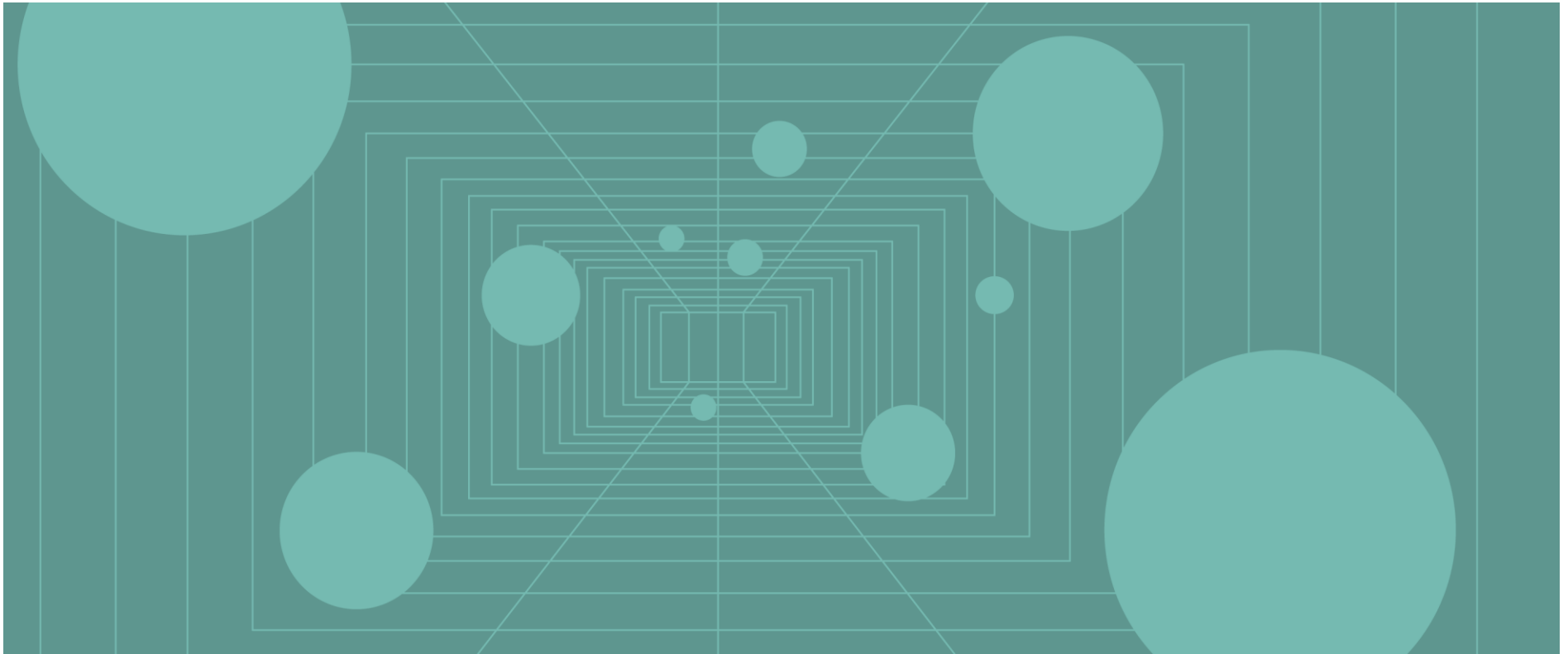


MONETARY POLICY AND GLOBAL RATES UPDATE

INFLATION AND TIGHTER POLICY CHALLENGE GOVERNMENT BONDS

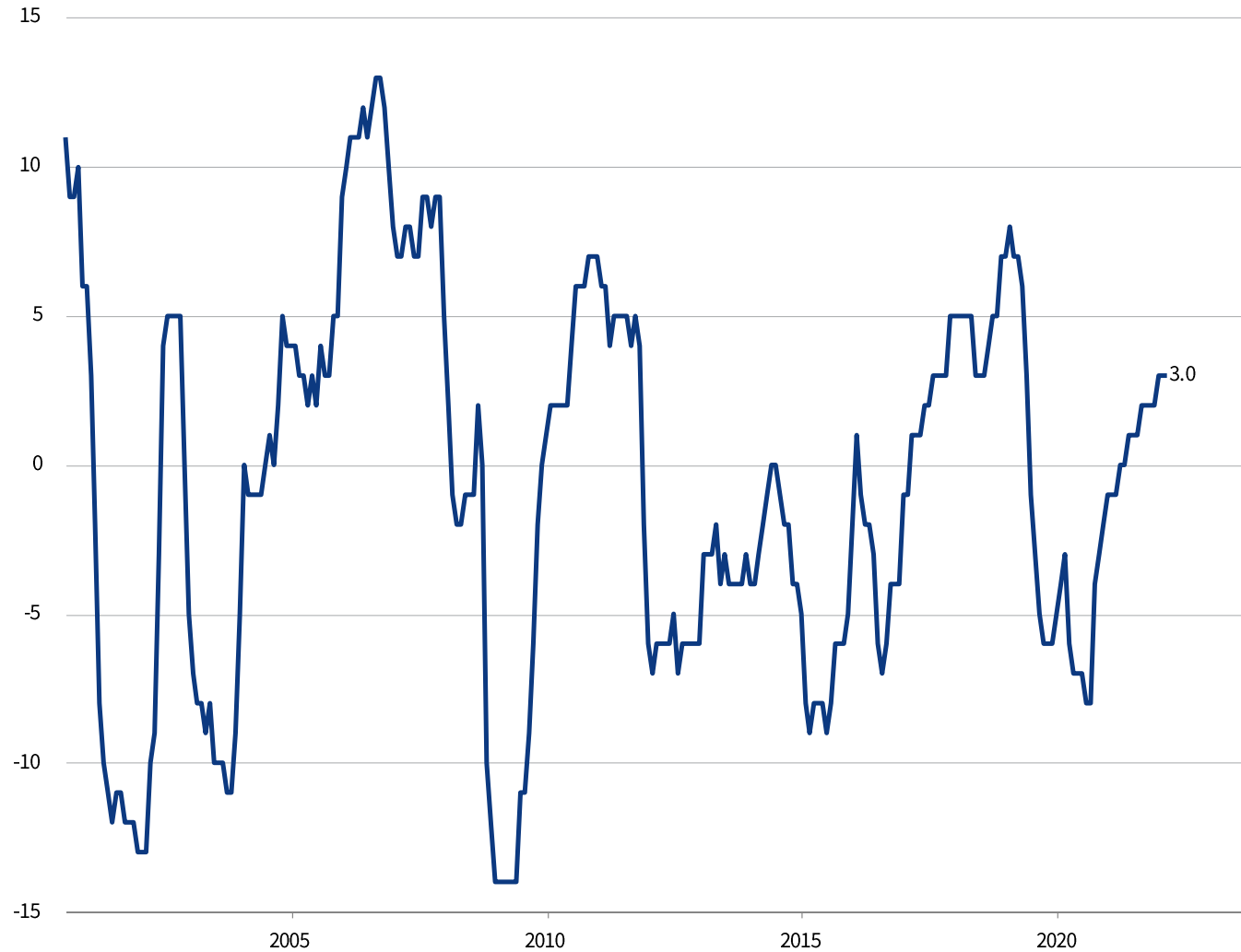


Key points

- Most developed markets central banks have started the process of removing monetary policy support they implemented during the pandemic.
- Central banks are under pressure due to the strong economic recovery and supply-chain disruptions, which have led to high inflation and tight labor markets.
- The hawkish shift by central banks has prompted the market to expect most central banks to raise policy rates multiple times in 2022.
- Government bonds have sold off to start the year. The sell-off has been most acute at the short end of the curve.
- The pace of central bank asset purchases is slowing, with the Fed expected to announce it will stop all purchases after their mid March meeting.
