Global Markets Daily: US Policy Rate Pricing in Recession Scenarios (Pandl/Tessari)

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- Consensus expectations for US inflation are skewed to the upside, according to surveys. Therefore, without a recession, mean expectations for the fed funds rate should arguably be moderately above current market pricing and our own forecasts in 2023-24 (based on a Taylor Rule framework, and not accounting for any outsized changes in financial conditions).
- But what about in a recession scenario? We argue that in an environment of high inflation, markets will expect policymakers to put relatively less weight on uncertain estimates of the output gap (or expect that they will tolerate some increase in the unemployment rate). Moreover, if consensus expectations for inflation remain skewed to the upside, markets may struggle to price very low mean outcomes for the funds rate. Therefore, in a US recession, we argue that markets will price a higher probability on funds rate outcomes around 1-2% in late-2024 and a lower probability on funds rate outcomes around 4-5%.
- These estimates are subject to a number of caveats about our modeling choices, but help inform how the front-end distribution might change in a cyclical downturn. Given the relatively low level of the funds rate expected later this year, the Fed could cut to zero in a relatively large recession and/or if the distribution of inflation risks shifts to the downside (e.g. due to a large decline in global commodity prices).

US Policy Rate Pricing in Recession Scenarios

Last week the FOMC raised the funds rate by 75bp and indicated that it was "strongly committed" to bringing inflation back down to 2%. The Summary of Economic Projections (SEP) showed that Fed officials believe lowering inflation will require some deterioration in the labor market: participants forecast that the unemployment rate will rise to 4.1% by 2024 from 3.6% currently. An increase of this magnitude has never occurred in US history except during or just before recessions. In other words, policymakers are signaling they are determined to bring down inflation, even if that implies a fairly high risk of recession. How might a recession affect the US yield curve? Using our framework based on inflation uncertainty, developed in earlier work, we argue that in a recession scenario, markets would put more probability on the funds rate ending 2024 at 1-2%, and less

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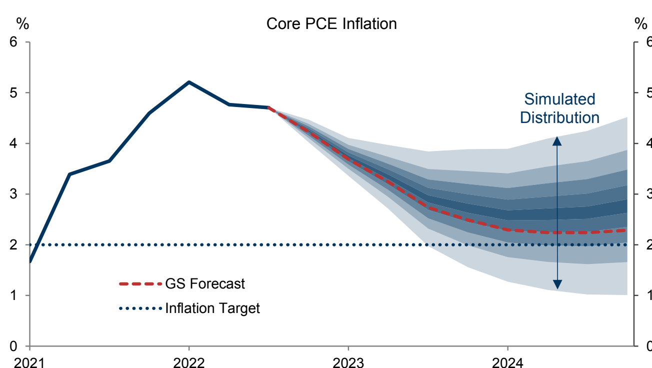
probability on the funds rate ending 2024 at 4-5%.

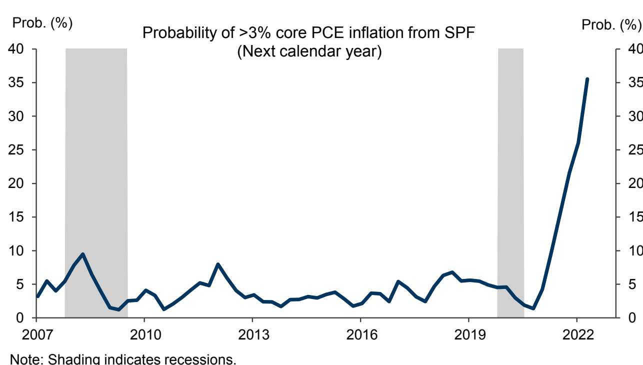
Exhibit 1 & Exhibit 3 show our baseline simulations for US inflation and the funds rate. In this exercise, we begin with GS forecasts for core PCE inflation and judgmentally set the US output gap to zero (on the assumption that the true level of the output gap is highly uncertain and policymakers are primarily focused on inflation at present). We then simulate alternative paths for inflation using Monte Carlo techniques, where the distribution of inflation outcomes is calibrated to resemble consensus views about inflation uncertainty, according to the Philadelphia Fed's Survey of Professional Forecasters (SPF).[1] We begin the simulations in Q4 2022 on the assumption that there is lower uncertainty about inflation and the funds rate over the next one quarter[2]. At the moment most economists see relatively high inflation uncertainty—the distribution has an unusually high variance—with risks tilted to the upside—the distribution has positive skew (Exhibit 1 & Exhibit 2). Relative to our economists' baseline forecasts (which reflect a modal or "single most likely" outcome), the mean inflation rate in our simulations is meaningfully above the Fed's 2% target for a longer period.

