Commodities in 2023

"Best Performing Asset Class" 3rd Year in Row?

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What Happened in 2022?

While commodities were the best performing asset class for the 2nd year in a row, 2022 was a tale of two halves. Performance was largely defined by the Russia-Ukraine war, Federal Reserve (Fed) tightening, China's lockdowns and tight supply/demand fundamentals.

Energy

- Top performing commodity sector for the year
- **Strong Fundamentals** – In H1 2022, tight supplies (especially for refined products) were exacerbated by the war in Ukraine while demand remained resilient.
- However, aggressive Fed tightening, Europe's energy crisis and China's persistent lockdowns shattered investor confidence in H2 2022, leading to a sharp selloff.

Agriculture

- Agricultural commodities had initial strong positive performance as adverse weather and the war in Ukraine upended yields and flow of goods.
- However, prices retreated as Russia surprised the market with record levels of wheat and limited Ukrainian exports resumed under the Black Sea Grain Initiative.
- Tight balances left little room for error causing heightened volatility in the space.

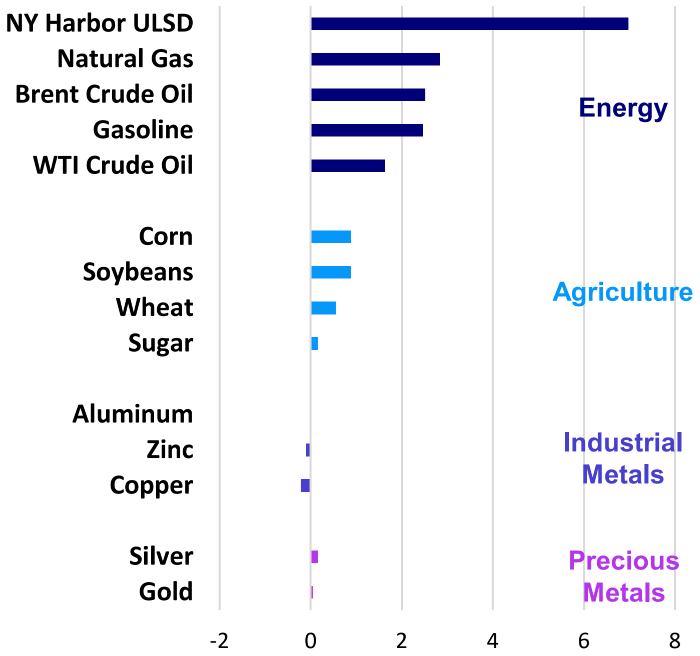
Industrial Metals

- Industrial metals had a strong start to the year, but gains were largely wiped out due to the summer's macro-driven selloff, despite historically low inventories.
- China's expanding lockdowns and struggling property sector remained the largest headwind for the sector, with dollar strength further denting export demand.

Precious Metals

- Despite trending lower for most of the year on dominating macro headwinds, gold ended 2022 largely flat while silver managed to squeeze in a small yearly gain.
- Precious metals were initially propped up by safe haven and inflation hedging demand but went into freefall amid aggressive central bank tightening and rising treasury yields/ a stronger US dollar.

DBIQ Optimum Yield Diversified Commodity Index
2022 Full Year Performance Attribution (%)



Source: Deutsche Bank, Invesco ETFs, FactSet as of Dec 31, 2022

Past performance is not a guarantee of future results. An investment cannot be made into an index. See page 14 for index definition.

Summary: Commodities 2023 Outlook

Energy

- **China Reopening**: "2023 will [likely] see **strong sequential demand growth from China's reopening** and recovering international travel."[1]
- **Lack of Investment**: "Alongside this, is the **manifestation of a decade of underinvestment**, with global ex US/OPEC+ production declining through 2026. Meanwhile, the US shale industry has matured, with a focus on shareholder returns."[1]
- **Geopolitical landmines** also remain an ever-present risk as the war in Ukraine persists and the effects of the EU sanctions still need to play out.

