How Inflation Went From Dormant to Dominant

Enterprise Bank, May 2022

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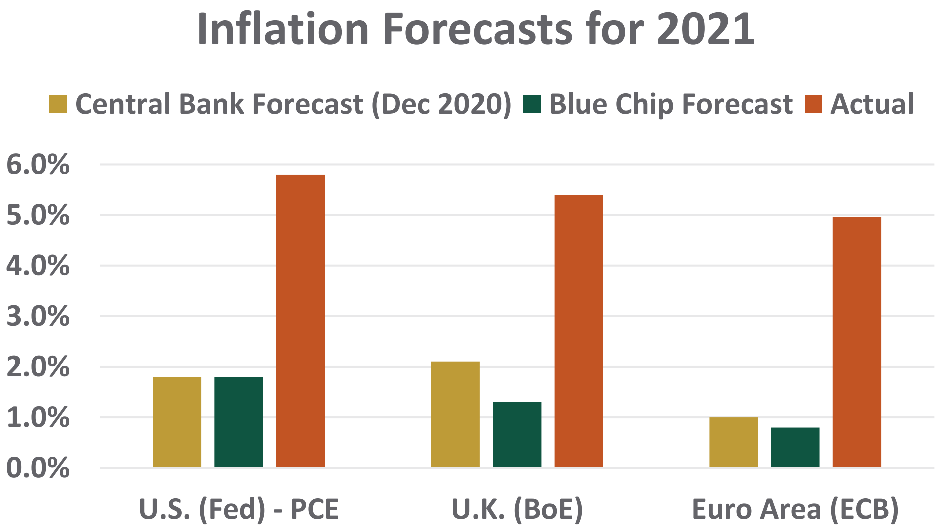
NORTHERN TRUST

“How did you go bankrupt?”

“Two ways: gradually, then suddenly.”

-- Ernest Hemingway, The Sun Also Rises

THE PRE-PANDEMIC MIND SET



Sources: Bloomberg, Fed, BoE, ECB, Blue Chip Consensus, Haver Analytics. Data as of May 2022.

Key Messages

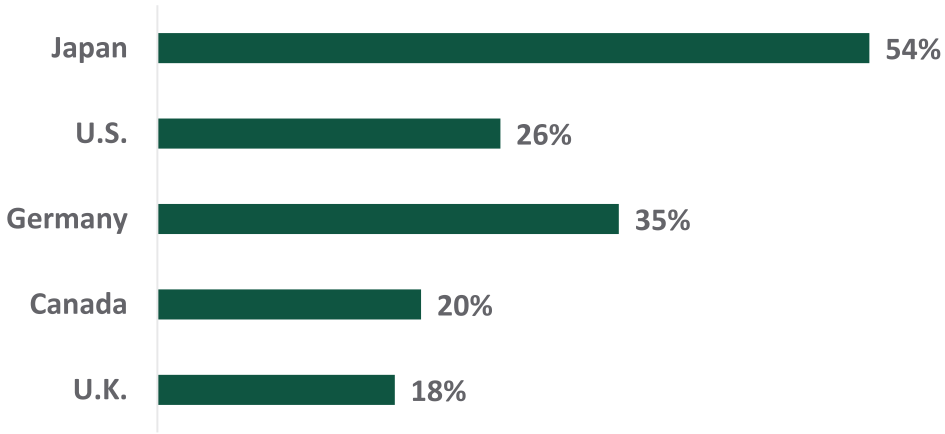
- Inflation was thought to be in secular decline
  - Long periods of undershoot relative to central bank targets
  - Very low levels of unemployment failed to pressure prices
  - Money growth was robust in the 2010s, but the link to inflation broke
  - Factors like e-commerce, technology, demographics, and global sourcing were credited for providing discipline
- ***Central banks were more worried about deflation***
- Even after the pandemic recovery began, inflation forecasts were slow to react
  - Forecasts for 2021 (left) remained benign
  - Was anchoring at play?
- ***Don't place the blame on central banks…virtually no one saw this coming!***

WHAT EVERYONE MISSED

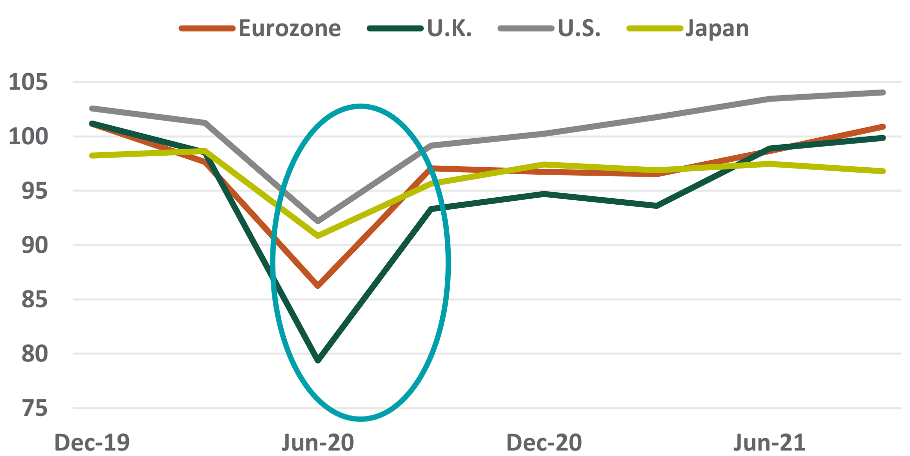
- Pandemic-related fiscal programs were excessive
  - Only visible in retrospect
- The war in Ukraine
  - Long-term implications for commodities prices
- Supply chains are brittle, and they are getting worse
  - Will they ever be the same?
- Policy kindled a renewed housing boom
  - Shelter costs will be trending higher for the next year
- Labor has regained leverage
  - Multiple effects from the pandemic
- Firms have renewed pricing power
  - Secular governors muted, for now
- Expectations can lose their anchor

