Capital Markets Strategy

Essential inCights for the C-Suite

The End of the Post Cold War Era

Near & Long Term Implications for the Economy, Policy & Markets

MARCH 2022

Total Returns by Asset Class

In stagflation environments, very few asset classes outperform. In 2022 YTD, commodities are an outlier in their positive performance with most other debt and equity asset classes experiencing their worst Q1 total return performance in many years.

2015	2016	2017	2018	2019	2020	2021	2022 YTD
Munis 3.6%	High Yield 17.5%	S&P 500 22.3%	Munis 1.0%	S&P 500 31.5%	S&P 500 18.4%	S&P 500 28.7%	Commodities 27.6%
Mortgages 1.5%	S&P 500 12.0%	EM Sov 10.0%	Mortgages 1.0%	High Yield 14.4%	High Grade 9.8%	Commodities 27.1%	Loans (-0.4%)
S&P 500 1.4%	Commodities 11.4%	High Yield 7.5%	US Gov't 0.8%	EM Sov 14.3%	US Gov't 8.2%	Loans 5.4%	S&P 500 (-2.6%)
US Gov't 0.8%	Loans 10.4%	High Grade 6.5%	Loans 0.6%	High Grade 14.2%	High Yield 6.2%	High Yield 5.4%	High Yield (-4.9%)
EM Sov 0.6%	EM Sov 9.5%	Munis 5.4%	High Grade (-2.2%)	Loans 8.7%	Munis 5.3%	Munis 1.8%	Mortgages (-5.3%)
Loans 0.1%	High Grade 6.0%	Loans 4.6%	High Yield (-2.3%)	Munis 7.7%	EM Sov 4.8%	High Grade (-1.0%)	US Gov't (-5.9%)
High Grade (-0.6%)	Mortgages 1.7%	Mortgages 2.4%	S&P 500 (-4.4%)	US Gov't 7.0%	Mortgages 4.1%	Mortgages (-1.2%)	Munis (-6.4%)
High Yield (-4.6%)	US Gov't 1.1%	US Gov't 2.4%	EM Sov (-4.6%)	Mortgages 6.5%	Loans 3.5%	US Gov't (-2.4%)	High Grade (-8.2%)
Commodities (-24.7%)	Munis 0.4%	Commodities 0.7%	Commodities (-13.0%)	Commodities 5.4%	Commodities (-3.5%)	EM Sov (-2.6%)	EM Sov (-10.3%)

Source: USD Markets. Bloomberg. CreditSights. EM Sov is USD EM Sovereign BBB & Lower index. Commodities is Bloomberg Commodity Index. Full year returns except for 2022 YTD calculated through March 30, 2022.

Global Corporate & Investment Banking
Capital Markets Strategy Team

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

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1. Ukraine Situation Analysis

Putin's (Mis)Calculations

The peak-winter season, perceived Western leadership weakness and tacit Chinese support have all contributed to the current timing of President Putin's long-held wish to restore Russia's 20th century borders and pushback on potential NATO expansion. However, while seeking to take advantage of a seemingly weakened West and fragmented NATO alliance, Putin's actions have become a catalyst for much stronger NATO unity and policy coordination than anticipated.

- Winter timing would maximize leverage over Europe
- Weakened West (Afghanistan, Biden, Johnson, Macron, Scholz)
- Fragmented NATO
- Complexity and logistics of military campaign
- Ukraine weakness politically, economically, militarily
- Strength of Zelensky leadership in crisis
- Scale and speed of sanctions and (private sector) self-sanctioning
- Willingness to reduce or ban Russian energy despite historically tight markets

Near & Long Term Implications of Russia-Ukraine

In many ways, the Russia-Ukraine crisis may prove to be a seminal event in the multi-year breakdown of the post Cold War geopolitical and global market paradigm. The near and longer term implications are likely to be profound, perhaps more than anticipated.

Near Term Implications

- Growth decelerating
- Supply side dislocations
- Inflation rising (food, energy, housing)
- Policy tightening
- Higher cost of funding
- Commodity import economies & currencies under pressure
- Higher structural volatility

Longer Term Implications

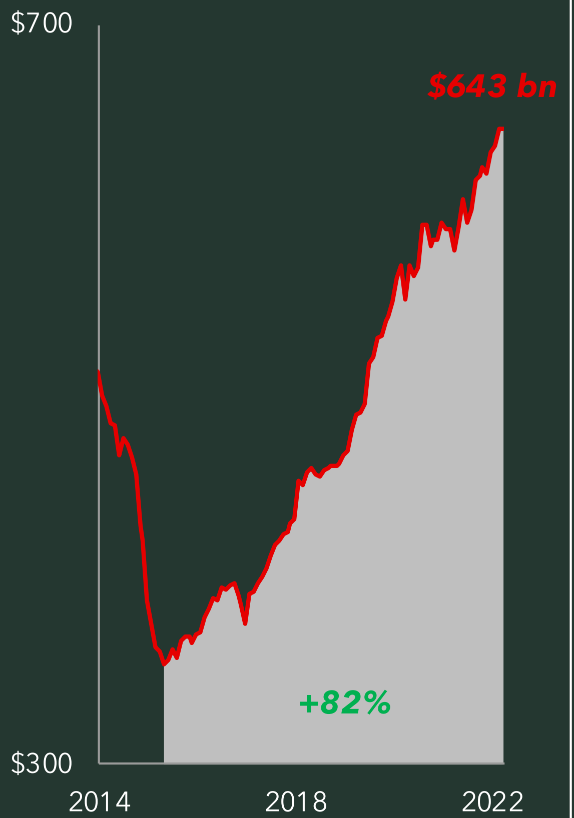
- Rising conflict between democracies & autocracies
- Rapidly rising defense spending
- Accelerating de-globalization
- Regionalization & reshoring of supply chains
- Weakening of US Dollar-dominated global financial system
- Accelerating energy transition & diversification
- More assertive gov't role in global economy (sanctions, regulatory, trade)

2. Global Sanctions Response

Russia Prepared for Ukraine

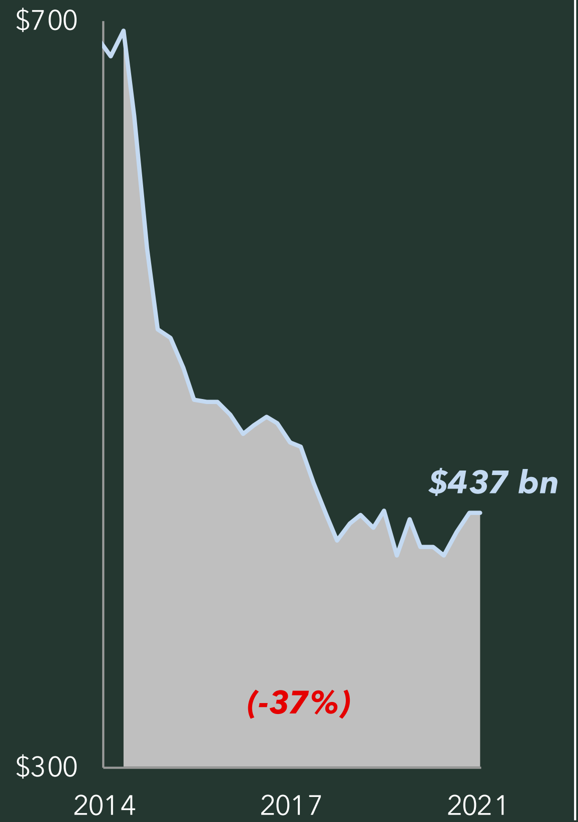
FX reserves rising

Russia FX reserves, USD bn



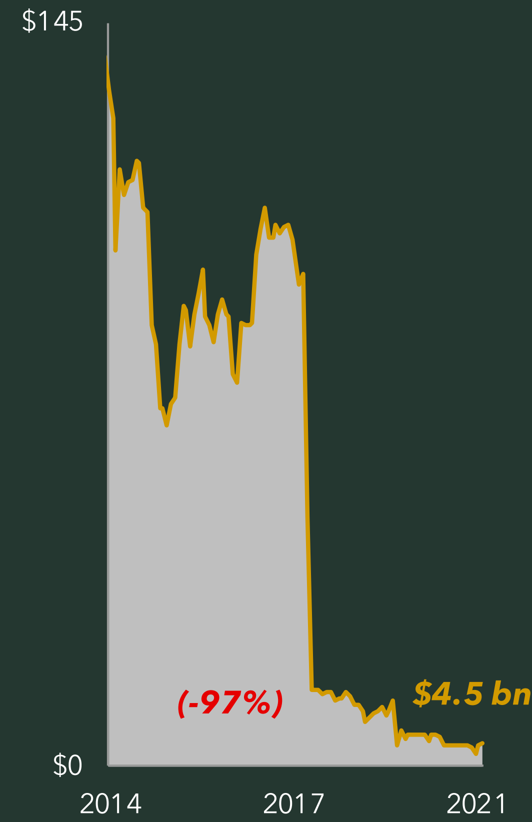
External debt declining

Total external debt, USD bn



US Dollar decoupling

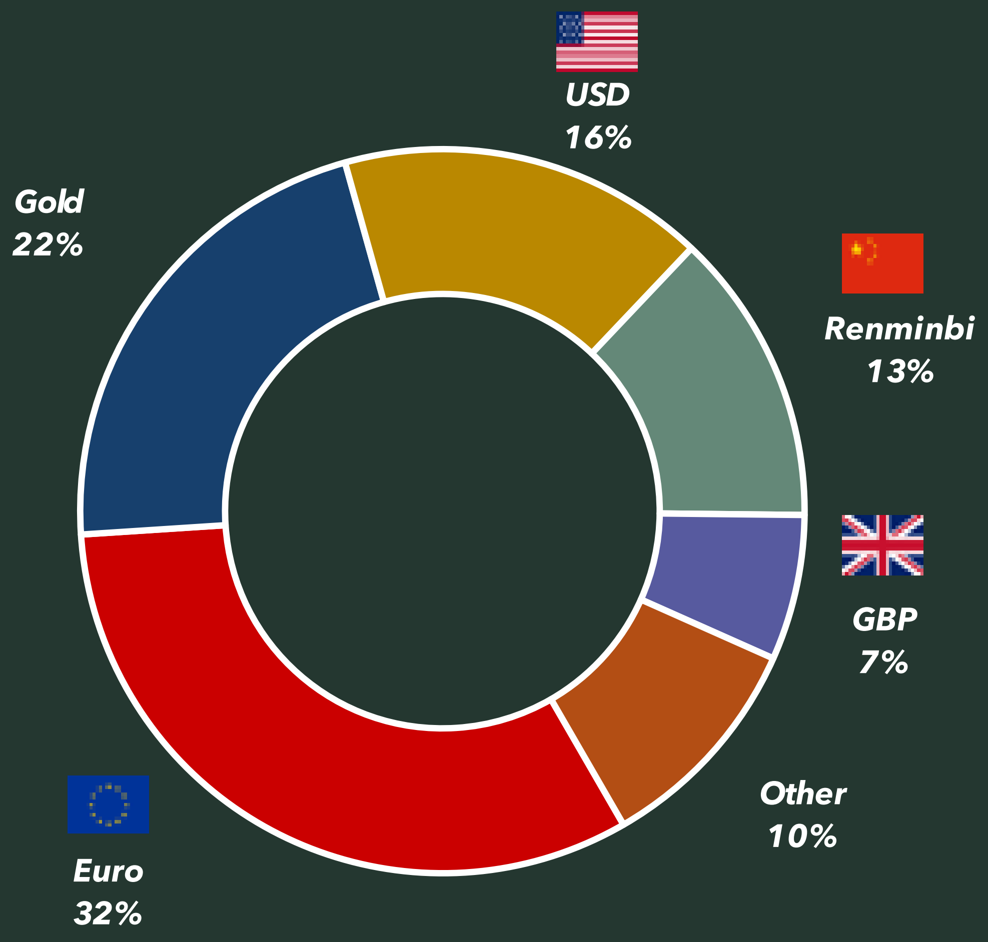
Russia's ownership of USTs, USD bn



Source: (1) Bloomberg. Data as of March 21, 2022. (2) MUFG. Ehsan Khoman, Head of Emerging Markets Research – EMEA. Bloomberg. BIS. (3) Bloomberg, "Russia's Years long Quest to Quit Dollar is Blunting Sanctions". Data as of March 28, 2022.

Breakdown of Russia's $643 Billion FX Reserves

Central Bank of Russia foreign exchange and gold assets, % market value



Over 65% of Russia's FX Reserves are Sanctioned

Source: (1) Central Bank of Russia "FT, A Global Financial Pariah - How Could Central Bank Sanctions Hobble Russia" (February 27, 2021).

US Sanctions

President Putin failed to anticipate the speed and likelihood with which the US would move to: (i) sanction Russia's Central Bank; (ii) deny Russian banks access to SWIFT; and (iii) implement a complete ban on new purchases of Russian oil, LNG and coal.

Sanctions as of March 30

1. **Russian Energy:** Biden signed EO banning US imports of Russian oil, LNG and coal, as well as prohibitions on investments or financing Russia's energy sector

2. **Central Bank:** Imposed restrictive measures to prevent the Russian Central Bank from accessing reserves in foreign currencies (done in conjunction with EU, UK and Canada)

3. **Financial Sector:** Announced removal of selected Russian banks from SWIFT system

4. **Visas:** Restricted sale of "golden passports" to exclude wealthy Russians

5. **Financial Sector:** Sanctions on several significant Russian financial institutions (including two largest, VTB and Sberbank) and selected Belarusian banks
   - Range from correspondent banking sanctions to full blocking sanctions
   - Full blocking sanctions freezes assets in US, prohibits transactions with US individuals and businesses, restricts access to the global financial system and US Dollar

US Sanctions

Sanctions as of March 30

6 **Funding:** Restrictions on US individuals and firms from purchasing debt issued by Russia's MoF, central bank (CBR), National Wealth Fund, Russian SOEs, banks, and private corporations (including gas, oil and power companies)

7 **President Putin:** Direct sanctions on President Putin

8 **Russian Elites:** Full blocking sanctions and travel restrictions for an expanded list of Russian elites and family members

9 **Russian Lawmakers:** 328 members of Russian State Duma sanctioned for their role supporting Putin's actions

10 **Export Restrictions:** Export controls on critical technologies (semiconductors, lasers, sensors, etc.) and oil equipment, as well as the addition of several Russian military companies and their subsidiaries to the "Entity List"

11 **Regional Sanctions:** Broad jurisdiction-based sanctions in the Donetsk and Luhansk regions

- Prohibitions on new investments, imports, exports and financing transactions (similar to sanctions put on the Crimea region after annexation in 2014)

US Sanctions

Sanctions as of March 30

12 **Gold:** Gold-related transactions involving sanctioned Russian entities prohibited

13 **Nat Gas:** Sanctions on Nord Stream 2 and the company's leadership

14 **Airlines:** All Russian-owned aircrafts, both cargo and passenger, banned from US airspace

15 **KleptoCapture:** New task force under the US Department of Justice focused on export restrictions, sanctions enforcement and economic countermeasures

16 **Trade:** Stripping Russia of MFN trading status, and suspending from WTO, is under consideration

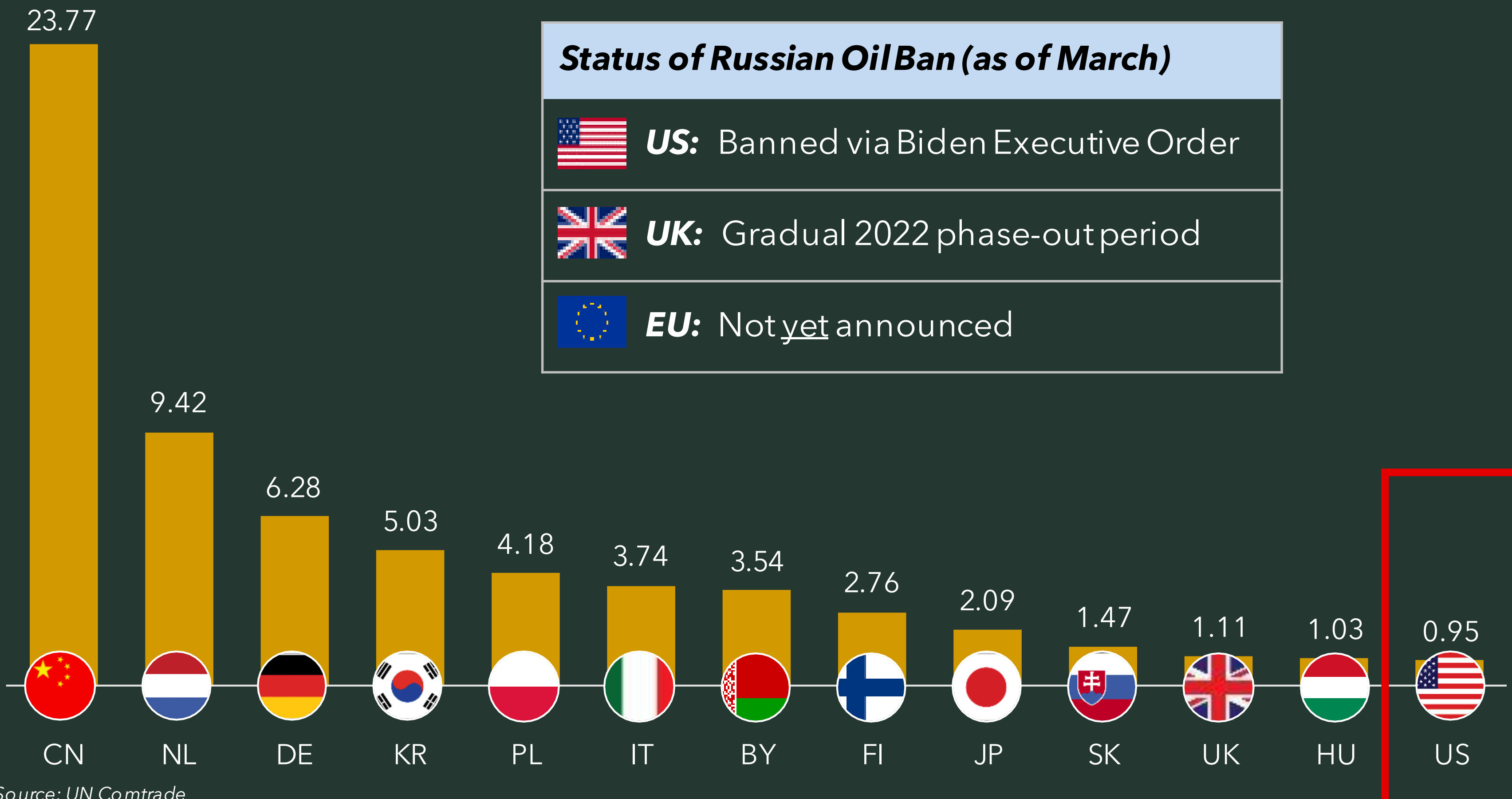
17 ***"Secondary" Sanctions:*** Sanctions under consideration for selected companies or countries (i.e., China, India) that have not adopted Western sanctions with Russian entities, and/or if viewed to be assisting Russia in circumventing sanctions.

