

Global Economic Changes and Their Impact on Inflation



Josh Silva
Managing Partner
Chief Investment Officer



Ashwin Karanth
Partner
Head of Research and Risk Management

Key Points

- Inflation comes in waves rather than as a steady increase, driven by factors like demand-pull and cost-push inflation, monetary policy, and commodity price fluctuations.
- Inflationary waves, particularly those triggered by the COVID-19 pandemic, energy price spikes, and geopolitical tensions, have all impacted global prices.
- Asset classes perform differently in equity bull and bear markets, and periods of rising and falling prices. While commodities and real estate generally perform better in high inflationary environments, investors are well-served to include TIPS and equities.
- Dynamic asset allocation highlights the importance of including real assets in investment portfolios to hedge against inflation shocks and currency depreciation.
- A well-diversified portfolio will perform better across varying economic conditions, including inflationary and disinflationary periods. It emphasizes the role of equities and demonstrates how adding equities to a portfolio consisting of real assets enhances the risk reward profile.

Introduction

Over the past decade, global supply chains have experienced significant transformations characterized by increased globalization, the adoption of just-in-time (“JIT”) inventory management, and greater efficiency with technological advancements.

This period has seen a dramatic shift in how companies manage their supply chains. Greater globalization has facilitated the integration of supply chains across regions, allowing companies to optimize costs and access new markets through international sourcing, manufacturing, and distribution networks. However, this has also resulted in more complex and interconnected supply chains that are vulnerable to disruptions.

The widespread adoption of JIT inventory management and lean manufacturing practices has become central to these strategies. By aligning production and delivery closely with customer demand, companies have sought to minimize inventory levels and reduce costs. While this approach has led to cost savings and improved profitability, it has simultaneously increased vulnerability to disruptions, as there is less of a buffer to absorb shocks from trade disputes, natural disasters, pandemics, and the like.

Events like the COVID-19 pandemic and geopolitical tensions have further highlighted these vulnerabilities, resulting in shortages and production bottlenecks. Consequently, companies are facing upward pressure on prices, which has contributed to inflation. In contrast, Artificial Intelligence (“AI”) is emerging as a transformative technology, with rapid adoption expected to enhance productivity and further reshape supply chain management, thereby impacting inflation. AI adoption is already happening globally at breathtaking speed. Overall, companies face a balancing act between efficiency and resilience in the evolving landscape of global supply chains.

Inflation refers to the general increase in prices, which can erode purchasing power and impact investment returns. The interplay between supply chain vulnerabilities and inflation presents both challenges and opportunities for investors. Investors must be aware of the potential risks associated with inflation, including market volatility and changing interest rates. A proactive approach to portfolio management and active re-weighting of components within an investment portfolio can help navigate these uncertainties. This is more relevant now than in the past.

This paper examines the evolving landscape of inflation and aims to provide insights into its complexities. It explores the ways investors can protect against inflation, emphasizing the importance of maintaining a diversified portfolio. By analyzing various investment strategies and asset classes, we seek to inform investors of recent changes in the global economy and to help them better navigate today’s inflationary pressures. Through a comprehensive overview, it addresses the potential risks and opportunities that inflation presents, ultimately guiding investors toward more resilient financial decisions in uncertain economic environments.

Inflation in Waves

Inflation moves in waves rather than in a steady, continuous rise in prices. Inflation catalysts often take time to affect prices. The following are the different types of inflationary conditions:

Demand-Pull

Periods of strong economic growth and high consumer demand lead to demand-pull inflation. This is when increased demand for goods and services outpaces the ability of supply to keep up. Inflationary waves are created as the economy goes through cycles of high and low demand.

Cost-Push

Spikes in the prices of key inputs, such as energy, raw materials, or labor, can lead to cost-push inflation. Rising production costs are passed on to consumers in the form of higher prices. Cost increases create inflationary waves as the economy responds to the changing input costs.

Monetary Policy

Central Bank actions, such as interest rate hikes or quantitative tightening, slows economic activity. This, in turn, curbs inflationary pressures, leading to periods of lower inflation. As Central Banks attempt a 'soft landing' by easing the short end of the curve, they run the risk of re-igniting inflation.

Psychological

Inflation can become self-reinforcing. If consumers and businesses start to expect higher prices in the future, they change their spending and pricing behaviors accordingly. This can impact the amplitude and duration of an inflationary cyclical wave cycle.

Structural

Longer-term structural changes, such as demographic shifts, technological advancements, or changes in global trade patterns, contribute to waves of inflation over time.

Most Recent Inflation Waves

COVID-19 Pandemic Wave

The COVID-19 pandemic caused disruption to global supply chains, leading to shortages of goods, materials, and labor. This, combined with accommodative fiscal policy from governments around the world as well as a surge in consumer demand has led to a wave of inflationary pressure that peaked in mid-2022. Inflation rates reached multi-decade highs in most developed economies.