OVERSTIMULATED

Value of COVID-19 Stimulus
% of GDP



Real GDP Q4 2018 = 100



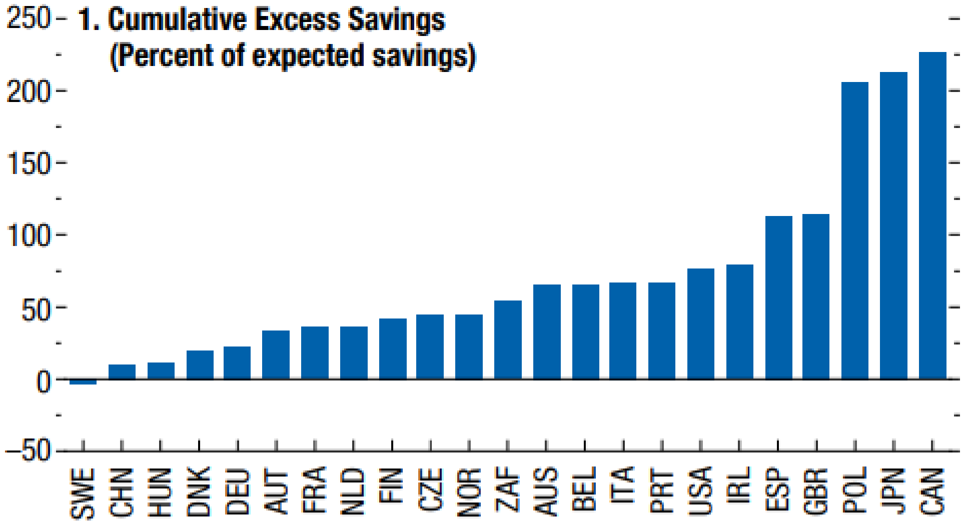
Key Messages

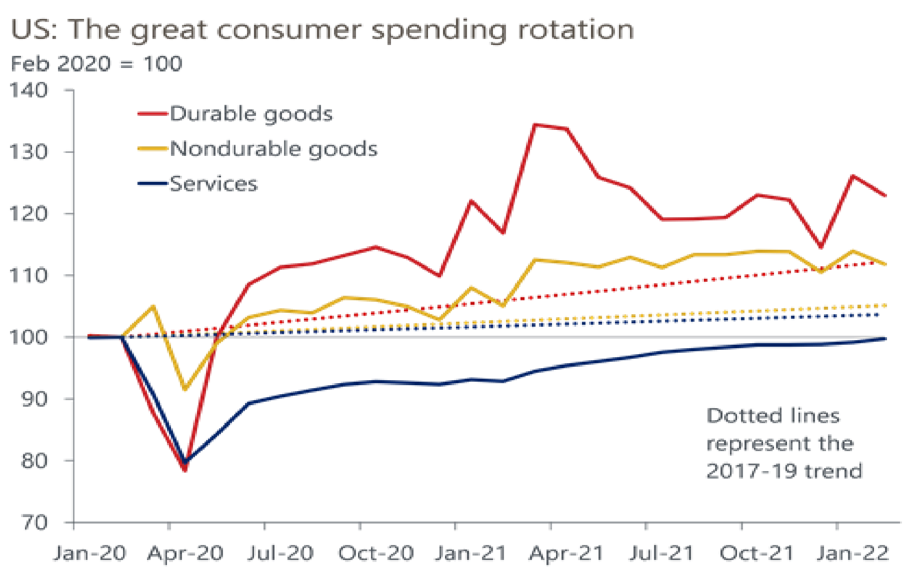
- In retrospect, pandemic-related fiscal programs were excessive
  - Fear of demand destruction set the tone for response
  - During the initial months, concern centered on doing too little, not too much
  - Programs often stressed scale and speed over intelligent design
  - A substantial amount of GDP loss was recouped almost immediately
  - Important amounts of stimulus remain undisbursed and unspent
- The ability to project the impact of pandemic programs on inflation was very limited
  - Nothing comparable in the historical data

➢ ***Policy makers now faced with facilitating demand destruction***

Sources: Statista, Haver Analytics. Data as of February 2022.

PLENTY IN THE PIPELINE





Sources: IMF, Oxford Economics. Chart data as of April 2022.

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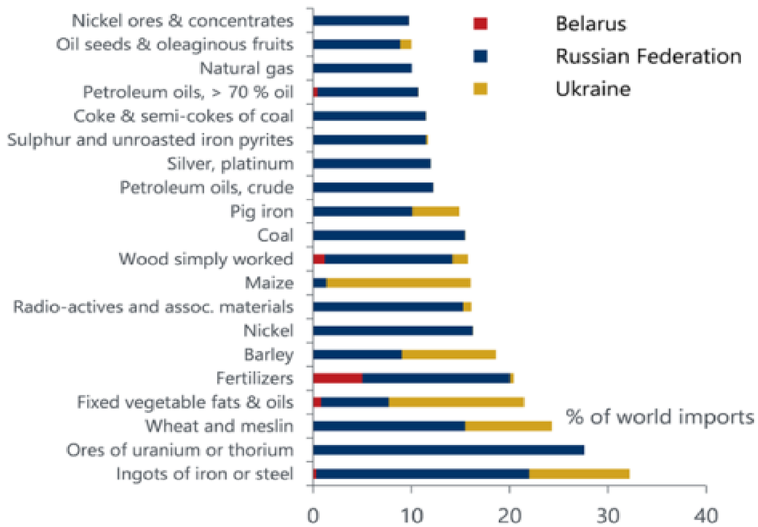
Key Messages

- **Households are in a very good position to lead growth forward**
  - — **Residual saving from pandemic support programs**
  - — **Employment prospects good; wages rising**
  - — **Consumer leverage is modest**
- **Rotation of spending patterns**
  - — **Goods had taken a greater share during COVID waves**
  - — **Services receiving renewed attention (restaurant, travel bookings)**
  - — **Could stress capacity; substantial labor shortages in service sectors**

