Capital Markets Strategy
Essential inCights for the C-Suite

Leaving the Station

The Implications of Rising Inflation & Global Central Bank Tightening

NOV 2021

Global Corporate & Investment Banking
Capital Markets StrategyTeam

Tom Joyce

Managing Director
Capital Markets Strategist
New York, NY

Tom.Joyce@mufgsecurities.com
(212) 405-7472

Hailey Orr

Director
Capital Markets Strategist
New York, NY

Hailey.Orr@mufgsecurities.com
(212) 405-7429

Stephanie Kendal

Associate
Capital Markets Strategist
New York, NY

Stephanie.Kendal@mufgsecurities.com
(212) 405-7443

> If you look at research on things like coffee, egg yolks, red wine, it is actually not clear whether these things are good or bad for you. That's a good analogy for markets in 2021.
>
> Perhaps the number one question investors need to ask themselves in 2021 will be: Are rising rates good or bad for stocks? It's not that obvious.

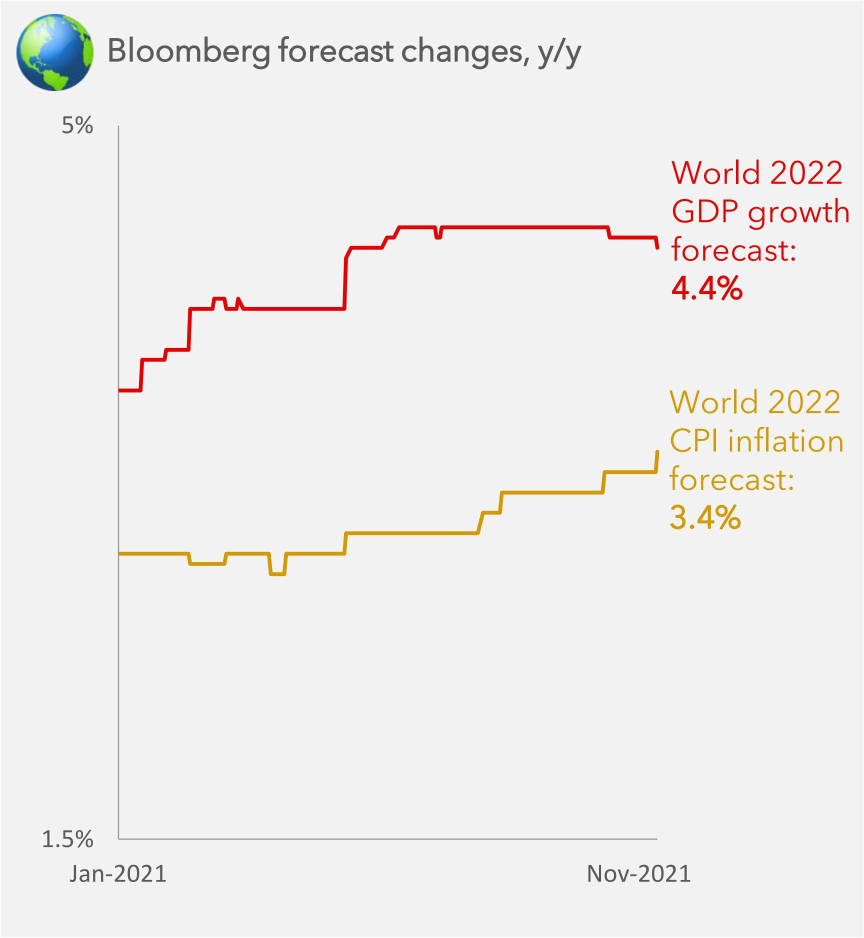
Sebastien Page, Head of Global Multi-Asset,
T. Rowe Price

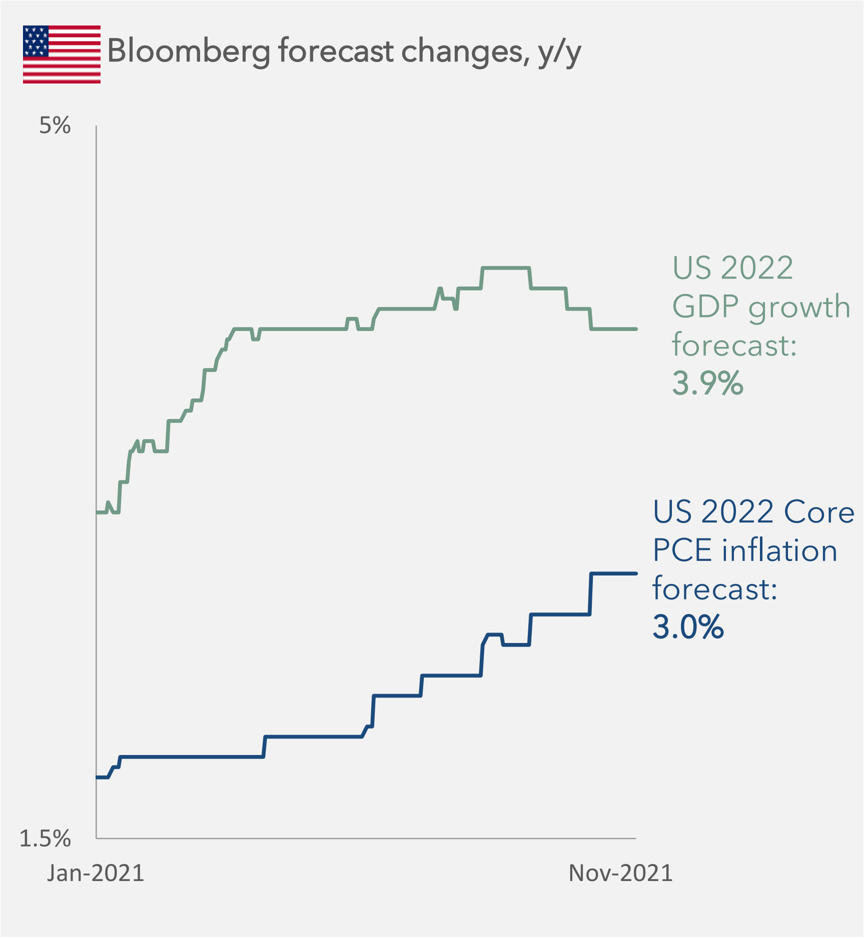
Contents


1
Inflation Pressures Broadening

Growth & Inflation Expectations Diverging

Persistent supply side dislocations have driven inflation expectations higher and growth forecasts lower



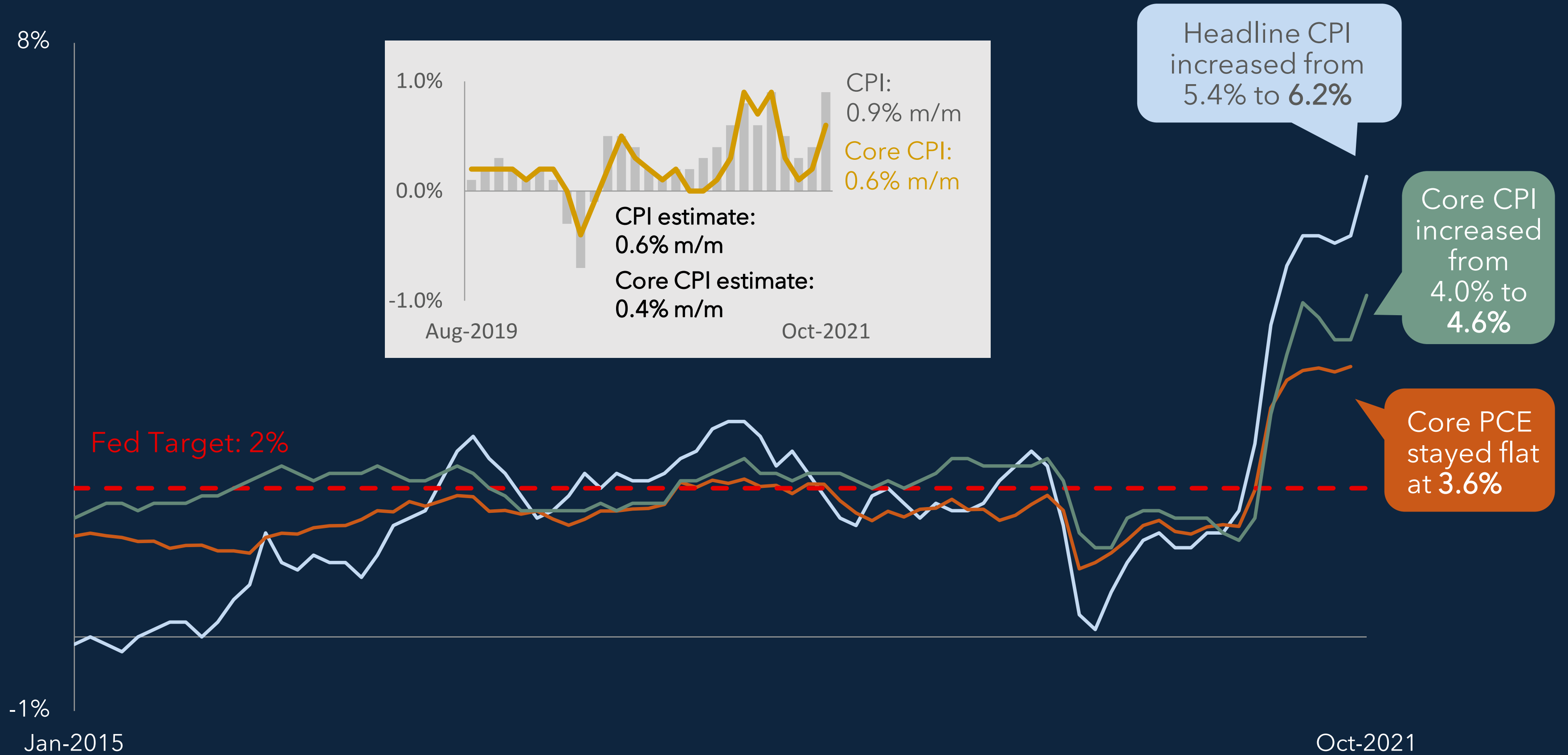


Source: (1-2) Bloomberg. Data as of November 12, 2021.

Highest US Inflation Since 1990

In October, headline US inflation surprised markets with a 6.2% year-on-year increase, the fastest annual increase since 1990 and well above consensus expectations of 5.9%. Inflation has now exceeded 5% for five consecutive months.

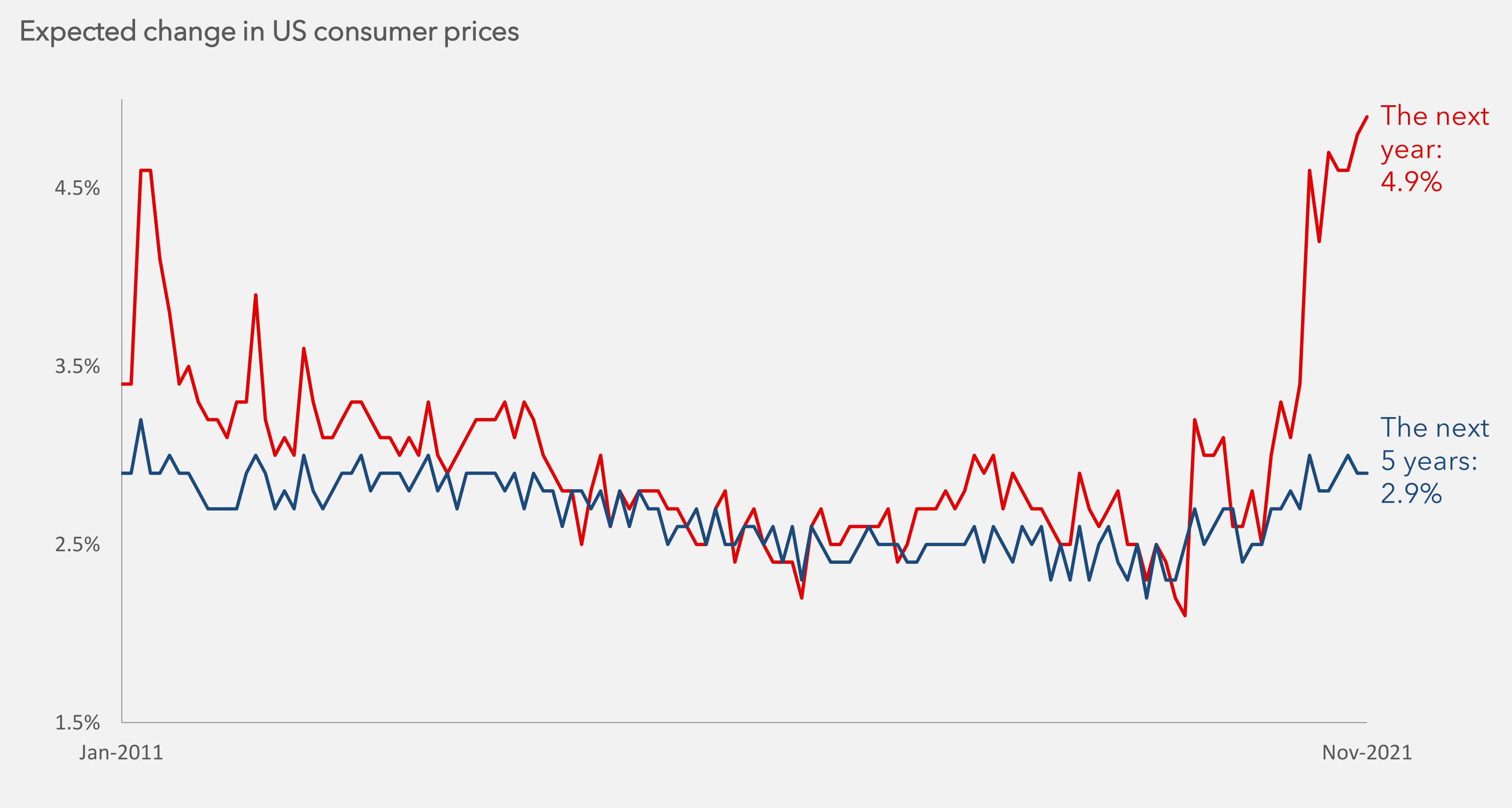
US Headline CPI & Core PCE (y/y)



Source: (1) Bloomberg. Data as of November 12, 2021. FRED.

Near Term Inflation Expectations Rising More Rapidly

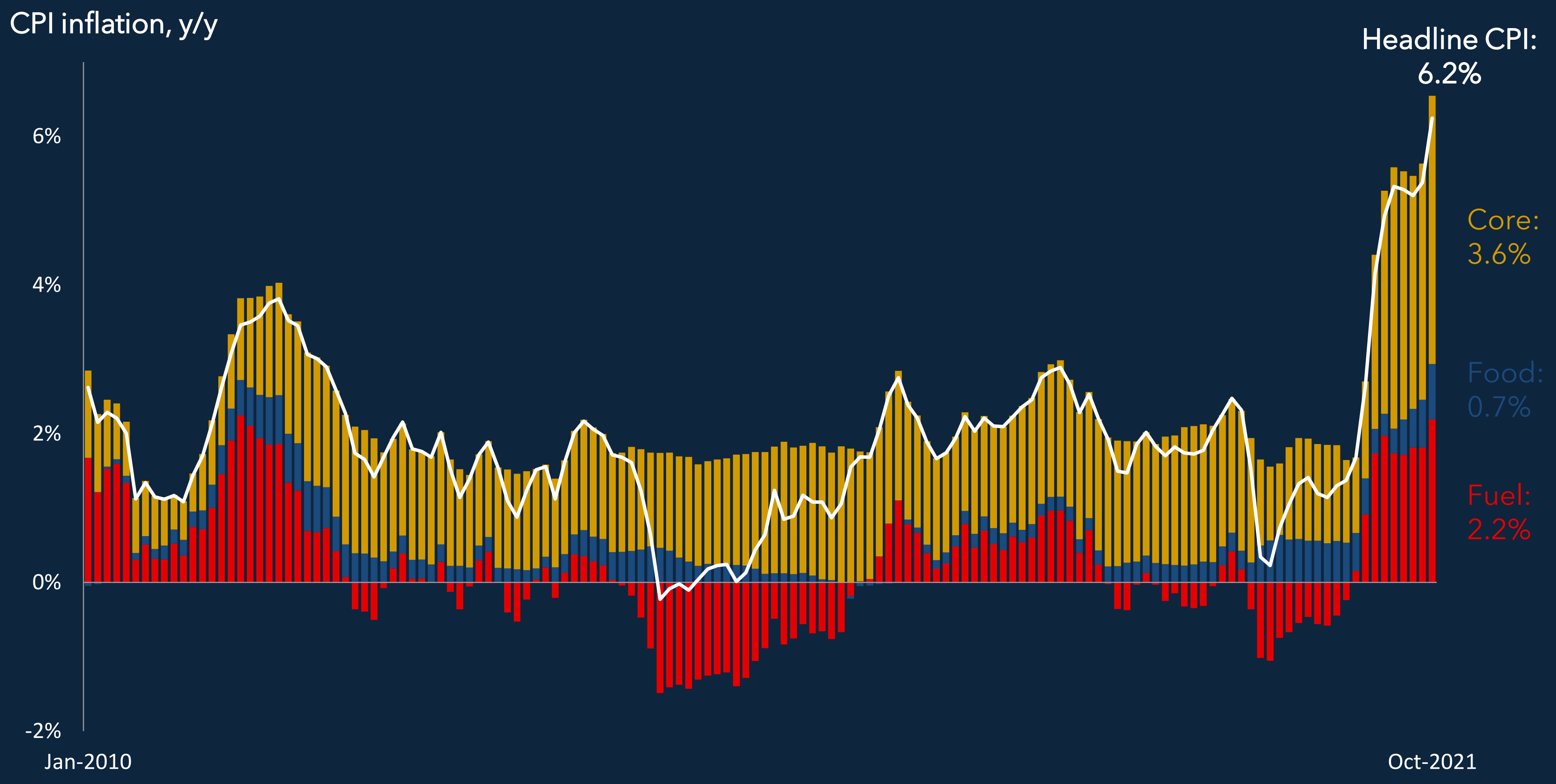
University of Michigan short-term inflation expectations increased to 4.9% in November, a 13-year high. While five-year inflation expectations stayed flat at 2.9% in November, they are still significantly higher than pre-pandemic levels.