US Ban on Russian Oil Exports

A ban on all Russian oil exports by the US and Europe would impact nearly 50% of total Russian oil exports. Preemptive self regulation has already begun to adversely impact Russian exports as shipping companies become concerned with safety of the Black Sea, reputation risk, letters of credit and insurance challenges.

Russia's Most Important Oil Export Partners, % of total

Status of Russian Oil Ban (as of March)
US: Banned via Biden Executive Order
UK: Gradual 2022 phase-out period
EU: Not yet announced

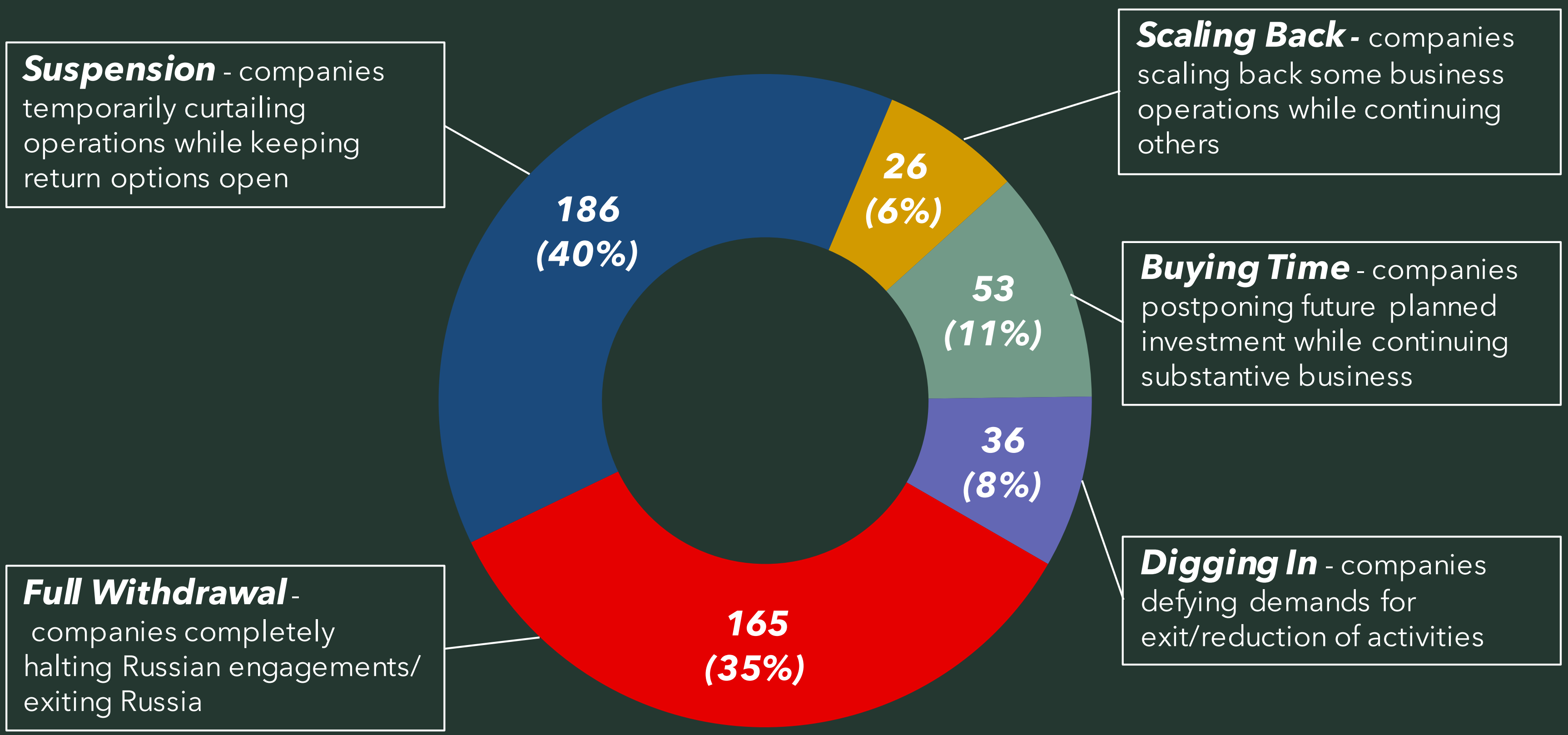


Source: UN Comtrade

"Self-Sanctioning" Russia

Yale University has created a comprehensive tracker of corporate responses to Russia's invasion of Ukraine. Of the more than 450 companies globally included in their tracking analysis, over 80% have either fully withdrawn, suspended or scaled back their Russia business.

Number of companies "self-sanctioning" Russia



Source: (1) Yale School of Management. Data as of March 28, 2022.

Investors Incorporating Russia into ESG Agenda

Banks, stock exchanges, clearinghouses and investment funds have made rapid structural changes to remove Russian assets from the world's financial system architecture.

Stock & Bond Indexes:

S&P Dow Jones Indices A Division of S&P Global
- Removing Russian stocks from its indexes

MSCI
- Removing Russian listings from equity & corporate bond indexes

FTSE Russell
- Removing Russian equities from benchmark indexes

VanEck
- Suspended share creation for VanEck Russia ETF (Van Eck is largest ETF investor in Russia)

Franklin Templeton
- Suspended creation of new shares in FTSE Russia ETF

J.P.Morgan
- Removing Russia from all fixed income indexes (including EM, Government, and Corporate indexes)

Investors Incorporating Russia into ESG Agenda

Investment Funds:

BlackRock.
- Halted creation of new shares in MSCI Russia ETF

DWS
- Actively managed funds will no longer make new investments in Russian securities

Rating Agencies:

FitchRatings
- Russian sovereign debt downgraded to junk

Moody's
- Russian sovereign debt downgraded to junk

S&P Global
- Downgraded Russian sovereign debt further into junk rating

Investors Incorporating Russia into ESG Agenda

Clearing Houses & Exchanges:

- No longer allowing investors to clear trades in ruble-denominated securities
- Clearstream no longer settling domestic trades in Russia, accepting Rubles as settlement currency or settling trades for Russian-linked stocks and bonds
- Suspends trading of firms with strong links to Russia
- Suspended trading of Russian government bonds

3. Economic Implications

Russia's Significance to Global Economy

Since Crimea in 2014, companies and economies globally have significantly reduced their "direct" counter-party exposure to Russian banks and other entities. According to the BIS, direct global exposure to Russian banks and all other entities today is approximately $30 and $90 bn, respectively (a reasonably low number against the backdrop of an $85 trillion global economy). However, the global economy is inextricably linked to the Russian commodity sector, which is the primary channel of contagion in the current crisis. In fact, 130 countries in the world source at least one commodity or import predominantly in Russia, Ukraine or Belarus.

#11 largest economy globally

#5 largest economy in Europe

#5 in global FX reserves

#16 largest exporter globally

#5 largest European trading partner

#1 source of European energy (40% of Nat Gas, 27% of oil)

#1 in natural gas reserves globally

#2 in coal reserves globally

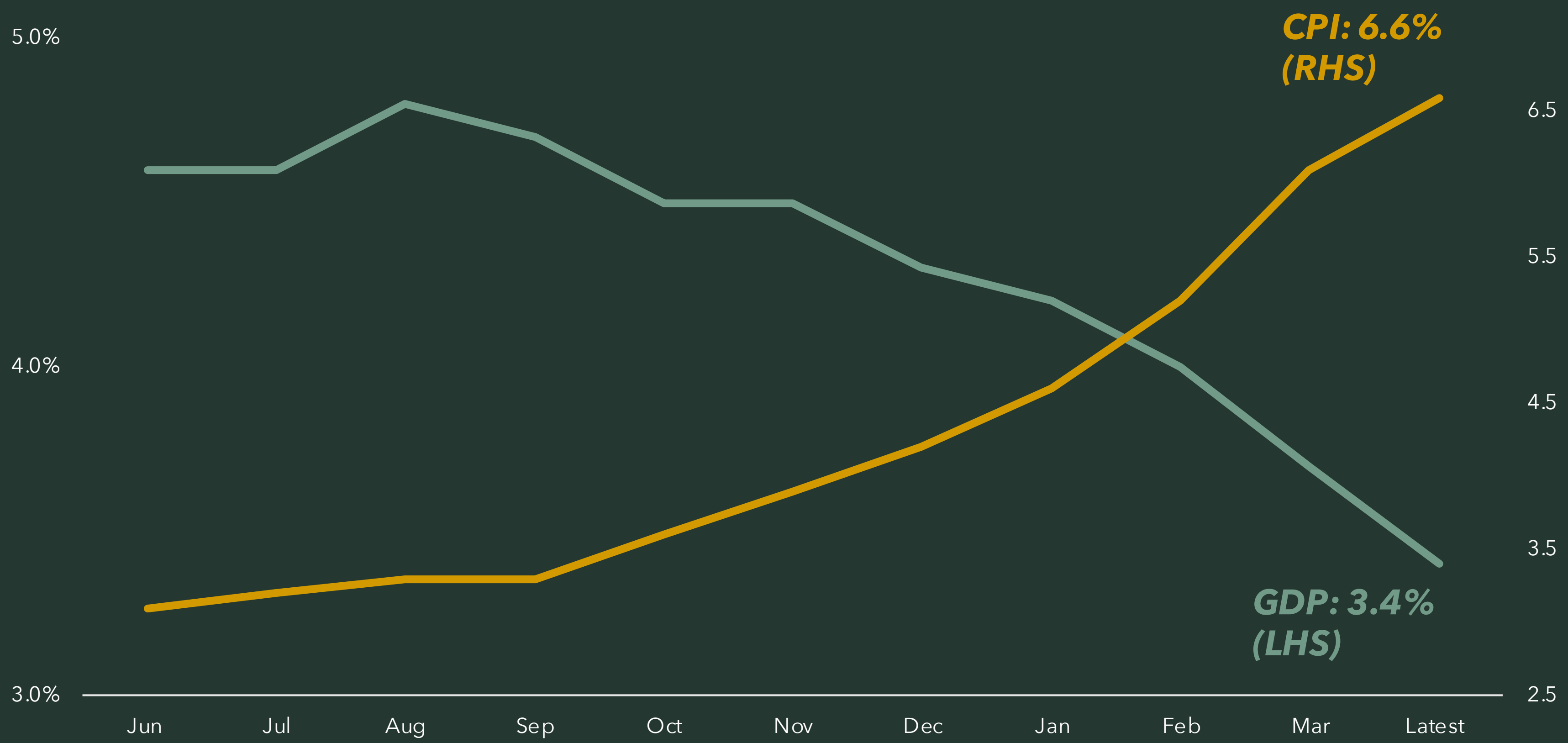
#8 in oil reserves globally (#3 in production)

Source: Bank of International Settlements

Dual Supply Side Shocks for Global Economy

The COVID and Ukraine crises have been dual shocks for the global economy, resulting in sharp downward revisions to global growth, and significantly higher expectations for inflation. Commodity markets are the primary channel of global contagion. While "stagflation" is not the baseline scenario, visibility remains low and risk is heavily weighted to the downside.

2022 World GDP and CPI revisions

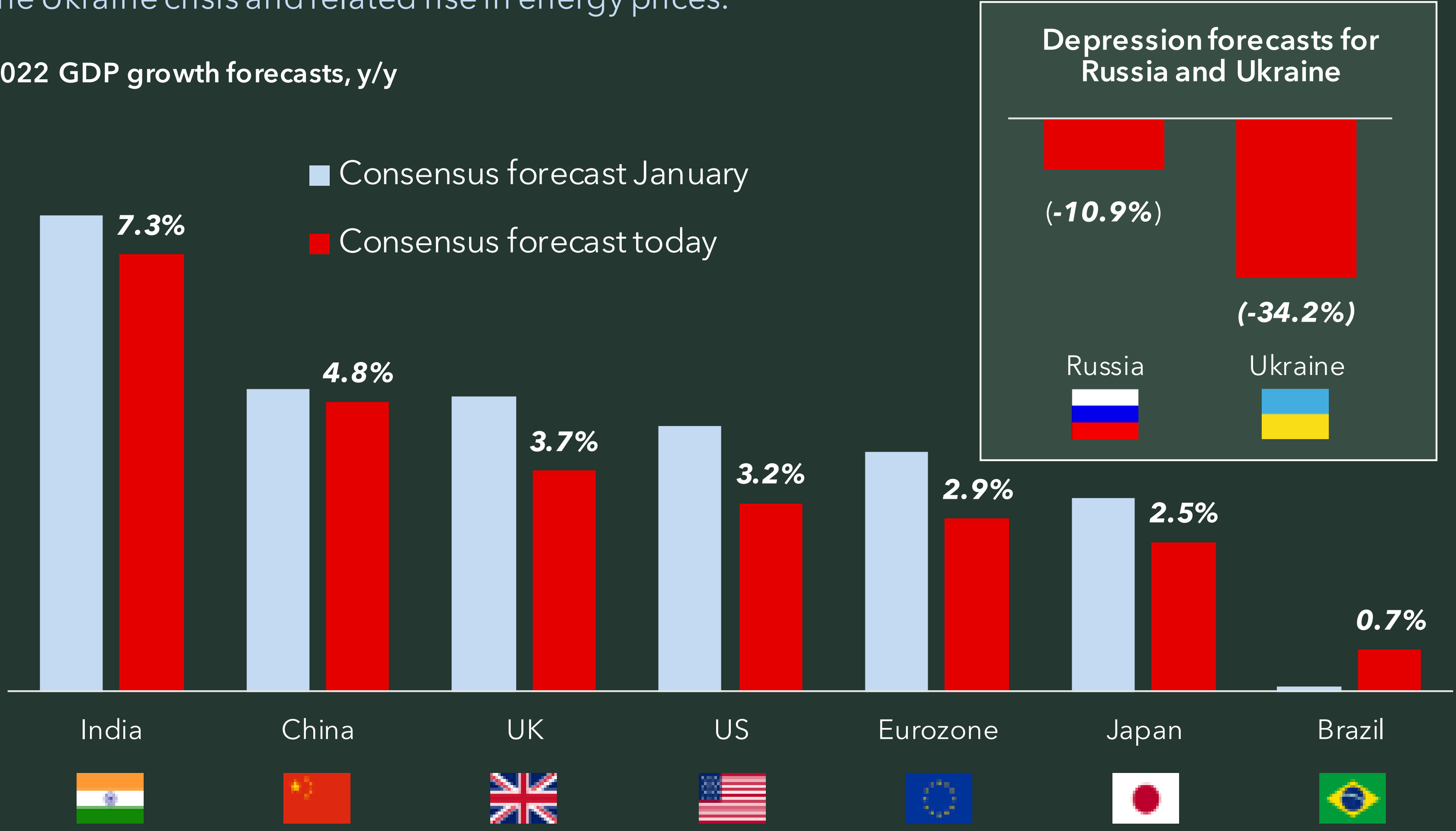


Source: (1) Oxford, "Global: War and supply chain shocks dampen economic outlook" (March 22, 2022)..

Decelerating Global Growth

Growth will likely decelerate in almost every major global economy in 2022, but still remain "above long term trend" in most advanced economies. Visibility remains low, and variability on current forecasts high, with elevated recession risk for Europe in particular, depending on the forward path of the Ukraine crisis and related rise in energy prices.

2022 GDP growth forecasts, y/y

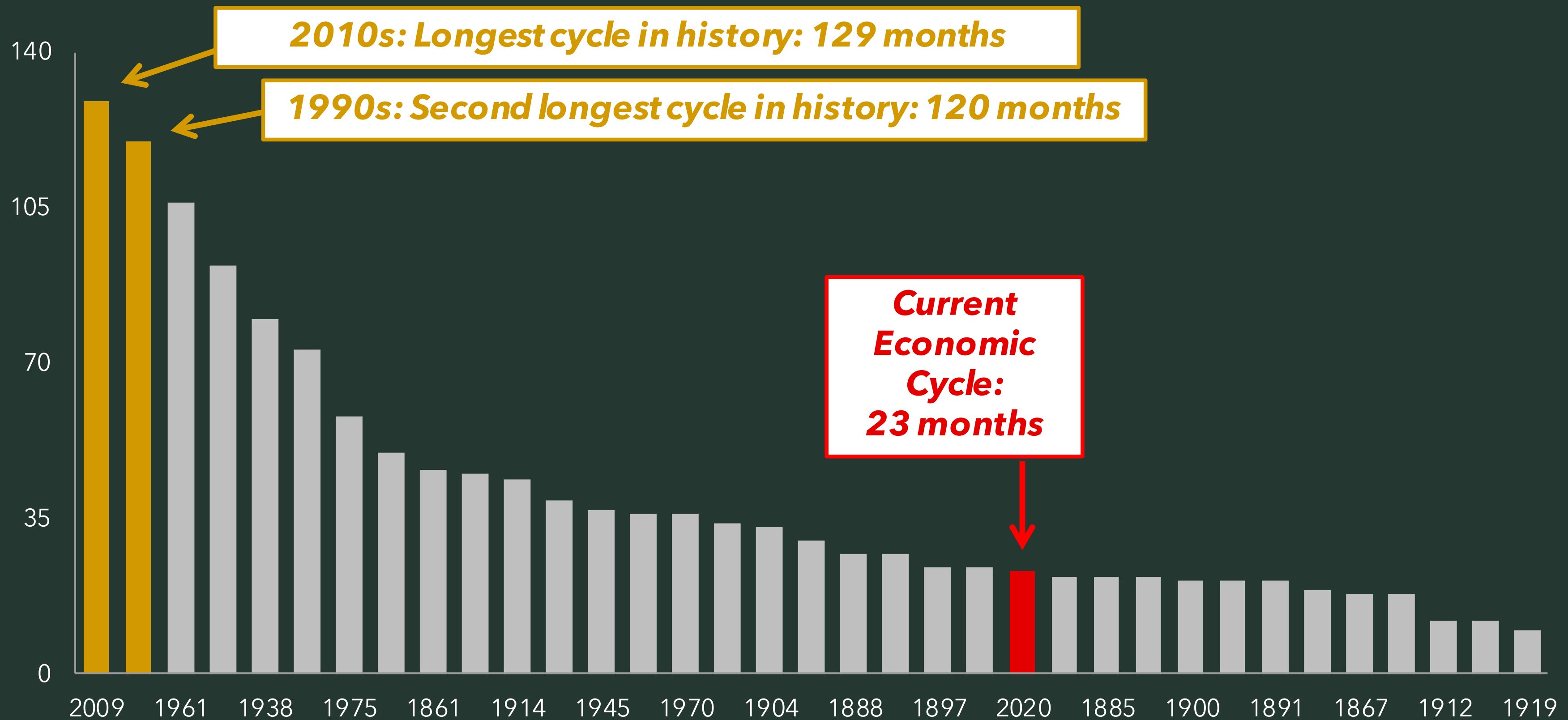


Source: (1) Oxford. Data as of March 30, 2022.