➢ ***Recession risks not that high for 2022, but rising for 2023***

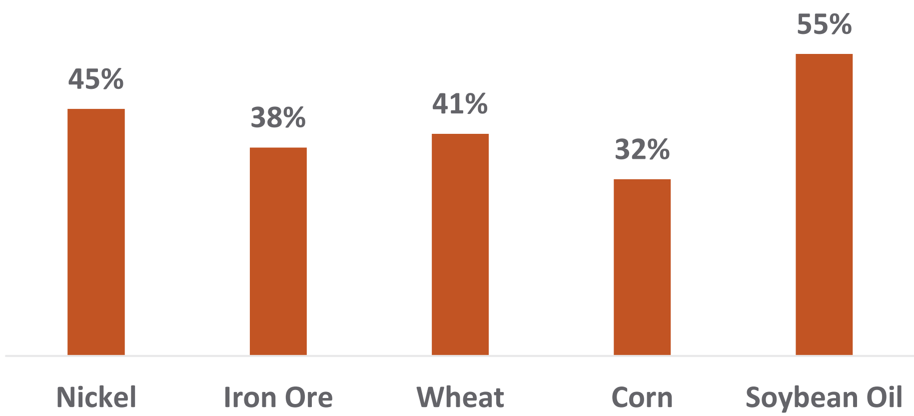
THE COSTS OF WAR

World import exposure to Russia, Ukraine and Belarus



Selected Commodities Prices

YTD Change



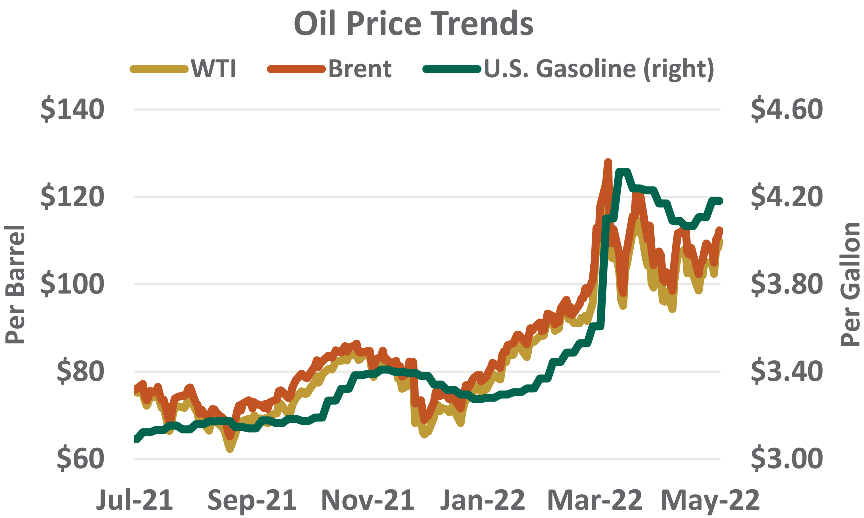
Key Messages

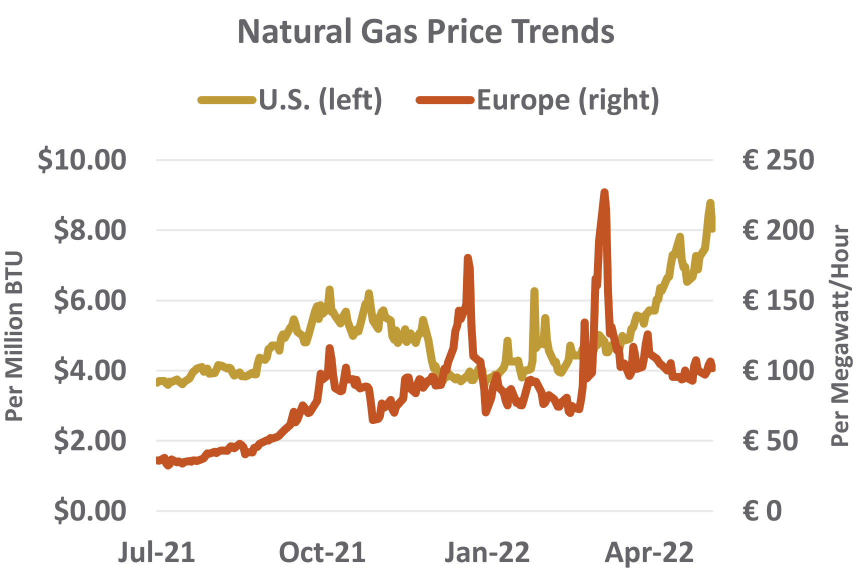
- **The combatants are substantial suppliers of a range of commodities**
  - — **Ukraine's agricultural sector hindered by lack of labor, lack of logistics, and (in some cases) direct destruction**
  - — **Sanctions against Russia and Belarus make it difficult to transact with them**
  - — **A focus on fertilizer as a case study in how widespread the disruption will be**
- **Re-orienting supply patterns is very difficult**
  - — **Global logistics are already snarled**
  - — **Getting supplies into/out of the region very challenging; ports risky**
  - — **Diversion of grains, LNG, and other commodities to needy markets will raise prices globally**

➢ ***Resolution of the conflict does not appear close at hand***

Sources: Oxford Economics, UNCTAD, Bloomberg. Data as of May 2022.

ENERGY COSTS





Key Messages

- **Oil prices have risen by 50% since the start of the year**
  - — **Trend pre-dates the invasion; economic reopening has increased fuel demand**
  - — **Russia accounts for about 10% of global crude production; some still flowing, but this may end soon**
  - — **The inability of Russia to import equipment will impair oil production**
  - — **U.S. production has ramped up slowly**
- **Natural gas has doubled in price since the beginning of the year**
  - — **Expanded LNG exports are part of the picture**
  - — **Stockpiles are low**

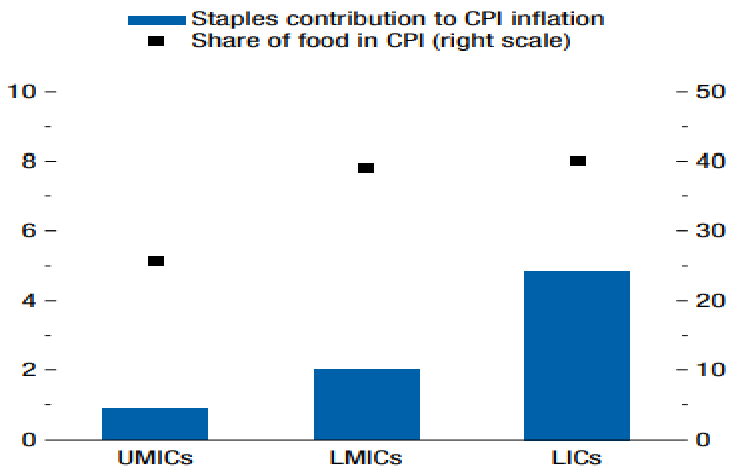
➢ ***Governments scrambling to offer relief and plan for new patterns of demand and supply***

Source: Bloomberg. Data as of May 2022.