Source: (1) Bloomberg. Data as of November 12, 2021.

Inflation Pressures Broadening

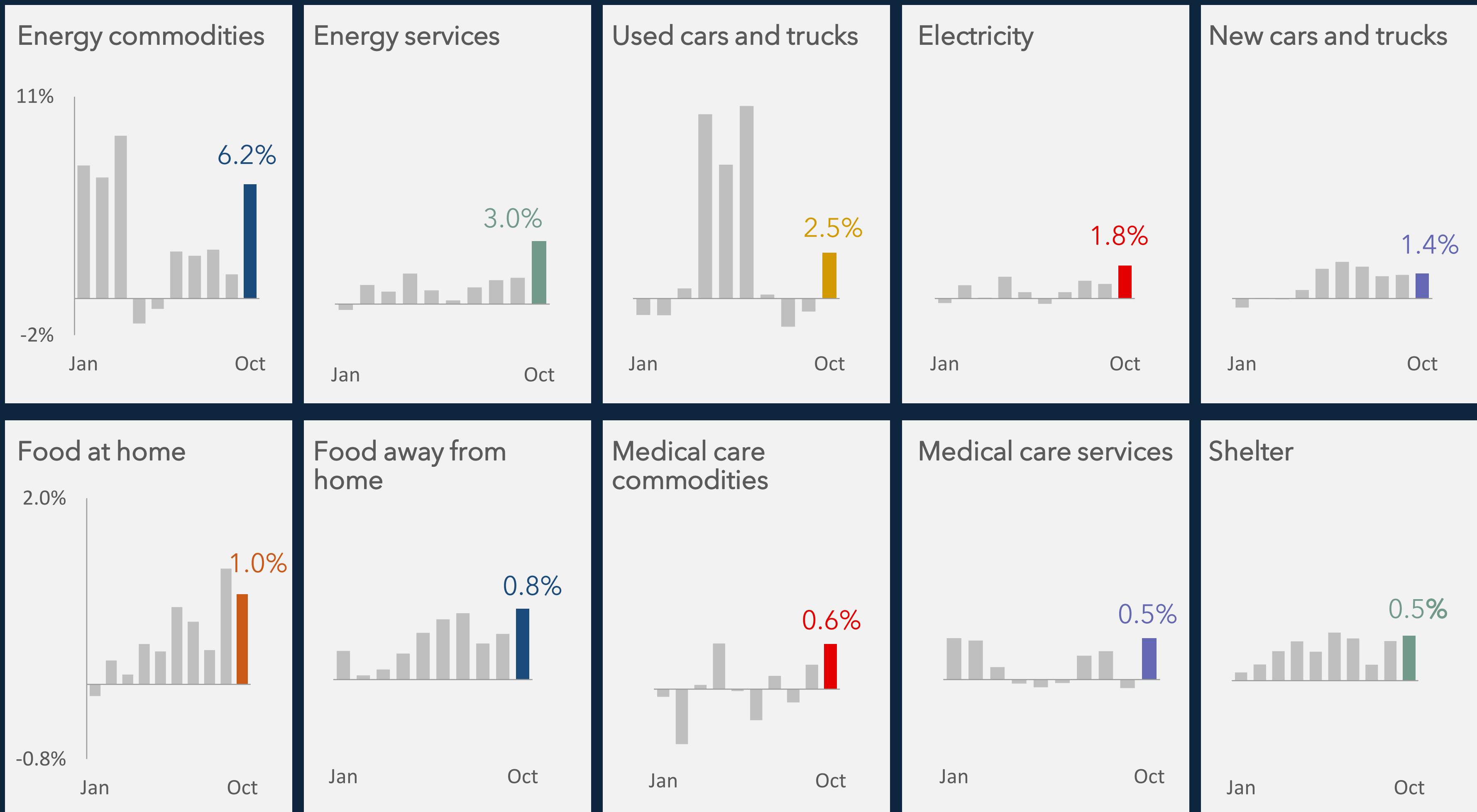
While increases in food and fuel did contribute to October's surprisingly high inflation print, growth in "core" factors were an even larger driver. Within the "core" component, numerous sectors are facing rising inflationary pressures, not just those directly impacted by the re-opening.



Source: (1) Bloomberg. Data as of November 12, 2021.

Inflation Rising Across Multiple Sectors

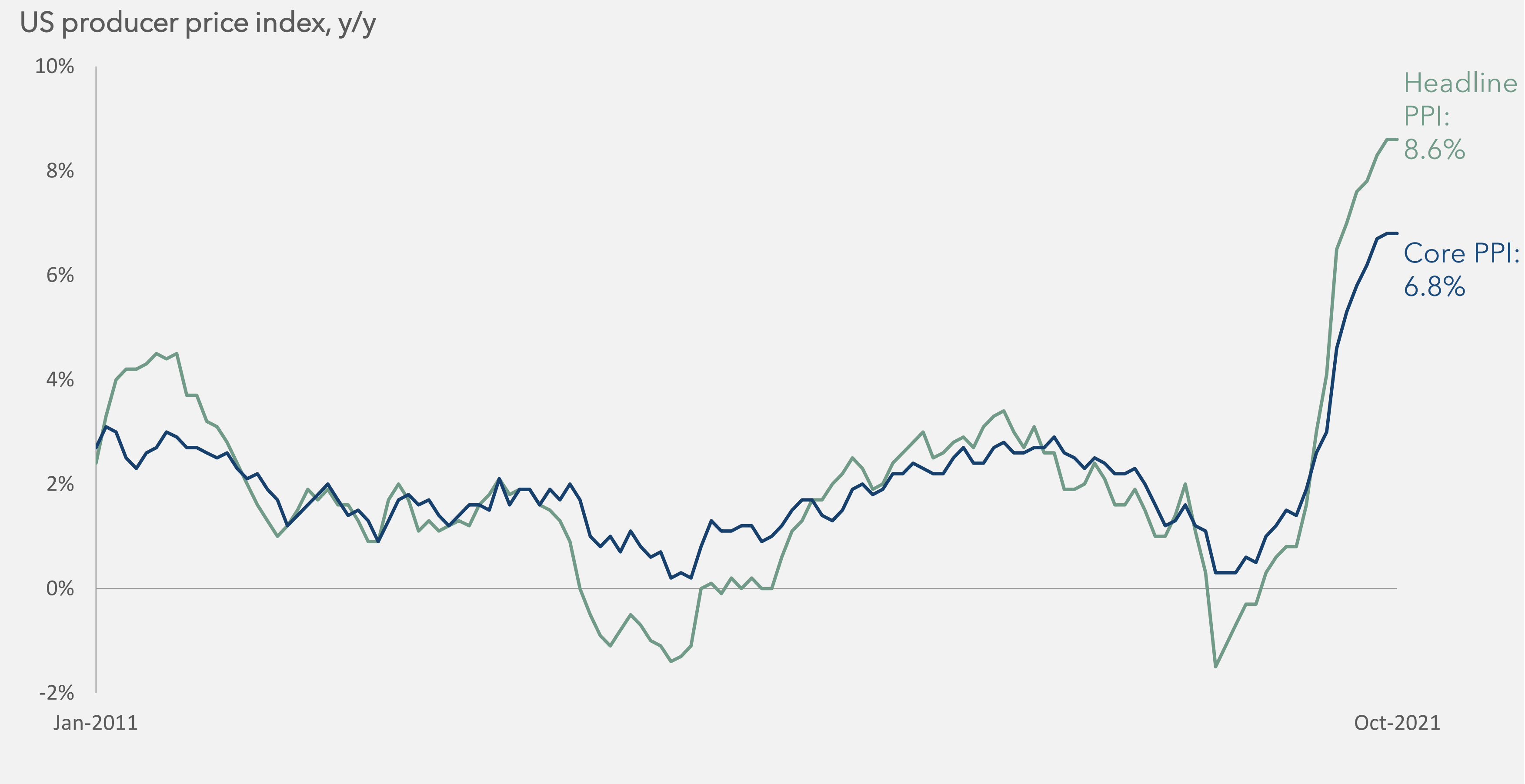
US CPI m/m in 2021



Source: (1-10) Bloomberg. Data as of November 12, 2021. Bureau of Labor Statistics. Seasonally adjusted.

US Producer Prices at Decade High

The US producer price index rose 8.6% y/y, the same as September and the highest on record since late 2010. While rising producer prices don't always translate into higher consumer prices as businesses absorb some of the additional costs, they do indicate the role of supply side dislocations in rising inflationary pressure.

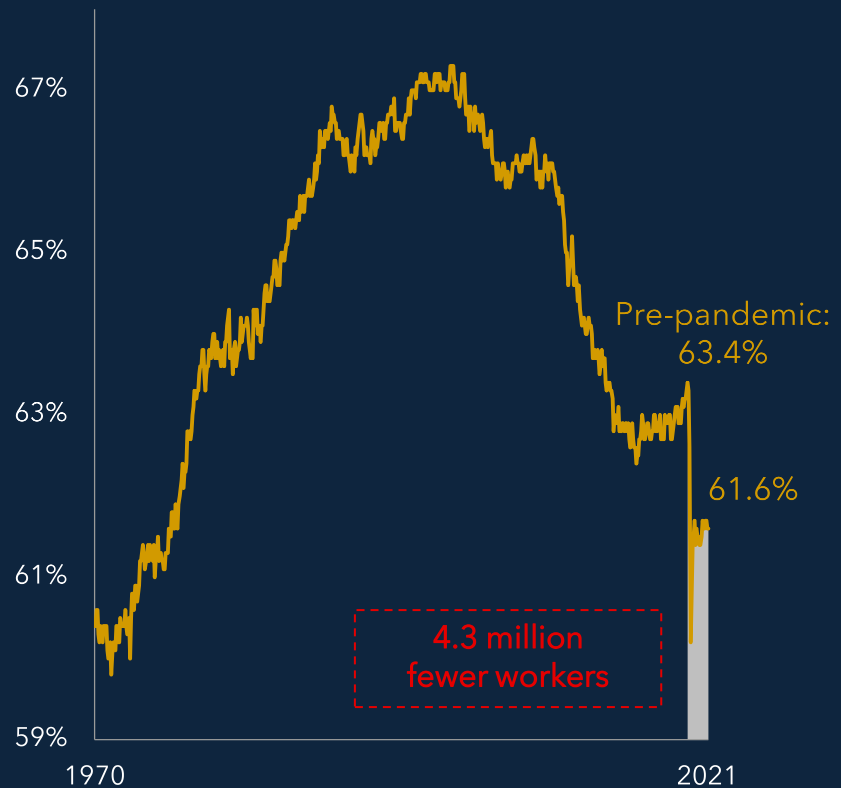


Source: (1) Bloomberg. Data as of November 12, 2021.

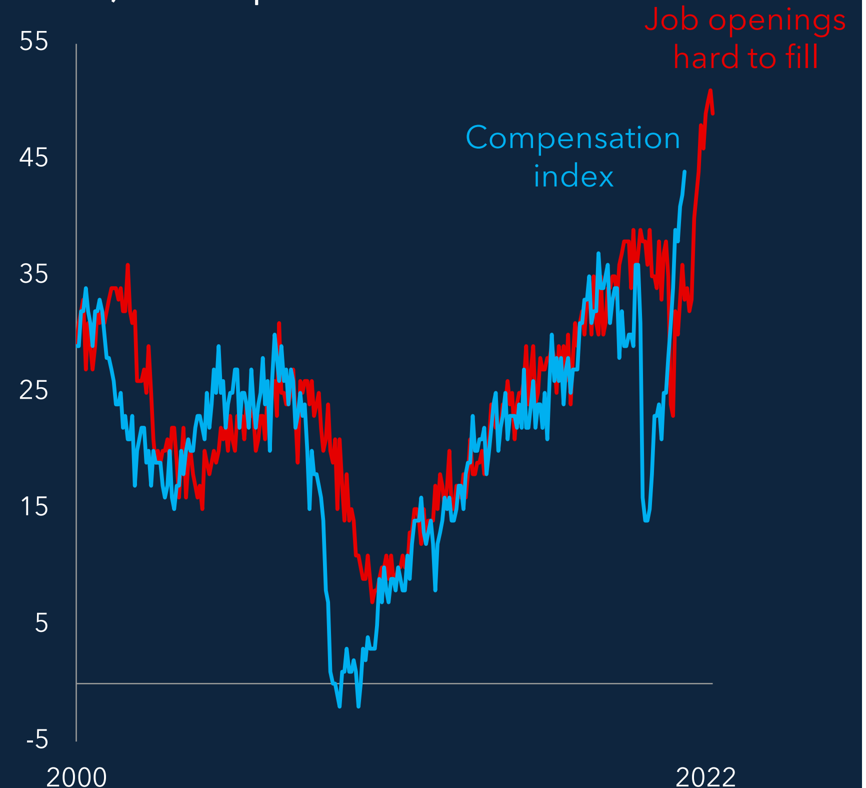
Labor Shortages, Wages Rising

At the start of the pandemic, the US labor force participation rate had its largest decline since WWII. While the rate has recovered since April 2020, it remains near the 1970s lows and nearly two points below its February 2020 level. The participation rate decline represents 4.3 million fewer workers employed today relative to pre-pandemic levels. The labor shortage is, in turn, putting upward pressure on wages and contributing to higher inflation.

Labor force participation rate



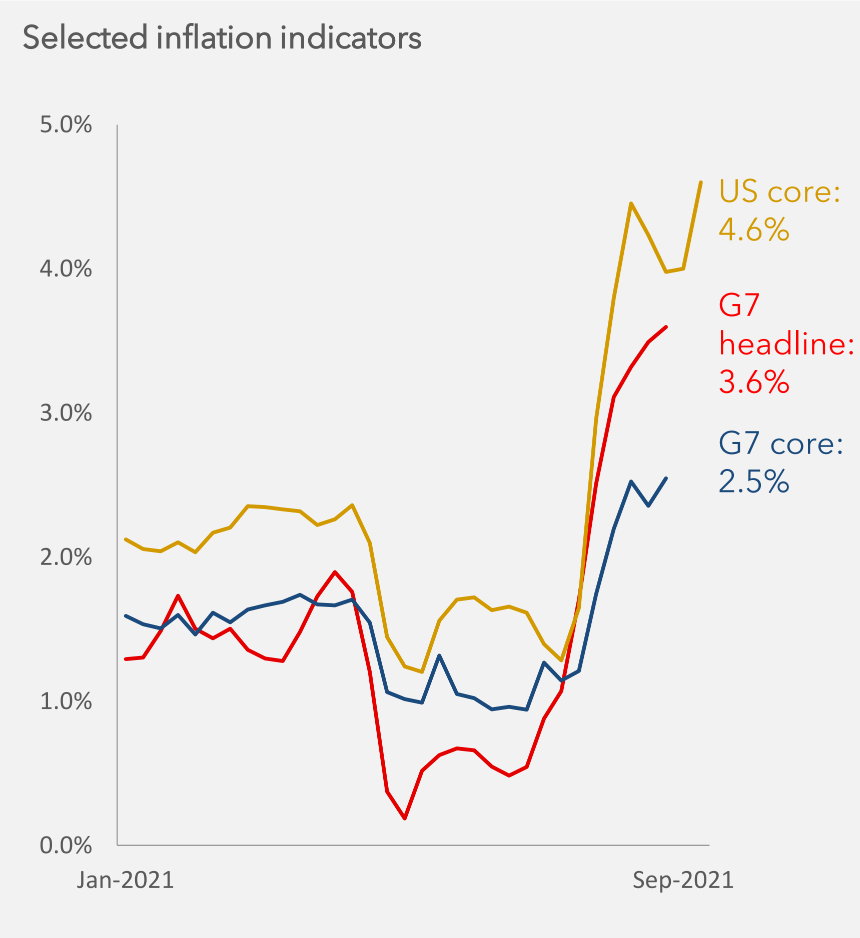
NFIB job openings hard to fill (advanced 12 months) and compensation index

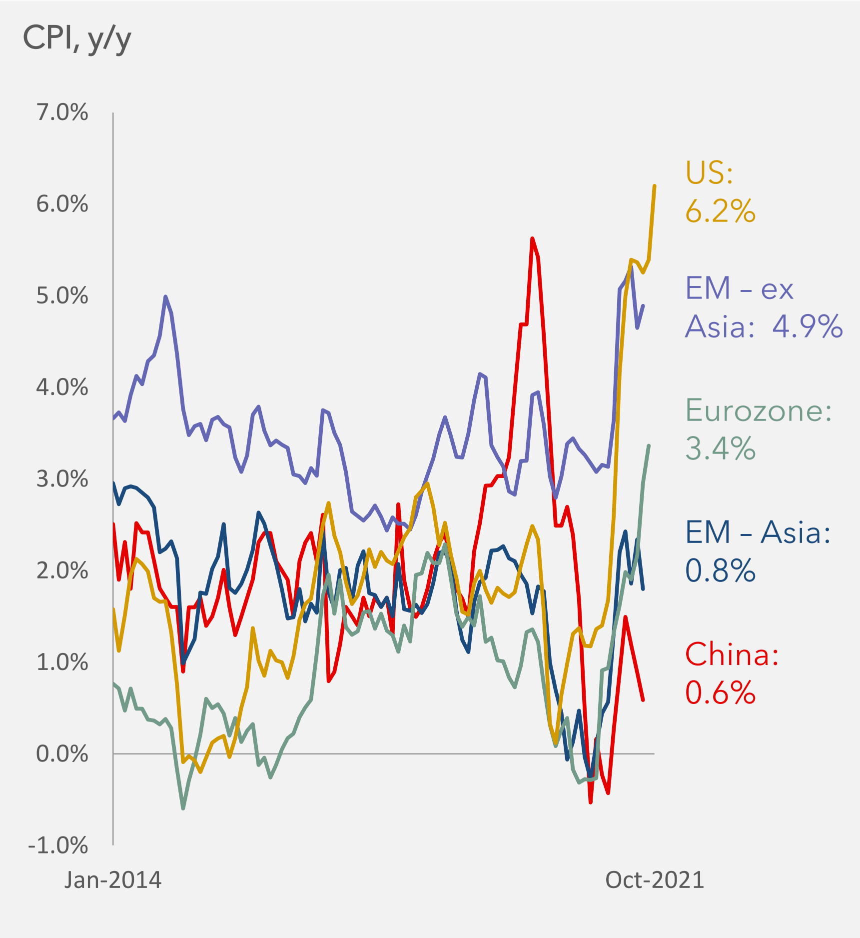


Source: (1-2) Bloomberg. Data as of November 12, 2021.