Exhibit 1: Inflation Distribution Skewed to Upside



Source: Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 2: Surveys Show High Probability of >3% Inflation



Source: Haver Analytics, Goldman Sachs Global Investment Research

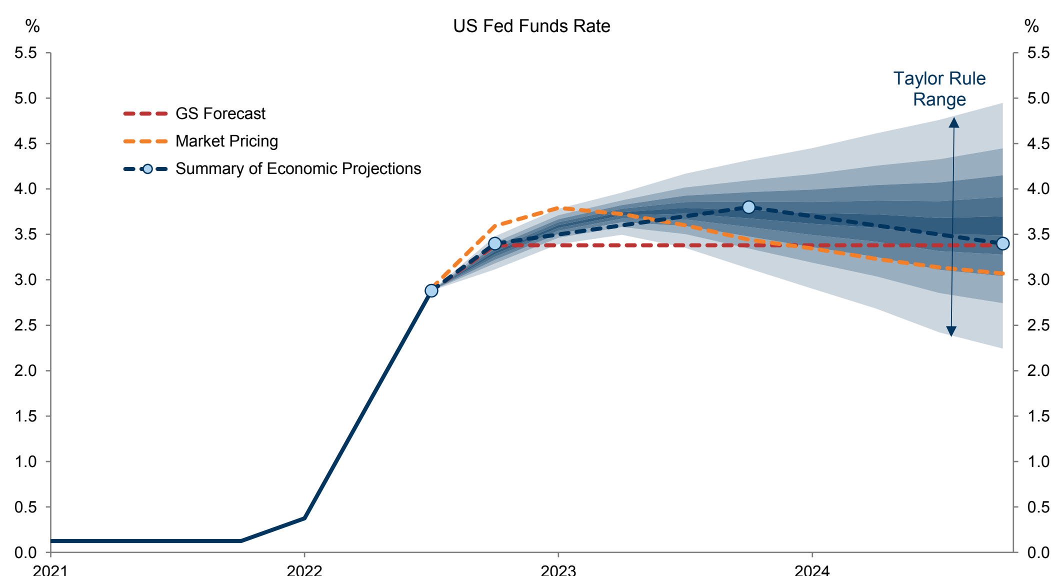
Next, we pass these inflation outcomes through a standard Taylor Rule (Exhibit 3).[3] Over the near-term market pricing for the funds rate exceeds predictions from a Taylor Rule, likely because of FOMC communication as well as the implicit policy rate guidance in the SEP "dot plot". Further ahead, the mean simulation for the funds rate exceeds our economists' baseline forecasts, reflecting upward skew to the perceived inflation distribution. In other words, if the US economy avoids recession, mean expectations for policy rates may move above our modal forecasts (as well as current market pricing), in light of upside risks to inflation.

[1] Latest survey as of 13 May 2022.

[2] We assume a 75bp hike in July and 50bp in September.

[3] Specifically, an inertial Taylor (1999) rule with the real neutral funds rate set to +0.5%.