- Economic pressures and expected central bank tightening suggest bond yields have room to move higher this cycle. However, there will likely be fits and starts and technical indicators suggest the recent rise in yields was beginning to look stretched.
- Bond markets have been unusually volatile in recent weeks given uncertainty around the Russia/Ukraine crisis and yields have come off recent highs.
- Expectations related to the duration of the war in Ukraine and its impact on the global economy will be a key driver of rates for the duration of the conflict.

Central banks are starting to remove the punchbowl

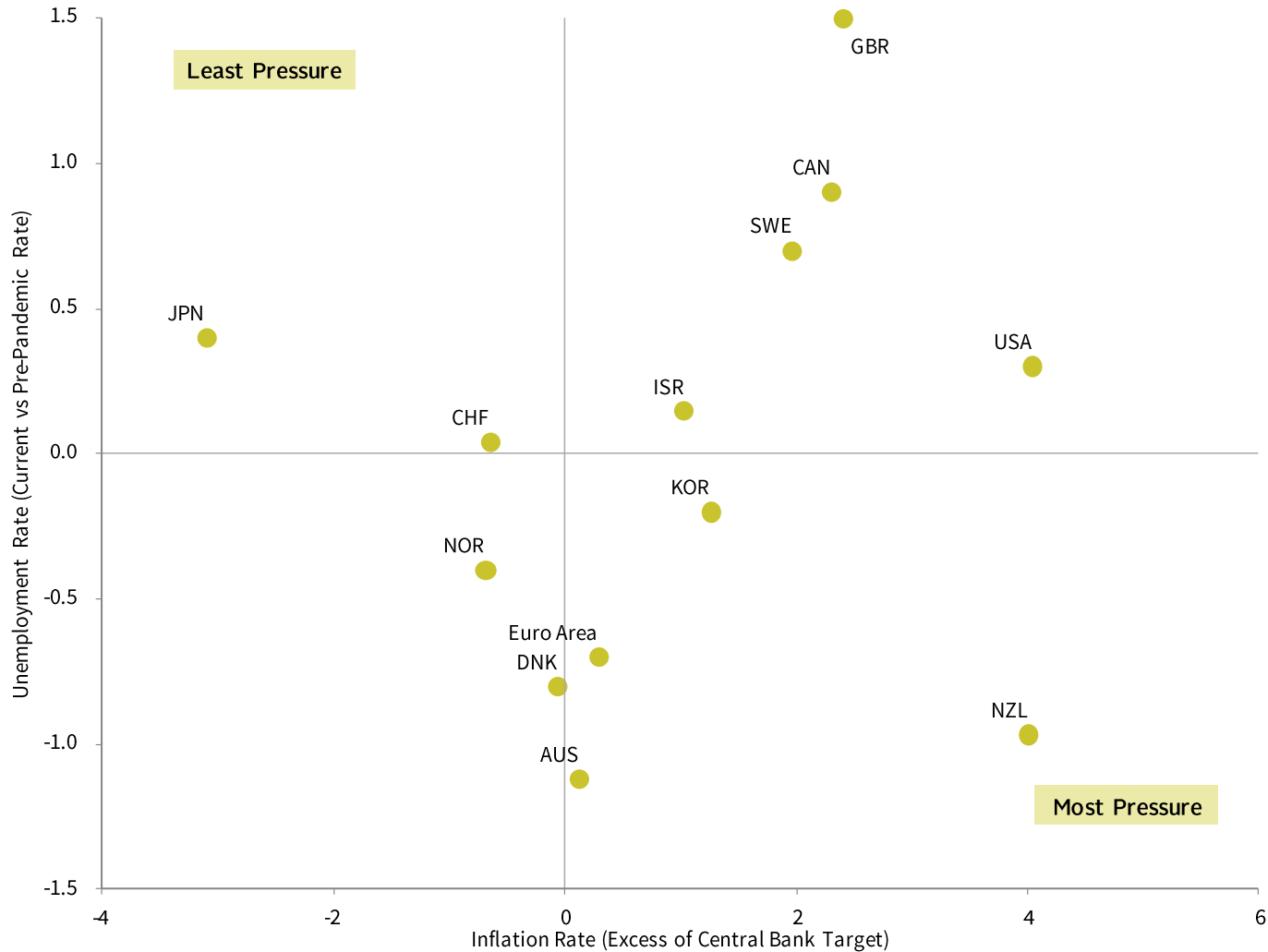
NET NUMBER OF DEVELOPED MARKETS CENTRAL BANKS HIKING POLICY RATES
July 31, 2000 – February 28, 2022