Global Inflation Also Increasing

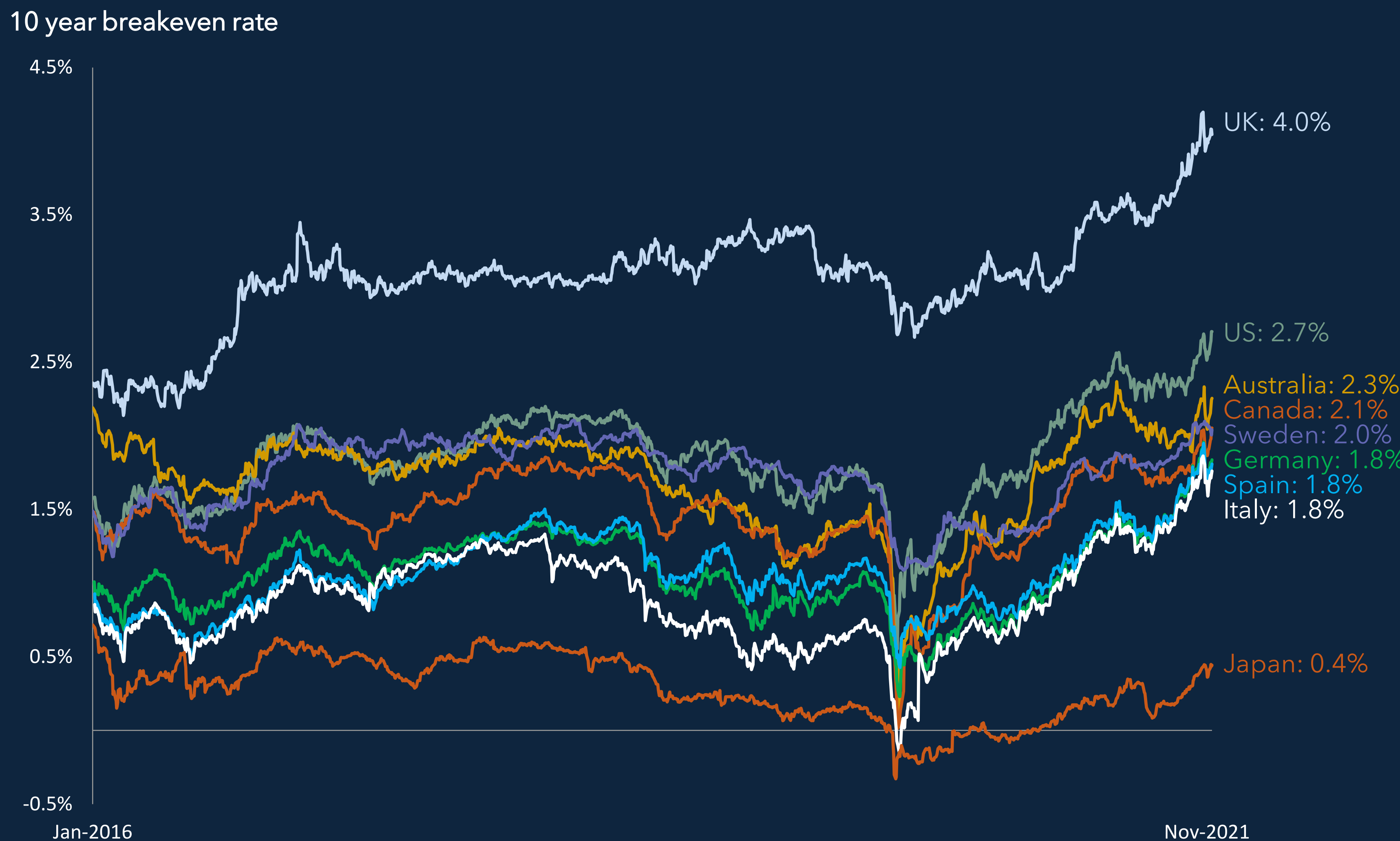
Global inflation has been rising since the end of 2020. G7 headline inflation is up from less than 1% y/y to 3.6%, and core from 1% to 2.5%. US headlines inflation, at 6.2%, is at its highest level in 30 years.





Source: (1) Oxford Economics, "Rising Inflation is a Demand as well as Supply Issue" (October 26, 2021). (2) BIS.

Global Inflation Expectations Rising



Source: (1) Bloomberg. Data as of November 12, 2021.

Inflation Moderation in 2H 2022?

In a non-COVID world, supply side gaps can be closed relatively quickly, which raises questions about whether the current rising inflation environment represents a fundamental "regime change" or a short term phenomenon vulnerable to "normalization". Looking ahead, numerous factors could converge to drive a moderation in inflation pressures as soon as the 2H of 2022.

More favorable base effects (Y/Y comparisons)

Continued deceleration in global growth

Massive global production and supply increases underway

Global monetary and fiscal stimulus tightening

Energy prices approaching cyclical highs / demand destruction at higher prices

Rebalancing of consumer behavior from goods to services (if global pandemic eases)

Gradual easing of supply chain disruptions

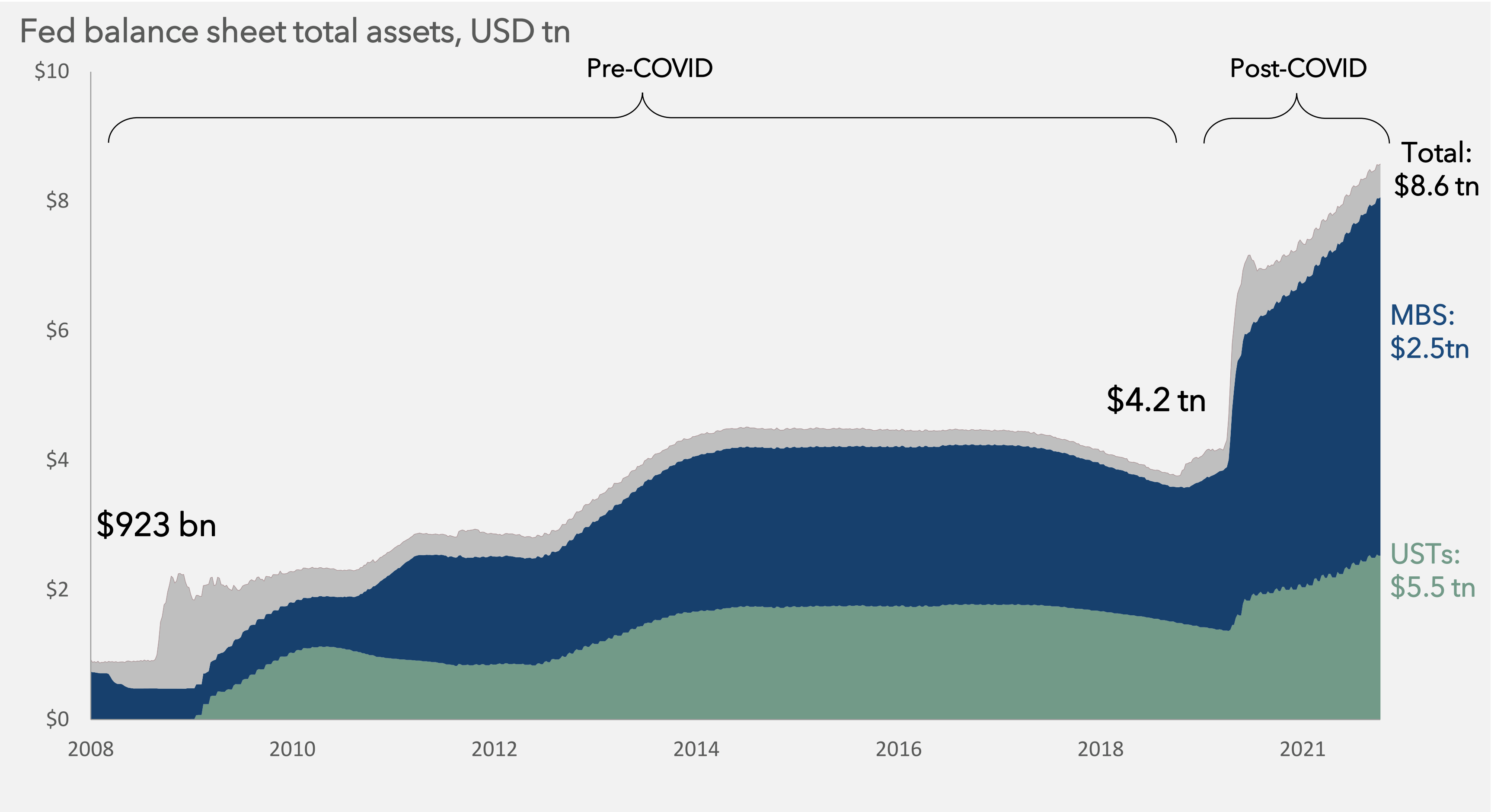
Pre-COVID disinflationary forces remain intact (aging populations, rising debt, declining productivity)

Source: (1) MUFG Macro Strategy, "November 2021 FOMC Recap" (George Goncalves).


2
The Fed’s Policy Pivot

Balance Sheet Tapering Before Rate Hikes

During the COVID crisis, the Fed more than doubled its balance sheet from $4.2 to $8.6 trillion. Even accounting for the $15 bn ($10 bn Treasuries, $5 bn MBS) per month taper in new purchases announced in November, the Fed's balance sheet is likely to surpass $9 trillion in the first half of 2022.



Source: (1) Bloomberg. Data as of November 12, 2021. Federal Reserve.

Key Takeaways from the November FOMC Meeting

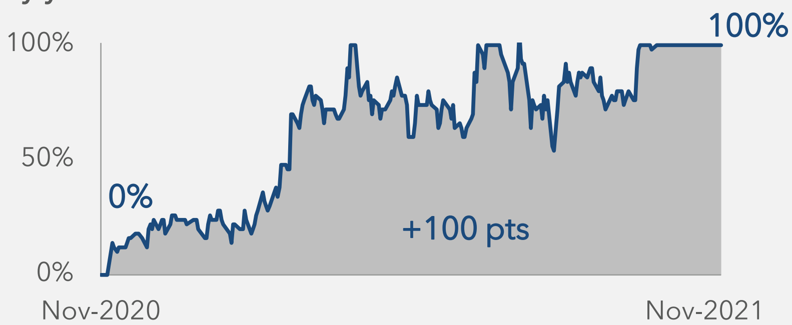
1. Tapering balance sheet purchases by $15 bn ($10 bn UST, $5 bn MBS) in November & December (more rapid than 2014 pace of $5 bn and $5 bn, respectively)
2. Tapering likely to conclude by June 2022, but Fed <u>may</u> adjust pace based on economic outlook
3. If inflation acceleration continues, taper pace could increase to $25 bn per month in January ($15 bn UST, $10 bn MBS)
4. Emphasized "different and more stringent" test for raising rates; MUFG expects first hike in September 2022
5. Softened stance on transitory nature of inflation & acknowledged role supply chain imbalances have had in causing "sizable price increases in some sectors"

Source: (1) MUFG Macro Strategy, "November 2021 FOMC Recap" (George Goncalves).

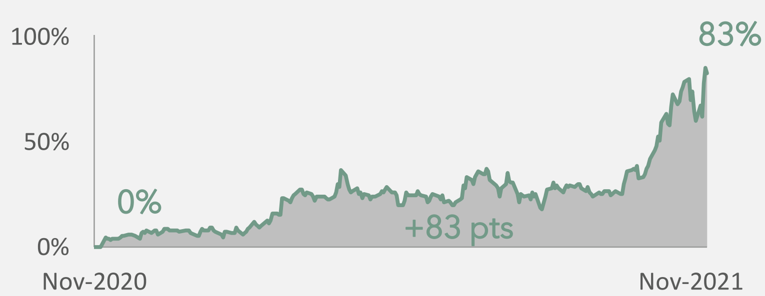
Market Repricing the Pace of Fed Hikes

Markets have rapidly repriced Fed tightening expectations since the first Pfizer vaccine announcement one year ago. While the Fed continues to link inflation to factors that are "expected to be transitory," the market is taking a comparatively more hawkish view, pricing in 2-3 rate increases by the end of 2022, and 5-6 rate increases by the end of 2023.

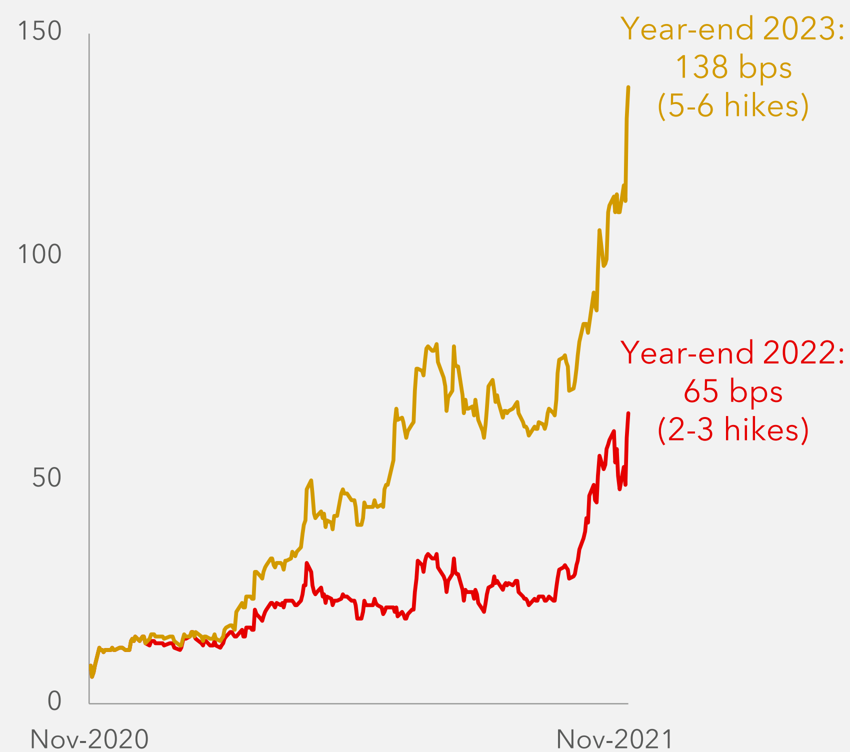
Market implied probability of one Fed rate hike by year end 2022