FOOD FOR THOUGHT

United Nations Global Food Price Index

Figure 2.1.2. Food Staples Contribution to CPI Inflation; Median, by Income
(Percentage points; percent on right scale)



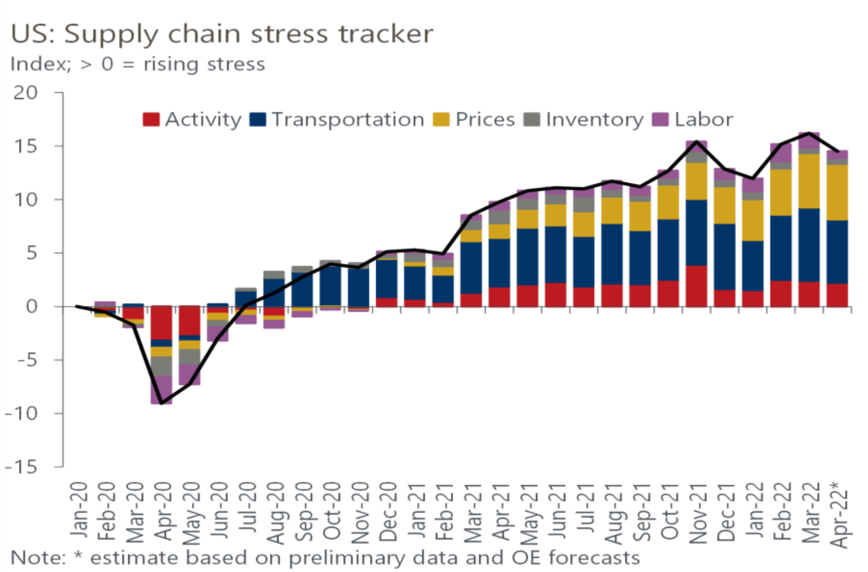
Sources: UN, Bloomberg, IMF. Data as of October 2021.

Key Messages

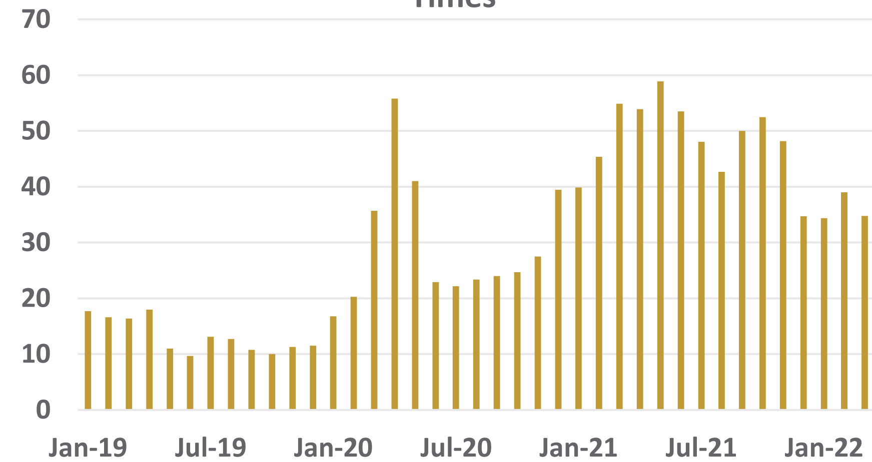
- A series of factors have pressed food prices around the world
  - Poor harvests
  - Logistic limitations (trucks, in particular)
  - Shift to eating at home and back again
  - Energy costs (processing/transport)
  - Protectionism
  - Currency levels
- Scarcity of items has been common
- A particular challenge for emerging markets
  - Food composes a large fraction of consumer price baskets in many countries
  - Some central banks in emerging markets have been forced to tighten

➢ ***Food scarcity and food prices are causing unrest in several parts of the world***

