Capital Markets Strategy
Essential inCights for the C-Suite

MUFG

New World Order

15 Defining Themes for the Global Economy & Markets in the 2H 2022

MAY 2022

"当今世界正处于百年未有之大变局"

The world today is undergoing major changes unseen in a century.

Frequent phrase used in speeches by China's President Xi Jinping

Numerous policy experts in China have noted the frequent use of this phrase by China's President Xi Jinping, to capture the complex interplay of global factors that influence China policy, including: shifting global power dynamics; disruptive technology; the rise of populism; rising global debt; US dollar based global financial system; evolving multi-lateral institutions; structural headwinds (poverty, population growth, aging populations); Brexit; EU integration challenges; Russia's Ukraine invasion and US – China policy.

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Introduction

Summary Observations on Russia – Ukraine

The entire 2022 global economic, markets and policy outlook must, by definition, run through the Russia-Ukraine crisis. Most notably, Western sanctions and Russia's retaliatory response will have significant implications for 2022 energy prices, which will in turn run through global growth, inflation and central bank policy decisions.

1 The scale of Russia's invasion was the greatest western intelligence failure in 20 years.

2 Putin's miscalculations (the West, Ukraine, Russian military) represent a strategic failure with decade long implications for Russia.

3 Corporate strategy should assume crisis is longer, rather than shorter. Worse before better.

4 Russia may be too weak to win this war; too strong to lose.

5 This war may be closer to the beginning than the end.

6 Russia is the world's 11th largest economy, and systemically significant through the commodity channel.

7 Russia is now the most heavily sanctioned country in the world (over 45 countries and 10,000 actions).

8 Europe is moving more quickly than anticipated on banning Russian oil & gas. Russian retaliation risk remains an ongoing concern.

9 Europe, China & EM are more exposed to this crisis than the domestically driven and energy-food surplus US economy.

10 $55 bn of US aid for Ukraine equates to 1/3 of pre-invasion Ukraine GDP

Silver Linings Against a Difficult Global Backdrop

It is not easy to escape the profoundly difficult and complex global economic and market backdrop in the post-COVID, post-Ukraine, "new world order." However, it is important to emphasize that we enter this more volatile period with significant tailwinds and much stronger balance sheets as compared to prior crises historically.

Silver Linings Amidst Higher Volatility

- Speed & strength of unified Western & Ukraine response to Russia's invasion
- Pivot in EU political economy regarding Russia, security architecture and energy dependencies
- Resilience of domestically driven US economy (vs. EU, China & EM)
- Strong fundamentals in credit markets (default rates near historic lows)
- Interest rates still low by historic standards
- Corporate earnings and revenue continue to exceed expectations
- Strength of consumer balance sheet ("excess savings", rising wages)
- $7 trillion of cash on corporate balance sheets
- Strongest global banking system of our lifetime
- Robust corporate capex cycle (equipment, R&D)
- New Q1 records for dividend payout and buyback activity

1 Multi-polar geopolitical system

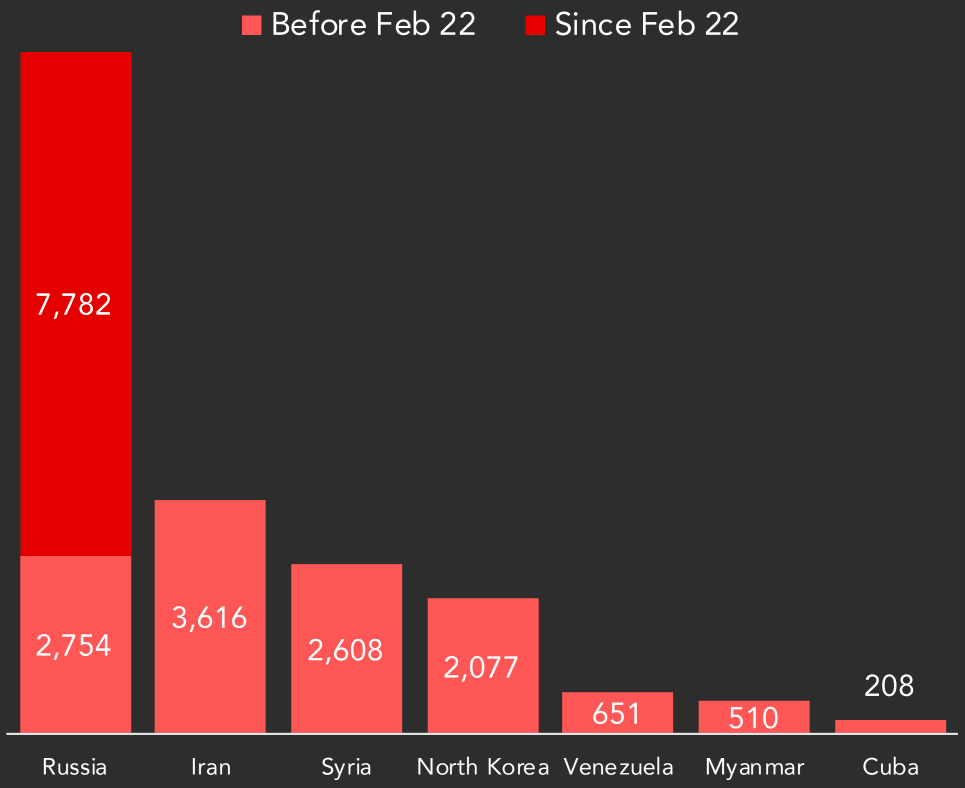
New World Order

1	Old World Order	New World Order
	Unipolar geopolitical system	**Multi-polar geopolitical system**
	• Post WW2 & post Cold War architecture	• Change in post WW2 positions (Switzerland, Germany, Finland, Sweden, Japan)
	• US hegemony	• Axes of power, East & West
	• The "peace dividend" in Europe	• Rapidly rising defense spend (especially Europe)
	• Periodic nuclear arms control negotiations	• Nuclear proliferation accelerating post Ukraine
	• More symbiotic US-China relationship	• More confrontation and competition
	• Unsustainable imbalances over time	• Trade, financial, technology, national security
	• More tolerance of ideological differences	• Less tolerance of ideological differences

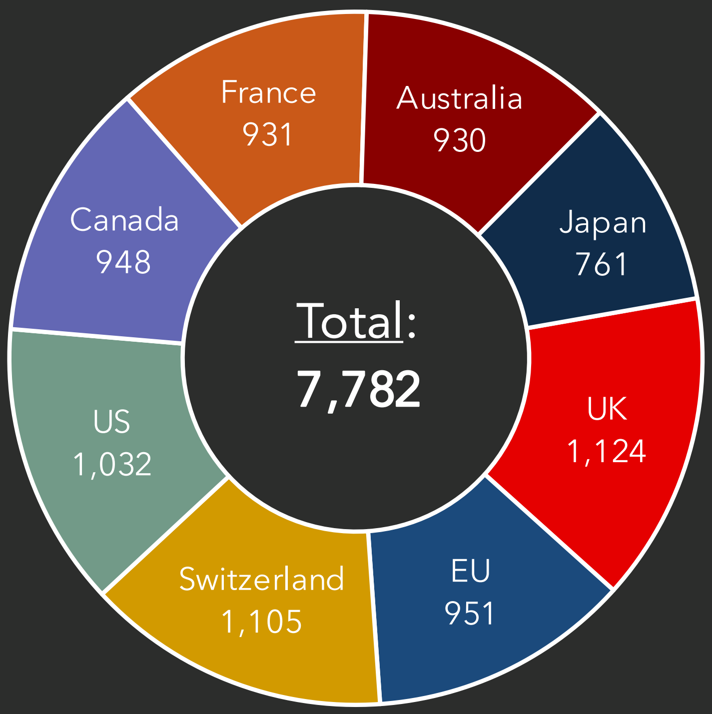
The World's Most Sanctioned Country

Following the Ukrainian invasion, Russia has become the world's most sanctioned country

# of total sanctions



# of Russian sanctions since Feb 22, by country

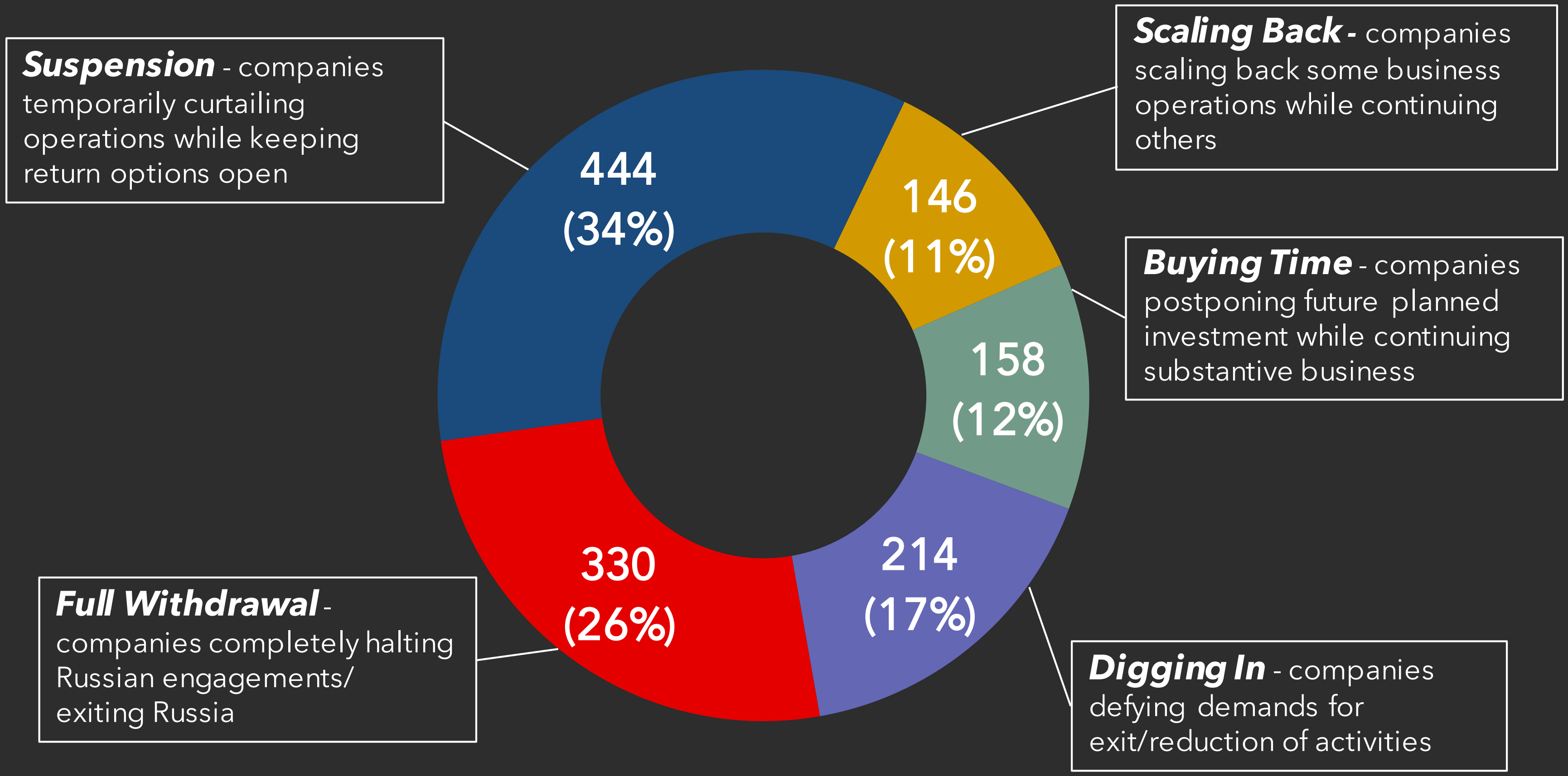


Source: (1-2) Castellum.AI. Data as of May 25, 2022.

"Self-Sanctioning" Russia

Yale University has created a comprehensive tracker of corporate responses to Russia's invasion of Ukraine. Of the more than 1,200 companies globally included in their tracking analysis, over 70% have either fully withdrawn, suspended or scaled back their Russia business.

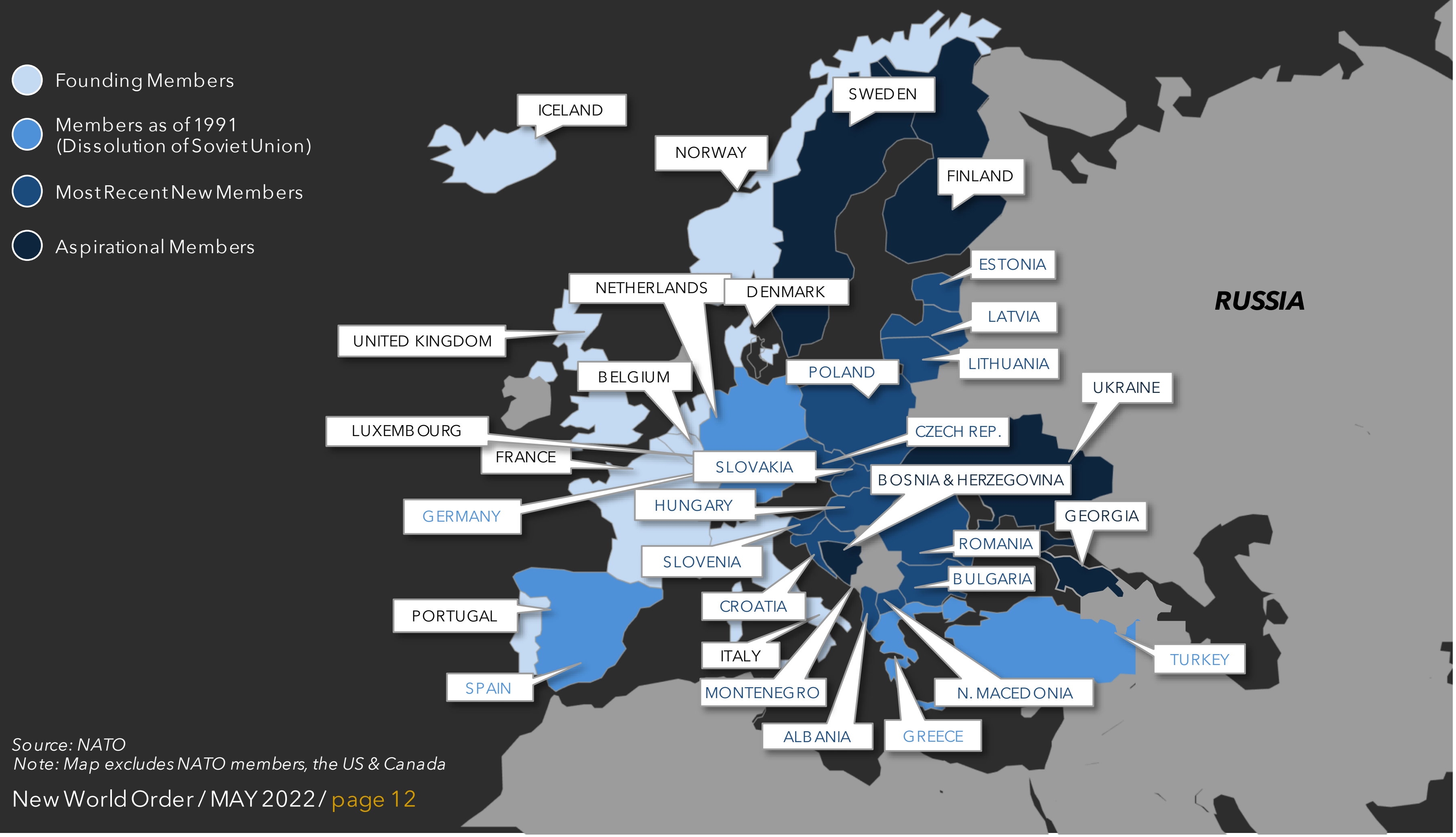
Number of companies "self-sanctioning" Russia



Source: (1) Yale School of Management. Data as of May 25, 2022.

Sweden & Finland Joining NATO

Since 1990, NATO has expanded in 5 waves, including 15 new countries representing over 100 million people. Following the Ukraine invasion, Sweden and Finland's move to join NATO will effectively double the length of Russia's border with NATO countries. Ukraine, Georgia and Bosnia remain longer-term aspirational members.



Source: NATO
Note: Map excludes NATO members, the US & Canada

2 Growth decelerating

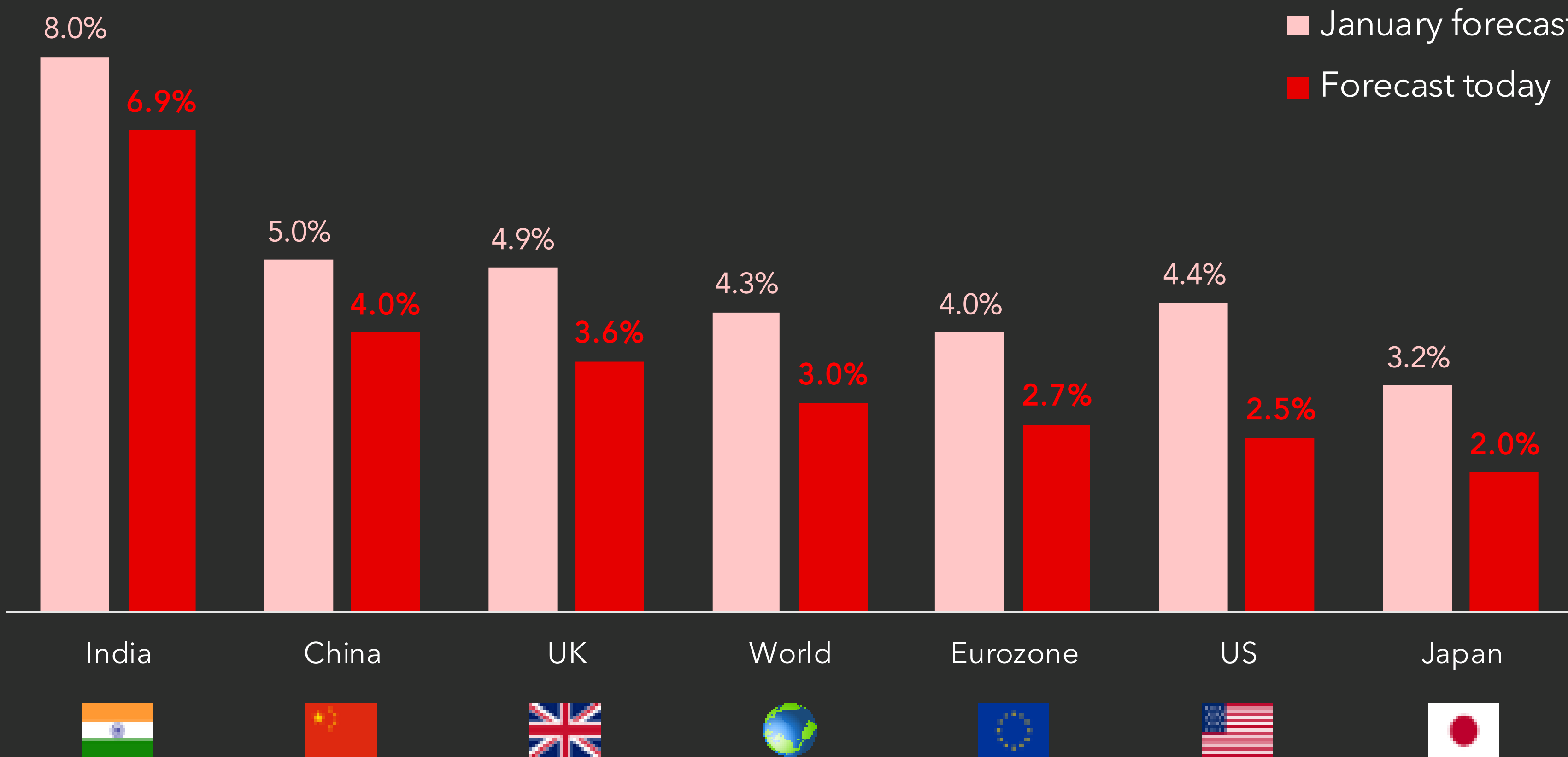
New World Order (cont'd)

	Old World Order	New World Order
2	**Growth accelerating**	**Growth decelerating**
	• Synchronized global COVID recovery	• US resilience; Europe & EM vulnerabilities
	• Longer economic cycles of last 30 years	• Shorter post-COVID economic cycle likely
	• Secular stagnation in DM (across growth, inflation and rates)	• Inflation "boom" in DM (stagflation risk)
	• Broad-based EM growth (globalization, rise of China)	• Differentiated EM growth (commodities, China slowdown & Russia crisis)
	• Excess EM production capacity (labor, production)	• Rising wages, labor shortages, production migration to new regions
	• Subdued productivity gains	• Accelerating productivity gains
	• Financial assets outperform economy	• Nominal economy outperforming financial assets

Global Growth Revised Downward

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

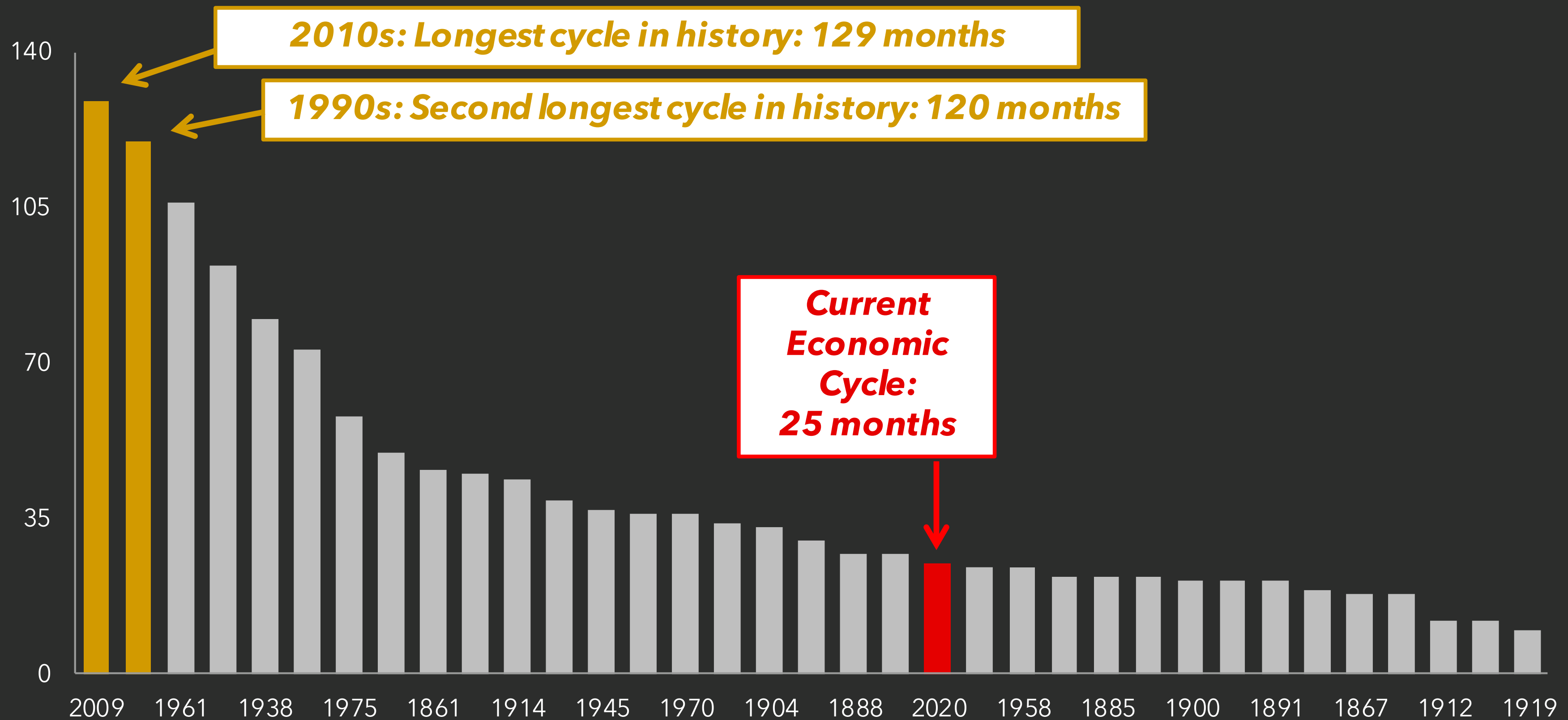


Source: (1) Oxford. Data as of May 25, 2022.

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

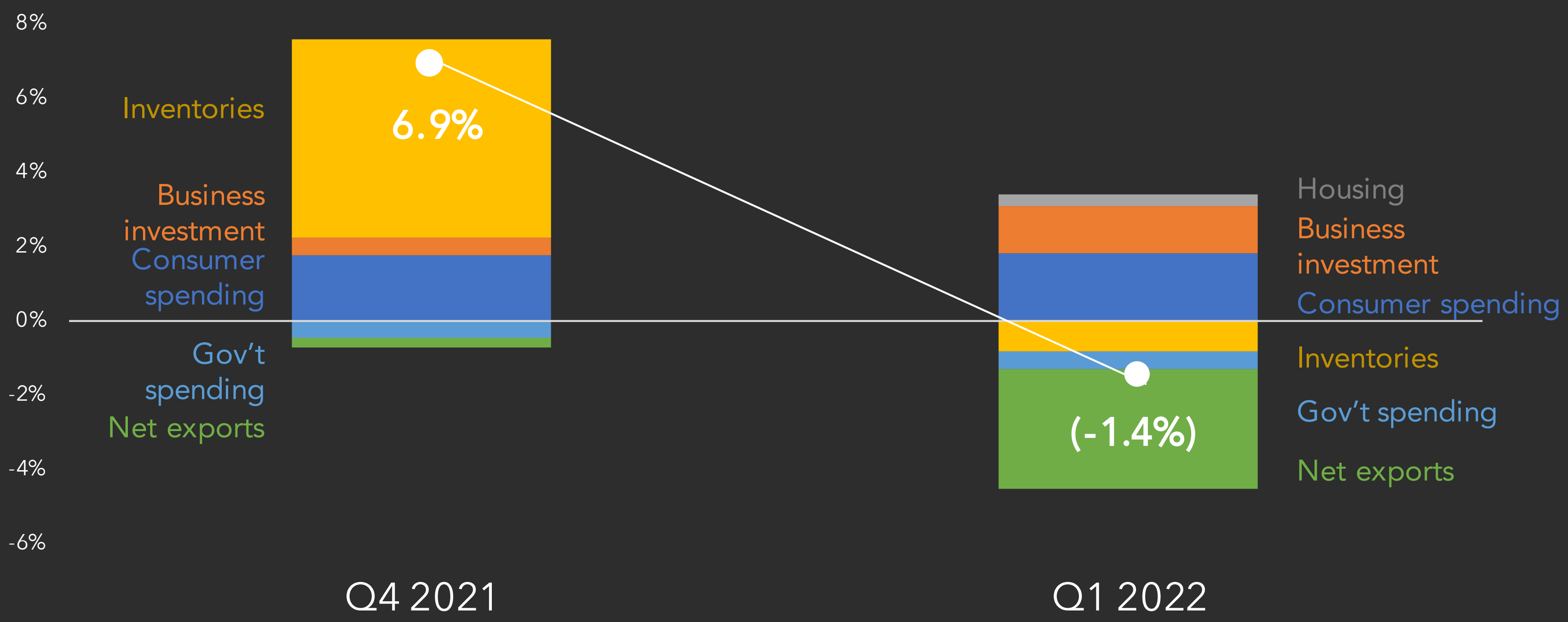


Source: (1) The National Bureau of Economic Research. Length of US recoveries as of May 2022.

“Growth Recession” More Likely Than “Technical Recession”

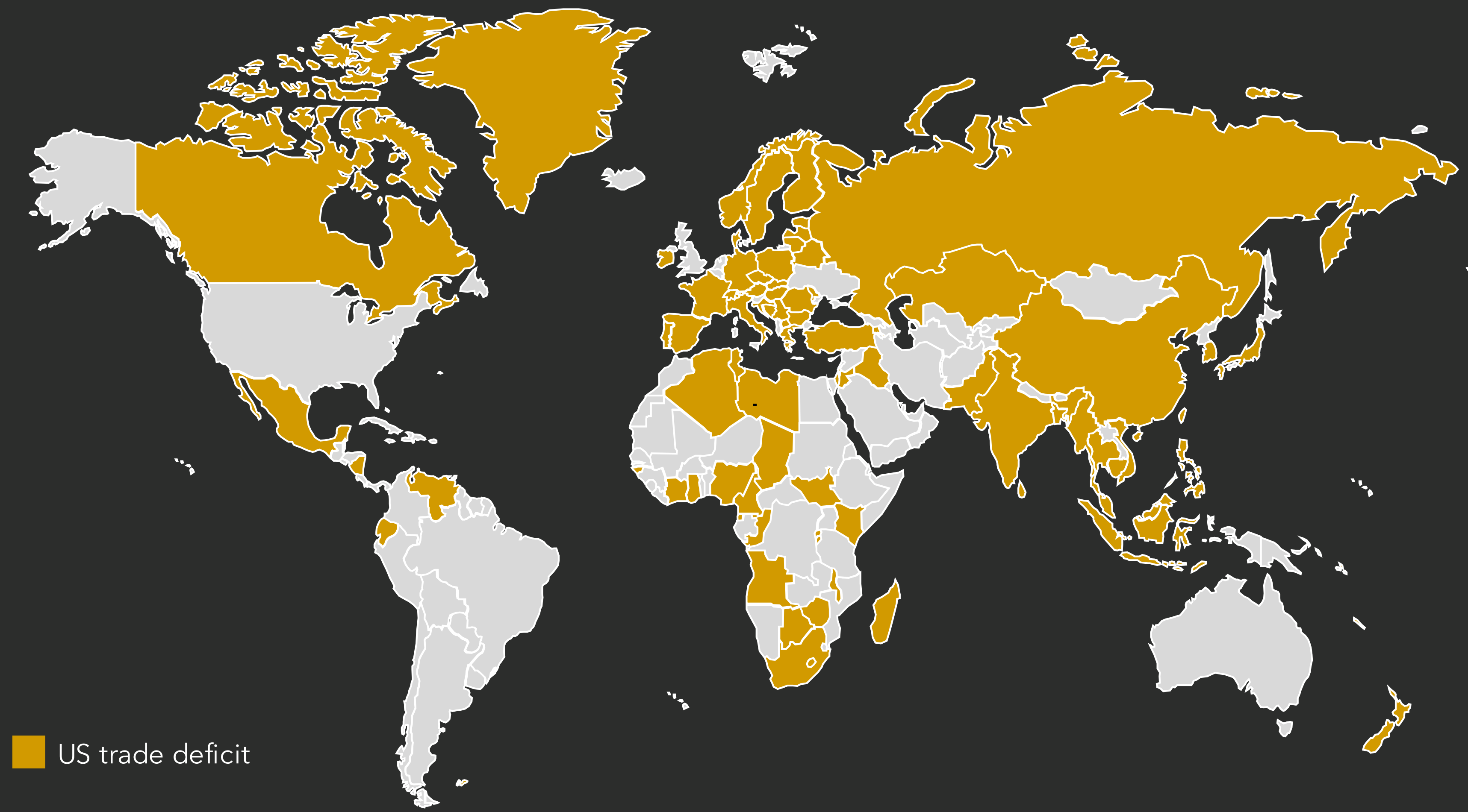
US Q1 GDP contracted (-1.4%) y/y, well below consensus expectations of +1%. The first quarter’s GDP miss was driven almost entirely by a larger trade deficit, slower inventory build and decreased public spending. Specifically, net trade represented a (-3.2 ppt) drag on GDP as a strong US dollar and slower global growth weighed heavily on US exports (-5.9%) as US imports increased 17.7%. Meanwhile, consumer spending, increased 2.7% on an annualized basis. Business investment also increased at a robust 9.2% pace in Q1, driven by strong equipment (+15.3%) and IP (+8.1%) spending.