Industrial Metals

- **China's recovery and central bank policies** remain the key swing factors in 2023 and should be bullish for prices once things kick off and the path forward clears.
- **Other Drivers:** Fed action (dollar moves) and recession concerns
- **Green Spending & Supply Concerns**: "Looking beyond 2023, base metals still carry a potent bull thesis given both the boosted demand prospects (Inflation Reduction Act) from energy transition and obstacles to supply over the next decade."[2]

Agriculture

- **Russia / Ukraine**: "The unprecedented scale of geopolitical fallout on agricultural markets from Russia's war in Ukraine will continue to compound fundamental fragilities across the agricultural complex."[3]; Even with a ceasefire, "agricultural markets will be subject to a low production hangover…for years to come."[4]
- **Energy Transition:** Could benefit "energy crops" like corn, sugar and soybeans.
- **China Reopening:** "On the demand side, hints of a **recovery in China's growth** and agricultural import demand have been evident in recent months."[3]

Precious Metals

- **Macro Developments**: Going into 2023, we expect things to look brighter as **"gold-negative macro headwinds appear weaker."**[5] Fed action will likely remain a key driver, especially as they work towards a soft landing in the US.
- **Geopolitical risks** remain abundant given "Russia's ongoing war in Ukraine, US-China tensions," etc. "as the world continues to face elevated inflation and commensurate economic challenges."[5]
- **Global Central Bank De-Politicizing Reserves**: Central banks are buying gold to replace dollar-denominated assets.

Sources: [1]Goldman Sachs Research, 2023 Oil Outlook: Market adjourns, conviction remains, Dec 13, 2022; [2]JPMorgan, *Base and Precious Metals 2023 Outlook: False starts before full stride*, Nov 23, 2022; [3]JPMorgan, *Agri Markets Outlook 2023/24: Fundamental fragility - the new normal*, Nov 28, 2022; [4]JPMorgan, *2023 Commodities Outlook: Oil and gold to drive commodity returns in 2023*, Dec 01, 2022; [5]RBC Insight, *Gold Strategy: A Turn is Coming*, Dec 09, 2022

Commodities: Key Influencing Factors for 2023

Macro: Inflation, Central Bank Tightening, Recession Risks

Geopolitics: Russia-Ukraine War, US-China Tensions

Policy: China Reopening, OPEC+, US SPR, Inflation Reduction Act (IRA)

Micro: Supply & Demand Fundamentals

Macro Drivers

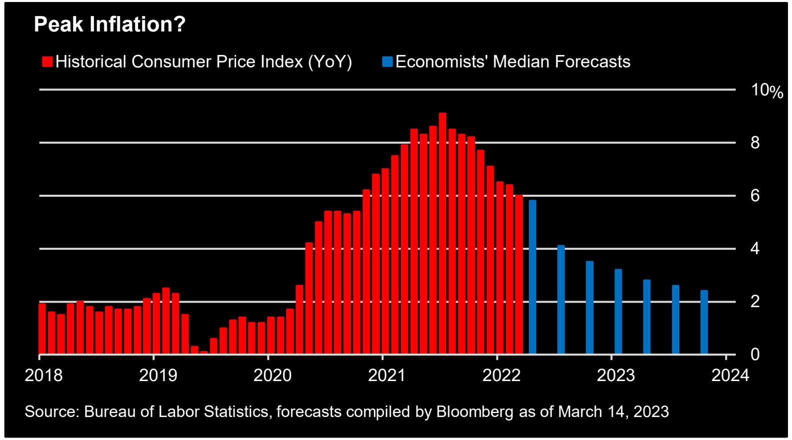
- Current Environment
- The Inflation / Commodities Relationship
- Inflation Sensitivity to Different Asset Classes
- Asset Class Performance During Fed Hike Cycles
- Recession Risk

Inflation – Current Environment & Future Drivers

While inflation has come down significantly since its peak in June 2022, it still remains well above 2%.

