upside US inflation surprises to start the year have led markets to now expect the Fed to cut interest rates later and more gradually than most G10 central banks, including the ECB, BoE, and BoC, which markets expect to begin cutting this summer while the first full Fed cut isn't priced until November. Meanwhile, Sweden's Riksbank and Switzerland's SNB have already started cutting rates, many emerging markets (EMs) are well into their easing cycles, and the BoJ—long the dovish outlier among G10 central banks—recently became the hawkish outlier as it began hiking rates for the first time in nearly two decades. How far central bank divergence could run, and the implications for economies and markets, is Top of Mind.

We first speak to three monetary policy watchers—Peter Praet, former Chief Economist and Executive Board member of the ECB, Maurice Obstfeld, Professor of Economics Emeritus at UC Berkeley and former Chief Economist at the IMF, and Jan Hatzius, GS Chief Economist and Head of Global Investment Research. They all expect some near-term divergence between the Fed and most G10 central banks amid a relatively later start to the Fed cutting cycle, which would be unusual in modern history, but they argue is reasonable given the relative strength of US growth and slower US disinflation process than many originally anticipated. That said, they somewhat disagree on the duration and degree of potential divergence ahead.

Praet sees "good reason" for the Fed to maintain a hawkish tilt over the coming months given the upcoming US election, whose outcome looks highly uncertain but could result in more expansionary fiscal policy and greater trade protectionism, as well as the Fed's desire to avoid a significant easing in financial conditions—both of which could hinder the Fed's path back to target inflation, and none of which hold true for the ECB.

Obstfeld, for his part, thinks the relative strength of the US economy could in itself lead the Fed to diverge from other central banks "more than anyone currently expects", with the Fed potentially delivering only one or even no cuts this year. But Hatzius expects only a moderate amount of divergence ahead, arguing that US growth relative to potential—the main focus of monetary policymakers—is similar to that of most other G10s and the inflation trajectory looks broadly synchronized across the major economies.

Even if some divergence from the Fed is warranted by differences in economic conditions, could a more hawkish Fed ultimately constrain other central banks' policy options? Our interviewees, as well as GS Chief European Economist Jari Stehn and senior global economist Joseph Briggs, generally say no.

All point out that the biggest impacts of policy divergence would likely come through FX markets, with the resulting sharp currency depreciations potentially raising domestic inflation. But they aren't too concerned about the inflationary impact of these dynamics for most G10 economies. Indeed, Briggs finds only modest impacts on core inflation from policy divergence in most of these economies, Stehn argues that any spillovers of a more hawkish Fed today likely won't be large enough to constrain ECB policy, and Praet even makes the case that the more significant constraint on ECB policy is the Euro area's lack of fiscal integration.

The notable exception to all of this is Japan, where unfavorable rate differentials with the US have led to a significant depreciation in the Yen that has the potential to force the BoJ to hike faster than domestic economic conditions warrant. But Obstfeld and Hatzius believe the lack of certainty around whether Japan has truly exited its long period of lowflation is a reason for the BoJ to proceed cautiously.

But could too much divergence prove problematic? Hatzius sees scope for large policy divergence if the economic data warrants it but thinks the global financial system would probably cope just fine, as it has in previous periods of extreme divergence. And while the memory of EM debt crises lingers, he believes that EMs today are less vulnerable to high US rates than in the past, a sentiment Obstfeld echoes even as he says frontier and low-income countries still warrant some concern.

Given the uncertainty around the ultimate scope of central bank divergence, we then dig into what's priced into assets today. Kamakshya Trivedi, GS Head of Global FX, Rates, and EM Strategy, and GS senior FX strategist Michael Cahill note that policy divergence and, in turn, FX volatility, has so far remained concentrated in EM currencies, with G10 FX pricing a relatively modest amount of divergence, consistent with our economists' policy forecasts. So, they don't see much room for G10 FX volatility to run, though more meaningful divergence than expected could change that and keep the Dollar "stronger for longer". Obstfeld generally agrees but is watching the outcome of the US election for potential limits to Dollar strength.

GS Head of European Rates Strategy George Cole similarly sees limited room to price more divergence into US-EU rate spreads given how much divergence is already reflected in front-end rates, but especially long-end rates, which are near all-time wides. However, he notes that divergence isn't yet priced into US traded inflation. And GS credit strategists Lotfi Karoui and Spencer Rogers don't expect a repeat of the outperformance of EUR IG vs. USD IG that occurred during the last period of policy divergence in 2016-19 given similar drivers of risk sentiment in both markets today, the relatively small expected degree of policy divergence ahead, and the fact that the ECB is now a seller rather than a buyer of corporate bonds.

While questions around central bank cutting cycles are mainly focused on the start and pace of rate cuts, the endpoints of the coming easing cycles are also in question. While Obstfeld sees several opposing forces on long-term rates, he argues that rising geopolitical tensions and a potential productivity boost from AI suggests a sustained higher rate environment. Praet agrees that geopolitical developments, together with increased government spending on the climate transition and central banks' reduced footprint in fixed income markets, should push nominal rates—and the term premium in particular—structurally higher. And while Hatzius expects rates to eventually move lower as the cyclical forces keeping them at their current levels unwind, he argues that structural forces should keep rates somewhat higher than in the post-Global Financial Crisis period.

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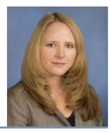


Interview with Peter Praet

Peter Praet is former Chief Economist and Executive Board member of the ECB (2011-2019). Currently, he is Senior Fellow at the Solvay Brussels School of Economics and Management at Université Libre de Bruxelles. Below, he argues that while the rare instances of the ECB leading the Fed have largely been unsuccessful, exceptions to unsuccessful divergence can occur if economic conditions warrant, as they do today.

The views stated herein are those of the interviewee and do not necessarily reflect those of Goldman Sachs.

Allison Nathan: The Fed has historically led the central bank cutting cycle, yet the ECB is widely expected to begin cutting rates in June while the market isn't pricing in a full Fed cut until November. How unusual is it for the ECB to move first, and how successful have past episodes of divergence been?

Peter Praet: Historically, the Fed has tended to lead the global financial cycle by adjusting its policy stance before other central banks, which has substantially influenced financial conditions elsewhere. Of course, spillbacks to the US economy can occur, not least via bond markets as foreign investors reallocate their portfolios based on rate differentials, so it's not a one direction game. That said, the ECB tends to follow the Fed with a 3–4-month lag, with few exceptions, which have been largely unsuccessful. In 2011, shortly after I joined the ECB, we took the opposite approach to the Fed and raised rates to fight inflation despite the Euro area teetering on the edge of a debt crisis, an unfortunate decision that was very quickly reversed.

The major exception to unsuccessful divergence occurred just a few years later, in May 2013, when the Fed announced its intention to taper its asset purchase program, leading to a spike in US bond yields and a sharp tightening in global financial conditions. The ECB forcefully eased policy in response, using forward guidance and, eventually, rate cuts into negative territory as well as various forms of balance-sheet expansion to maintain a very accommodative policy stance. This substantial monetary policy divergence proved sustainable because it occurred alongside divergences in economic fundamentals between the US and Europe, which was suffering from very weak growth, deflationary pressures, a credit crunch, and a sovereign debt crisis, with the dramatic decline in oil prices over 2014-2015 also limiting the inflationary impact of the large Euro depreciation caused by the policy divergence.

Allison Nathan: Given current economic fundamentals, how much scope exists for Fed-ECB divergence today?

Peter Praet: While markets are currently focused on divergences, important commonalities exist between the US and Euro area economies, especially in terms of inflation dynamics. The sources of the 2021-2022 inflation surge admittedly differed—the US experienced demand-driven inflation owing to the massive fiscal response to the pandemic, while Europe's inflation largely resulted from a series of supply shocks, including an energy supply shock following Russia's invasion of Ukraine. But these shocks were similar in that they both proved persistent, which explains why centrals banks embarked on synchronized monetary tightening cycles that yielded relatively similar results in terms of lowering inflation without inflicting significant economic damage, with no major financial instabilities emerging, and labor markets remaining very tight in both the US and Europe.

That said, the divergence currently priced into markets of only around 1.5 Fed cuts versus around three ECB cuts this year seems reasonable given differences in growth. The Euro area has stagnated over the past five quarters and only began staging a shallow recovery this year, whereas US growth has proven resilient. Europe is suffering from very weak productivity growth, which is arguably structural, while the US has benefitted from a positive productivity shock as well as from its position as a net oil exporter amid the sharp rise in oil prices from pandemic-era lows.

Beyond the growth differences, the Fed has good reason to maintain a hawkish bias over the coming months given the upcoming US elections. While future fiscal and trade policy is highly uncertain, the potential for fiscal policy to remain expansionary and possibly become even more so could fuel another inflation surge, as could continued—or even greater—trade protectionism. Chair Powell also arguably went a bit too far last December when he signaled that Fed cuts were coming, which led to a significant easing in financial conditions that the Fed is unlikely to want to repeat.

None of this is the case in Europe, and the Euro area growth recovery the ECB projects depends on three rate cuts this year. So, Fed-ECB divergence over the next several months is practically a given. The big question is what comes after. ECB President Christine Lagarde has been careful not to make strong pre-commitments on the future policy path, and the ECB will likely proceed cautiously amid uncertainties around the disinflation process and the post-election US economic outlook.

Allison Nathan: Could a more hawkish Fed limit the extent to which the ECB can ease policy, potentially threatening the Euro area's nascent recovery?

Peter Praet: One of the channels through which a more hawkish Fed could limit the ECB's policy choices is via FX markets, as policy divergence could lead to currency depreciation that raises import prices. And FX markets can be very volatile, so this is certainly a risk. That said, I'm not too concerned about the inflationary impact of a weaker Euro given that exchange rate changes tend to have only moderate impacts on the Euro area price level. So, FX considerations probably won't limit the extent of ECB easing and, in turn, the growth recovery. However, a more hawkish Fed could threaten Euro area growth by tightening global financial conditions, which is why I'm particularly worried about what could lie ahead for US economic policy post the election.

Allison Nathan: Would today's combination of weak growth and well-anchored inflation expectations temper a hawkish ECB response to an upside inflation surprise, potentially from higher energy prices?

Peter Praet: An energy shock would certainly put the ECB in a tough situation. While inflation expectations have been successfully anchored, they're fragile and could easily de-anchor if the ECB lets inflation run high for too long. At the same time, real wages haven't fully recovered to pre-pandemic levels, and European growth remains weak. So, governments would need to step in with fiscal policy to cushion the impacts of the shock on consumers and businesses, as they did in the 2022 energy crisis. If not, the ECB would likely have to tighten policy, which could jeopardize the nascent growth recovery and lead to significant financial instability. So, while an energy shock that raises inflation could be a reason why the Fed and ECB diverge less than currently expected, more important to watch in this situation would be the fiscal response.

Allison Nathan: What bearing could differences in the policy mandates of the Fed and the ECB, which only has a price stability mandate, have on their relative policy paths?

Peter Praet: French President Emmanuel Macron recently objected to the ECB's single mandate. So, it could become a source of controversy and tension in the case, for example, of a monetary policy mistake. But the mandate's effect on the ECB reaction function shouldn't be overexaggerated, both in absolute terms and relative to the Fed. Stable prices are generally viewed as necessary for sustainable growth, and the Treaty on European Union requires the Eurosystem to support the Union's general economic policy without prejudice to the objective of price stability. And the higher the trust in a central bank's commitment to deliver price stability, the more flexibility it has to manage shocks over the long run. Studies have also shown that not much daylight exists between the Fed and ECB reaction functions despite their differing mandates, which is why their policies tend to be relatively synchronized. And even though the ECB usually lags the Fed, that likely owes less to its single mandate than to the Fed's focus on financial conditions versus the ECB's focus on banking conditions, which are slower to respond to changes in the monetary policy stance. So, the impact of mandate differences on the Fed and ECB's relative policy paths is likely limited.

The more significant constraint on ECB policy is the absence of a fiscal union in the Euro area, which distinguishes it from the US and explains why the ECB embarked on quantitative easing (QE) much later than both the Fed and the BoE in the post-Global Financial Crisis (GFC) period. This delay owed to European central bankers' reluctance to be seen as monetary financing government deficits, which the European Monetary Constitution provides strong safeguards against. The ECB only began QE in 2015, and while the policy proved successful, we probably should have implemented it much earlier. So, differences in the fiscal setups of the US and Euro area can have important implications for their relative policy paths.

Allison Nathan: Could the need for European governments to raise spending on defense and the climate transition given the current state of the world blur the lines between monetary and fiscal policy in Europe, potentially leading to less divergence between Fed and ECB policy?

Peter Praet: Geopolitical developments and structural changes in the macro landscape provide a theoretical case for some form of coordination between fiscal and monetary policy authorities, as recently argued by Mario Draghi, who believes that the enormous pressure on public finances and governments' increased funding needs over the coming years means that monetary authorities should cooperate with fiscal policymakers. Crucially, though, Draghi argues that this cooperation is conditional on governments laying out credible fiscal plans, in which case the central bank can look through the additional public spending even if it fuels short-term inflationary pressures. But even with this caveat, increased fiscal spending is a major concern in the minds of European central bankers, who stress the need for governments to restore fiscal space in anticipation of future spending. And my sense is that many of them will be suspicious of all the talk about higher deficits, which could increase the risk of fiscal dominance and, in turn, undermine the central bank's independence and inflation-fighting credibility. So, the prospect of higher spending could actually lead central bankers to react in a hawkish fashion.