Monetary authorities responded swiftly and forcefully to the pandemic with unprecedented monetary policy measures. Of the 14 DM central banks tracked by the Bank of International Settlements, nine reduced their policy rates to or below zero in 2020. Some central banks, such as the European Central Bank, relied solely on alternative stimulus measures, as their policy rates were already deeply negative. Fast forward two years and central banks are dialing back policy stimulus. Some central banks have already raised policy rates, such as the Bank of England (+15 bps) and the Reserve Bank of New Zealand (+50 bps). Most other central banks, including the Fed, have signaled they plan to begin hiking rates this year.

Inflation pressures are forcing central banks to tighten policy

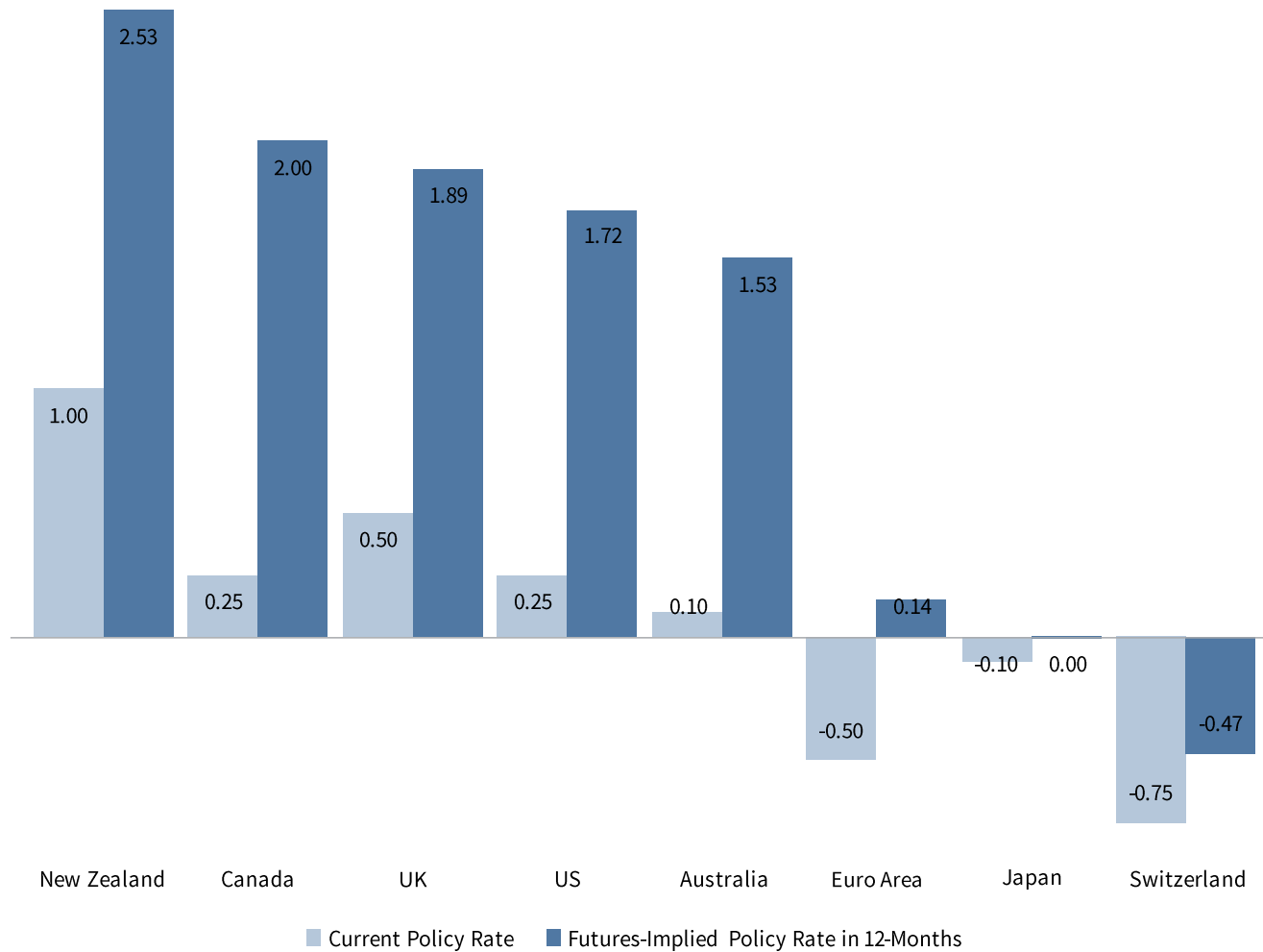
ECONOMIC PRESSURES FACING DEVELOPED MARKETS CENTRAL BANKS
As of February 28, 2022 • Percent (%)



Inflation rates have spiked on the back of the strong economic recovery from the pandemic and the ongoing disruption in global supply chains. So far, inflation pressures have been most acute in the United States, New Zealand, United Kingdom, and Canada. In the US, core inflation rose 6.0% year-over-year in January, more than 4 percentage points above the Fed's 2% target. Labor markets have also tightened in most DM countries, fueling concerns among policymakers that wage pressures could further exacerbate the rise in inflation. And given Russia's and Ukraine's role in global energy and agricultural markets, a prolonged conflict between the two countries has the potential to further disrupt supply chains and keep inflation higher for longer.