Current Environment

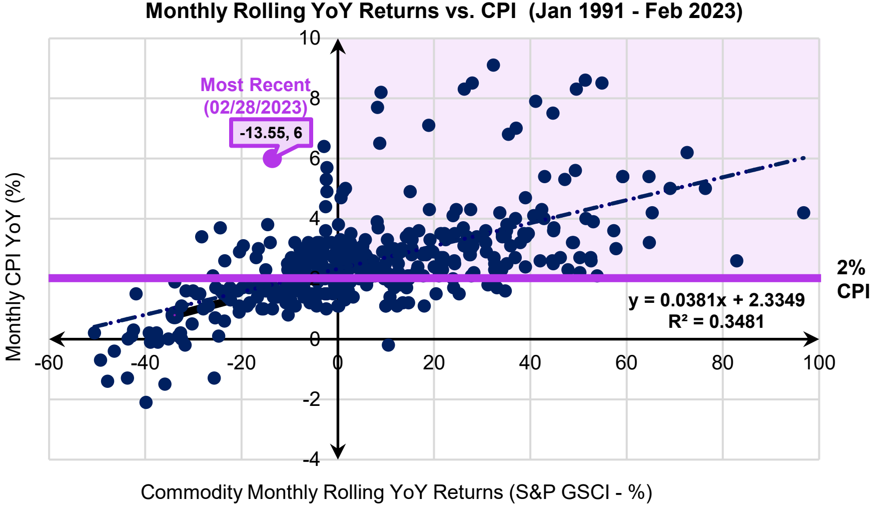
- While inflation has come down significantly since hitting a 40-yr high in June 2022, the YoY Consumer Price Index (CPI)[1] remains elevated with the latest print of 6.0% for Feb 2023.
- Hawkish central bank policies, most notably the Fed, have brought and should continue to bring down inflation, albeit gradually, to ensure a “soft landing”.



[1]**Consumer Price Index (CPI)** is a measure of the average change over time in the price of a market basket of consumer goods & services (transportation, food, medical care etc.) to assess changes in cost of living and identify periods of inflation/deflation

The Inflation / Commodities Relationship

Commodity returns were largely positive when YoY CPI was greater than 2%



When CPI was greater than 2%:	
Positive Returns	73%
Negative Returns	27%

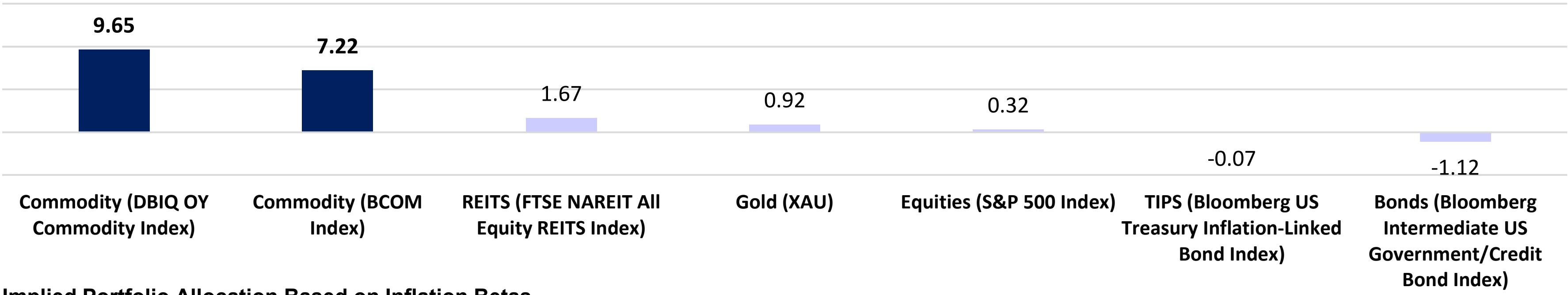
When CPI was less than 2%:	
Positive Returns	26%
Negative Returns	74%

Forward-looking statements are not guarantees of future results. They involve risks, uncertainties and assumptions, there can be no assurance that actual results will not differ materially from expectations.
Source: Bloomberg L.P., Jan 1991 - Feb 2023. Past performance is not a guarantee of future results. An investment cannot be made into an index. See page 14 for index definition.