Allison Nathan: What have we learned during the recent hiking cycle in terms of where the neutral, or long-run equilibrium, rate may lie for the major economies, and what could the structural changes in the economic landscape we've discussed mean for the neutral rate and rates more broadly ahead?

Peter Praet: I have long been skeptical about using the neutral rate, or r*, to assess the stance of monetary policy. The idea that economies can be in "equilibrium" is unrealistic—I can't remember a time when economies were in equilibrium, and the times when many considered them to be, such as during the Great Moderation, imbalances were building that ultimately led to the GFC. The concept of a neutral rate also suggests that interest rates exhibit mean reversion, which, again, doesn't mesh with reality, as economies are constantly subject to a variety of shocks. To gauge the monetary policy stance, I prefer to look at financial conditions and their transmission to the real economy rather than compare the current interest rate to the neutral rate. So, over the short term, r* isn't a useful concept.

From a longer-term perspective though, the concept of a "normal" rate can be useful when thinking about the implications of structural developments. And I share the view of those who expect an upward shift in nominal rates. While arguments exist in both directions, the structural transformations that are likely ahead for economies will put upward pressure on different components of nominal rates, in particular the term premium, or the amount by which the yield on a long-term bond exceeds the yield on shorter-term bonds. The term premium was negative for a significant portion of the post-GFC period, largely owing to central banks' increased footprint in the fixed income market as they purchased long-term government bonds as part of their QE programs. But as central banks reinject duration into the long end of the market due to changes in their balance sheet policies and fiscal deficits rise on more defense and green energy spending, the term premium will move structurally higher, which should also lead the yield curve to steepen.

Interview with Jan Hatzius

Jan Hatzius is Chief Economist and Head of Global Investment Research at Goldman Sachs. Below, he argues that the Fed will likely begin cutting rates later than many other G10 central banks, though similarities in the growth environment and inflation trajectory between the US and other G10 economies suggest only a moderate amount of policy divergence ahead.

Allison Nathan: The Fed usually leads shifts in the global monetary policy cycle, but we expect the Fed to begin cutting rates only in July versus the ECB, BoE, and BoC in June, and some developed market (DM) central banks have already initiated cuts. What's behind this break in the historical pattern?

Jan Hatzius: It's true that in modern history instances of the Fed not leading the monetary policy cycle have been relatively rare. But the purpose of having flexible exchange rates and independent central banks is to enable central banks to respond to the needs of their own economies. And while the case for the Fed to start cutting rates soon is coming together, it's not as obvious as it is for many other G10 economies. In Sweden, for example, where rate cuts have recently begun, substantial softening in the economy and disinflation makes a strong case for easing. The case for cutting in the Euro area and Canada is similarly strong based on the macro backdrop. In the UK, the case is a bit weaker because the disinflation process is lagging relative to other G10 economies, but notable weakening in the labor market argues for the BoE to also start easing soon.

Meanwhile, in the US, disinflation is taking longer than we expected at the start of the year and growth remains relatively strong. So, some delay to the start of rate cuts relative to other G10 economies makes sense. That said, disinflation in the US is still occurring. That's somewhat evident in the CPI and PCE figures, which continue to decline on a year-over-year basis, and even more so in the labor market, which has shown clear signs of softening as job growth has slowed and the unemployment rate has drifted higher. And, on the growth side, while the US economy is still stronger than other G10 economies, at the margin, that is less true now than it was three months ago. US growth in the first half of the year has decelerated to the low-to-mid-2% range from the 4% range in the second half of 2023. So, domestic economic conditions warrant some degree of policy divergence between the US and other G10 economies, but probably not a large amount.

Allison Nathan: Why has the US disinflation process seemingly been bumpier and growth stronger than other G10 economies coming out of the pandemic shock?

Jan Hatzius: I would agree with the second observation more than the first. The US growth path has certainly been firmer, which owes to stronger productivity growth and, in particular, stronger labor force growth. US productivity growth has not been exceptional; it is running around only 1.5%—roughly in line with the pre-pandemic trend. But the gap between productivity growth in the US and elsewhere has widened sharply because productivity growth in Europe and beyond has deteriorated substantially, the drivers of which are a bit of a mystery. My best guess is that this productivity weakness is largely due to Europe's longer recovery from the pandemic shock and the energy shock it also endured, which suggests that this weakness will ultimately prove temporary.

But the larger driver of US growth outperformance has been the growth in US labor supply on the back of a recovery in labor force participation and, more recently, a significant influx of immigrants. The fact that supply-side strength has been a key driver of US growth is important because monetary policymakers are largely focused on growth relative to potential rather than on absolute growth. And, assuming that these positive supply-side developments have boosted US potential growth, we estimate that US growth is running only modestly above its now-higher potential growth. From that perspective, the US doesn't look much different from other G10 economies.

On the inflation side, inflation rose earlier and then fell earlier in the US than in other G10 economies. It has since reconverged somewhat as US disinflation stalled or even regressed a bit earlier this year while disinflation continued elsewhere. But the broader picture shows a reasonably well-synchronized inflation cycle across the major economies.

Allison Nathan: If US growth relative to potential isn't much different than in other G10 economies and the inflation trajectory looks broadly synchronized, why does there seem to be so much more uncertainty about when the Fed will begin to cut rates relative to most other major central banks, where imminent rates cuts are widely expected or have already occurred?

Jan Hatzius: If you had asked me 18 months ago what the Fed's next move would be if US core PCE inflation printed at 2.8% year-on-year, the unemployment rate rose to 3.9%, and wage growth fell to 4%, I would have said that they would be on the verge of cutting now. The reason why the timing of the Fed's first rate cut is so much in question despite all of this progress owes in part to the pattern of this progress. Significantly more-than-expected progress on disinflation occurred in the second half of last year, only to discover that some of this progress wasn't real as inflation turned hotter again earlier this year. But taking a step back from the sequential pattern, progress on disinflation and the rebalancing of the economy more broadly has been substantial, so we think the Fed is in a good place to begin cutting rates in July or perhaps September—only slightly later than most other G10 central banks.

Allison Nathan: Looking beyond the start of the cutting cycles, how much scope exists for monetary policy divergence further ahead?

Jan Hatzius: We forecast a moderate amount of divergence between the US and most other G10 economies in this cycle, on the order of 100-150bp, which is not too far from current market pricing. We're generally slightly more dovish than market pricing across most G10 economies, especially in the UK, because we seem to be a bit more confident on the disinflation process than others.

That said, it all depends on the data; I don't see any reason why large differences in short-term interest rates and policy rates across the different economies couldn't occur if the data warrants it. During the 1990s and the 2000s, for example, Japan was an extreme outlier, with rates much lower than in most DMs and certainly the US. But the global financial system coped with this divergence just fine, which would probably also be the case today.

Allison Nathan: Is there any point at which divergence could become problematic?

Jan Hatzius: Divergences tend to feel more problematic in the short term than in the long term given the potential for sharp and sudden moves in exchange rates. But I'm not worried about these type of dynamics for G10 economies, and I'm less concerned about them for emerging market (EM) economies today than in past cycles, because domestic debt markets are more developed, and EM central banks now have much more inflation-fighting credibility. This credibility has been building over the last several years, but many EM central banks' correct decision to tighten early—and earlier than DM central banks—to fight post-Covid inflation has bolstered it. So, while the legacy of past EM debt crises still leaves some concern about the implications of policy divergence for indebted EMs, this worry is certainly much lower than it was 10 or 20 years ago.

Allison Nathan: The BoJ is once again an outlier in its policy stance as it recently embarked on a rate hiking cycle, yet the Yen is still under substantial pressure. Could still-unfavorable rate differentials ultimately lead the BoJ to hike more than domestic economic conditions warrant?

Jan Hatzius: Exchange rate moves are important for financial conditions, and the downward pressure on the Yen has undoubtedly been a factor in the BoJ's hawkish shift and will likely remain so. We now expect the BoJ to hike every six months, on average, until they reach a terminal rate of 1.25-1.5% in 2027. But the risks to our view remain skewed to the downside, not because of any worry about recession, but because it's still not completely clear that Japan has durably exited its sustained period of lowflation. I think it has, but we can't be totally sure until more inflation and wage growth numbers compatible with the 2% target are realized. Until then, the BoJ will probably want to err on the side of caution in terms of the pace of rate hikes.

Allison Nathan: Should we be at all worried about potential spillbacks to the US economy from central bank divergence ahead? Could the divergence we expect—or greater-than-expected divergence—ultimately prove problematic for the Fed?

Jan Hatzius: I don't expect any spillback to be particularly problematic. Other major central banks easing more than the Fed may have some impact on exchange rates, bond yields, equity prices, etc. but again, in a flexible exchange rate regime with independent central banks, the monetary spillovers would be small. Of course, scenarios exist that would lead to more significant spillbacks, say, if exchange rates move sharply and nothing else moves much. But the exchange rate channel for the US is also generally small given the US Dollar's status as the global currency, which means that US import prices don't move much in response to currency fluctuations.

Allison Nathan: What have we learned during the recent hiking cycle about where the neutral rate may lie for the major economies and its influence on monetary policy? What does that imply for the relative endpoints of the coming easing cycle?

Jan Hatzius: We have certainly learned that economies have coped with much higher short-term rates better than most forecasters expected two years ago. That is most true for the US economy, which has substantially outperformed, but also generally true for the global economy. So, the short-run neutral rate, defined as the rate that keeps the economy on an even keel from an economic activity and resource utilization perspective, has clearly been much higher than most assumed.

It's less clear what that tells us about where the policy rate will be five years down the road. But, independent of that, several factors suggest that the neutral rate for many economies may be higher in the current cycle than in the cycle immediately preceding the pandemic. First, the neutral rate in the prior cycle was depressed by the post-2008 balance sheet repair process. Second, investment demand is probably structurally higher owing partly to reshoring and to a more capital-intensive technology cycle given the demands of the technology sector on processing capacity. And third, higher government deficits and debt levels also suggest upward pressure on the demand for capital. So, policy rates will likely remain higher than before the pandemic.

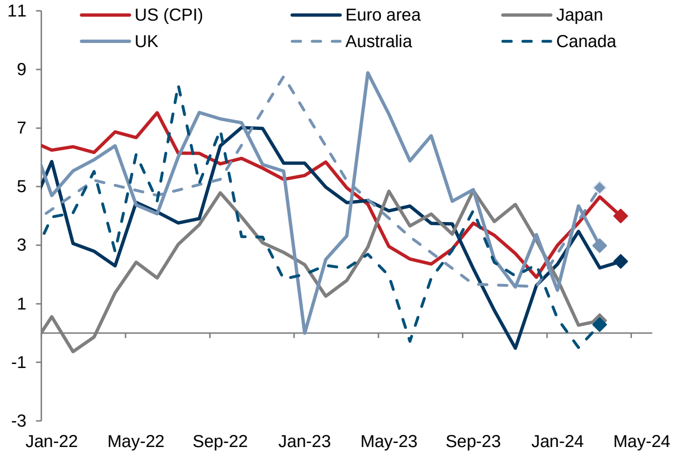
Allison Nathan: During the very low-rate environment in the decade following the Global Financial Crisis (GFC), consensus expected rates to remain low for the foreseeable future. And in today's higher-rate environment, consensus expects rates to remain higher. Is there too much tendency to extrapolate the future stance of policy from current conditions?

Jan Hatzius: Fundamentals do sometimes shift, which warrants rethinking expectations. But I agree that markets can assume a greater degree of persistence to cyclical conditions than is warranted. In the decade following the GFC, I never fully bought into the idea that structural shifts would leave rates lower—aka, secular stagnation—and I currently don't fully buy into the idea that structural shifts will leave rates higher, at least as high as they are today. During the post-GFC period, rates were likely to remain low for a long period because unwinding the after-effects of a credit crisis takes time. But my view was that it was a mistake to think that these shifts were all structural in nature, and indeed, many proved not to be. And we're likely in a similar situation today in the sense that the forces keeping rates at their current levels are likely both cyclical and structural in nature, which suggests that rates will eventually move lower, though probably not to post-GFC lows.

The US vs. other G10 economies in pics

While US core inflation has recently been relatively high in sequential terms...

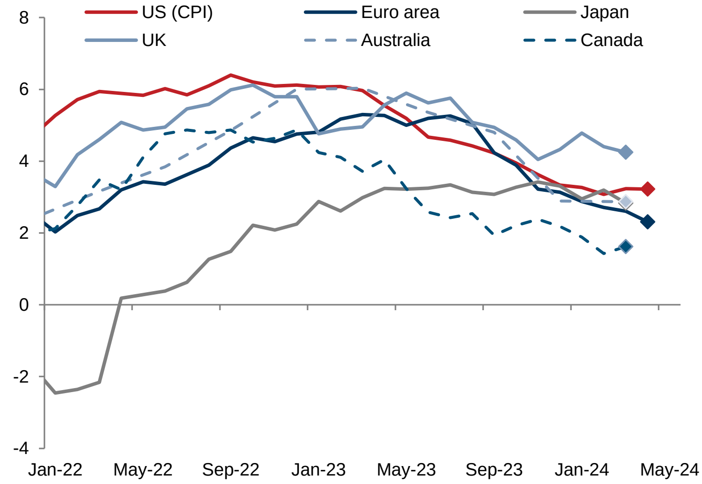
GS harmonized core inflation*, 3m annualized rate, %



*Measure excludes food, energy, alcohol, tobacco, owned housing, used cars, and financial services. Definitions of rent and health insurance are adjusted to be consistent across countries.
Source: Goldman Sachs GIR.