Markets expect most central banks to increase policy rates significantly in the near-term

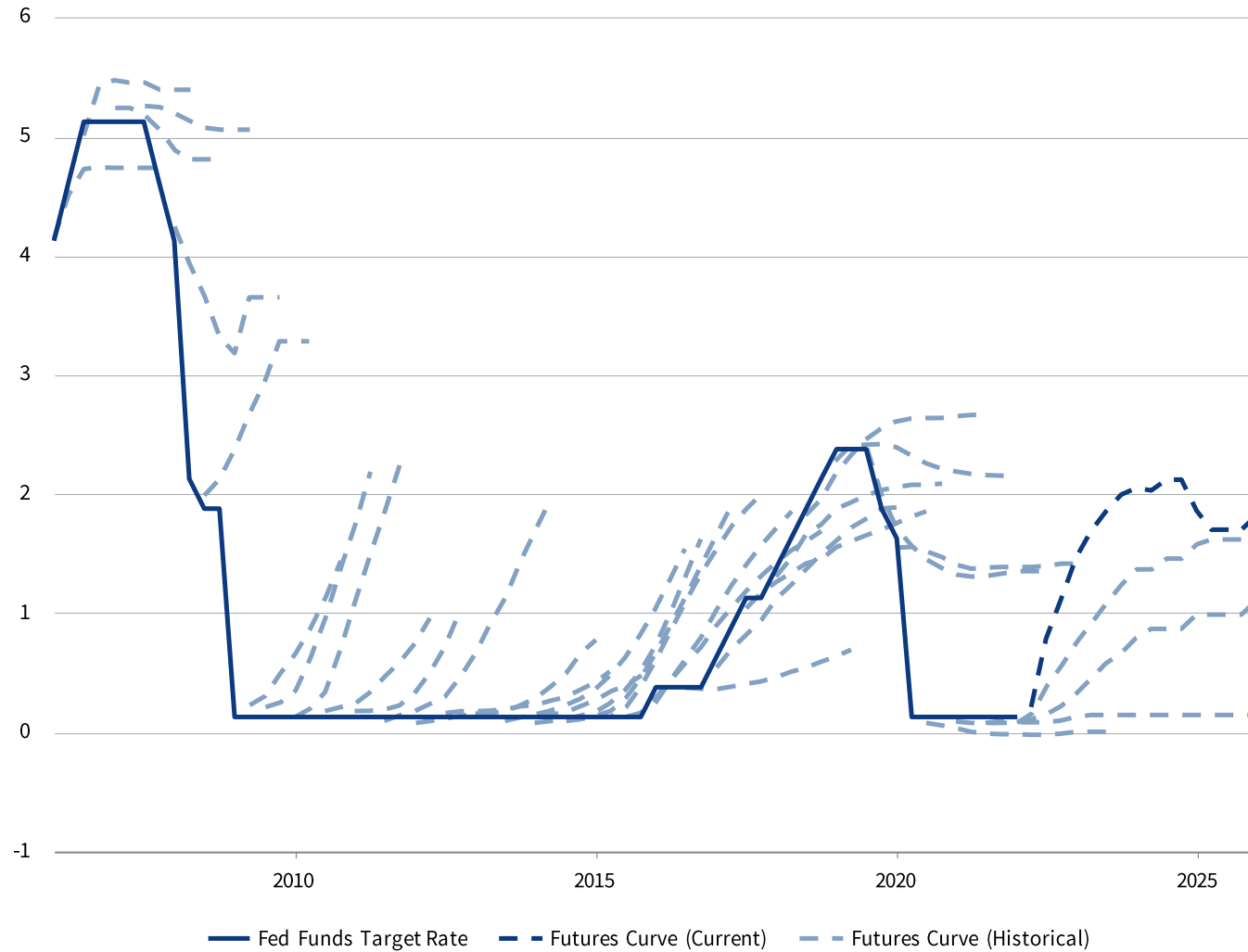
CURRENT AND FUTURES-IMPLIED CENTRAL BANK POLICY RATES
As of March 03, 2022 • Percent (%)



Policy rates remain near or below zero across DM countries. However, the hawkish shift by DM central banks has prompted the market to expect much higher policy rates in the near-term. For instance, the policy rate implied by the futures curve 12 months from now is over 2% in New Zealand and Canada and 1.9% in the UK. In the US, the market expects the Fed to hike rates six times over the next 12 months, or roughly 150 bps. Policy rates are even expected to move higher in the euro area, despite clear signals from the ECB they plan to lag other central banks. Euro area policy expectations have eased somewhat following Russia's invasion of Ukraine, but the market still anticipates the ECB will move policy rates above zero for the first time since July 2012 by the end of first quarter 2023.