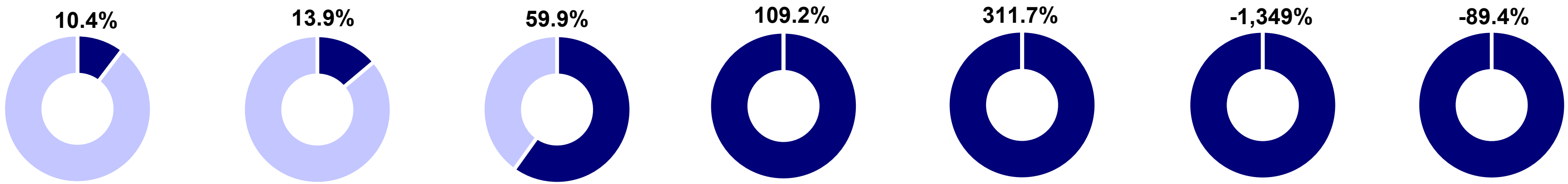
Inflation Sensitivity to Different Asset Classes

Commodities are historically the most efficient hedge for inflation

Inflation Betas[1] (1998 – 2022)



Implied Portfolio Allocation Based on Inflation Betas



Commodities had a challenging second half of 2022 as macro fears on risk assets bled over despite strong fundamentals (tight supply and strong demand). This led to a decrease in inflation betas (i.e., higher allocation requirement) across all asset classes, but the least drastically in commodities.

[1]**Inflation Beta** is a metric used to evaluate an asset class' ability to hedge inflation. It measures the change in inflation against the return of the asset class over a specific time period (1998 – 2022 in the chart above)

Inflation Beta = slope of the regression line between the asset's yearly returns and YoY CPI on the last day of each year (Ex: For 2022, use YoY CPI on Dec 31, 2022)