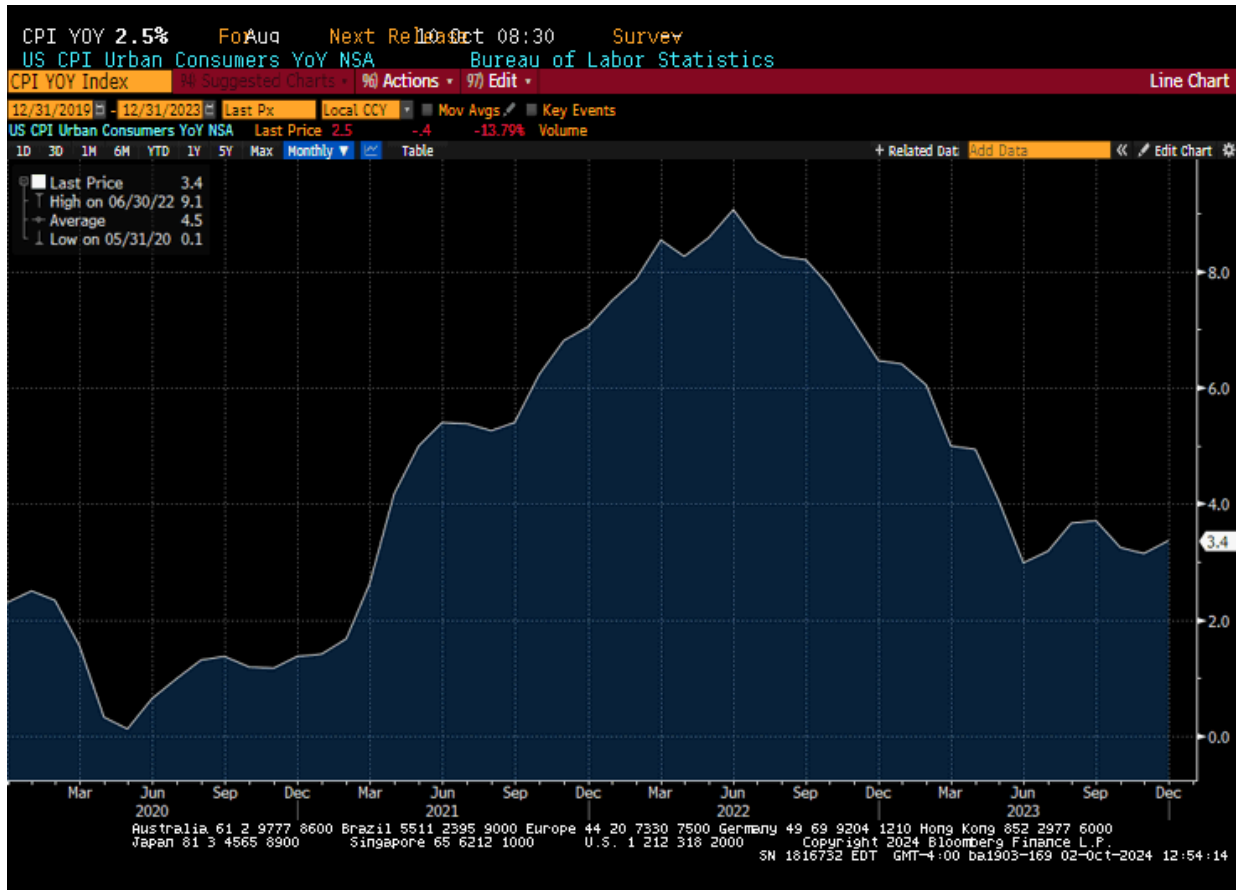


Exhibit 1: Sourced from Bloomberg. “CPI YOY Index” is the US Consumer Price Index Year over Year from 12/2020 to 12/2023.

Energy Price Wave

Starting in 2021, driven by factors such as the post-pandemic recovery in demand, geopolitical tensions, and supply chain issues, the global economy experienced a sharp rise in energy prices, particularly for oil and natural gas. These circumstances created a cost-push inflation wave that led to higher prices for consumers and businesses.



Exhibit 2: Sourced from Bloomberg. “CL1 COMB Comdty” is the Generic 1st Crude Oil futures contract from 12/2020 to 12/2023

Food Price Wave

Disruptions to agricultural production and supply chains, combined with the impacts of the Russia-Ukraine conflict, led to a wave of rising food prices globally. This was particularly impactful on certain commodities, such as wheat and vegetable oils, causing hardship for many households.

Housing Demand Wave

The COVID-19 pandemic led to a surge in demand for housing, driven by factors like low-interest rates and remote work arrangements.

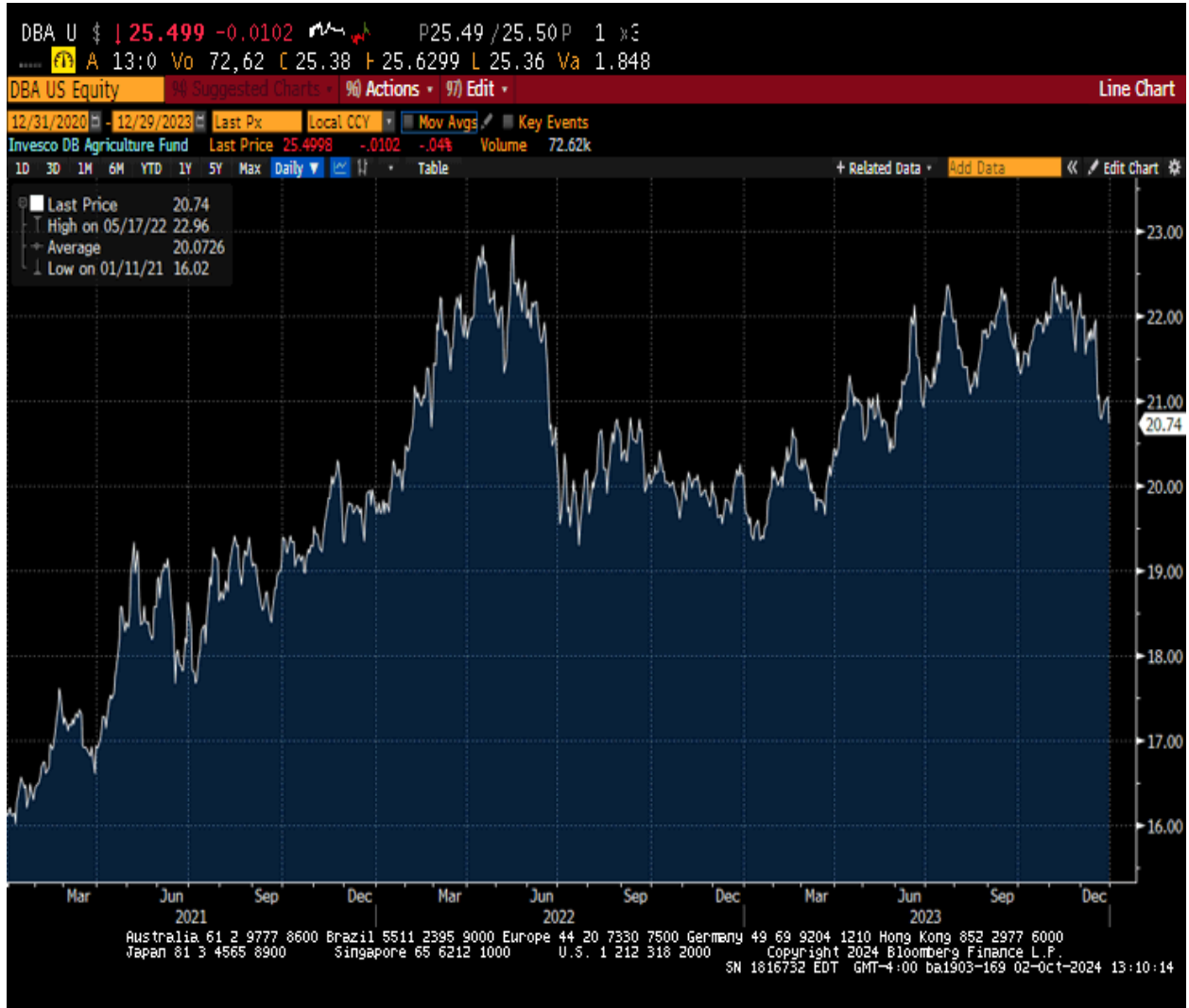


Exhibit 3: Sourced from Bloomberg. “DBA US Equity” is the Invesco DB Agriculture Fund from 12/2020 to 12/2023

This combined with supply chain issues and labor shortages in the construction industry led to increases in home prices and rents.