Shorter Economic Cycle Likely

There have been 35 US economic recoveries since 1854, the two longest of which occurred in the last 30 years. More effective central bank inflation policy and improved business management of supply chains and inventory have been important contributors to the length of recent cycles. The current cycle, however, on the back of extraordinary COVID crisis stimulus and rapidly rising inflation, is likely to be much shorter by comparison.

35 US recoveries since 1854

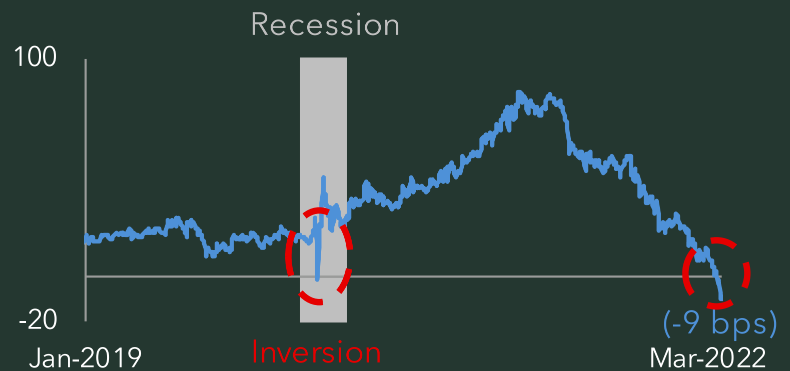


Source: (1) The National Bureau of Economic Research. Length of US recoveries as of March 2022.

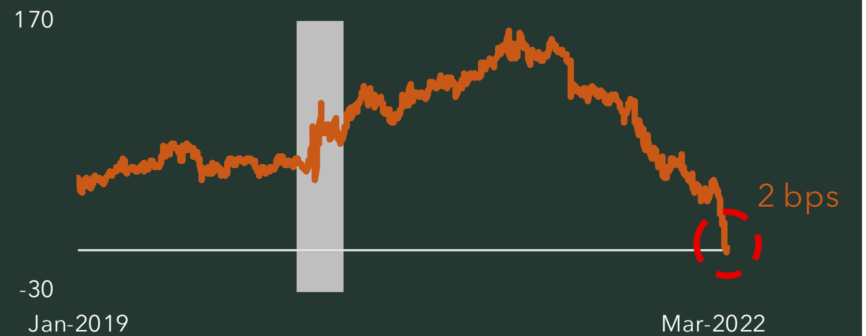
Yield Curve Signaling Decelerating Growth

Yield curve inversion has historically been the most reliable indicator of US recession, typically with 9-12 months of lead time. However, different parts of the curve signal different messages about policy and the economy. Notably, some have argued that the extraordinary Fed QE purchase program of recent years, combined with a Fed today so far "behind the curve," has made it more challenging to compare current YC dynamics to prior cycles.

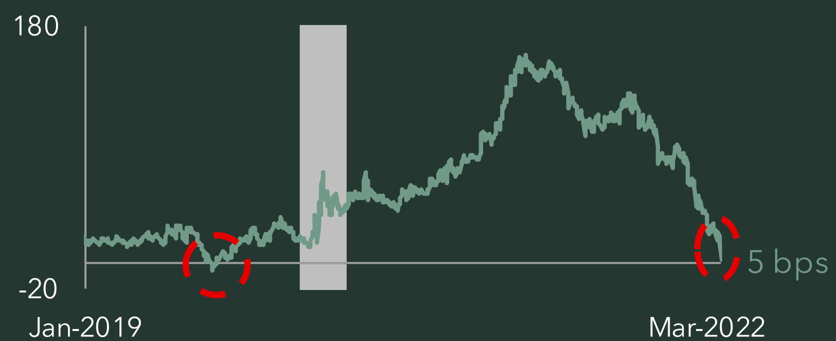
US 5s10s Curve



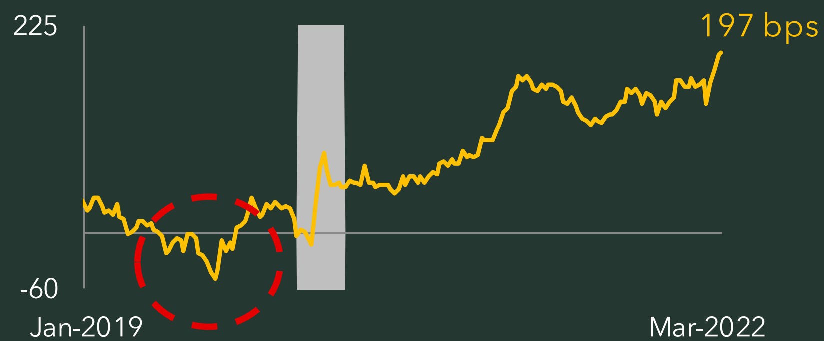
US 5s30s Curve



US 2s10s Curve



US 3m10yr Curve



Source: (1-4) Bloomberg. Data as of March 30, 2022. 2s10s inverted intraday on March 29.

The Signaling Power of YC Inversion

A 2018 Fed study showed that, while numerous parts of the yield curve have been highly informative in signaling US recessions over the last 50 years, the 3M-10 year curve inversion has been the most accurate. Another prominent study concluded that inversions preceded 85% of recessions over the past 158 years. However, numerous analysts today believe that extraordinary central bank policy in recent years has reduced the signaling power of YC inversion.

Other Potential Explanations for Recent Yield Curve Inversion

- Distortions in term premia due to years of Fed QE
- Strong global technical demand for USTs
- View that Fed may be "behind the curve" for just a short period
- Short term inflation expectations > longer term
- Believe Fed tightening cycle will be brief
- Long term "neutral" Fed rate expectations low (structural headwinds)

Resilience of the US Economy

With Russia's economy facing a depression in 2022 (contraction> 10%), and Europe at high risk for recession depending on escalation scenarios, the US economy is likely to be more resilient by comparison. While surging energy prices would be the primary channel of contagion to the US consumer, we would assess the probability of a US recession over the next 12 months at approximately 20-25%.

Resilience of the US Economy

- Long history of resilience during global economic crisis (Asia 1997, Europe 2012)
- Relatively closed, insular economy by G20 standards (consumer 70% of GDP, exports only 11%)
- Direct Russia exposure low (energy, trade, counterparty risk)
- Fortified corporate balance sheets (high cash balances, pre-funding, extended maturities)
- Strong consumer balance sheets (US consumer balance sheets rose $28 trn during COVID; deposits increased $4 trn; "excess savings" up $2.5 trn)
- Low unemployment, rising wages

US Macro Scenarios for Next 18 Months

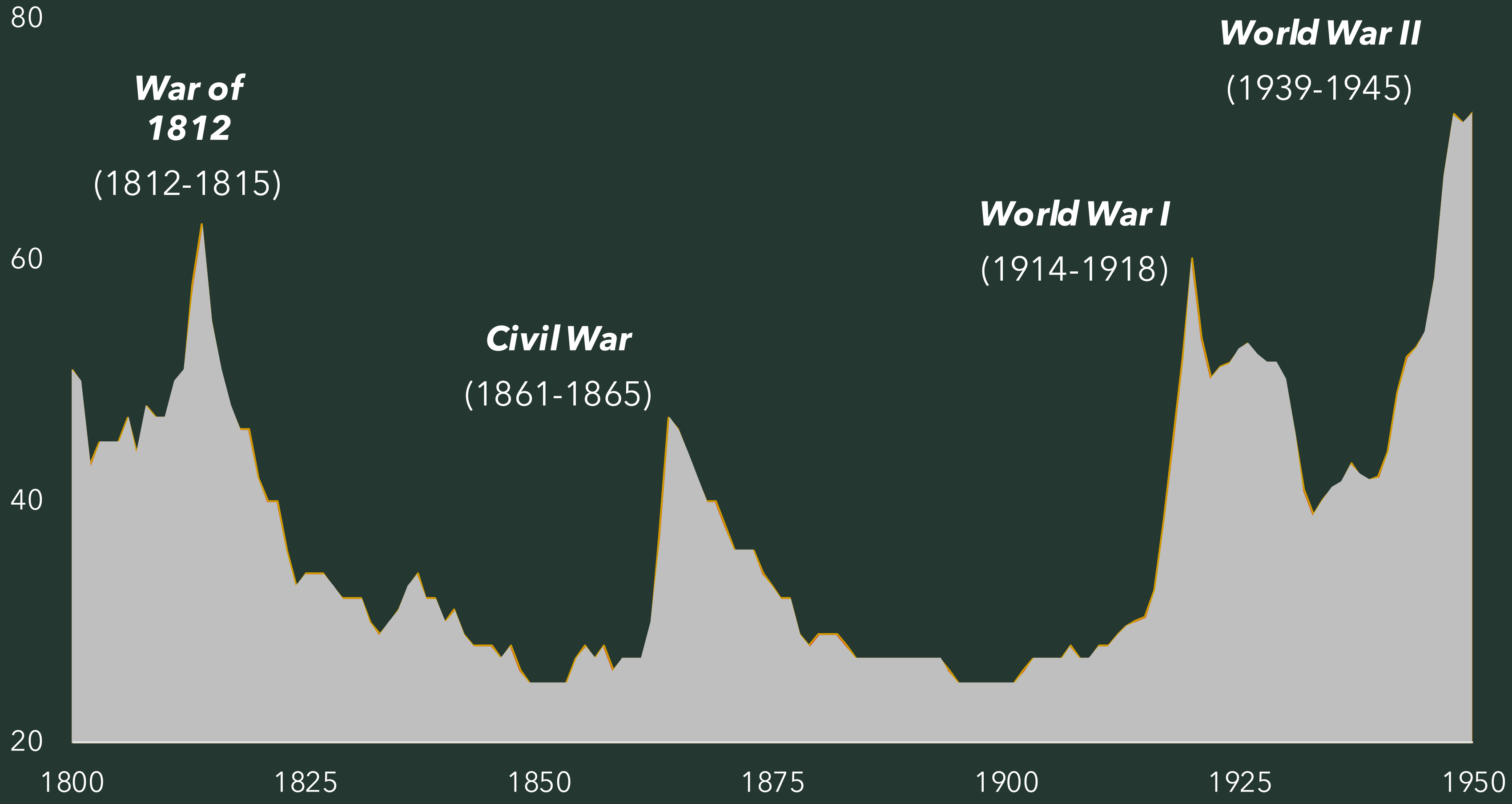
MUFG's Head of US Macro Strategy, George Goncalves, has provided a useful framework for assessing the change in the US macro outlook, with the preponderance of risk for the US economy now shifting down to scenarios somewhere between a mid-cycle slowdown and recession over the next 18 months. For corporates, decelerating growth, rising input costs (wages, goods), inventory pre-ordering and higher funding costs are likely to contribute to significant margin pressure and a steep deceleration in corporate profits in the year ahead.

Macro Scenario	Current Probability Assessment	Prior Probability Assessment
The Boom	***0%***	65%
Goldilocks	***20%***	15%
Mid-cycle slowdown	***25%***	5%
Stagnation	***5%***	5%
Stagflation	***20%***	5%
Recession	***30%***	5%

4. Inflation Implications

Wars are Highly Inflationary Historically

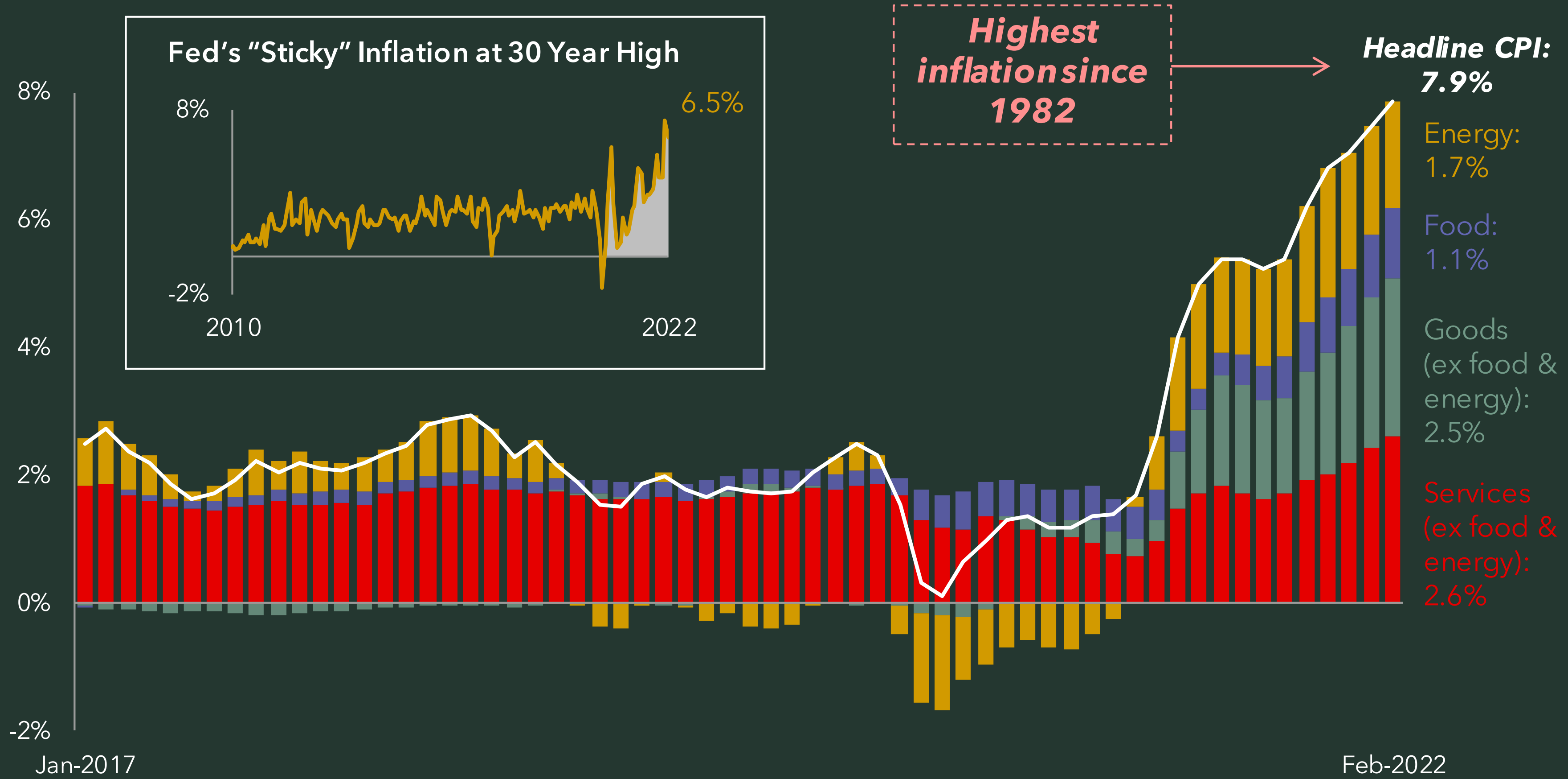
US consumer price index, 1800 – 1950



Source: (1) Yardeni Research. Bloomberg. Census Bureau. Historical Statistics of the US.

US Inflation at 40 Year Highs, & Rising

Rising energy prices helped push the headline CPI rate up to a 40-year high of 7.9% in February. The Russia – Ukraine war will add further pressure through higher energy, food and core commodity prices, coupled with existing supply chain dislocations, leading to a higher near-term peak in inflation before moderating.