Market implied probability of three Fed rate hikes by year end 2022



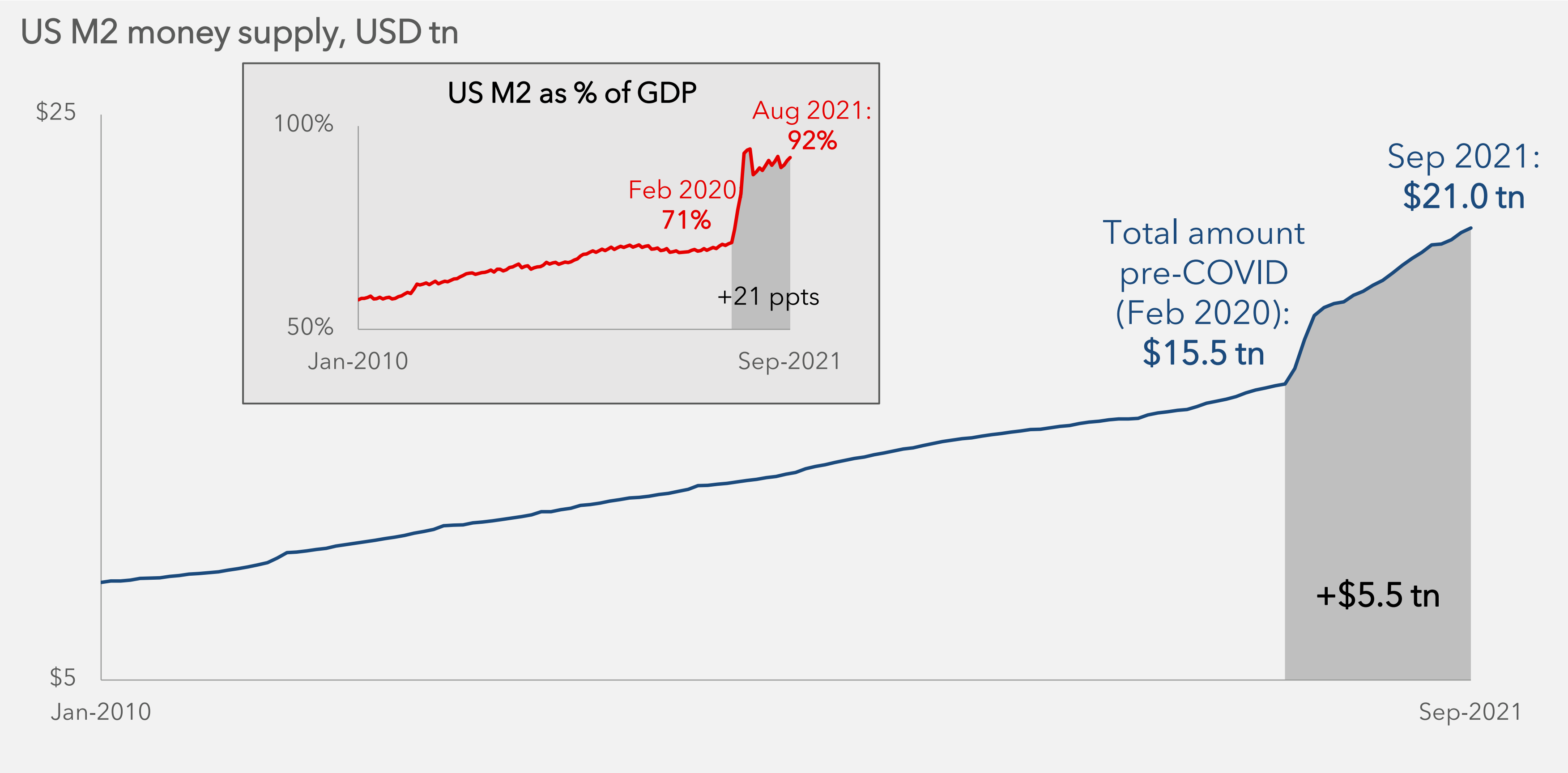
Market implied rate hikes, bps



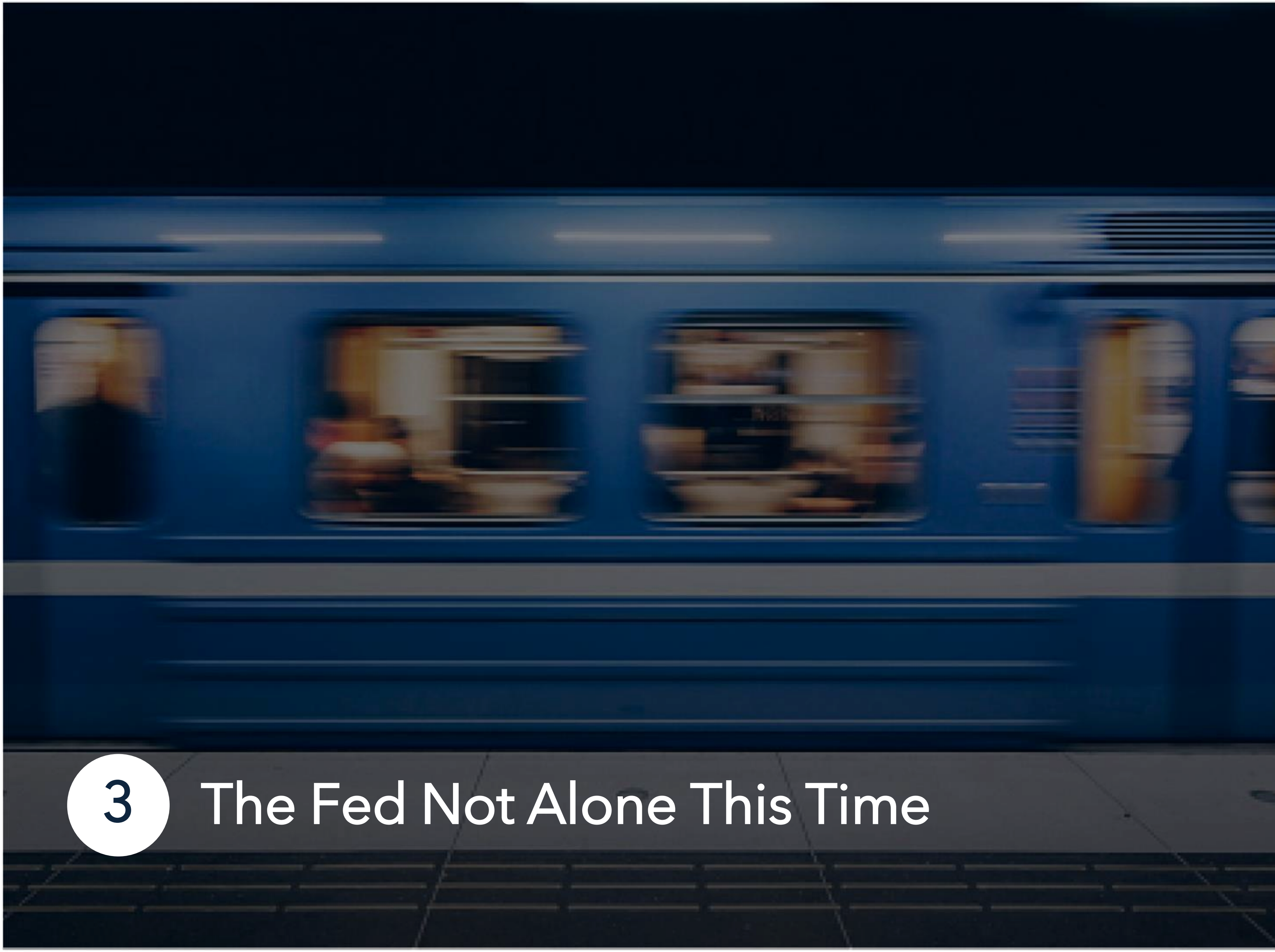
Source: Oxford Economics. (1-3) Bloomberg. Data as of November 12, 2021. Market implied probability of Fed rate hike based of off January 2023 futures contract and current effective federal funds rate. Market implied rate hikes based on December 2022 futures contract and December 2023 futures contract.

Monetary Policy Still Extraordinarily Accommodative

Although Fed accommodation is past peak, monetary policy remains extraordinarily easy, with M2 money supply currently over $5 trillion above its pre-COVID levels. Global monetary and fiscal stimulus has risen by a remarkable $32 trillion over the last 18 months, $13 trillion in the US alone ($5.5 monetary, $7.4 fiscal).



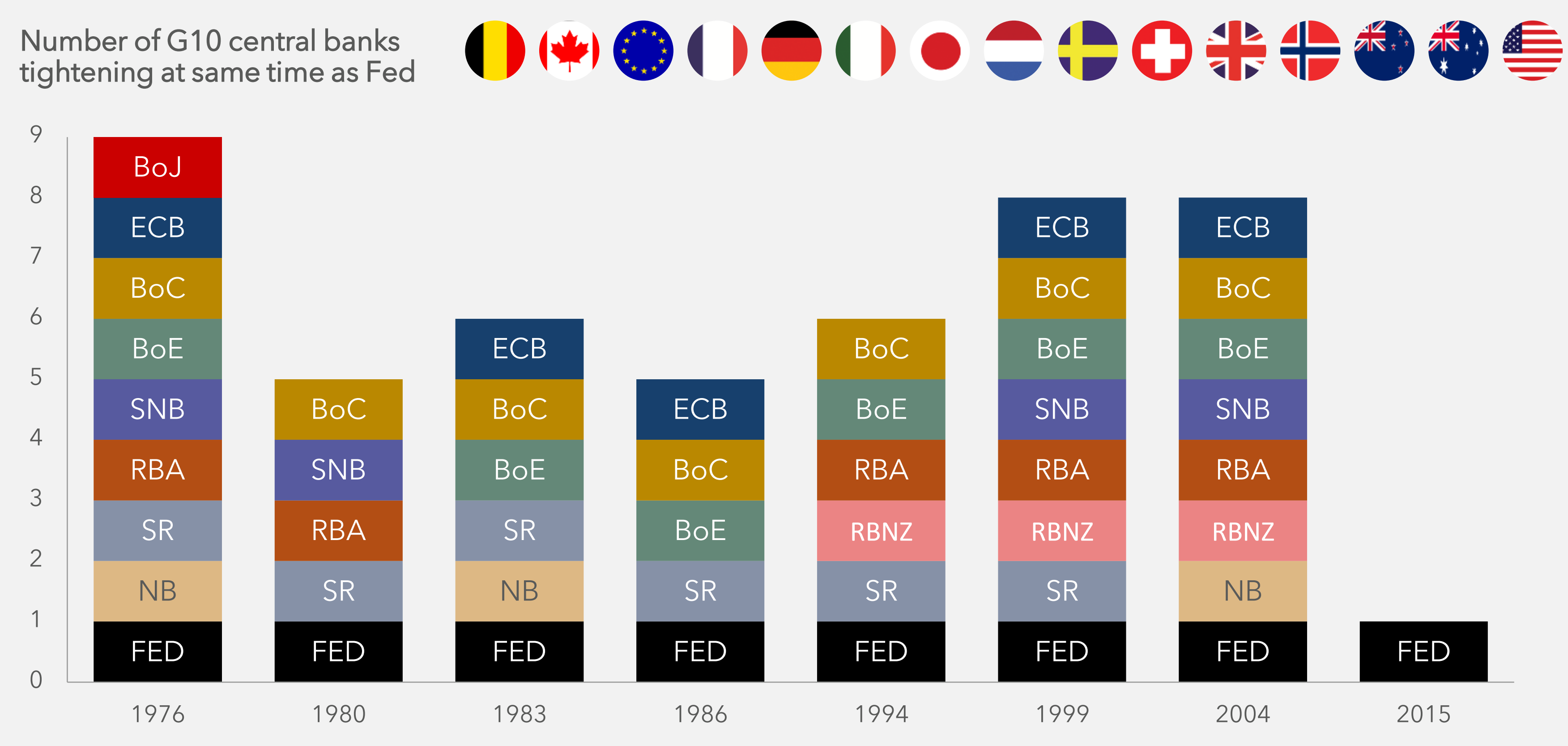
Source: (1-2) Bloomberg. Data of November 12, 2021.



3 The Fed Not Alone This Time

The Fed Was Alone in 2015, Not this Time

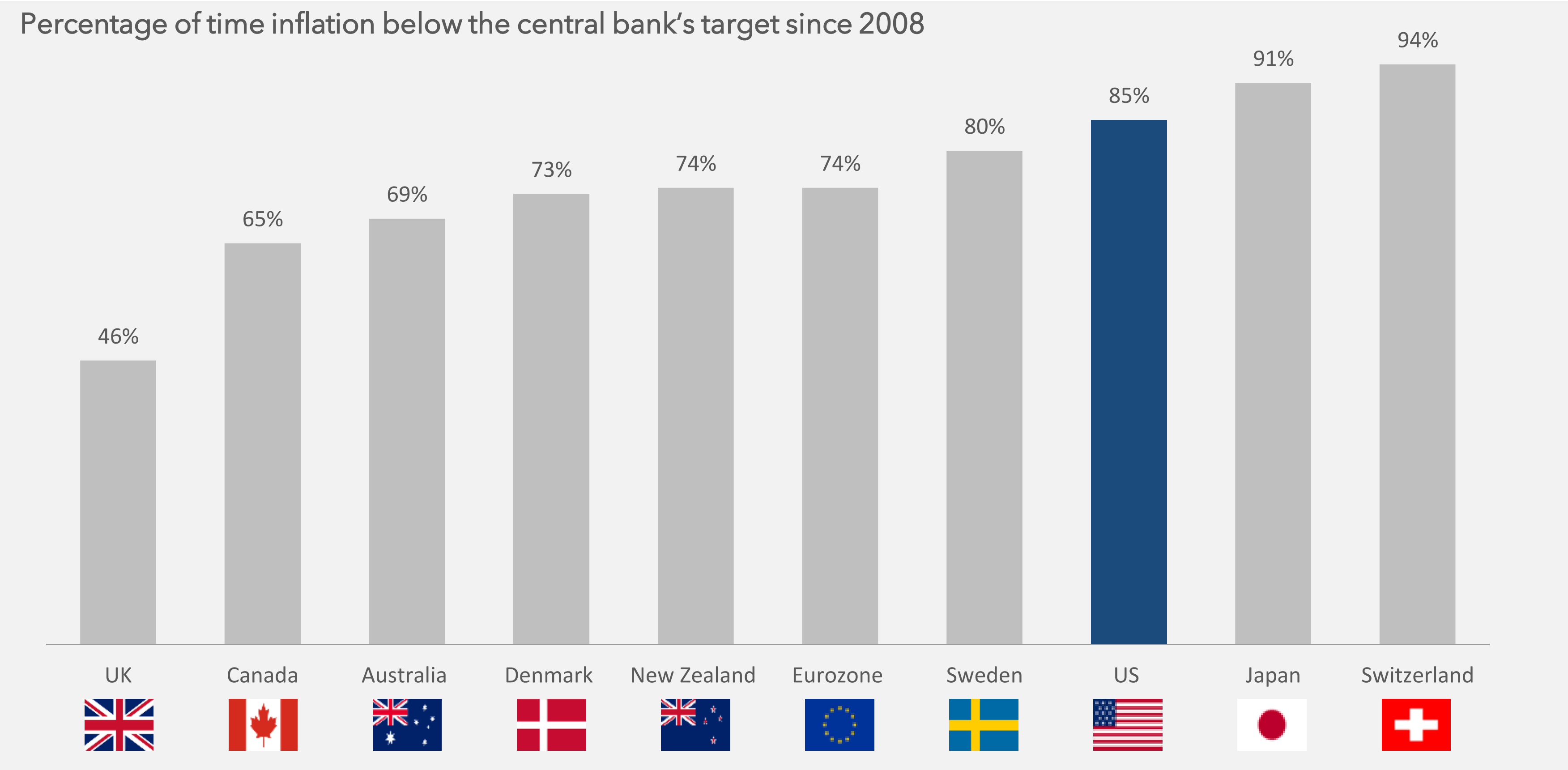
In most tightening cycles over the last 50 years, Fed tightening has been accompanied by concurrent policy shifts from numerous other G10 central banks, with one exception in particular. In 2015, the Fed was alone for the vast majority of its tightening cycle (until late 2017), which in turn, contributed to a powerful tightening in global financial market conditions.



Source: (1) Bloomberg. Data as of September 10, 2021. Bundesbank until 1992, ECB onwards. New Zealand data only available after 1988. BoJ = Bank of Japan. ECB = European Central Bank. BoC = Bank of Canada. BoE = Bank of England. SNB = Swiss National Bank. RBA = Reserve Bank of Australia. RBNZ = Reserve Bank of New Zealand. SR = Sveriges Riksbank (Sweden). NB –Norges Bank (Norway).

Central Banks Conditioned by Decades of Low Inflation

More often than not, advanced economy Central Banks are managing inflation that is below target. While Central Banks have a vast toolkit for managing higher inflation, policy risk remains elevated given that so many central banks find themselves in "new territory" as COVID-related supply-side dislocations continue to accelerate.

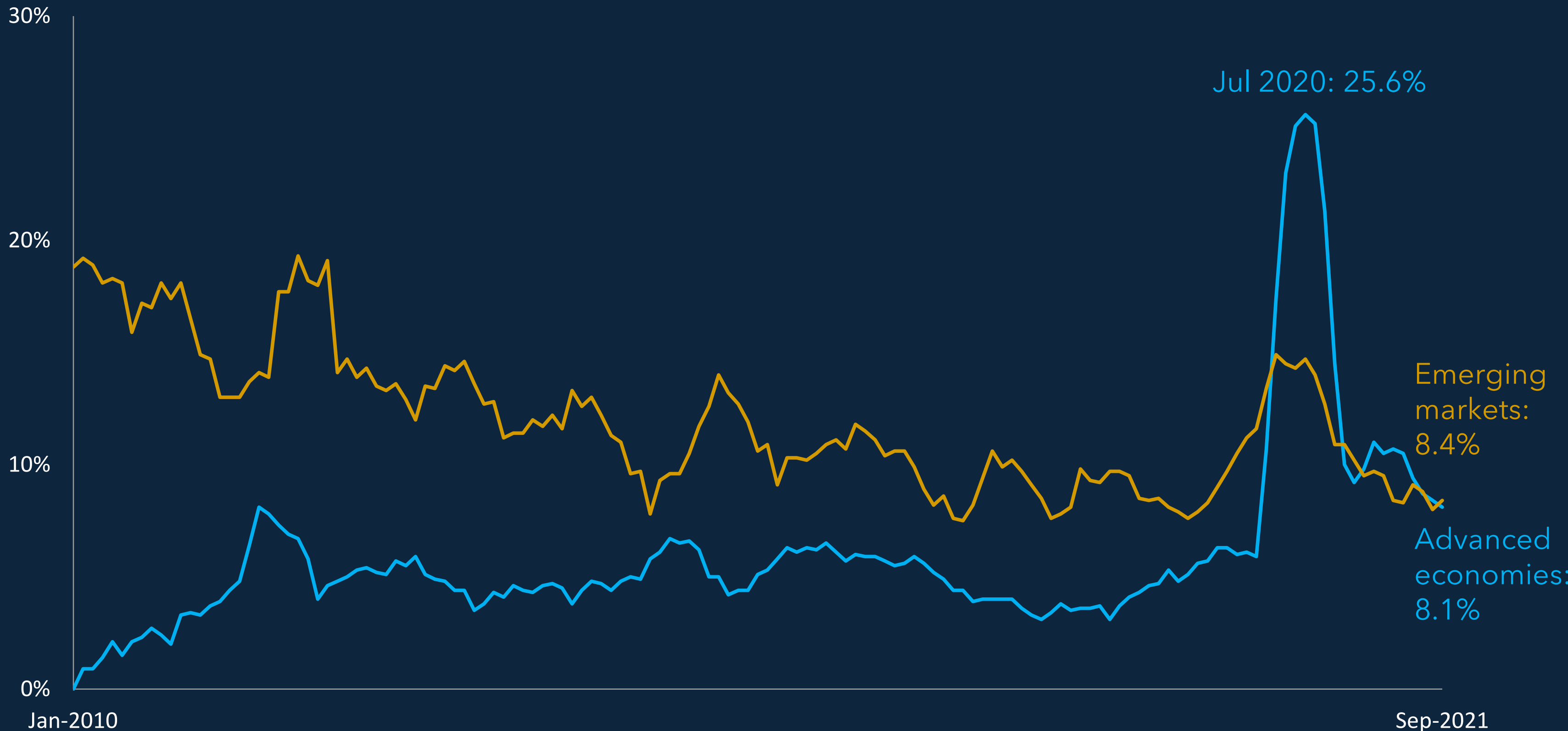


Source: (1) BEA. Statistics Canada. Denmark's Statistics. ECB. MIC Ministry of Internal Affairs and Communications Japan. Statistics Sweden. ONS. Statistics New Zealand, Various Central Banks. Deutsche Bank.