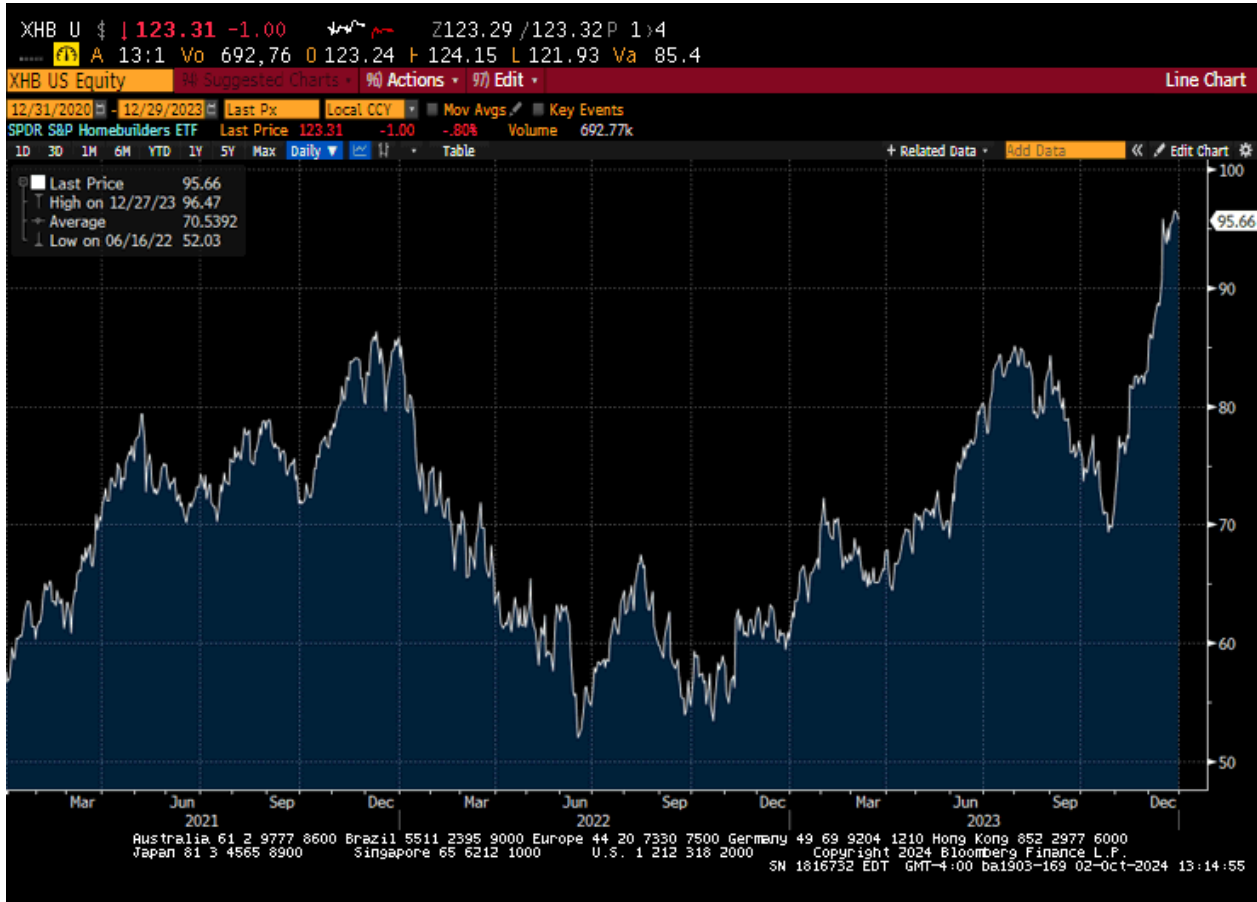


Exhibit 4: Sourced from Bloomberg. “XHB US Equity” is the SPDR S&P Homebuilders ETF from 12/2020 to 12/2023

Wage-Price Wave

A tighter labor market, with low unemployment and abundant job openings allowed workers to demand higher wages, leading to a wave of rising labor costs. When possible, businesses have passed higher labor costs on to consumers, creating a self-reinforcing wage-price inflation dynamic.

Historical Examples of Inflation Waves

Post-World War II Wave (1940s-1950s)

At the end of World War II, pent-up consumer demand, supply shortages, and expansionary fiscal and monetary policies led to a surge in inflation in many developed economies. This inflationary wave lasted throughout the late 1940s and into the 1950s, with inflation rates reaching double digits in some countries.

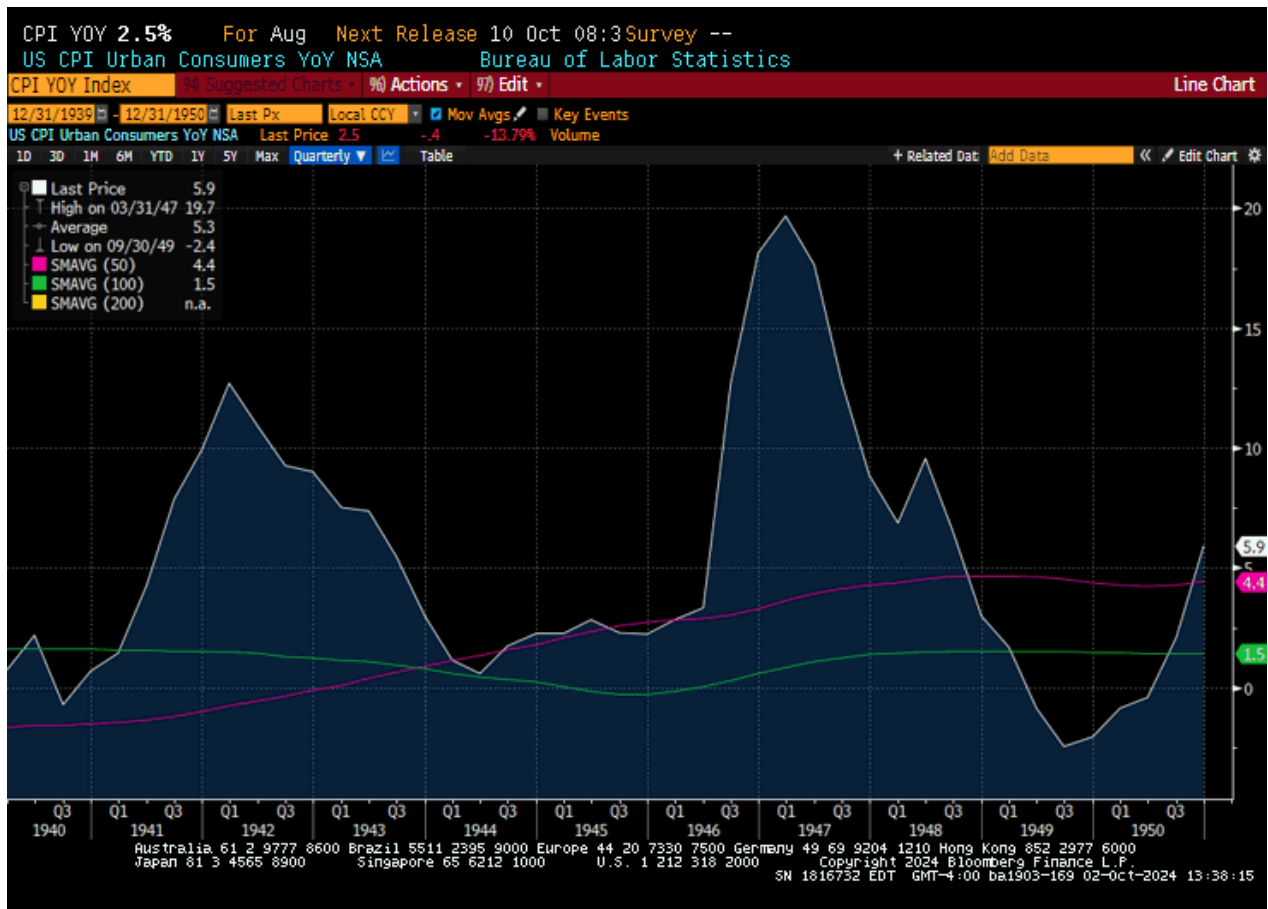


Exhibit 5: Sourced from Bloomberg. “CPI YOY Index” is US Consumer Price Index Year over Year from from 12/1939 to 12/1950.