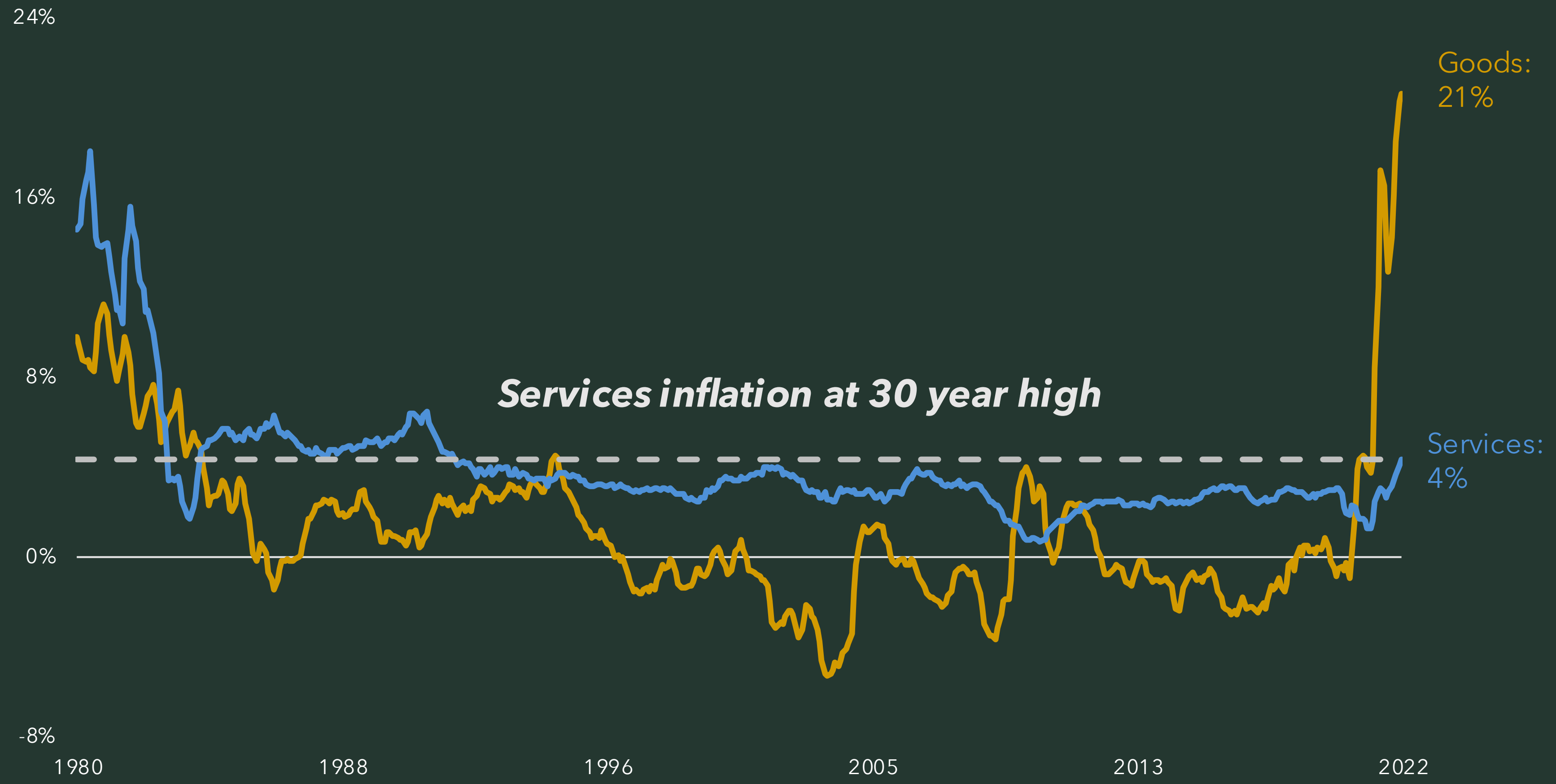


Source: (1-2) Bloomberg. Data as of March 30, 2022. John Authers. Sticky inflation is US CPI all items less food, shelter, energy & used cars & trucks is NSA.

Services Inflation Also Picking Up

The CPI basket is comprised of approximately 60% services, 20% goods and 20% food and energy. While goods inflation continues to surge, services inflation has recently risen to 30 year highs.

CPI inflation, y/y



Source: (1) Bloomberg. Data as of March 30, 2022. Services inflation is CPI services ex energy. Goods inflation is CPI durables.

Inflation Pressures Vary by Sector

US inflation by sector (y/y)

Used cars and trucks	41%
Motor fuel	38%
Energy commodities	38%
Energy	26%
Lodging away from home	25%
Car & truck rental	24%
Utility gas service	24%
Furniture & bedding	17%
Tires	15%
Meats	14%
Motor vehicle parts and equipment	14%
Airline fares	13%
Energy services	12%
New vehicles	12%
New trucks	12%
Vehicle accessories	12%
Eggs	11%
Outdoor equip. & supplies	11%
Milk	11%
Financial services	10%
Music instruments & acces.	10%
Laundry & cleaning services	10%
Electricity	9%
Tools, hardware & supplies	9%
Household furnishings & supplies	9%
Domestic services	9%
Food at home	9%
Cereals & bakery products	8%
Public transportation	8%
Fruits and vegetables	8%
Footwear	7%
Transportation services	7%
Apparel	7%
Appliances	7%
Sporting goods	7%
Tobacco & smoking products	7%
Food away from home	7%
Nonalcoholic beverages	7%
Moving, storage, freight expense	6%
Land-line phone services	6%
Intracity mass transit	5%
Veterinarian services	5%

Source: (1) Bureau of Labor Statistics. CPI Report February 2022.

Inflation Pressures Vary by Sector (Cont.)

US inflation by sector (y/y)

Housekeeping supplies	6%
Motor vehicle maint. & Repair	6%
Rent of shelter	5%
Pets & pet products	5%
Computers and smart home assistants	5%
Legal services	5%
Shelter	5%
Recreation services	5%
Motor vehicle insurance	4%
Owners' equivalent rent	4%
Services less energy services	4%
Nursing homes	4%
Water & sewerage maint.	4%
Garbage & trash collection	4%

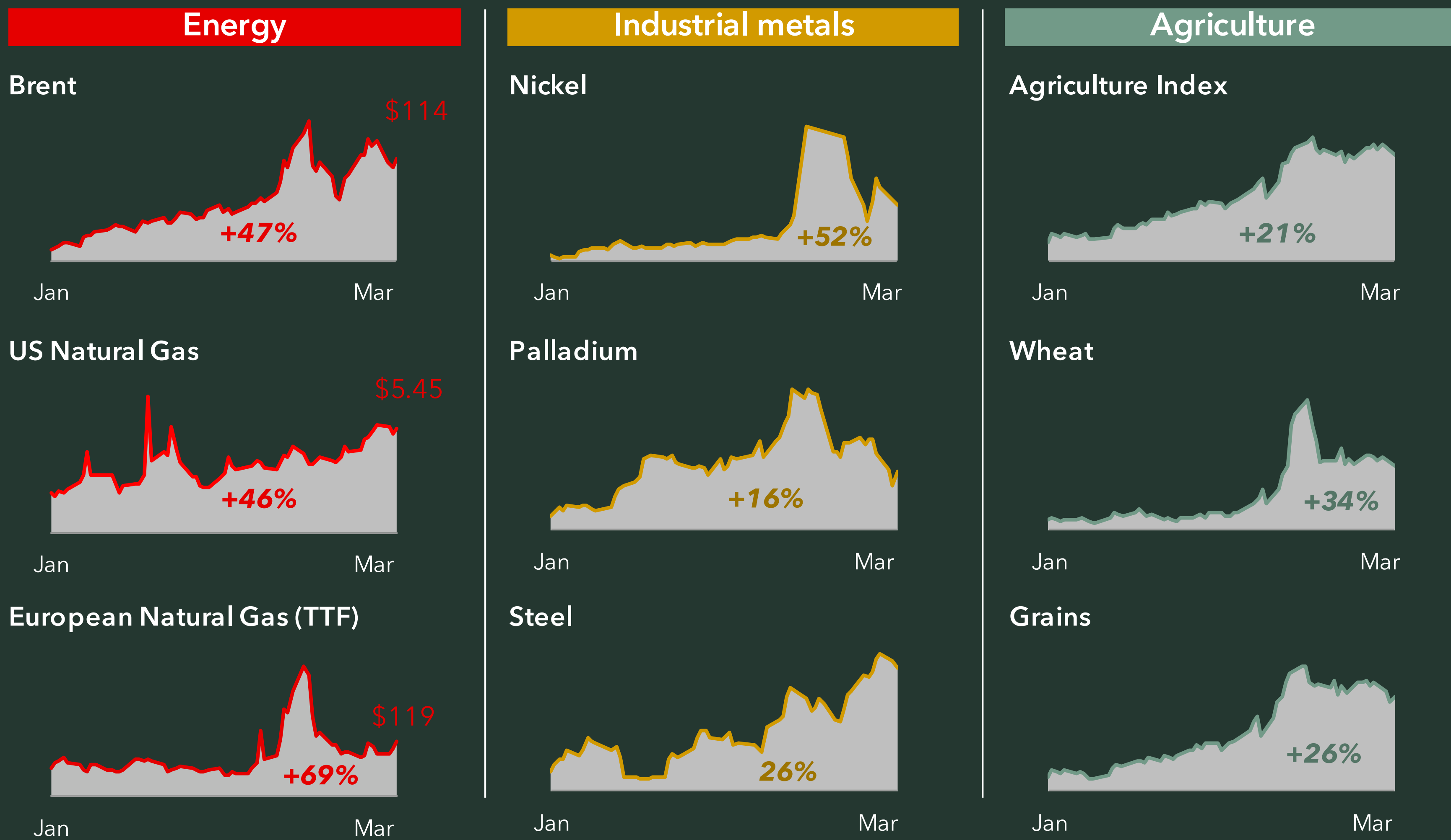
Jewelry and watches	4%
Delivery services	4%
Alcoholic beverages	4%
Health insurance	4%
Recreational reading	4%
Toys	3%
Medicinal drugs	3%
Photo equipment & supplies	3%
Hospital services	3%
Day care and preschool	3%
Internet services	3%
Medical care services	2%
Professional services	2%

Funeral expenses	2%
School tuition	2%
College tuition and fees	2%
Educational books	1%
Physicians' services	1%
Technical & bus. school tuition	1%
Personal care products	1%
TVs	0%
Wireless phone services	0%
Audio equipment	0%
Cosmetics	-1%
Computer software and accessories	-2%
Smartphones	-13%

Source: (1) Bureau of Labor Statistics. CPI Report February 2022.

Commodity Prices Surging Higher

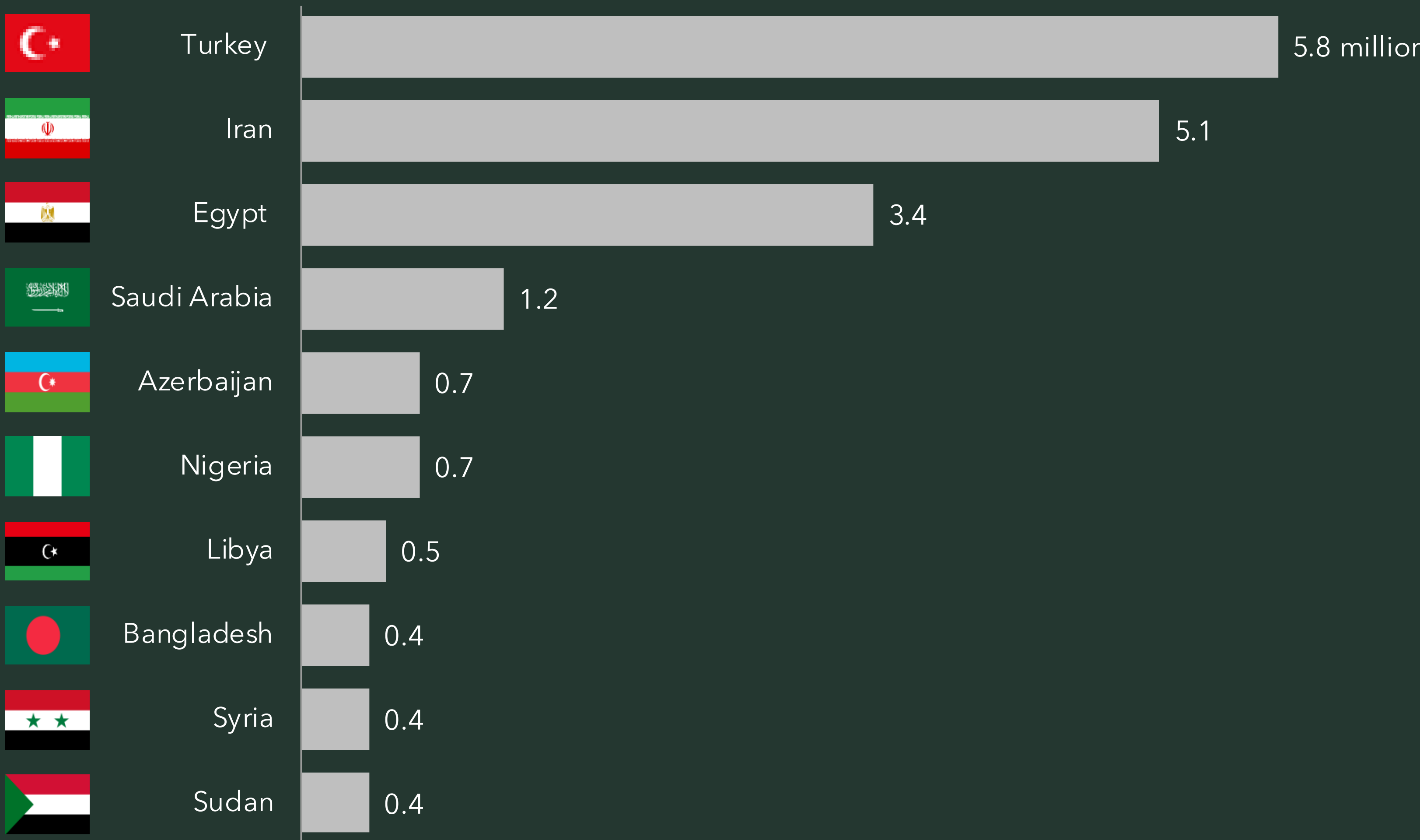
2022 YTD performance



Source: (1-9) Bloomberg. Data as of March 30, 2022.

Largest Buyers of Russian Grain

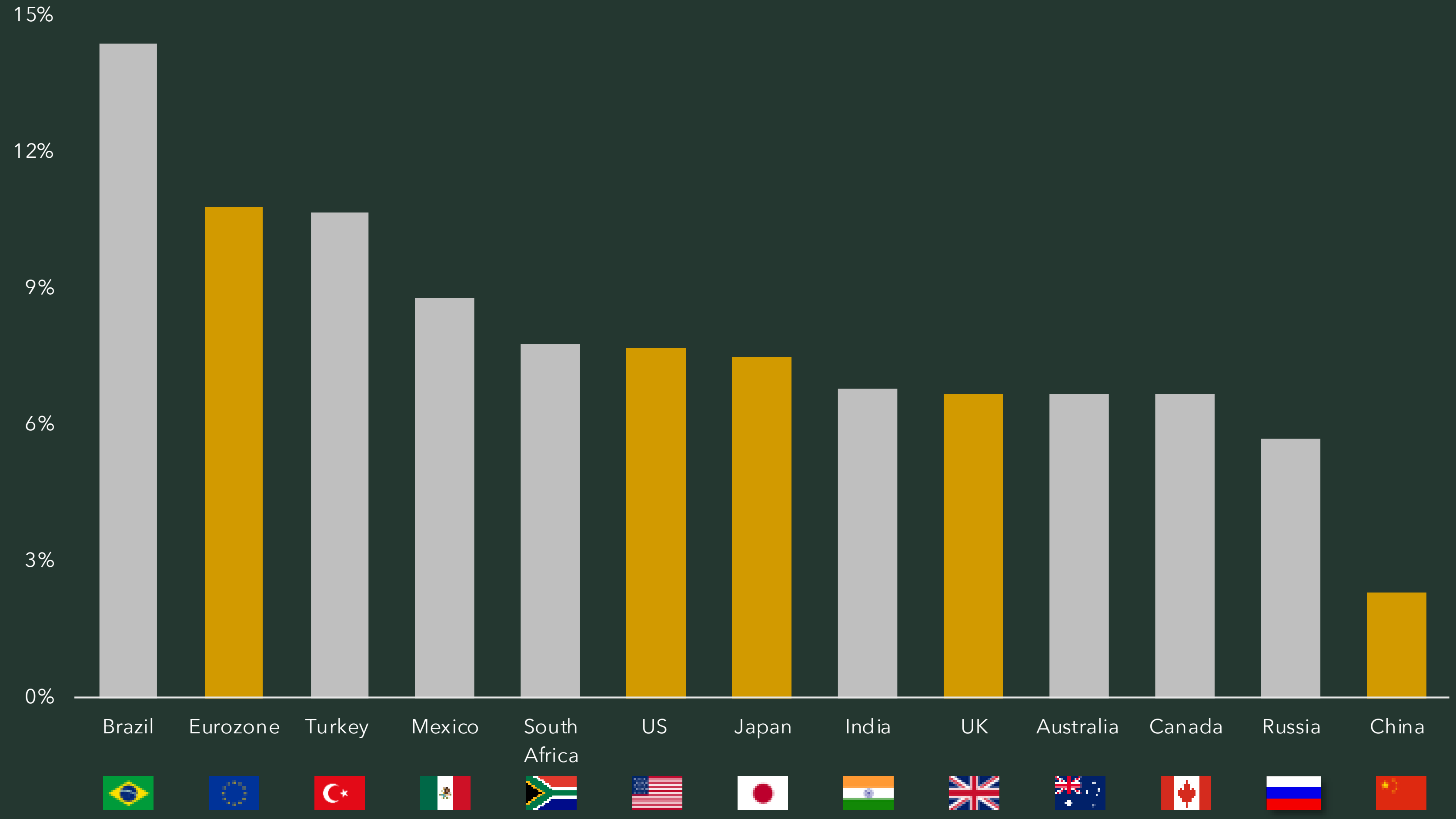
Russian grain destinations in tons (July 2021 – January 2022)



Source: (1) Bloomberg Government, "Food Protectionism Is Another Threat to Crop Trade: Supply Lines" (March 11, 2022). Demetra. Rusagrotrans

Energy as % of Total Inflation Basket

By comparison to other large economies (US, UK, Japan, China), Europe's economy is much more vulnerable to rising energy prices



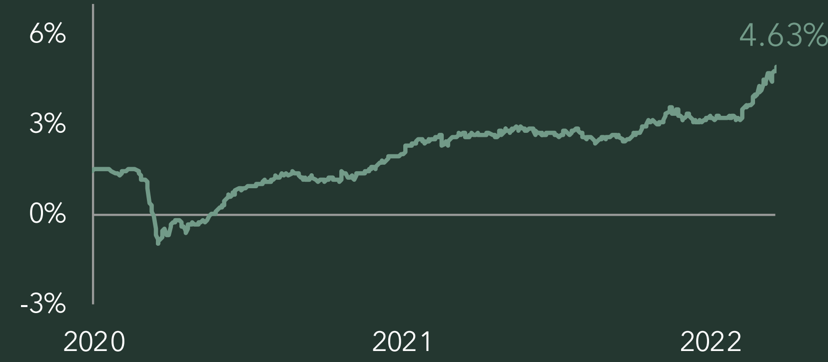
Source: (1) Bloomberg.