...it remains near the middle of the G10 range in year-on-year terms

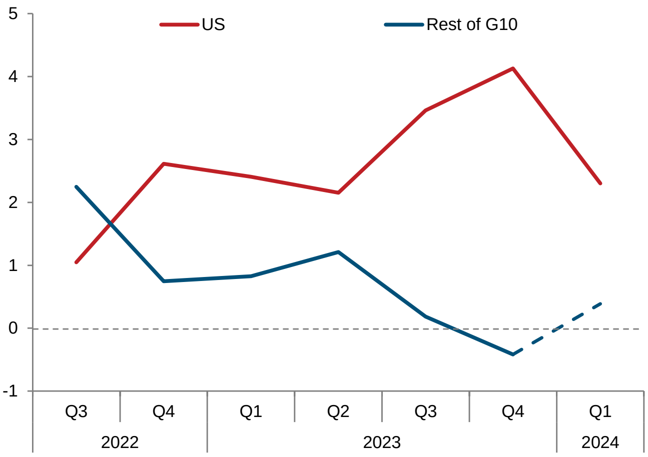
GS harmonized core inflation, year-on-year rate, %



Source: Goldman Sachs GIR.

US growth has outperformed the rest of G10...

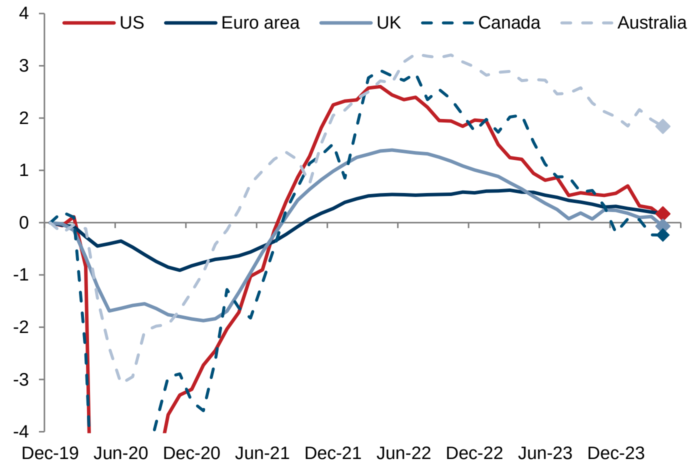
Two-quarter annualized real GDP growth, %



Note: The latest value for the US includes GS estimated revisions to 1Q24 GDP growth; dashed line in this chart indicates GS forecast.
Source: Goldman Sachs GIR.

...though the jobs-workers gap—an important measure of labor market tightness—has declined similarly across G10 economies

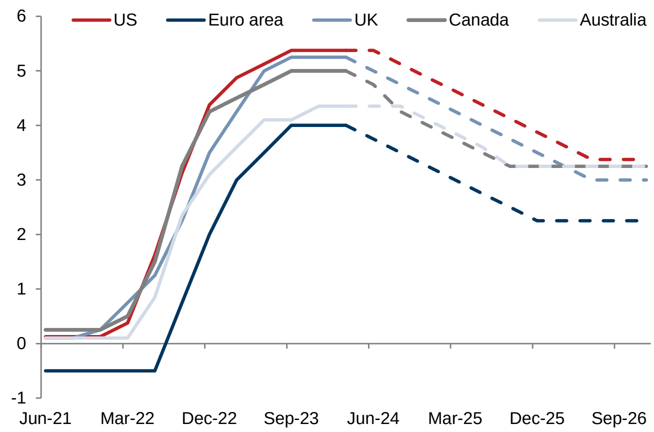
Change in GS jobs-workers gap since December 2019, pp



Source: Haver Analytics, Goldman Sachs GIR.

Accordingly, we expect only moderate G10 policy divergence ahead as G10 central banks embark on easing cycles...

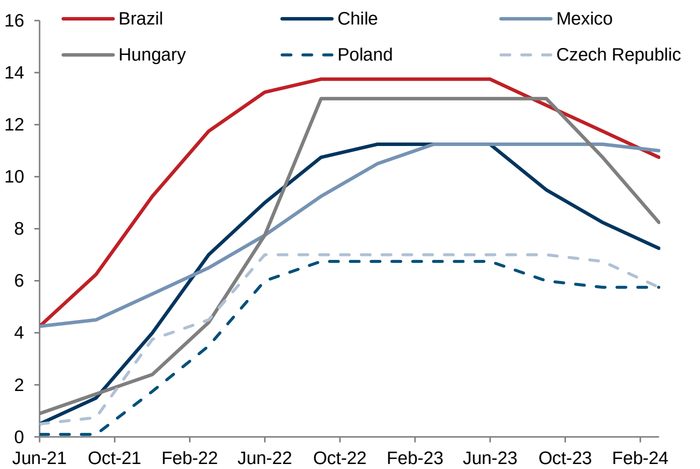
Policy rates and GS policy rate forecasts, %



Note: Dashed lines in this chart indicate GS forecasts.
Source: Haver Analytics, Goldman Sachs GIR.

...which many EM central banks are already well into

Policy rates in select EM early hikers

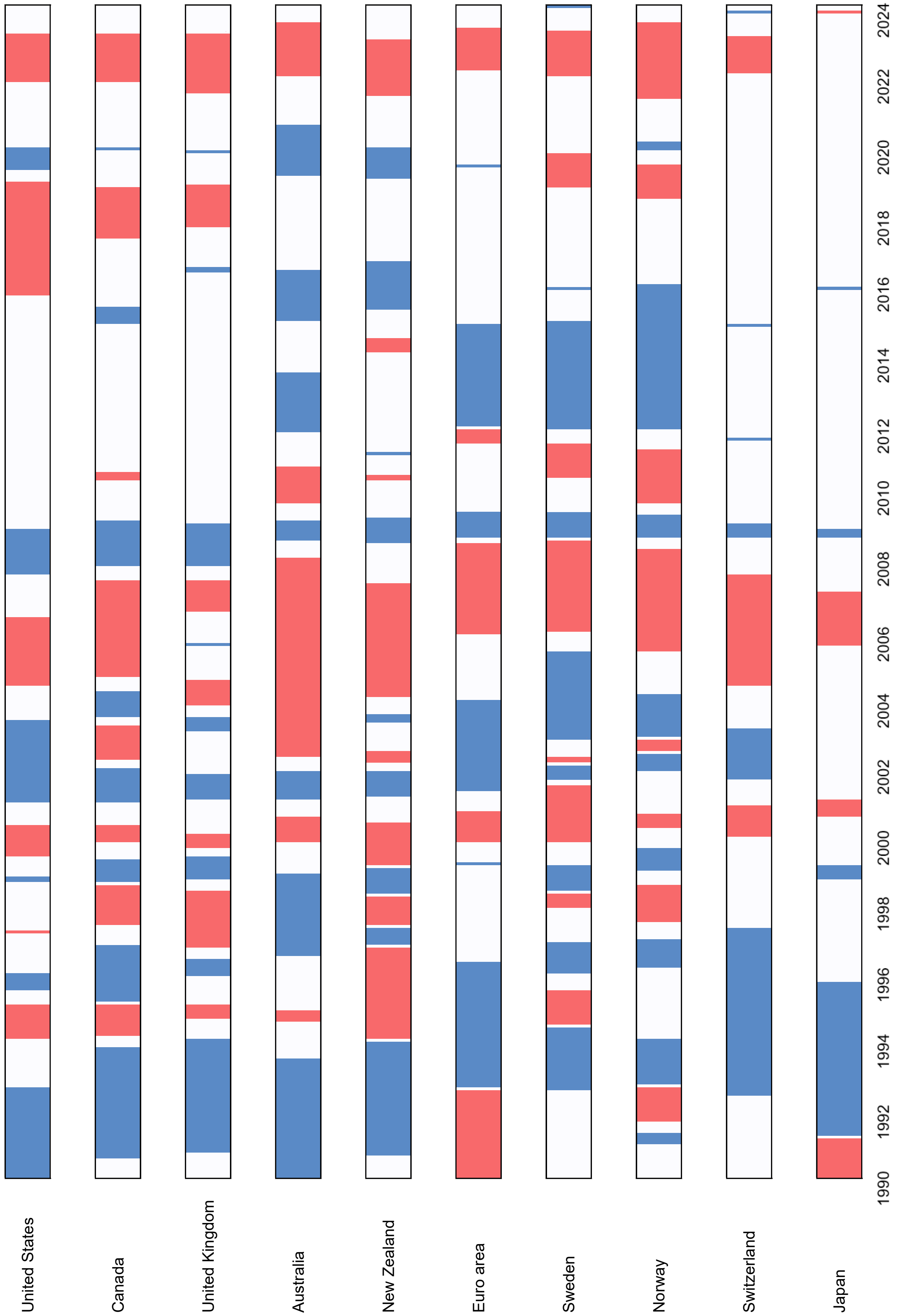


.Source: Haver Analytics, Goldman Sachs GIR.

Special thanks to GS GIR global economist Devesh Kodnani for these charts, which were originally published in a May 20, 2024 Global Views note.

More past convergence than divergence

A history of G10 monetary policy divergence/convergence: tightening cycle = red, easing cycle = blue, on hold = white



Note: Each colored segment represents a hiking or easing cycle, based on the first and last hike/cut. Pre-1999, the German policy rate is used for the Euro area.
Source: Haver Analytics, Goldman Sachs GIR.
This exhibit was originally published in a February 2019 Global Markets Analyst and a March 2019 Top of Mind report.

Special thanks to GS GIR global economists Giovanni Pierdomenico and Devesh Kodnani for data and methodology.

Limited divergence, limited constraints

Joseph Briggs argues that a hawkish Fed is generally unlikely to limit policy options in most G10 economies given the modest inflationary impacts of policy divergence

Most major developed market (DM) central banks are approaching the start of their policy rate cutting cycles, the timing and pace of which domestic economic conditions will largely determine. Following a mostly synchronized global inflation surge and monetary policy tightening campaign, differences in domestic economic data have started to emerge. GDP growth in non-US DMs has significantly underperformed over the last year (although Q1 GDP data showed green shoots), while disinflation progress slowed in the US despite mostly continuing in its DM peers.

The combination of weaker growth and more disinflation has raised the possibility that other central banks could cut while the Fed remains on hold, leading policy rates to diverge. This policy divergence is visible in end-2024 rate differentials, which have widened moderately relative to the US since the January US CPI report first raised concerns that the Fed may not be able to cut as much as previously expected.

Despite recognition that some degree of policy divergence is warranted based on domestic economic data, some investors and central bank officials have raised concerns that a more hawkish Fed could eventually constrain policy options. While DM central bankers are primarily focused on domestic inflation and have emphasized that they will set policy according to their domestic mandates, they also generally see a challenge in diverging too far. In particular, several policymakers have expressed concern that weaker currencies could lead to a rise in "imported inflation" that makes it more difficult to return inflation to target.

Limited inflationary impacts from policy divergence

The main channel through which policy rate divergence could impact the economic outlook is the foreign exchange channel, as lower capital flows and currency demand in countries where yields are lower may lead to currency depreciation. This depreciation would lead imported goods prices to rise in local currency terms, thereby posing upside risk to inflation that could constrain dovish policy divergence.

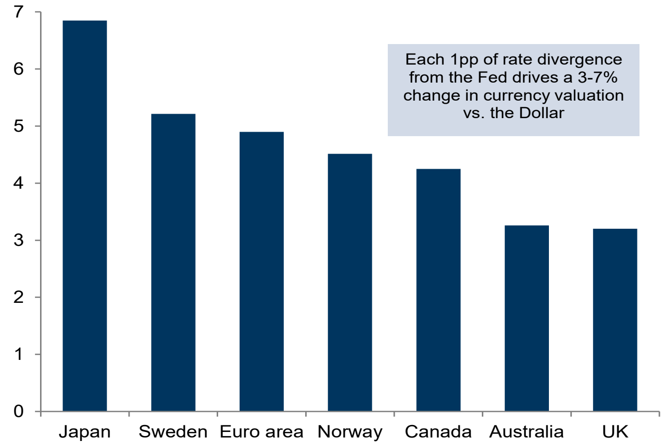
So far, inflationary impacts through this channel appear modest. We find that recent currency depreciation implies no more than 0.2pp of upside to core inflation over the next year across G10 economies[1], suggesting that the policy divergence currently priced by markets is unlikely to constrain policy options ahead.

We also do not expect that reasonable levels of policy divergence will constrain DM central bank policy over the medium run. We calculate[2] a rule of thumb for the relationship between policy divergence and core inflation: for each 1pp of rate cuts in excess of the Fed, core inflation rises by 0.1-0.2pp in most DMs, with larger effects of 0.3pp in Canada and Japan.

Applying this rule-of-thumb to our current year-end 2025 core inflation forecasts suggests that Canada is most at risk of inflation exceeding the BoC's target by 0.5pp (if policy rates diverge by another 100bp), while it would probably take at least an incremental 150bp of divergence to raise inflation to problematic levels in other economies aside from Norway (where our baseline forecasts assume inflation exceeds the Norges Bank's 2% target by 0.7pp at end-2024).

The impact of policy divergence on FX

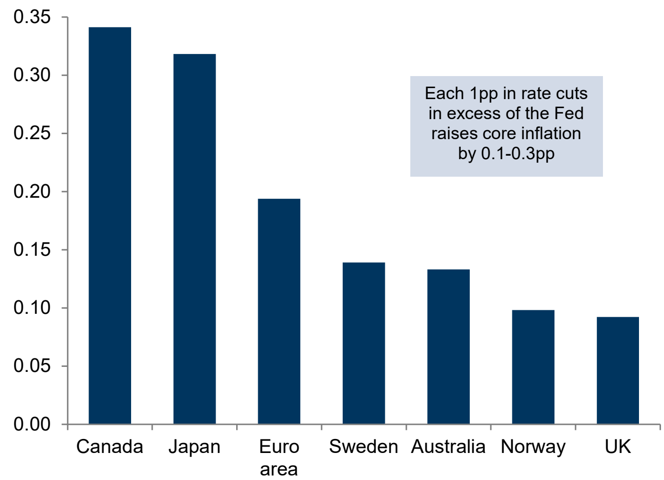
Effect of a 1pp rate differential with US on currency value relative to USD, %



Note: We use two-year yield differentials for all economies.
Source: Goldman Sachs GIR.