The Great Inflation Wave

In the 1970s, the global economy experienced a period of high inflation coupled with slow economic growth, known as “stagflation.” These circumstances were driven by a combination of factors including the oil price shocks of 1973 and 1979, expansionary monetary policies, and rising labor costs. The United States experienced a prolonged period of high inflation during the 1970s and early 1980s, with inflation rates, at times, in

the double digits. The inflationary wave persisted for over a decade, with inflation rates reaching over 10% in many major economies. This inflationary wave was driven by a combination of factors, including expansionary monetary policies, rising energy and food prices, and the wage-price spiral. It required a major policy change by the Federal Reserve, under the leadership of Paul Volcker, to break the inflationary cycle and restore price stability in the early 1980s.

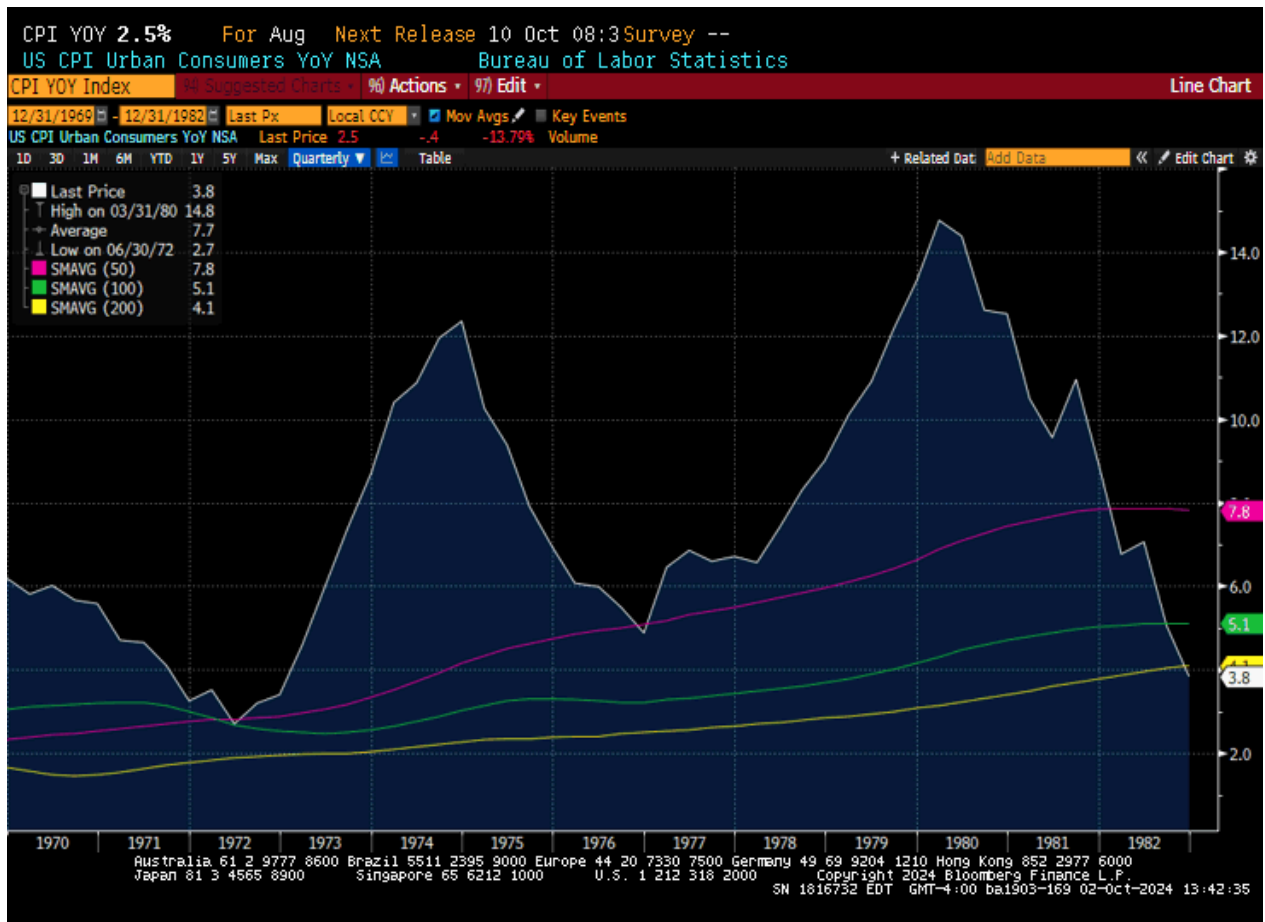


Exhibit 6: Sourced from Bloomberg. “CPI YOY Index” is the US Consumer Price Index Year over Year from 12/1969 to 12/1982.

Commodity Price Wave

In the early 2000s, a sustained rise in global commodity prices, particularly for energy and raw materials, created an inflationary wave that affected economies around the world. This was driven by factors such as strong global demand, supply constraints, and geopolitical tensions. The commodity price inflation wave contributed to higher inflation rates overall during this period.