Global Monetary Growth Normalizing

Global broad money supply growth soared in 2020 but has started to normalize over recent months. In advanced economies, broad money growth is down from a peak of 25.6% y/y to 8.1% y/y – still higher than the average of the past decade. In EM, broad money growth has returned to pre-crisis norms.

Broad money growth, 6 month annualized change

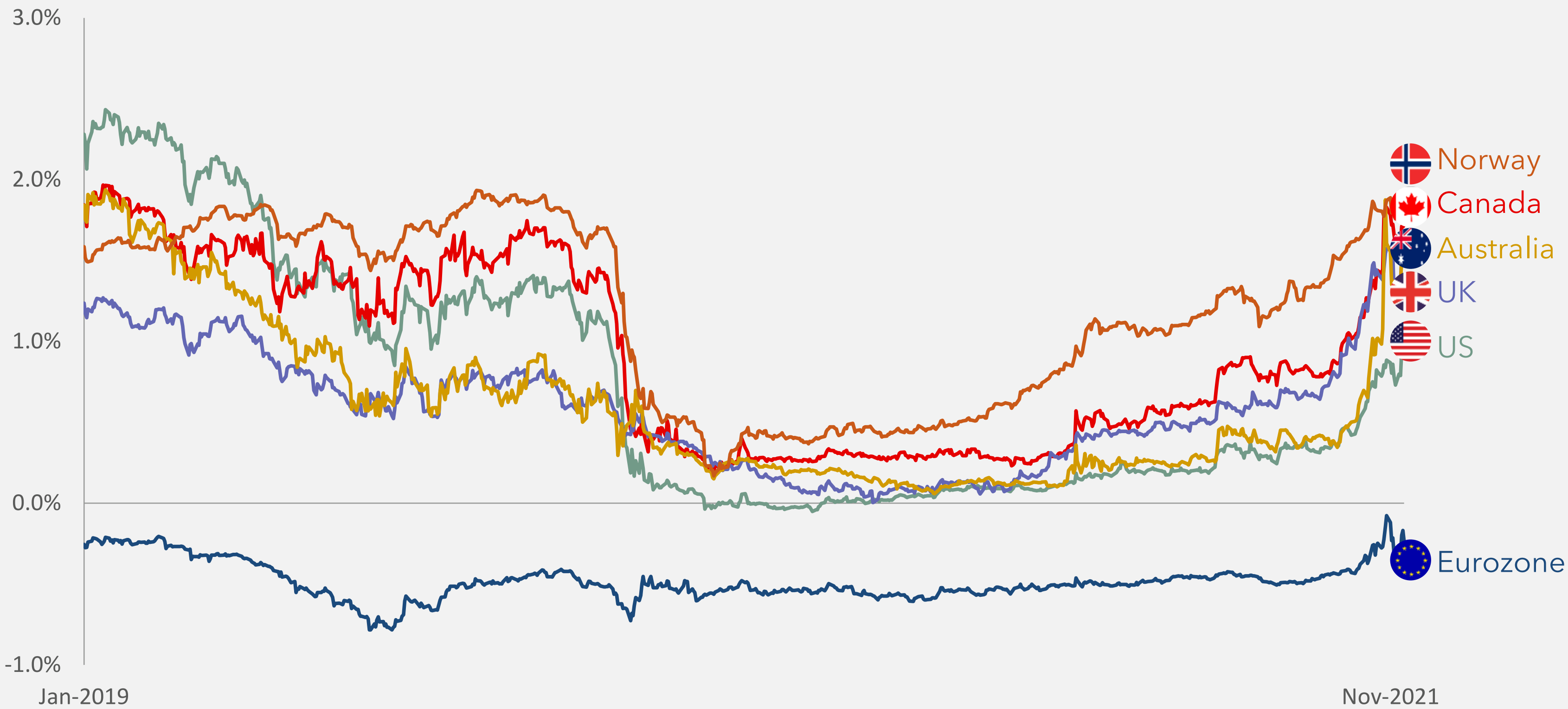


Source: (1) Oxford Economics "Normalizing Money Growth is Reducing Inflation Risks" (November 9, 2021). Advanced economies include US, Eurozone, UK, Canada, Australia & Japan. EM includes China, India, Brazil, Russia, South Africa, Nigeria, Indonesia, Turkey & Mexico. Excess money growth is 6m annualized broad money growth minus a target rate consisting of the inflation target, trend GDP growth and trend velocity growth.

Global Rate Hike Expectations Rising

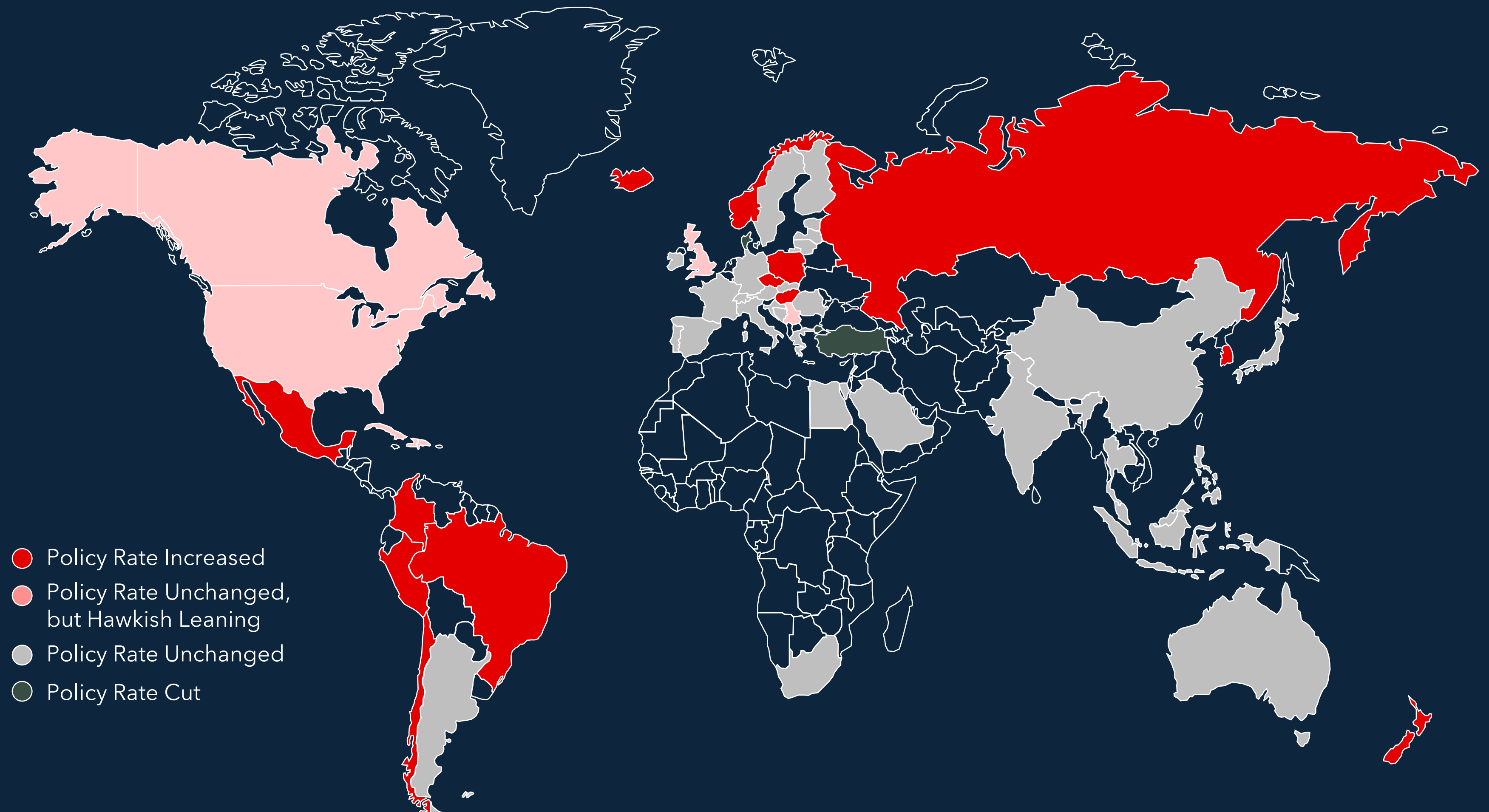
Major bond markets globally have begun to reprice as inflation and expectations for central bank tightening spike around the world

Global 1y1y forward OIS rates



Source: (1) Bloomberg. Data as of November 12, 2021.

Global Central Banks Becoming More Hawkish



Source: Global Central Banks. Bloomberg.
**Turkey has hiked and cut policy rate this year and is now net lower than start of the year, recent move was a policy rate cut of 200 bps. Data as of November 8, 2021.*

Breakdown of Global Central Bank Activity

Over the last six months, as inflation and inflation expectations have risen globally, over a dozen major central banks have increased policy rates. Numerous other large central banks (i.e., US, UK, Canada) are increasingly pivoting to more hawkish policies, though have not yet increased policy rates.

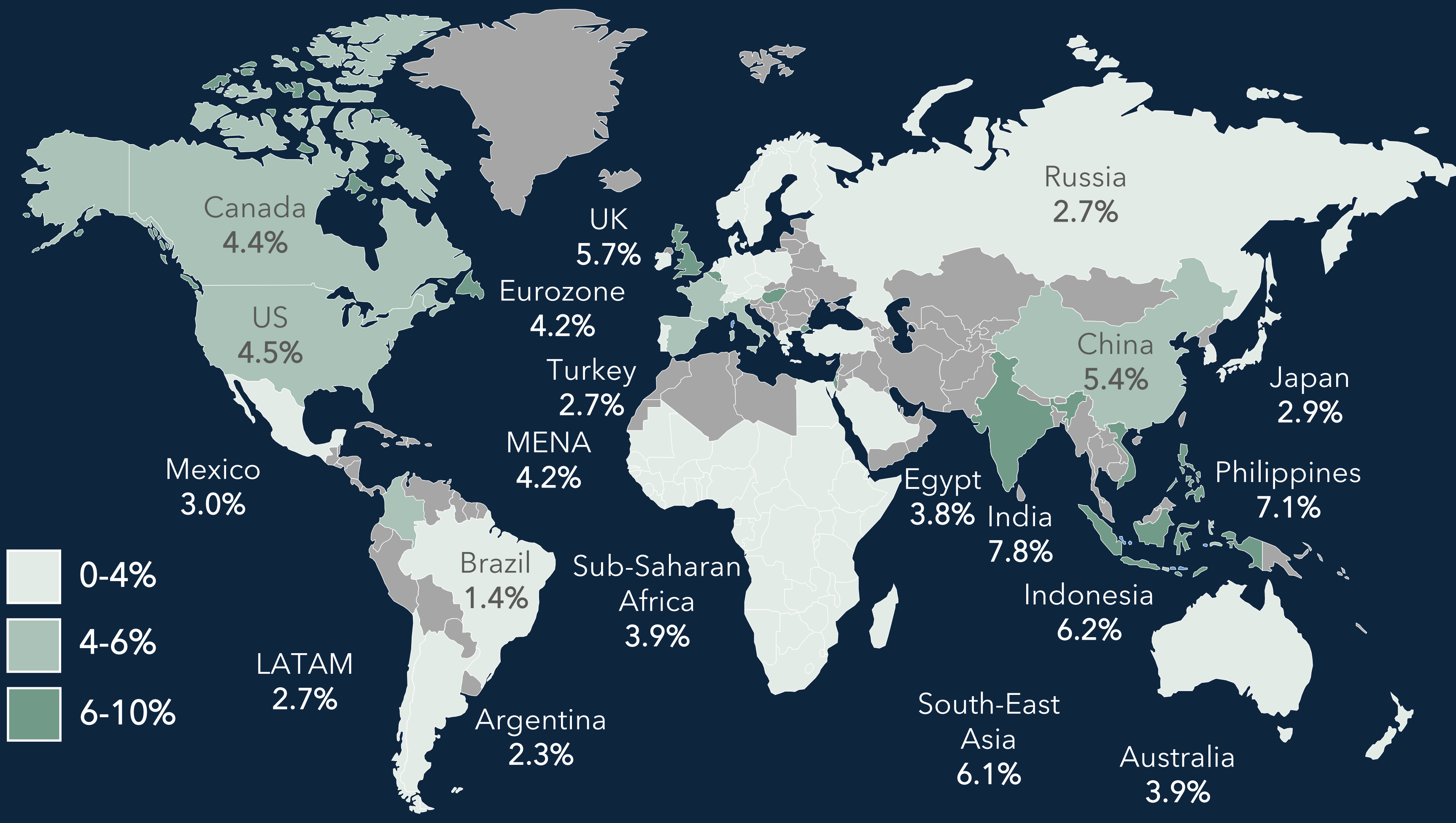
Central bank policy moves over the last 6 months (since May 1, 2021)

Policy Rate Hike	Policy Rate Unchanged		Policy Rate Cut
• Brazil	• Argentina	• Philippines	• Denmark
• Chile	• Australia	• Romania	• Turkey
• Colombia	• Canada	• Serbia	
• Czech Republic	• Switzerland	• Saudi Arabia	
• Hungary	• China	• South Africa	
• Iceland	• Hong Kong	• Sweden	
• Korea	• Indonesia	• Thailand	
• Mexico	• Israel	• UK	
• New Zealand	• India	• US	
• Norway	• Japan	• Euro Area	
• Peru	• Malaysia		
• Poland			
• Russia			

Source: (1) Bloomberg. BIS Central Bank Policy Rates. Turkey has hiked and cut policy rate this year and is now net lower than start of the year. Recent move was a policy rate cut of 200 bps. Data as of November 8, 2021. Denmark is benchmark deposit rate.

Desynchronized Global Growth Story

2022 GDP growth forecasts

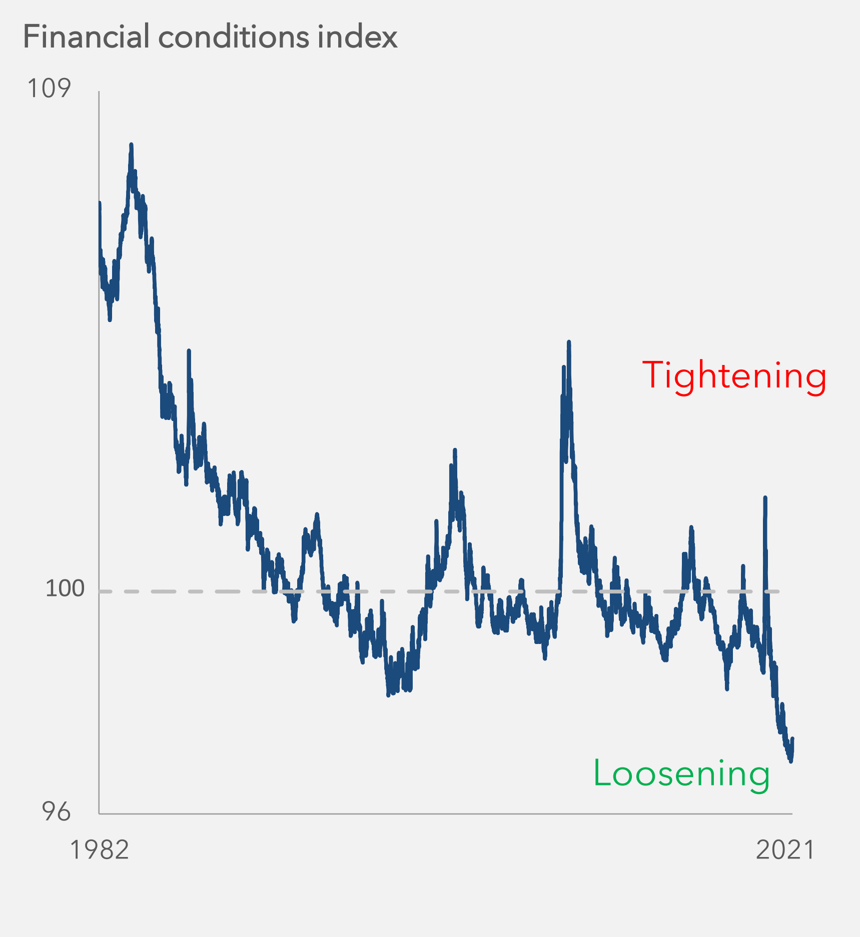


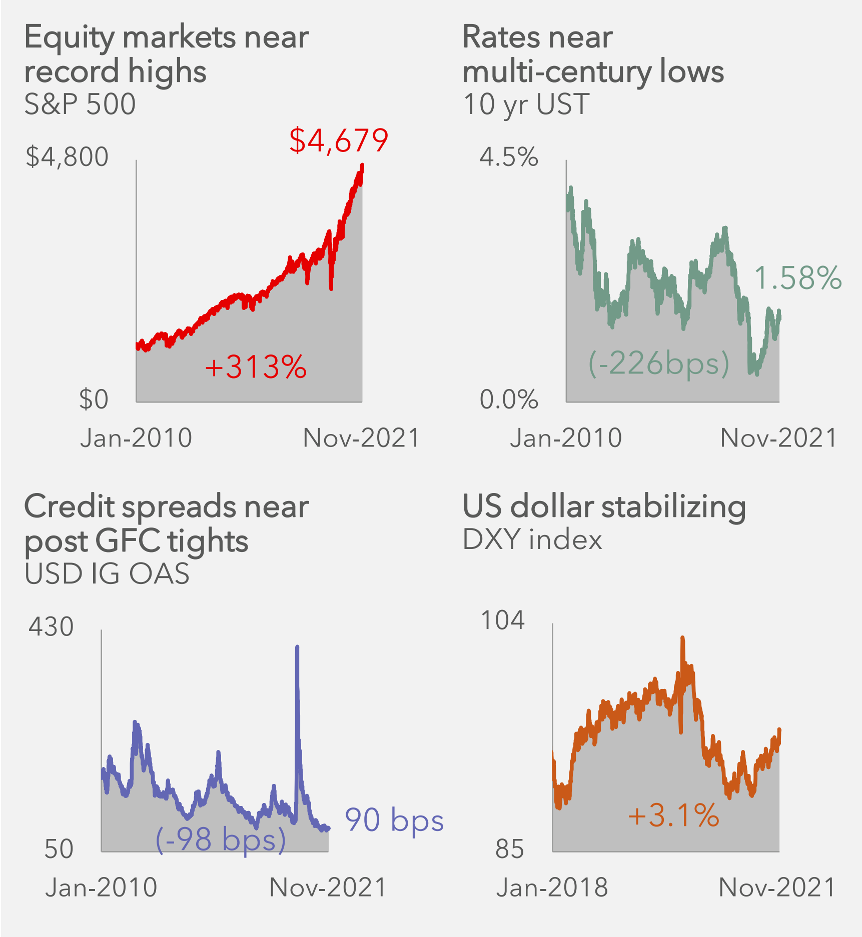
Source: Oxford Economics. Data as of November 12, 2021.