The impact of rate cuts on core inflation

Effect of each 1pp of rate cuts in excess of the Fed on core price level, %



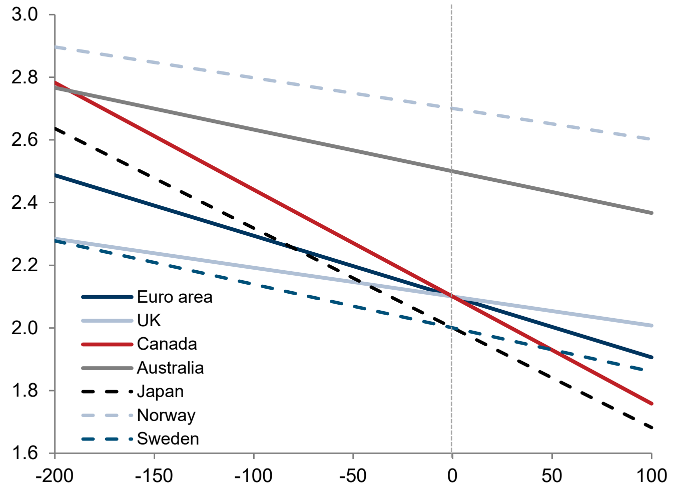
Source: Goldman Sachs GIR.

[1] To calculate the effect of recent currency depreciation on inflation, we combine the recent changes in currency values relative to the US Dollar with estimates of the US Dollar share of goods imports, goods imports as a share of overall consumption, the historical pass-through from FX changes to import prices, and the historical pass-through from import to consumer prices.

[2] To relate future changes in rate differentials to inflation, we first combine our FX strategists' estimates of the sensitivity of currency valuations to rate differential changes with our rule-of-thumb of the impact on currency depreciation on inflation. The resulting estimates imply that each 1pp divergence in the 2-year yield (relative to the US) drives a 3-7% change in currency valuation relative to the US Dollar across G10 economies, with larger effects in Japan. Combining these estimates with historical pass-throughs from policy to two-year rates, we are able to construct our rule of thumb that relates policy divergence to core inflation.

Inflation risk from policy divergence largest in Canada

Effect of additional rate divergence vs. current GS rate forecasts on year-end 2025 core inflation, %

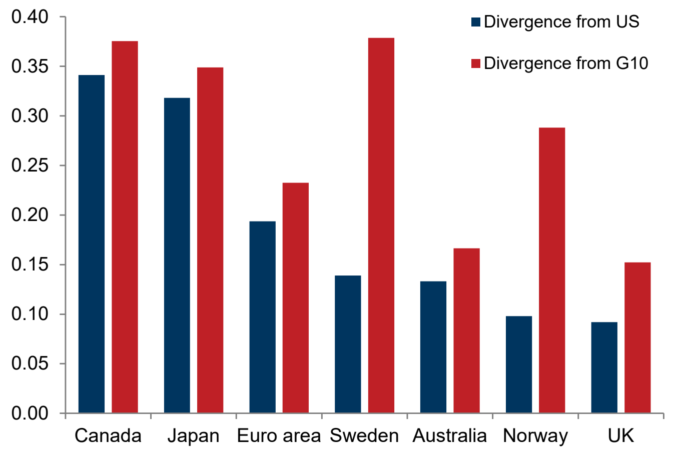


Source: Goldman Sachs GIR.

However, if any central bank diverges not only from the Fed but also from its G10 peers, the impact on inflation would likely be larger, as its currency would depreciate relative to a broader set of trade partners, raising non-USD import prices as well. Assuming the same policy rate path for a given country but a Fed-like path for other economies suggests a larger inflationary impact of divergence, particularly for smaller open economies. Intuitively, the decision to diverge is easier when several DM central banks diverge from the Fed together rather than in a scenario where most central banks opt to "follow the Fed" but one chooses not to. As such, further hawkish changes to the outlook for other major central banks could prompt correlated changes in policy across G10.

Larger inflationary cost of divergence if other G10s follow the Fed

Effect of 1pp rate divergence on core price level, scenarios, %



Source: Goldman Sachs GIR.

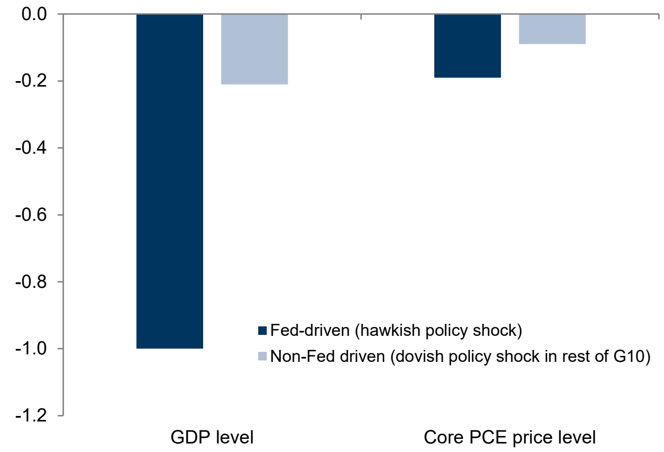
Policy divergence could lower the bar for Fed cuts

While we anticipate that policy rate divergence is most relevant for non-US DMs, more dovish policy in foreign economies should also slow growth and inflation in the US, thereby helping the Fed to achieve its goals. In particular, US Dollar appreciation would make US exports more expensive and less attractive to foreign consumers and imports from abroad cheaper and more attractive to US consumers (thereby slowing growth through a reduction in net exports). Dollar appreciation would also likely lower inflation by making imports cheaper, with our estimates suggesting that each 10% Dollar appreciation lowers core PCE inflation by around 0.3pp.

We find[3] that in a scenario in which dovish policy abroad drives divergence, the exchange rate channel would lower US GDP growth by 0.2pp and core inflation by 0.1pp. And in a scenario in which a more hawkish Fed drives policy divergence and the impact of higher rates on the US economy is felt more broadly, GDP would likely decline by 1% and core PCE prices by 0.2pp.

Policy divergence should lower the Fed's bar for cuts

Effect of each 1pp Fed vs. G10 divergence on US economy, %



Note: Hawkish Fed policy moves driven by upside surprises to US GDP growth would not be exogenous and thus would have a smaller impact on GDP.
Source: Goldman Sachs GIR.

All told, relatively earlier and more aggressive rate cuts from foreign central banks could help the FOMC reach its inflation target, and, on the margin, support earlier Fed rate cuts. This is one reason why we expect the Fed to cut rates by slightly more than markets currently expect, which lowers the likelihood of an extended period of policy rate divergence.

Limited divergence, limited constraints

The policy divergence that we currently expect is unlikely to generate significant inflationary pressures in most major DMs, giving foreign central banks substantial room to ease policy before higher domestic inflation becomes a problem, although Canada and Japan may face constraints if they diverge too far. We therefore continue to expect the ECB, BoE, and BoC to deliver 75bp of cumulative easing and the Riksbank 100bp of cuts in 2024 while the BoJ embarks on a gradual rate hike cycle, even though we forecast only two 25bp Fed rate cuts this year in July and November.

Joseph Briggs, Senior Global Economist

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[3] To estimate the impact of 100bp in policy divergence on the US economy, we combine our estimates of the effect of Dollar appreciation on US growth and inflation with our prior estimate that each 1pp increase in Fed policy rates leads to a 3% currency appreciation.

Interview with Maurice Obstfeld

Maurice Obstfeld is Professor of Economics Emeritus at UC Berkeley and Senior Fellow at the Peterson Institute. Previously, he was a member of the Council of Economic Advisers (2014-15) and Chief Economist at the IMF (2015-18). Below, he argues that while the ECB and BoE easing ahead of the Fed is unusual, it's not surprising given the relative cyclical positions of their economies, and he sees the potential for central bank divergence to run further than expected.

The views stated herein are those of the interviewee and do not necessarily reflect those of Goldman Sachs.

Allison Nathan: The Fed has historically led the central bank cutting cycle, yet the ECB and BoE are widely expected to begin cutting rates this summer while the market isn't pricing in the first full Fed cut until November. What do you make of these unusual relative starting points?

Maurice Obstfeld: While the ECB and BoE easing policy ahead of the Fed may be unusual in the context of the last three decades of the global policy cycle, earlier rate cuts wouldn't be surprising given the relative cyclical positions of the Euro area and UK versus the US. Economic growth in the US has proven remarkably more resilient than in both the Euro area and UK, with most forecasters expecting well above 2% real GDP growth in the US this year compared to below 1% in the Euro area and UK. The path back to target inflation has also been bumpier in the US than in Europe, so the Fed likely needs more time to gain the greater confidence in the inflation trajectory that it needs to cut rates, as noted by Chair Powell at the May FOMC press conference. So, it seems reasonable that both the ECB and BoE could move before the Fed in this cycle.

Allison Nathan: Why has growth in the US proven so much more resilient than in other developed market (DM) economies, and could that lead to even more policy divergence between the Fed and other major central banks than is currently expected?

Maurice Obstfeld: I wouldn't be surprised if the Fed actually delivered only one or even no cuts this year given the strength of the US economy. The transmission mechanism of monetary policy has been fairly muted in the US, with higher interest rates not biting as much given the significant number of household and corporate borrowers that took advantage of extremely low interest rates during the pandemic years to lock in low rates. The US economy has also received a boost from fiscal stimulus through the CHIPS Act and Inflation Reduction Act as well as from an influx of immigration as the Biden Administration eased some of the tight Trump-era immigration restrictions, which also provided some much-needed relief on the inflation front.

The considerable easing in financial conditions over the past several months has also supported growth. This easing is surprising given the level of interest rates, but likely owes to the Fed's dovish messaging at last December's FOMC meeting, which loosened financial conditions in a way that was probably counterproductive for the inflation modulation the Fed is trying to achieve. That, together with the US economy's strength, suggests that the Fed could diverge from other central banks even more than anyone currently expects.

Allison Nathan: Could the current momentum in the US economy actually lead the Fed to hike rates, thereby setting up for even more policy divergence, or will the economy eventually catch up to higher rates?

Maurice Obstfeld: A catch up will almost certainly happen down the road. One channel through which this could occur is corporate borrowing. Unlike US mortgage holders who tend to take out 30-year loans, corporates borrow money at much shorter time horizons, so they will likely begin to feel the impact from higher rates sooner as pandemic-era loans mature. So, some of the factors currently supporting growth will soon fall away, which is why the Fed would likely need to see much more evidence that progress on inflation has stalled or even reversed before restarting the hiking cycle.

> "The Fed could diverge from other central banks even more than anyone currently expects.

Allison Nathan: What would be the main impact of other central banks cutting before/more than the Fed?

Maurice Obstfeld: Currencies would bear the brunt of the impact from an asynchronized cutting cycle. I, together with Haonan Zhou, have investigated the impact of interest rates on the Dollar's exchange rate, finding overwhelming evidence that the exchange rate strongly correlates with not just the current level of interest rates but the entire expected future path of interest rates. The evidence also shows that exchange rates respond even more strongly to long-term rates than short-term rates, which intuitively makes sense since long-term rates depend on the expected future path of the policy rate plus a term premium. So, interest rate expectations play an important role in exchange rates, and we clearly see that today with the Dollar appreciating against many other currencies as markets have repriced the path of Fed policy higher.

Allison Nathan: Could exchange rate considerations ultimately limit how much DM central banks can diverge from the Fed?

Maurice Obstfeld: Such considerations likely wouldn't limit the extent of divergence between the Fed and the ECB, as the ECB isn't very concerned about Euro depreciation given that the inflationary impact from a weaker currency won't be very meaningful in an economy as closed externally as the Euro area. The BoJ, though, is in a more difficult position. While it initiated a tightening cycle with a rate hike in March, rates are rising from very low levels after eight years of negative interest rates, and the BoJ isn't hiking quickly enough to stabilize the Yen. The BoJ is proceeding cautiously in part because, while Japan benefited from a rebound in tourism and growth in 2023, it's now staring down the barrel of very low growth rates. And though inflation has been relatively high, the BoJ isn't fully assured that Japan has truly escaped the low-inflation trap of the Lost Decades. At the same time, though, a deep-rooted fear of high inflation exists in Japan, so the BoJ is very concerned about the possible inflationary impacts of Yen weakness and is suspected to have recently intervened in the market to prop up the Yen. It remains to be seen if the BoJ will raise interest rates faster than they would ultimately like to stem Yen depreciation, which could come at the cost of lower growth and a higher fiscal burden.

Allison Nathan: Higher for longer US rates have historically been more worrisome for emerging market (EM) economies than DM economies. How concerned are you about the prospects for EMs in a world of later/more gradual Fed cuts?

Maurice Obstfeld: Many EM economies are already well into their cutting cycles, which should support growth in these economies. And the recent easing in financial conditions has sparked significant interest in EMs and frontier markets among investors. But if the hoped-for Fed cuts are further delayed and the Dollar continues to strengthen, the conditions for EMs would likely become more challenging.