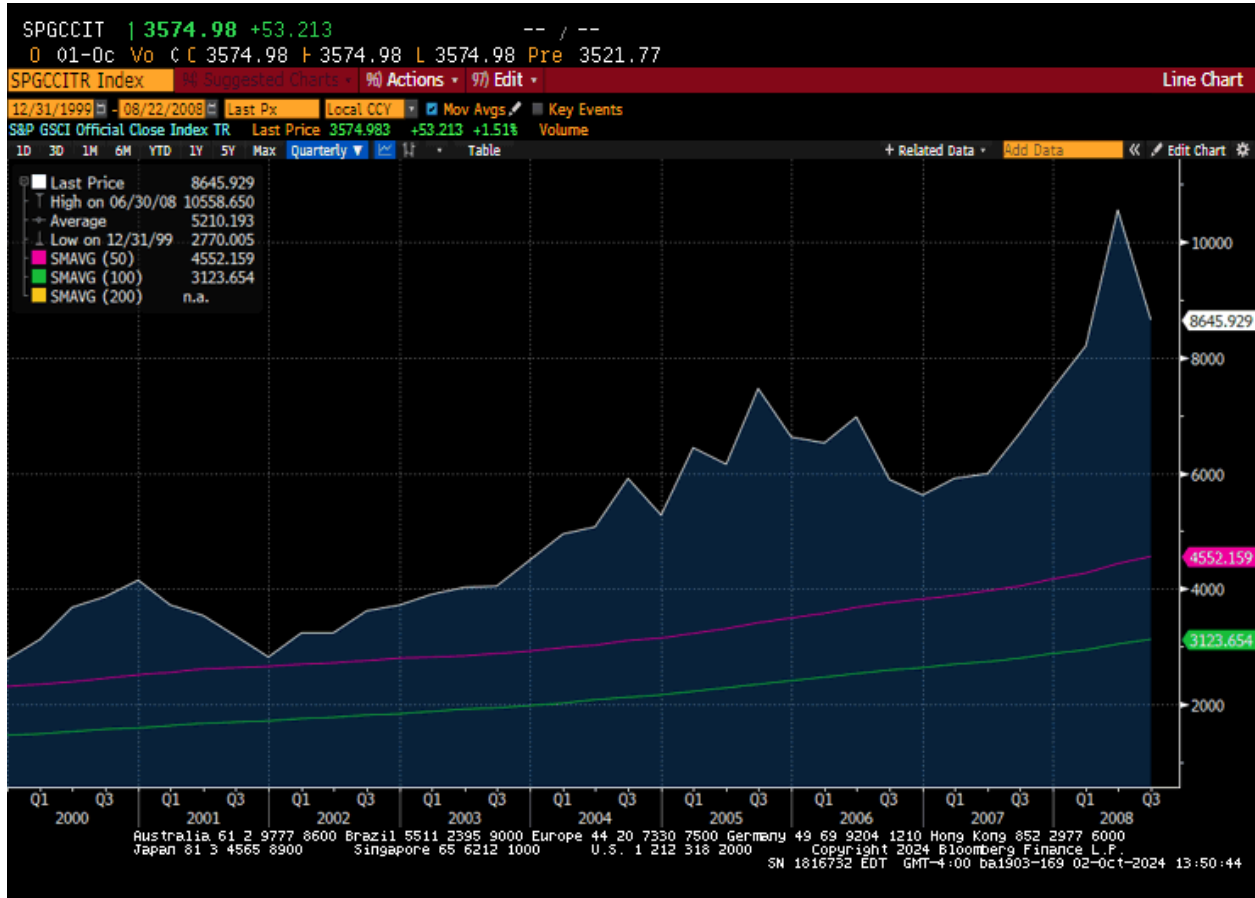


Exhibit 7: Sourced from Bloomberg. “SPGCCITR Index” is the S&P GSCI Commodity Total Return Index from 12/1999 to 8/2008.

Conventional Thinking on Inflation

BONDS

For much of the last 20+ years, bonds were negatively correlated with stocks. However, since 2022 stocks and bonds have fallen in tandem. The bond market has faced significant challenges since the onset of COVID-19 and the transition from a low-inflation, low-interest rate environment to a higher-inflation, rising-rate environment. In the early stages of the pandemic, as the economic outlook deteriorated and equity markets experienced significant volatility, there was a ‘flight to quality’ in financial markets. As the economic recovery gained momentum and inflationary pressures built up, central banks shifted toward tightening monetary policy, raising interest rates to combat inflation. This led to a significant rise in bond yields, especially on longer-dated government bonds. Investors demanded higher returns to compensate for the higher inflation and rising interest rate environment.



Exhibit 8: Sourced from Bloomberg. “LBUTTRUU Index” is the Bloomberg US Treasury Inflation Notes TR Index. “LBUSTRUU” Index is the Bloomberg US Agg Index from 12/2019 to 12/2023.

COMMODITIES

Commodities are often used as a hedge against inflation, as they respond to rising inflation in several different ways. Commodities often see increased demand and higher prices during periods of rising inflation. They are perceived to safeguard against the declining purchasing power of money. Precious metals, energy commodities, agricultural products, industrial metals and building materials are particularly sensitive to rising inflation and tend to be correlated with higher prices. Investing in gold and silver and other precious metals can help preserve purchasing power during inflationary periods. Investing in oil or natural gas can benefit from rising prices due to increased demand and production costs. Since 2019 and the subsequent onset of the COVID-19 pandemic, commodities have recovered dramatically, marked by volatile global economic conditions, supply chain issues, and geopolitical factors. Commodities, including oil, experienced a sharp decline in prices due to plummeting demand as economies shut down. WTI crude oil briefly fell below \$0 per barrel in April 2020, an historic low. However, as governments implemented stimulus measures and economies began reopening, demand for commodities rebounded. Precious metals like gold surged as investors sought safe havens. Industrial metals, such as copper, also made gains due to increased demand for infrastructure projects. Throughout 2021, supply chain issues contributed to higher prices for many commodities as shipping delays and labor shortages affected production and distribution. Rising inflation and geopolitical tensions (e.g., the Russia-Ukraine conflict) further drove up prices for energy and agricultural products. In general, what we see is that commodities are very good at protecting against inflation shocks.

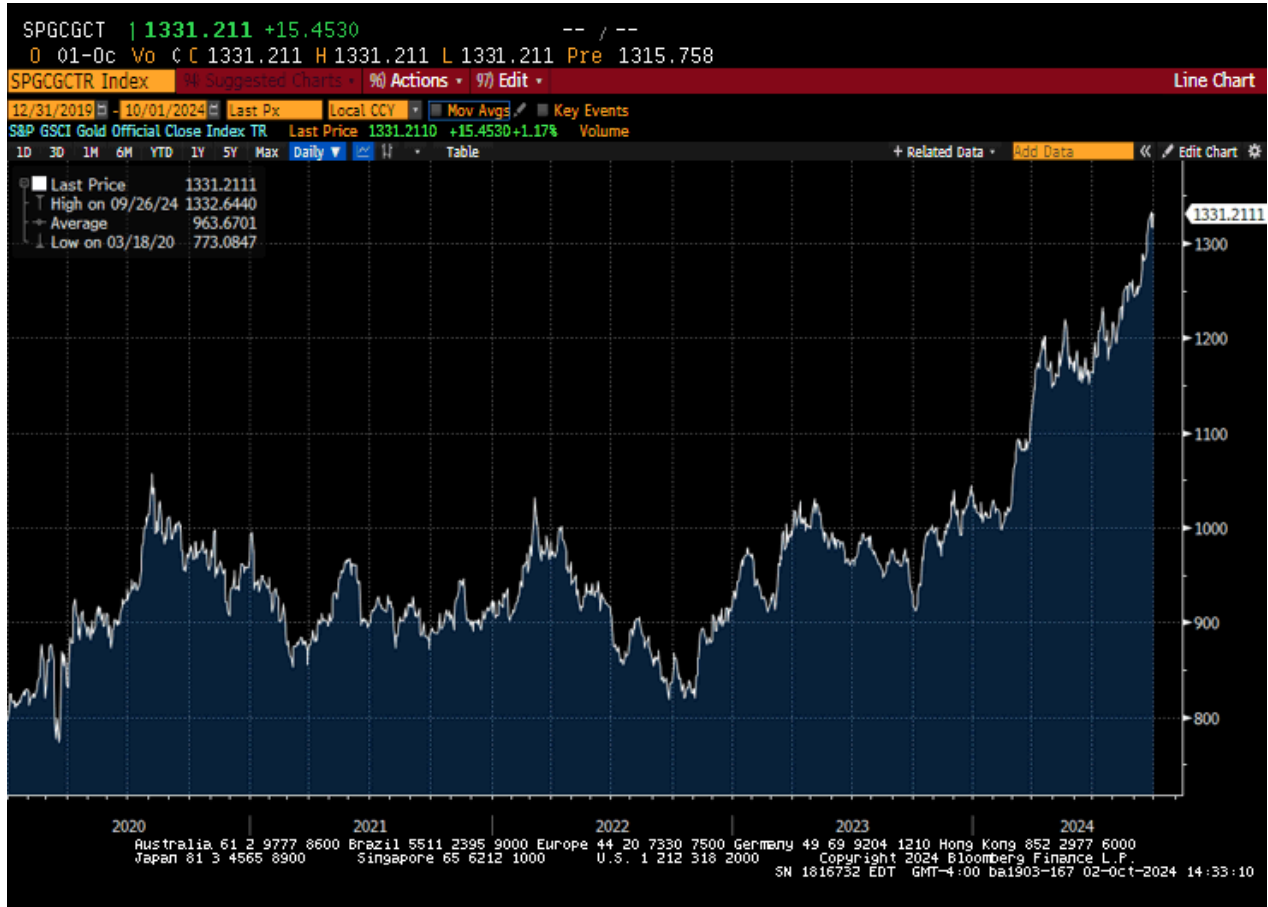


Exhibit 9: Sourced from Bloomberg. “SPGCGCTR Index” is the S&P GSCI Gold Official Close Index Total Return from 12/2019 to 9/2024.