Near Term Inflation Expectations Rising More Rapidly

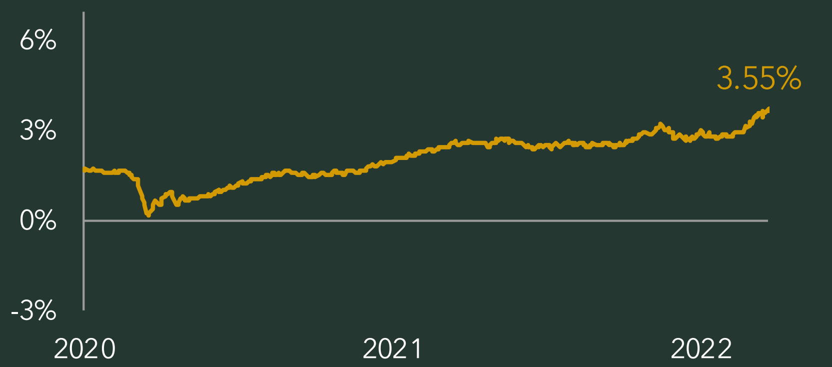
While the Fed has abandoned use of the term "transitory," debt and equity markets are still trading with more optimism of a "soft landing"

US 1 year breakeven

US 2 year breakeven



US 5 year breakeven

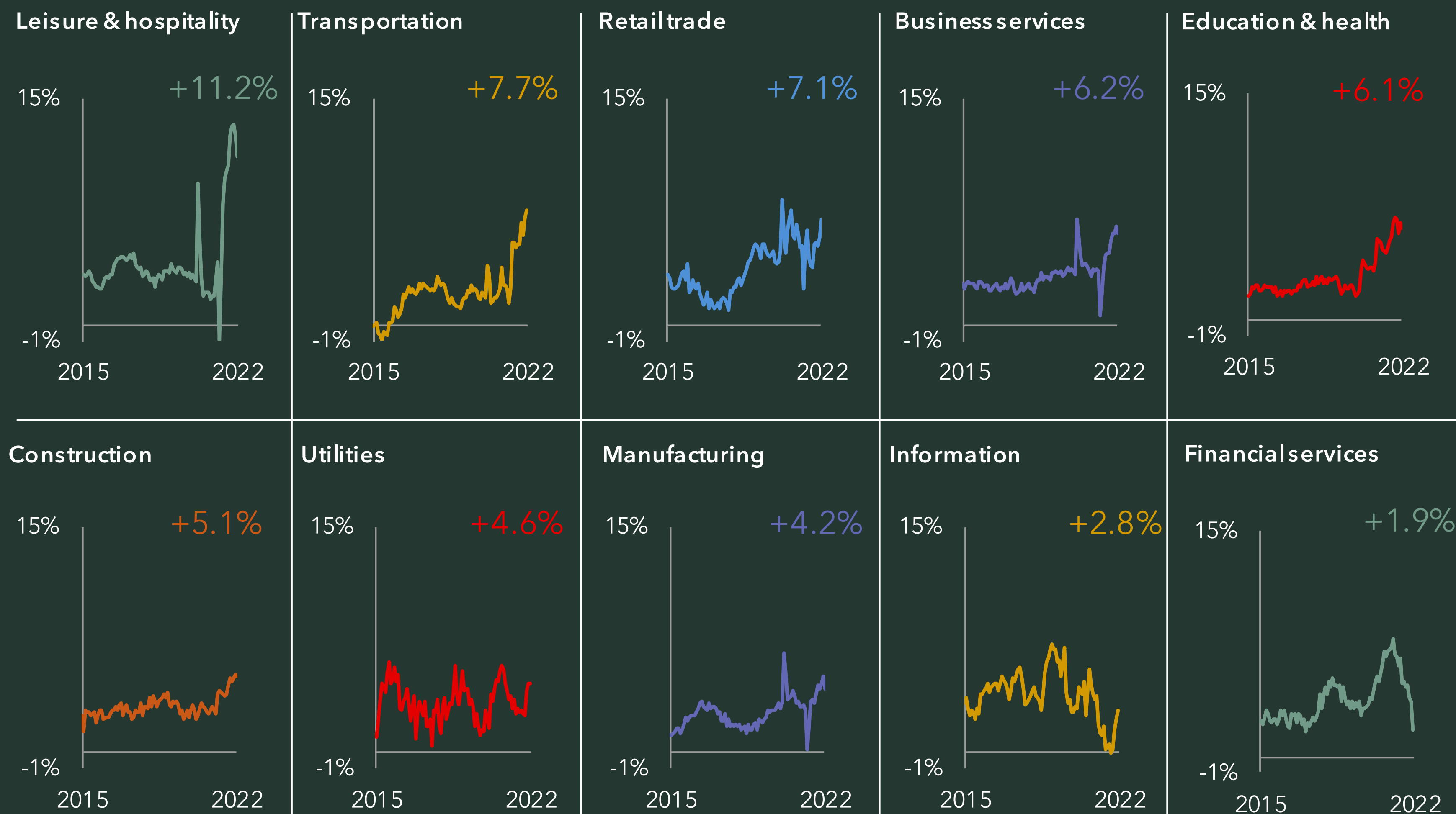


US 10 year breakeven

Source: (1-4) Bloomberg. Data as of March 30, 2022.

Wage Inflation Varies by Sector

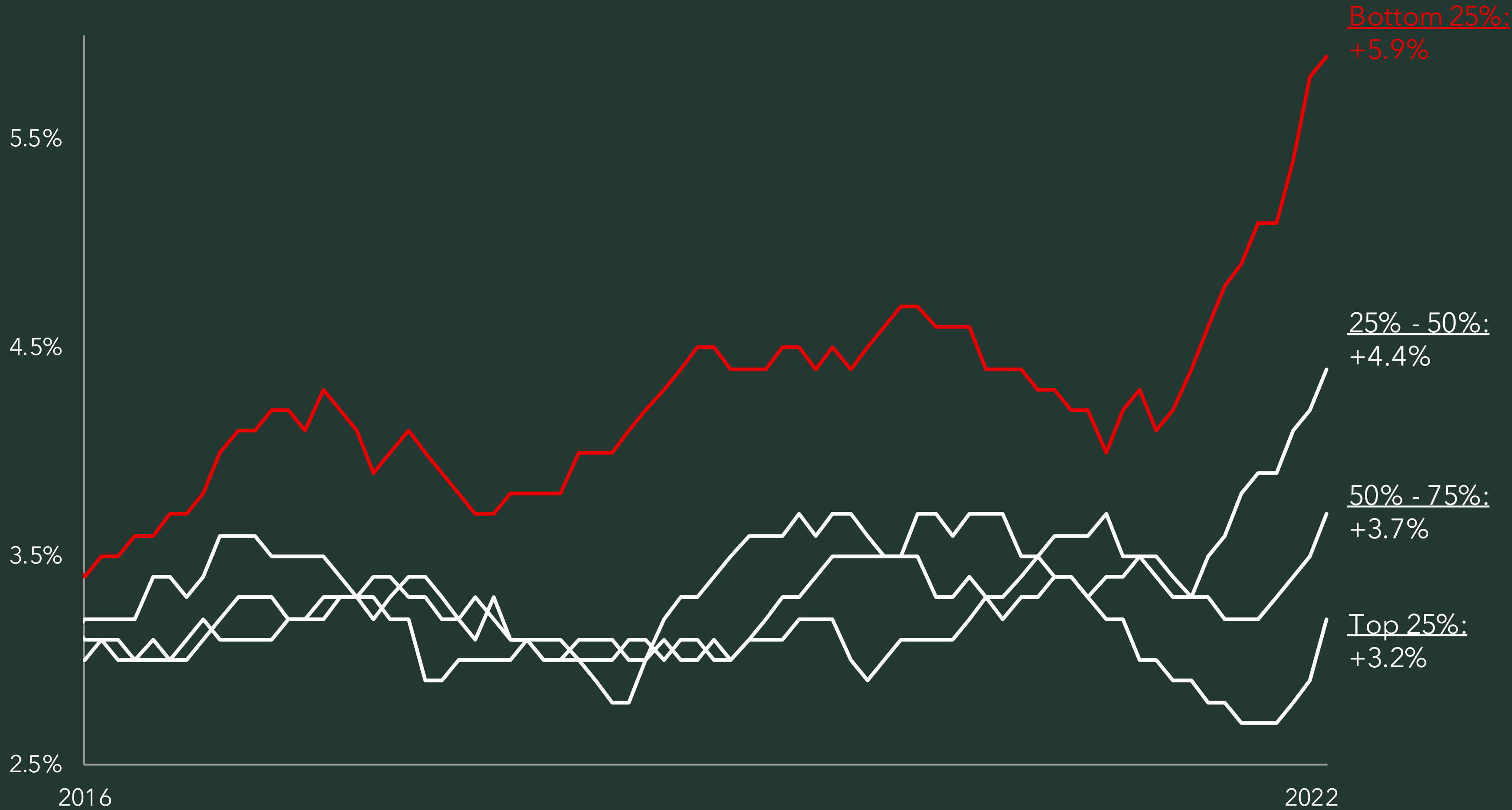
In February, wages rose at a higher than expected 5.1% y/y. Tight labor markets have pushed wages higher in the post-crisis period, particularly for those in the lower quartile of earners.



Source: (1-10) Bloomberg. Data as of March 30, 2022.

Wage Inflation Varies by Income Level

Hourly wage growth by quartile



Source: (1) Atlanta Fed Wage Growth Tracker. 12-month moving average of median wage growth, hourly data. Data as of March 30, 2022.

5. Supply Chain Implications

Supply Side Dislocations Part 3

#1: COVID Crisis
(2020 – 2021)

$32 tn of global stimulus

$6 tn of "excess" global savings

Consumer shift to goods over services

#2: Ukraine Crisis
(2022)

Global commodity price shock

Supply side pricing pressures

#3: China's COVID Resurgence
(2022)

Rolling regional shutdowns (HK, Shenzhen, Shanghai)

Supply side production & delivery pressures

- Shipping queues
- Port delays
- Container backlogs
- Warehouse constraints
- Trucking bottlenecks
- Labor shortages
- Rising input costs
- Microchip backlog

Supply side dislocations

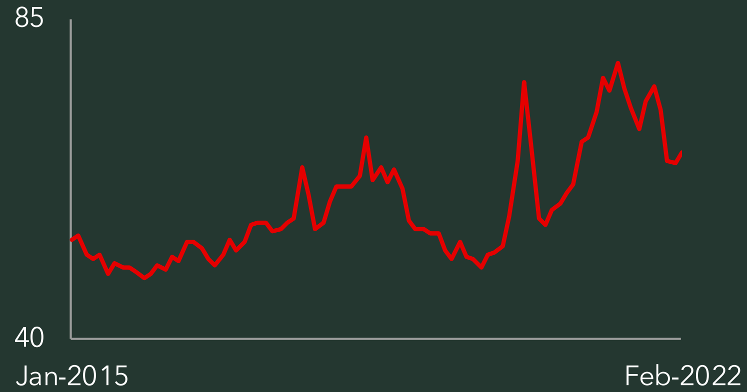
China's COVID Quandary

The COVID and Ukraine crises represent back-to-back supply side shocks for the global economy. Recent outbreaks across Asia and China in particular, including China’s restrictions across Shenzhen’s 24 million person population, have exacerbated supply chain and tech sector bottlenecks globally.

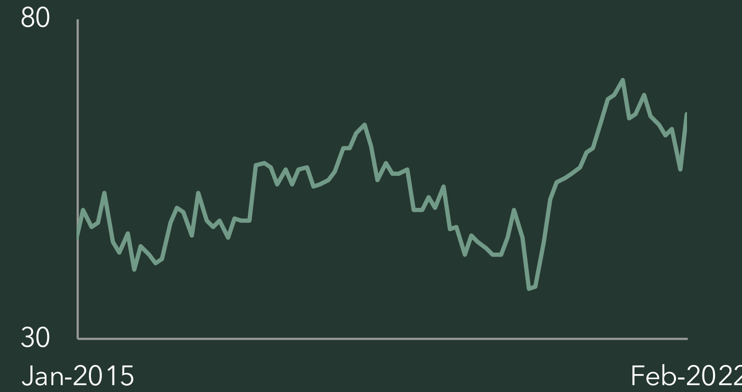
- Low natural immunity across population
- Low vaccination rates
- Low vaccine efficacy
- Aging demographics
- Poorly resourced hospital system nationally

Recent Supply Chain Moderation May be Short-Lived

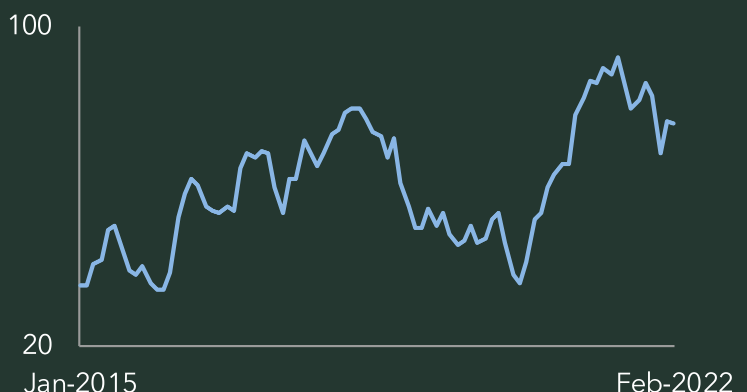
ISM delivery times



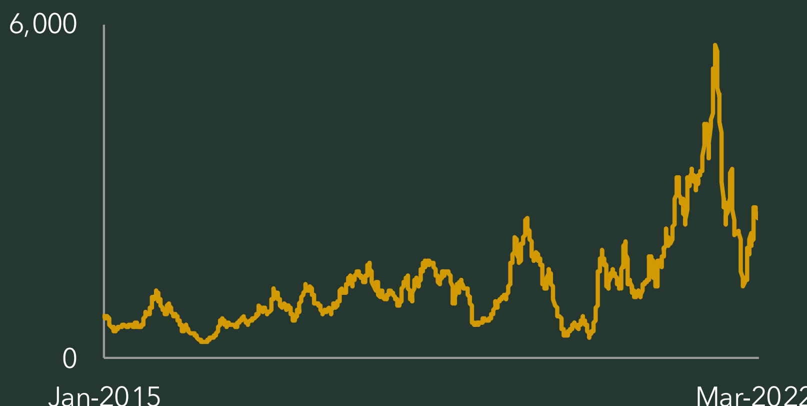
ISM manufacturing order backlogs



ISM manufacturing prices paid



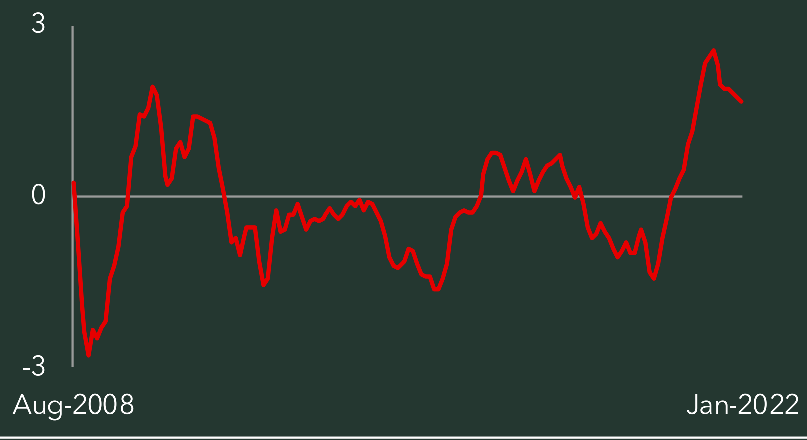
Baltic dry shipping price index



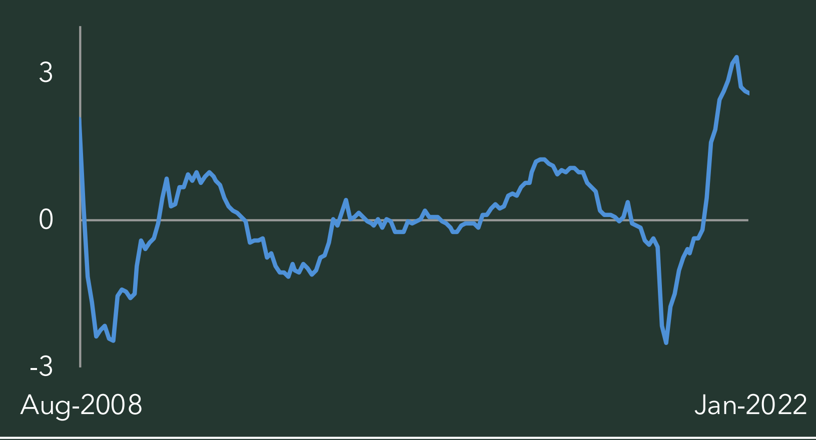
Source: (1-4) Bloomberg. Data as of March 30, 2022.