Source: Bloomberg L.P., US Bureau of Labor Statistics, as of December 2022

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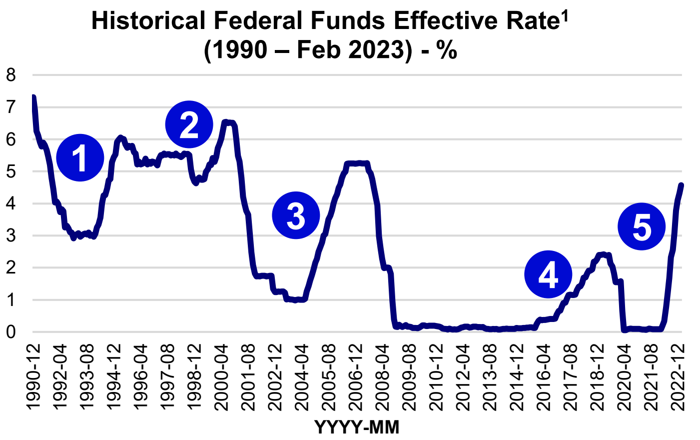
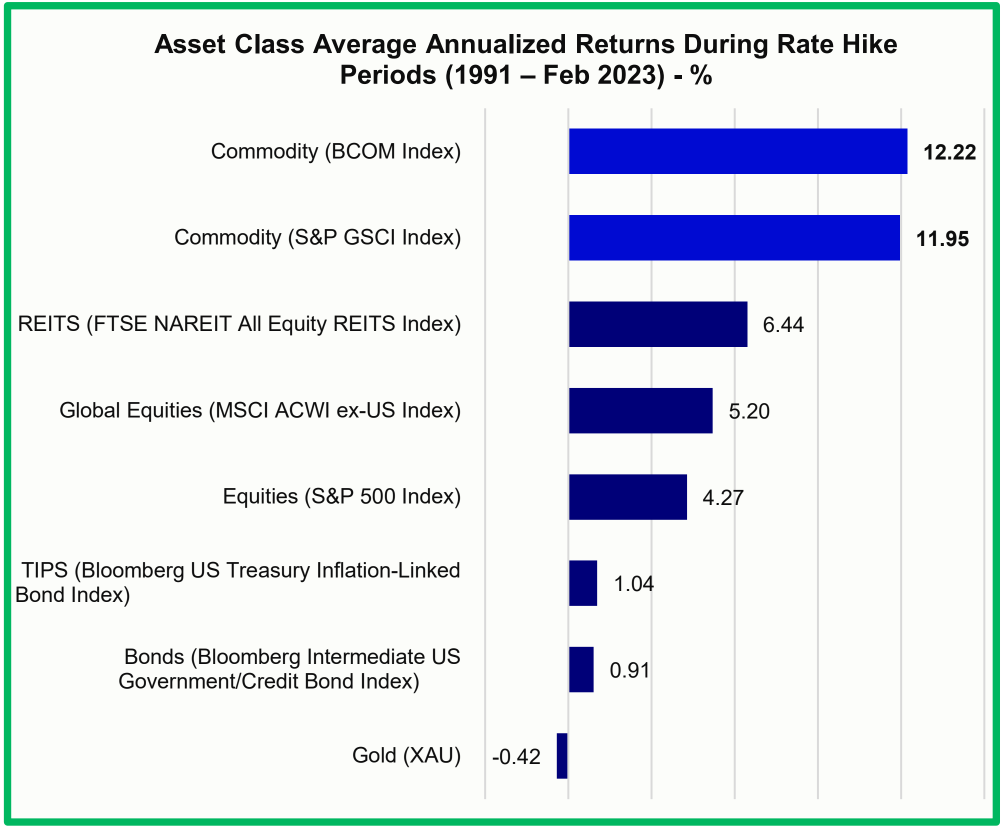
Fed Rate-Hike Cycles: A Lens for Comparing Asset-Class Returns



	Rate Hike Period	Total Change in FFER (%)	Number of Months in Period	Avg. Rate Change/ Month (%)
1	94-95 period	3.00	16	0.19
2	99-00 period	1.66	20	0.08
3	04-06 period	4.21	27	0.16
4	15-19 period	2.29	41	0.06
5	**Current Period: Mar22 – Feb23**	**4.49**	**13**	**0.35**



[1]**Federal Funds Effective Rate (FFER) –** The interest rate banks charge each other for overnight loans to meet their reserve requirements, which can influence short-term rates on consumer loans and credit cards. This is set by the Federal Open Market Committee (FOMC), the branch of the U.S. Federal Reserve that makes decisions on monetary policy

Source: Bloomberg L.P. as of February 2023

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Invesco

Top of Mind: China Reopening

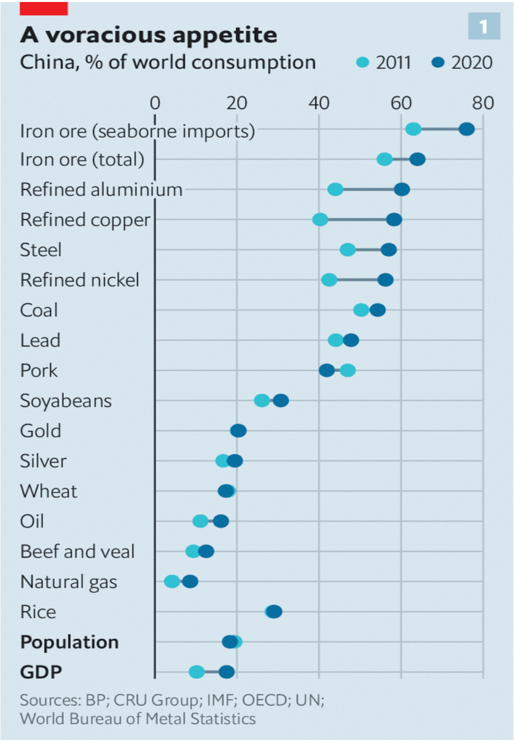
- Biggest Consumer of Commodities
- Impacting Every Commodity Sector