The market routinely expects rates to rise aggressively

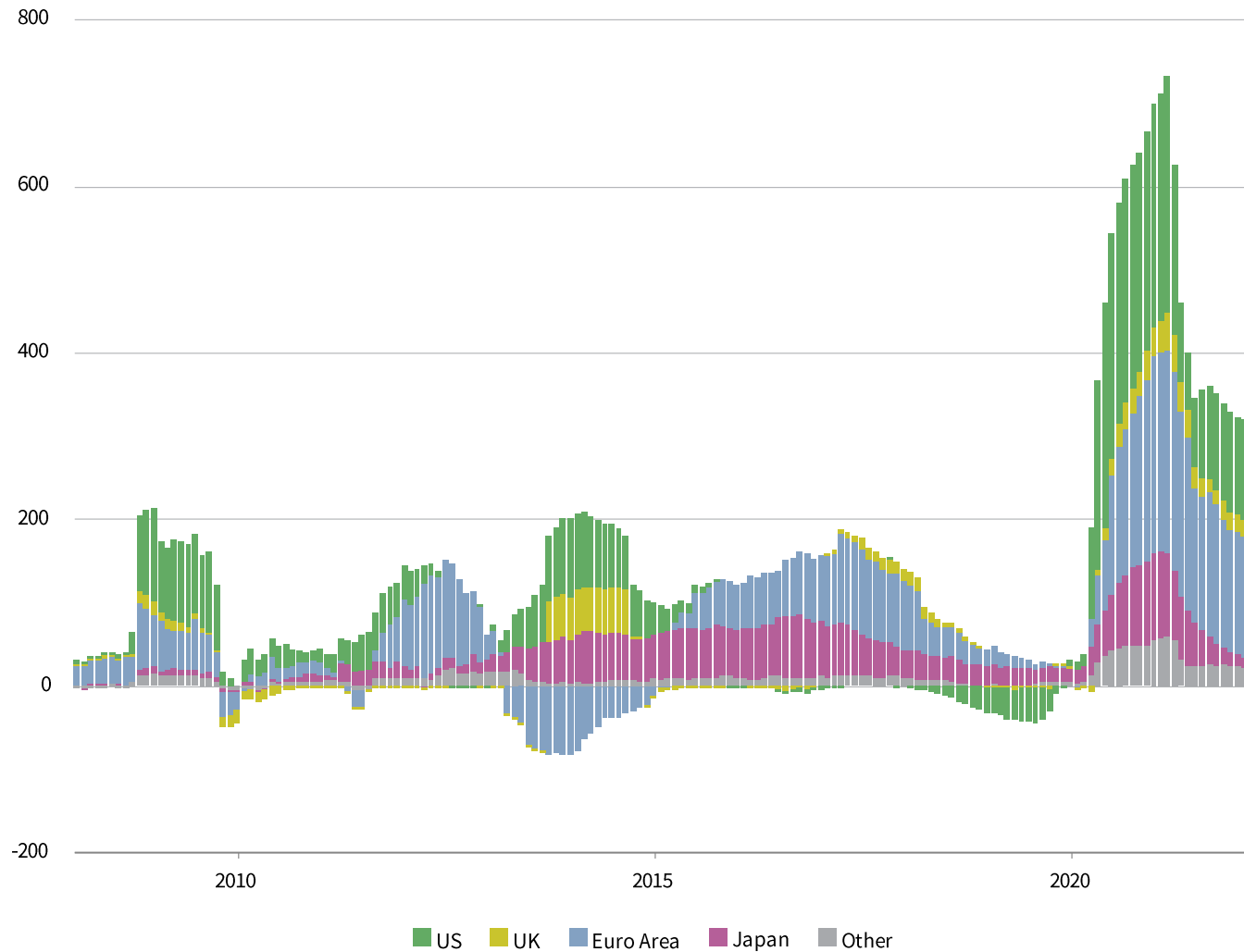
HISTORICAL FED FUNDS TARGET RATE AND FED FUNDS FUTURES CURVES
As of March 03, 2022 • Percent (%)



The expected path of policy rates has increased dramatically in recent months. The futures-implied policy rate in the US as of the end of 2022 is currently 1.47%, versus 0.76% as of the start of this year or even 0.125% at the beginning of 2021. However, the market tends to be overly aggressive about the future path of policy. For instance, in March 2011, the market expected the Fed to increase policy rates by over 200bps by the end of 2013. Yet, the Fed left rates unchanged until December 2015. That said, not all rate hiking cycles are alike, and inflation is much higher than in recent cycles. Given the market still expects policy rates to remain below 2% through 2025, there is a risk that this rate hiking cycle bucks the trend, and the Fed must hike rates more than expected to bring inflation under control.

Central banks have slowed the pace of asset purchases

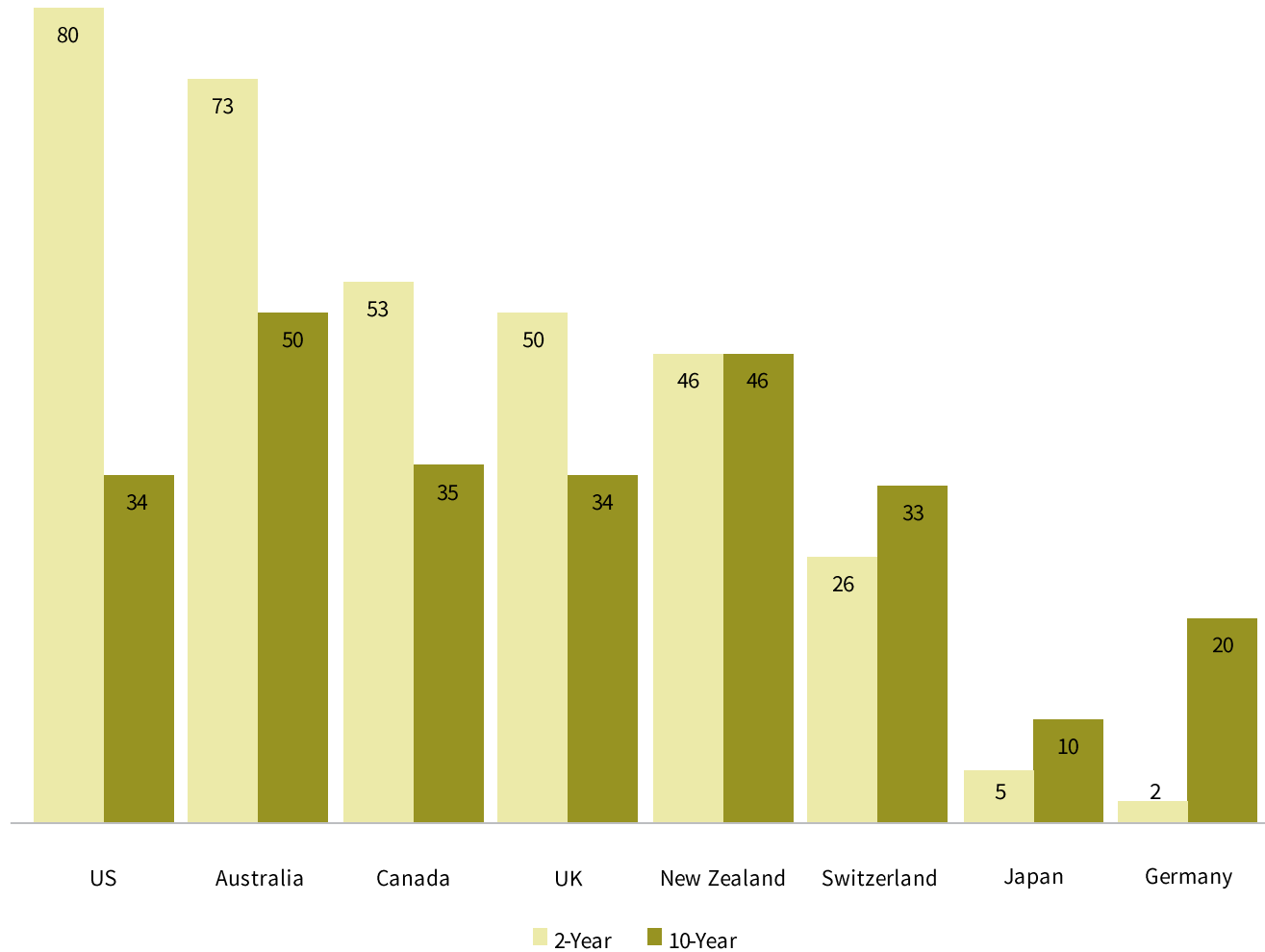
DEVELOPED MARKETS CENTRAL BANK ASSET PURCHASES
 January 31, 2008 – February 28, 2022 • Rolling 12-Month Average • US Dollar (Bn)