Exhibit 3: Upside Risks to Inflation Imply Higher Mean Expectation for Fund Rate (if Recession Avoided)

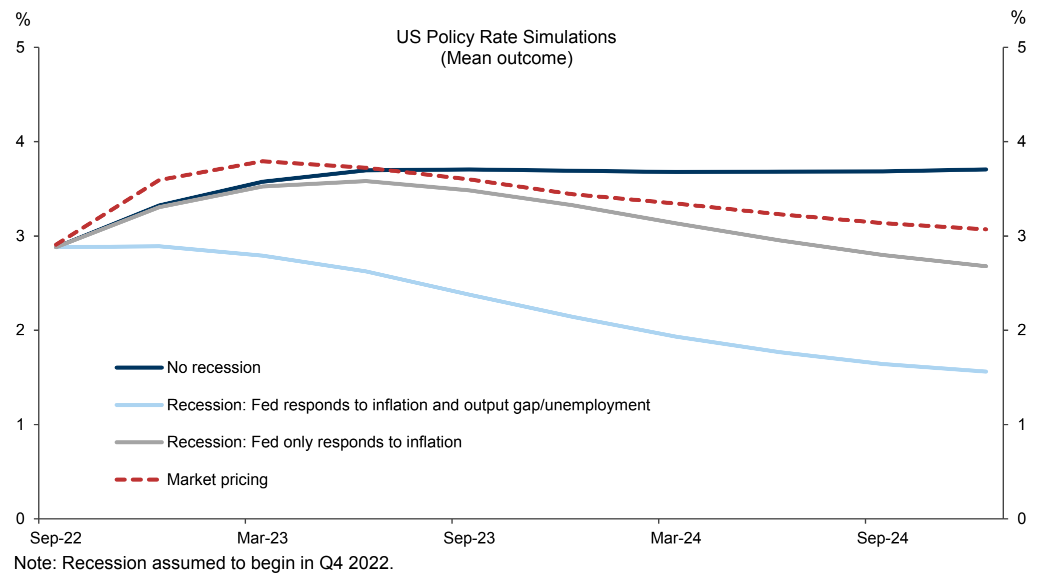


Source: Bloomberg, Federal Reserve Board, Goldman Sachs Global Investment Research

But what if the US economy does slip into recession? To estimate the possible implications for policy rates, we calculate the typical change in the US output gap and core inflation during past recessions. In the median example, the output gap falls about 5pp from roughly +1% prior to the recession to -4% at the trough. Similarly, in the median post-WWII US recession, core inflation falls by about 1.25pp after 8-10 quarters (using a simple average of core CPI and core PCE inflation; headline CPI and PCE inflation for earliest post-WWII recessions). In our simulations, we smooth these median outcomes for both the output gap and inflation with a LOESS regression.

Exhibit 4 shows simulation results for the funds rate in a recession scenario, where the first quarter of negative GDP growth occurs in Q4 2022 (recession timing discussed further below). Importantly, in these simulations the inflation distribution still resembles results from the SPF—i.e. the inflation process is assumed to have both high variance and positive skew. We show two examples: (i) where the Fed responds to both inflation and the output gap, as in a traditional Taylor Rule and (ii) where the Fed only responds to inflation, on the assumption that policymakers will have high tolerance for weaker real activity in order to ensure that inflation and inflation expectations come down. In example (i), the FOMC pauses late this year and begins cutting in early 2023, eventually reducing the funds rate to roughly 1.5%. In example (ii), the FOMC continues hiking until mid-2023 and then begins cutting, lowering the funds rate by end-2024 to about 2.5%. If we assume that the "true" recession scenario falls between simulations (i) and (ii), our results imply that markets are pricing a roughly 1-in-4 chance of recession.