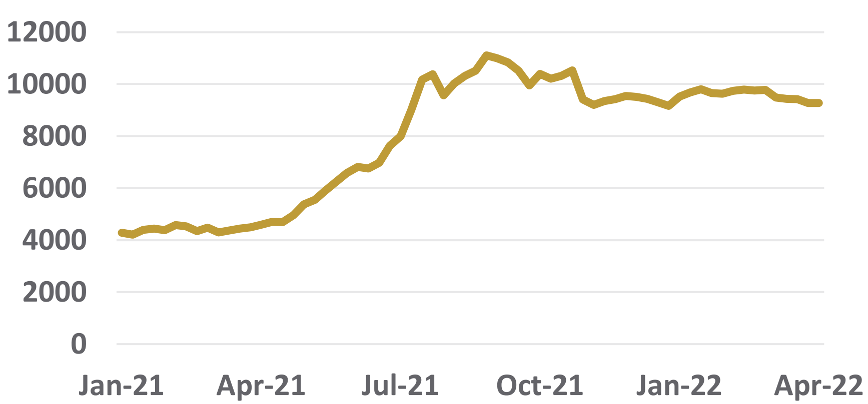
SUPPLY CHAIN FRICTION PERSISTS

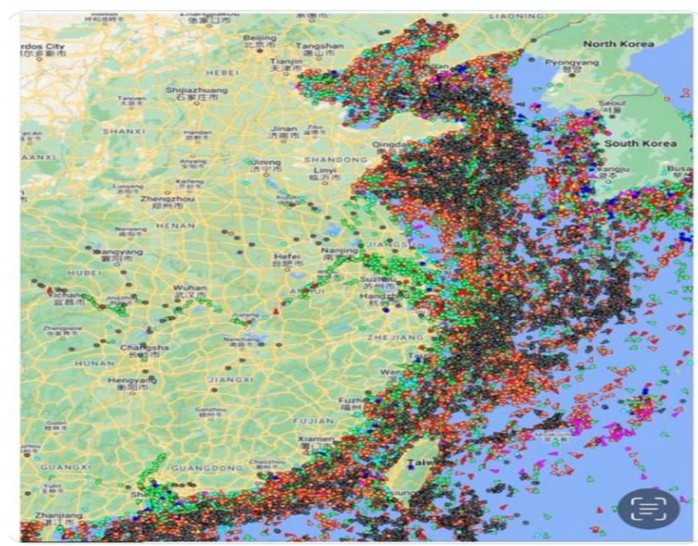


ISM Manufacturing Survey: Percent of Firms Reporting Slower Delivery Times



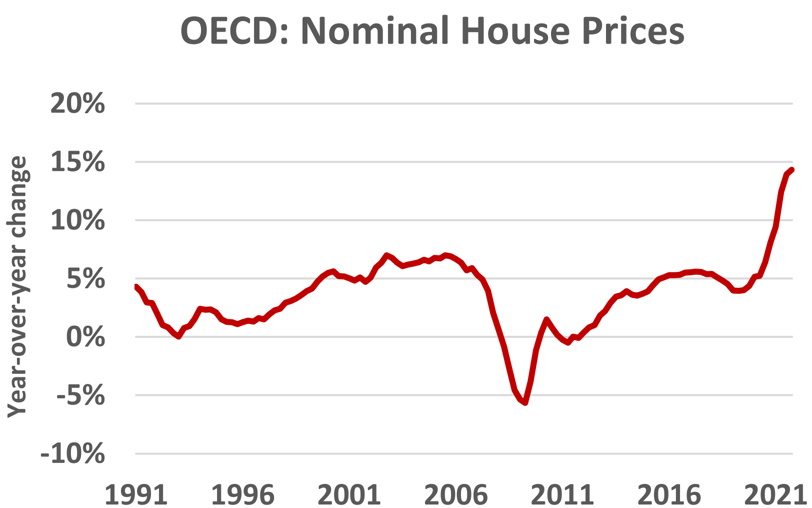
Index of Global Freight Costs

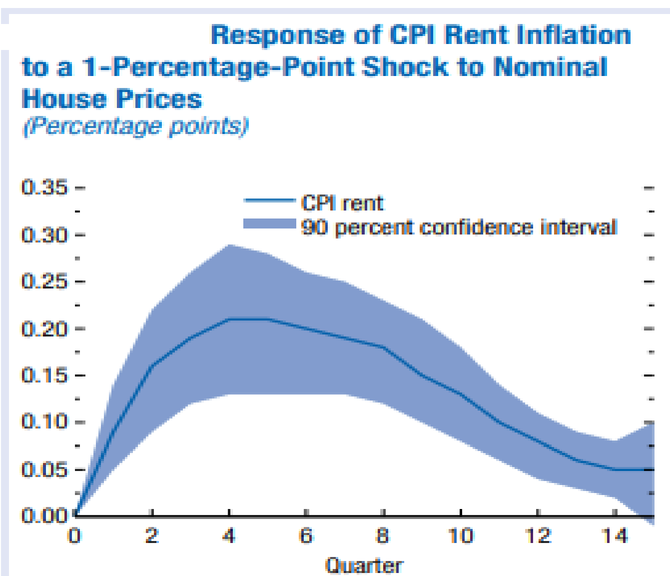




Sources: Oxford Economics, Bloomberg, Freightos, Shanghai Shipping Exchange, Goldman Sachs. Chart data as of April 2022.

RAISING THE ROOF





Sources:Haver Analytics, OECD, IMF. Chart data as of April 2022.

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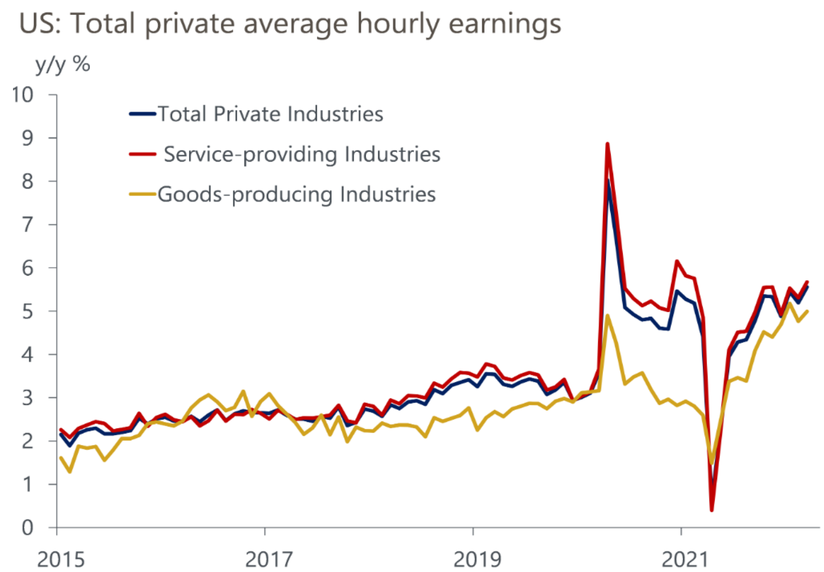
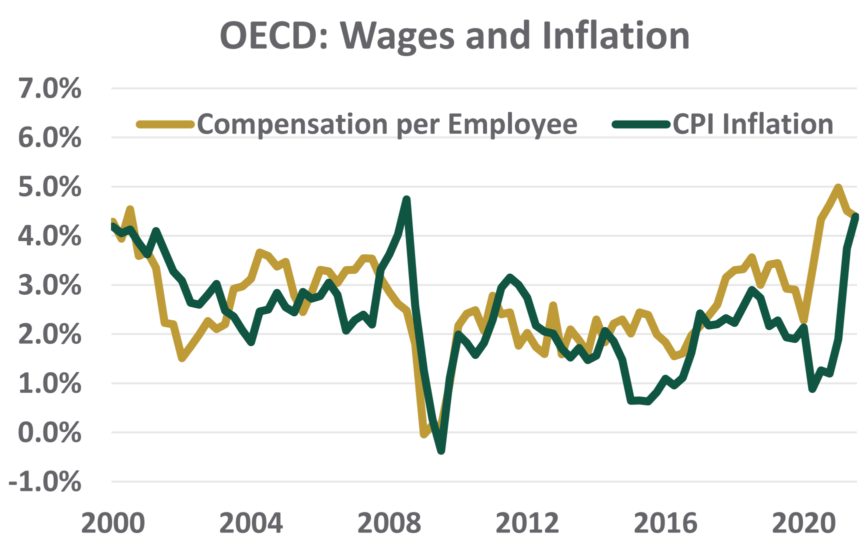
Key Messages