In the two years following the pandemic, DM central banks' balance sheets grew by over \$12 trillion. An amount roughly equivalent to the total balance sheet growth that occurred between 2008-19. However, the pace of asset purchases peaked in February 2021, and it has slowed significantly since then. It should slow further now that the BOE has concluded its asset purchase program and with the Fed on track to end asset purchases this month. Additionally, the BOE has already announced it will shrink its balance sheet by stopping reinvestments and selling corporate bonds and the Fed may begin reducing its balance sheet later this year. All else equal, this should put upward pressure on longer-duration yields.

Developed markets government bonds have sold off sharply to start the year

YEAR-TO-DATE INCREASE IN TREASURY YIELDS BY TENURE
As of March 03, 2022 • Basis Points



The FTSE World Government Bond Index returned -2.6% in local currency terms through the end of February, which marks its worst annual performance since 1994. Yields have increased across the curve, but the sell-off has been most acute at the short end, especially in countries where the market is pricing in more rate hikes. In the US for example, the two-year yield has increased 80 bps year-to-date, while the ten-year yield is up 34 bps. Yields have backed off recent highs following Russia's invasion of Ukraine, especially in Europe given the region's proximity to the crisis and its dependence on Russian resources. German two-year yields were actually down on the year and ten-year yields turned negative for a brief period on March 1.

The US yield curve is unusually flat given the Fed has not started hiking rates

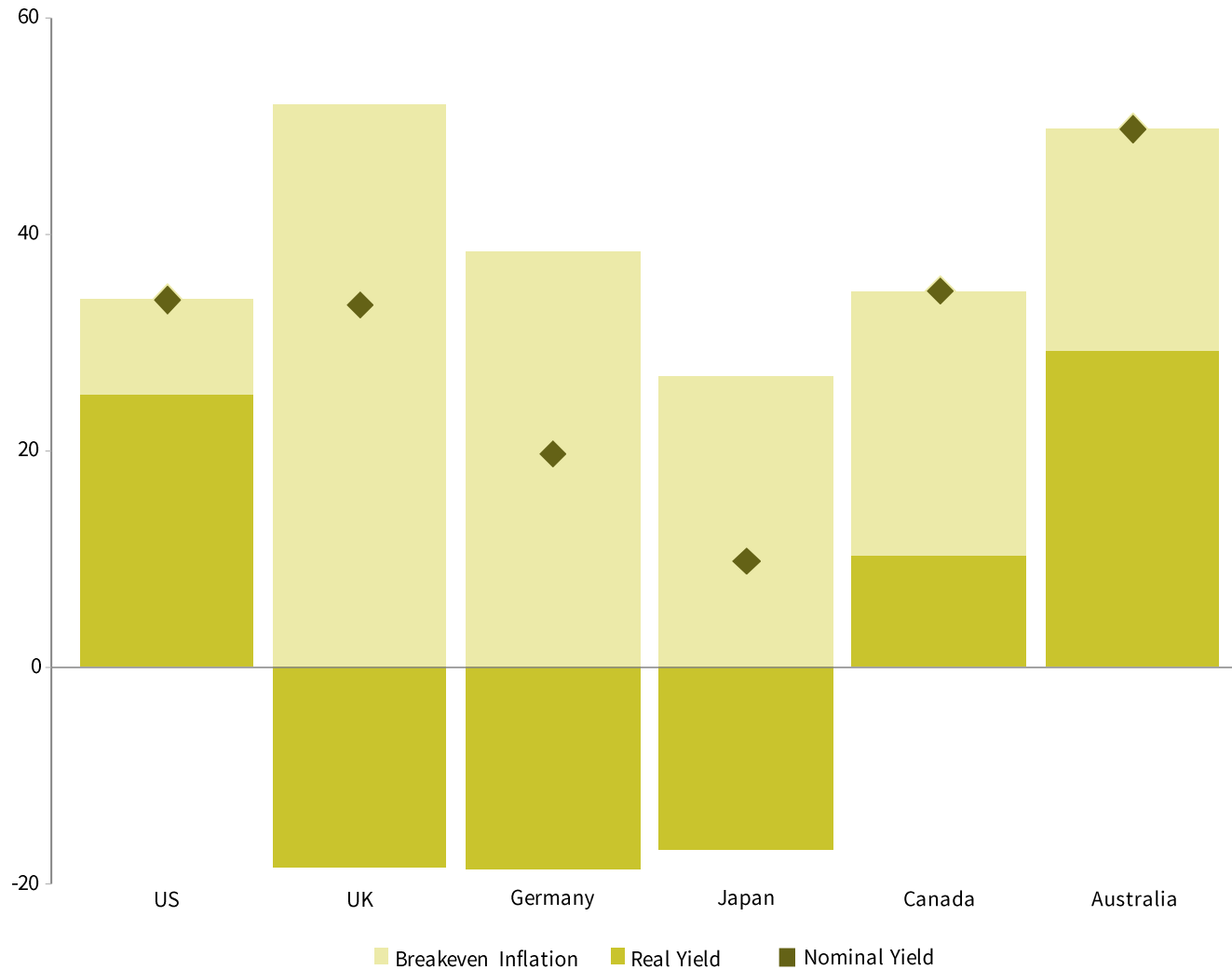
FED FUNDS TARGET RATE AND 10-YR/2-YR US TREASURY YIELD SPREAD
January 31, 1992 – February 28, 2022 • Percent (%)