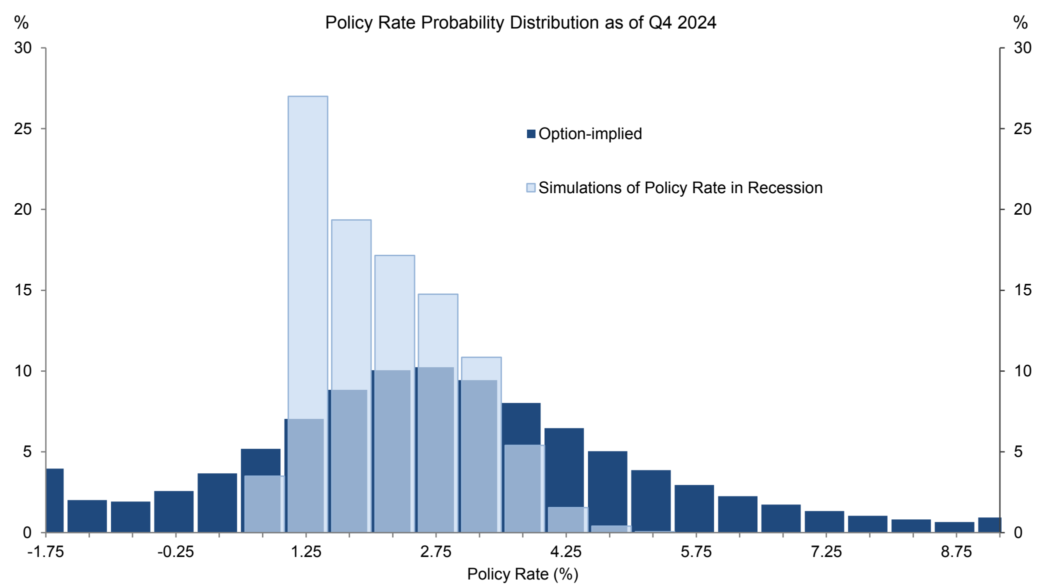
Exhibit 4: Policy Rate Path Depends on Whether Fed Responds to Output Gap/Unemployment



Source: Bloomberg, Goldman Sachs Global Investment Research

We next compare the full distribution of outcomes in recession scenarios to the market-implied probability distribution derived from options (Exhibit 5; for the recession scenario we show a simple average of simulations including and excluding a Fed response to the lower output gap/higher unemployment rate). If the likelihood of recession were to rise, the option-implied probability on forward rates around 4–5% would have the furthest to fall, whereas the option-implied probability on forward rates around 1-2% would have the most upside (given our specific modeling assumptions).

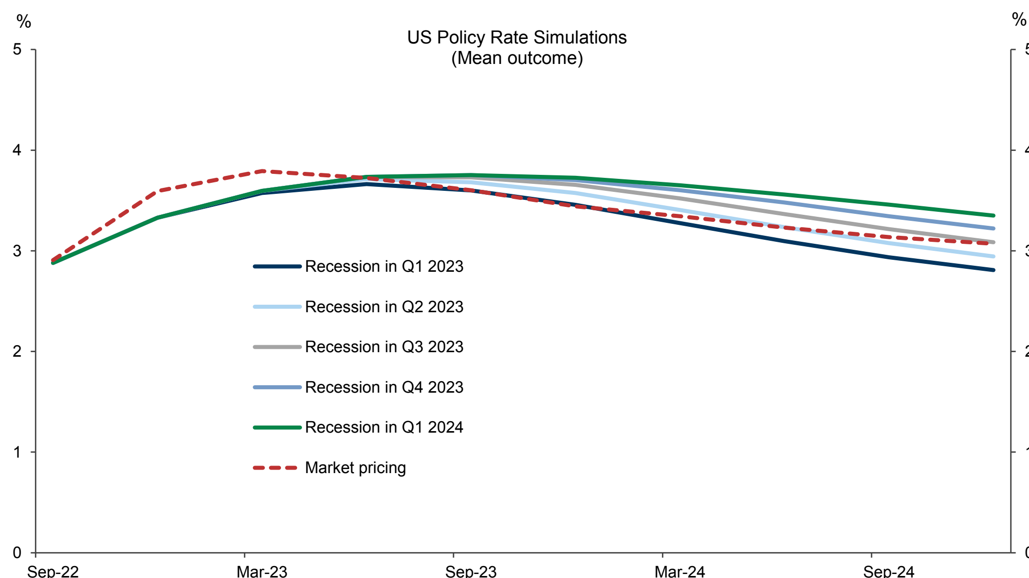
Exhibit 5: Higher Odds of Policy Rates around 1-2% in US Recession



Source: Bloomberg, Goldman Sachs Global Investment Research

What if a recession arrives later? Exhibit 6 shows the same recession-scenario simulation results, but varying the start of the downturn. The peak in current market pricing comes earlier, then most closely resembles the "late recession" scenarios by end-2024. Should markets expect a recession to arrive sooner, we should expect forwards in late-2023 through 2024 to decline.