The large EM economies—with the exception of Argentina and possibly Turkey, which are suffering from some idiosyncratic domestic issues—would likely weather higher US rates fairly well given their central banks' established inflation-fighting track records, which would prove useful if their currencies depreciated against the Dollar. However, frontier and low-income countries, many of which are at or near distressed debt levels partly owing to large amounts of Covid-related borrowing, are in a much more difficult situation. So, while I don't foresee a general crisis in EMs, low-income countries stand out as vulnerable in a world of higher-for-longer US rates.

Allison Nathan: Given the differences in the potential paths of central bank policy that we've discussed, how do you expect the Dollar to move from here, and, ultimately, do you see a limit to Dollar strength?

Maurice Obstfeld: As I mentioned, the Dollar's exchange rate depends on future interest rate expectations, so, to the extent that the market further pushes out its expectation for the first Fed cut or other major central banks deliver more or larger cuts than currently priced, the Dollar can continue to strengthen. The Dollar has not quite reached the heights of fall 2022 when the Fed was energetically trying to catch up to where it thought it needed to be to control inflation, so room certainly exists for the Dollar to move even higher.

However, a stronger Dollar will throw a spanner in the works for US exporters and industries that compete with foreign imports. If these industries start demanding protection, that could prompt official action to push down the Dollar. A similar situation occurred in 1985, when the Dollar's significant appreciation over the prior several years led to the signing of the Plaza Accord, a collective effort by the G5 to weaken the Dollar. That said, such coordinated action seems unlikely in the current environment of limited international economic cooperation.

Another limit to Dollar strength could come from the outcome of the US election in November, with former President Trump reportedly seeking ways to bring about a weaker Dollar with the goal of reducing the US trade deficit. He is also floating plans to introduce presidential control over monetary policy decisions, which could allow him to steer policy toward a weaker Dollar.

Allison Nathan: With central bank cutting cycles firmly in view, debate has arisen around where the equilibrium interest rate for the major economies ultimately lies. What have we learned in the course of the recent hiking cycle on this front, and what does that imply for the relative endpoints of the coming easing cycle?

Maurice Obstfeld: It's important to distinguish between the neutral rate—the rate at which monetary policy is neither contractionary nor expansionary—and the natural rate—the long-run real rate that equilibrates saving and investment. The neutral rate is a more short-run and country-specific concept than the natural rate—capital flows ultimately connect real interest rates across the world, though much less so in the short run than the long run.

Currently, the neutral rate in the US is higher than in the Euro area and UK. As I mentioned, the transmission mechanism of tighter monetary policy is currently muted in the US and likely more so than in Europe, partly owing to differences in the structure of mortgage markets. Household balance sheets are also fairly strong in the US, but Europe was hit harder by the 2022 energy crisis. So, the endpoint of the Fed's cutting cycle will likely be higher than the ECB's and BoE's.

Natural rates tend to be more uniform across countries, especially across DMs where the free movement of capital links saving and investment flows. Currently, several opposing forces are pushing the natural rate in both directions. On the one hand, unfavorable demographics are putting downward pressure on the natural rate. Populations are aging and global population growth is slowing, with the UN predicting that population growth will turn negative by the 2080s. On the other hand, rising geopolitical tensions—and the associated rise in military budgets—as well as a potential economy-wide productivity boost from AI advancements suggest a higher interest rate environment. Despite these competing forces, I would lean in the direction of a somewhat higher natural rate than in the post-Global Financial Crisis period, though nowhere near the highs of the 1990s. So, real interest rates across DMs should converge over the long term, though as we've discussed throughout, some divergence is very likely over the shorter term.

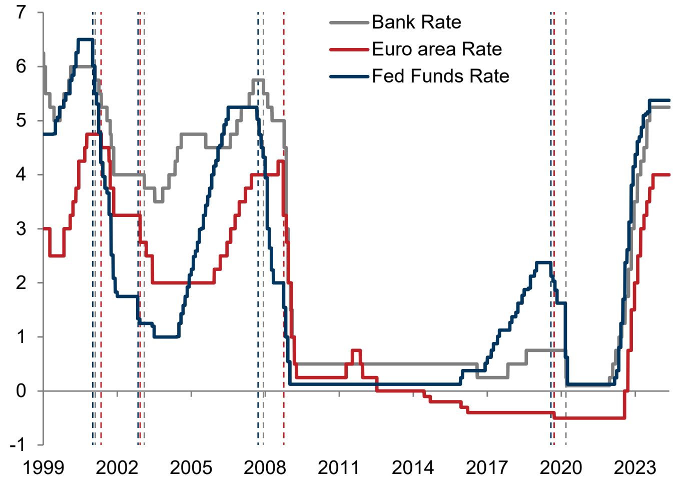
Room for European policy divergence

Jari Stehn argues that European central banks have historically cut rates after the Fed due to the data, rather than the Fed's actions themselves, with current data suggesting a deviation from the historic trend

The Fed has historically embarked on cutting cycles ahead of European central banks. In the last three central bank cutting cycles, the Fed moved first in 2001 (Jan vs. Feb/May for the BoE/ECB), in the run-up to the 2007-2008 financial crisis (Sept 2007 vs. Oct for the BoE and one year later for the ECB), and in 2019 (July vs. Sept for the ECB). While this historical trend has sparked skepticism among many investors that the ECB and BoE can significantly diverge from the Fed this year, we find that differences in economic conditions, rather than the Fed's action themselves, ultimately led the ECB to cut after the Fed in the last three cutting cycles. And with economic conditions suggesting that near-term policy normalization is more appropriate in Europe than in the US, divergence from the Fed—and history—is likely ahead.

The Fed usually leads European central banks in the policy cycle

Policy rate pricing, bp



Note: Dotted vertical lines indicate start of rate cuts.
Source: BoE, ECB, Fed, Goldman Sachs GIR.

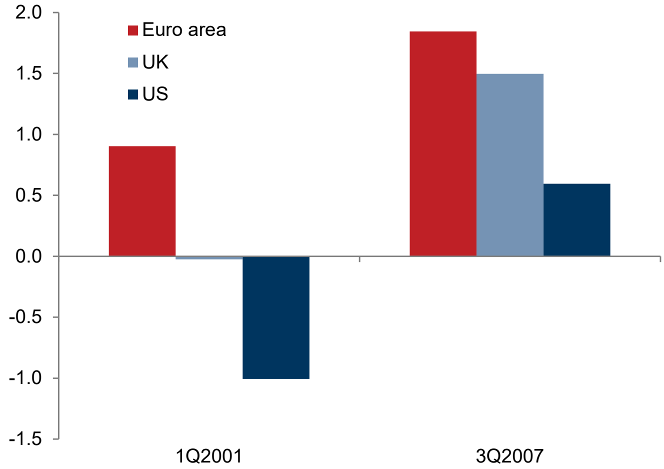
Data, not Fed, dependent

To understand why the Fed has tended to lead policy cycles, we explore the relationship between changes in Fed and ECB policy rates since 1999, finding that ECB policy rates tend to respond strongly to the federal funds rate, with the ECB typically adjusting rates with a one-quarter lag. However, this relationship weakens meaningfully when accounting for differences in the economic data between the US and Euro area, which suggests that European central banks have historically cut rates after the Fed due to the data rather than the Fed's actions themselves.

Indeed, in the lead up to the 2001 and 2007/08 cutting cycles, economic conditions weakened notably earlier in the US than across Europe. By 2001, US growth had already slowed sharply, while growth in the UK and Euro area remained above trend until mid-2001. Similarly, the US economy decelerated sharply in 2007 while Euro area and UK growth fell below potential only in mid-2008. Underlying inflationary pressures also weakened earlier in the US than in Europe in both cycles. This pattern is quite intuitive as both the 2001 and 2008 recessions emanated from the US, making rate cuts appropriate earlier in the US than in Europe.

Earlier US growth decelerations, earlier Fed cuts

Year-on-year real GDP growth, deviation from trend, pp



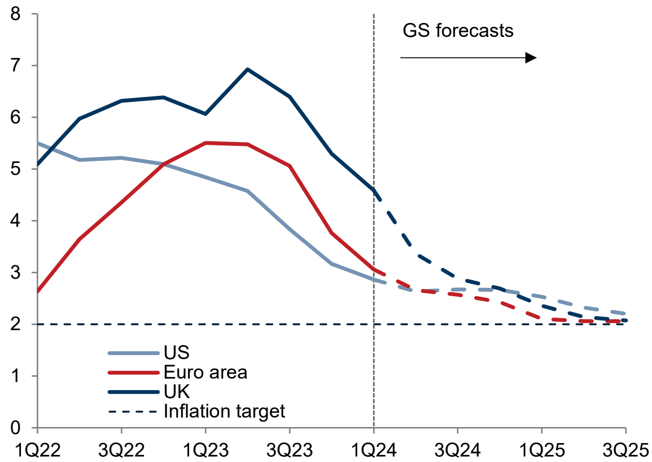
Source: Goldman Sachs GIR.

It's the economy, stupid

The European economic outlook will therefore play a key role in determining the relative timing and speed of interest rate cuts across Europe versus the US. We expect core inflation to decelerate significantly in the US, Euro area, and UK, falling to around 2.5% or slightly higher by year-end and converging toward 2% in 2025. Economic activity, however, remains notably weaker in the Euro area and UK than in the US. And while growth should improve across Europe this year, we only expect trend-like momentum compared to continued above-trend growth in the US. As such, we see a stronger case for near-term policy normalization across Europe than in the US.

While core inflation should decelerate significantly across all three economies…

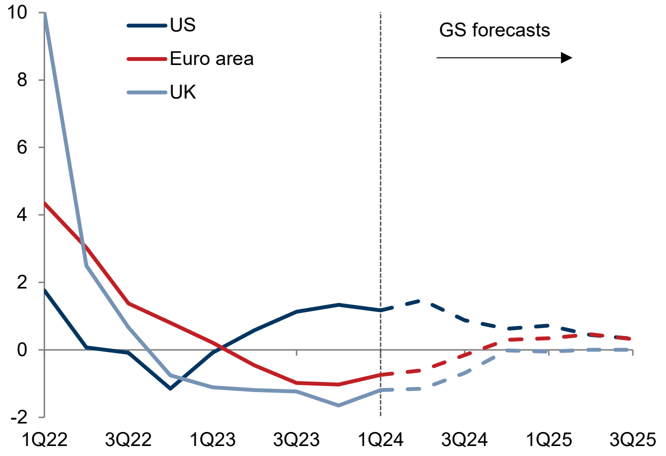
European and US core inflation, % change, yoy



Source: Goldman Sachs GIR.

...the Euro area and UK macro outlook is weaker than the US

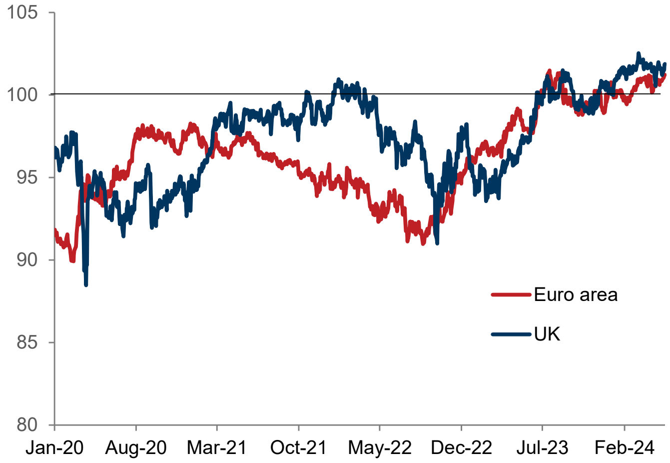
Real GDP growth (deviation from potential), % change, yoy



Source: Goldman Sachs GIR.

The Euro and Pound have not meaningfully depreciated on a trade-weighted basis

Nominal trade-weighted effective exchange rate, 1/2/24=100



Source: Haver Analytics, Goldman Sachs GIR.

As a result, we expect an earlier start to and more rate cuts in Europe than in the US, with both the ECB and the BoE starting rate cuts in June, one month ahead of the Fed, and a total of three rate cuts in the Euro area and the UK this year versus just two in the US. While the uncertainty around the monetary policy outlook remains elevated on both sides of the Atlantic, we see a lower risk of slower rate cuts in Europe than the US.

Limits to divergence exist, but won't act as a constraint

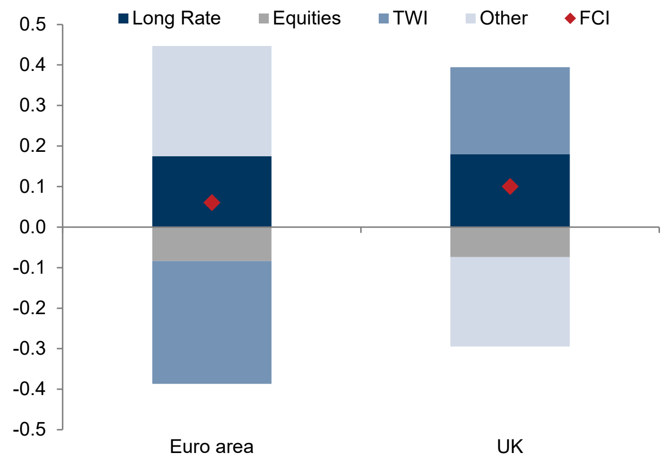
That said, exchange rate movements could limit the degree of divergence that can occur (see pgs. 10-11). Materially faster cuts across Europe than in the US would weaken European exchange rates, putting upward pressure on goods inflation. We have previously found that a persistent 10% Euro appreciation typically lowers consumer prices by 1% after two years, with a similar impact in the opposite direction from Euro depreciation. As such, policy divergence could raise European inflation, which, in turn, would limit the room for divergence.