The yield curve typically flattens when the Fed raises rates. That is, yields tend to rise across the curve, but yields at the short end of the curve rise faster than yields at the long end, causing the yield curve to flatten. Yet, the rapid curve flattening that has occurred this time around before the Fed has even started hiking rates is unusual. The US 10-yr/2-yr yield spread peaked in early 2021, and since then, it has fallen 121 bps and is currently just 38 bps. During the previous four cycles, the 10-yr/2-yr yield spread was 130 bps on average when the Fed first hiked rates. The Fed may find it difficult to follow through on expected rate hikes if the yield curve eventually inverts. During the previous four rate hiking cycles the Fed funds rate peaked around the time the yield curve inverted.

Real yields have driven this year's sell-off in the US, but inflation fears still dominate in Europe

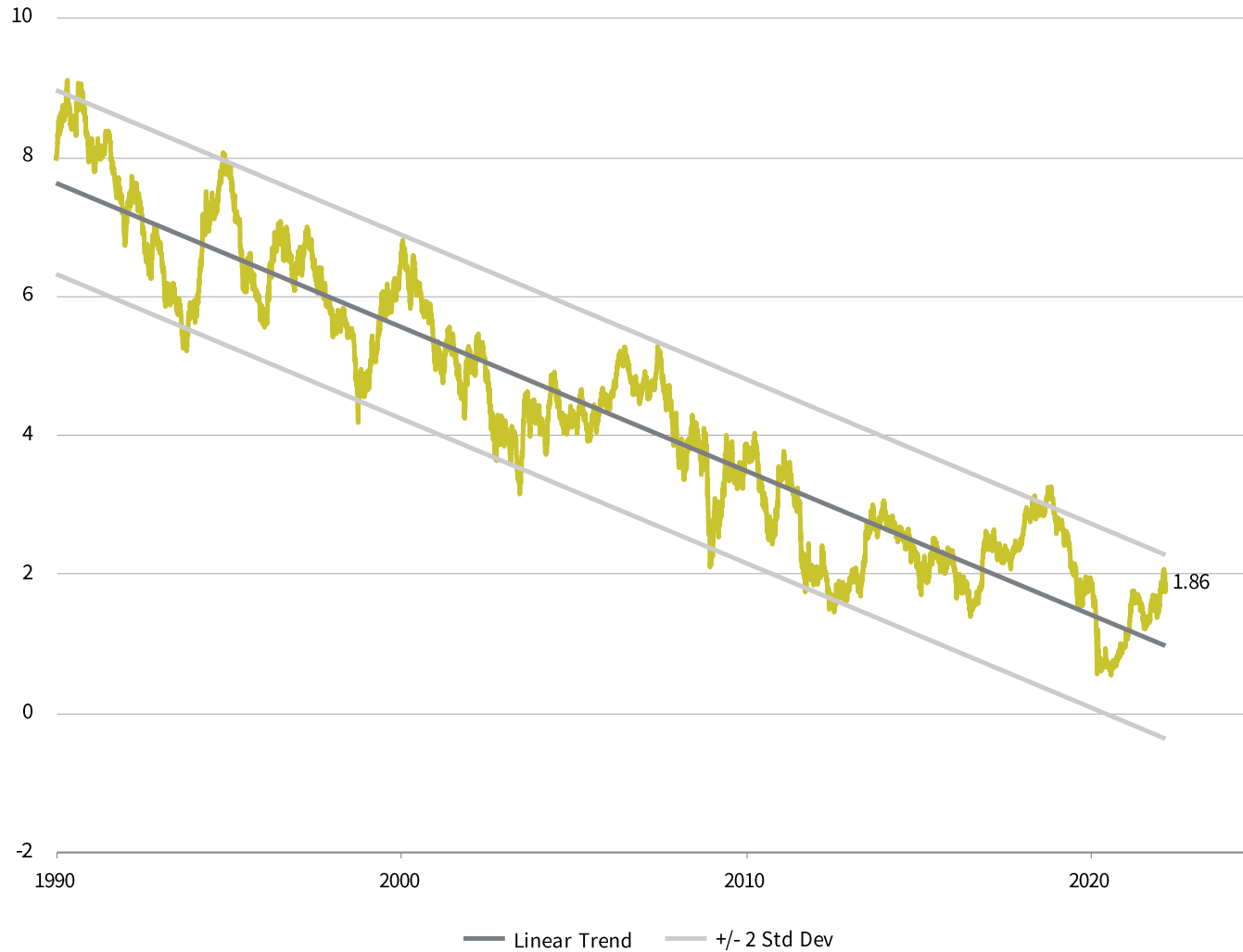
BREAKDOWN OF YEAR-TO-DATE CHANGE IN 10-YR TREASURY YIELDS
As of March 03, 2022 • Basis Points



Last year's rise in nominal yields was almost entirely due to an increase in market-based inflation expectations, with real yields pinned near historical lows by central banks' dovish policies. Until recently, this year's sell-off had been driven primarily by real yields given the hawkish shift by central banks. This is still the case in the US—ten-year real yields have increased 25 bps year-to-date, while ten-year breakeven inflation rates are up 9 bps. However, in Europe the market has grown more concerned about upside risks to inflation than tighter monetary policy following Russia's invasion of Ukraine and the subsequent rise in energy prices. Since mid-February, both UK and German ten-year breakeven inflation rates have increased more than 30 bps, while ten-year real yields have plunged roughly 60 bps.