4 Financial Market Conditions Remain Easy

Financial Conditions Remain Easy

Even as the Fed pivots policy in a more hawkish direction, financial market conditions remain at historically easy levels with equities high, rates low, credit spreads tight, and the USD index stabilizing at more accommodative levels





Source: (1-5) Bloomberg. Data as of November 12, 2021. Financial conditions index is Goldman Sachs FCI.

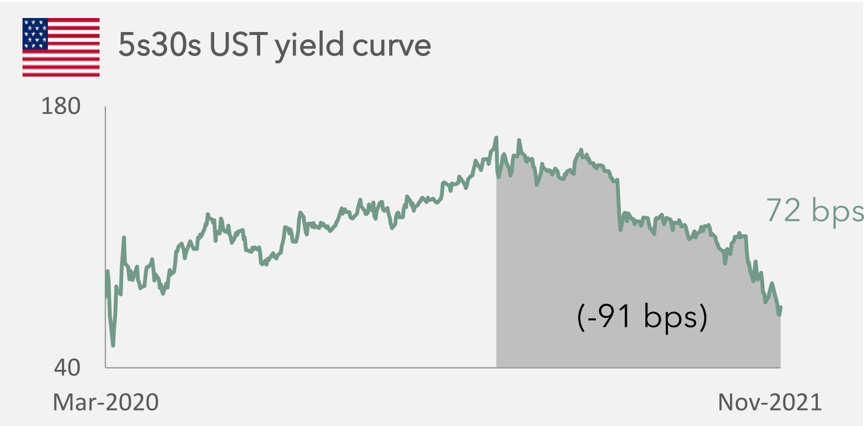
Negative Real Yields Supporting Risk Assets

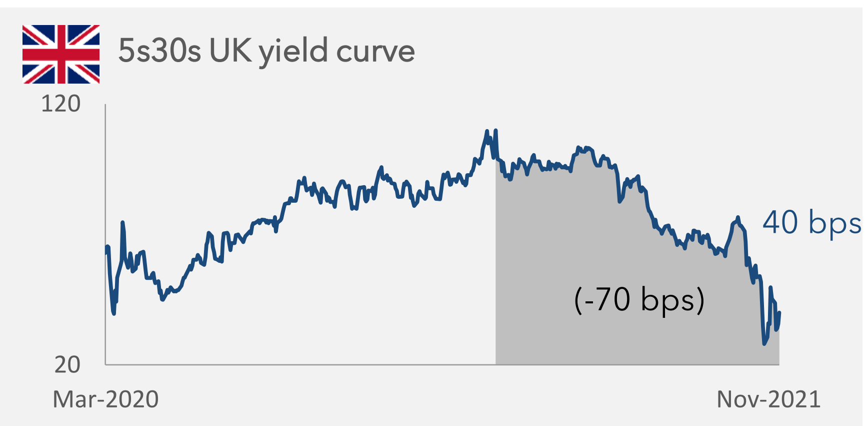
Despite the Fed's taper announcement in November, real yields remain near historic lows. To be sure, Chair Powell has been cautious to avoid the bond market meltdown (and near EM crisis) that accompanied Chair Bernanke's unexpected policy pivot in 2013. Persistent and deeply negative real yields also increase investor demand for risk assets (i.e., equities, HY, EM).

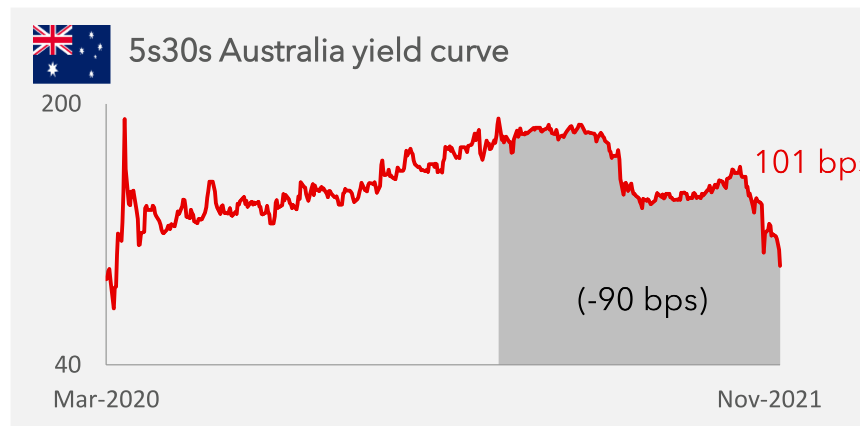
Source: (1) Bloomberg. Data of November 12, 2021. John Authors, Bloomberg Opinion.

Yield Curves Flattening Globally

China slowdown, supply side dislocations and rising inflation have raised concerns around global growth deceleration in the year ahead. The related yield curve flattening across global bond markets also suggests that the market believes the economy cannot handle too much policy tightening without a disruptive impact to growth.



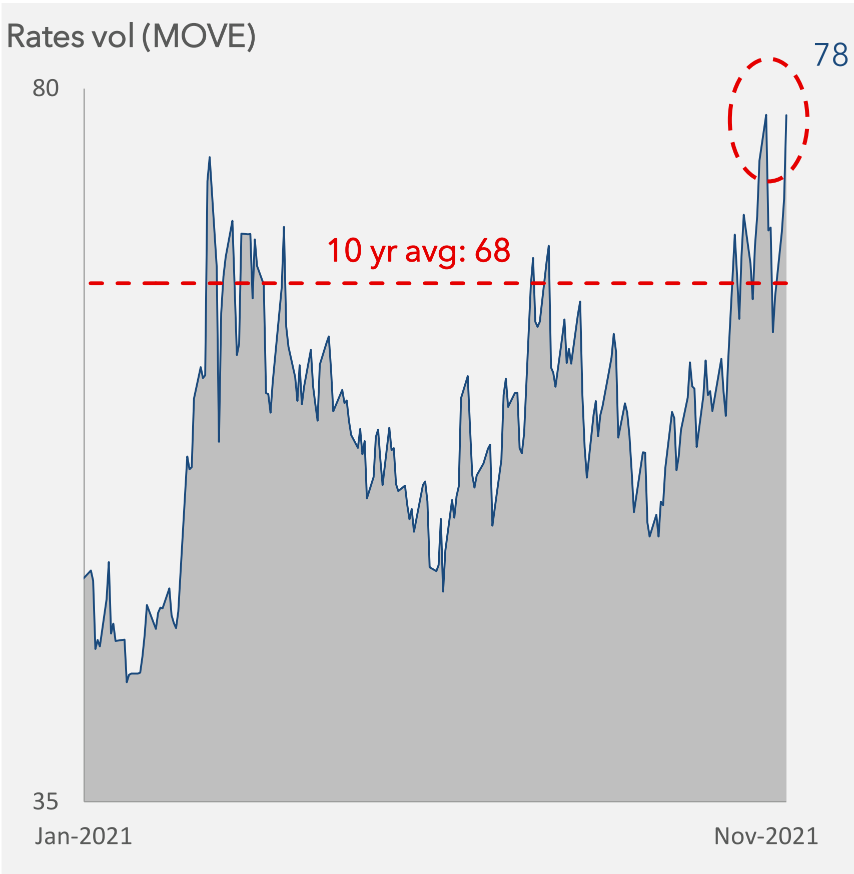


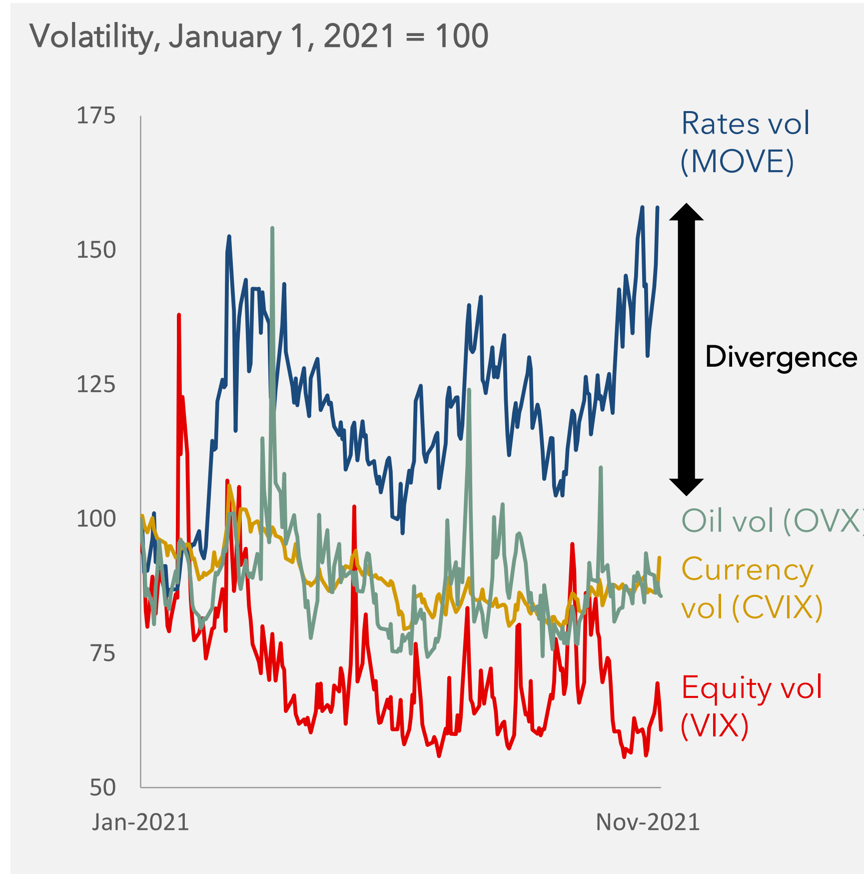


Source: (1-4) Bloomberg. Data as of November 12, 2021.

Structurally Higher Volatility

Historically, as the economy transitions to mid-cycle, with decelerating growth, rising asset prices and policy tightening, volatility in markets moves structurally higher. COVID-related supply side dislocations and inflationary pressures further exacerbate the uncertainty and volatility typical in this stage of the cycle.



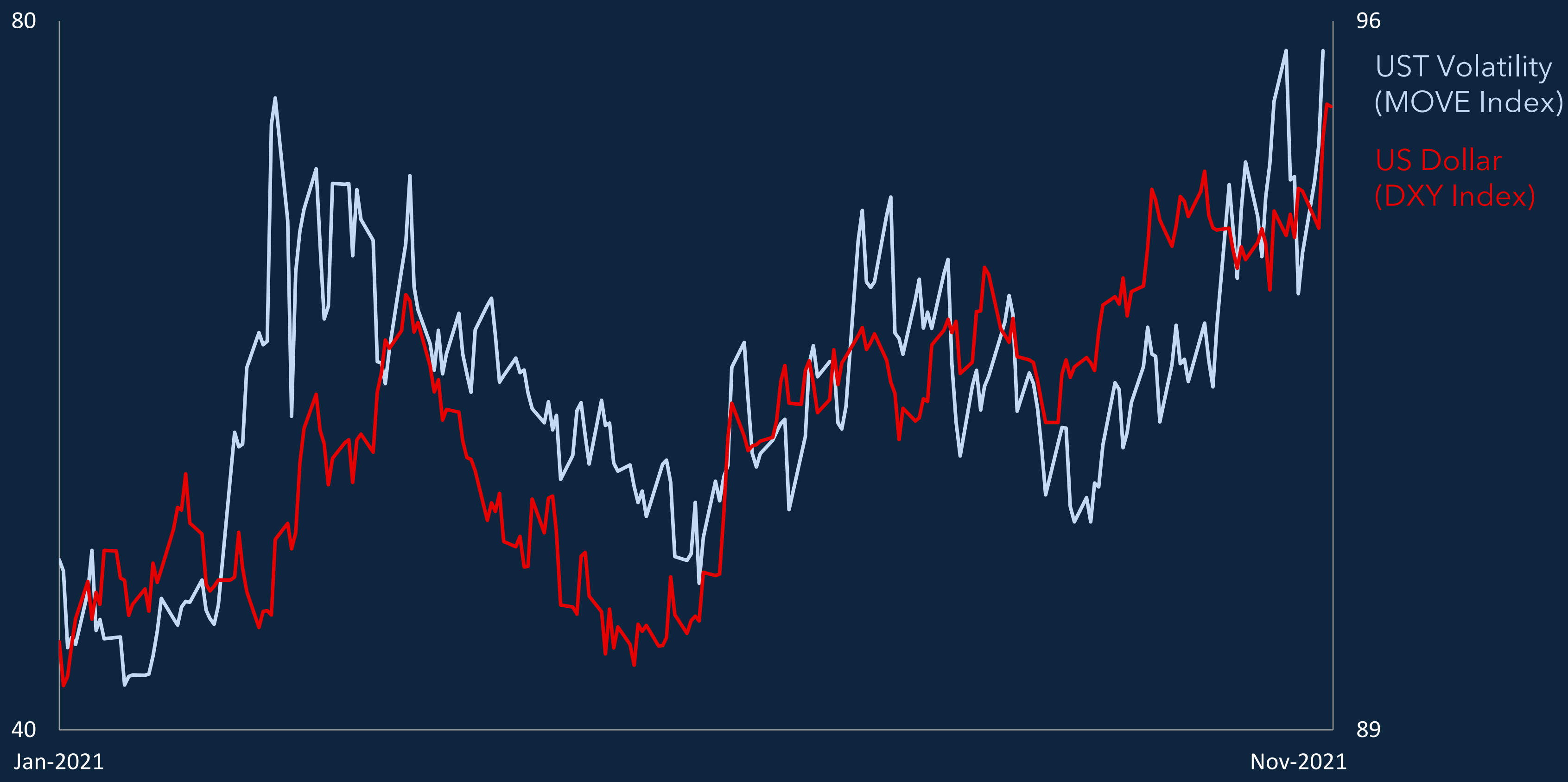


Source: (1-2) Bloomberg. Data as of November 12, 2021.

US Dollar Strengthening Continues

As noted by MUFG FX Strategist, Derek Halpenny, the USD Index has risen to a 16 month high as the market reprices the timing and pace of Fed QE tapering and tightening. Looking ahead, the US dollar is likely to be supported by higher UST bond yields and UST bond yield volatility, which recently reached new highs for the year.