- **Pandemic policy renewed the global housing boom**
  - — **Fiscal support to households**
  - — **QE held down borrowing costs**
  - — **Purchases of mortgage-backed securities (U.S.)**
- **Remote work has placed a premium on living space**
- **Housing supply has grown slowly in many developed markets since the 2008 financial crisis**
- **Higher home prices slowly enter inflation rates**
  - — **Through "equivalent rent"**
  - — **A very large component of many CPIs**
  - — **IMF calculations: 10% increase in home prices adds 2% to inflation**
  - — **Long lags make this contributor more persistent**

➢ ***This process could influence inflation well into 2023***

WAGE/PRICE FEEDBACK LOOP



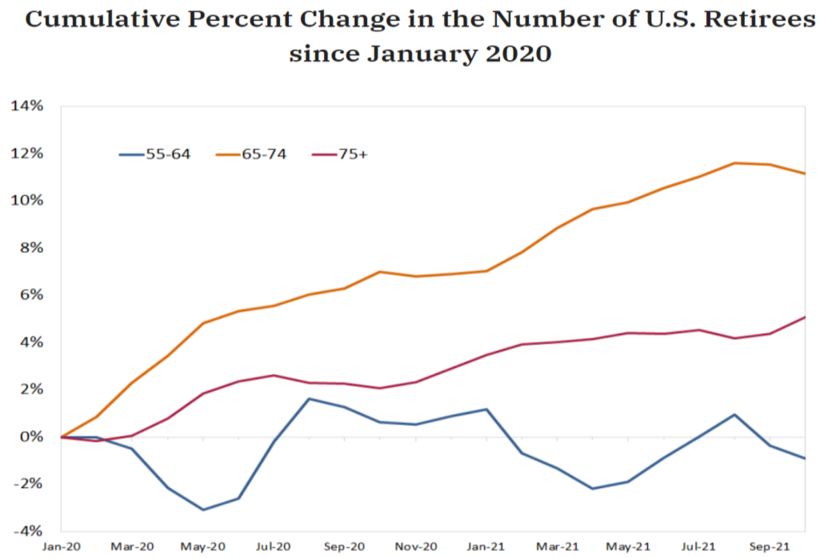


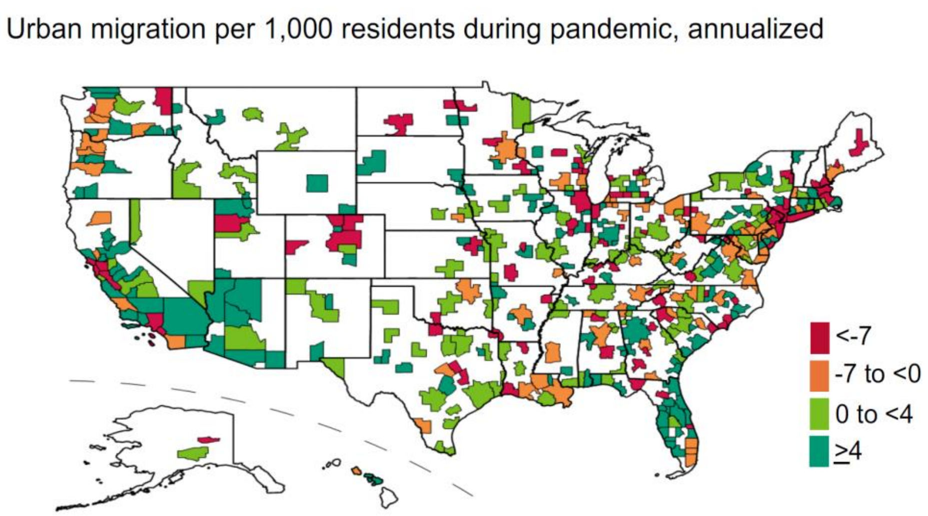
Sources: Oxford Economics, OECD. Data as of April 2022.

Key Messages

- **Wage increases have risen and broadened**
  - **Worker shortages have led to intense competition for labor**
  - **Some progress attracting workers back to the labor market, but substantial friction remains; views here**
- ***Employee leverage has re-emerged with a vengeance***
- **Firms appear to have more pricing power than at any time in recent memory**
  - **High saving levels have made consumers slightly less price conscious**
- **How the spiral gets started**
  - **Workers desire to preserve/increase purchasing power**
  - **Demand raises commensurate with inflation**
  - **Firms pass the higher wages along**
- ***In this way, transitory price increases can become more permanent***

WHERE HAVE WORKERS GONE?