Recent Supply Chain Moderation May be Short-Lived

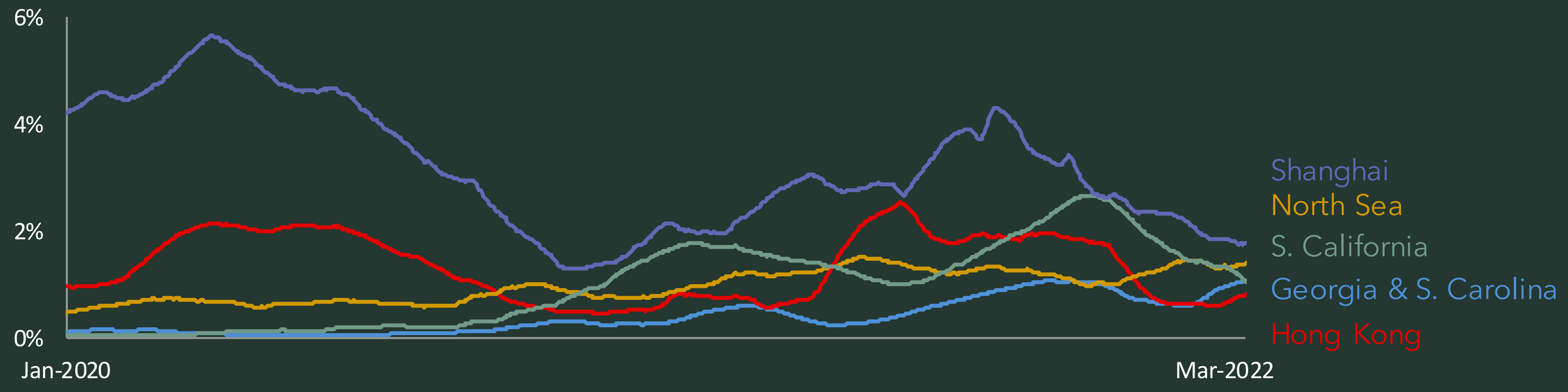
US supply constraint index



Eurozone supply constraint index



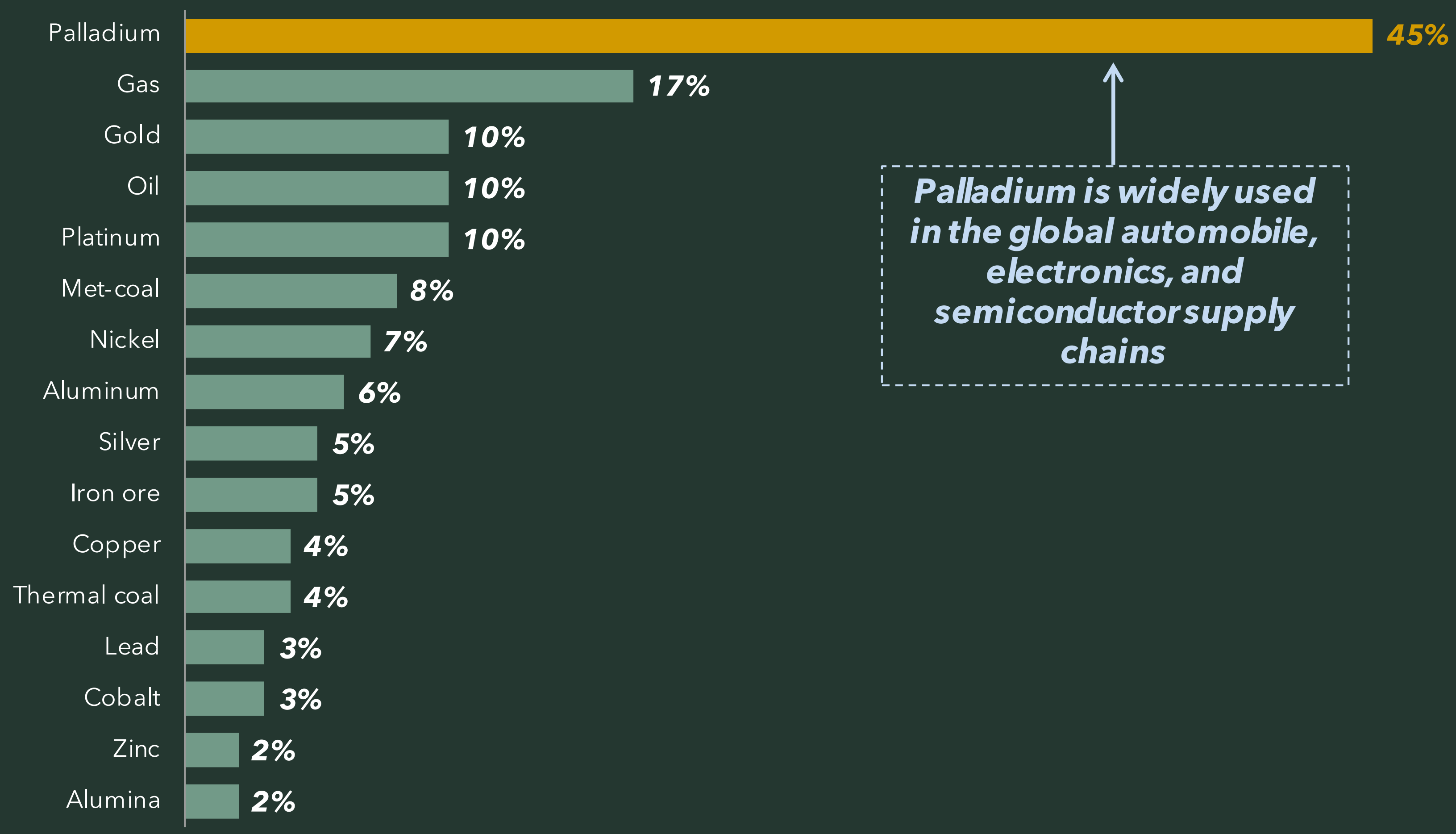
Ship waiting times



Source: (1-2) Bloomberg, "GLOBAL INSIGHT: Supply Stress Eased Into 2022, Then Came Omicron" (January 12, 2022) Data as of Januay 26, 2022. Indicators are Bloomberg's supply constraint indices. (3) Bloomberg Government, "Global Supply Chains Near Make-or-Break Point for Easing in 2022" (January 24, 2022). Kiel Institute for the World Economy last updated March 30, 2022.

Russia's Share of Global Commodity Production

Russia's share of global production by commodity (% of world total)

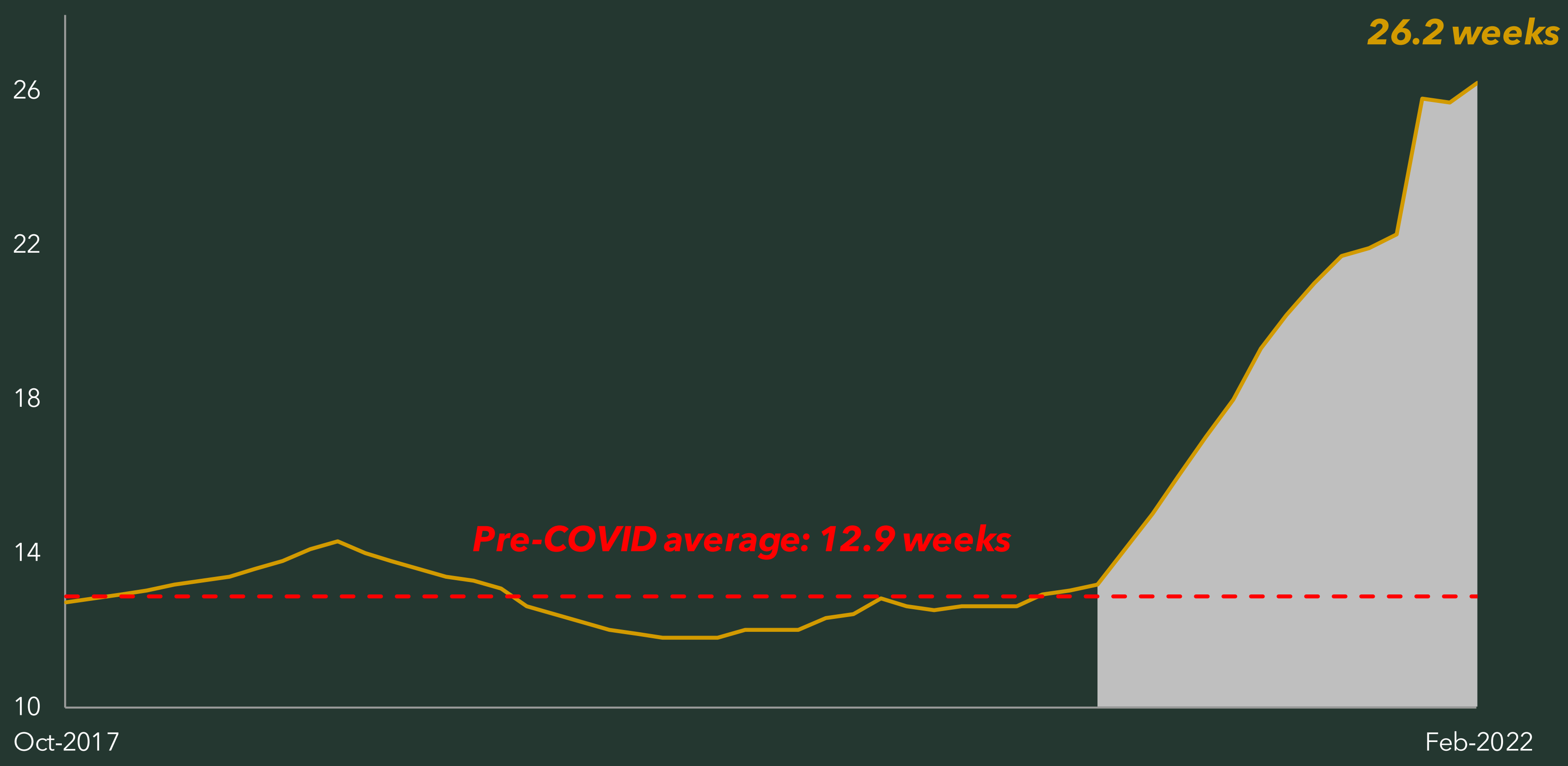


Source: (1) MUFG. Ehsan Khoman, Head of Emerging Markets Research – EMEA. Bloomberg.

Microchip Backlog Continues to Lengthen

Russia-Ukraine represents a supply side shock on top of a supply side shock (COVID) for the global economy. Notably, the time between ordering a microchip and delivery continues to lengthen and is now double its pre-COVID average.

Gap between ordering a chip and delivery, weeks



Source: (1) Bloomberg, "Wait Times for Chip Deliveries Grow Again as Shortages Persist" (March 11, 2022).

6. Policy Implications

Central Bank Divergence

Global central bank policy has shifted from broad-based and coordinated easing in response to COVID-19, to sharp divergence as economies globally face myriad challenges managing the fallout from the conflict in Ukraine, decelerating growth, and upward inflation pressures

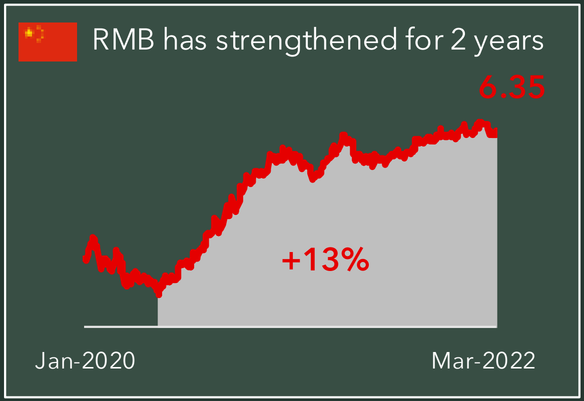
Divergent Central Bank Policy

	2022 Policy Rate	***Balance Sheet***	***10 Yr Yields***	***Currency***	***Inflation***
Fed	230bps of hikes priced in (9 hikes)	QT announced	Rising rapidly (2.25% - 2.50%)	Broad strengthening	Upward pressure; more insulated from energy & food imports
ECB	60bps of hikes priced in (ending NIRP)	Tapering purchases, TLTROs maturing in Q3	Rising but still <1% (Germany)	Range bound at weaker levels	Upward pressure; energy import dependence
BoJ	No hikes priced	Unlimited QE announced	Likely resistance level at 0.25%	Weakening	Upward pressure; energy & food import dependence

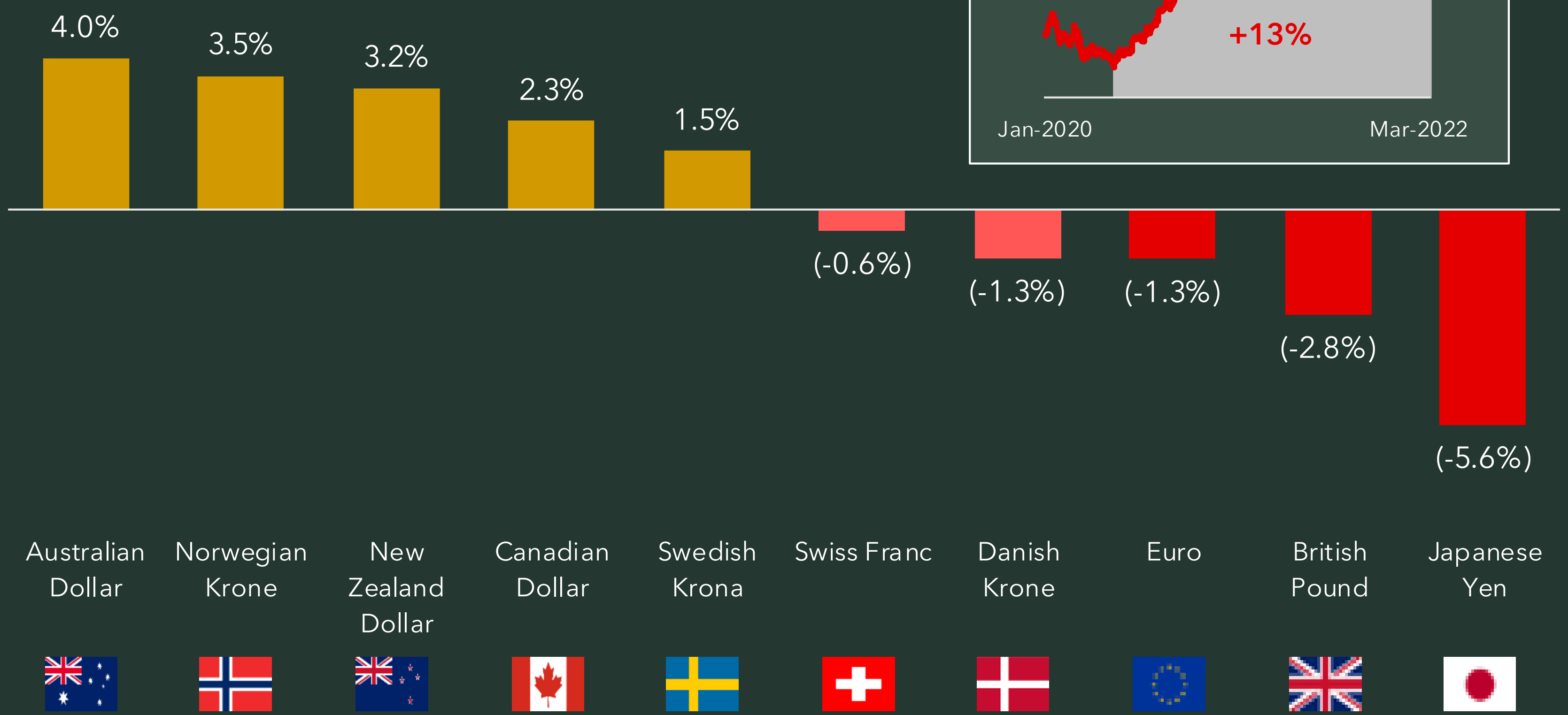
Source: (1) MUFG Research.

G10 Currencies During the Ukraine Crisis

The Euro, Sterling and Yen have been the three worst performing G10 currencies since the Ukraine invasion began on February 24



G10 currencies vs US Dollar Since February 24, 2022

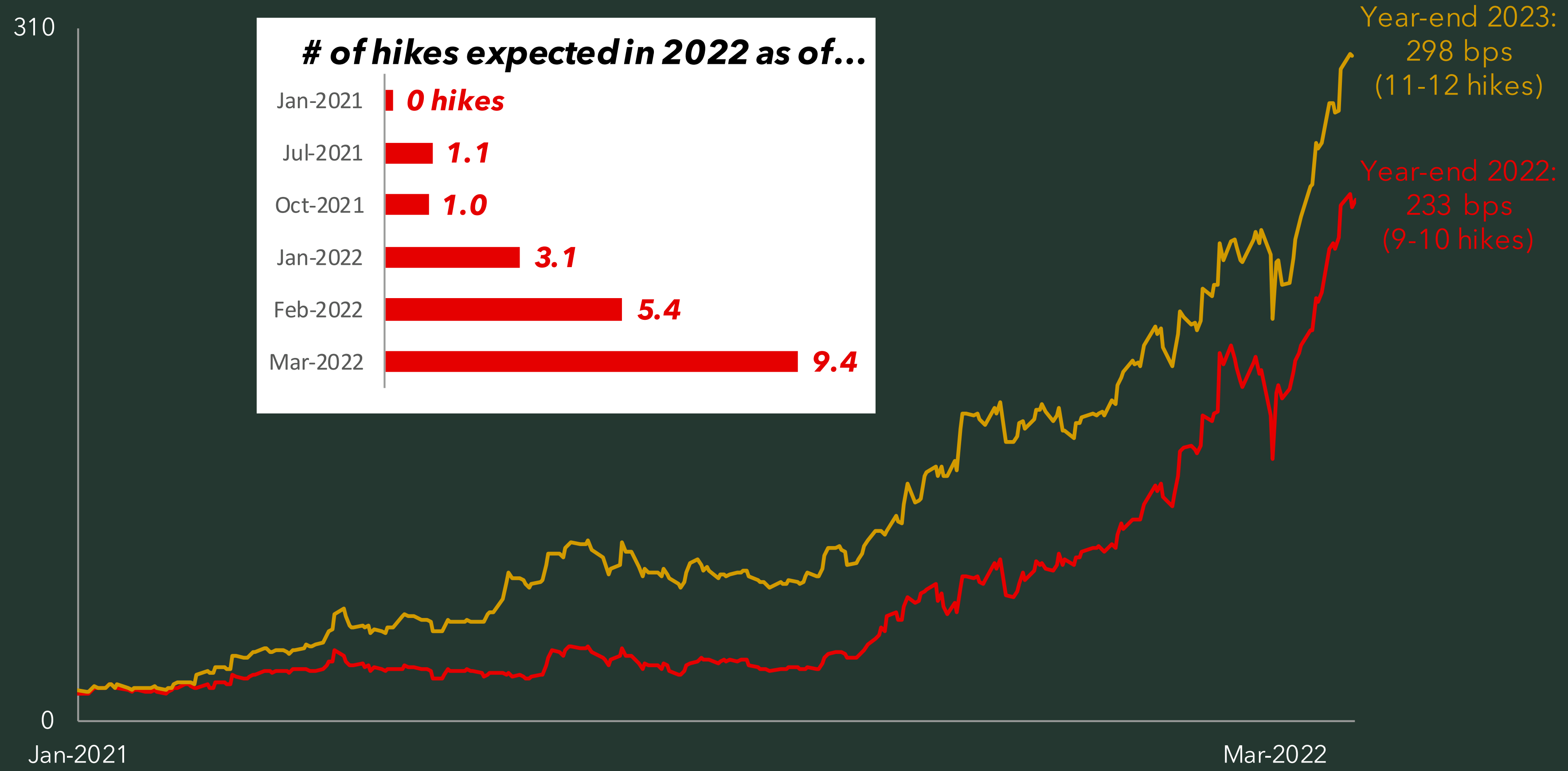


Source: (1) Bloomberg. Data as of March 30, 2022. Performance is vs. USD. CNYUSD graphed to show appreciation.