However, it is important to note that the trade-weighted exchange rate, not just the Dollar exchange rate, matters for growth and inflation. And so far, given that economic conditions in many other parts of the world are also weaker than in the US, European currencies have not meaningfully depreciated on a trade-weighted basis, which suggests limited upside risk to inflation from divergence for now.

Moreover, broader European financial conditions are unlikely to move significantly in the event of a more hawkish Fed. While weaker exchange rates would ease financial conditions, fewer cuts in the US would also likely imply higher long-term rates, lower equity prices, and wider corporate and sovereign spreads across Europe. So, the net FCI spillovers from Fed policy shocks should be limited as the moves in rates and risk assets offset the exchange rate moves.

The net FCI spillovers from Fed policy shocks should be limited

Response of FCI to Fed policy shock, pp



Source: Goldman Sachs GIR.

The more important limit to divergence, therefore, might come from concerns among European policymakers that the US experience with sticky services inflation could signal that the "last mile" of disinflation might be similarly difficult in Europe. Indeed, recent policymaker comments across Europe suggest that uncertainty around whether the European inflation picture will resemble the US calls for caution in lowering interest rates. However, we find that the read-across from US inflation surprises to European inflation will likely be limited, pointing to manageable risk of a reacceleration in services inflation ahead and leaving us comfortable with our view that the ECB and BoE will start cutting rates in June, ahead of the Fed.

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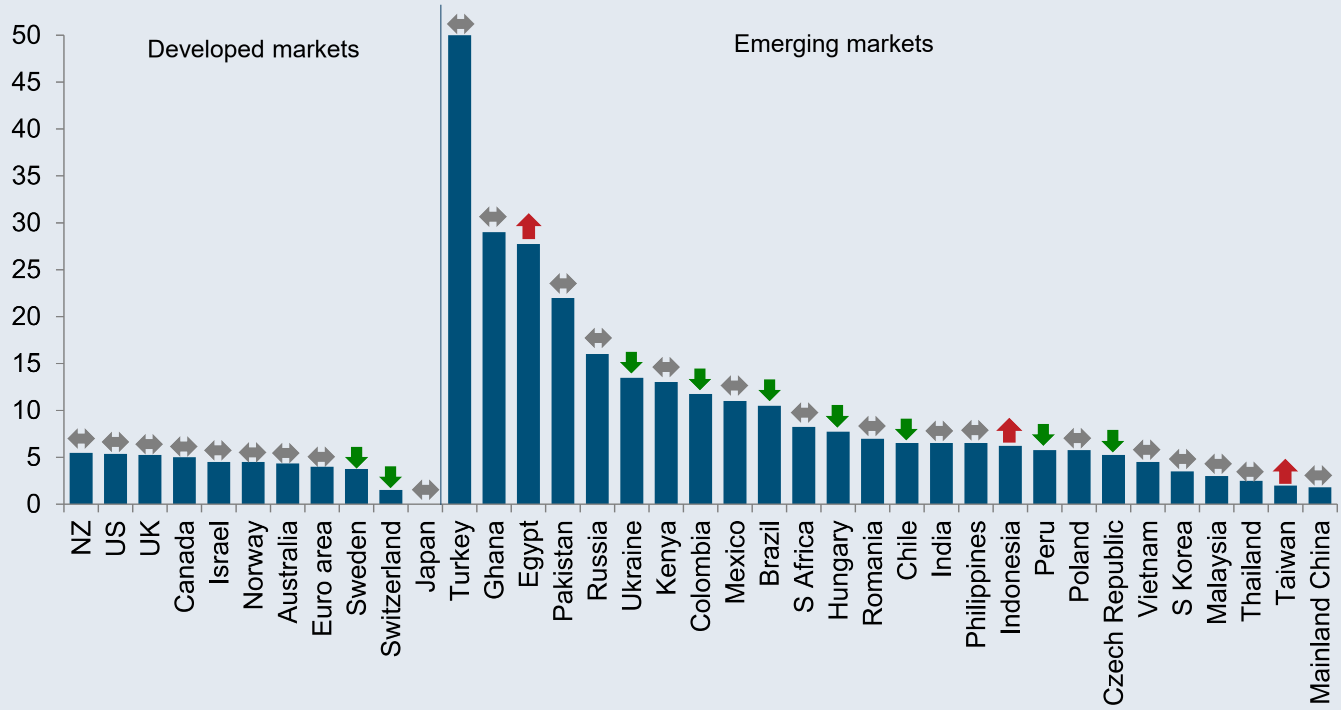
How dovish/hawkish are central banks?

Many EM central banks have embarked on rate cutting cycles, while most DM central banks have yet to do so

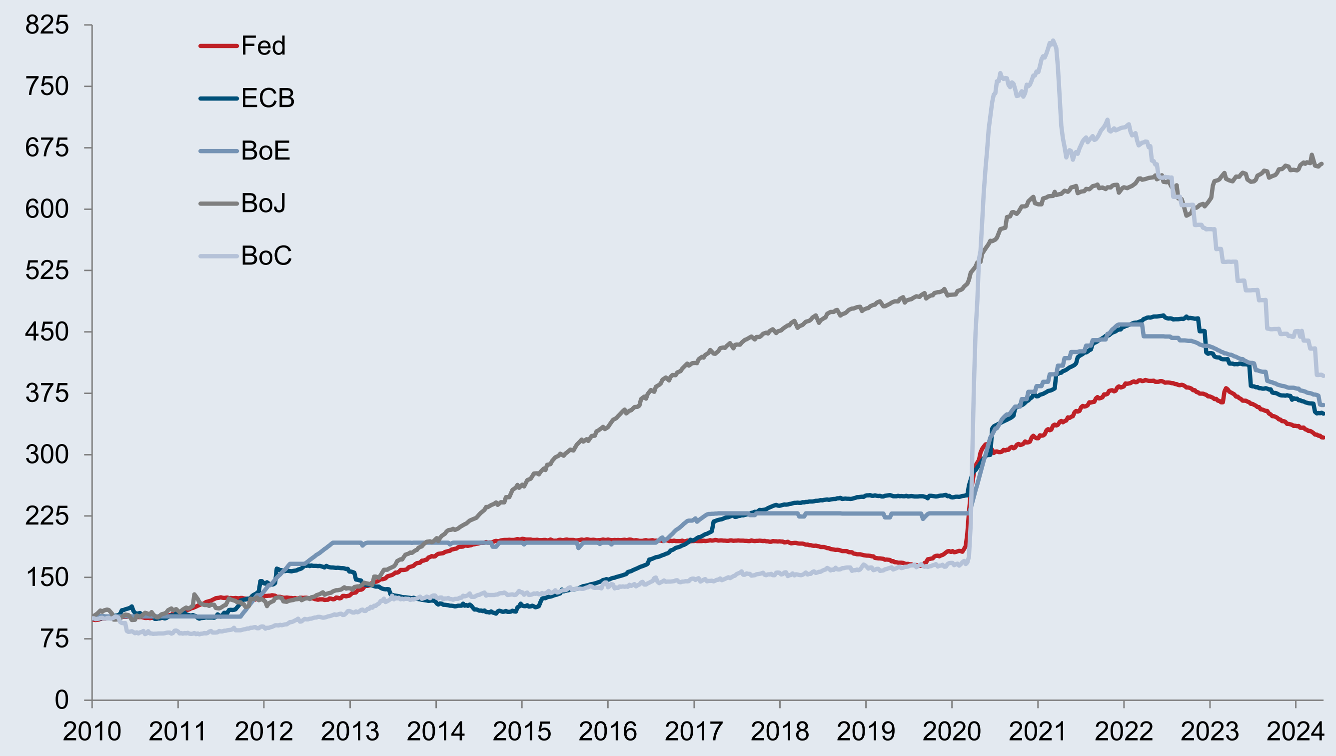
Policy rates, %; arrows mark the direction of the policy rate change since the last meeting of each central bank



Note: Red arrows represent a rate hike, green arrows represent a rate cut, grey arrows represent no change in policy since last meeting.
Source: Haver Analytics, Goldman Sachs GIR.

Most major G10 central banks have embarked on quantitative tightening (QT) and shrunk their balance sheets, though the Fed recently announced that it will soon slow the pace of shrinkage

Central bank balance sheet assets, index, January 8, 2010=100



Note: BoE line represents UK central bank reserves supplied via the Asset Purchase Facility.
Source: Haver Analytics, Goldman Sachs GIR.

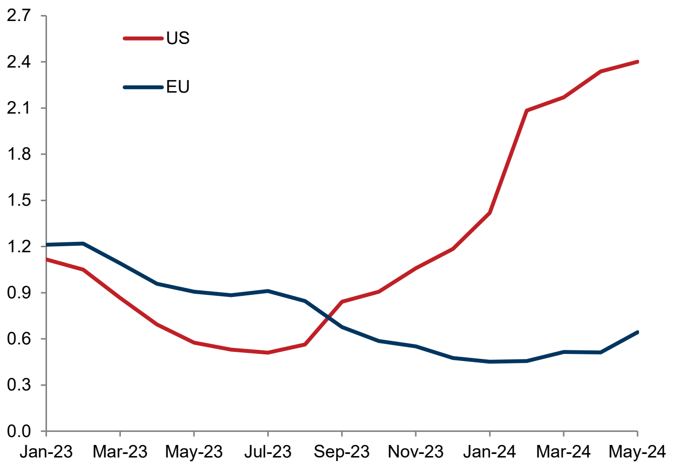
US-EU divergence: harder in practice

George Cole argues that rate markets have largely already priced in significant divergence between the US and Europe, but sees some opportunity in traded inflation

The theme of central bank divergence has received substantial attention in recent months, not only from market commentators but also from central banks themselves. Growth expectations for the US and Europe have been widening in favor of the US for almost a year now, and realized outcomes have remained much stronger in the US. Both the ECB and the BoE have argued—rightly, in our view—that their inflation dynamics are different from the US, driven more by energy price dynamics than strong consumption. As a result, they are embracing the possibility of cutting their policy rates ahead of the Fed, even though the historical experience typically sees the Fed as the first policymover. Switzerland and Sweden have already cut rates, underscoring the difference in European macro dynamics versus the US.

Growth expectations for the US and Europe have been widening in favor of the US

2024 GDP expectations, %



Source: Consensus Economics, Goldman Sachs GIR.

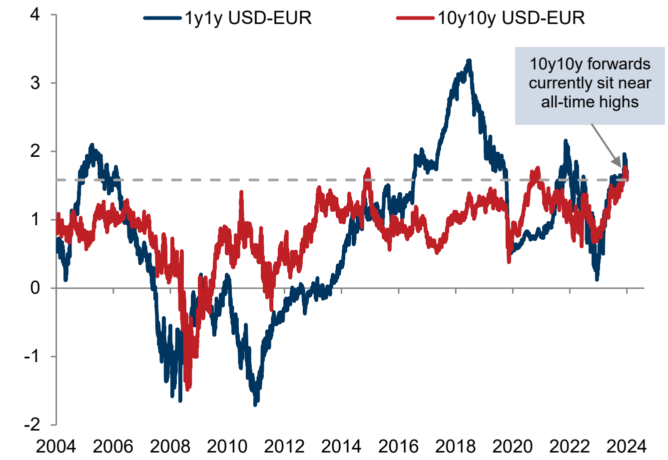
Limited room to price more divergence in rates

Markets have reacted accordingly and are now pricing earlier and deeper cuts from the ECB and the BoE for 2024 and beyond. However, the gap between ECB and Fed pricing is only around one 25bp cut, which is in line with our economic forecasts. This suggests that divergence is more a question of which central bank will cut by more, rather than a divergence in the direction of travel. As a result, it is not clear that a lot more room to price wider rate spreads in the very near term exists. This is especially true when data surprises are moving toward convergence rather than divergence—as they have been recently—a function not necessarily of weak US or strong EU data, but simply high US and low EU expectations.

What about further out the curve? At the front-end of the rate curve, rate spreads have widened but remain below their post-Global Financial Crisis (GFC) peak in 2018, when the Fed undertook a tightening cycle while the ECB was still cutting—true divergence. This suggests that the market is already pricing a reasonable degree of divergence, and unless the Fed moves toward hikes while the ECB cuts, it may be difficult to push rate spreads much wider. Even further out the curve, we find that rate spreads are near all-time wides—10y10y rate forwards have, in fact, seldom been higher.

Rate spreads at the front-end of the curve remain below their post-GFC peak, while spreads further out are near all-time wides

USD-EUR rate spreads, %



Source: Goldman Sachs GIR.

Long-end US-EU spreads more likely to narrow than widen

This suggests that the market is already pricing a significant and long-lasting divergence between the US and European economies, well beyond the cyclical divergence of the economies. One explanation could be differences in fiscal policy. While European economies are still spending well beyond the levels of the last decade as a share of GDP, European deficits are much more modest than in the US and are set to shrink faster than in the US in coming years, at least on paper. Other explanations are also possible, such as a higher productivity rate in the US or better demographics. But this reasoning only serves to explain the divergence that is already priced rather than offer a clear market opportunity. In addition, our fair value framework for long-dated rate forwards suggests that—based on our current economic forecasts—US-EU rate spreads should, in fact, narrow rather than widen.