Technical indicators suggest the recent rise in yields was beginning to look stretched

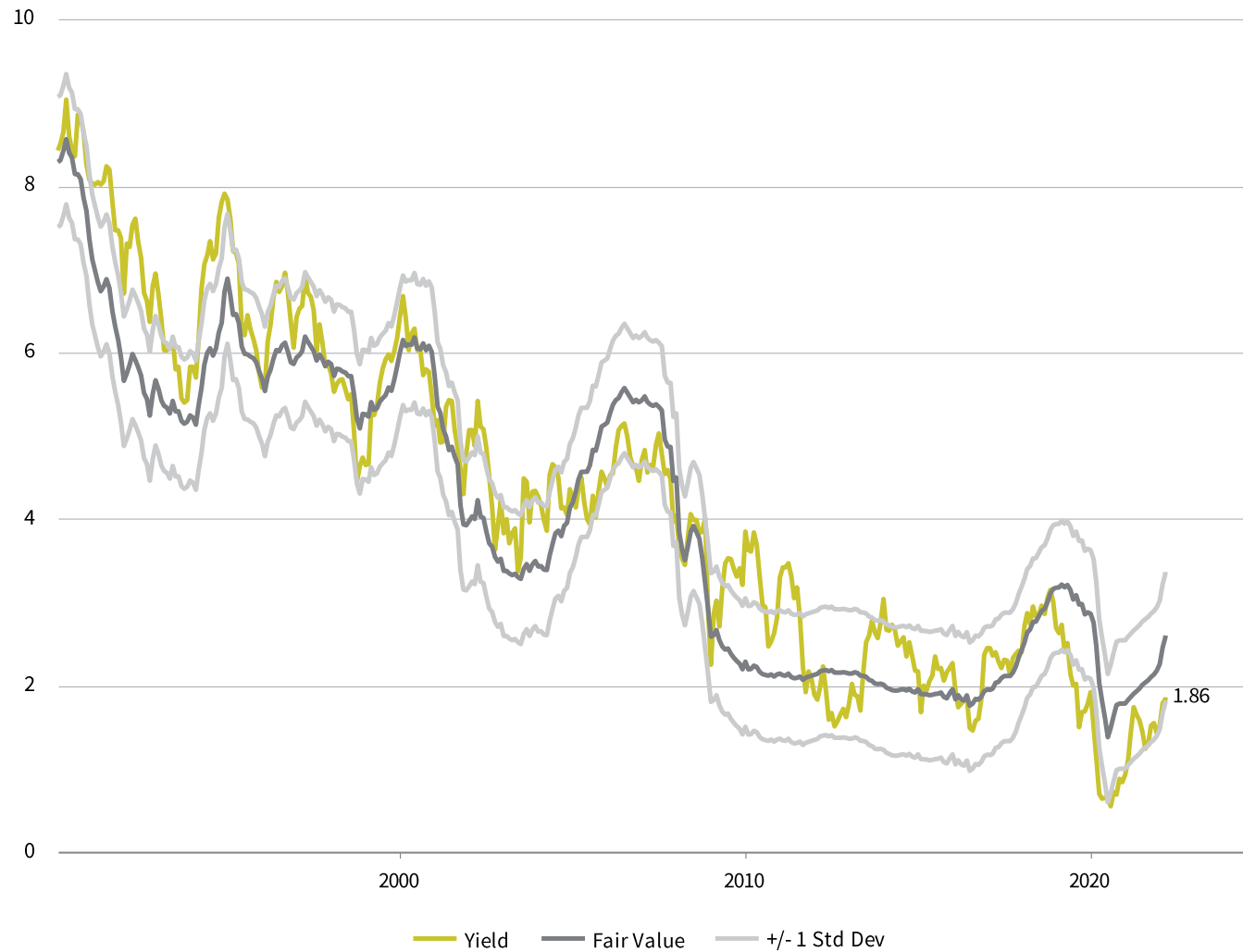
10-YR US TREASURY YIELDS OVER TIME
January 01, 1990 – March 03, 2022 • Percent (%)



US ten-year Treasury yields have increased over 130 bps from their 2020 lows, and they briefly topped 2% earlier this month for the first time since July 2019. The recent run-up in yields begs the question, how much higher can yields go? Yields have trended lower over the previous 30+ years, with yields setting lower lows and lower highs with each subsequent economic cycle. Prior to the volatility of the past few weeks, US ten-year yields were approaching the upper limit of their long-term trend (2.3%). Other indicators, such as momentum and investor positioning, also suggested the Treasury market was beginning to look oversold. According to J.P. Morgan, Chase and the Commodity Futures Trading Commission, both institutional investors and speculators were running significant short positions in longer-maturity US Treasuries.

Above-trend nominal growth + central bank tightening = higher nominal bond yields

MODEL FAIR VALUE RANGE FOR 10-YR US TREASURY YIELDS
January 31, 1990 – March 03, 2022 • Percent (%)



While technical indicators point to some near-term support for government bonds, the healthy economic backdrop and tighter monetary policy suggest yields have more room to run before this cycle comes to an end. A simple bond model based on the trend in nominal GDP and the one-year yield (a proxy for monetary policy expectations) is trending up and currently suggests the predicted fair value for ten-year US Treasury yields is 2.6%. This happens to be in line with the Fed's current estimate of the long-run neutral rate of 2.5%, which has acted as a ceiling on ten-year yields in recent years. At 1.86%, ten-year yields are still near the low end of their fair value range. An indication they are likely to continue to rise over the next few years. Of course, much depends on the duration of the War in Ukraine and its impact on the global economy.



Contributors to this report include TJ Scavone and Ilona Vdovina.

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