Contribution to real GDP by sector (%)



Source: (1) Bureau of Economic Analysis. Gross Domestic Product, First Quarter 2022.

The US has trade deficits with more than 100 countries, up from approximately 80 countries in 1990. While US consumer and business spending have been reasonably resilient against rising inflation, the decline in Q1 US GDP came almost entirely from the trade sector.

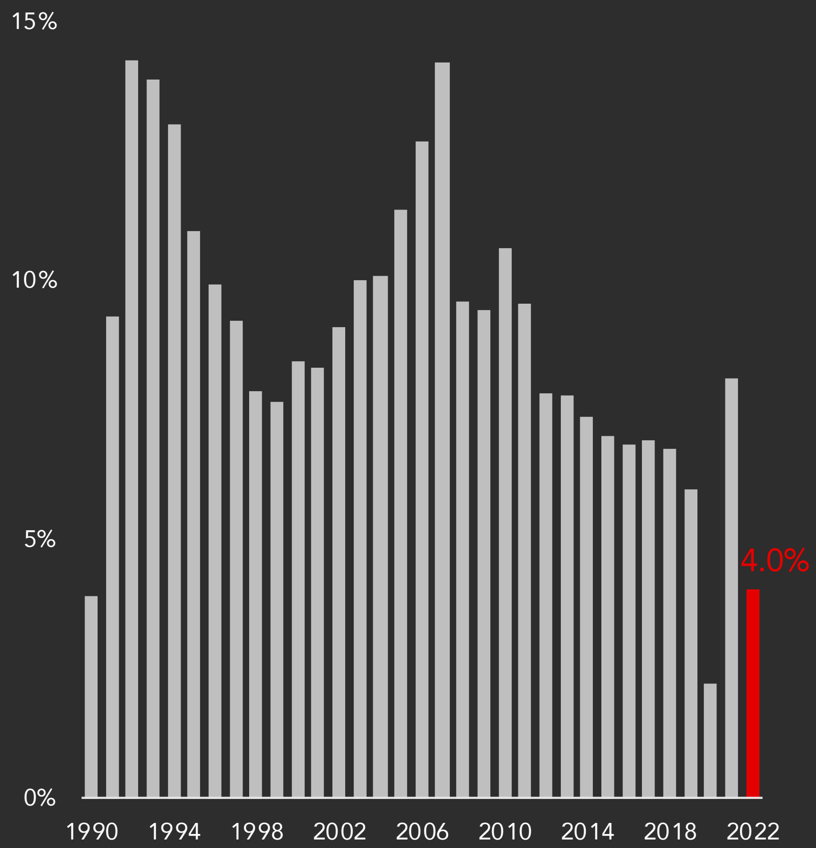


Source: World Bank. World Integrated Trade Solution. Full year data as of 2019.

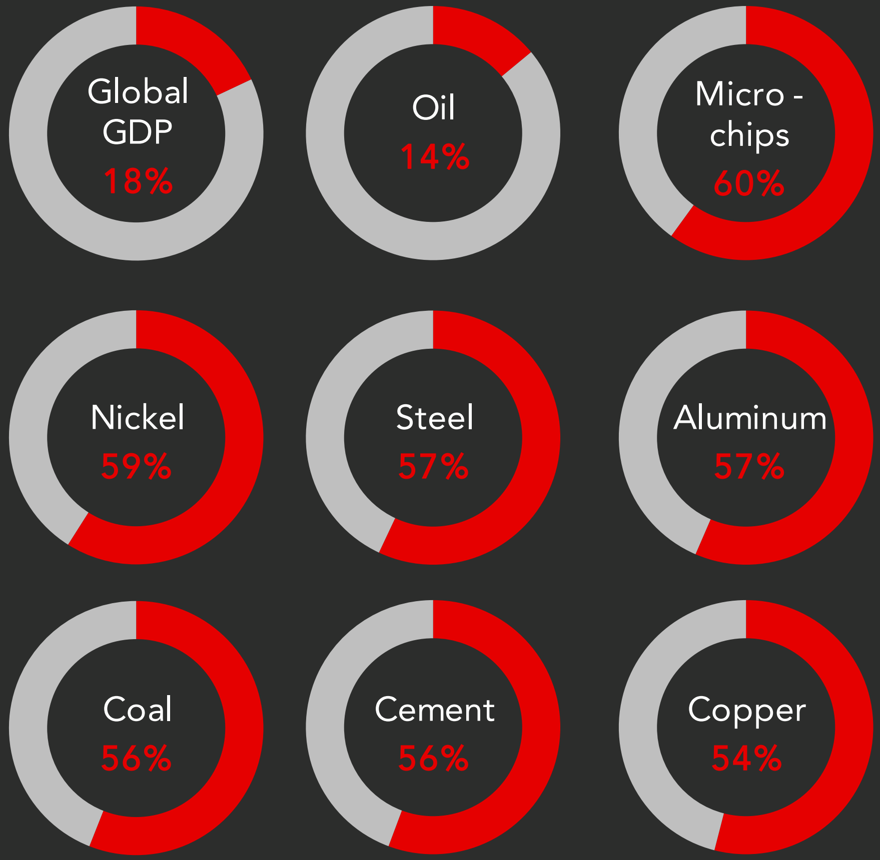
China's Economy Slowing Down

China's 2022 slowdown will have implications for the global economy and markets, and has been driven by a myriad of forces: COVID lockdowns, cautious policy given property sector, higher commodity prices, the Ukraine crisis, declining exports and tepid domestic consumption.

China GDP growth, y/y



Share of global demand

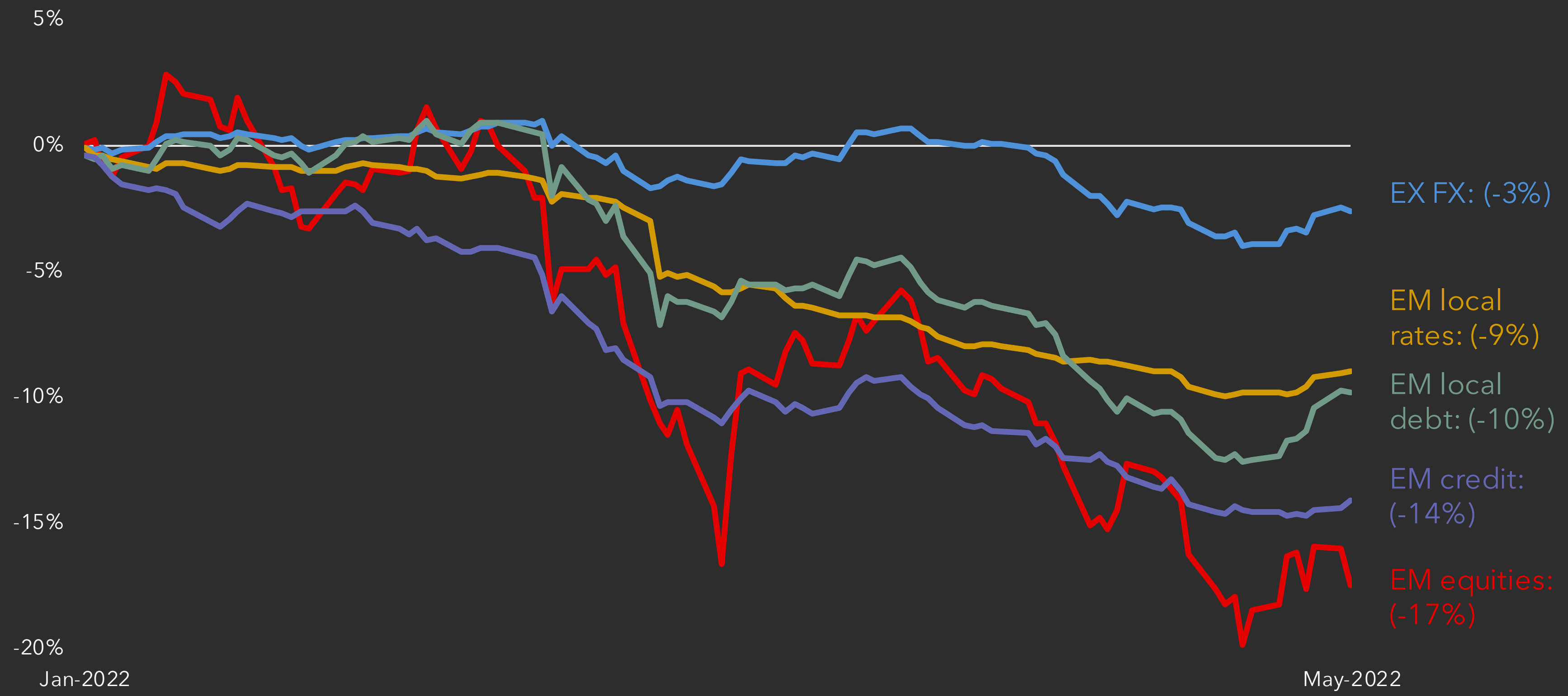


Source: (1) Oxford Economics. (2) Visual Capitalist. 2021 GDP. (3) EIA. 2019 data. (4) PWC. SIA. Data is 2019. (5,7,10) Statista. 2019 data. (6) OECD. 2020 data. (8) IEA. 2020 data. (9) Cemnet. 2019 data.

Economic Vulnerabilities Across the EM Complex

Emerging market economies have been exposed to elevated stagflation risk across multiple dimensions: the Russia-Ukraine crisis, China's lockdown, supply chain dislocations, higher borrowing costs (on policy tightening) and rising commodity prices. EM PMI data suggests that the trend of slower EM economic activity will likely continue for the remainder of the year, while inflation pressures remain sticky and elevated.

YTD performance

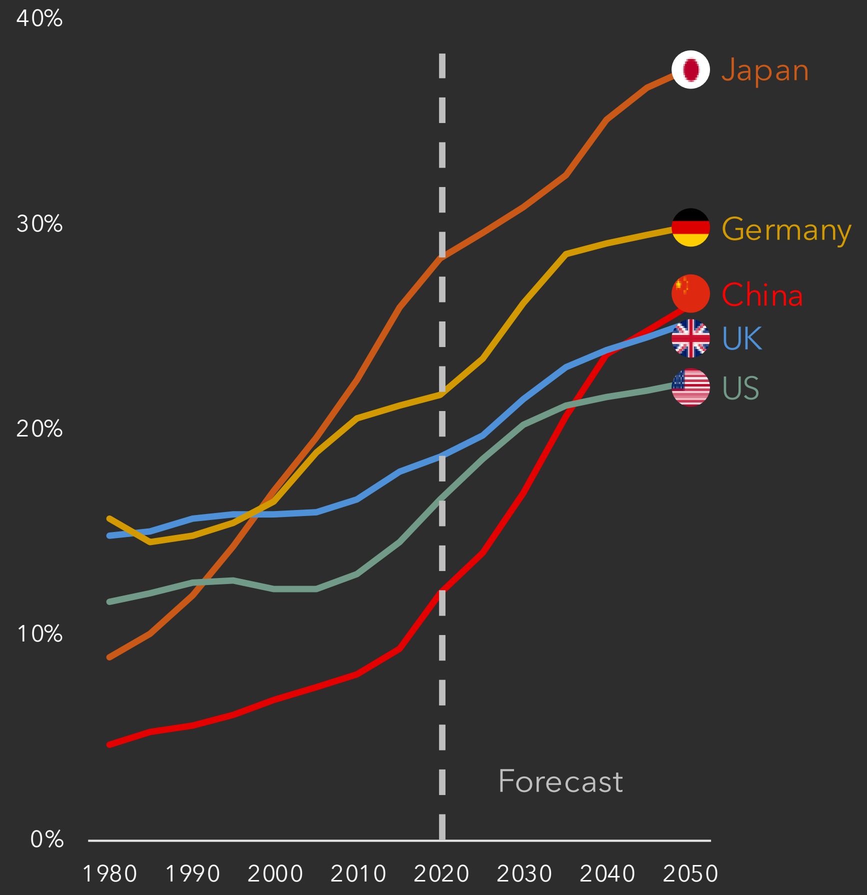


Source: (1) MUFG Macro Monthly (Khoman). Bloomberg. Data as of May 25, 2022. EM FX and equities are MSCI. EM local rates is Bloomberg Local Currency Government 10% Country Capped Index. EM Credit is Bloomberg EM Hard Currency Aggregate Index.

Aging Populations, Rising Liabilities

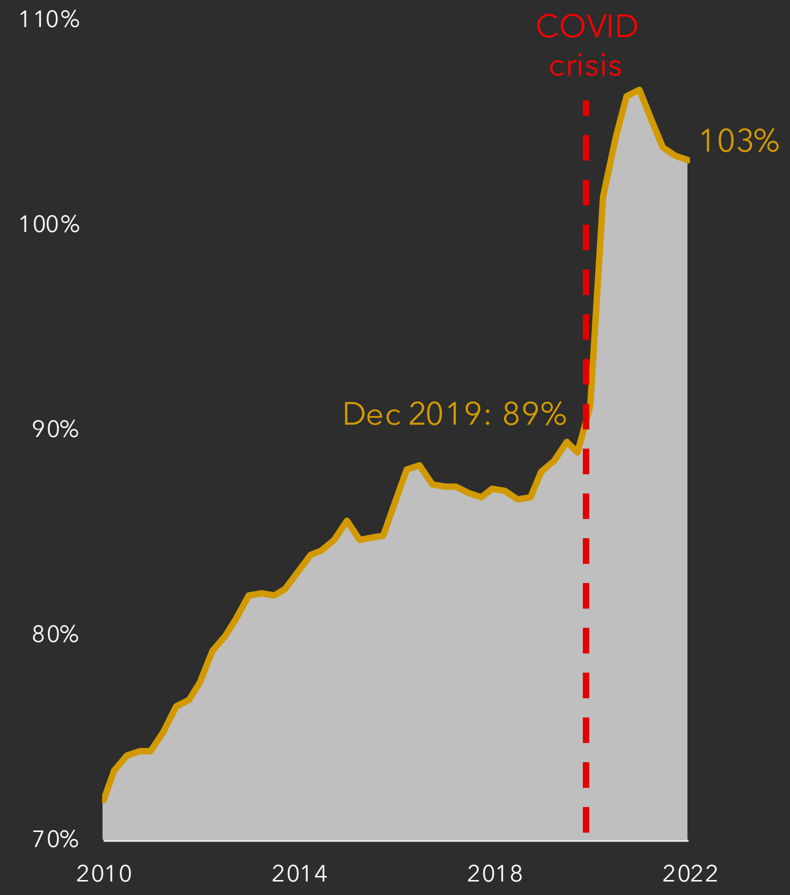
Aging Populations

% of population over 65 to total population



Rising debt levels

Global government debt to GDP



Source: (1) Oxford Economics, "Why an aging population doesn't mean soaring inflation" (May 19, 2022). UN World Population Prospects. (2) IIF. Global Debt Monitor. Global government debt to GDP is IIF's 21 mature market figures.

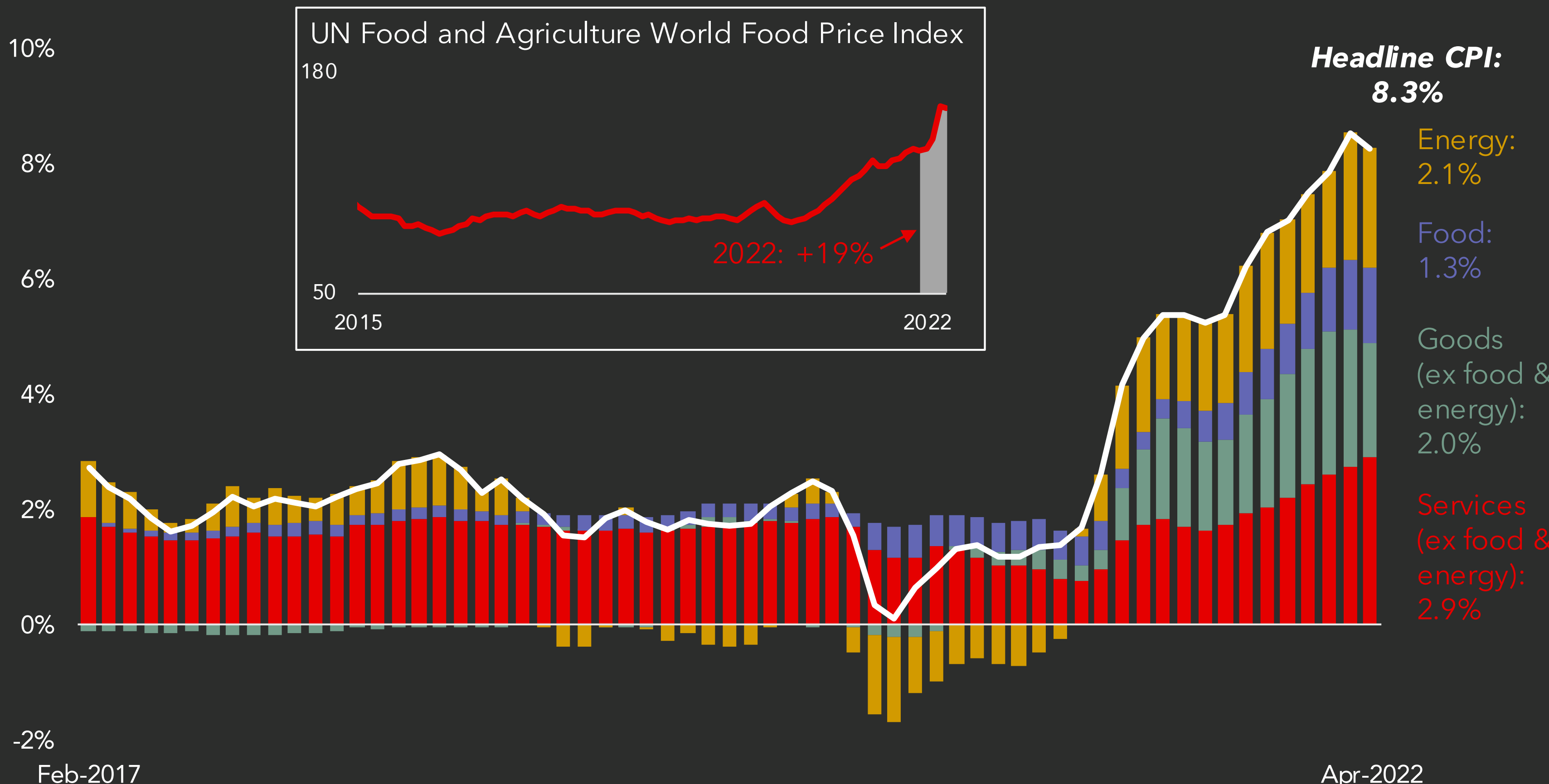
3 “Conflict” inflation

New World Order (cont'd)

3	Old World Order	New World Order
	"COVID" inflation	**"Conflict" inflation**
	• COVID related demand & supply shocks	• More supply side and commodity driven
	• More durable goods & discretionary in source	• More services & less discretionary in source
	• More transitory in nature	• More "enduring" in nature (de-globalization, ESG, supply side)
	• Less detrimental to growth	• More detrimental to growth

US Inflation Near 40 Year Highs

US Headline inflation slowed to 8.3% in April, down from a 40 year high of 8.5% in March, though persistently high and above consensus expectations of 8.1%. While the composition of inflation has shifted in recent months from goods to commodities and services, the modest moderation in April's inflation numbers benefitted from a 6.1% retreat in gasoline prices, following an 18.3% surge in March.

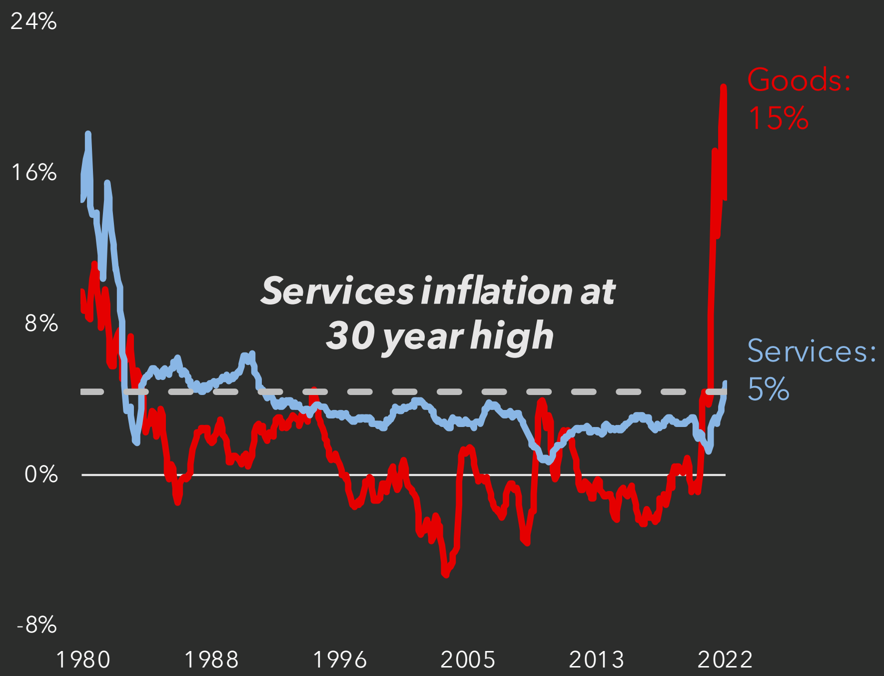


Source: (1-2) Bloomberg. Data as of May 13, 2022.

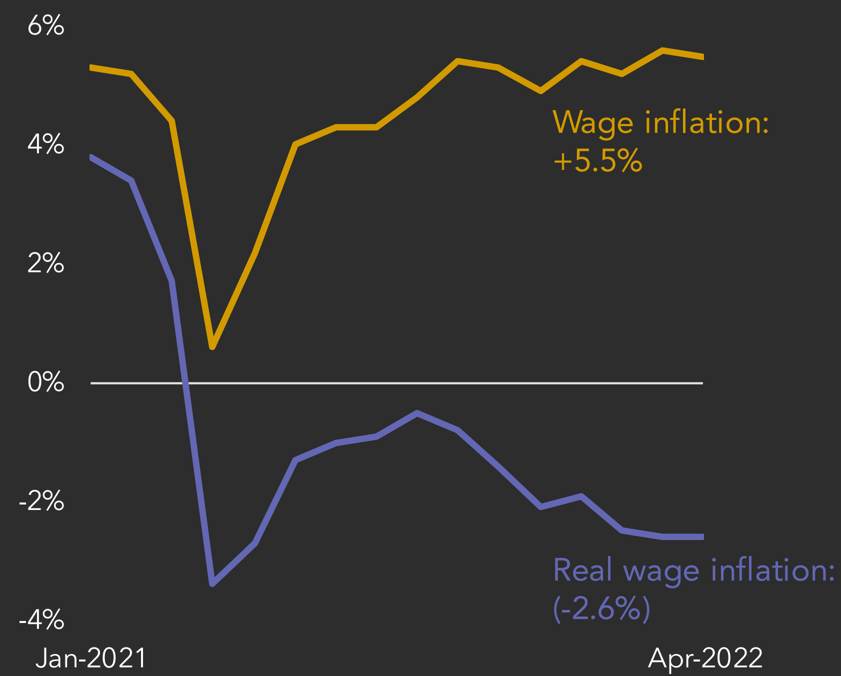
Services Inflation at 30 Year High

While goods inflation continues to surge, services inflation has recently risen to 30 year highs. As the price of durable goods moderated within a high range in April, the cost of services accelerated rapidly as consumers emerged from a third COVID winter, with high vaccination rates and strong pent-up demand for travel, leisure and "experiences." Wages are having the two-fold adverse effect of dragging corporate earnings lower, while not keeping pace with inflation

CPI inflation, y/y



US average hourly earnings, y/y



The CPI basket is comprised of approximately 60% services, 20% goods and 20% food and energy

Source: (1-2) Bloomberg. Data as of Mary 25, 2022. Services inflation is CPI services ex energy. Goods inflation is CPI durables.

Inflation Pressures Vary by Sector

Inflation pressures, which centered around durable goods during the early phase of COVID, have since shifted to services and commodity prices, which by definition, are likely to be more "enduring" and "detrimental" to growth.

Energy | Food | Core goods | Core services

US inflation by sector (y/y)

Energy commodities	**45%**
Motor fuel	**44%**
Airline fares	**33%**
Energy	**30%**
Used cars and trucks	**23%**
Utility gas service	**23%**
Eggs	**23%**
Public transportation	**22%**
Lodging away from home	**20%**
Tires	**16%**
Furniture & bedding	**15%**
Milk	**15%**
Motor vehicle parts and equipment	**15%**
Meats	**14%**

Delivery services	**14%**
Energy services	**14%**
New vehicles	**13%**
New trucks	**13%**
Vehicle accessories	**13%**
Outdoor equip. & supplies	**12%**
Electricity	**11%**
Food at home	**11%**
Household furnishings & supplies	**11%**
Car & truck rental	**10%**
Tools, hardware & supplies	**10%**
Health insurance	**10%**
Laundry & cleaning services	**10%**
Cereals & bakery products	**10%**

Veterinarian services	**10%**
Nonalcoholic beverages	**10%**
Transportation services	**9%**
Housekeeping supplies	**8%**
Fruits and vegetables	**8%**
Appliances	**8%**
Sporting goods	**8%**
Domestic services	**7%**
Tobacco & smoking products	**7%**
Food away from home	**7%**
Pets & pet products	**7%**
Moving, storage, freight expense	**7%**
Financial services	**7%**
Music instruments & acces.	**7%**

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

Inflation Pressures Vary by Sector (Cont.)

Inflation pressures, which centered around durable goods during the early phase of COVID, have since shifted to services and commodity prices, which by definition, are likely to be more “enduring” and “detrimental” to growth.

Energy Food Core goods Core services

US inflation by sector (y/y)

Legal services	7%
Land-line phone services	6%
Apparel	5%
Motor vehicle maint. & Repair	5%
Rent of shelter	5%
Shelter	5%
Services less energy services	5%
Owners' equivalent rent	5%
Footwear	5%
Garbage & trash collection	5%
Recreation services	4%
Motor vehicle insurance	4%
Water & sewerage maint.	4%
Alcoholic beverages	4%

Day care and preschool	4%
Nursing homes	4%
Hospital services	4%
Medical care services	4%
Funeral expenses	3%
Photo equipment & supplies	3%
School tuition	3%
Educational books	2%
Medicinal drugs	2%
Recreational reading	2%
Personal care products	2%
College tuition and fees	2%
Intracity mass transit	2%

Professional services	2%
Internet services	2%
Physicians' services	1%
Technical & bus. school tuition	1%
Jewelry and watches	0%
Computers and smart home assistants	0%
Toys	0%
Cosmetics	(-1%)
Wireless phone services	(-1%)
Audio equipment	(-3%)
Computer software and accessories	(-4%)
TVs	(-6%)
Smartphones	(-16%)

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


4 Rapid policy tightening

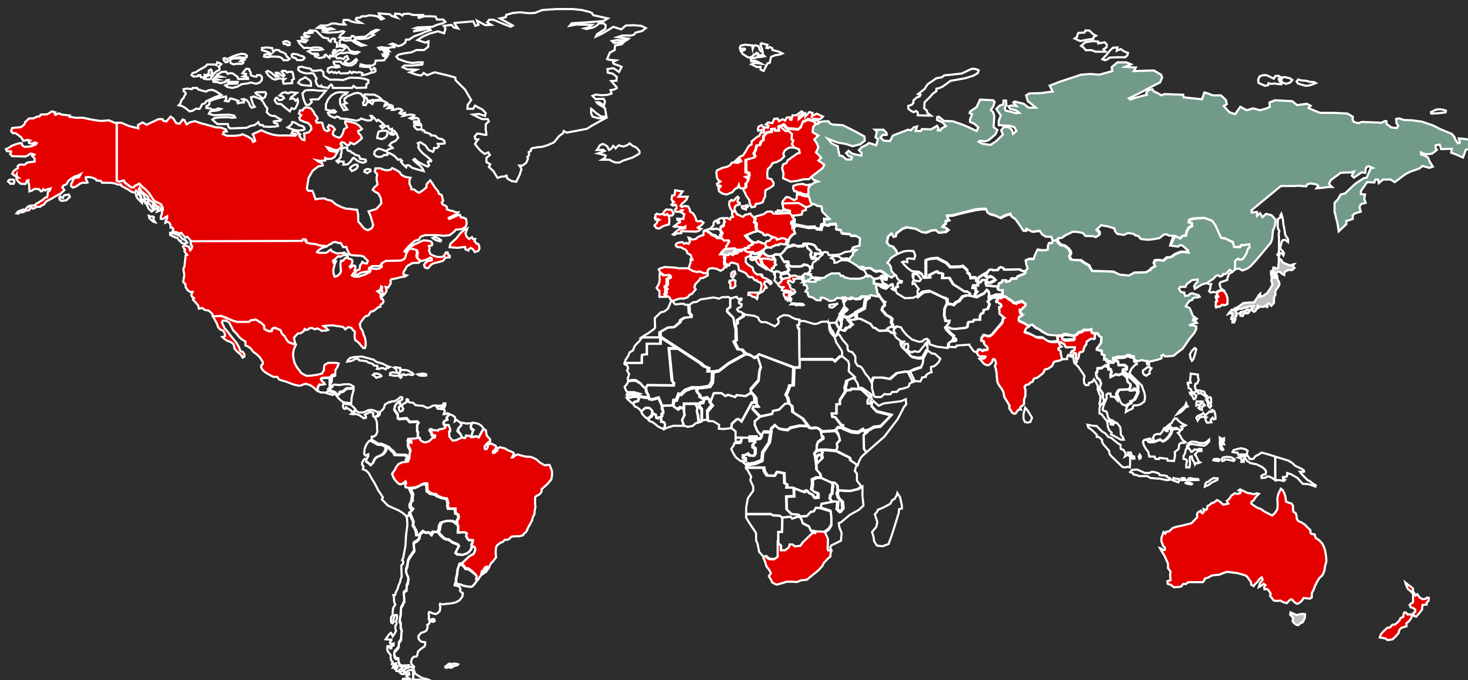
New World Order (cont'd)

4

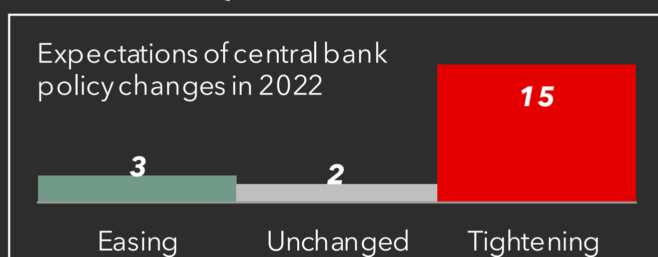
Old World Order	New World Order
Extraordinary policy easing	**Rapid policy tightening**
• > $30 trillion globally (during COVID)	• Fiscal austerity and rate hikes
• Fed Funds below neutral (ZIRP, zero rate policy)	• Fed Funds possibly 100-150bps > neutral at peak in 2023 (8-10 hikes in 2022)
• ECB NIRP (negative) rate policy	• Market pricing 2H 2022 ECB tapering and rate hikes
• BOJ QQE & YCC (yield curve control)	• Tradeoffs between YCC and defending Yen
• Quantitative easing	• Quantitative tightening (June implementation)
• Currency wars	• "Reverse" currency wars
• Central bank challenges to stimulate inflation (Fed, ECB, BOJ)	• Central bank challenges to address supply side inflation (food, energy)
• Inflation consistently below 2% targets	• Reducing inflation from 8% to 4% easier than from 4% to 2% (without "hard landing")

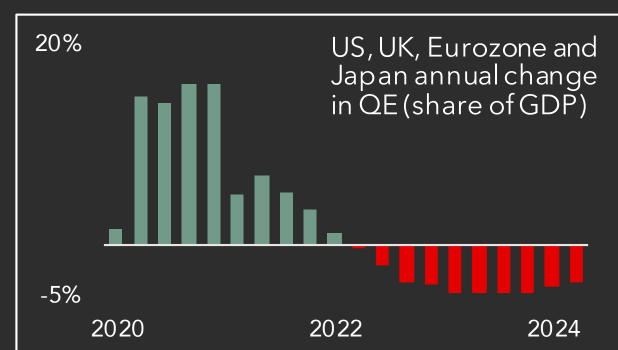
Global Policy Tightening

15 of the 20 most important central banks globally are expected to tighten policy in 2022. China is the only major economy easing policy in 2022.