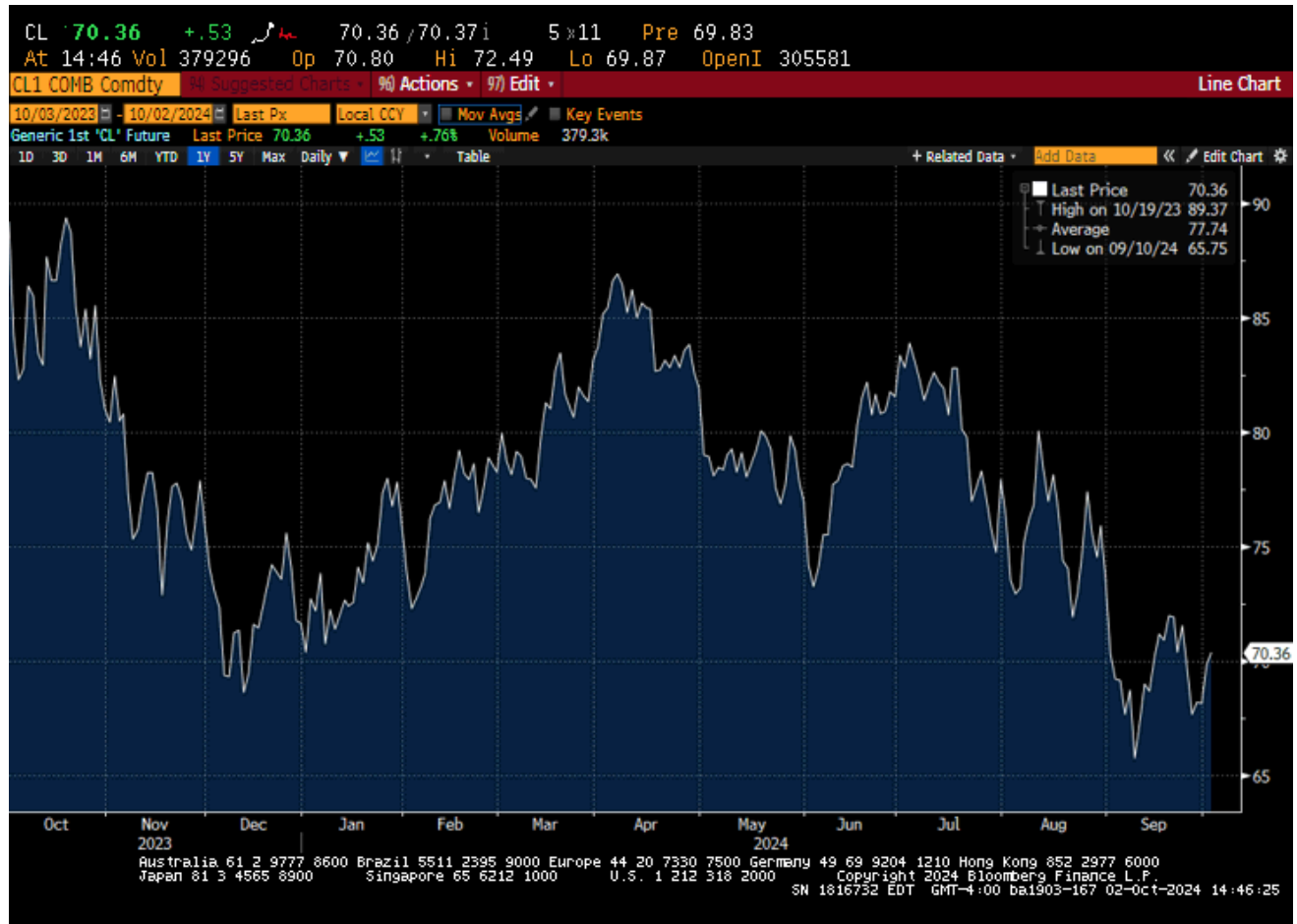


Exhibit 10: Sourced from Bloomberg. “CL1 COMB Comdty” is the Generic 1st Crude Oil futures contract from 12/2019 to 9/2024.



Exhibit 11: Sourced from Bloomberg. “CL1 Comdty” is the Generic 1st Crude Oil futures contract and SPGCGCTR Index is the S&P GSCI Gold Official Close TR Index from 12/2019 to 9/2024.