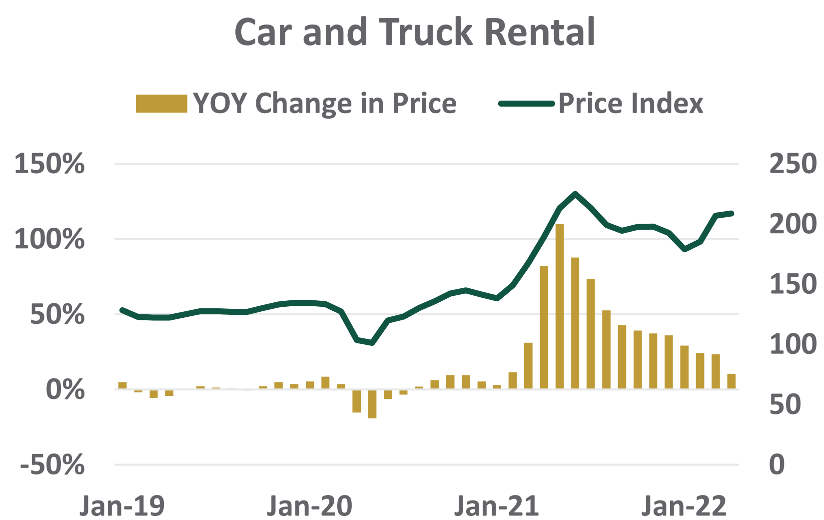


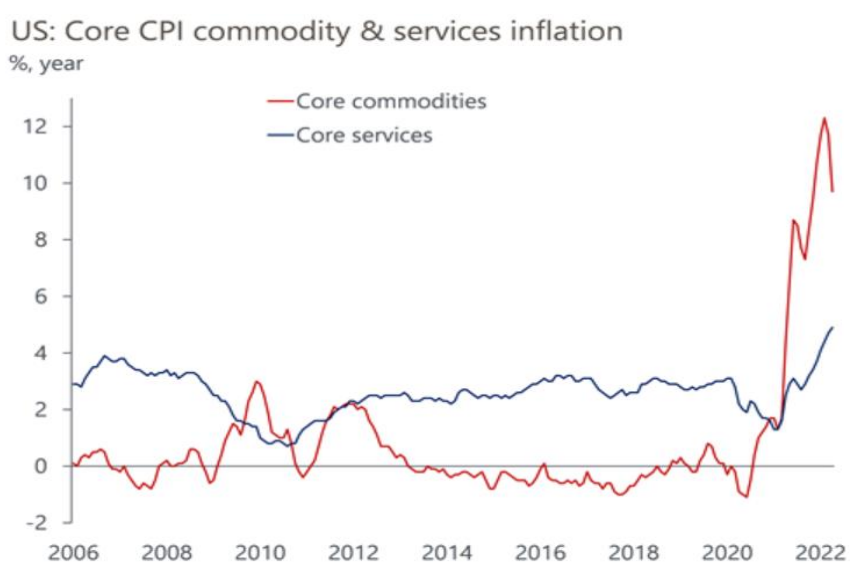
<u>**Key Messages**</u>

- **About 2.4 million Americans say they have retired in the last two years, above what demographic trends would have predicted**
  - — **High COVID concerns**
  - — **A significant number do not have college degrees; may need to return to the workforce**
- **We are missing 2 million legal immigrants that would have normally arrived since the pandemic started**
- **The demand is there, and the supply may follow; but matching is a problem**
  - — **Mismatches of skills and geography**
  - — **Wages will have to continue adjusting to overcome this**

Sources: Federal Reserve Bank of St. Louis, Equifax, Moody's Analytics. Chart data as of February 2022.

HOW WE ARE BREAKING DOWN INFLATION





Sources: BLS, Haver Analytics, Oxford Economics. Data as of May 2022.

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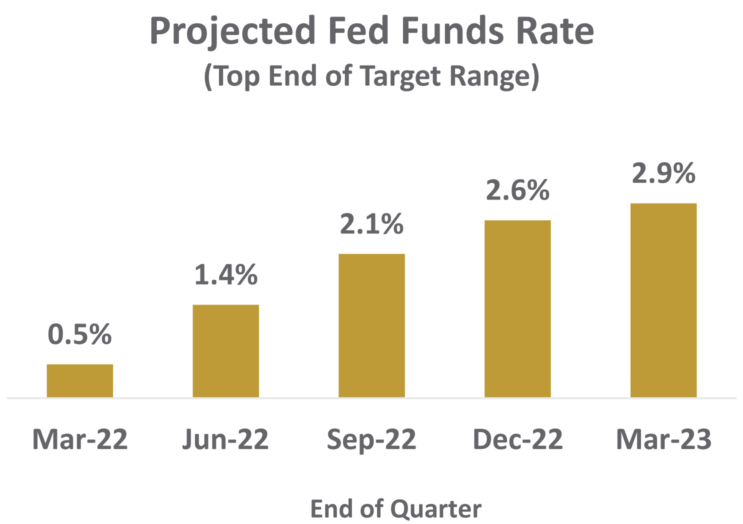
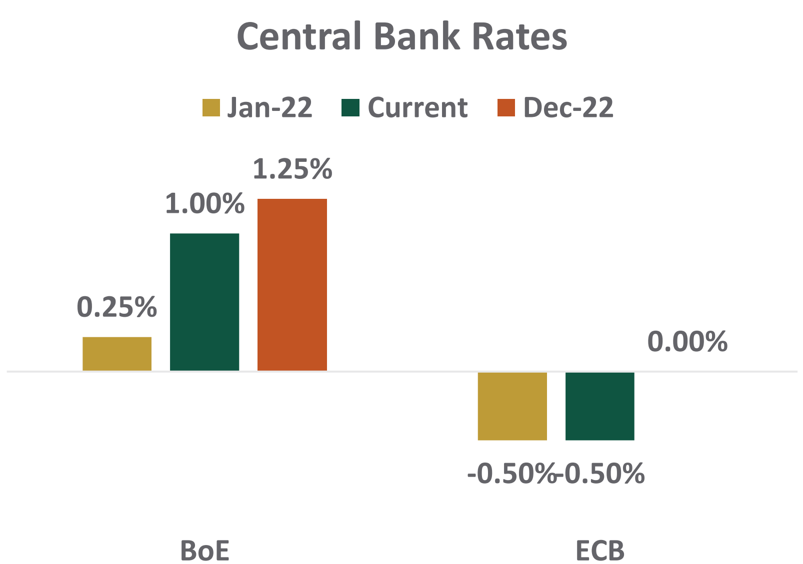
Key Messages