- Easing
- Unchanged
- Tightening

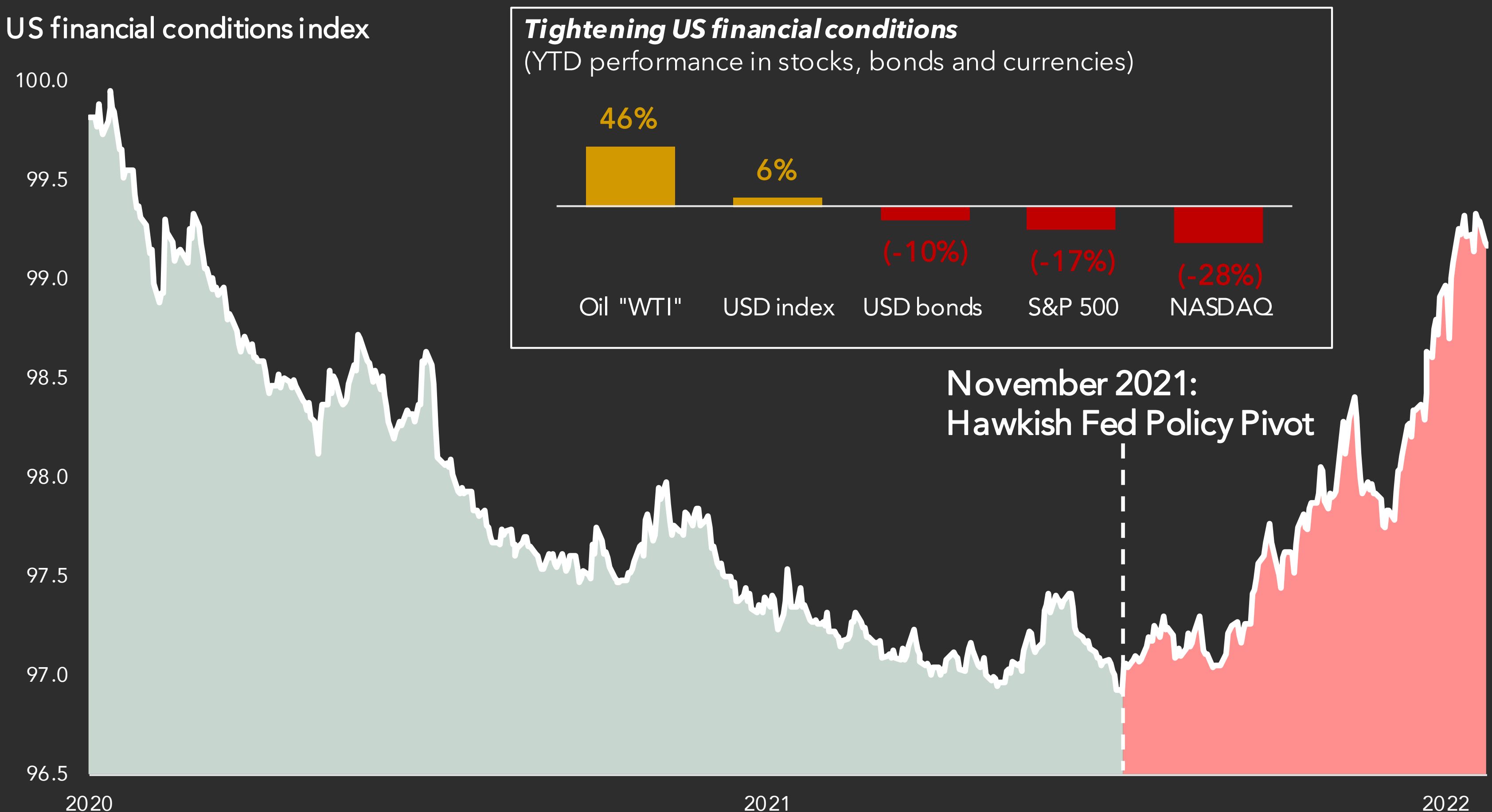




Source: (1-2) Capital Economics, "Tightening Risks Recession but Inaction Would be Worse" (March 2022). (3) Oxford Economics "Global credit standards are on the turn", May 19, 2022, (Slater).

US Financial Conditions Tightening

US financial conditions (as impacted by higher interest rates, wider credit spreads, a stronger US dollar and lower equities) have tightened considerably since the Fed embarked on its hawkish pivot in November - precisely the policy outcome they are hoping to achieve.



Source: (1-2) Bloomberg. Data as of May 25, 2022. Financial conditions index is Goldman Sachs.

History Suggests "Hard Landing" Risk High

Looking back at the 12 Fed tightening cycles in the post-WWII era, the Fed only avoided a "hard landing" on three occasions (mid-1960s, 1983, and 1994). Historically, recessions have been more likely to follow tightening cycles when the total rate increases were larger and when initial and peak inflation were higher. Given the strength of the US economy, it is quite possible that a "hard landing" in this tightening cycle could look more like a "growth recession" (i.e., 0-1% growth) than a technical recession (< 0% growth for 2 Qs).

US rate cycles and recession periods

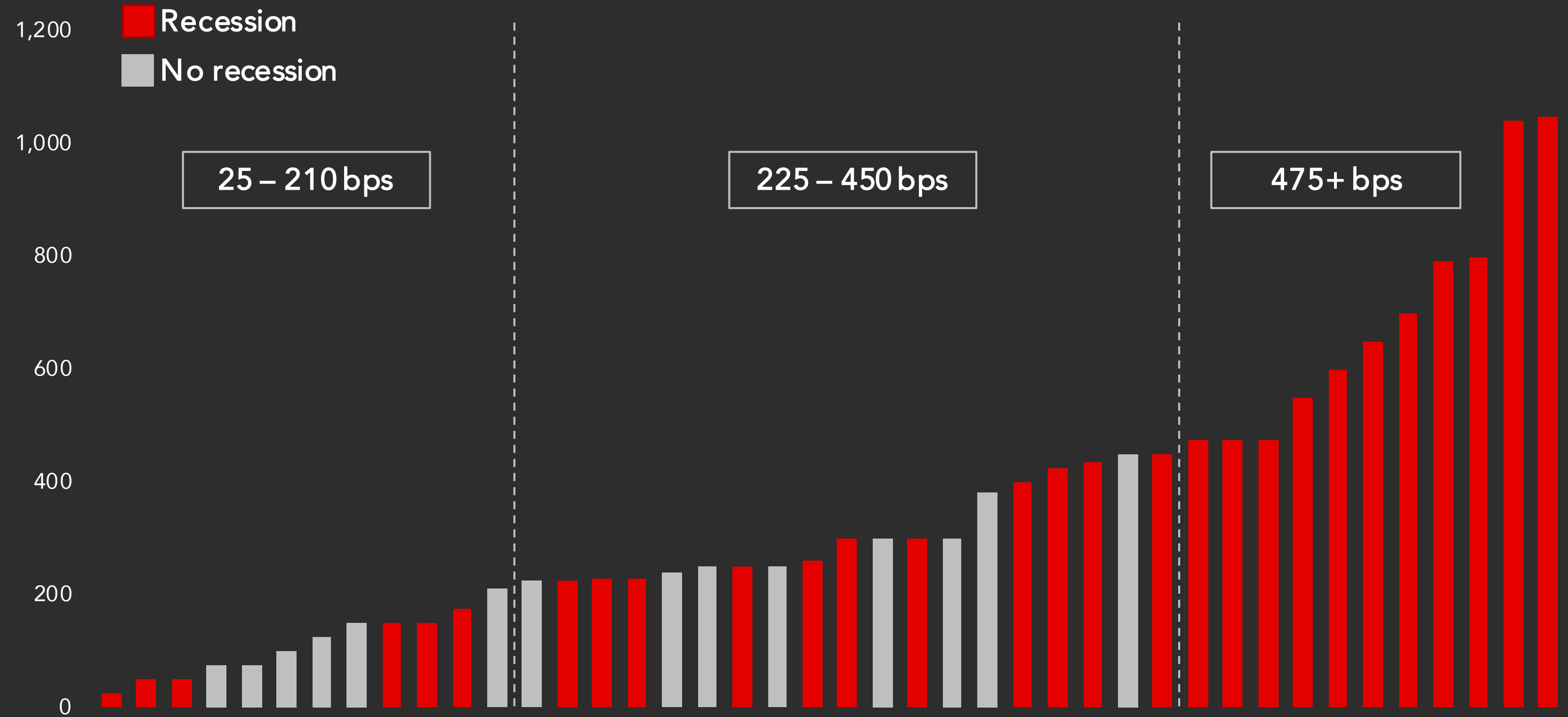
Tightening Cycle	Total bps hiked	Peak inflation rate	Hard or soft landing?
1954 - 1957	227 bps	3.7%	Hard
1958 – 1960	305 bps	3.6%	Hard
1964 – 1966	**210 bps**	**3.8%**	**Soft**
1968 – 1969	500 bps	6.2%	Hard
1972 – 1974	850 bps	12.3%	Hard
1977 – 1980	1,040 bps	14.8%	Hard
1980 – 1981	790 bps	11.0%	Hard
1983 – 1984	**250 bp**	**4.8%**	**Soft**
1988 – 1989	300 bps	5.2%	Hard
1994 – 1995	**300 bps**	**3.0%**	**Soft**
1999 – 2000	175 bps	3.8%	Hard
2004 – 2006	425 bps	4.7%	Hard

Source: (1) Oxford Economics, "What History Tells us About Rate Hikes and Recession Risk" (May 9, 2022). 2017-2018 tightening cycle not included because interrupted by exogenous COVID shock.

The More Tightening, the More Hard Landing Risk

In a study of 42 hiking cycles dating back to the 1950s in the US, UK, Germany / EU, and Japan, Oxford Economics found that larger tightening cycles were more likely to bring about recession than smaller ones. While the current cycle is expected to hike rates by ~250 bps (relatively modest), the additional impact of Quantitative Tightening will make the current cycle more challenging.

Global recessions and soft landings by size of hiking cycle, bps

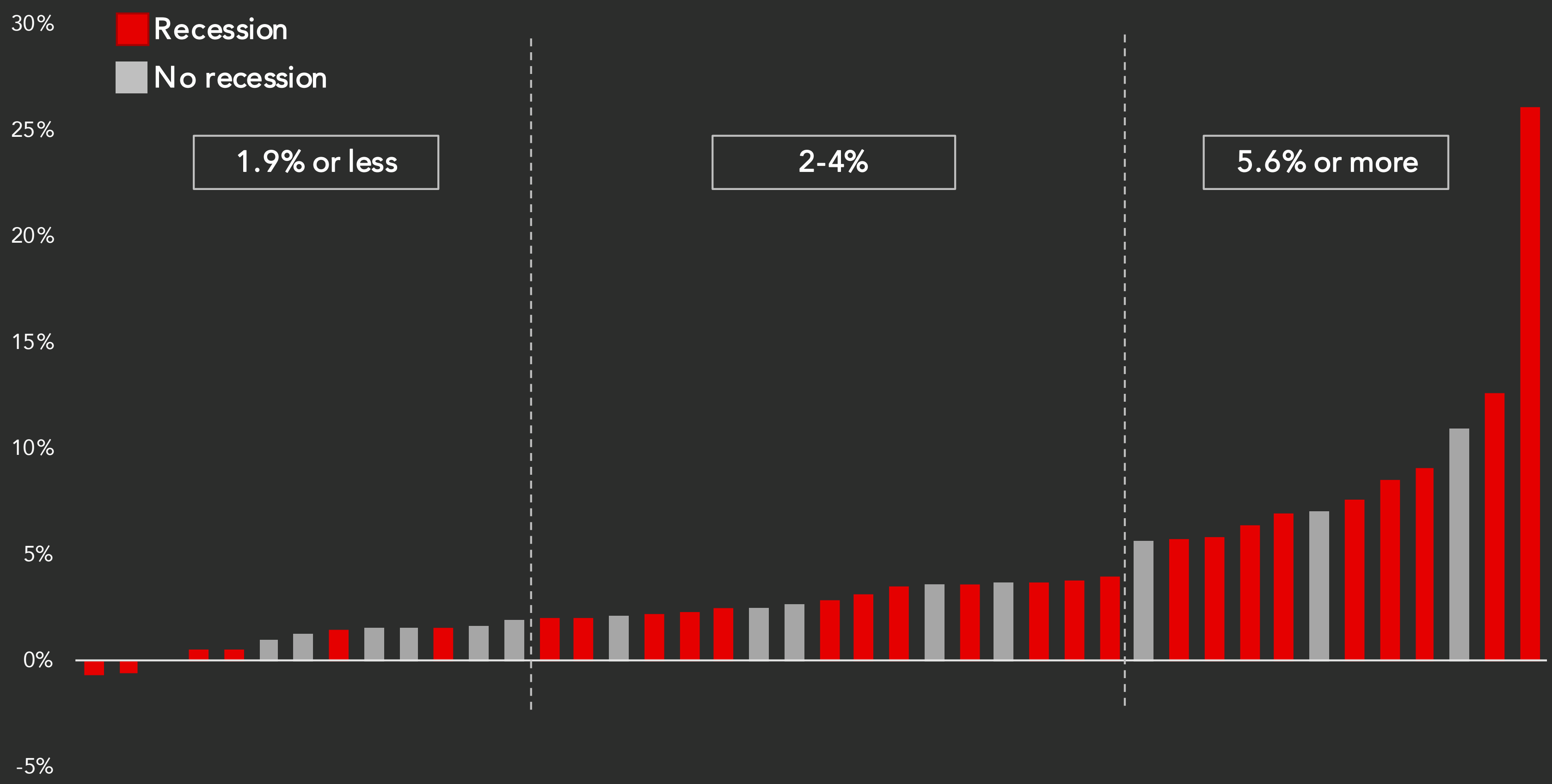


Source: (1) Oxford Economics, "What History Tells us About Rate Hikes and Recession Risk" (May 9, 2022).

The More Inflation, the More Hard Landing Risk

In the same study of 42 hiking cycles, Oxford Economics found that higher levels of inflation at the start of a tightening cycle also correspond with higher probability of recession. When initial inflation rates were below 2%, over half of cycles avoided recession while in cycles with initial inflation over 5.6% only 3 of 12 cycles ended without recession.

Global recessions and soft landings by peak inflation rate



Source: (1) Oxford Economics, "What History Tells us About Rate Hikes and Recession Risk" (May 9, 2022).

Summary Observations on Fed Policy Tightening

The Fed's demand side toolkit is well equipped to reduce inflation from 8% to 4%, but likely less able to reduce inflation from 4% to 2% given the supply side sources of much inflation (food, energy, shelter)

1 The Fed's 50 bps May rate hike was the first in 22 years (with several more expected).

2 The Fed is targeting neutral by year end (2.5% area) but may need to tighten 100-150bps above neutral in 2023 to "normalize" real rates.

3 Current Fed tightening cycle more front-loaded than prior cycles historically

4 Liquidity will be a QT concern, as the Fed today owns 25% of a $23 trillion UST market (which has grown 5 fold since 2007).

5 The Fed has never begun a tightening cycle after the yield curve inverted.

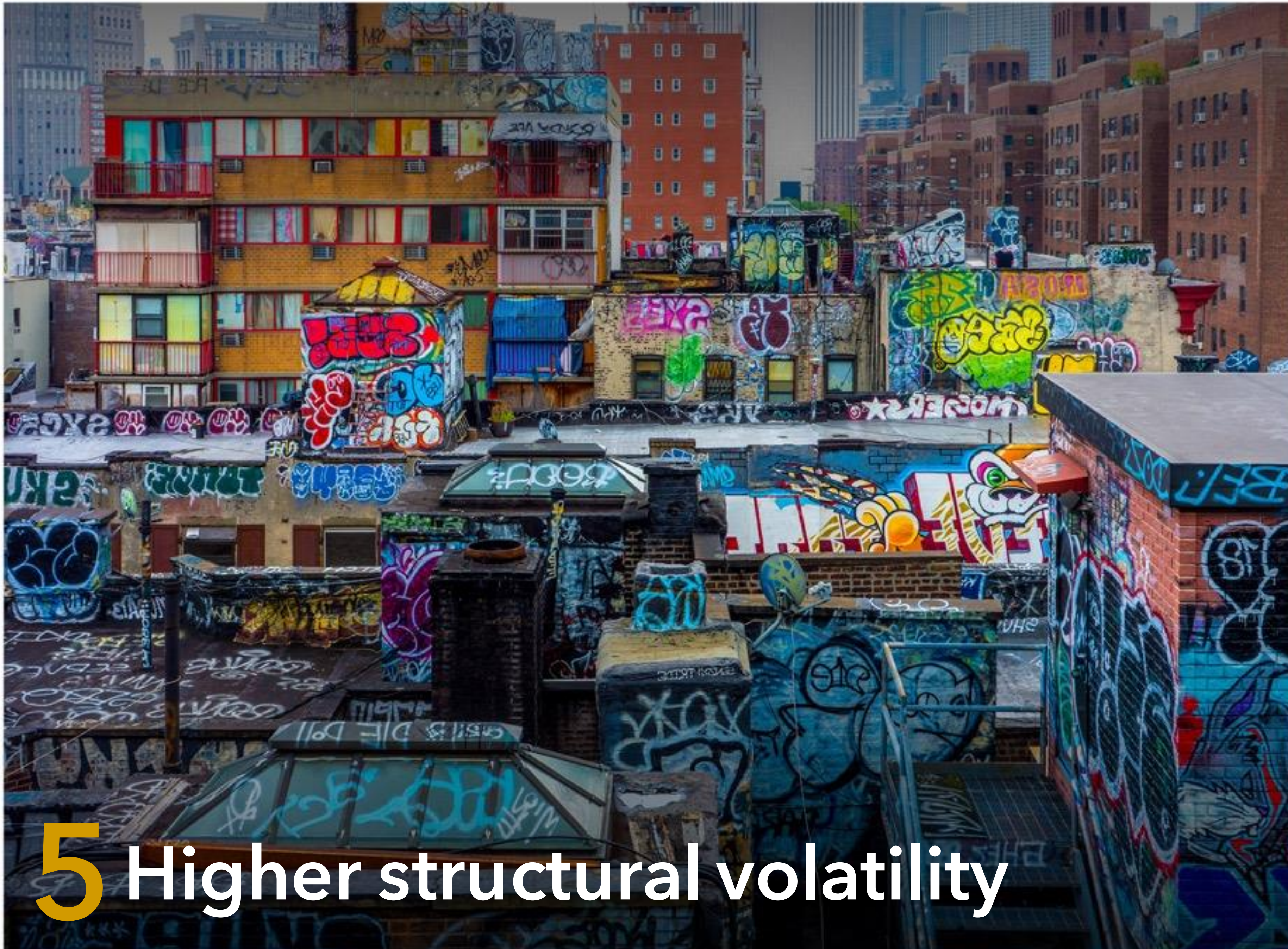
6 The Fed has never begun a tightening cycle after so large a correction in equity markets.

7 The Fed has never begun a tightening cycle with policy rates near 0%, inflation above 8% and a systemically significant geopolitical event.

8 The US and global economy have not faced a supply side shock of this magnitude since 1973.

9 The Fed's demand side tools are not well equipped to address Ukraine's food and energy related inflation, or China's COVID lockdown supply chain dislocations.

10 Today's US economy is more "financialized" than ever before. 9 of the 12 Fed tightening cycles since WW2 have resulted in "hard landings."



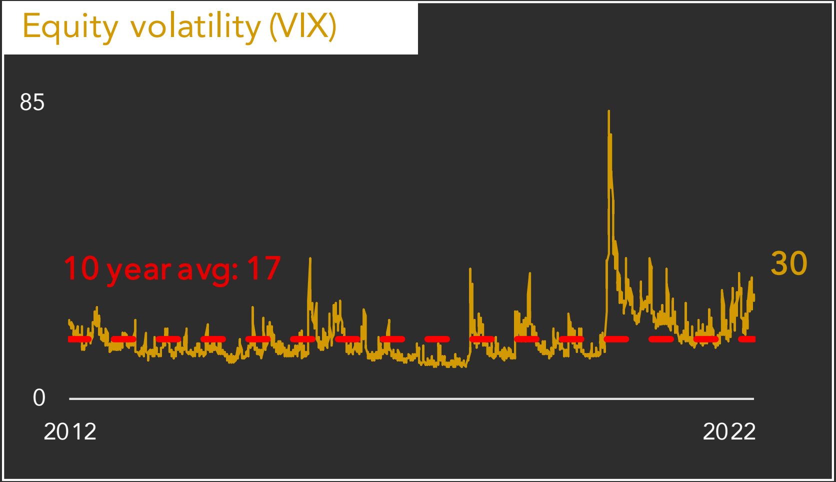
5 Higher structural volatility

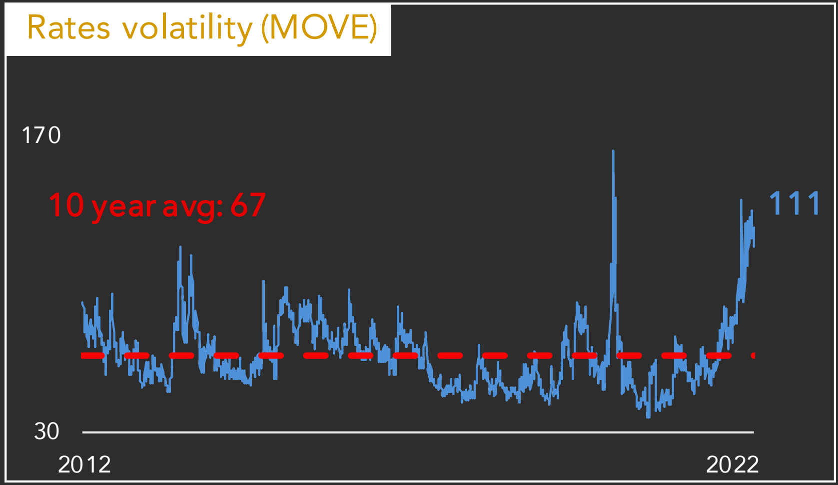
New World Order (cont'd)

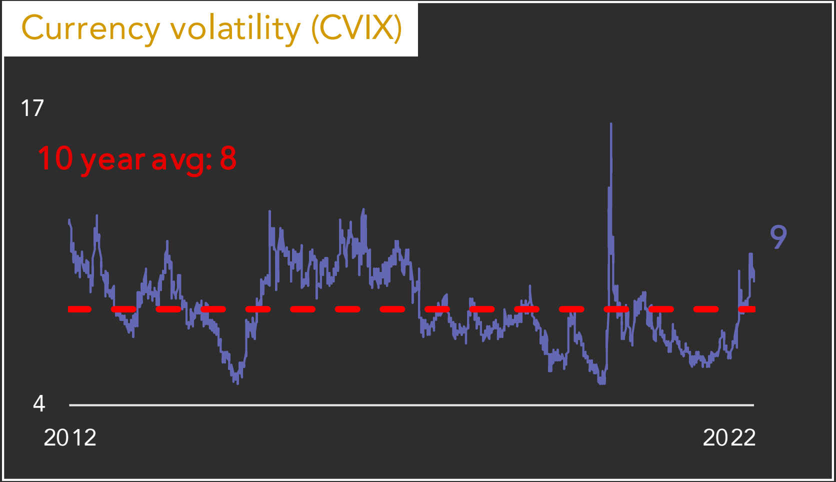
	Old World Order	New World Order
5	**Volatility suppression**	**Higher structural volatility**
	• More correlated markets	• Less predictable & uncorrelated risk
	• More correlated global business cycles	• Less synchronized global business cycles
	• Lower DM government debt burdens	• Higher DM government debt burdens
	• Larger central bank policy toolkits	• Smaller central bank policy toolkits
	• More symbiotic US-China relationship	• More US-China structural rivalry

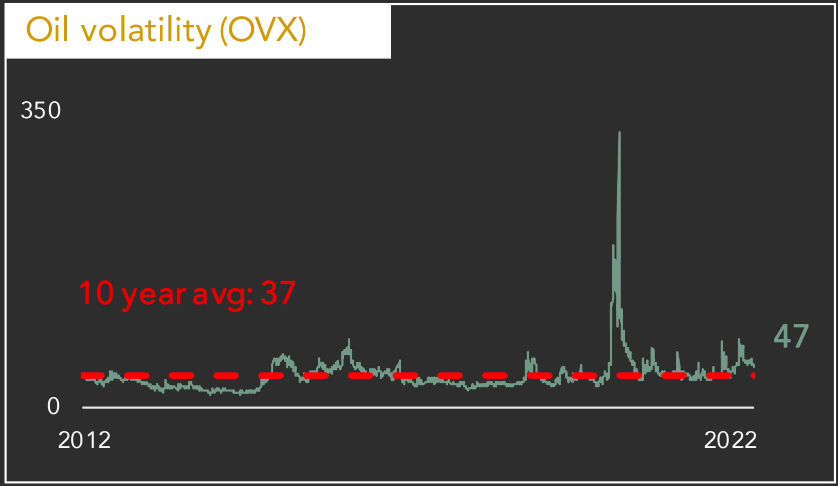
Higher Structural Volatility

COVID's long shadow, rising inflation, policy tightening and the Ukraine crisis have driven higher volatility in global markets







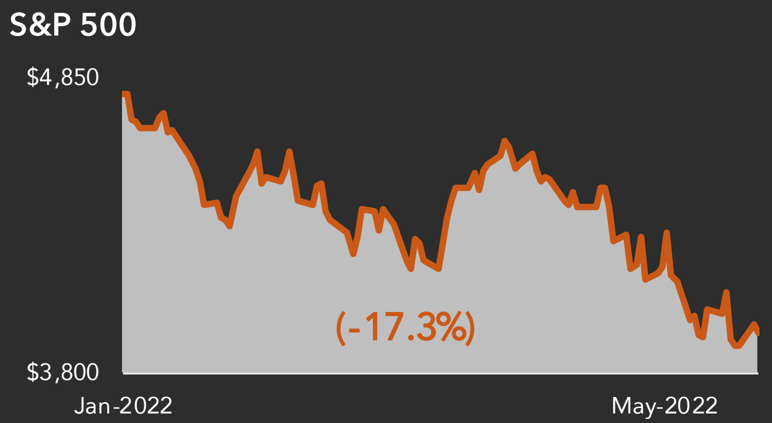


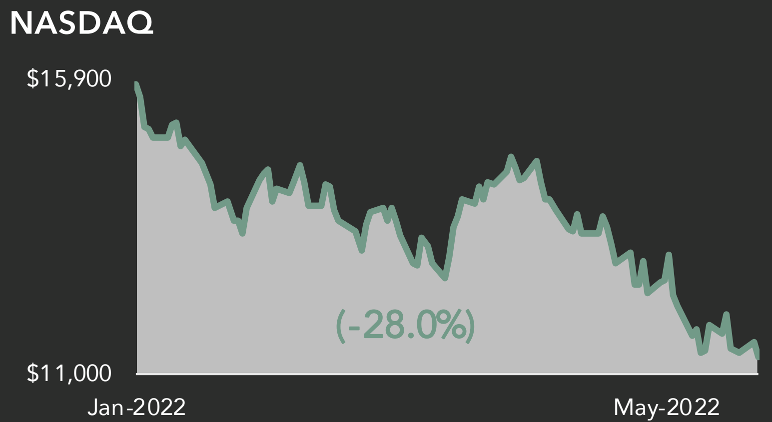
Source: (1-4) Bloomberg. Data as of May 25, 2022.

Worst Start for Equities Since 1939

The S&P 500 has had its worst start to the year in over 80 years, down (-13.3%) at the end of April as investors are increasingly worried about rising inflation, Fed tightening, China lockdown and the Ukraine crisis

Year	First 4 months % change
1932	(-28.2%)
1939	(-17.3%)
2022	(-13.3%)
1941	(-12.0%)
1942	(-11.9%)
1970	(-11.5%)
2020	(-9.9%)
1973	(-9.4%)
1960	(-9.2%)
1962	(-8.8%)





Source: (1-3) Dow Jones Market Data. Bloomberg. Data as of May 25, 2022.