Russia/ Ukraine War

China Reopening – A Key Swing Factor

The health of the Chinese economy is one of the key determinants of commodity pricing and thus, "China's reopening is unequivocally bullish for commodities, but timing matters."[1]

Energy	Industrial Metals	Agriculture
➢ **Chinese mobility** numbers are steadily improving – 9 out of 10 tracked cities have seen public transit ridership above 80% of pre-pandemic levels.[2] ➢ **Crude Oil** – An expected 1.1 mb/d rise in China demand this year (Q4/Q4) should push oil markets back into a deficit in June 2023.[3] ➢ **Jet Fuel** – "Revenge Travel" – weekly total flight counts are currently near 80% of normal, on track to be 5.2% above 2019 levels by the end of 2022.[2]	➢ China is at the center of the global growth upgrade (to 3.6%) and the dominant metals consumer.[4] ➢ If China's growth accelerates into Q2, we could see decreasing inventories and increasing demand, moving metal prices higher.[4] ➢ "The government's renewed focus on growth provides a policy underpin for onshore metals demand not seen since the 2020 COVID stimulus."[4] ➢ **Other Drivers**: Building industry, renewable energy and EV growth.	➢ With export arbs to China open as onshore prices rise, the US has seen a sequential improvement in exports.[4] ➢ Issues in Latin American farms are allowing China to draw down US stocks before the start of the growing season.[4] ➢ The Live cattle market is structurally bullish, with greater household spending in China on protein (and supply limited by high grain costs in 2022).[4]



The Economist

Source:
[1]RBC Insight, *Oil Strategy: China – The Sequential Indicators to Watch*, Jan 29, 2023
[2]RBC Insight, *Digital Intelligence Strategy: Quantifying the Rate of Change of China's Reopening*, Feb 15, 2023
[3]Goldman Sachs Research, Lowering Our Oil Price Forecast; Deficit Still Pending on China Reopening, Feb 09, 2023
[4]Goldman Sachs Research, *Real Asset Investing: Next leg higher pending on a firmer micro*, Feb 20, 2023

Russia-Ukraine War – Geopolitical Landmines & Escalation Risk

"The war has now seemingly settled into an intractable stalemate. And yet, with both sides still believing that they can prevail, and the diplomatic track frozen, the risk of escalation and a wider war remain ever present."[1]

Energy

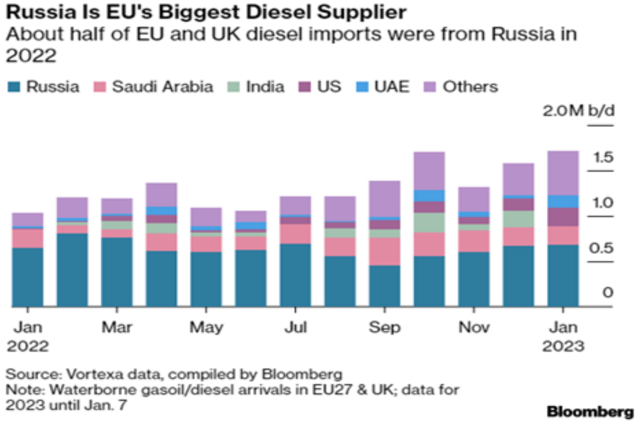
- EU's sanctions on Russian seaborn oil and refined products & the remapping of global trade routes
- Russia Weaponizing Natural Gas – Europe has been lucky but for how much longer…