- **Leveling off: categories that surged, but are unlikely to continue rising at their recent paces (or may even decline)**
  - — Energy
  - — Food
  - — Transportation
- **Lingering: areas where endemic problems are unlikely to cure anytime soon**
  - — Goods produced by global supply chains
  - — Shelter costs
- **Question marks:**
  - — Chip-sensitive products
  - — Service prices

MONETARY POLICY OUTLOOK





Interest Rates

- **Our latest call:**
  - An additional 200 basis points of interest rate hikes, with 50 basis point increases in June and July
  - Balance sheet reductions of $2 trillion over the next two years; our views on quantitative tightening can be found here
  - Financial conditions will be monitored carefully to avoid an overcorrection

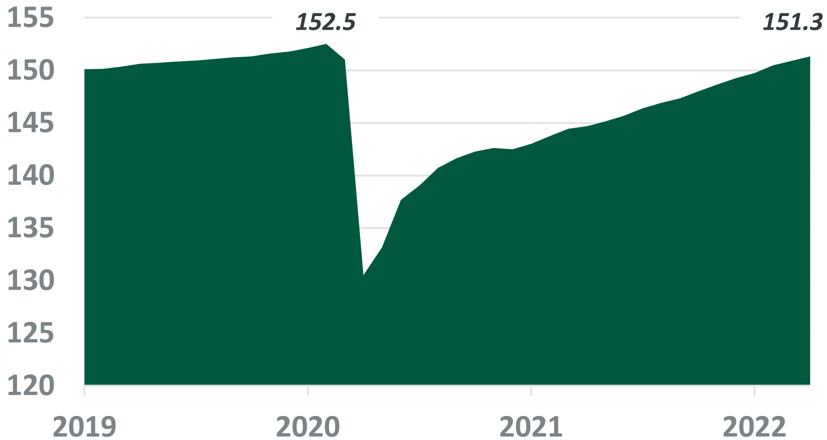
Europe

- Bank of England near the end of its tightening cycle
  - Inflation reducing purchasing power; consumption is faltering
  - Trade stress with the rest of Europe presents downside risk
- The ECB seems likely to join the rate hiking club
  - We expect the benchmark deposit rate to rise 50 basis points this year, bringing it back to zero
  - Given uncertainty related to the war, we think they will stop there

Sources: Northern Trust, Haver Analytics. Data as of May 2022.

RISK OF RECESSION?

Payroll Employment, Millions



Key Economic Indicators

	2022				2023			
	22:1a	22:2f	22:3f	22:4f	23:1f	23:2f	23:3f	23:4f
Real Gross Domestic Product (% change, SAAR)	-1.4	3.4	2.7	2.5	2.1	2.2	2.1	1.9
Consumer Price Index (% change, annualized)	9.2	7.8	4.9	3.1	2.7	2.6	2.5	2.4
Civilian Unemployment Rate (%, average)	3.8	3.5	3.3	3.3	3.3	3.4	3.4	3.5
Federal Funds Rate	0.16	0.78	1.78	2.33	2.84	2.88	2.88	2.88
2-yr. Treasury Note	1.44	2.74	3.07	3.30	3.43	3.44	3.44	3.44
10-yr. Treasury Note	1.94	2.95	3.20	3.40	3.50	3.50	3.50	3.50

a=actual
f=forecast
*=annual average

Key Messages

- Inflation and poor equity returns are concerns, but economic fundamentals are sound
- Employment recovery continues apace
  - Over 400,000 jobs created every month for past year
  - 1.1 million workers shy of February 2020 peak, a gap that can be closed
  - Almost 2:1 ratio of job openings to unemployed people
  - Unemployment rate 3.6%, weekly claims low
- Remaining pent-up saving from pandemic stimulus
- If the opportunity arises, inventory rebuilding will also be a tailwind
- Policy will be less supportive, but not overly restrictive
  - Financial conditions will be key

➢ ***Recession probability is modest in 2022***

Sources: BLS, Haver Analytics, Northern Trust. Data as of May 2022.

BIOGRAPHY

Carl R. Tannenbaum
Chief Economist
Northern Trust

Carl Tannenbaum is the Chief Economist for The Northern Trust. In this role, Mr. Tannenbaum briefs clients and colleagues on the economy and business conditions, prepares the bank's official economic outlook and participates in forecast surveys. Mr. Tannenbaum publishes weekly commentaries and is frequently interviewed by media outlets such as The Wall Street Journal, Bloomberg, and Reuters.

Mr. Tannenbaum was the recipient of the 2021 Lawrence Klein Award, granted by the Blue Chip Economic Consensus to the contributor with the best forecasting record over the prior four years.

Mr. Tannenbaum is also responsible for the analytics and modeling group within Northern Trust's risk management division, and he monitors the strategic risks facing the organization. He is a member of the bank's capital committee, its investment policy committee, and the asset/liability management committee.

Prior to joining Northern Trust, Mr. Tannenbaum spent four years at the Federal Reserve, where he led the risk section. He was deeply involved in the central bank's response to the 2008 financial crisis, helped to create and conduct its stress testing program, and advised senior Federal Reserve leaders on developments in banking and the financial markets.

Mr. Tannenbaum began his career in banking at LaSalle Bank/ABN AMRO, a global banking organization with $1 trillion in total assets. He served for more than 20 years there as the organization's Chief Economist and Head of Balance Sheet Management.

Mr. Tannenbaum is the current Chairman of the International Conference of Commercial Bank Economists and a past Chairman of the National Association for Business Economics, the Conference of Business Economists, the American Bankers Association's Economic Advisory Committee, and the North American Asset/Liability Management Association.

Mr. Tannenbaum holds an M.B.A. and a B.A. in finance and economics from the University of Chicago.

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