Worst Bond Market Returns in Decades

Since 1976, there have only been 4 years that the US bond market recorded losses, with 2022 on track to be the worst, down almost 9% YTD. In 1994, when the Federal Reserve raised interest rates six times for a total of 250bps, bonds lost (-2.9%).

US aggregate bond index, total annual return

Year	Total annual return
2022 YTD	(-8.9%)
1994	(-2.9%)
2013	(-2.0%)
2021	(-1.5%)
1999	(-0.8%)
2018	0.0%
2015	0.5%
1978	1.4%
1979	1.9%
2005	2.4%
2016	2.6%
1980	2.7%
1987	2.8%
1977	3.0%
2017	3.5%

Year	Total annual return
1996	3.6%
2003	4.1%
2012	4.2%
2006	4.3%
2004	4.3%
2008	5.2%
2009	5.9%
2014	6.0%
1981	6.2%
2010	6.5%
2007	7.0%
1992	7.4%
2020	7.5%
2011	7.8%
1988	7.9%

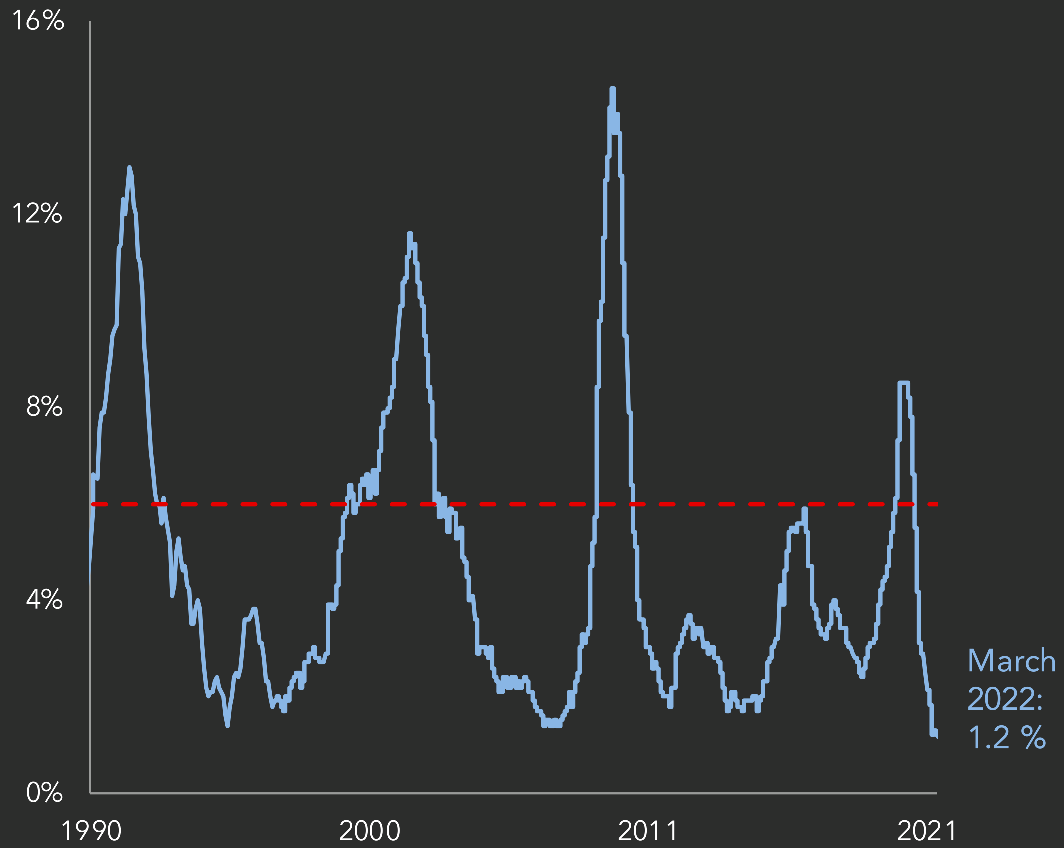
Year	Total annual return
1983	8.4%
2001	8.4%
1998	8.7%
2019	8.7%
1990	9.0%
1997	9.7%
1993	9.7%
2002	10.3%
2000	11.6%
1989	14.5%
1984	15.1%
1986	15.3%
1991	16.0%
1995	18.5%
1985	22.1%
1982	32.6%

Source: (1) WSJ, "It's the Worst Bond Market Since 1842. That's Good News" (May 6, 2022). Bloomberg. Data as of May 25, 2022. Bloomberg US aggregate bond index.

Resilient USD Bond Markets

Much of the YTD negative returns in bond markets have come from a doubling in US Treasury rates. Despite higher volatility and rising recession risk, we are not expecting another turn in the USD credit default cycle in 2022-23 as fundamentals remain strong.

US corporate speculative grade trailing 12 month default rate



Strong fundamentals

- Recent default cycle (2020)
- High cash balances
- Significant pre-funding
- Resilient US economy
- Earnings > expectations
- High energy prices

Source: (1) Moody's "Default Trends Global – March 2022 Default Report" (April 18, 2022).

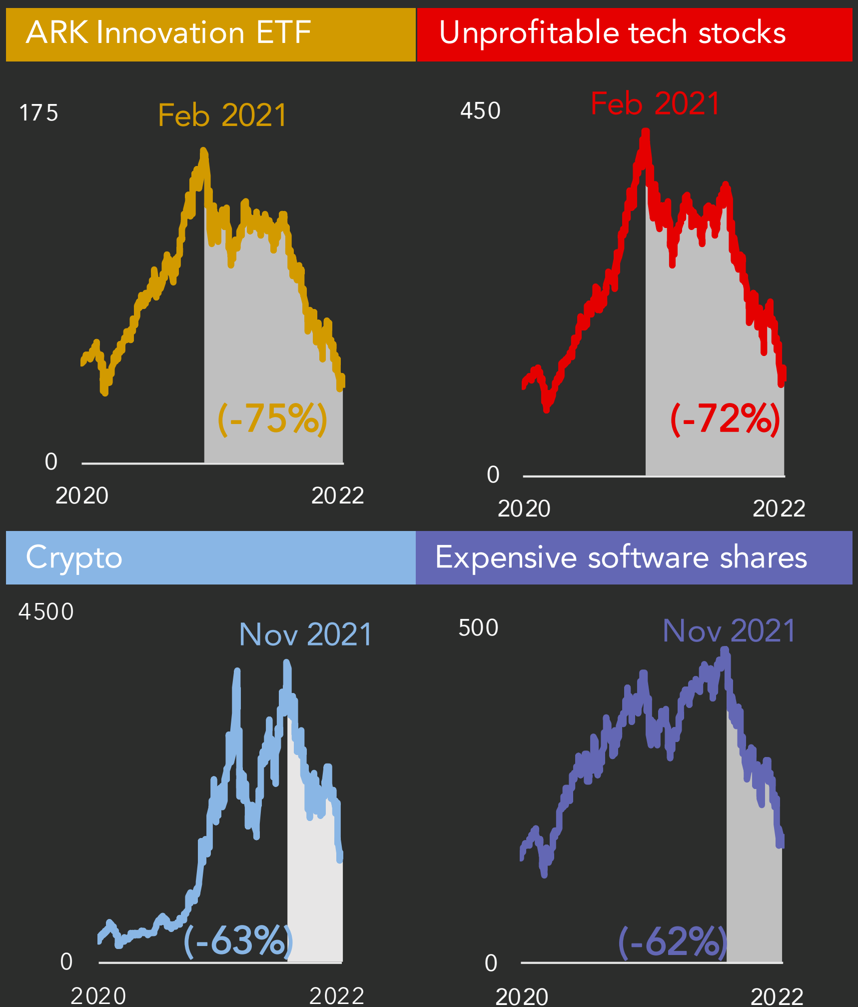
6 Stagflation Markets

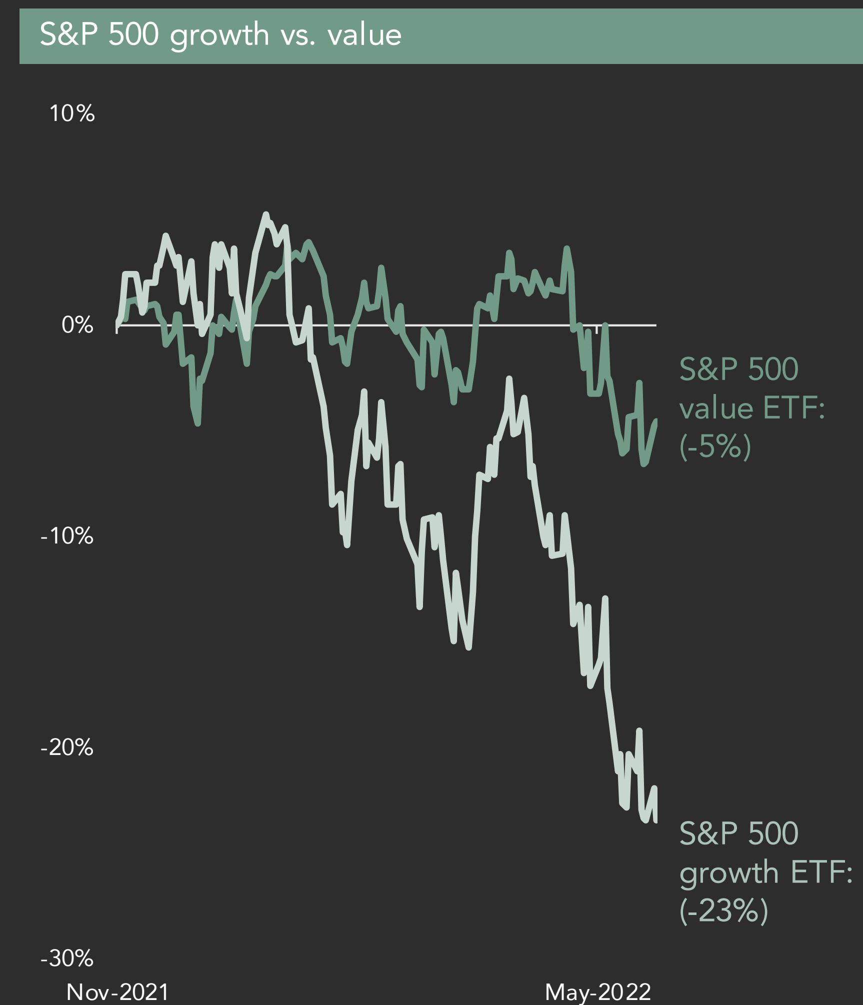
New World Order (cont'd)

6	Old World Order	New World Order
	Liquidity driven markets (Post GFC, COVID Crisis)	**Stagflation markets (Post COVID, Ukraine Crisis)**
	• Technology shares	• Value stocks
	• Durable goods	• Services & experiences
	• Reliable safe havens (yen, gold)	• Evolving safe havens (energy sector)
	• Energy as underperformer	• Energy sector outperformance
	• Bond bull market	• Bond bear market
	• Synchronized EM (rise of China, BRICS)	• More differentiated EM (across China, Russia, commodities)
	• High growth buyback stocks	• High FCF dividend stocks

Rotation from High Tech Growth to Value

Structurally higher rates and slower growth post COVID – Ukraine has had a meaningful impact on the value of longer duration assets such as technology



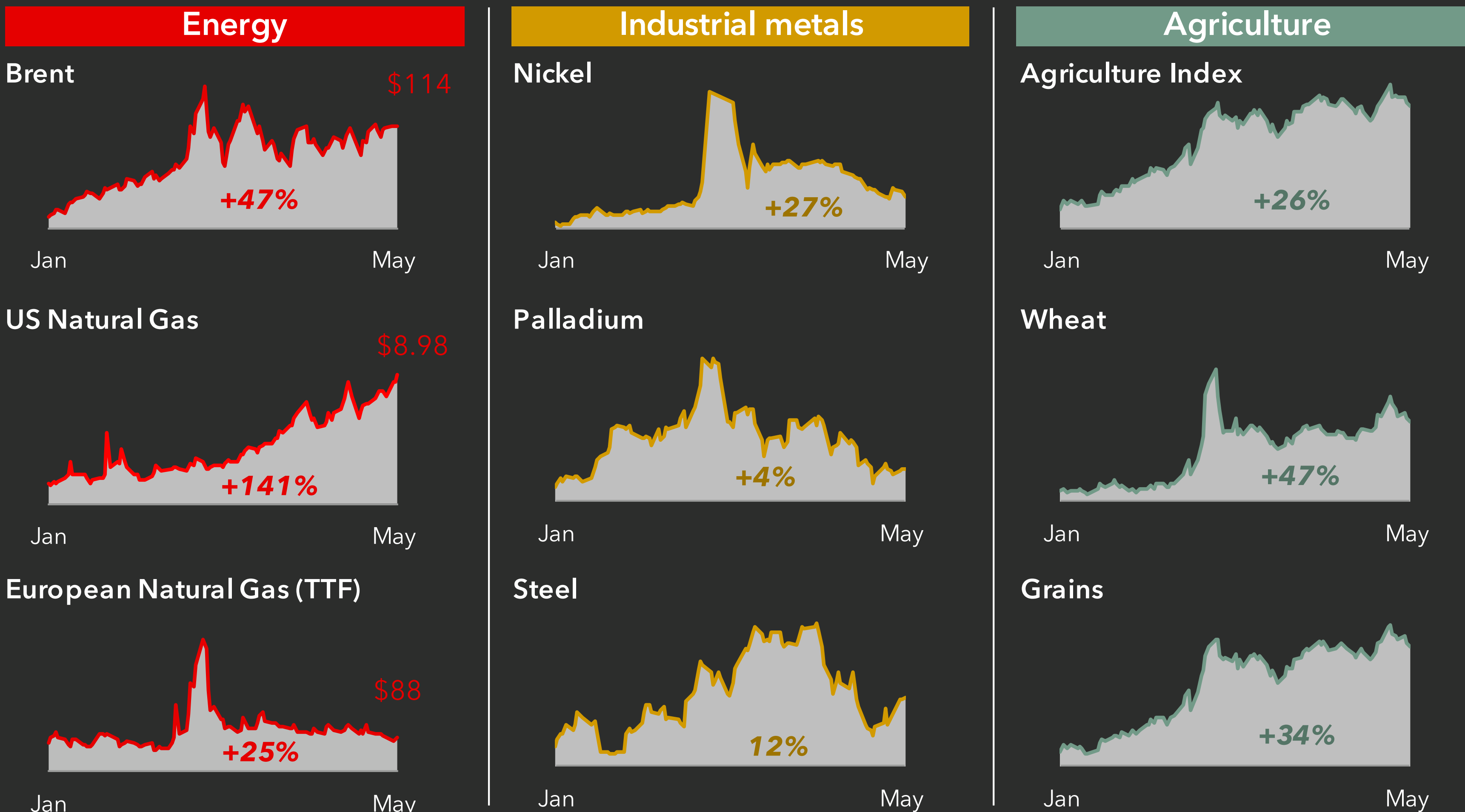


Source: (1-5) Bloomberg. Data as of May 25, 2022. Unprofitable tech stocks and expensive software shares are Goldman Sachs indices.

Commodities Outperform in Stagflation Environments

Commodities are among a small group of financial market assets that tend to perform well in stagflation environments, an historical trend exacerbated by the supply side and sanction shocks of Russia – Ukraine

2022 YTD Performance



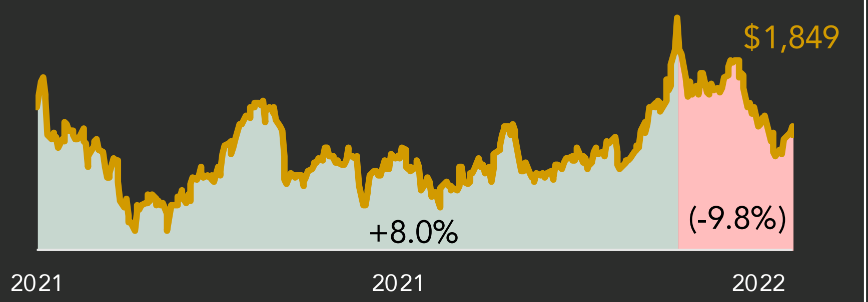
Source: (1-9) Bloomberg. Data as of May 25, 2022.

Evolving "Safe Havens"

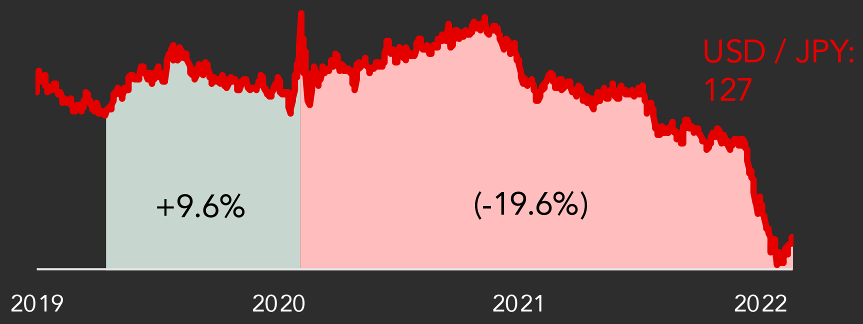
Very few financial markets trade well in stagflation environments. Surprisingly, traditionally reliable safe havens (i.e., gold, Yen) have also under-performed during this Ukraine crisis. By comparison, the energy sector has become a "safe harbor" in global markets, with energy equities strongly outperforming and HY energy bonds trading 60 bps tighter than the broader index.

Traditional "safe havens" performing poorly post-Ukraine

Gold

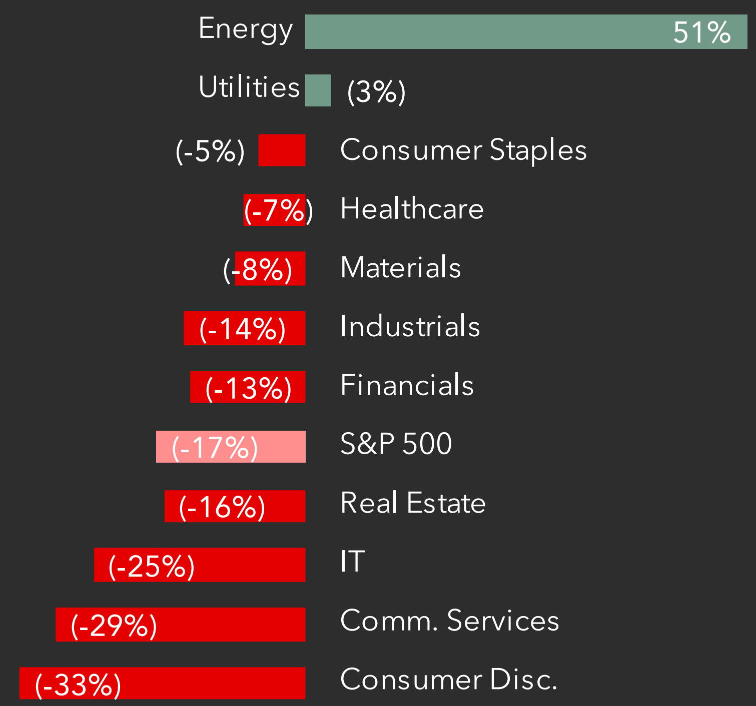


Yen vs. USD



Energy sector emerging as "safe haven" post-Ukraine

YTD S&P 500 performance, by sector

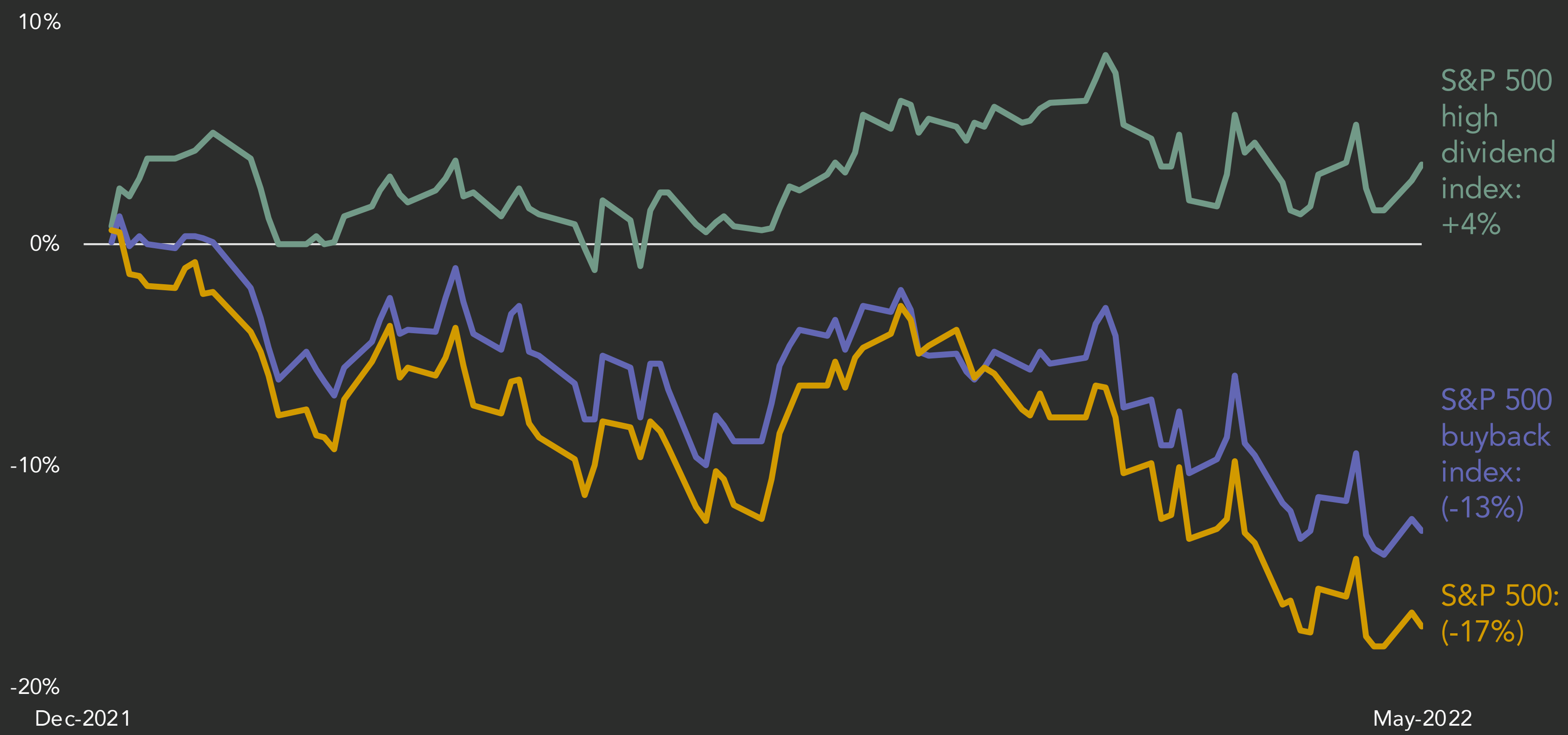


Source: (1-3) Bloomberg. Data as of May 25, 2022. Currency axis inverted to show depreciation.

Dividend Stocks Outperforming Buybacks

S&P 500 companies paid $138 billion of dividends in Q1, 2022, a new record. With inflation and interest rates rising, investors value free cash offered by high paying dividend stocks over the future profits of high growth stocks, heavy buyback names and the broader market. In today's "new world order", inflation dilutes the appeal of longer duration high growth assets.

S&P 500 vs. S&P High Dividend Index vs. S&P Buyback Index



Source: (1) Bloomberg. Data as of May 25, 2022.

Nominal GDP Growth Outpacing Financial Assets

For most of the post GFC era, financial asset appreciation well exceeded the pace of global GDP growth. Due largely to the Ukraine crisis and Fed policy pivot, nominal GDP growth in 2022 has exceeded returns in most global financial markets YTD.

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 33.2%
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 (-3.3%)
)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%	Mortgages (-7.3%)
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%	US Gov't (-7.9%)
EM Sov 0.6%	EM Sov 9.5%	Munis 5.4%	High Grade (-2.2%)	Loans 8.7%	Munis 5.3%	Munis 1.8%	Munis (-9.3%)
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%)	High Yield (-10.6%)
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%)	High Grade (-12.5%)
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%)	S&P 500 (-16.8%)
Commodities (-24.7%)	Munis 0.4%	Commodities 0.7%	Commodities (-13.0%)	Commodities 5.4%	Commodities (-3.5%)	EM Sov (-2.6%)	EM Sov (-17.6%)

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 May 25, 2022.

7 “Reverse” currency wars

New World Order (cont'd)

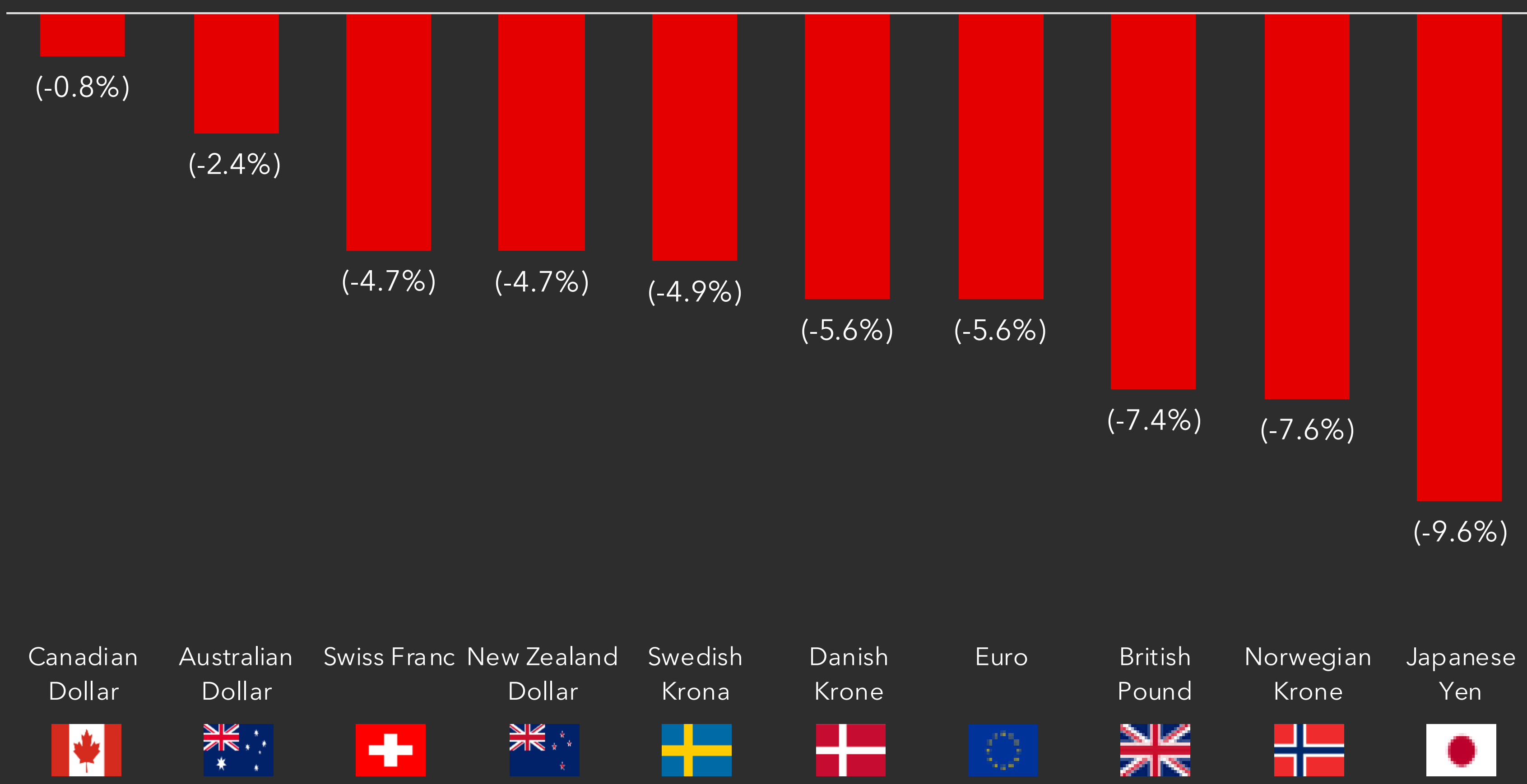
7

Old World Order	New World Order
Currency wars	**"Reverse" currency wars**
• Decade of quantitative easing (QE)	• Pivot to quantitative tightening (QT)
• "Race to the bottom"	• Fed "opening door" to global central bank tightening
• Depreciating currencies to stimulate growth	• Strengthening currencies to combat inflation
• USD based global financial system	• Early stages of multi-currency settlement regime
• Peak EM surpluses reinvested in USTs	• Increased CB demand for "gold" and non-US currencies

G10 Currencies During the Ukraine Crisis

Though traditionally a reliable safe haven in global markets, Yen has been the worst performing G10 currency since the Ukraine invasion began on February 24.

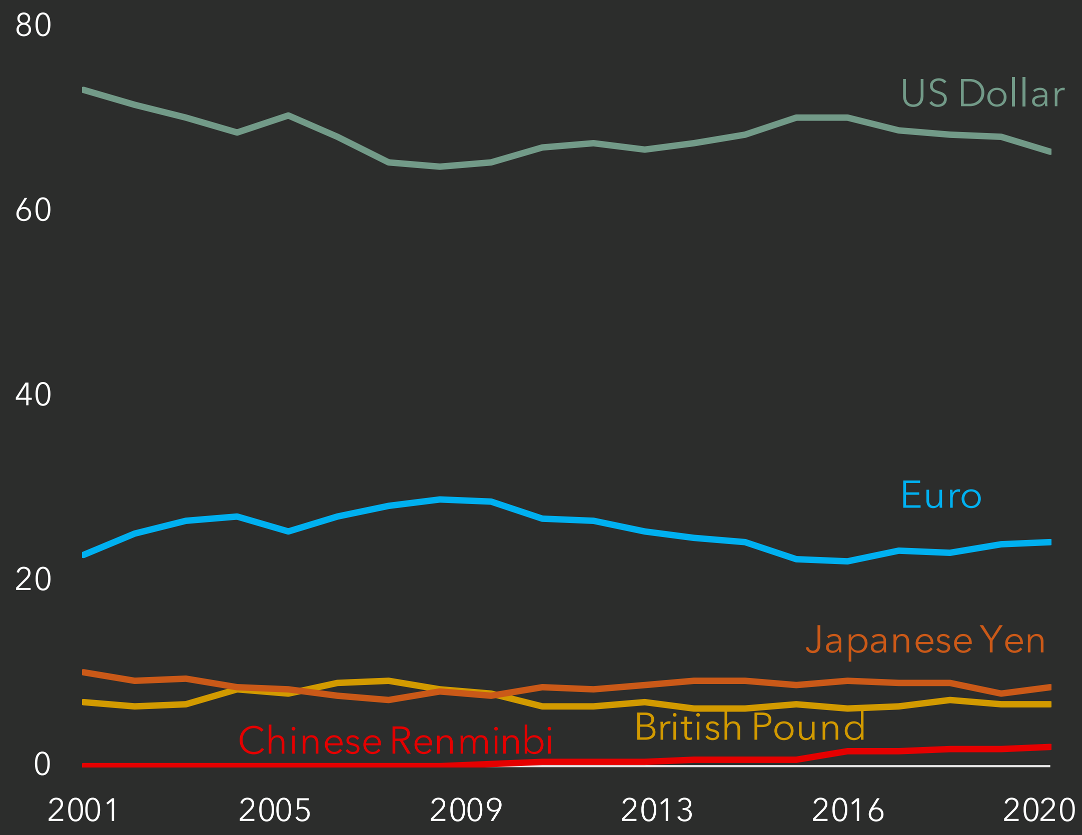
G10 currencies vs US Dollar Since February 24, 2022



Source: (1) Bloomberg. Data as of May 25, 2022. Performance is vs. USD. CNYUSD graphed to show appreciation.