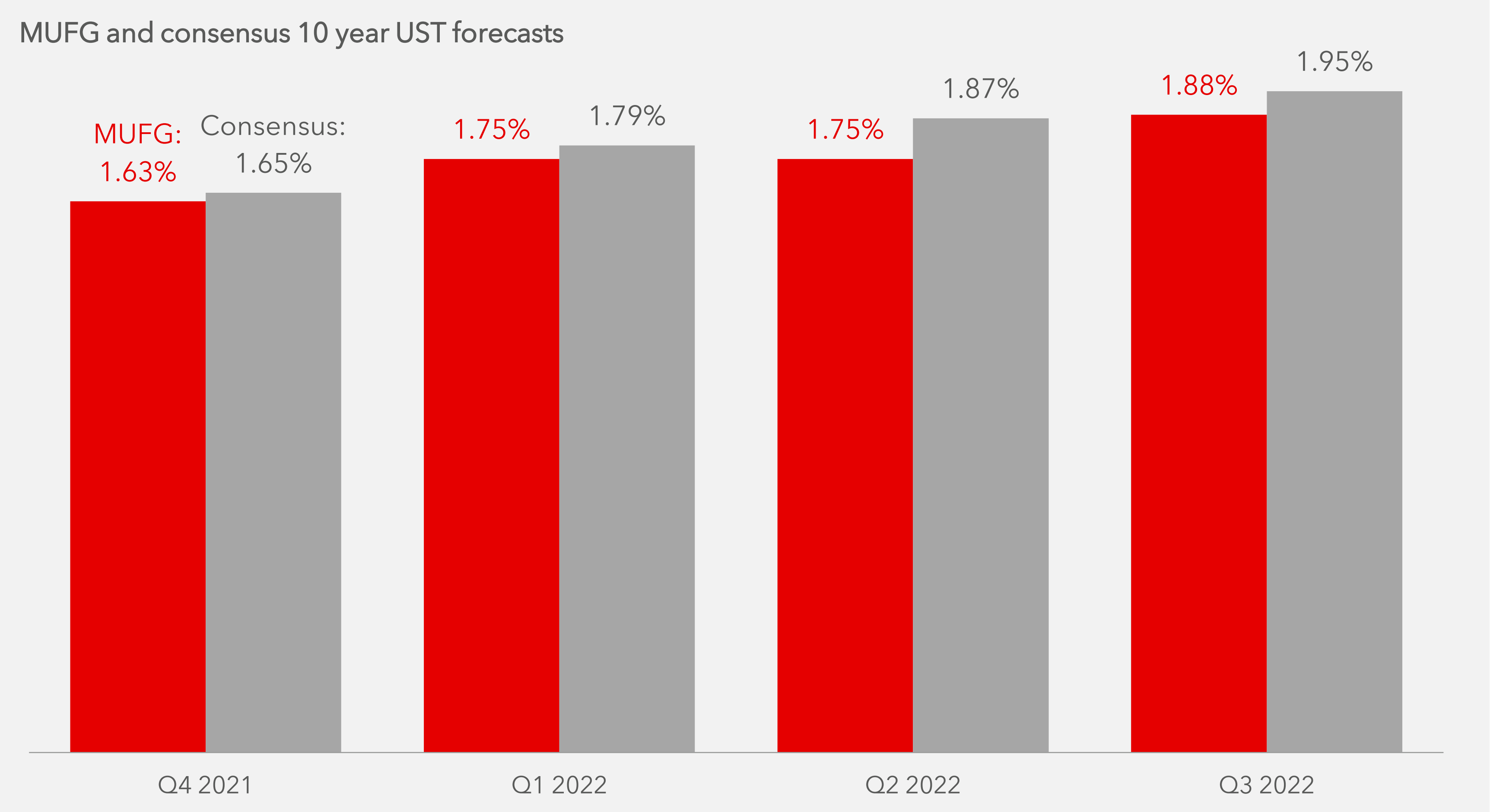
US Dollar & US Treasury Yields



Source: MUFG Research. Derek Halpenny. "The Bullet Europe". Data as of November 12, 2021.

Below Consensus US Rates Forecast

MUFG's Head of Macro US Strategy, George Goncalves, has a below consensus forecast for US rates over the year ahead



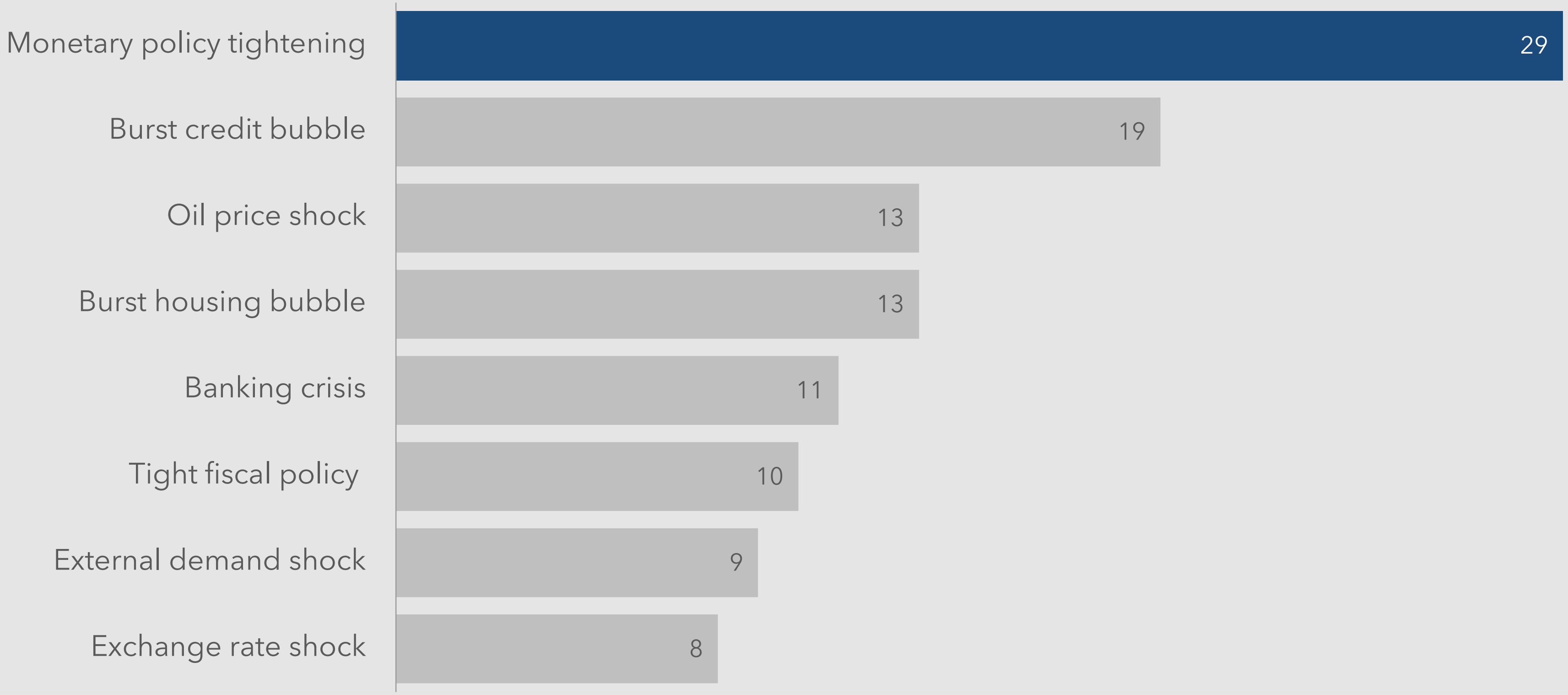
Source: (1) MUFG US Desk Strategy "Key Events in the Month Ahead – November 2021" (George Goncalves). Consensus data as of November 12, 2021.

5 Market Performance During Tightening Cycles

Tightening Cycles Pose Risks for Markets

Monetary policy tightening and credit cycle turns have accounted for nearly half of G7 recessions since 1960. While recession risk remains low near term, policy risk nonetheless remains high, with potentially adverse economic and market consequences at a time when risk asset-valuations are already at late cycle levels.

Factors contributing to 46 recessions in G7 economies since 1960



Source: (1) WSJ. Capital Economics. Factors contributing to 46 recessions in G7 economies since 1960. Bars do not sum to 46 due to multiple factors for specific recessions.

Casualties of Fed Tightening

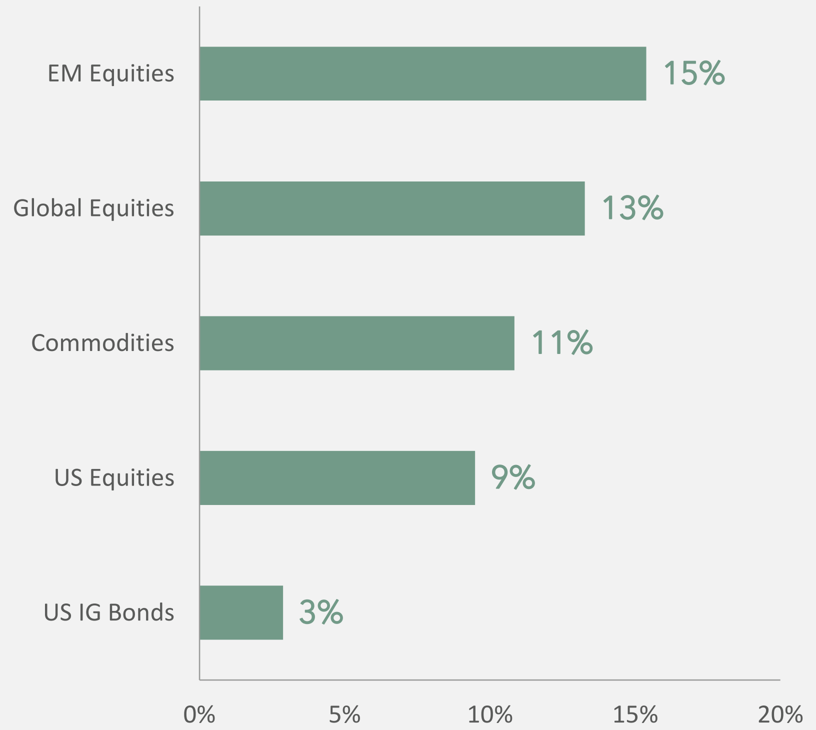
Every Fed tightening cycle of the last 40 years has claimed a large financial casualty, and this cycle (though gradual) should be monitored closely. While the Fed may not have been the primary cause of the market dislocations noted below (i.e., the preconditions), Fed tightening cycles have nonetheless been a precipitant for numerous global market shocks given the impact of US monetary policy on rates, currency markets and risk assets globally.

- **Early 1980s** — LatAm Debt Crisis
- **Late 1980s** — US Commercial Real Estate
- **1994** — G10 Bond Turmoil
- **Late 1990s** — Asia Financial Crisis
- **2008** — Global Financial Crisis
- **2014-2016** — Commodities Super Cycle Bust

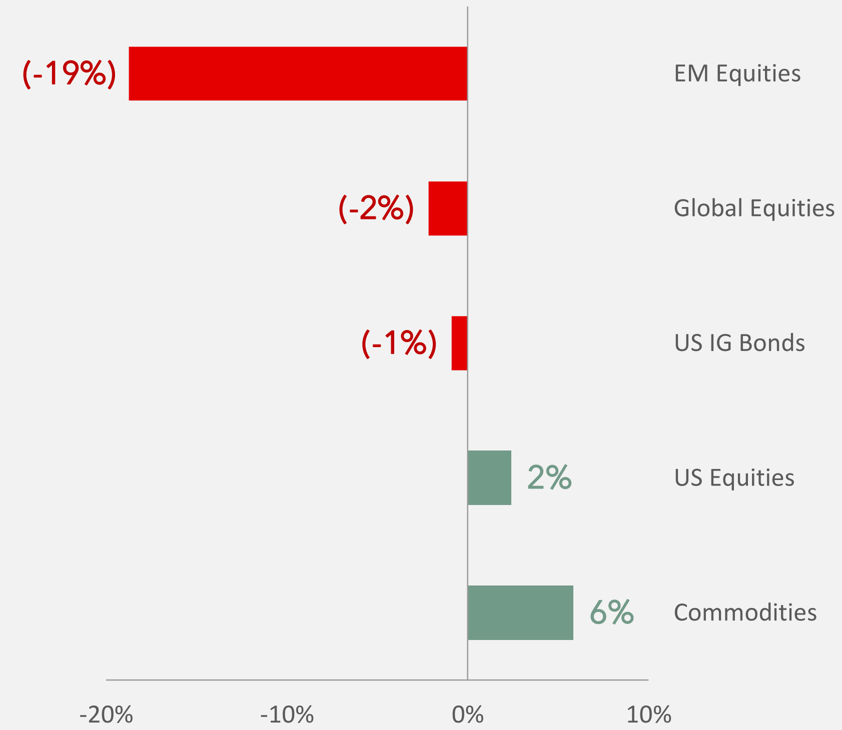
Communication Critical for Markets

Though conventional wisdom suggests that risk assets and bonds perform poorly during Fed tightening cycles; historical evidence suggests otherwise. Tightening typically accompanies strong underlying fundamentals which are supportive of risk assets. 1994, however, offers a case study on the importance of clear and advance communication on Fed policy pivots.

Average returns in first 12 months of Fed tightening cycles since 1983



Average returns in 12 months after poorly communicated 1994 tightening



Source: (1-2) FRED. Data as of October 1, 2021. Bloomberg. Average returns based on 7 tightening cycles dating back to 1983 except for EM equities & IG bonds where data availability is limited to 5 cycles.

Magnitude of Fed Tightening

Since 1980, Fed tightening cycles have averaged just around 300 bps, with nearly 200 bps in the first year alone (equivalent to one rate hike in each of the 8 FOMC meetings in a year). The most recent tightening cycle (2015) was longer and slower by comparison, and was ultimately interrupted by the US-China trade wars.

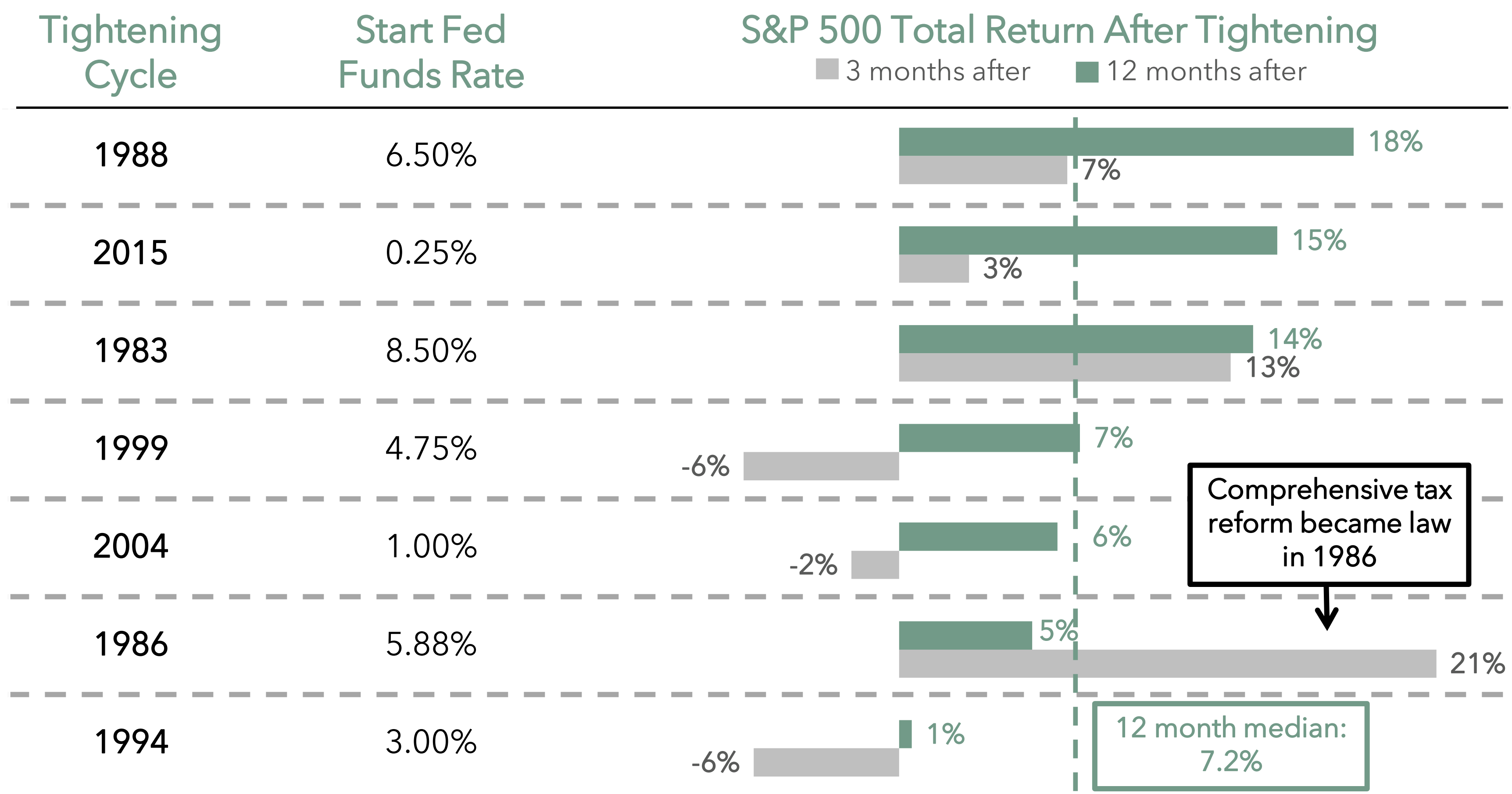
Tightening cycle	Duration (months)	Start rate	Magnitude of tightening, bps (entire cycle)
2015	36 months	0.25%	225 bps
2004	24 months	1.00%	425 bps
1999	11 months	4.75%	175 bps
1994	12 months	3.00%	300 bps
1988	11 months	6.50%	325 bps
1986	9 months	5.88%	137 bps
1983	15 months	8.50%	325 bps

Median: 300 bps

Source: (1) Bloomberg. Data as of October 1, 2021. Federal Reserve. Start rate is upper bound.