Markets Repricing Fed Hike Path

Expectations for Fed Tightening in 2022

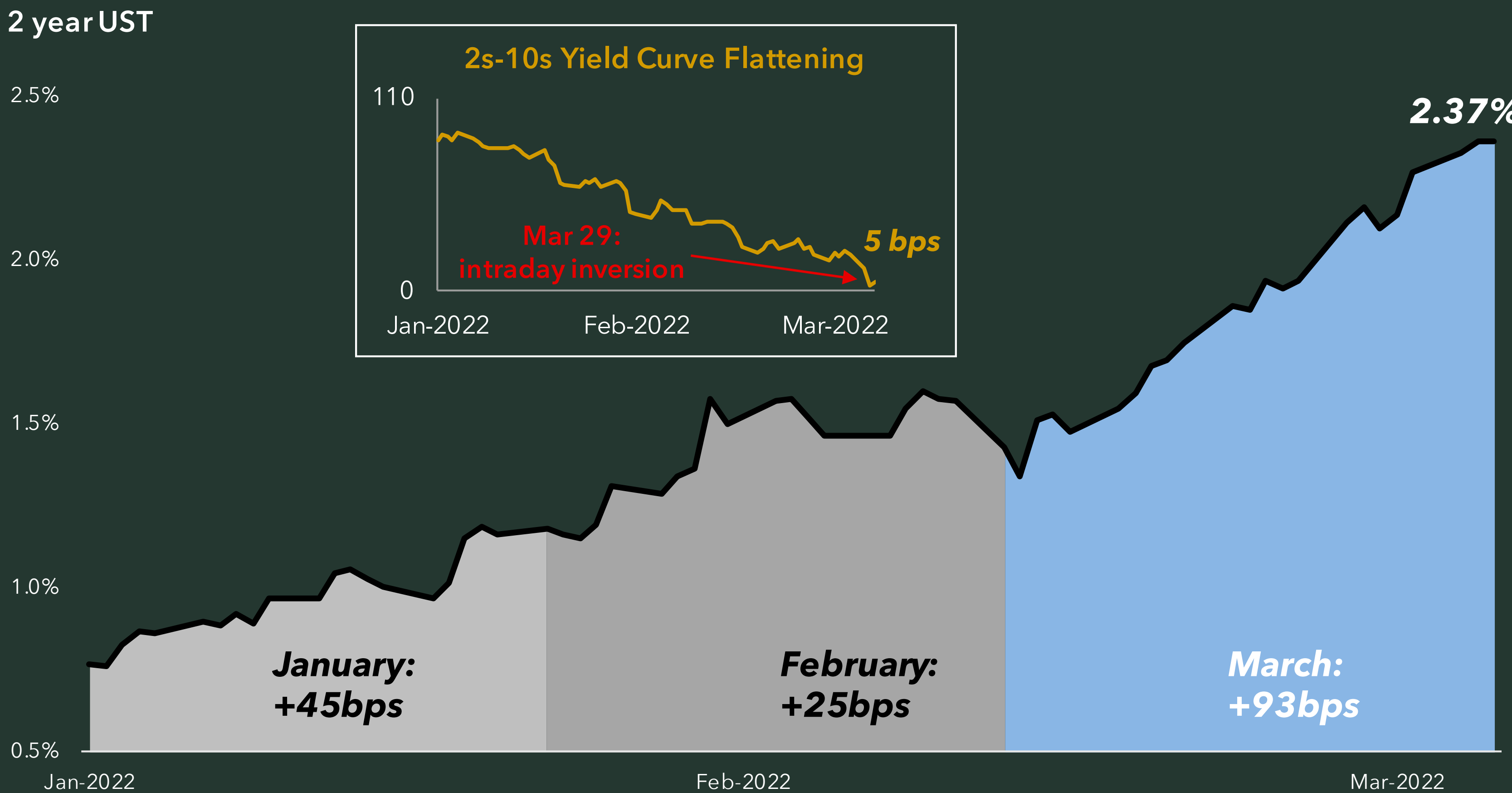
Market implied rate hikes, bps



Source: (1) Bloomberg. Data as of March 30, 2022. 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.

Historic Rise in 2 Year UST Yields in March

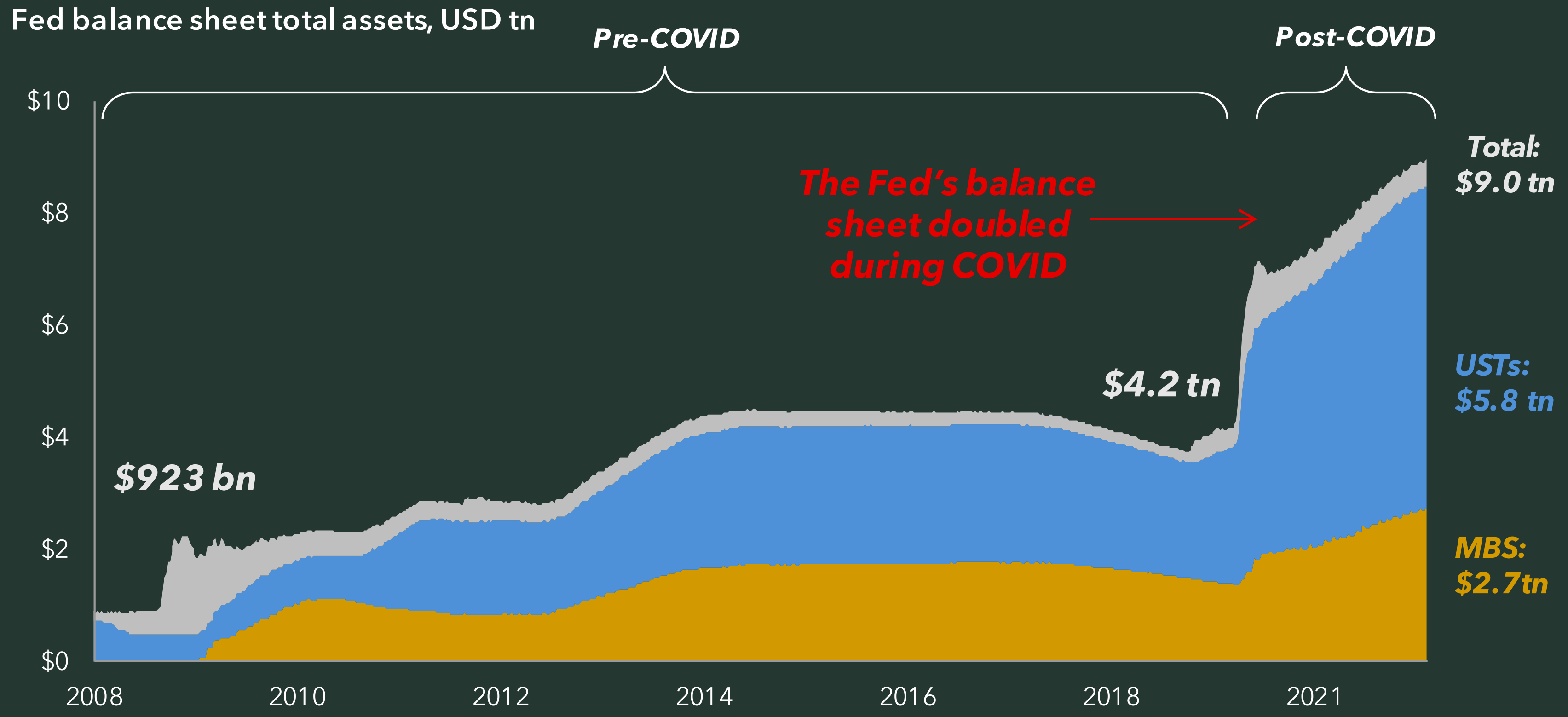
With the Fed currently more focused on rising inflation than decelerating growth, 2 year UST yields have had their largest monthly increase in March since 1984



Source: (1-2) Bloomberg. Data as of March 30, 2022. 2s10s curve inverted intraday on March 29.

Quantitative Tightening Moving Forward

MUFG's Head of US Macro Strategy, George Goncalves, expects the Fed to reduce its balance sheet by $500–600 bn in 2H2022, and by an additional $1.2 trillion in 2023. George also believes that the Fed is unlikely to raise rates as much as markets are currently pricing, as the tightening impact of concurrent Fed balance sheet reduction is likely to be significant. Whereas rate increases have more impact on the short end of the curve, balance sheet reduction may be targeted to have more impact on the long end.

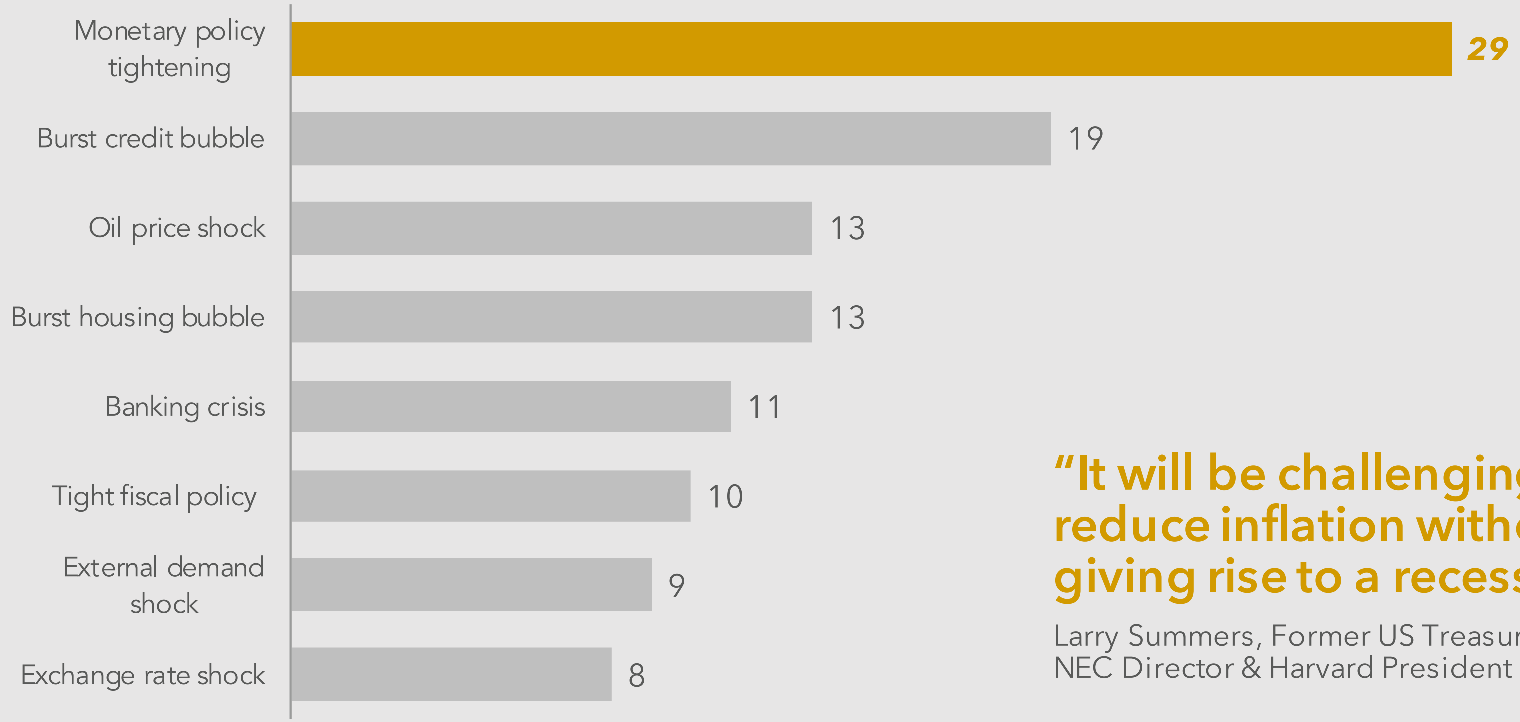


Source: (1) Bloomberg. Data as of March 30, 2022. Market implied probability of Fed rate hike based of off January 2023 futures contract and current effective federal funds rate. Market implied rate hikes based on December 2022 futures contract and December 2023 futures contract.

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



"It will be challenging to reduce inflation without giving rise to a recession."

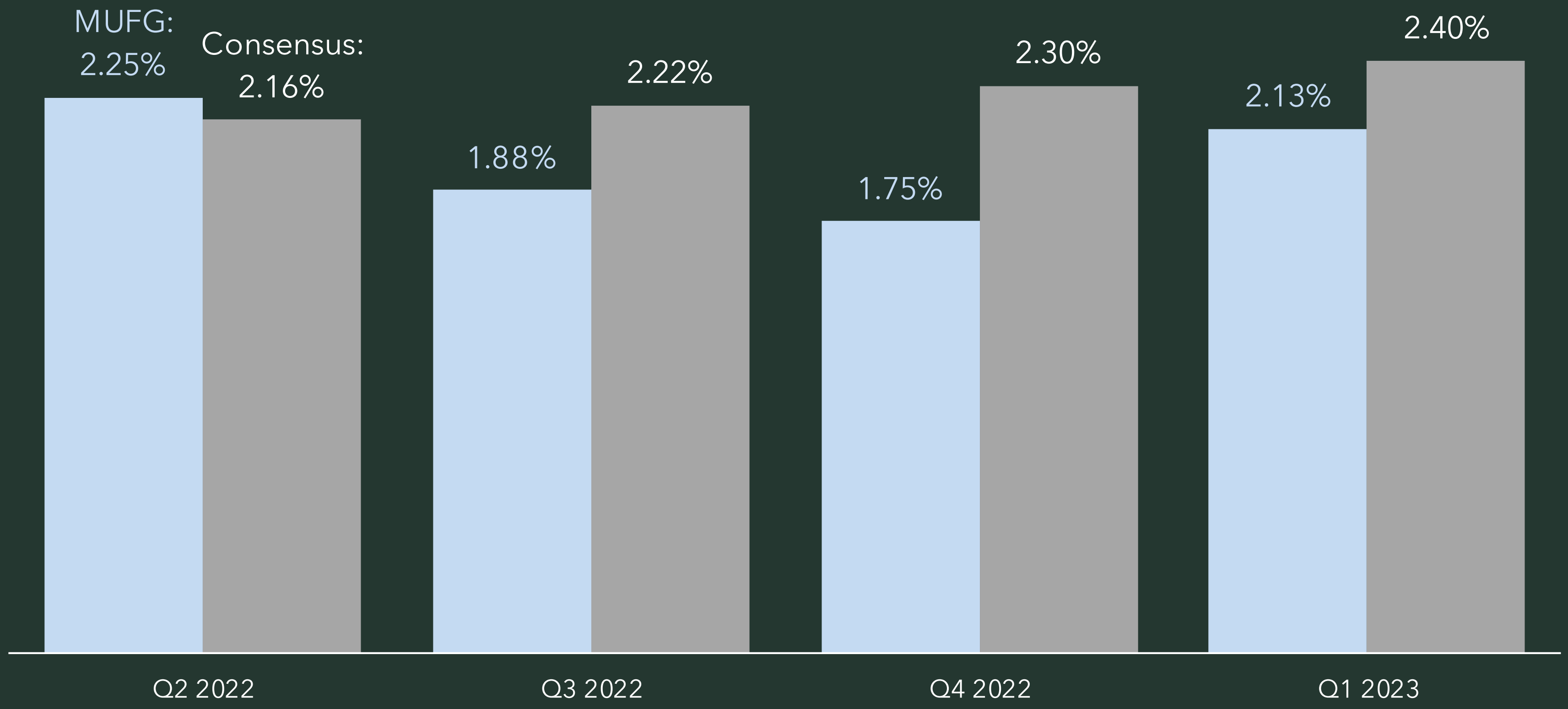
Larry Summers, Former US Treasury Secretary, NEC Director & Harvard President

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.

US Rates Forecast for 2022

MUFG's Head of US Macro Strategy, George Goncalves, expects the 2 Year UST to absorb the majority of the Fed's rate tightening in 2022. Importantly, George's 2022 forecasts are based on an approach that triangulates three variables given the feedback loops from financial markets in today's economy: (1) growth; (2) inflation; and (3) financial conditions.

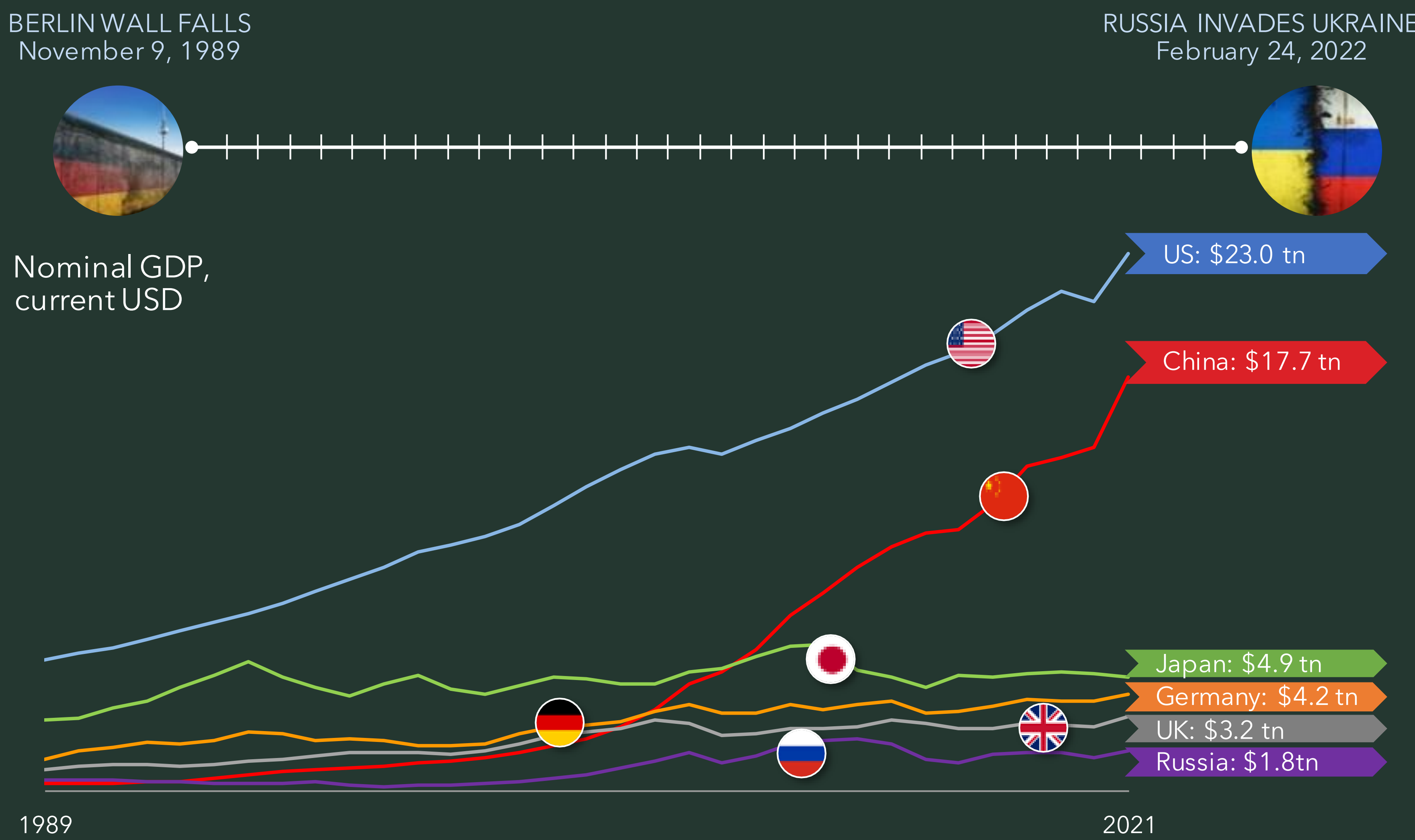
10 year UST forecasts



Source: (1) MUFG Fixed Income Desk Strategy "2022 Macro2Markets Outlook" (George Goncalves). Consensus data as of March 30, 2022.