The Dollar Dominated Global Financial System

Index of international currency usage



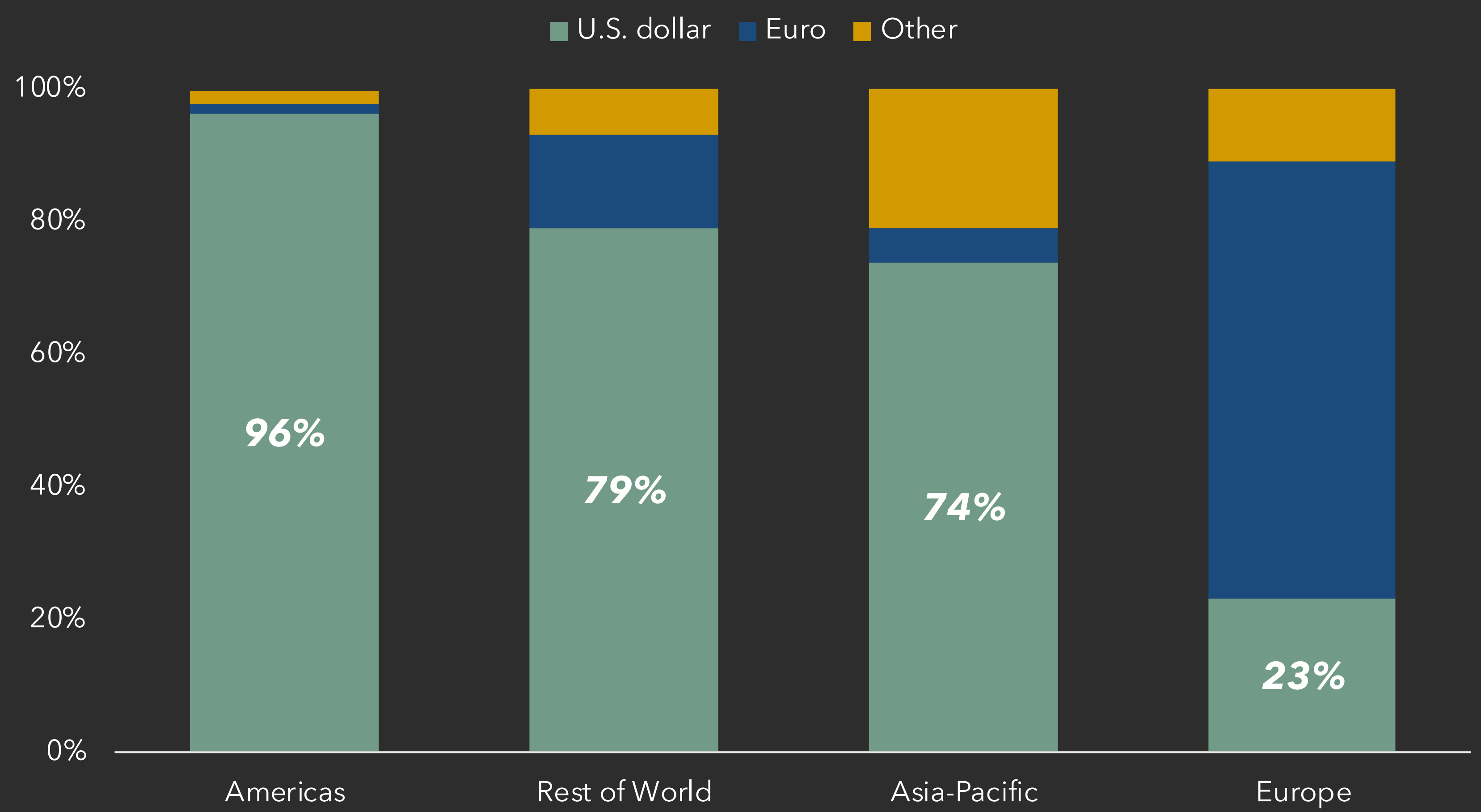
5 measures of currency usage

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%).

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.

FX Forecast Table

Despite the unexpectedly strong US Dollar gains YTD, MUFG FX Strategist Derek Halpenny believes that USD appreciation still has legs given Fed and financial condition tightening, with USD moderation and weakening expected in the latter part of the year.

Currency pair	Spot (5/25)	Q2 2022	Q3 2022	Q4 2022	Q1 2023
EUR / USD	1.07	1.04	1.08	1.12	1.12
GBP / USD	1.25	1.23	1.26	1.30	1.32
USD / JPY	127	127	125	124	123
USD / CNY	6.69	6.60	6.65	6.70	6.65
AUD / USD	0.71	0.71	0.72	0.74	0.75
NZD / USD	0.65	0.64	0.66	0.68	0.69
USD / CAD	1.28	1.29	1.26	1.24	1.22
USD / NOK	9.63	9.42	8.98	8.57	8.53
USD / SEK	9.89	10.00	9.58	9.20	9.15
USD / CHF	0.96	0.97	0.95	0.94	0.94
USD / RUB	59.87	73.67	77.22	80.65	85.39
USD / MXN	19.85	20.50	20.65	20.80	21.00
USD / BRL	4.85	5.00	5.35	5.60	5.58

Source: (1) MUFG Foreign Exchange Outlook (May 2022).


8 Bond bear market (maybe!)

New World Order (cont'd)

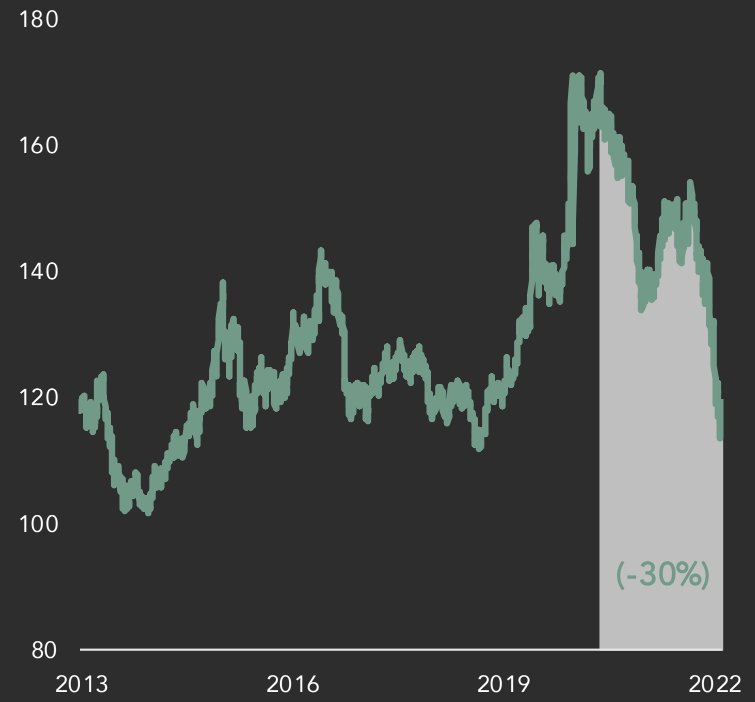
	Old World Order	New World Order
8	**40 year bond bull market (1981-2021)**	**Bond bear market (maybe!)**
	• Structurally lower rates	• Slightly higher rates, in broader range
	• Multi-decade low growth & inflation	• COVID and CONFLICT inflation
	• Extraordinary policy easing & QE	• Accelerated policy tightening & QT
	• Easy FCI, P/E multiple expansion	• Tighter FCI, lower P/E multiples
	• Price appreciation for liquidity driven markets	• Liquidity driven markets exposed
	• Extraordinary technical demand for USTs	• Less liquidity & demand in UST market (Fed QT, smaller EM / China surpluses, post Ukraine)

Beginning of Bear Market for Bonds?

The 40 year US bond bull market from 1981 – 2021 may in fact be over, but MUFG's Rate Strategist, George Goncalves, notes that it may be too early to draw such a definitive conclusion. George notes that we will need another one to two quarters to observe whether UST yields continue to trade well outside of their multi-decade trend line, and whether recent inflation pressures continue unanchored. Either way, with growth decelerating, UST yields are more likely to trade sideways in a broader band, than spike sharply higher.

10 year UST yield

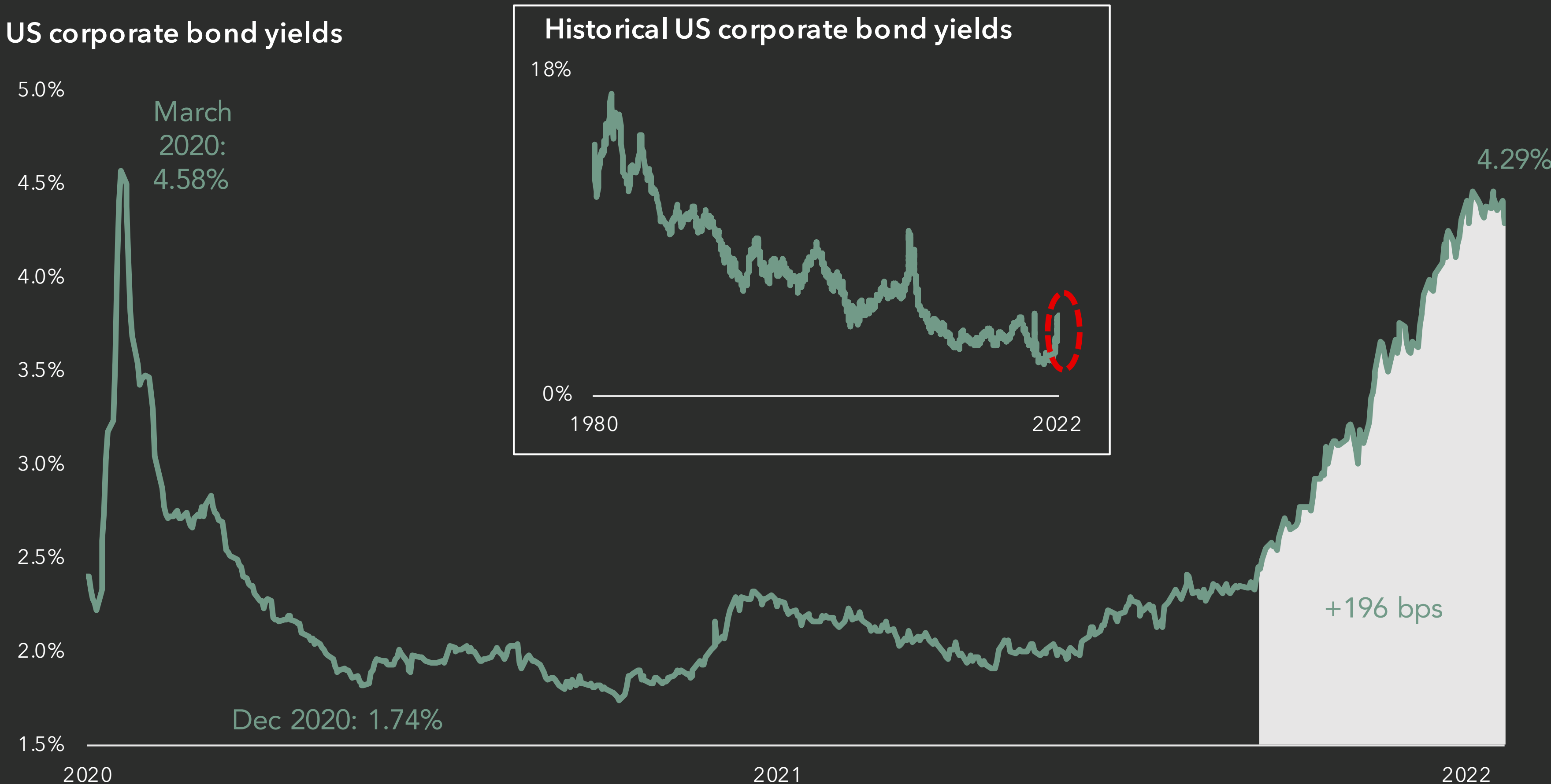
iShares 20+ year treasury bond ETF



Source: (1-2) Bloomberg. Data as of May 25, 2022. NASDAQ.

IG Funding Costs Rising Rapidly in 2022

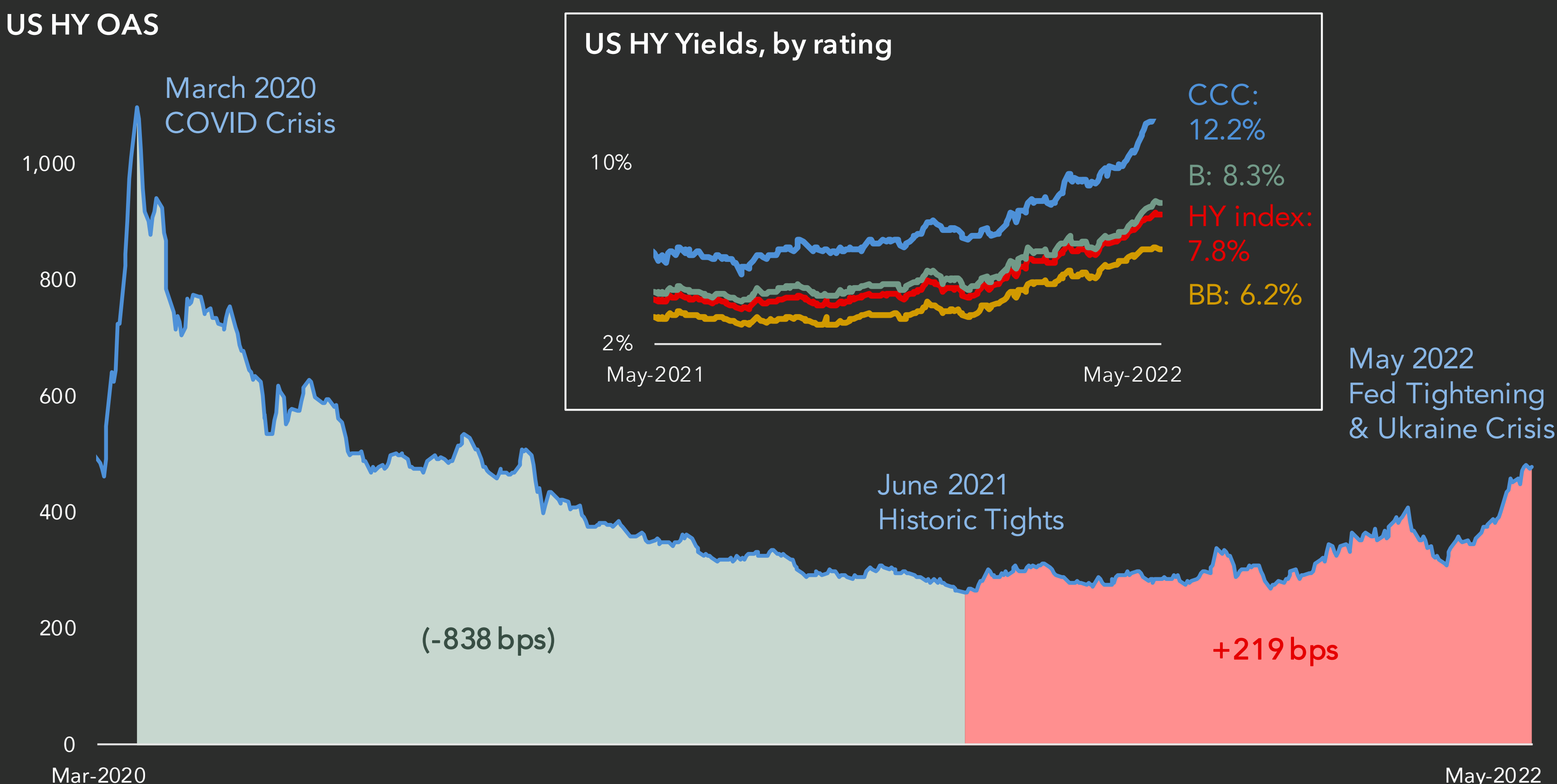
With rising interest rates, volatility induced spread widening and continued solid issuance volumes, financing costs in the IG market have moved rapidly higher and are now approaching the peak pandemic funding levels of March 2020. While the price increase from the historic lows of December 2020 has been significant, from a historical perspective, funding levels still remain low.



Source: (1-2) Bloomberg. Data as of May 25, 2022. Index is Bloomberg Barclay's US Agg Corporate YTW.

HY Spreads Pushed Wider on Volatility

High yield credit spreads have been pushed wider as market volatility moves structurally higher on the withdrawal of decades of Fed support, continued pandemic disruptions, prolonged Ukraine conflict and elevated inflation concerns. A flight to quality on concerns of increased defaults has caused the spread between CCCs and BBs to reach the widest level since November 2020.

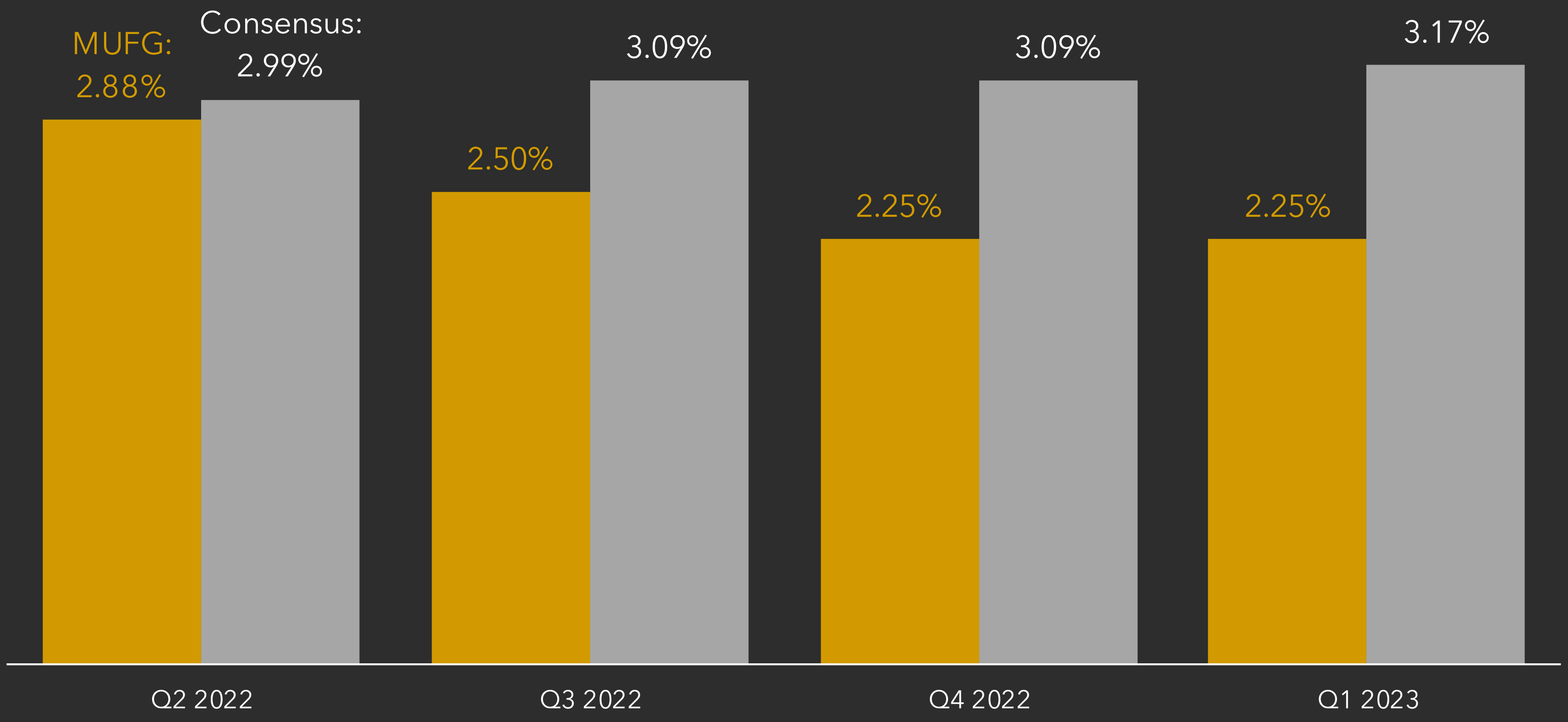


Source: (1-2) Bloomberg. Data as of May 25, 2022. HY OAS is Bloomberg US Corporate High Yield Average OAS.

US Rates Forecast for 2022

MUFG's Head of US Macro Strategy, George Goncalves, believes that 10 year UST yields will decline in 2H 2022 as growth decelerates and financial conditions tighten. While the doubling of UST rates YTD has been formidable, we share George's view that it may be premature to declare the beginning of a new longer-term bear market for bonds.

10 year UST forecasts



Source: (1) MUFG Fixed Income Desk Strategy "2022 Macro2Markets Outlook" (George Goncalves). Consensus data as of May 25, 2022.

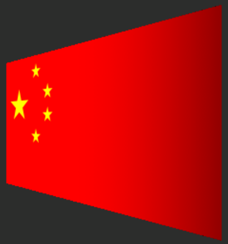
9 US – China structural rivalry

New World Order (cont'd)

	Old World Order	New World Order
9	**Symbiotic US – China relationship**	**US – China structural rivalry**
	• More synergistic US-China policy	• More confrontational US-China policy
	• Rapidly rising trade & FDI	• Rising barriers across trade, tech and finance
	• More focus on China currency peg and manipulation	• More focus on China IP & patent infringement
	• Tensions focused on trade policy (Trump)	• Tensions migrating to technology policy (Biden)
	• More export-based Chinese economy	• More consumption-based Chinese economy
	• Greater China reliance on foreign technology	• More self-sufficient Chinese technology focus
	• Greater tolerance of ideological differences	• "Hardening" divide across socio-political differences
	• Less assertive Chinese foreign policy	• Greater US-China geopolitical competition

New "Economic Iron Curtain"

Over the last 40 years, the US and China built a largely symbiotic, mutually beneficial and complex economic relationship; however, unsustainable imbalances built over time in terms of co-dependencies, deficits and surpluses. The relationship has since transitioned into a more intensely confrontational and competitive one across trade, technology, finance and geopolitics.



United States

1. Consumption dependent growth model (demand driven)
2. Savings rate too low
3. High government debt
4. Reliance on China for low cost capital (UST purchases)
5. Asset based wealth creation (stocks, housing)
6. Dollar dominant global financial system

China

1. Investment-production driven growth model (supply driven)
2. Savings rate too high
3. High local government and corporate debt
4. Reliance on US and European export markets
5. Insufficient social safety net (healthcare, retirement) reduces consumption
6. Managed RMB currency policy

"After 30 years of globalization, we now face the very real prospect that an economic iron curtain may descend."

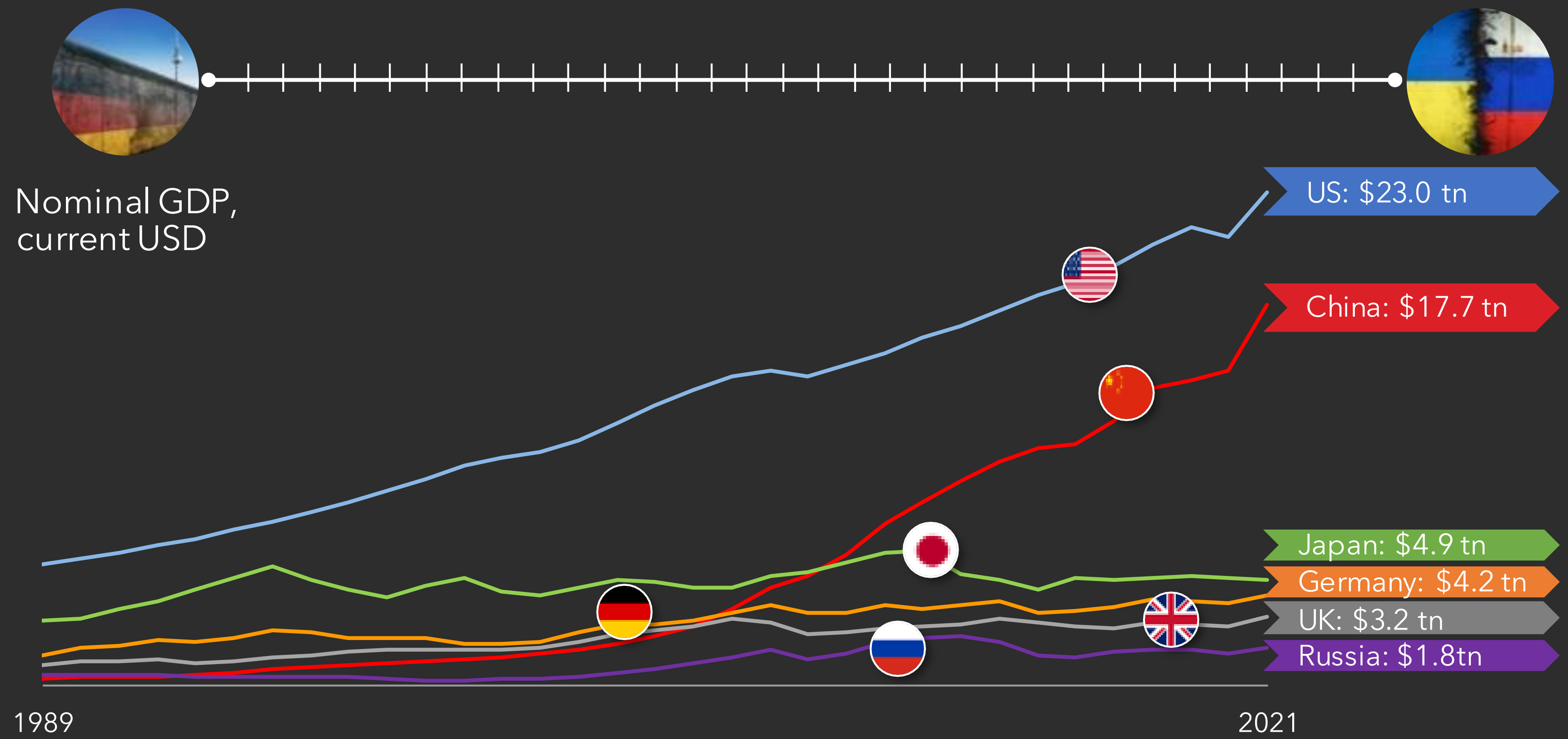
Former US Treasury Secretary, Henry Paulson, in Singapore in November 2018

China Seeking Hegemony, Not Isolation

Given its annual trade of $3.5 trillion with the West, and only $150 billion with Russia, China is unlikely to be very interested in a post Ukraine world order broken up into distinct regional blocs, East & West. Rather, China today is still very focused on preserving an integrated global economy, one in which it replaces the United States as the dominant, hegemonic power.

BERLIN WALL FALLS
November 9, 1989

RUSSIA INVADES UKRAINE
February 24, 2022



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

US – China Structural Rivalry

Selected US – China policy actions

Trade | Financial sector | Tech sector | Geopolitical

Mar 2018	US section 232 tariffs on steel and aluminum
Jul 2018	US Tariffs on $50bn of Chinese imports
Sep 2018	US Tariffs on $200bn of Chinese imports
May 2019	US Tariff rates rise on $200bn of Chinese imports
May 2019	US national security order to ban Huawei
Aug 2019	10% US tariffs on $300bn of Chinese imports
Sep 2019	US tariffs on $112bn of Chinese imports
Feb 2020	US bans government purchases of Huawei gear
May 2020	US Commerce Department tightens export controls
Jun 2020	Uyghur Human Rights Policy Act of 2020 becomes law
Jun 2020	US FCC designates Huawei & ZTE as national security threats
Jul 2020	US issues visa restrictions on Huawei workers
Jul 2020	US Congress enacts Hong Kong Autonomy law
Nov 2020	Executive order prohibiting Americans from investing in 31 tech firms
Nov 2020	US invests $12.7m in rare earth producers
Dec 2020	4 additional Chinese technology companies added to blacklist
Mar 2021	US FCC blacklists 5 Chinese telecom companies
Mar 2021	US sanctions 24 mainland China and Hong Kong officials
Mar 2021	EU, US, UK and Canada sanction China over alleged Xinjian human rights issue

Source: (1) Veda Partners (Treyz). China Briefing "US – China Relations in the Biden Era: A Timeline" (Dezan Shira & Associates).