Agriculture

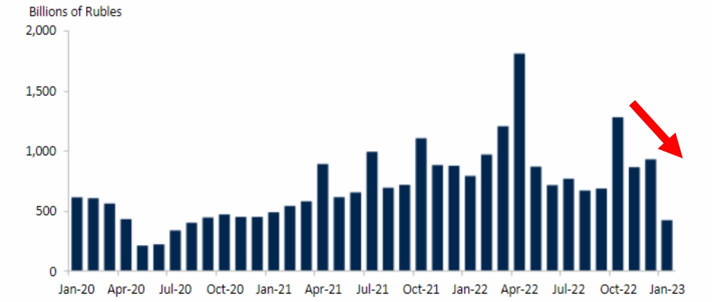
- Black Sea Grain Initiative – Quarterly renewals not guaranteed
- Record Russian wheat exports in 2022 – Can they keep it up?
- Limited fertilizer exports to "unfriendly" countries

Industrial Metals

- Russian Aluminum Bans / Tariffs
- High natural gas prices = Higher smelting costs



Russia Oil and Gas Tax Revenue



Source: Russia Ministry of Finance, Bloomberg L.P., RBC Capital Markets

Source: [1]RBC Insight, *Russia/Ukraine: Escalation Dominance*, Feb 22, 2023

Energy Transition & Climate Change – Bullish

Why is “Net Zero” Actually “Greenflationary”?

- Energy
- Industrial Metals
- Agriculture

Key Thesis Risk Cases

Geopolitical Relief

Easing geopolitical tensions could alleviate market disruption concerns

Government Action

Governments intervene to lower commodity prices

Oil Supply Growth

OPEC+ increasing production, US producer discipline ceasing, production from Venezuela /Iran

Stalled Chinese Reopening

Actual growth falls below expectations or takes longer to materialize

Demand Destruction

Record demand could die down if prices move higher and "revenge demand" eases

Deep Global Recession

A long, deep reduction in GDP could cause a sharp reduction in demand

Russian Commodity Flood

Due to financial needs, Russia could continue to flood the market with commodities

COVID-19 Variants

While the world has largely recovered from this, new strains remain an ever-present risk

About risk and other important information

Index Definitions

- **S&P Goldman Sachs Commodity Index (GSCI)** – Diversified benchmark commodities index tracking the performance of the global commodities market
- **DBIQ OY Commodity Index** – The DBIQ Optimum Yield Diversified Commodity Index is a rule-based index composed of futures contracts of the 14 most heavily-traded and important global commodities
- **BCOM Index** – The Bloomberg Commodity Index (BCOM) tracks the performance of a diversified basket of global commodities
- **REITs (FTSE NAREIT All Equity REITs Index)** – Real Estate Investment Trusts are companies that own and/or operate income-producing real estate. The index is an unmanaged index considered representative of US REITs
- **S&P 500 Index** – This is an unmanaged index considered representative of the U.S. stock market. It is widely regarded as the best single gauge of large-cap U.S. equities and includes 500 leading companies
- **XAU** – Gold spot price quoted in US Dollars
- **TIPS (Bloomberg US Treasury Inflation-Linked Bond Index)** – Treasury Inflation-Protected Securities are Treasury bonds indexed to inflation to protect investors against a decline in purchasing power. The index measures the performance of the US TIPS market
- **Bloomberg Intermediate US Government/Credit Bond Index** – The index is a broad-based benchmark that measures the non-securitized component of the US Aggregate Index with less than 10 years to maturity. The index is comprised of the Intermediate U.S. Treasury and U.S. Agency Indices
- **Purchasing Managers' Index (PMI)** – an index of the prevailing direction of economic trends in the manufacturing and service sectors.

About risk and other important information

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Commodities may subject an investor to greater volatility than traditional securities such as stocks and bonds and can fluctuate significantly based on weather, political, tax, and other regulatory and market developments.

In general, stock values fluctuate, sometimes widely, in response to activities specific to the company as well as general market, economic and political conditions.

Interest rate risk refers to the risk that bond prices generally fall as interest rates rise and visa versa. An issuer may be unable to meet interest and/or principal payments, thereby causing its instruments to decrease in value and lowering the issuer's credit rating.

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