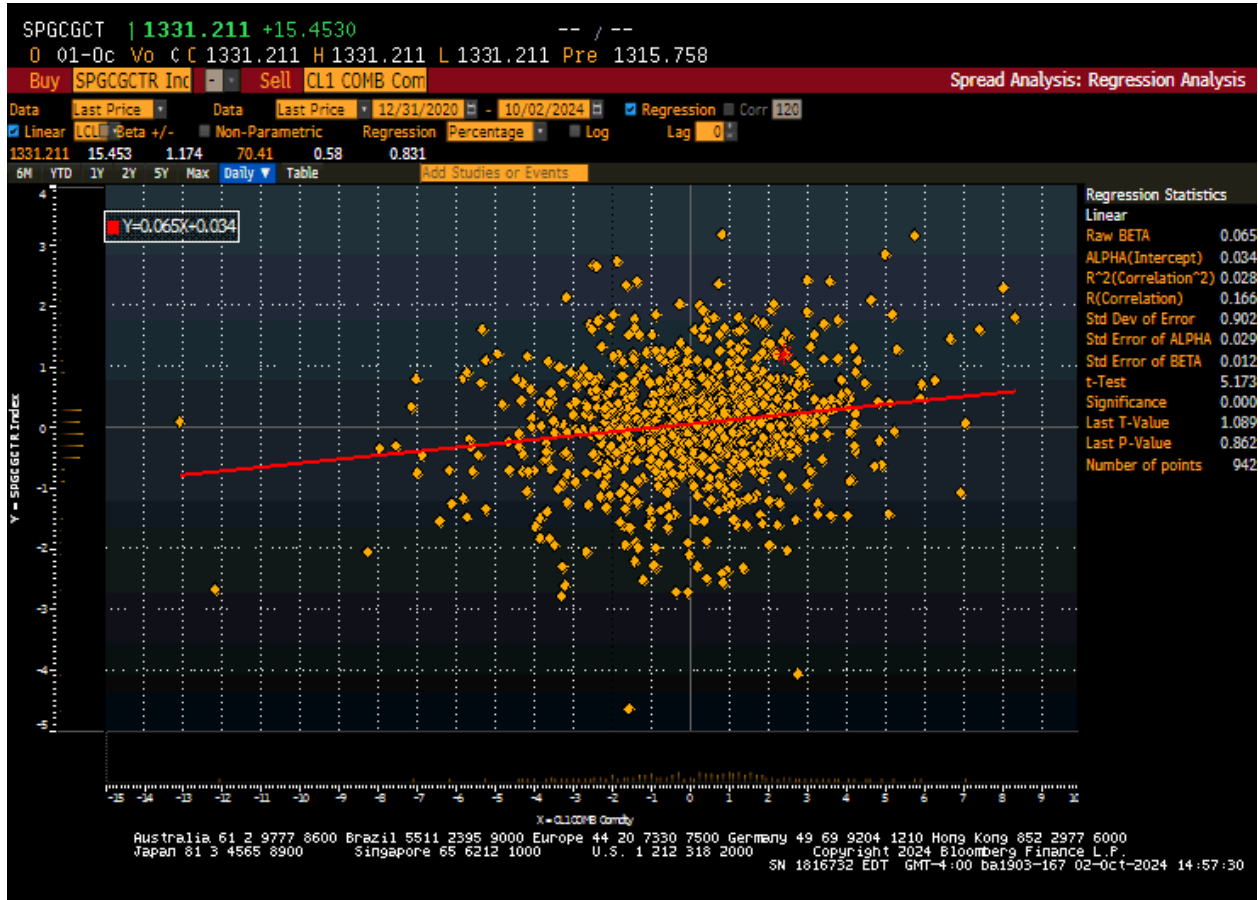


Exhibit 12: Sourced from Bloomberg. “CL1 Comdty” is the Generic 1st Crude Oil futures contract and “SPGCGCTR Index” is the S&P GSCI Gold Official Close TR Index from 12/2019 to 9/2024.

The regression chart/table (Exhibit 12), comparing gold and oil, indicates that investing in both commodities at the same time may not be optimal. This relationship highlights broader market sentiments, as both gold and oil are affected by macroeconomic factors such as inflation, interest rates, and geopolitical events. A weaker correlation between the two suggests that different market dynamics influence each commodity. As a result, a more nuanced allocation strategy is necessary for each asset class to effectively manage risks and capitalize on their own unique behaviors. Thus, an informed tactical approach can add value over a simple strategic allocation.

REAL ESTATE

Real estate typically appreciates in value over time and rental income typically increases with inflation. Investing in real estate investment trusts (“REITs”) provides exposure without direct property ownership. The real estate sector has proven resilient during rising inflationary periods with residential markets generally thriving and commercial sectors producing mixed results. Since the COVID-19 pandemic began in early 2020, real estate has seen varied performance across different sectors. Many markets experienced

significant price increases for larger homes due to low mortgage rates and a shift to remote work. There was a notable migration from urban areas to suburban and rural locations as people sought more space and affordable housing. Real estate investments became attractive as a hedge against inflation, leading to increased interest from institutional and individual investors.

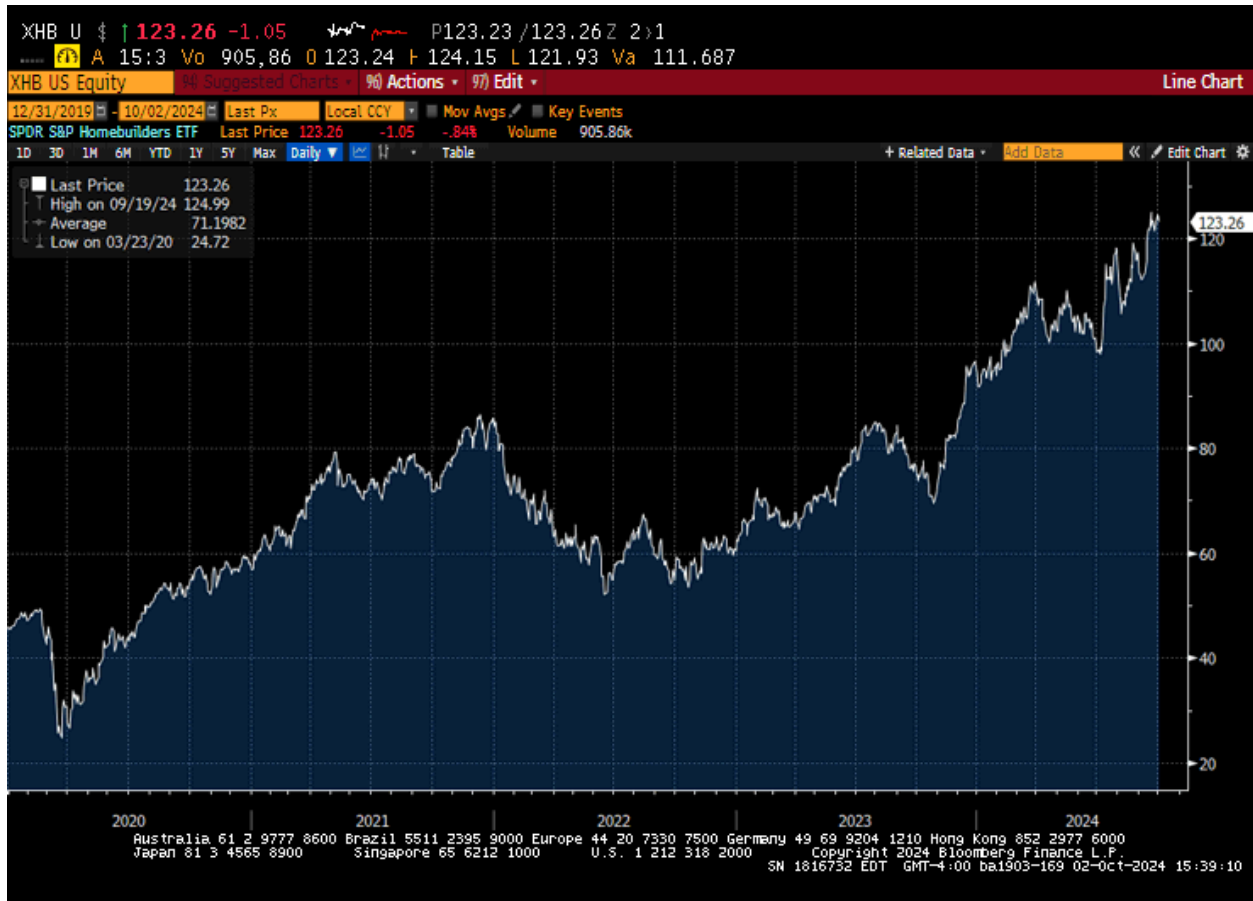


Exhibit 13: Sourced from Bloomberg. “XHB US Equity” is the SPDR S&P Homebuilders ETF from 12/2019 to 9/2024.