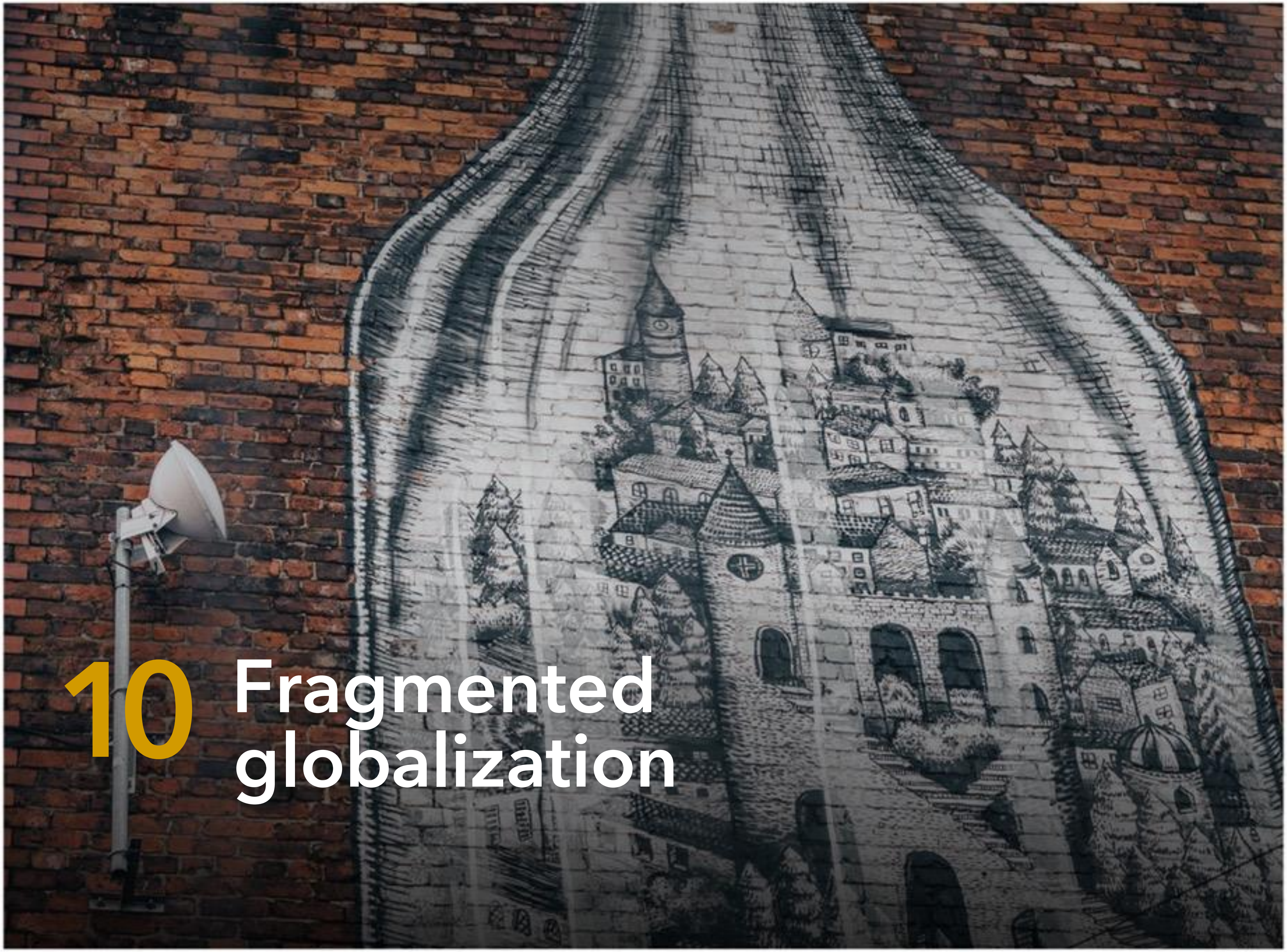
US – China Structural Rivalry

Selected US – China policy actions

Trade | Financial sector | Tech sector | Geopolitical

Apr 2021	US Commerce Department blacklists 7 Chinese supercomputing entities
Apr 2021	US Senate Foreign Relations Committee approves the Strategic Competition Act of 2021
Jun 2021	Executive order barring American investment into firms with ties to defense and surveillance technology sectors
Jun 2021	US Senate passes the Innovation and Competition Act of 2021
Jun 2021	US bans imports of solar panel materials from Xinjiang
Jul 2021	US adds 23 Chinese companies to economic blacklist
Oct 2021	US FCC revokes China Telecom America's services authority
Nov 2021	US blacklists over a dozen Chinese quantum computing companies
Dec 2021	US SEC finalizes rules enabling it to delist Chinese firms
Dec 2021	US diplomats and officials to boycott Beijing Olympics
Dec 2021	US bans all imports from China's Xinjiang
Dec 2021	US Sanctions 4 Chinese officials in Xinjiang
Dec 2021	US OFAC adds China's top AI firm to the US's investment blacklist
Dec 2021	US Treasury Department blacklists 8 Chinese technology firms
Dec 2021	US Commerce Department adds 24 more Chinese entities to its entity list
Dec 2021	US sanctions 5 more Hong Kong-based Chinese officials
Feb 2022	US House of Representatives passes America Competes Act
Feb 2022	US adds 33 Chinese entities to its "unverified list"
Mar 2022	SEC releases list of 5 Chinese companies for possible delisting from US stock markets
Mar 2022	SEC adds Weibo to list of Chinese companies for possible delisting from US stock markets
May 2022	Biden leads "Quad" negotiations (India, Australia, Japan) and launches Indo-Pacific Economic Framework for Prosperity (IPEF) with 12 regional partners

Source: (1) Veda Partners (Treyz). China Briefing "US – China Relations in the Biden Era: A Timeline" (Dezan Shira & Associates).

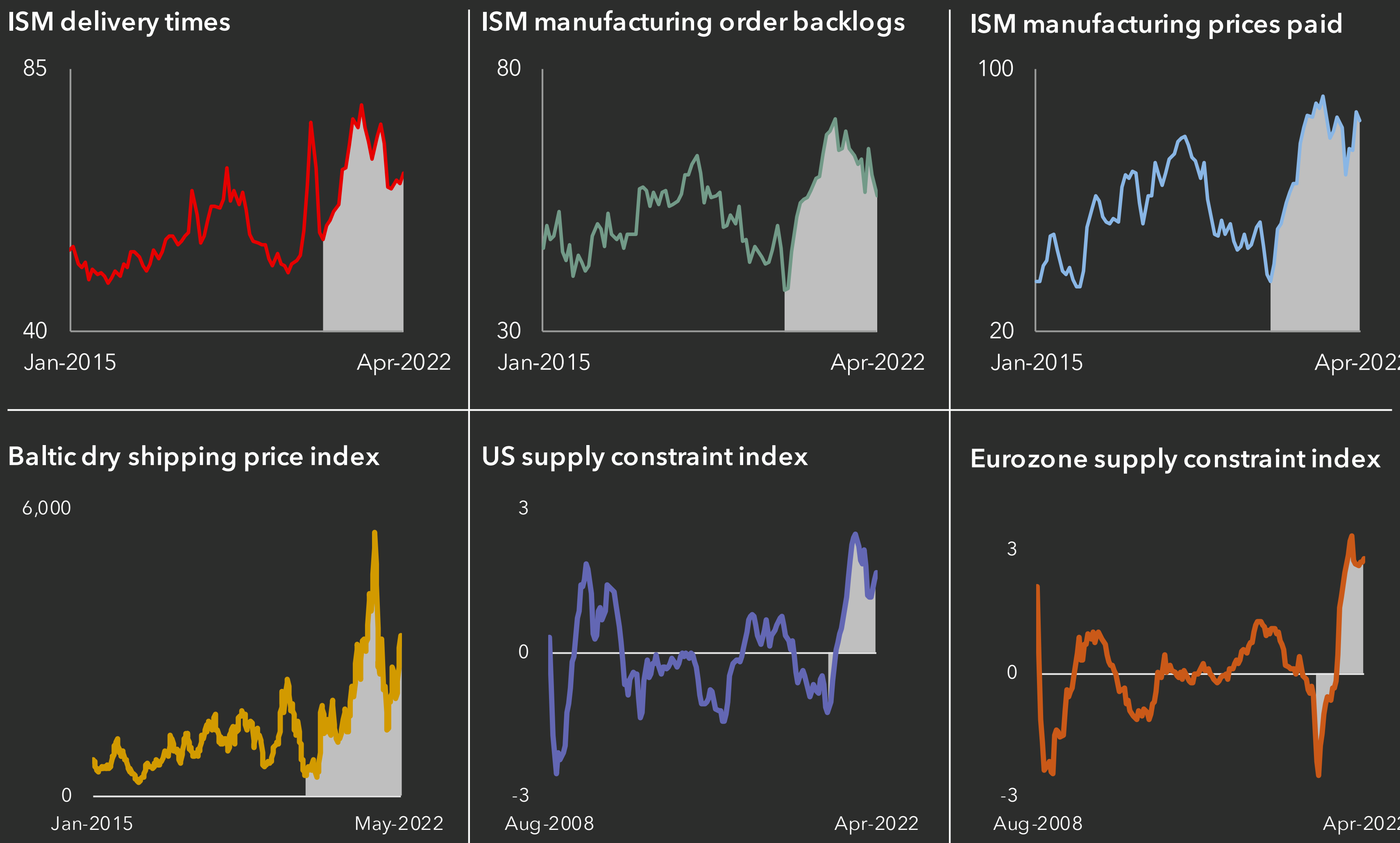


10 Fragmented globalization

New World Order (cont'd)

	Old World Order	New World Order
10	**Expansive globalization**	**Fragmented globalization**
	• Efficient global supply chains	• On-shoring, near-shoring, friend-shoring
	• Offshoring	• Re-shoring; gradual "re-industrialization" of America
	• Priority: speed & cost	• Priority: security and resilience
	• Complex, multi-country, few redundancies	• Inventory building, regionalization, supplier diversification
	• Rapidly rising trade volumes	• Slowing and redirected trade volumes
	• Disinflationary forces	• Inflationary forces

Supply Chain Dislocations Still Elevated

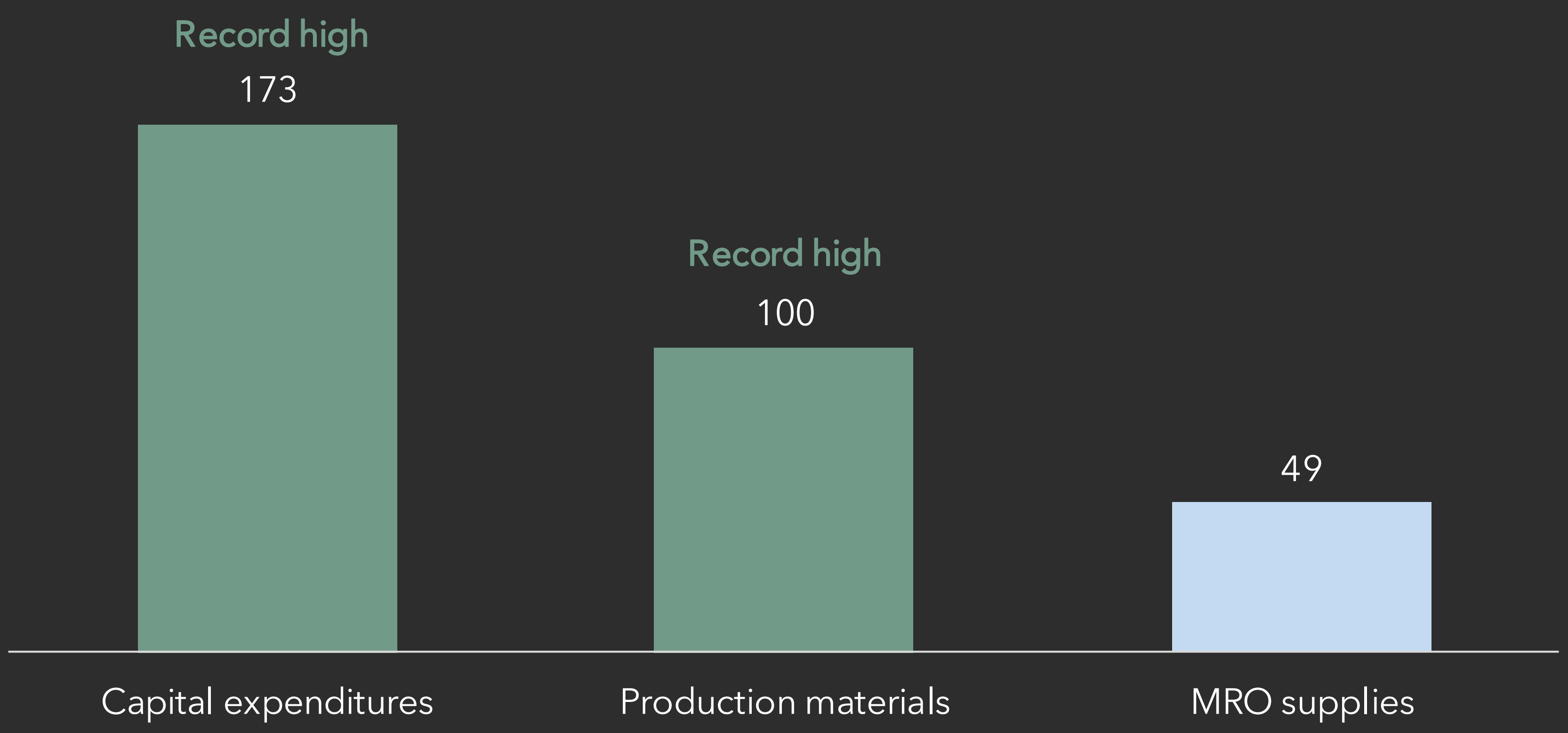


Source: (1-6) Bloomberg. Data as of May 24, 2022.

Supply Chain Dislocations Shifting to Manufacturing

Global supply chain dislocations have shifted once again from transportation to manufacturing. Despite some recent improvement in transportation delays globally, challenges in manufacturing lead times have risen. The lead time for production materials reached a record long 100 days in April while the average commitment time for capital expenditures reached a record long 173 days.

Manufacturing lead times, days

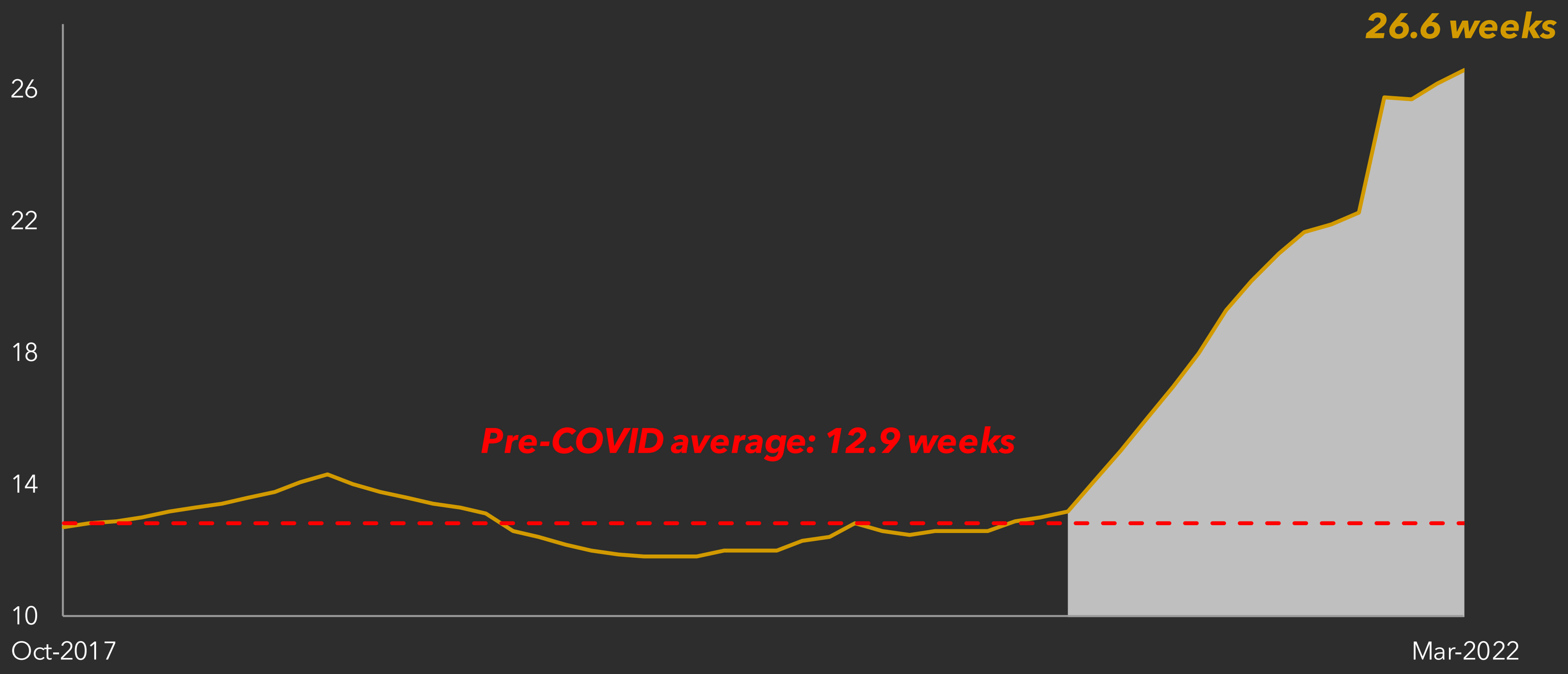


Source: (1) Bloomberg Government, "Storm of Disorder Worsens for US Manufacturers" (May 3, 2022).

Microchip Backlog Continues to Lengthen

Russia-Ukraine represents a supply side shock on top of a supply side shock (COVID) for the global economy. Semiconductors are particularly vulnerable to the conflict due to Ukraine's outsized proportion of noble gas exports (Neon, Krypton, Xenon), which are critical components of the chipmaking process. In particular, Ukraine supplies roughly 70% of the world's neon gas. While South Korea will ramp-up production of neon gas in 2H 2022, other suppliers, such as China, could take up to two years to increase production. The backlog between ordering a chip and delivery is now more than double the pre-COVID average.

Gap between ordering a chip and delivery, weeks

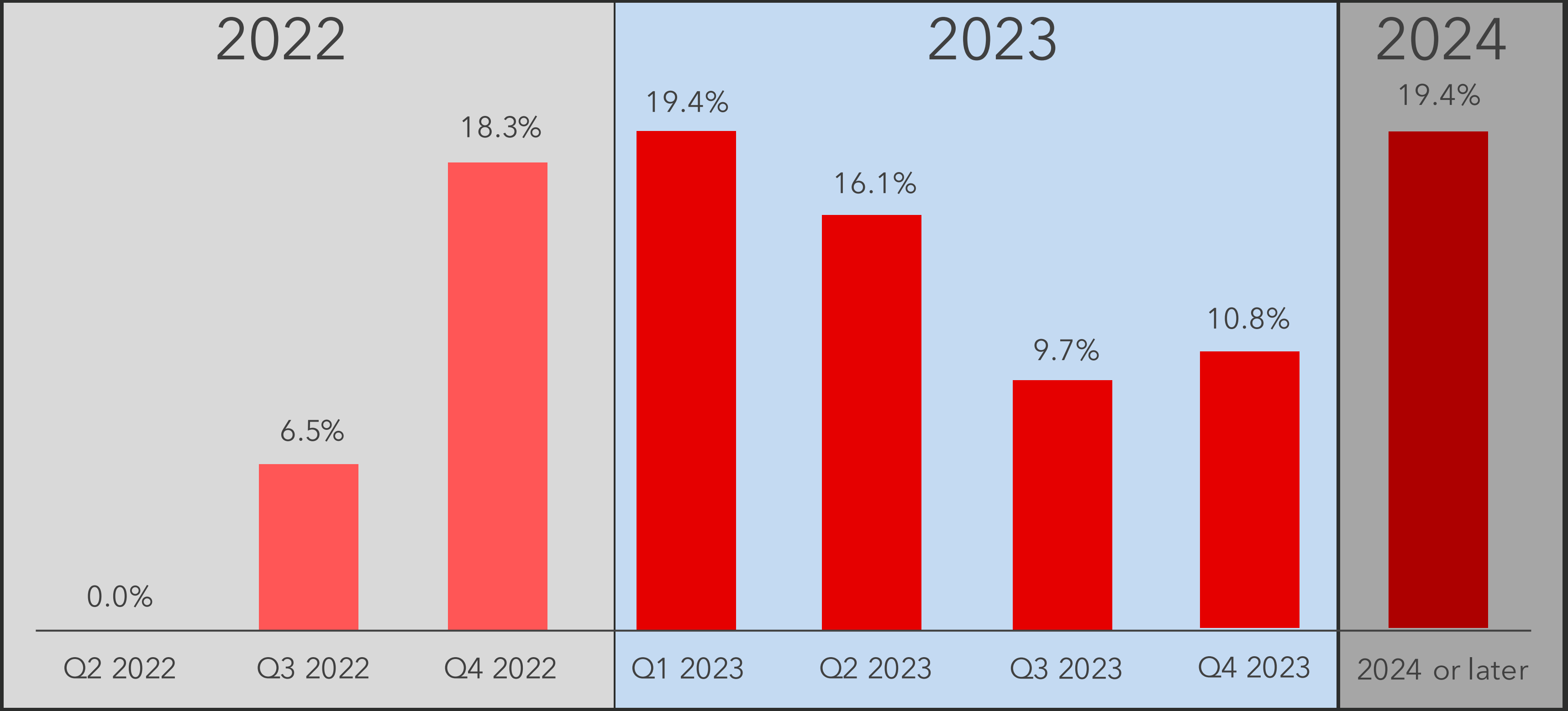


Source: (1) Bloomberg, "Wait Times for Chips Grow Again in March as Shortages Drag on (April 5, 2022). Susquehanna Group.

Relief Not Expected Until 2023

According to an Oxford Economics survey of over 150 businesses conducted at the end of April, 75% of respondents expect supply chain disruptions to continue beyond this year, up from 60% last month

When do you expect supply-chain disruption to end for your business?

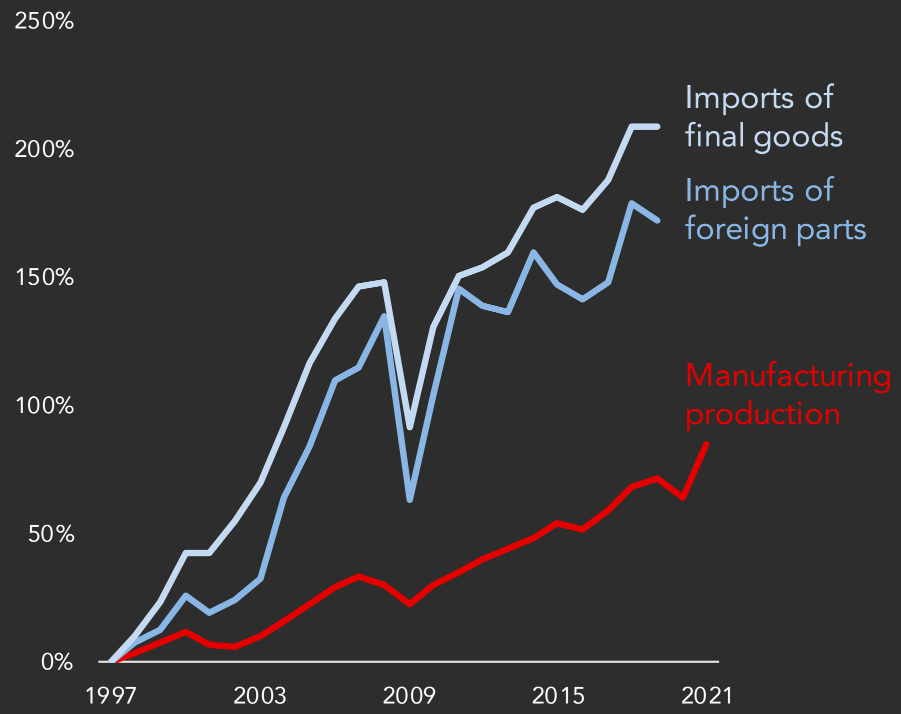


Source: (1) Oxford Economics, "Global - Businesses see war as the key risk - and not just in near term" (April 28, 2022). Survey conducted April 14 – 28 by 159 businesses, primary clients of Oxford Economics across a wide range of sectors and geographical regions.

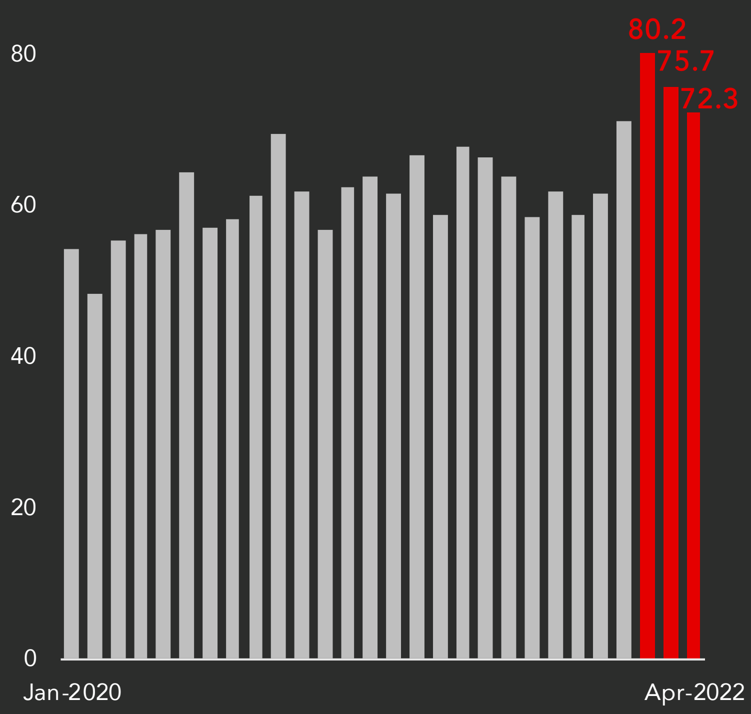
Reshoring Takes Time

In order to alleviate the pressures of recurring and persistent supply side disruptions, companies are re-shoring foreign production, diversifying supplier networks and increasing inventories of key products. In a survey of 60 supply chain executives conducted in Q2 2020 (at the onset of COVID driven dislocations), McKinsey found that 40% of survey respondents planned to near-shore and increase their supplier base. However, near– and re-shoring takes time and can be highly capital intensive. While domestic production has increased since the onset of COVID, imports of foreign parts and final goods continue to grow at a faster pace.

US imports vs. domestic manufacturing



Logistics Managers' Index, inventory levels



Source: (1) World Bank. World Integrated Trade Solution. Imports latest data is 2019, Manufacturing production is GDP value added by industry – manufacturing. (2) Logistics Managers' Index April 2022 Report.

11 ESG's Acceleration

New World Order (cont'd)

11

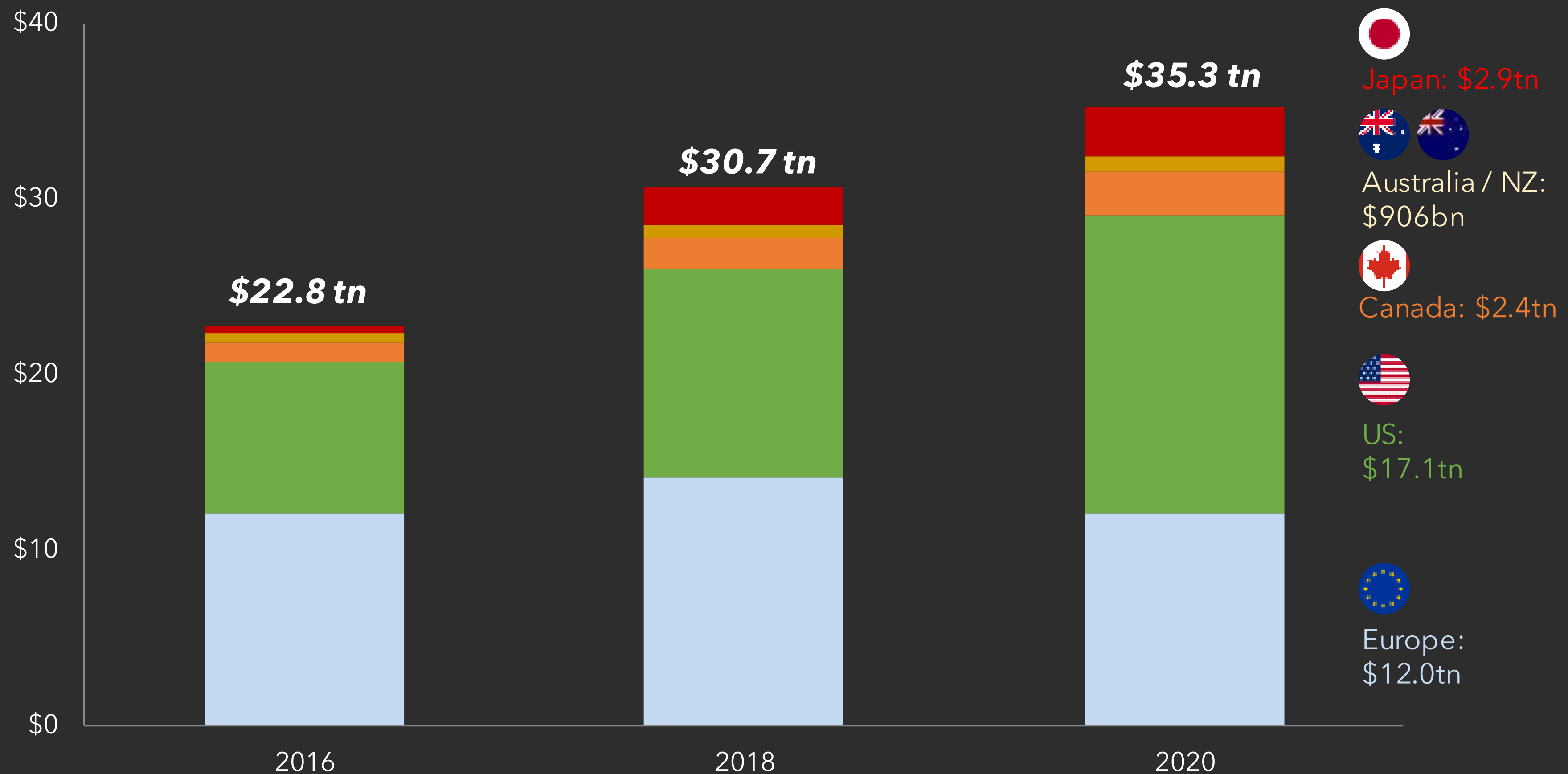
Old World Order	New World Order
ESG's Evolution	**ESG's Acceleration**
• Largely European driven	• Truly global acceleration (EU, US, China & EM)
• Limited US adoption	• US "whole of government" approach
• Primarily "E" focused	• Expanded focus on "E, S and G"
• Shareholder as primary constituent	• Multiple stakeholders (shareholders, consumers, employees, regulators)
• De minimis shareholder activism	• Significant focus of shareholder proxy season
• Limited buy side engagement	• Over $35 trillion of dedicated global sustainable investing assets
• Undeveloped ESG financing markets	• Deep, liquid ESG financing markets
• Net zero targets non-existent	• 2/3 of world's 650 largest companies have net zero targets
• Minimum data and reporting	• Broad TCFD adoption and mandatory SEC reporting requirements
• Limited regulatory focus	• Fully integrated into "financial stability" mandate

Source: Ehsan Khoman, Head of Emerging Markets Research, EMEA.