US Equities During Fed Tightening Cycles

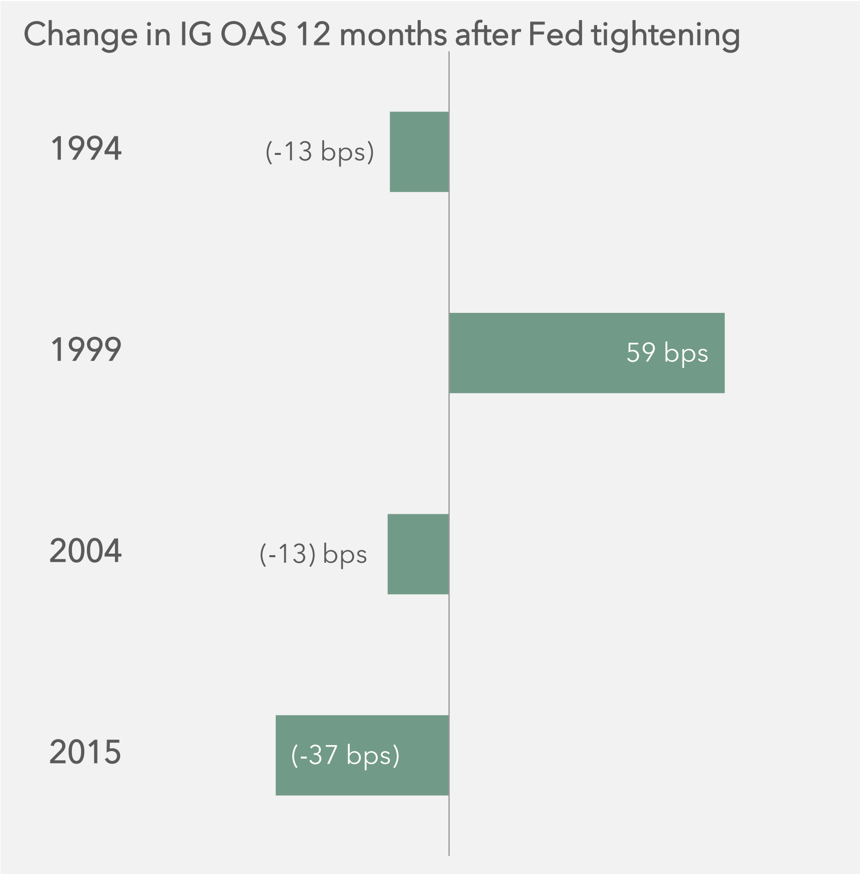
US equities have performed well in 6 of the 7 Fed tightening cycles since 1986, with median 12 month returns in the 7% area. While initial equity returns can be poor immediately following the policy pivot, the market has typically regained losses and generated positive returns in the 12 months following the transition.

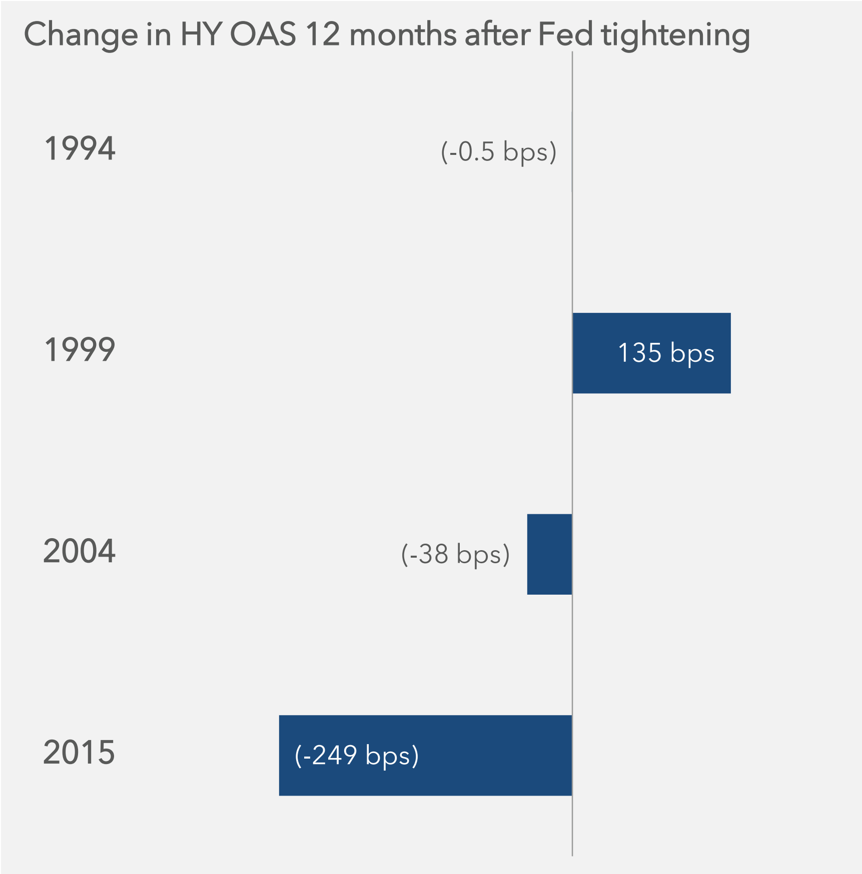


Source: (1) Bloomberg. Data as of September 10, 2021. Calculated from start of Fed tightening cycle. Total returns. Start rate is upper bound.

USD Credit During Fed Tightening Cycles

Historically, HY spreads have generally outperformed IG in tightening cycles, though both can perform well. Generally speaking, both IG and HY spreads have widened in the early stages of a tightening cycle (on the policy transition), but then grind tighter over the course of the tightening cycle (so long as volatility remains in check).



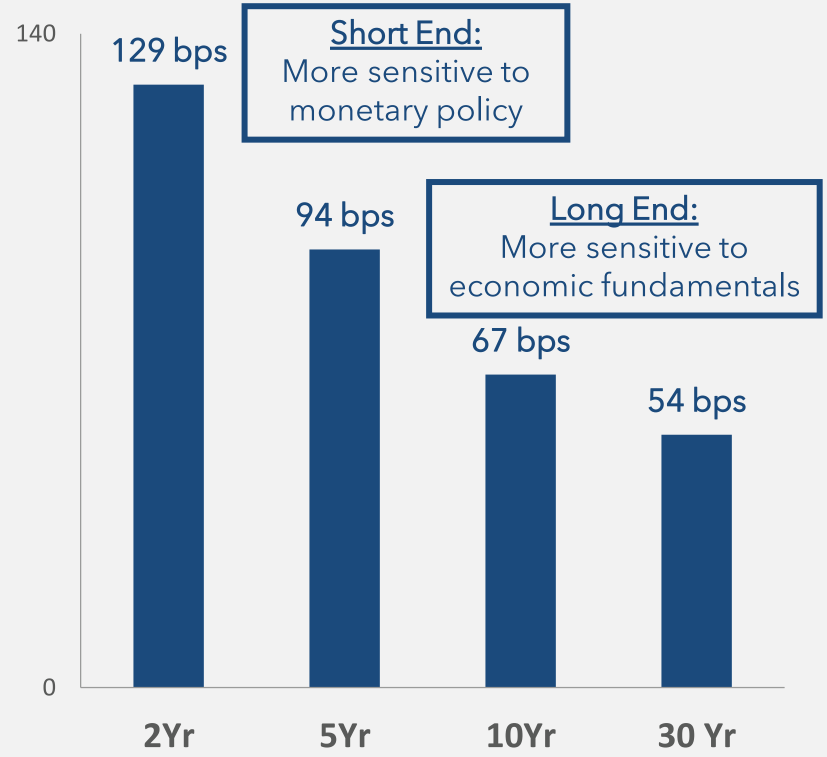


Source: (1-2) FRED. Data as of September 10, 2021. Bloomberg.

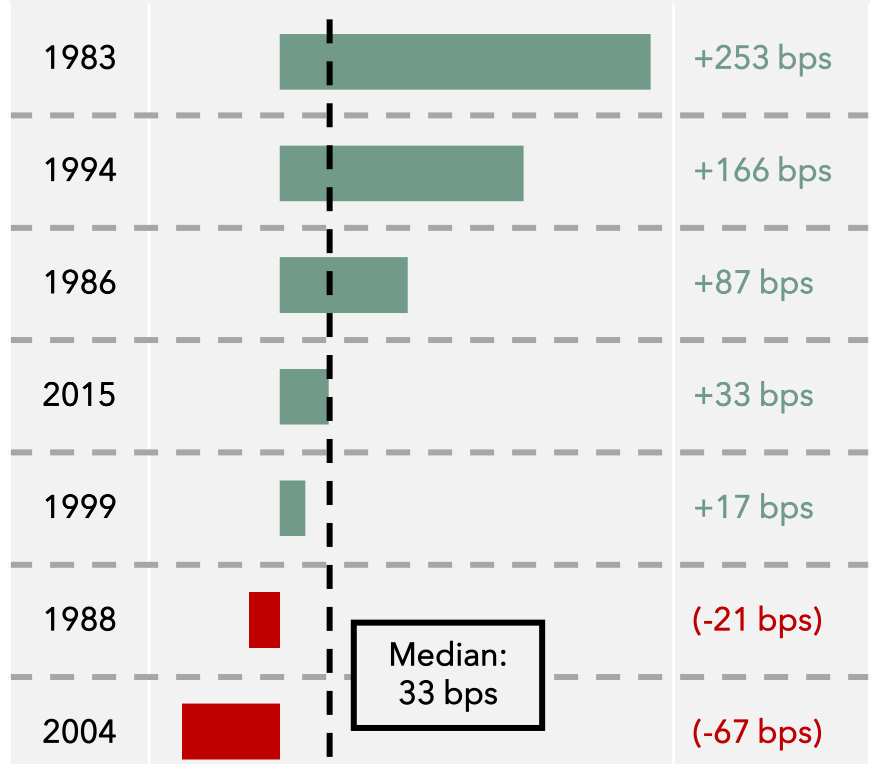
US Treasuries During Fed Tightening Cycles

In prior tightening cycles, UST rates generally rose across the curve by 50 - 150 bps, with the front end more sensitive to monetary policy transition, and the long end generally more driven by economic fundamentals. This, in turn, drives a general "bear flattening" trend in most cycles, with much of the rate move occurring early. In the current cycle, rates have remained lower than prior tightening cycles as a result of decelerating growth, elevated tail risk and strong global technical factors.

Average UST yield change 12 months after Fed tightening



10yr UST yield change 12 months after Fed tightening



Source: (1-2) Bloomberg. Data as of September 10, 2021. Average across duration based on same seven cycles shown on right.

US Dollar During Fed Tightening Cycles

Historically, the US Dollar has had high variance in its performance during tightening cycles. Looking more closely at the recent 2015-18 tightening cycle, this was the first time since the 1970s that the Fed was the only major central bank tightening, and as such, the strong USD gains were more front-loaded going into the cycle than in prior pre-Fed tightening periods.

Tightening Cycle	Start Fed Funds Rate	US Dollar Performance
1983	8.50%	11.9%
1988	6.50%	11.1%
2015	0.25%	4.5%
1994	3.00%	3.8%
1999	4.75%	1.3%
1986	5.88%	(-2.5%)
2004	1.00%	(-3.4%)

Source: (1) Bloomberg. Data as of September 10, 2021. Index is US Fed trade weighted nominal broad dollar index. 12 month performance calculated from start of Fed tightening cycle. Start rate is upper bound.

About the Authors

Tom Joyce
Managing Director
Capital Markets Strategist
New York, NY

Tom.Joyce@mufgsecurities.com
(212) 405-7472

Tom Joyce is a Managing Director and Capital Markets Strategist within MUFG's global capital markets and investment banking business. Based in New York, Tom heads a team that creates customized analytical content for multi-national S&P 500 companies. His team provides in depth analysis on the impact of economic, political, public policy and regulatory dynamics on the US credit, foreign exchange, rates and commodities markets.

Tom has over 25 years of Investment Banking experience in New York, London, Hong Kong, and San Francisco. Over the last 15 years, Tom created and built the Capital Markets Strategy role, advising corporate C-Suite executives (Boards, CEOs, CFOs, and Treasurers) on the pervasive macro forces driving markets. Tom also presents at dozens of corporate events each year including Board meetings, CEO ExCo sessions, CFO and Treasury off-sites, corporate leadership events and conferences.

Tom's educational background includes a year of study at Oxford University from 1991 - 1992, a Bachelor of Arts in Political Science from Holy Cross College in 1993, and a MBA from Kellogg Business School, Northwestern University in 2000.

Tom resides in New Canaan, CT with his wife and four sons, where he coaches youth basketball and serves on the Board of Trustees of the New Canaan Library, the Board of the New Canaan Football (Soccer) Club and the Holy Cross College President's Council.

About the Authors

Hailey Orr

Director
Capital Markets Strategist
New York, NY

Hailey.Orr@mufgsecurities.com
(212) 405-7429

Hailey Orr is a Director in MUFG's Capital Markets Strategy group within the global capital markets and investment banking business. The team provides market based content for corporate clients to assist in strategic decision making. Focus areas include the impact of economic, political, public policy and regulatory dynamics on the US credit, foreign exchange, rates and commodities markets.

Hailey has a decade of Wall Street experience, including three years as a Consumer Sector Specialist in Equity Sales and seven years as a Capital Markets Strategist. Hailey is also a member of MUFG's Inclusion & Diversity Council and has devoted years to participating in and developing Wall Street recruiting programs.

Hailey graduated with honors from the University of Michigan's Ross School of Business with a BBA and a minor in International Studies.

In March 2020, Crain's New York Business Magazine named Hailey one of the "Rising Stars in Banking and Finance".

Stephanie Kendal

Associate
Capital Markets Strategist
New York, NY

Stephanie.Kendal@mufgsecurities.com
(212) 405-7443

Stephanie Kendal is an associate in MUFG's Capital Markets Strategy group within the global capital markets and investment banking business. The team provides market based content for corporate clients to assist in strategic decision making. Focus areas include the impact of economic, political, public policy and regulatory dynamics on the US credit, foreign exchange, rates and commodities markets.

Stephanie has spent over three years as a Capital Markets Strategist. At her prior firm, Stephanie was a part of the Americas Women's Network Junior Council and was an active member of the University of Michigan recruiting team.

Stephanie graduated with honors from the University of Michigan's Ross School of Business with a BBA .

MUFG's Capital Markets Strategy Team

The MUFG Capital Markets Strategy team provides monthly publications and weekly policy notes, presenting to Boards and C-Suite executives, on a broad range of transformative themes driving the FX, rates and credit markets including: the COVID-19 recovery, ESG's acceleration, tax code policy changes, US-China decoupling, corporate strategy, geopolitical risk and central bank monetary policy.

MUFG's Capital Markets Strategy Team

Disclaimer

The information herein provided is for information purposes only, and is not to be used or considered as investment research, a proposal or the solicitation of an offer to sell or to buy or subscribe for securities or other financial instruments. Neither this nor any other communication prepared by MUFG Bank, Ltd. (“MUFG Bank”), MUFG Union Bank, N.A., MUFG Securities Americas Inc. (“MUFG Securities”), or other MUFG Group Company (collectively, "MUFG") is or should be construed as investment advice, a recommendation or proposal to enter into a particular transaction or pursue a particular strategy, or any statement as to the likelihood that a particular transaction or strategy will be effective in light of your business objectives or operations. Before entering into any particular transaction, you are advised to obtain such independent financial, legal, accounting and other advice as may be appropriate under the circumstances. In any event, any decision to enter into a transaction will be yours alone, not based on information prepared or provided by MUFG. MUFG hereby disclaims any responsibility to you concerning the characterization or identification of terms, conditions, and legal or accounting or other issues or risks that may arise in connection with any particular transaction or business strategy. MUFG is not acting and does not purport to act in any way as an advisor or in a fiduciary capacity.

Certain information contained in this presentation has been obtained or derived from third party sources and such information is believed to be correct and reliable but has not been independently verified. While MUFG believes that factual statements herein and any assumptions on which information herein are based, are in each case accurate, MUFG makes no representation or warranty regarding such accuracy and shall not be responsible for any inaccuracy in such statements or assumptions. Note that MUFG may have issued, and may in the future issue, other reports that are inconsistent with or that reach conclusions different from the information set forth herein. Such other reports, if any, reflect the different assumptions, views and/or analytical methods of the analysts who prepared them, and MUFG is under no obligation to ensure that such other reports are brought to your attention. Furthermore, the information may not be current due to, among other things, changes in the financial markets or economic environment and MUFG has no obligation to update any such information contained in this presentation. This presentation is not intended to forecast or predict future events. Past performance is not a guarantee or indication of future results. Any prices provided herein (other than those identified as being historical) are indicative only and do not represent firm quotes as to either price or size. This presentation has been prepared by members of our capital markets strategy team and does not necessarily represent the MUFG “house” view.

This presentation is proprietary to MUFG Securities and may not be quoted, circulated or otherwise referred to without our prior written consent. Notwithstanding this, MUFG Securities shall not be liable in any manner whatsoever for any consequences or loss (including but not limited to any direct, indirect or consequential loss, loss of profits and damages) arising from any reliance on or usage of this presentation and accepts no legal responsibility to any investor who directly or indirectly receives this material.

IRS Circular 230 Disclosure: MUFG Securities does not provide tax advice. Accordingly, any discussion of U.S. tax matters included herein (including any attachments) is not intended or written to be used, and cannot be used, in connection with the promotion, marketing or recommendation by anyone not affiliated with MUFG Securities of any of the matters addressed herein or for the purpose of avoiding U.S. tax-related penalties.

The MUFG logo and name is a service mark of Mitsubishi UFJ Financial Group, Inc., and may be used by it or other Group companies for branding or marketing purposes. Group companies include MUFG Bank, MUFG Americas Capital Leasing & Finance, LLC, Mitsubishi UFJ Trust and Banking Corporation, MUFG Securities Americas Inc., and MUFG Union Bank, N.A. ("MUB”). Corporate or commercial lending or deposit activities are performed by banking affiliates of MUFG, including, in the United States, MUFG Bank and MUB.

FLOES™ is a service mark of MUFG Securities Americas Inc.