Opportunities amid divergence

So where is divergence not yet priced? One obvious location is traded inflation. Long-dated inflation in the Euro area has rallied remarkably from the lows of 2015-2020, and currently sits at or above its pre-GFC levels. Some of this move reflects technical factors—European markets have reduced issuance of inflation-linked bonds, which has biased real rates lower and traded inflation higher. However, this doesn't quite explain the relatively low levels of US traded inflation, especially as other areas of US optimism, namely around real rates and economic growth, have risen substantially. As a result, we think that US inflation outperformance will be a long-run source of divergence relative to what is priced.

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FX: ready for divergence, data permitting

Kamakshya Trivedi and Michael Cahill note that macro/policy divergence has led to EM FX volatility, and argue that more policy divergence than expected in G10 could ultimately keep the Dollar stronger for longer

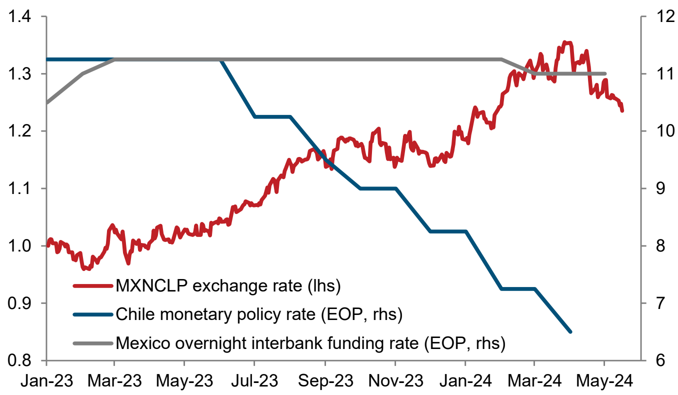
An environment rich in macro divergence offers a fertile backdrop for currency volatility since currency pairs are a relative asset. Recently, such divergence, and the resulting FX volatility, has been mostly concentrated in emerging market (EM) currency pairs, and we largely expect this to remain the case. But the risks of more macro and, in turn, monetary policy divergence in both EM and G10 economies could change this, and ultimately keep the Dollar stronger for longer.

Divergence has led to volatility in EM FX...

Significant macro and policy divergence has fueled substantial movement in EM currency pairs over the past 6-12 months. Between October 2023 and April of this year, for example, the Polish Zloty appreciated by over 10% versus the Czech Koruna as the CNB embarked on a cutting cycle while the NBP kept rates on hold. Even more striking was the 30% appreciation in the Mexican Peso versus the Chilean Peso, again reflecting macro and policy divergence, as the Central Bank of Chile cut rates by around 400bp while policy rates in Mexico held steady.

More dovish monetary policy in Chile versus Mexico led to a significant appreciation in the Mexican Peso

Index, Jan 2023=1 (lhs), % (rhs)



Source: Goldman Sachs GIR.

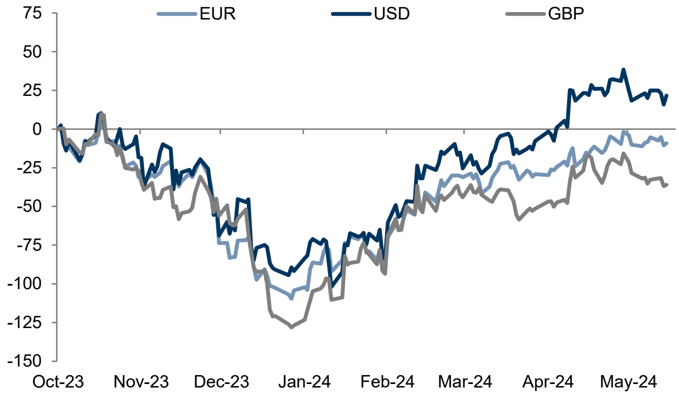
...but less so in G10 FX

By contrast, volatility across the major G10 currency pairs has remained relatively subdued despite a firmer nominal growth profile in the US relative to many other parts of the world. That is because currencies respond to *policy* divergence rather than *macro* divergence. At the start of the year, well-above-target inflation in most G10 economies meant policy divergence was still too far away for FX to respond. And lately, the data have converged somewhat, so the need for more substantial policy divergence has diminished.

Under our baseline forecasts of two rate cuts in the US this year compared to three cuts in the Euro area and the UK, we expect that limited policy divergence to broadly continue. And market pricing of monetary policy across the major G10 jurisdictions is also close to our forecasts, limiting the impact on currency pairs. So far, this relative outlook has been enough for the Dollar to edge higher this year despite its high valuation and countercyclical properties, and we think this can continue.

Markets have priced relatively moderate G10 policy divergence

Relative move in year-end central bank pricing for Fed, ECB, BoE



Source: Goldman Sachs GIR.

Policymakers already responding to divergence

But even the modest Dollar appreciation we expect is not a slam dunk. Where macro and potential policy divergence has been more apparent, policymakers have kept a keen eye on Fed shifts to limit the extent of currency volatility. In the case of Japan, where the steep real rate differential with the US has kept pressure on the Yen, policy authorities apparently recently intervened to limit Yen depreciation. Similarly, despite ongoing macro and policy divergence between the US and China, policy authorities continue to use a range of currency market tools to tightly manage the extent of Renminbi weakness.

Policy plans have also shifted in response to higher US rates in several EMs, with smaller rate cuts in Brazil, a pause in cuts in Mexico, and a hike in Indonesia despite still-supportive domestic inflation dynamics. This would likely remain the case in the reverse direction as well, where the possibility of faster Fed cuts would provide more room for policymakers in other countries to accelerate domestic policy easing (as we saw to some extent earlier this year), and continue to limit the policy divergence that impacts currencies.

Dollar stronger for longer?

Still, more meaningful divergence is possible ahead given the balance of risks in our outlook. Earlier this month, Sweden's Riksbank decided to go ahead with its first rate cut in light of the weak domestic economic backdrop as inflation has been moving back toward (and may undershoot) the target in what is one of the most rate-sensitive economies in G10. If the Fed holds steady but more jurisdictions—we expect June cuts in Canada, the UK, and Euro area—decide to proceed with domestic easing rather than waiting on the Fed, policy divergence would likely keep the Dollar stronger for longer.

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No performance divergence in credit

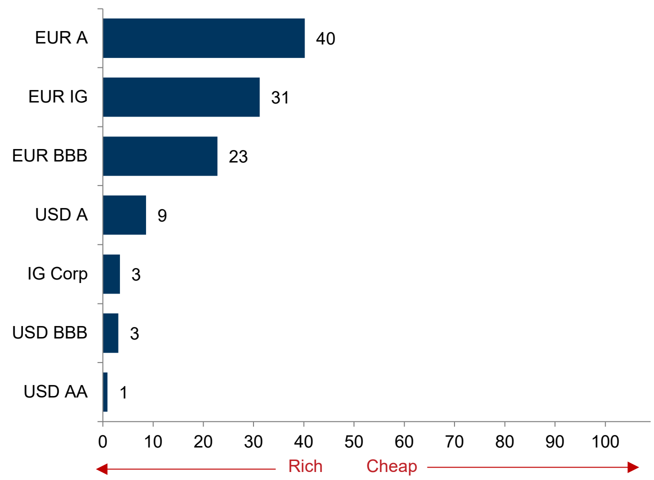
Lotfi Karoui and Spencer Rogers argue that Fed-ECB policy divergence is unlikely to drive sustained outperformance of the EUR IG credit market relative to the USD market

The past few weeks have provided confirmation that the later start to the easing cycle in the US relative to what most market participants and Fed officials had expected going into the year is unlikely to constrain the ECB's ability to deliver its first cut in June (see pgs. 14-15). For global credit investors, this raises a key question: will this mark the start of a period of policy divergence, and if so, will this divergence drive outperformance of EUR credit markets relative to their USD peers?

The case for such outperformance is certainly compelling. In addition to the policy gap between the US and Euro area, valuation appears more attractive in the EUR investment grade (IG) corporate bond market. Indeed, EUR IG corporate bond spreads are cheap relative to both their own history and relative to their USD counterparts. Many market participants also remember the period from late 2016 to mid-2019, which featured a gradual normalization of monetary policy in the US against a backdrop of accommodative policy in the Euro area, with negative policy rates and continued balance sheet expansion (including via purchases of corporate bonds). This policy divergence translated into modest relative outperformance of EUR IG spreads from late 2016 to 2017. This time, however, will likely be different.

Valuations are more attractive in EUR IG versus USD

Valuations, current percentile (1/2010-present)



Source: Bloomberg, ICE-BAML, Markit, Palmer Square, Goldman Sachs GIR.

Growth, inflation, and policy all matter...

Despite the valuation gap between the EUR and USD IG markets, we don't think the current policy backdrop will catalyze sustained outperformance of the EUR IG market. The interaction of growth, inflation, and policy arguably ultimately matters more for sentiment than the monetary policy stance. In the US, this interaction currently features still-strong but decelerating growth, some inflation stickiness (largely reflective of idiosyncratic factors in 1Q24), and restrictive monetary policy but easy financial conditions (as evidenced by the healthy levels of activity in primary credit markets).

In the Euro area, the current backdrop features weak but rebounding growth, declining inflation, and easing policy alongside relatively loose financial conditions. All in all, the top-down drivers of risk appetite are roughly in the same place on both sides of the Atlantic. And even if the growth outlook were to deteriorate in the US, we think the Fed can, and likely will, accelerate its easing timeline, which should limit the scope for spread widening. As such, from an allocation standpoint, we remain comfortable staying neutral between the EUR and USD IG markets.

...and policy divergence will likely be short-lived

Another ingredient of our neutral view is the fact that policy divergence itself will likely be short-lived and thus fall short of fueling a sustained boost in risk appetite among Euro area investors versus their US peers. Indeed, our economists' baseline case is for the ECB and the Fed to start their easing cycles in June and July, respectively (see pgs. 6-7). They also expect both central banks to proceed with a quarterly pace of cuts afterward. And while more uncertainty arguably exists around the timing of the first Fed cut, a policy gap similar in length and magnitude to the one that prevailed from late 2016 to mid-2019 remains highly unlikely.

Balance sheet runoff: another headwind for outperformance

The ECB's plan to continue to shrink its balance sheet by reducing its ownership of corporate bonds also constitutes a major difference with the 2016-2019 period when the ECB deployed its balance sheet into the EUR IG corporate bond market, thus providing the market with an additional technical tailwind. We estimate that the ECB's holdings of corporate bonds peaked at €390 billion in March 2023, equivalent to nearly 11% of the overall EUR IG market. Since then, the ECB has reduced its holdings to €362 billion. To be clear, ECB balance sheet runoff is now well priced-in, and we continue to expect it to remain well-digested by the EUR IG market even as the average monthly pace of runoff gradually increases over the coming years. That said, the EUR IG market has lost a large and indiscriminate buyer, which further limits the scope for sustained outperformance versus the USD IG market.

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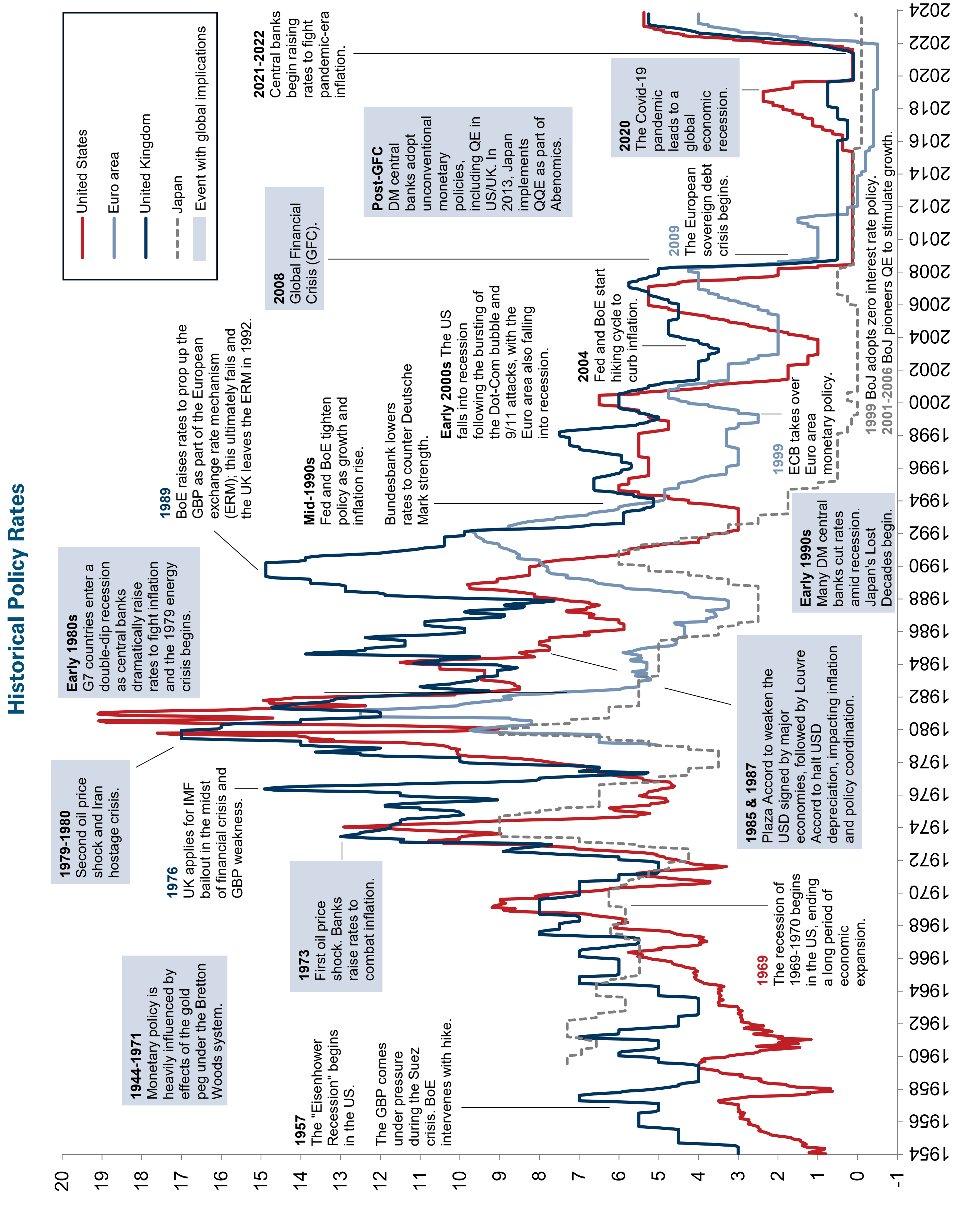
A long history of DM policy rates



Source: Haver Analytics, NBER, Federal Reserve Bank of St. Louis, various news sources, Goldman Sachs GIR.