Rapid Growth of ESG Markets

Between 2018 and 2020, assets under management in the US sustainable investment market rose 42% to $17 trillion, just under half of global AUM tracked in the GSIA's biannual report

Global sustainable investing assets, USD tn

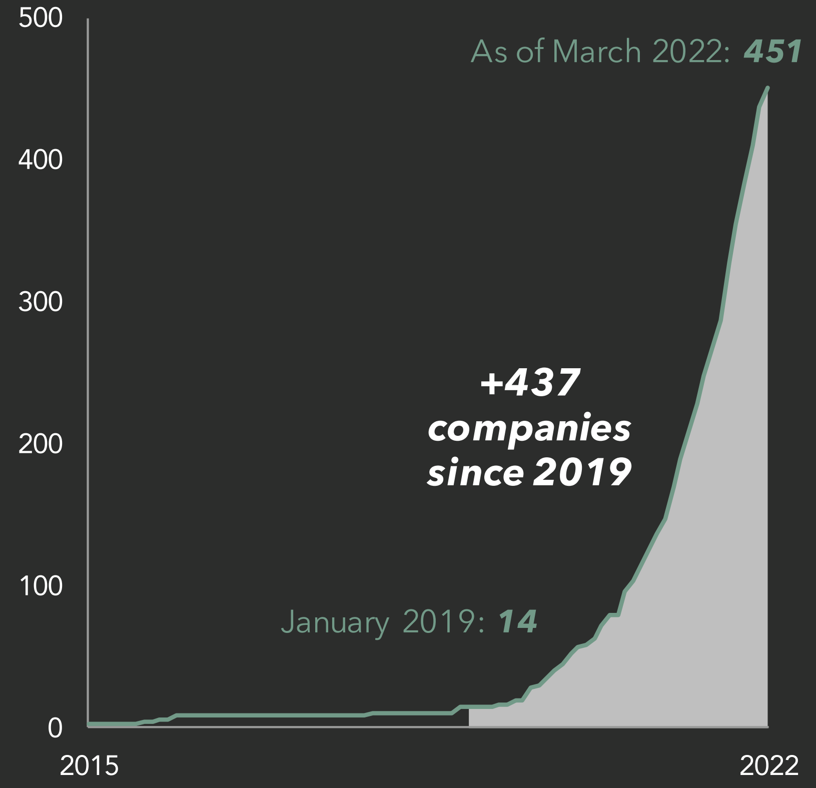


Source: (1) Global Sustainable Investment Alliance, "Global Sustainable Investment Review 2020." (July 2021).

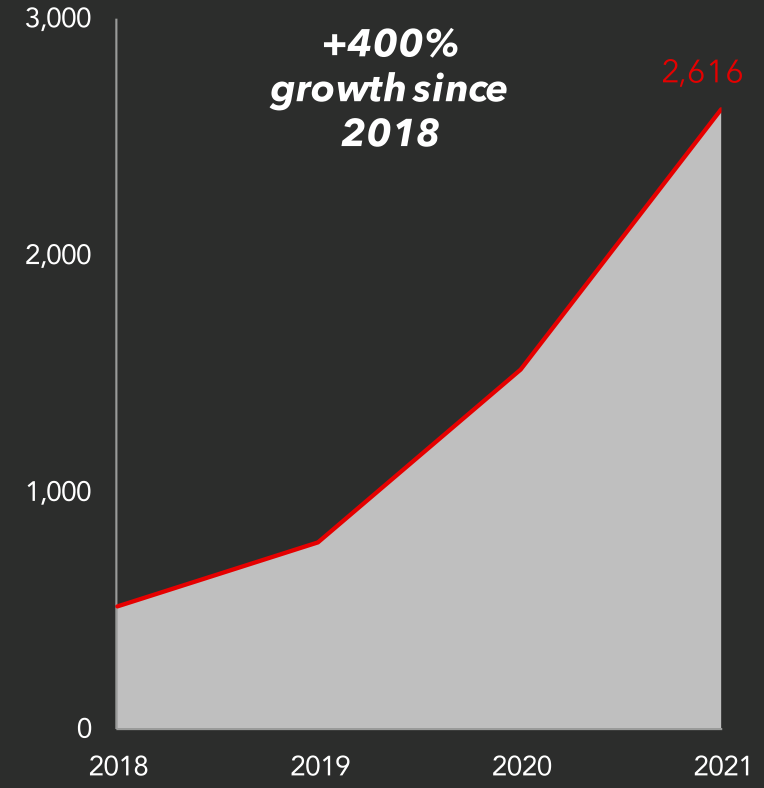
Companies Keeping Pace with ESG

Companies globally are becoming more outspoken and transparent about their Net Zero goals. Ahead of expected regulatory action, companies are rapidly adopting voluntary disclosure models (such as TCFD, SASB, or GRI) and publicly setting net zero goals for their businesses. As of Q2 2022, 451 of the world's 650 largest companies in the heaviest-emitting sectors had made net zero pledges.

# of 650 largest companies in the heaviest-emitting sectors making net zero pledges



# of entities supporting TCFD disclosure framework



Source: (1) BloombergNEF. "Corporate Net-Zero Assessment Tool" (March 2022). (2) Task Force on Climate-Related Financial Disclosures – 2021 Status Report.

Numerous Alliances Committed to Net Zero

Investors and corporates have created numerous forums and alliances to increase accountability and demonstrate support for net zero commitments

Notable corporate, financial and investor forums and alliances

INVESTOR & ASSET MANAGER ALLIANCES

- UN PRI
- Climate Action 100+
- Institutional Investors Group on Climate Change
- Net Zero Asset Managers Initiative
- One Planet Sovereign Wealth Funds
- Asia Investor Group on Climate Change
- Interfaith Center on Corporate Responsibility
- Net Zero Asset Owners Alliance
- Net Zero Investment Consultants Initiative

CORPORATE SECTOR ALLIANCES

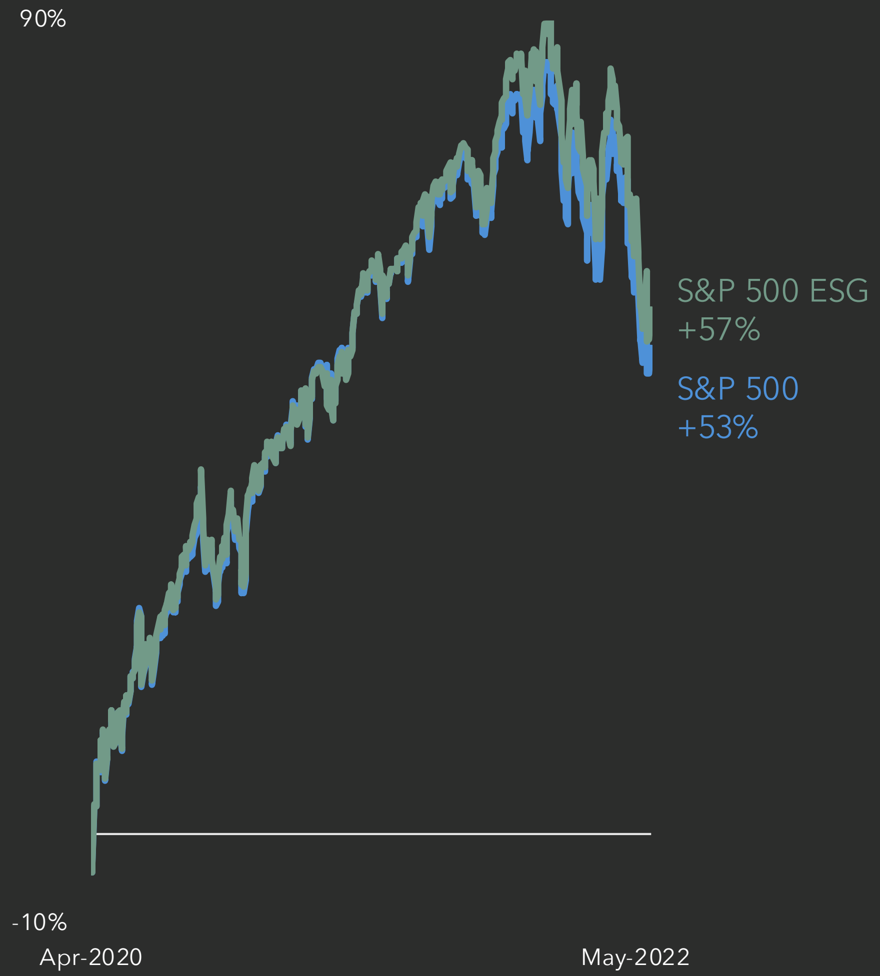
- Science Based Targets Initiative
- International Coalition for Sustainable Aviation
- Fashion Industry Charter for Climate Action
- Race to Zero
- World Business Council for Sustainable Development

BANK & FINANCIAL SECTOR ALLIANCES

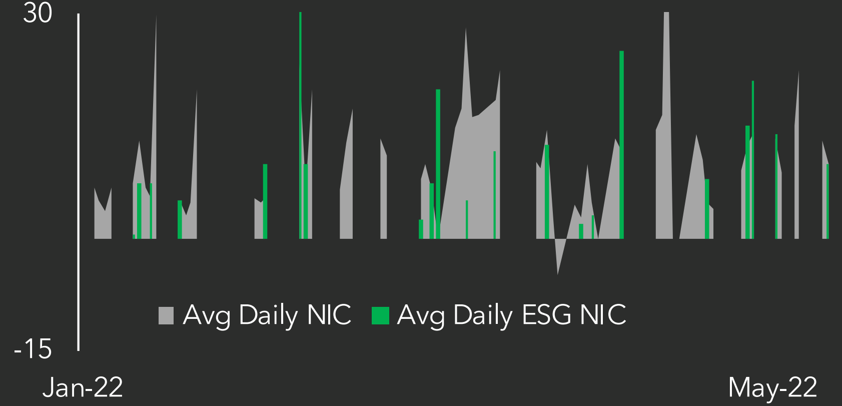
- Glasgow Financial Alliance for Net Zero
- Net Zero Banking Alliance
- Net Zero Insurance Alliance
- Net Zero Financial Service Providers Alliance

ESG's Outperformance

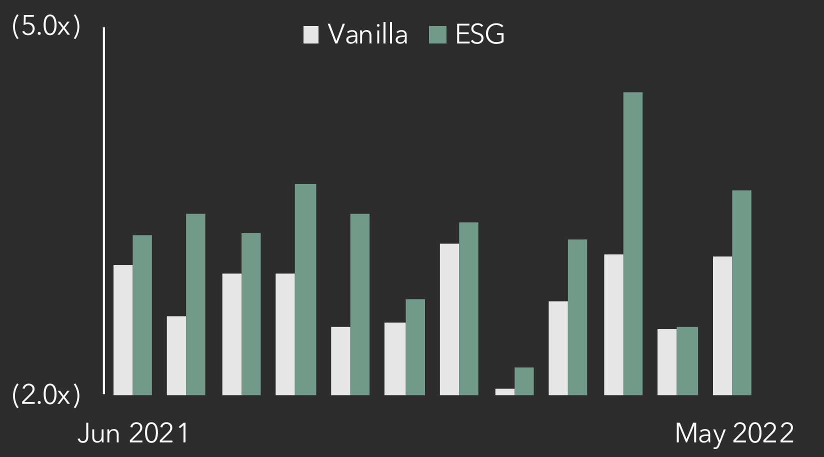
S&P 500 ESG index has outperformed the broader market since the COVID crisis began



Lower Average NICs for ESG Issuance in 2022



Larger average orderbooks for ESG bonds



Source: (1) Bloomberg. Data as of May 25, 2022.

12 Energy transition & diversification

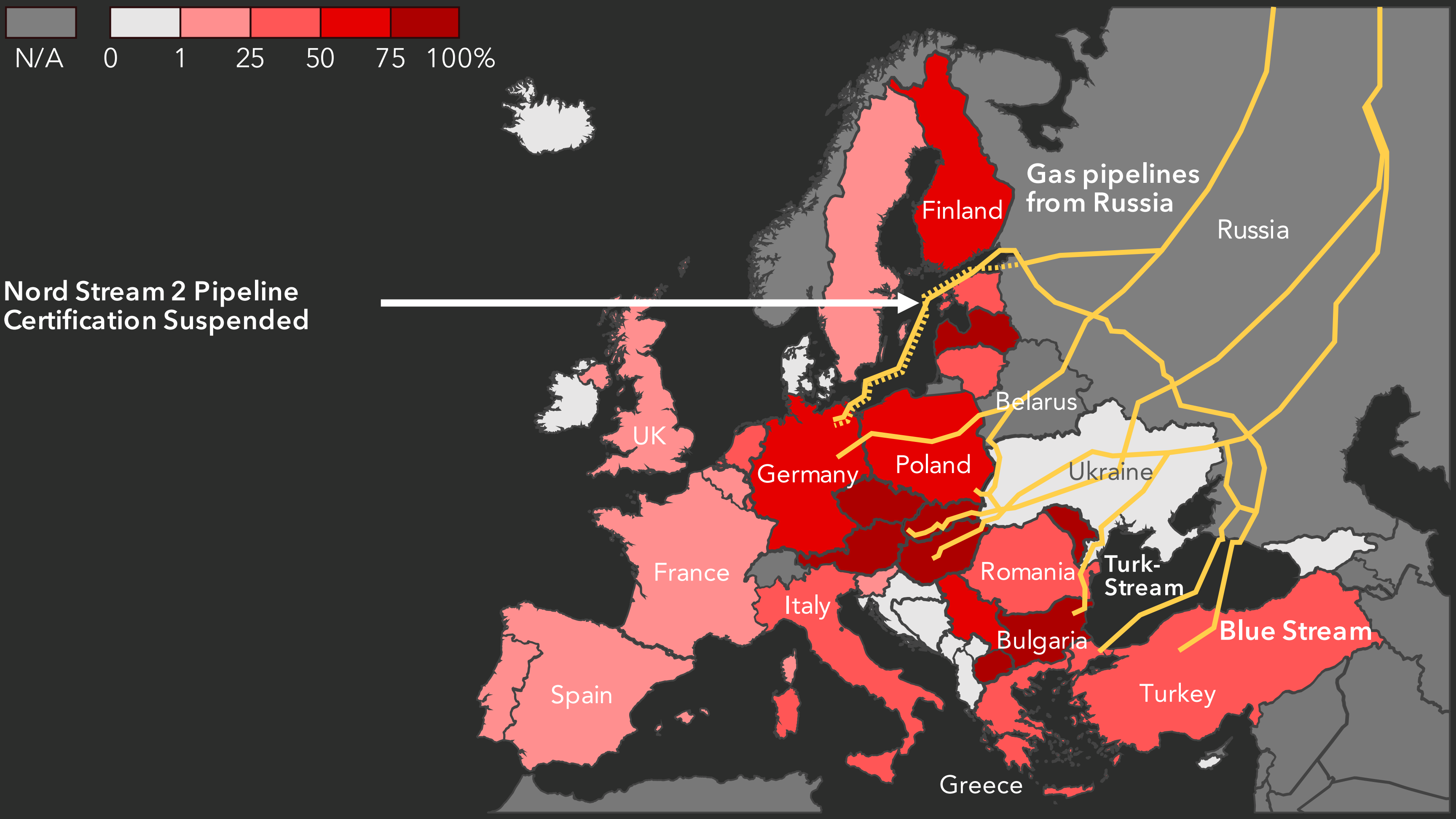
New World Order (cont'd)

	Old World Order	New World Order
12	**Fossil-fuel energy dependence**	**Energy transition & diversification**
	• National security alignment	• Private sector and regulatory pivot
	• Middle East centric policy positions	• European policy acceleration post Ukraine
	• Heavy European dependence on Russian oil & gas	• Rapid European diversification away from Russia
	• Modest public & private investment in renewables	• Massive public & private investment in renewables
	• Lighter carbon regulatory environment	• More stringent carbon regulatory environment
	• More private sector lending to "brown" energy (lower capital charges)	• Less private sector lending to "brown" energy (higher capital charges)
	• ESG's evolution	• ESG's acceleration

Source: Ehsan Khoman, Head of Emerging Markets Research, EMEA.

Russia Using Energy as a Political Weapon

Share of natural gas imports coming from Russia, 2020

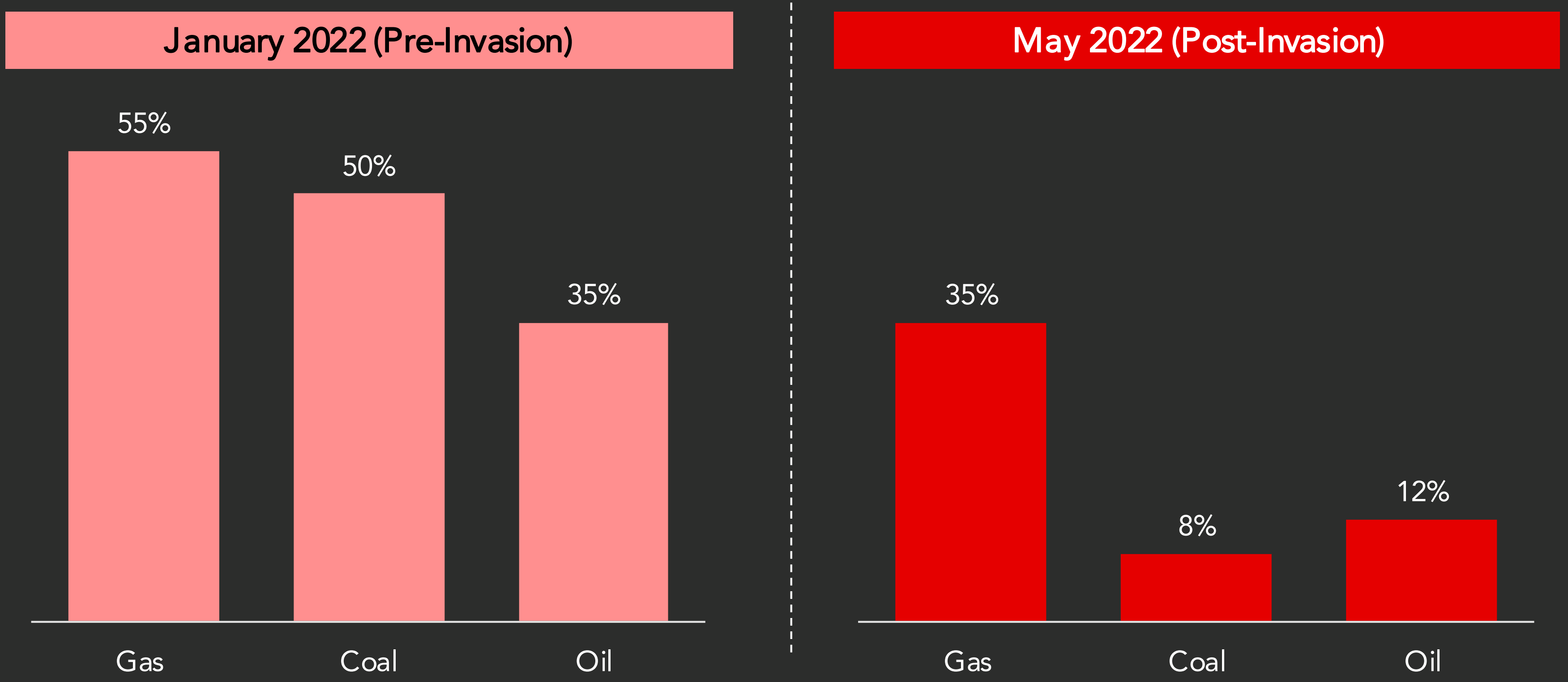


Source: Bloomberg. Eurostat. US Energy Information Administration. Austria's Ministry of Climate Protection. Data for 2020 not available for UK and Bosnia-Herzegovina.

Europe Reducing Russian Energy Dependencies

Since the invasion, Europe has been pivoting more quickly away from Russian energy than most had anticipated, banning all Russian coal imports starting in August and discussing an imminent ban of Russian oil. In the 11 weeks since the start of the war, the German government has cut the country's reliance on Russian coal, oil and gas, with the potential for Russian coal and oil to be phased out entirely by the end of May.

Percentage of imports from Russia



Source: (1) WSJ, "How Germany Is Racing to Sever Dependence on Russian Energy" (May 17, 2022).

Major Sectoral Sanctions & Export Control Restrictions

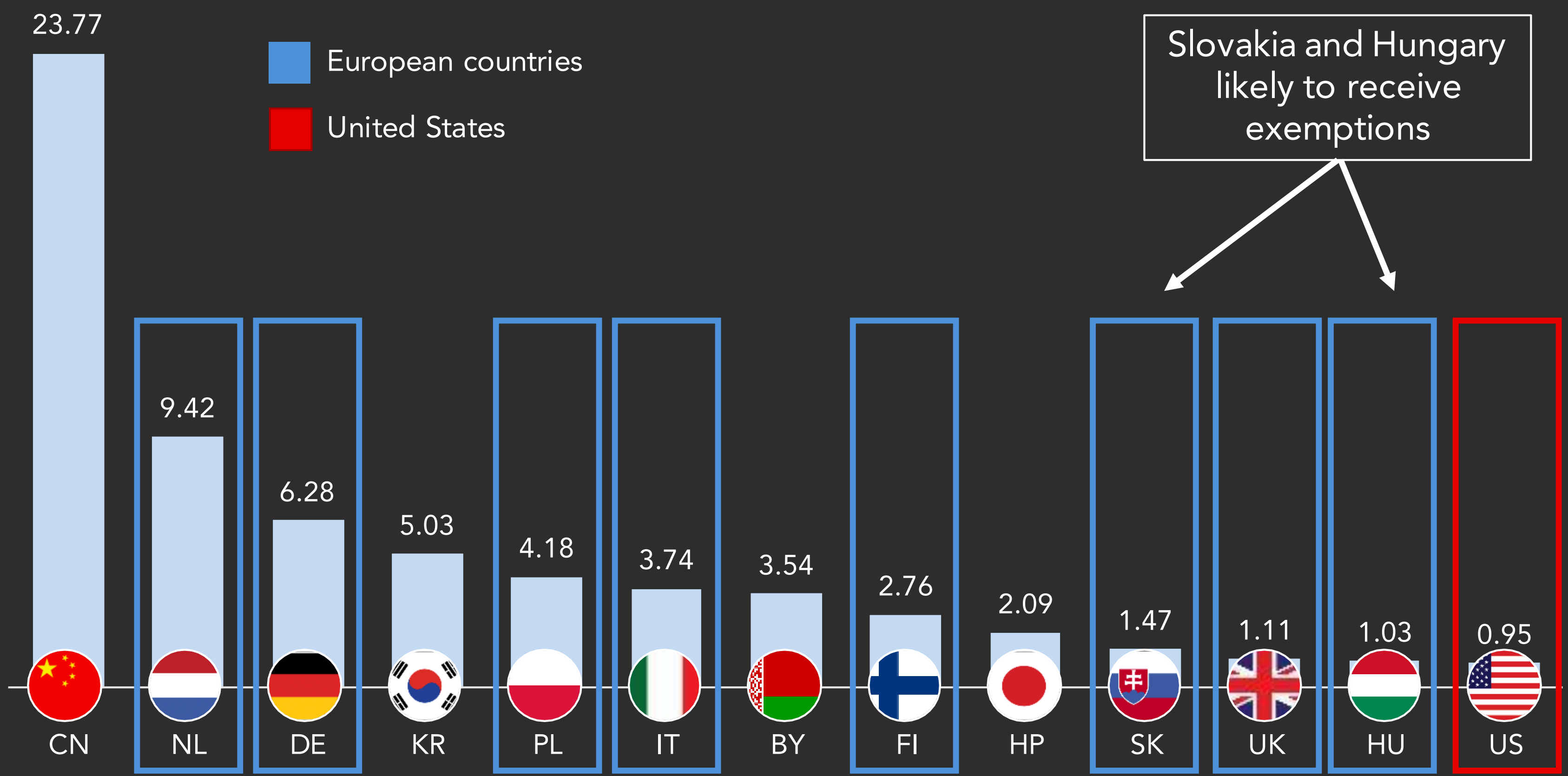
	US	EU	UK	Switzerland	Japan	Canada	Australia
Restrictions on Russian oil imports	✓	✓	✓		✓	✓	✓
Restrictions on Russian gas imports	✓						✓
Restrictions on Russian coal imports	✓	✓	✓		✓		
Restrictions on Russian metals imports		✓		✓			
Restrictions on export of metals to Russia							✓
Restrictions on export of luxury goods to Russia	✓	✓	✓	✓	✓	✓	✓
Restrictions on import of luxury goods from Russia	✓		✓				
Restrictions on export of technology to Russia	✓	✓	✓	✓	✓	✓	
Restrictions on Russia access to IMF & World Bank funds	✓	✓	✓		✓	✓	
Revocation of Most Favored Nation status	✓	✓	✓		✓	✓	✓
Restrictions on sovereign debt	✓	✓	✓	✓	✓	✓	✓
Restriction on Russian banks' correspondent banking accounts	✓		✓				
Restrictions on Russian banks' access to SWIFT	✓	✓	✓	✓	✓	✓	

Source: Castellum.AI. Data as of May 25, 2022.

Sanctioning Russian Oil

A ban on all Russian oil exports by the US, UK 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

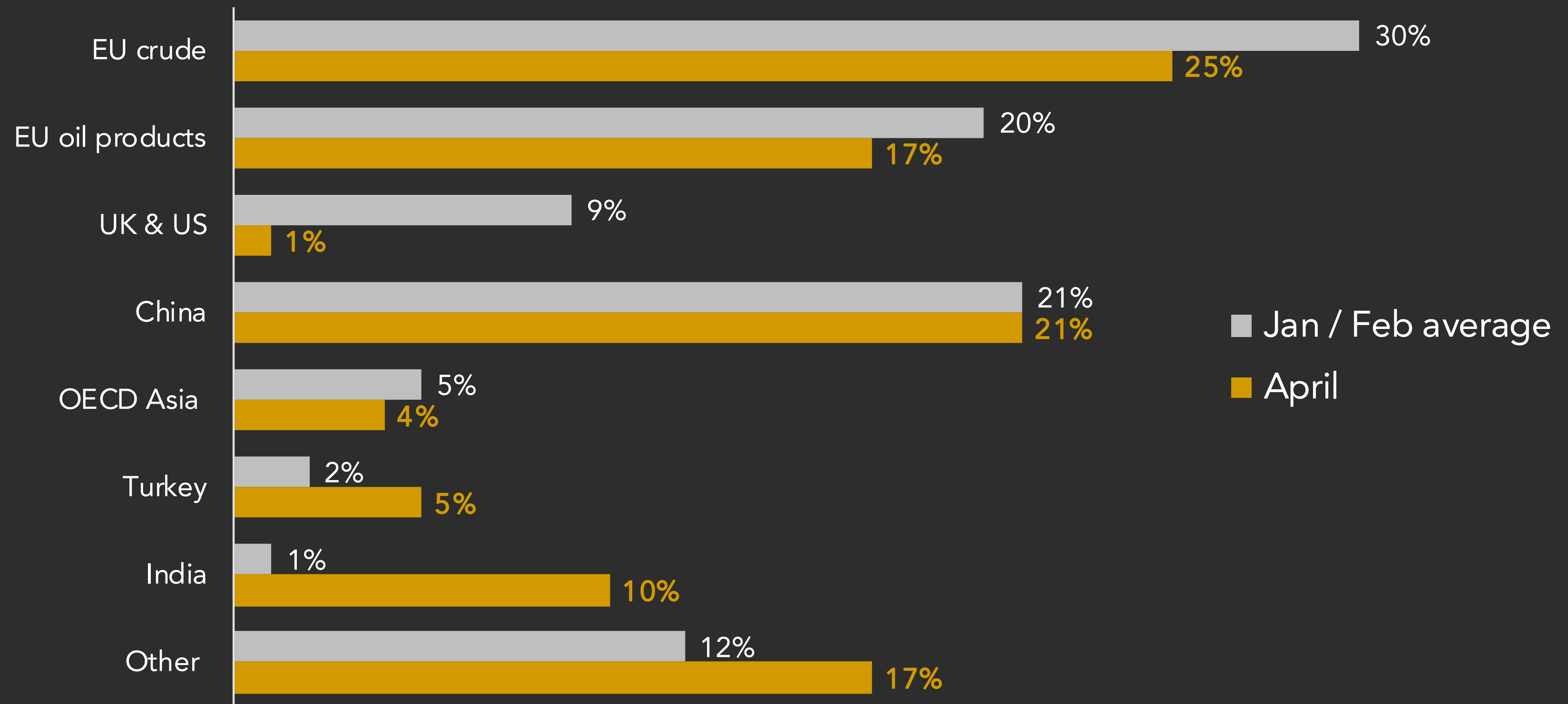


Source: (1) UN Comtrade.

Destination Shifts on Russian Oil

In early 2022, half of Russian oil exports were shipped to the EU. As of April, India gained a 10% share of Russian oil exports vs. 1% at the start of the year, almost fully offsetting the reduction in exports to the US and UK. China's share remained stable at 21% reflecting its cautious stance to date. In the months ahead, we expect the gap between Russia's physical market and financial decoupling to close, and more Russian barrels to come offline.

Destinations of Russian oil exports



Source: (1) Oxford Economics, "EU oil ban will hurt, but Russia on course for surplus" (May 18, 2022). IEA. Argus. Kpler.