Exhibit 6: Might Pricing Most Consistent with "Late Recession" Outcomes by Late-24



Source: Bloomberg, Goldman Sachs Global Investment Research

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1. Stay long SGD vs short TWD, opened on October 29, 2020, at 20.95 (indexed at 100), with a revised total return target of 117, and a revised stop of 113, currently trading at 116.30.
2. Stay long MSCI EM vs. short EMBIG-Div, opened on November 9, 2021, at 100, and revised on 8 December to include duration (from hedged previously) together with a revised total return target of 120 and a revised stop of 86, currently trading at 98.42.
3. Stay long Dec-23 CME Copper, opened on November 9, 2021, at $9325/mt, with a target of $11,000/mt and a stop of $8,600/mt, currently trading at $8,962/mt.
4. Stay long Dec-23 Brent position, opened on December 2, 2021, at $64.6/bbl, with a revised target of $100/bbl and a revised stop of $85/bbl, currently trading at $92.6/bbl.
5. Stay long BRL DI Jan24s-Jan27s steepeners, opened on January 12, 2022, at -43bp, with a target of 60bp, and a revised stop of -130bp, currently trading at -80bp.
6. Stay long S&P GSCI Industrial Metals Total Return Index, opened on January 14, 2022, at 1879 (indexed at 100), with a revised target of 128, and a revised stop of 88, currently trading at 92.34.
7. Stay long THB vs TWD, opened on February 18, 2022, at 100, with a total return target of 108, and a stop of 96, currently trading at 97.69.
8. Stay long MYR vs PHP, opened on March 2, 2022, at 100, with a total return target of 108, and a stop of 96, currently trading at 100.04.
9. Stay long CMBX 6 BBB- index, opened on March 29, 2022, at $75.36, with a target of 8.0% and a stop of -5.0%, currently trading at 3.61%.
10. Buy 6m20y JPY A/A+ 25 payer spread, opened on April 29, 2022, at 0bp, with a total return target of 15bp and a stop of -7bp, currently trading at 6bp.
11. Stay long THB 2/10Y OIS flatteners, opened on May 9, 2022, at 124bp, with a revised target of 40bp, and a revised stop of 70bp, currently trading at 54bp.
12. Receive 5s on 2s5s10s SEK OIS fly, opened on May 13, 2022, at 22bp, with a target of 7bp, and a stop of 32bp, currently trading at 21bp.
13. Stay long 2s10s OIS steepeners in GBP vs EUR, opened on May 13, 2022, at -105bp, with a target of -80bp, and a stop of -120bp, currently trading at -105bp.
14. Stay long an equal-weighted basket of CZK and HUF vs ILS, opened on May 18, 2022, at 100, with a total return target of 108, and a stop of 96, currently trading at 101.70.
15. Buy 10y30y straddles vs sell 3y30y straddles (3:1 vega risk), opened on May 20, 2022, at 30abp, with a target of 35abp, and a stop of 27abp, currently trading at 32abp.
16. Buy 6m USD/JPY digital puts, opened on May 20,2022, at 128, with a target of 115, currently trading at 136.3.
17. Stay short NZD/CAD, opened on June 3, 2022, at 0.82, with a target of 0.80, and a stop of 0.84, currently trading at 0.819.
18. Stay long BRL vs ZAR, opened on June 10, 2022, at 100, with a total return target of

106, and a revised stop of 96, currently trading at 97.05

19. Receive KRW 2Y IRS vs pay HKD 2Y IRS, opened on June 22, 2022, at 19bp, with a target of -40bp and a stop of 60bp.

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