Special thanks to GS GIR macro's Manuel Abecasis, James Moberly, Alex Stott, and Chelsea Song for chart data and feedback.

Central bank policy snapshot

	What have they done?	What have they said about policy and divergence?	What do we expect?
Fed	**Federal funds rate: 5.25%-5.5%** • The Federal Reserve has held the federal funds rate target range steady since its last rate hike in July 2023. • Balance sheet shrinkage will slow beginning in June as the monthly redemption cap on Treasury securities will decline from $60bn to $25bn.	**Fed Governor Christopher Waller** (5/21/2024) • "The economy now seems to be evolving closer to what the Committee expected. Nevertheless, in the absence of a significant weakening in the labor market, I need to see several more months of good inflation data before I would be comfortable supporting an easing in the stance of monetary policy." **Fed Vice Chair Philip Jefferson** (5/20/2024) • "It is too early to tell whether the recent slowdown in the disinflationary process will be long-lasting ."	• We expect the Fed to cut rates twice this year, in July and November.
ECB	**Deposit facility rate: 4.00%** • The ECB has held the deposit facility rate steady since its last rate hike in Sept 2023. • Over the second half of 2024, the ECB intends to reduce the PEPP portfolio by €7.5bn/month on average, and discontinue reinvestments under the PEPP at year-end.	**ECB Governing Council Member Boris Vujcic** (4/19/2024) • "The longer a possible gap between us and the Fed widens, the more impact it is likely to have. We can, of course, move first given the differences between the two economies, but we will then have to carefully assess the impact as we move along." **ECB Governing Council Member Bostjan Vasle** (4/18/2024) • "The economic situation in the US is at the moment different from the Euro area. So, it is a logical consequence that the reaction of monetary policy might also be different. But this divergence has limits." **ECB President Christine Lagarde** (4/11/2024) • "The US is a very large market, a very sizable economy, a major financial center as well, so all that finds its way into our projections."	• We expect the ECB to cut starting in June and proceed at a quarterly cutting pace, for a total of three cuts this year and four cuts next year.
BOE	**Bank Rate: 5.25%** • The BoE has held Bank Rate steady since its last rate hike in August 2023. • The BoE stopped buying bonds at end-2021, stopped reinvesting the proceeds from maturing bonds in Feb 2022, and began actively selling bonds in Nov 2022.	**BoE Governor Andrew Bailey** (4/16/2024) • "It is possible for the path of rates on either side of the Atlantic to diverge. The dynamics for inflation are rather different now between Europe and the US."	• We expect the BoE to begin cutting rates in June and cut again in August, after which we expect quarterly cuts, for a total of three cuts in 2024 and four cuts in 2025.
BOJ	**Deposit Rate: 0-0.1%** • The BoJ increased the deposit rate for the first time in 17 years in March 2024. • The BoJ appears to have intervened to prop up the Yen in late April/early May under the direction of the Ministry of Finance.	**BoJ Governor Kazuo Ueda** (4/26/2024) • "For now, the weak Yen has not had a big impact on underlying inflation. But prices are overshooting as a whole and the chance of inflation moving in line with our forecast is rising...There is a risk that we could see a second round of cost-push inflation... The impact of Yen moves is usually temporary. But the chance of the impact being prolonged is not zero."	• We expect the BoJ to raise rates by 0.25pp every six months on average until the target range of the policy rate reaches 1.25-1.5% in 2027.
BOC	**Policy rate: 5.00%** • The BoC has held the policy rate steady since its last rate hike in June 2023. • The BoC has been shrinking its balance sheet since Apr 2022 by letting its bond holdings roll off at maturity without replacing them.	**BoC Governor Tiff Macklem (4/12/2024)** • "What happens in the US definitely has an impact on Canada. It has an impact through our trade relationship. Our financial markets are very integrated. So, that is something we are going to have to take into account."	• We expect the BoC to initiate its easing cycle in June and deliver a total 75bp of cuts in 2024.

Source: Federal Reserve, European Central Bank, Bank of England, Bank of Japan, Bank of Canada, various news sources, Goldman Sachs GIR.

Summary of our key forecasts

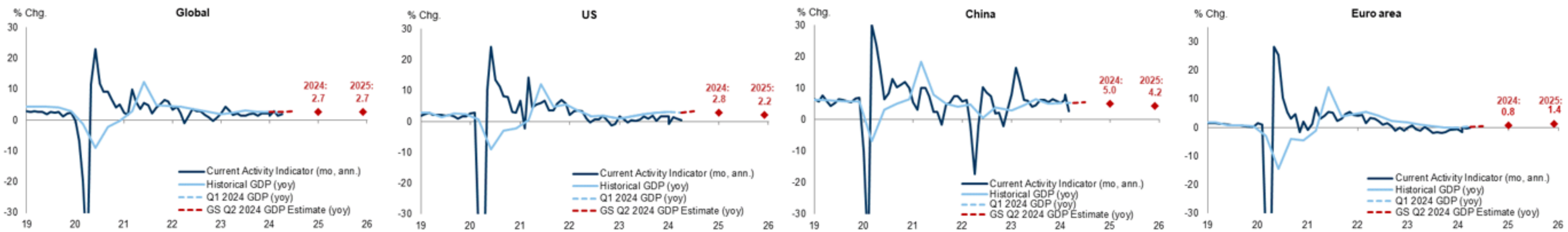
GS GIR: Macro at a glance

Watching

- **Globally,** we expect real GDP growth of 2.7% yoy in 2024, reflecting tailwinds from strong real household income growth, a gradual recovery in manufacturing activity, and a start to rate cuts as inflation cools. We expect global core inflation to fall back to around 2.5% by the end of 2024 as core goods inflation continues to decline, shelter inflation falls further, and both services inflation and wage growth continue to slow in response to the improved supply-demand balance across the global economy.
- **In the US,** we expect well-above-consensus real GDP growth of 2.4% in 2024 on a Q4/Q4 basis, reflecting easing financial conditions amid a start to Fed rate cuts and strong real disposable income growth. We continue to see a below-consensus 15% probability of entering a recession over the next 12 months. We expect core PCE inflation to fall to 2.7% yoy by Dec 2024, reflecting further rebalancing in the auto, housing rental, and labor markets, and to converge toward 2% next year. We expect the unemployment rate to end 2024 at 3.8% and fall to 3.6% by end-2026.
- **We believe the Fed** will remain on hold at the current fed funds rate range of 5.25-5.5% until the first 25bp cut in July, after which we expect rate cuts to proceed at a quarterly pace with the next 25bp cut in November, though the timing remains sensitive to upcoming data.
- **In the Euro area,** we expect real GDP growth to increase to 0.8% yoy in 2024, reflecting a pickup in real disposable income and a fading credit drag as the ECB turns toward rate cuts, which should more than offset the building headwind from fiscal policy. We expect core inflation to slow further to 2.4% yoy by December 2024, reflecting continued declines in services inflation, normalizing wage growth, and further scope for energy-related effects to fade.
- **We believe the ECB** will remain on hold at 4.00% until the first rate cut in June, after which we expect cuts to proceed at a quarterly pace until the policy rate reaches 2.25% for a total of three cuts in 2024 and four cuts in 2025, although the risks are skewed toward a semiannual pace of cuts.
- **In China**, we expect real GDP growth of 5.0% yoy in 2024 as growth headwinds such as a prolonged property downturn and the lack of confidence among households and private businesses are offset by strong exports and continued policy easing. We expect inflation to remain low in 2024, with continued PPI deflation and moderate CPI reflation amid the ongoing food price deflation, property downturn, and manufacturing overcapacity. Over the longer term, we remain cautious on China's growth outlook given deteriorating demographics, property and local government deleveraging, and global supply chain de-risking.
- **WATCH CONFLICT IN THE MIDDLE EAST, OTHER GEOPOLITICAL RISKS, AND US POLITICS.** The situation in the Middle East remains highly uncertain and further escalation could send oil prices substantially higher. Elevated tensions amid the Russia-Ukraine war and more fraught US-China relations could also have material market implications. And in the US, the all-but-certain Trump-Biden rematch in the November general election could have important macro and market implications, especially if it brings the possibility of fresh unfunded fiscal expansion or a further rise in tariffs.

Goldman Sachs Global Investment Research.

Growth



Source: Haver Analytics and Goldman Sachs Global Investment Research.
Note: GS CAI is a measure of current growth. For more information on the methodology of the CAI please see "Improving Our Within-Month CAI Forecasts," Global Economics Comment, Mar. 06, 2023.

Forecasts

Economics

GDP growth (%)	2024 GS (Q4/Q4)	2024 Cons. (Q4/Q4)	2024 GS (CY)	2024 Cons. (CY)	2025 GS (CY)	2025 Cons. (CY)
Global	2.8	--	2.7	2.6	2.7	2.6
US	2.4	1.6	2.8	2.4	2.2	1.7
China	4.7	4.7	5.0	4.9	4.2	4.5
Euro area	1.4	1.2	0.8	0.7	1.4	1.4

Policy rates (%)	2024 GS	2024 Mkt.	2025 GS	2025 Mkt.
US	4.88	4.90	3.88	4.35
Euro area	3.25	3.28	2.25	2.86
China	1.70	1.83	1.70	--
Japan	0.13	0.35	0.63	0.52

Markets

Interest rates 10Yr (%)	Last	E2024	E2025
US	4.44	4.25	4.10
Germany	2.50	2.25	2.00
Japan	0.98	1.25	1.80
UK	4.11	3.75	3.75

Commodities	Last	3m	12m
Crude Oil, Brent ($/bbl)	84	87	82
Nat Gas, NYMEX ($/mmBtu)	2.75	2.70	4.00
Nat Gas, TTF (EUR/MWh)	31.93	30	32
Copper ($/mt)	10,801	10,500	13,000
Gold ($/troy oz)	2,420	2,600	2,700

FX	Last	3m	12m
EUR/$	1.09	1.05	1.08
GBP/$	1.27	1.24	1.28
$/JPY	156	155	150
$/CNY	7.21	7.30	7.20

Credit (bp)		Last	1H24	2H24
USD	IG	86	89	90
	HY	296	297	291
EUR	IG	122	121	120
	HY	329	341	336

Equities

S&P 500	E2024 GS	E2024 Cons.	E2025 GS	E2025 Cons.
Price	5,200	--	--	--
EPS	$241	$244	$256	$277
Growth	8%	9%	6%	13%

Returns (%)	12m	YTD	E2024 P/E
S&P 500	-2	11.3	22.2x
MXAPJ	1	8.1	14.8x
Topix	5	17.0	16.3x
STOXX 600	3	9.4	14.4x

Consumer	2024 CPI (%, yoy)	2024 Unemp. Rate	2025 CPI (%, yoy)	2025 Unemp. Rate	Wage Tracker 2024 (%) Q1	Q2	Q3	Q4
US	3.3	3.8	2.7	3.7	4.3	--	--	--
Euro area	2.4	6.7	2.1	6.7	--	--	--	--
China	0.4	--	1.5	--	--	--	--	--

Source: Bloomberg, Goldman Sachs Global Investment Research. For important disclosures, see the Disclosure Appendix or go to www.gs.com/research/hedge.html.

Market pricing as May 20, 2024

Glossary of GS proprietary indices

Current Activity Indicator (CAI)

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

For more, see our CAI page and Global Economics Analyst: Trackin' All Over the World – Our New Global CAI, 25 February 2017.

Dynamic Equilibrium Exchange Rates (DEER)

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

For more, see our GSDEER page, Global Economics Paper No. 227: Finding Fair Value in EM FX, 26 January 2016, and Global Markets Analyst: A Look at Valuation Across G10 FX, 29 June 2017.

Financial Conditions Index (FCI)

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

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

For more, see our FCI page, Global Economics Analyst: Our New G10 Financial Conditions Indices, 20 April 2017, and Global Economics Analyst: Tracking EM Financial Conditions – Our New FCIs, 6 October 2017.

Goldman Sachs Analyst Index (GSAI)

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

Macro-Data Assessment Platform (MAP)

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

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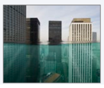

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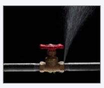

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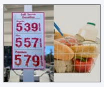

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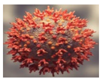

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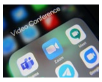

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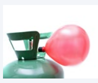

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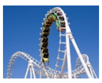

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Reg AC

We, Allison Nathan, Jenny Grimberg, Ashley Rhodes, Joseph Briggs, Michael Cahill, George Cole, Jan Hatzius, Lotfi Karoui, Spencer Rogers, Jari Stehn, and Kamakshya Trivedi hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

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