13 New structural commodities super-cycle

New World Order (cont'd)

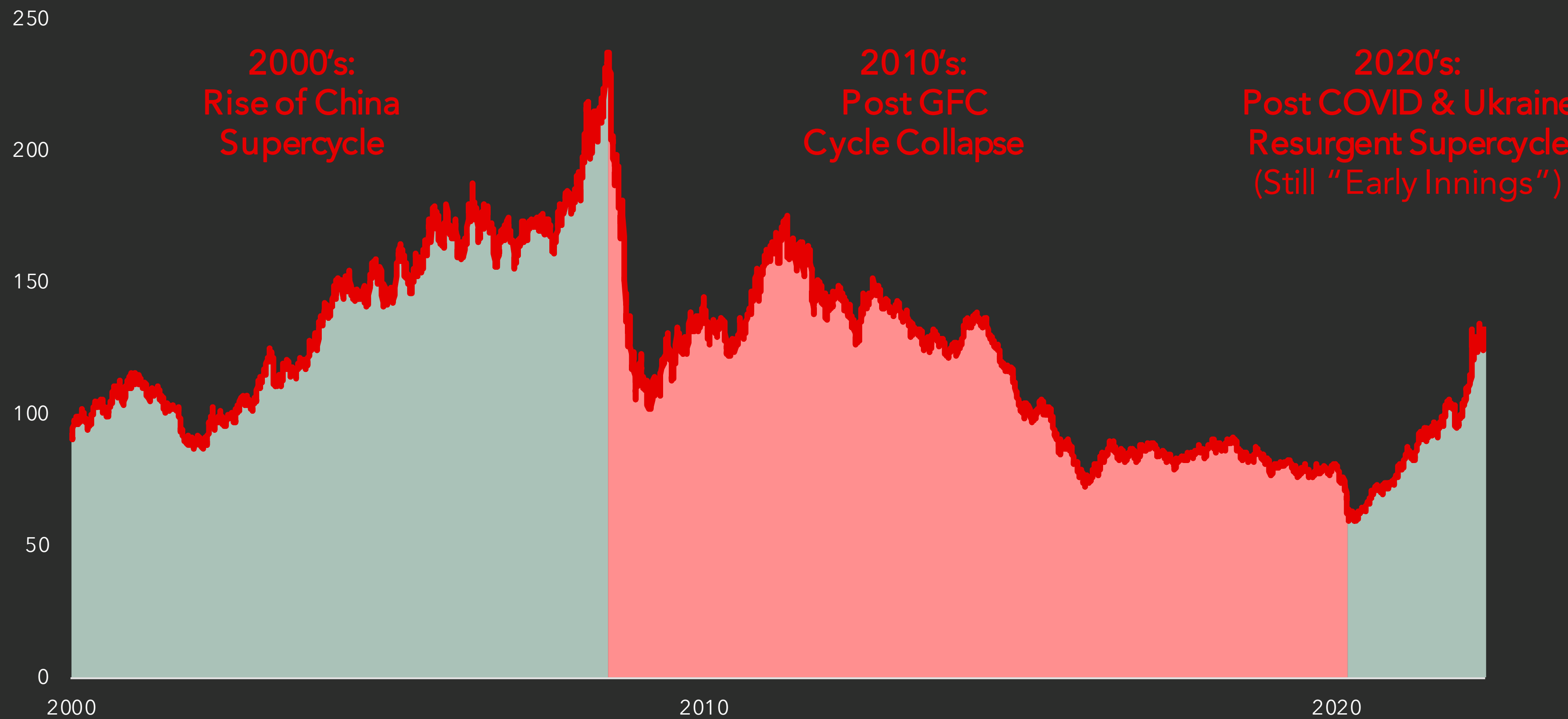
	Old World Order	New World Order
13	**Commodities super-cycle "bust"**	**New structural commodities super-cycle**
	• Declining global growth post GFC	• Structural underinvestment, supply scarcity, depleting inventories
	• Less OPEC discipline & unity	• ESG's acceleration ("greenflation")
	• Peak China & EM growth ("peak oil")	• Russia geopolitical risk premium & sanctions
	• US "shale revolution"	• New political economy in Europe
	• COVID crisis demand shock	• Commodities best hedge to inflation & Fed hikes

Source: Ehsan Khoman, Head of Emerging Markets Research, EMEA.

Resurgent Commodity Supercycle

Commodity supercycles are relatively rare events with only four occurring since the mid nineteenth century and often preceded by periods of rapid economic growth. For example, the first supercycle in the 1890s occurred as a result of the US industrial revolution, while the early 2000s cycle coincided with China joining the WTO. The global COVID economic recovery and structural under-investment in some fossil fuels may induce the next supercycle.

Bloomberg commodities index



Source: Bloomberg. Data as of May 25, 2022.

You can’t control the drilling, shipping, storing, refining, buying, selling, trading, and taxing of oil and then say you don’t control oil prices.

Key Drivers of Resurgent Commodities Supercycle

MUFG's Head of Emerging Markets research, Ehsan Khoman, emphasizes how the Russia-Ukraine crisis has turbo-charged a commodities supercycle - one driven by shortages across energy, metals and agriculture - that still may be in its early innings. In the end, demand destruction may be the only force powerful enough to rebalance exceptionally tight markets.

Key Drivers of Commodity Supercycle

1. Russian Sanctions

Physical decoupling from Russia lagging financial decoupling; Russian exports poised to collapse; EU energy sanctions accelerating; costly transportation; scarce insurance; self-sanctions; threat of US secondary sanctions (i.e., on China, India)

2. Structural Under-investment

Impact of recent energy default cycle; low capex during COVID; ESG and regulatory constraints

3. Depleted Inventories

OPEC discipline; OECD inventories at 20 year lows; demand exceeding pace of production increases; thinning spare capacity; global supply chain dislocations

Source: MUFG Commodities Weekly, "Can a strong USD derail the commodity bull cycle" (Ehsan Khoman). Bloomberg. Data as of May 16, 2022.

Key Drivers of Resurgent Commodities Supercycle

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Key Drivers of Commodity Supercycle

4. Commodities as Best Inflation Hedge

Physical commodities markets have been the strongest performing financial asset class during stagflation; resilient to rising rates and inflation; strong performance historically during Fed tightening cycles; USD strength has de-linked from commodity bull-cycle.

5. ESG's Acceleration

ESG and regulatory change driving policy uncertainty and structural under-investment; cash-flow reinvestment 40% below 10 year avg; investors demanding clean energy transition and net zero timelines; delicate transition between old and new economy ("the more unpopular fossil fuels become, the more expensive they will be")

6. Greenflation

Europe's new political economy; capex pivot to renewables; carbon intensive green metals are critical to de-carbonization (copper for electricity; nickel for EV batteries; aluminum and iron ore for wind turbines); total clean tech infrastructure investment estimated at $56 trillion by 2050

Source: MUFG Commodities Weekly, "Can a strong USD derail the commodity bull cycle" (Ehsan Khoman). Bloomberg. Data as of May 16, 2022.

Commodity Price Forecast

MUFG quarter average forecasts

	Spot (May 25)	Q2 2022	Q3 2022	Q4 2022	Q1 2023
Brent	**$114**	$125	$141	$112	$110
WTI	**$110**	$120	$136	$108	$106
US Natural Gas	**$8.98**	$7.10	$4.50	$5.10	$5.30
European Natural Gas	**$88**	$96	$104	$88	$117

Source: MUFG Commodities Weekly, Ehsan Khoman (May 19,2022). Bloomberg. Data as of May 25, 2022.

14 Technology driven productivity revival

New World Order (cont'd)

	Old World Order	New World Order
14	**Productivity stagnation**	**Technology driven productivity revival**
	• 3rd industrial revolution – "Digital Revolution"	• 4th industrial revolution – integration of digital, biological and physical innovation
	• Post-dotcom bubble productivity stagnation	• Labor shortage driven productivity resurgence
	• Human capital investment	• Investment in automation and digitization
	• Internet, cell phone and tablet adoption	• Enterprise SaaS & cloud computing adoption
	• Technology sector proliferation	• Technology integration into "non-tech" sectors (i.e., retail, manufacturing, healthcare)
	• "In-person" work environment	• "Hybrid" work environment for many industries

The Fourth Industrial Revolution

The fourth industrial revolution which began earlier this Century has accelerated in the post-COVID era, rapidly integrating the proliferation of digital, biological, renewable and physical innovation.

1st Revolution
(late 1700s – mid 1800s)

Mechanization, discovery of coal, steam and water power, creation of factories (textile industry - spinning machines, looms)

2nd Revolution
(late 1800s – WWI)

Technological Revolution, extensive railroad networks, communication technologies (telephone, radio), large-scale iron and steel production, widespread use of machinery in manufacturing, electricity (the light bulb), and the internal combustion engine (automobiles)

3rd Revolution
(late 20th century)

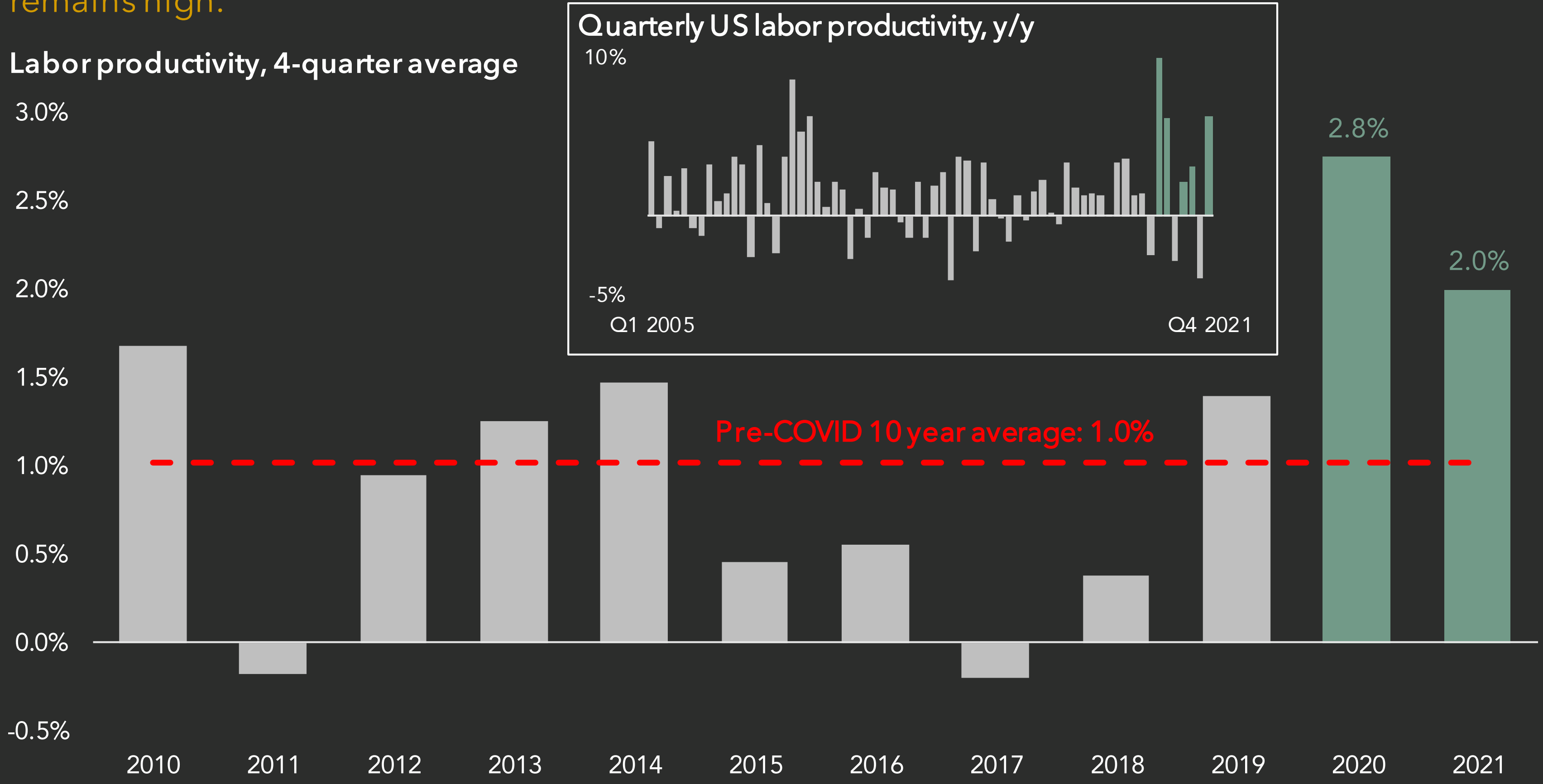
Digital Revolution, mass production and widespread use of personal computer, the internet, cell phones, electronic and IT systems, automation

4th Revolution
(21st century)

AI, blockchain, quantum computing, virtual reality, green & renewable technology, genetic engineering, robotics, mobile technology, internet of things, e-commerce & digital payments

Productivity Resurgence

After the dot-com induced gains of the 1990s, productivity in the US stagnated in the early 2000s and post GFC period. The sudden onset of the pandemic in 2020 required businesses to digitize and adopt new technologies at a record pace, fuelling a resurgence in productivity (with annual productivity rates 2-3x higher than pre-pandemic levels). While an increase in hiring and supply-chain induced output disruption caused a sharp decline in Q1 productivity, post-pandemic potential remains high.

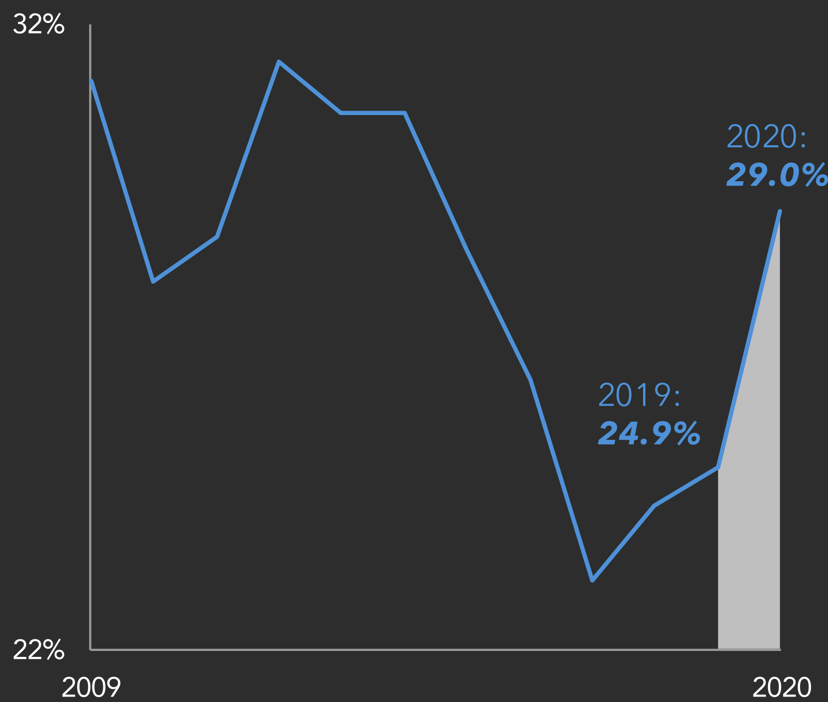


Source: Bloomberg. Data as of May 25, 2022.

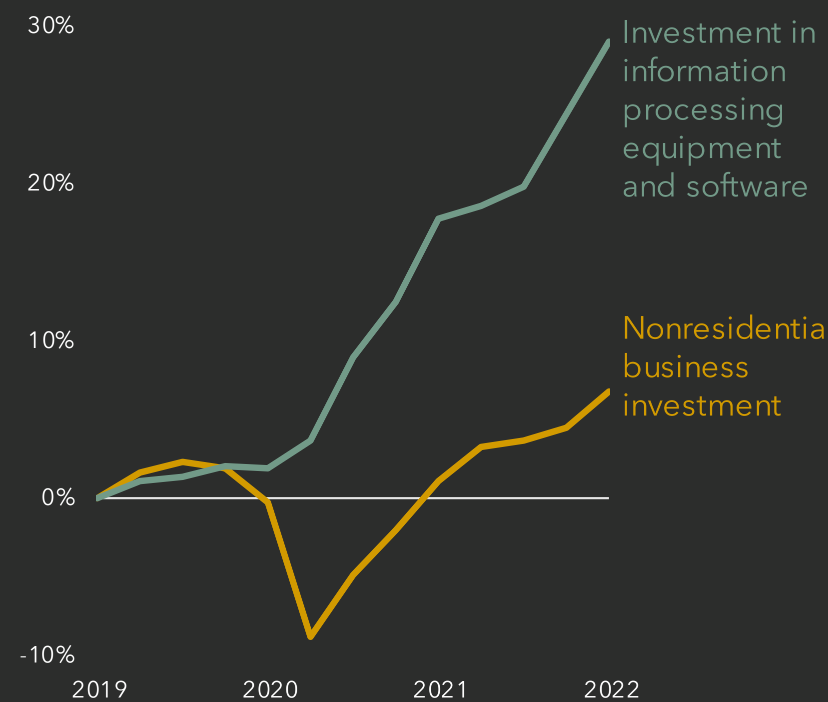
Accelerating CapEx Cycle

Historically, companies have responded to periods of supply side and labor market shortages with an uptick in productivity-focused investment. Faced with volatile and uncertain short-term operating environments during COVID, companies globally responded by sharply increasing their spending on capex by nearly 30% across: (i) vertical integration of supply chains; (ii) productivity-enhancing infrastructure (tech, automation, digitization); and, (iii) sustainability and climate-related investment. Notably, R&D investment jumped to its highest levels in decades.

Capex as a % of total global spend

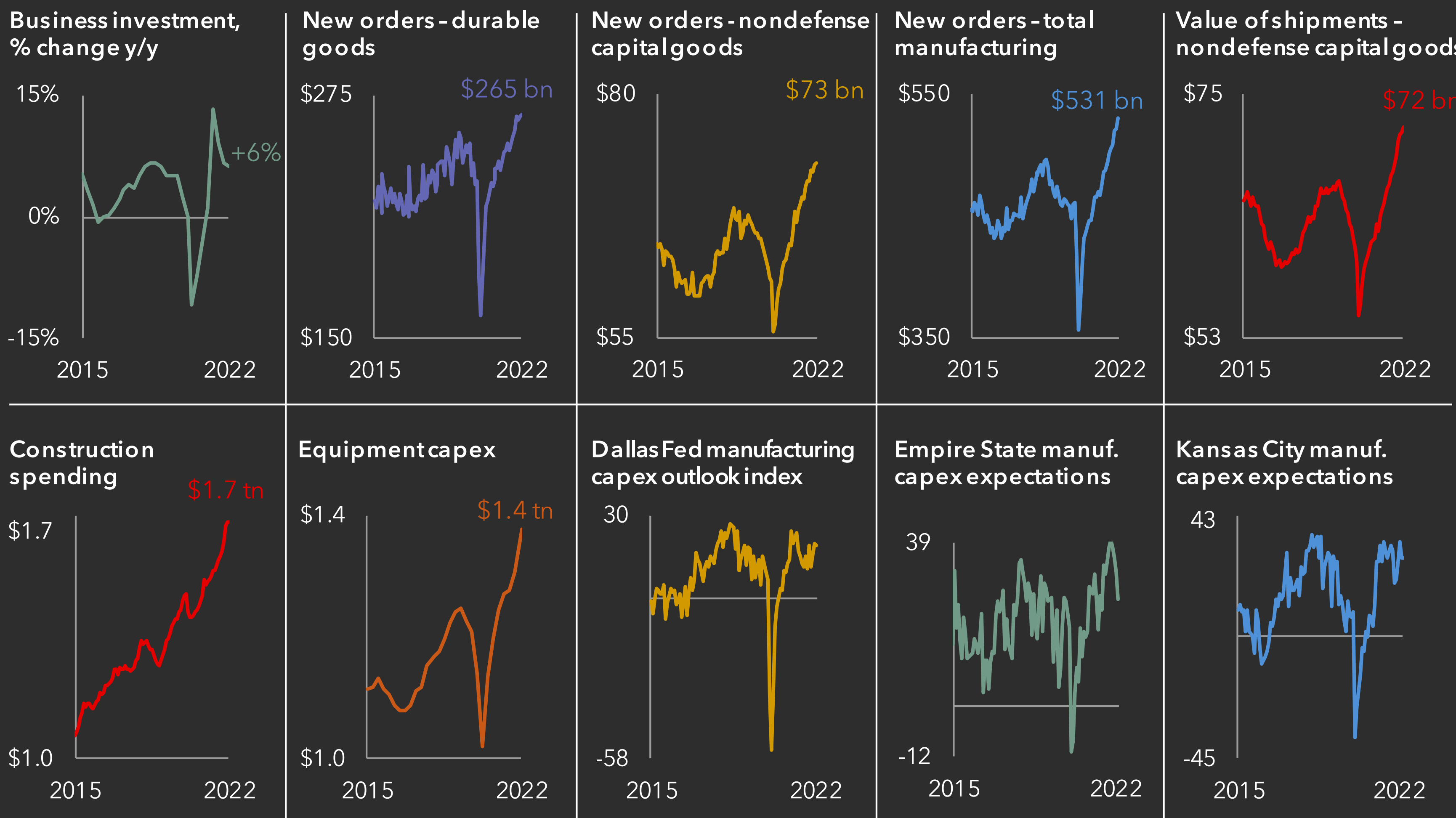


Capital expenditures, change since Q1 2019



Source: (1) FCLT Compass 2021 Report, "The Economics of Resilience: Capital Allocation and Investment Horizons During COVID-19." Data is based on FactSet data from the balance sheets of ACWI index companies. (2) WSJ "Capital Spending Boom Helps Raise Productivity, Contain Costs". FRED. Nonresidential business investment is real private nonresidential fixed investment.

Strongest CapEx Cycle Since the 1940s



Source: (1-10) FRED. Business investment is real gross private domestic, fixed, nonresidential investment. Data as of May 25, 2022. Nondefense capital goods new orders & shipments is ex-aircrafts. Empire State and Kansas City Manufacturing Survey is 6 month ahead expectations for capital expenditures.

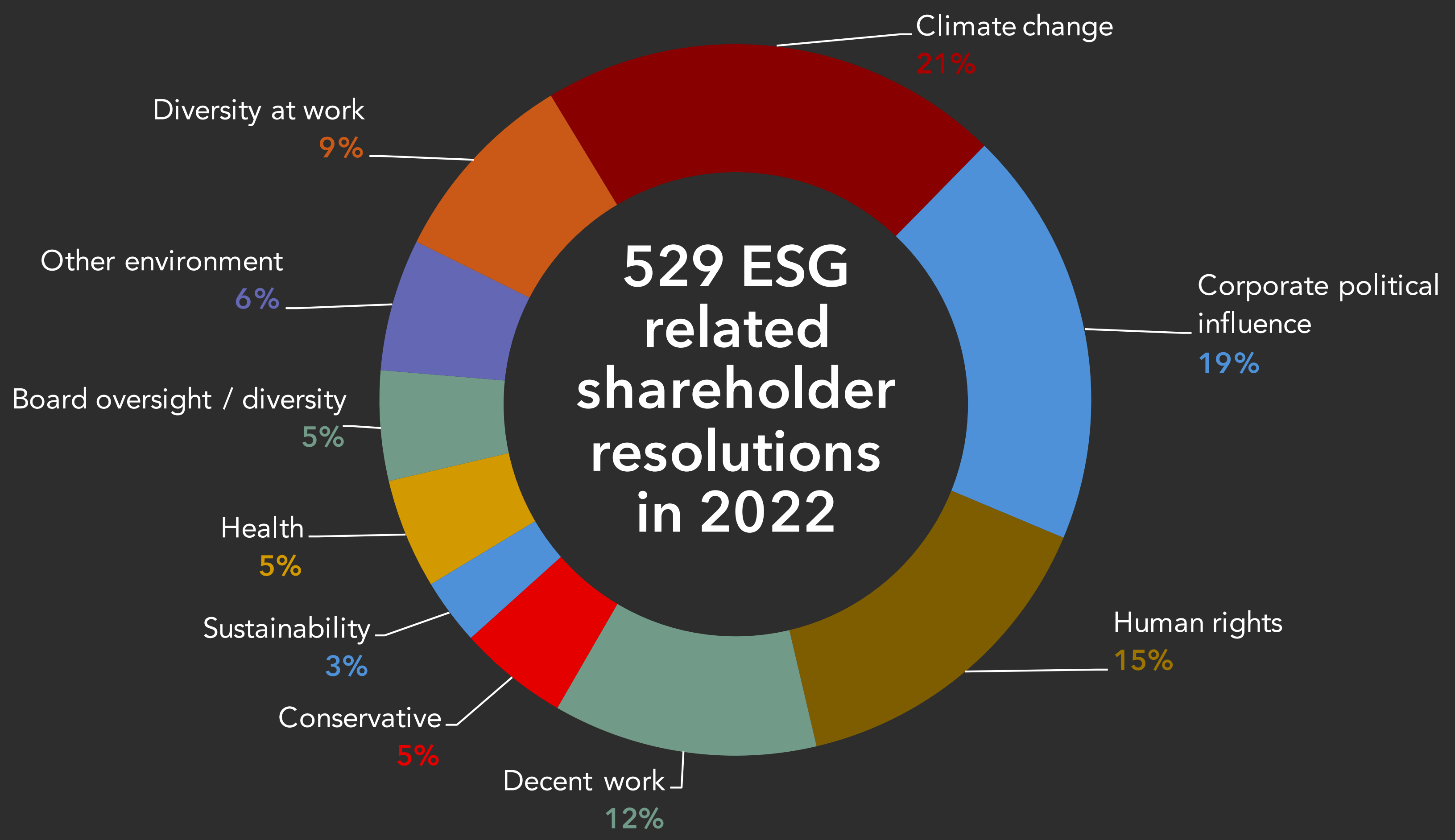
15 More government regulation

New World Order (cont'd)

	Old World Order	New World Order
15	**Less government regulation**	**More government regulation**
	• 1980s-1990s deregulation	• Financial stability, climate change, rising inequality
	• Lower taxes	• Higher taxes
	• "Free trade"	• Rising protectionism, cross-border scrutiny & sanctions
	• "Maximizing" profits and returns	• Multiple stakeholders
	• More shareholder-centric	• Investors, regulators, employees, consumers, environment

Record ESG Shareholder Resolutions

Shareholders have filed a record 529 ESG related resolutions in the 2022 proxy season, an increase of 20% vs. the same time in 2021. Importantly, 300 of these proposals are likely to be voted on in 2022, up nearly 60% from 2021.

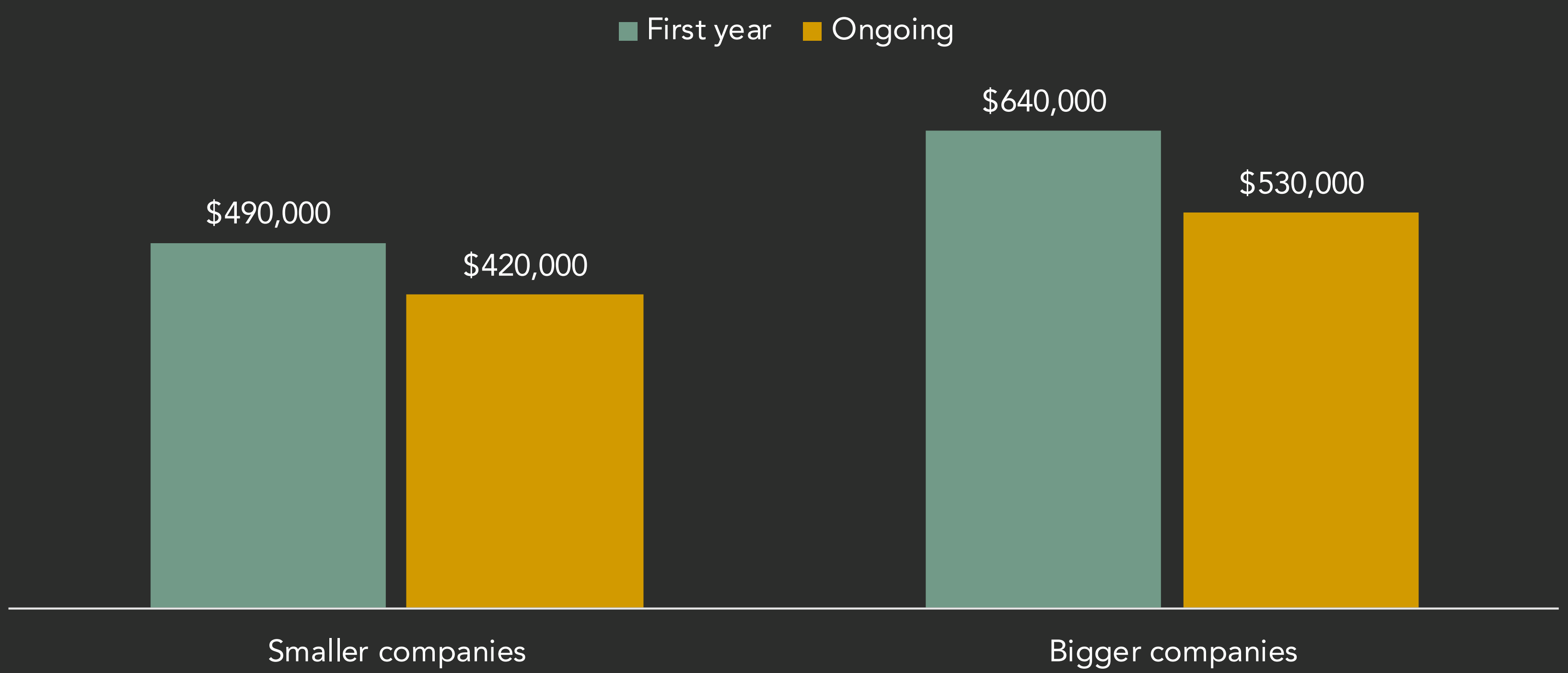


Source: (1) Proxy Preview, "Proxy Preview 2022."

The Cost of SEC Climate-Change Rules

In March, the SEC released a highly anticipated proposed rule on climate-related corporate disclosures. If passed in current form, the proposal would require in-depth reporting on climate risk management, implications for corporate strategy and disclosure of Scope 1, Scope 2 and, in some cases, Scope 3 emissions data. A new analysis by the SEC estimates that large companies could end up spending over $500k annually in additional costs to comply with the new disclosure rule. The additional cost to comply is just one point of pushback to the proposed rule, which is open for public comment until the end of June.

Estimated annual cost to a company of the SEC's proposed climate-reporting rule



Source: (1) WSJ, "Fight Brews Over Cost of SEC Climate Change Rules" (May 17, 2022). SEC.


“Gather the bits of road that were not gravel to the traveler, but eternal lanes of joy on which no man who walks can die.“
Patrick Kavanagh, Acclaimed Irish Poet & Novelist
(Inniskeen, Co Monaghan, Ireland)

About the Authors

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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.

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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".

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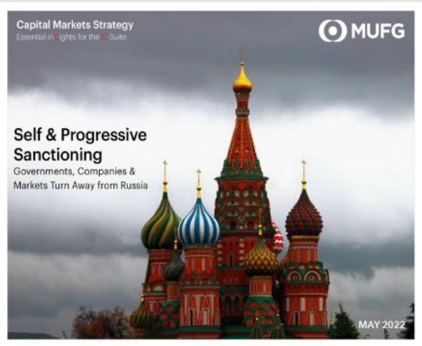
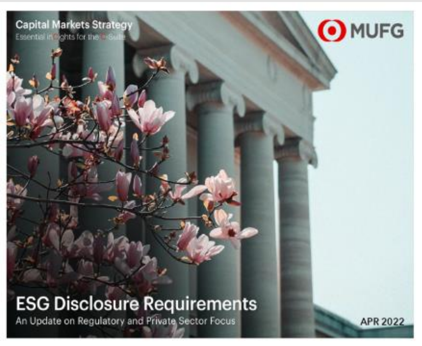
Stephanie has spent over three years as a Capital Markets Strategist. At her prior firm, Stephanie was a part of the Americas Women's Network Junior Council and was an active member of the University of Michigan recruiting team.

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.





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