7. End of Post Cold War Era

The Post Cold War Era is Over



Source: (1) World Bank. Data as of February 25, 2022. 2021 is Oxford Economics data.

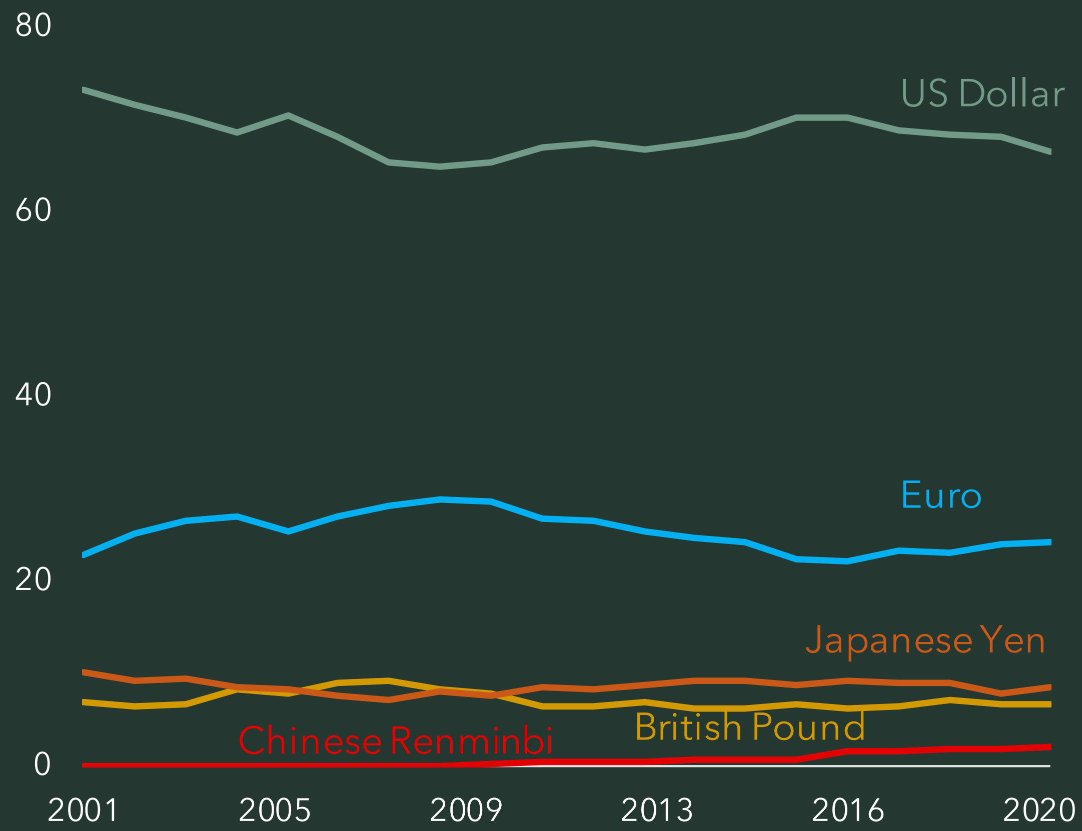
New World Order: Geopolitical

The Russia-Ukraine Crisis is likely to accelerate a "new world order" that began to change a decade ago, one defined by a dilution of hegemonic, unipolar US power, and increased structural rivalry between the West and a China-Russia led bloc in the East.

Old World Order (Post-Cold War Era)	***New World Order*** (Multi-Polar Structural Rivalry)
Unipolar world • US hegemonic power	***Multi-polar world*** • Axes of power East & West
The "end of history" • Fall of Berlin Wall • Proliferation of Democracy	***Rising conflict*** • Between authoritarian regimes and democracies • Steady decline in # of democracies since 2006
The "peace dividend" • Especially in Europe • Low defense spend to GDP • Formation of the Euro & increased economic integration	***Rapidly rising defense spending*** • Especially in Europe • Rising defense spend to GDP • Abandoning of Swiss & Swedish "neutrality"
Rise of China • Symbiotic US-China relationship (across consumption & production, deficits & surpluses, trade & supply chains)	***US-China "structural rivalry"*** • More confrontational & competitive US-China economic & geopolitical relationship

The Dollar Dominated Global Financial System

Index of international currency usage



5 measures of currency usage
1. Official FX reserves
2. FX transaction volume
3. FX debt instruments outstanding
4. Cross-border deposits
5. Cross-border loans

Source: (1) The Federal Reserve "The International Role of the U.S. Dollar" (October 6, 2021). IMF COFER. BIS Triennial Central Bank Survey of FX and OTC Derivatives Market. Dealogic. Refinitiv. BIS Locational Banking Statistics. Board Staff Calculations. Index is a weighted average of each currency's share of globally disclosed FX reserves (25% weight), FX transaction volume (25%), FX currency debt issuance (25%), FX and international banking claims (12.5%) and FX international banking liabilities (12.5%).

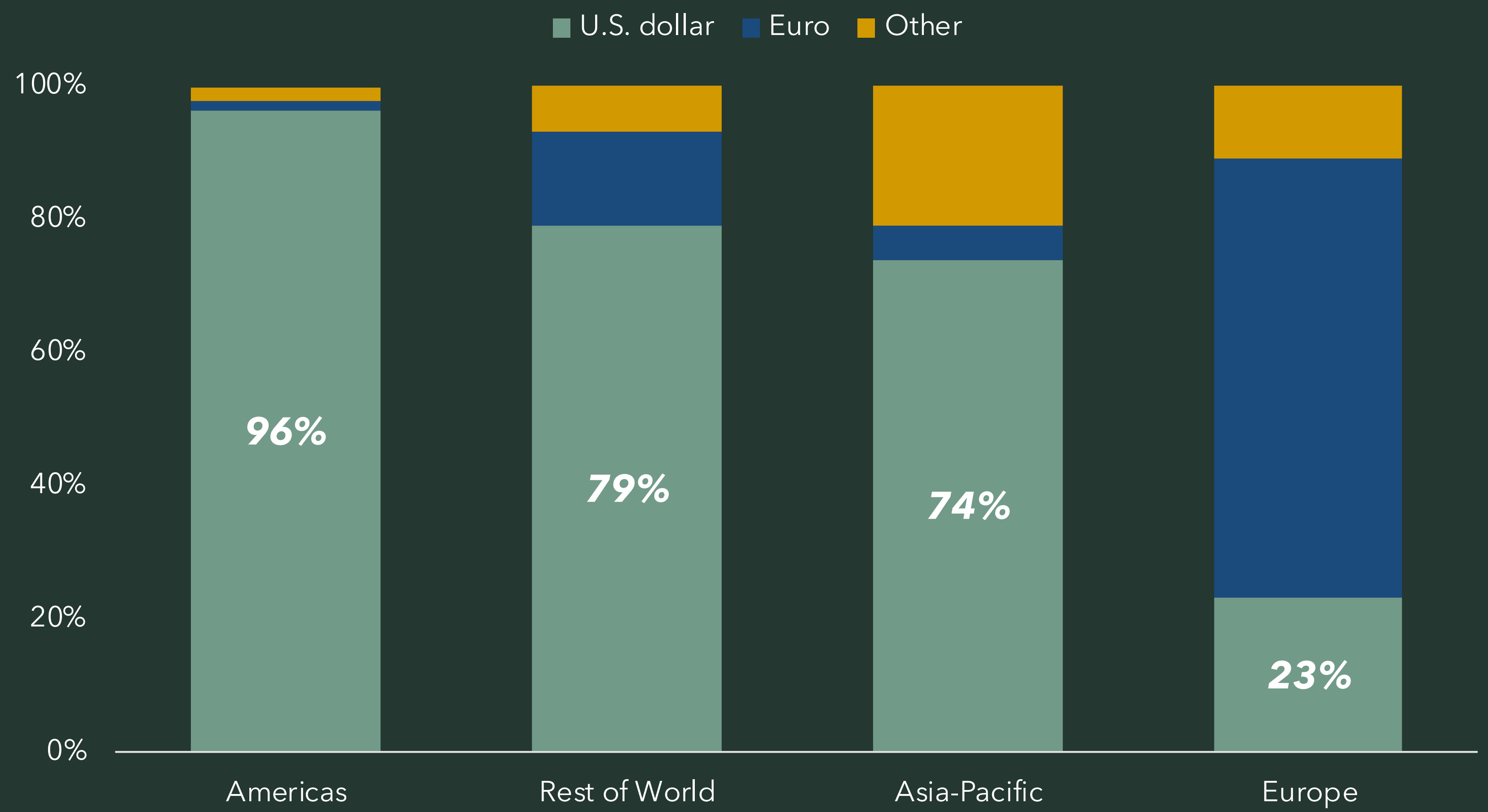
New World Order: Financial & Economic

The Ukraine crisis likely represents a seminal event in the inevitable weakening of the US dollar dominated global financial system that has dominated the global economy since the end of Bretton Woods in 1971. Many of the forces and transitions underway will contribute to higher inflation in the West.

Old World Order (Post-Cold War Era)	***New World Order*** (Multi-Polar Structural Rivalry)
Globalization & trade • More highly correlated business cycles & risk • Currency wars / US Dollar strength • Rising US trade deficits • Deflationary forces	***De-globalization & protectionism*** • Less predictable & uncorrelated risk • Less USD strength • Declining US trade deficits (over time) • Inflationary forces
Global supply chains • Priority: low cost & speed • Low cost EM labor & production capacity • Offshoring of manufacturing & production	***Regional supply chains / Re-shoring*** • Priority: security & resilience • Unutilized productive EM capacity less available • Potential "re-industrialization of America"
Deflationary Cycle • Structurally low inflation & rates • Multi-decade bond bull market • Fed suppression of volatility	***More Inflation in the West*** • Supply constrained growth • Less demand for USTs • Smaller central bank toolkit

US Dollar Share of Global Trade Settlement

Share of export invoicing



Source: (1) The Federal Reserve "The International Role of the U.S. Dollar" (October 6, 2021). IMF direction of trade; Central Bank of the Republic of China. Average annual currency composition of export invoicing, where data are available. Data extend from 1999 through 2019. Regions are those defined by the IMF.

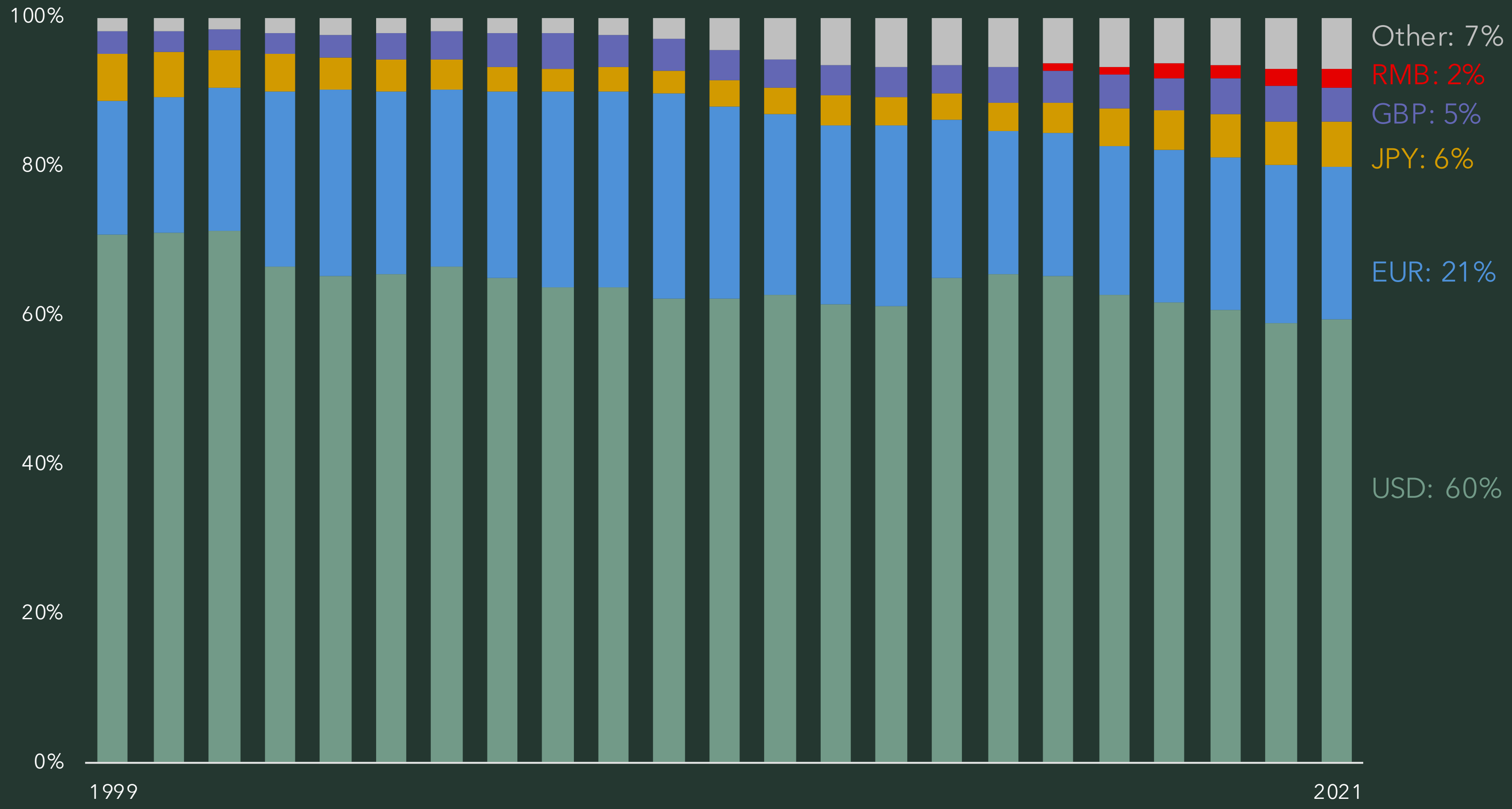
New World Order: Financial & Economic

The Ukraine crisis likely represents a seminal event in the inevitable weakening of the US dollar dominated global financial system that has dominated the global economy since the end of Bretton Woods in 1971. Many of the forces and transitions underway will contribute to higher inflation in the West.

Old World Order (Post-Cold War Era)	***New World Order*** (Multi-Polar Structural Rivalry)
US Dollar based global financial system • USD dominated trade & commodities settlement (petrodollars) • Currency pegs to USD • UST as global risk-free asset • Cheaper US debt • Power to yield sanctions	***Multi-currency settlement regime*** • Multi-currency trade & commodities settlement • Weakening of Eurodollar system • Rising use of commodity-backed currencies in the East • Increased use of RMB by China • Increased appeal of IMF SDR reserve based system globally
USTs as primary CB FX asset • Global FX reserves & EM surpluses recycled into USTs and dollars	***Rising demand for "physical" gold*** • Increased CB demand for gold • Increased CB demand for broader basket of currencies

US Dollar Share of Global FX Reserves

FX reserves



Source: (1) The Federal Reserve "The International Role of the U.S. Dollar" (October 6, 2021). IMF. COFER. Share of globally disclosed FX reserves at current exchange rates. 2021 is Q1 only. Chinese Renminbi is 0 until Q2 2015.

New World Order: Regulatory

Over the last decade, global governments have become much more involved in the economy following three crises: GFC (2008), COVID (2020) and Russia-Ukraine (2022). History suggests that as governments increase their participation during times of crisis, their role is typically not quick to recede.

Old World Order (Post-Cold War Era)	***New World Order*** (Multi-Polar Structural Rivalry)
Less Government regulation Evolution of government activism: • 1980s-90s deregulation • Financial crisis bailouts • Trade war protectionism • COVID crisis financial support • Ukraine crisis sanctions	***More government regulation*** Priorities of government activism: • Financial stability • Climate change • Rising inequality (higher taxes) • Anti-trust scrutiny • Cross-border scrutiny and sanction regimes
Lower Tax Regime • Lower corporate taxes • Global tax safe havens • Carbon & fossil fuel tax deductions	***Higher Tax Regime*** • Rising taxes to fund crisis bailouts, deficits & aging populations • Global minimum tax • Declining tax havens • Carbon taxes
Fossil-fuel energy dependency • National security strategy aligned accordingly	***Energy transition & diversification*** • National security strategy aligned accordingly
"Investor-centric" corporate strategy • Investor as primary constituent • Maximizing profitability	***"ESG-centric" corporate strategy*** • Investors, regulators, consumers • Broader range of criteria

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

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