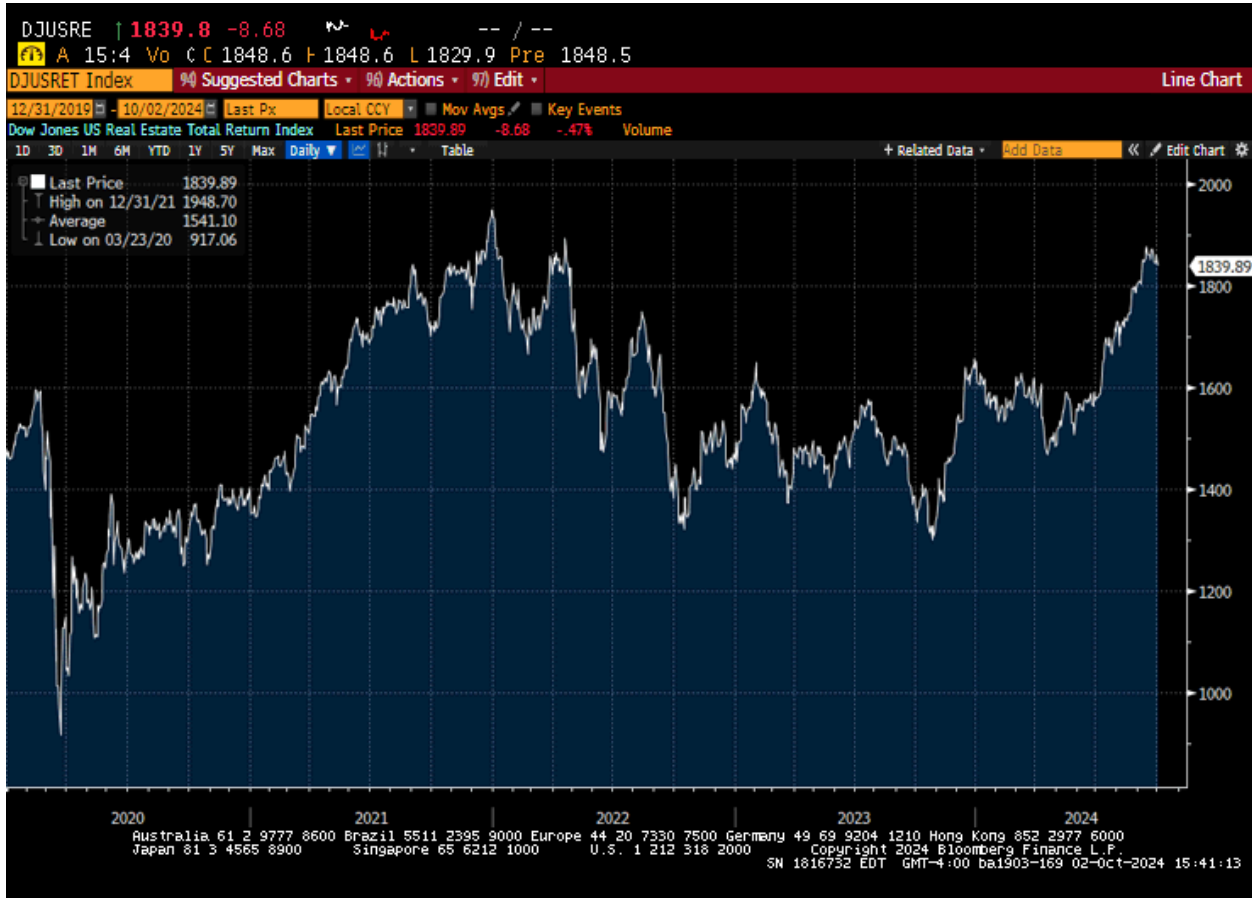


Exhibit 14: Sourced from Bloomberg. “DJUSRET Index” is the Dow Jones US Real Estate Total Return Index from 12/2019 to 9/2024.

EQUITIES

Equities have shown a strong long-run performance relative to inflation, although the specifics can vary by region, sector, and market conditions. In a rising inflationary environment, most equities, particularly those in sectors like technology and consumer goods, managed to maintain or even increase their value despite rising inflation. This is partly due to companies passing on costs to consumers. Sectors like energy benefit from rising prices. Historically, equities have outpaced inflation, making them an attractive investment for wealth preservation. More recent inflation, which includes increased labor costs, has caused businesses to invest in automation and software, creating productivity gains. These gains translate into earnings growth and higher stock prices.



Exhibit 15: Sourced from Bloomberg. “SPTR Index” is the S&P 500 Total Return Index from 12/2019 to 10/2024.



Exhibit 16: Sourced from Bloomberg. “QQQ US Equity” is the ETF proxy for the Nasdaq 100 Index from 12/2019 to 10/2024.

Asset Classes Most Correlated to Inflation

The following chart shows that commodities maintain a strong relationship with the CPI. Commodities perform when the CPI is rising, inflation drives up the prices of raw materials, and underperforms when the CPI declines, reduced demand and lower prices. Real estate maintains a moderate link to the CPI, with high correlation during high inflation and low correlation during low inflation. In low inflation regimes, real estate is more aptly driven by interest rates and economic conditions.

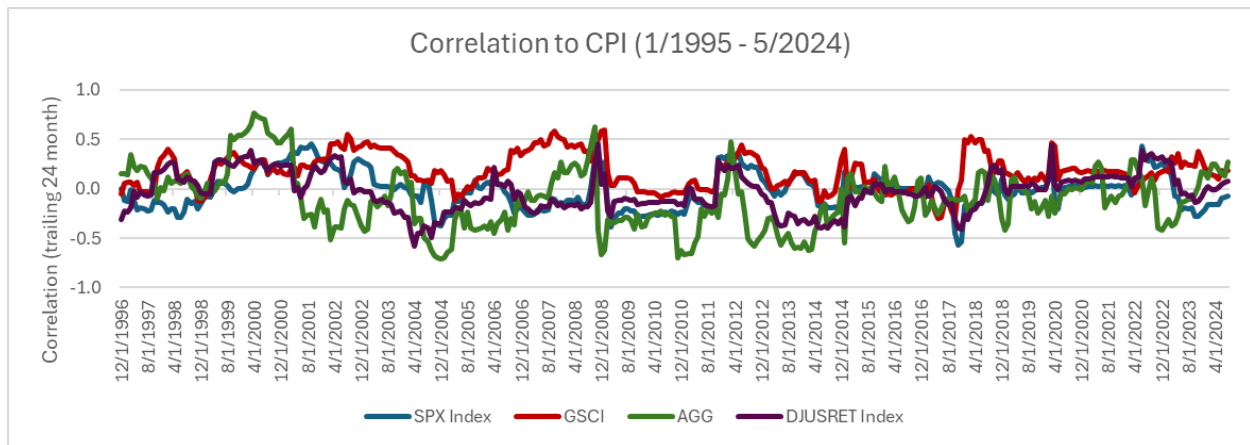


Exhibit 16: Sourced from Bloomberg. “SPX Index” is the S&P 500 Total Return Index. “GSCI” is the S&P GSCI Commodity Total Return Index. “AGG” is the Bloomberg US Agg Total Return Value Unhedged Index. “DJUSRET Index” is the Dow Jones US Real Estate Total Return Index. Correlation of asset classes from 1996 to 2024.

The following chart illustrates how two categories of real assets have performed during periods of high inflation, the CPI above 2.5%. We chose the CPI above 2.5% because the Federal Reserve aims for a 2% inflation target, allowing for some buffer in high inflation scenarios. Notably, from 1999 to 2000, commodities experienced significant outperformance. A similar trend was observed in real estate from 2009 to 2011 and, most recently, from April 2022 through March 2024. This evidence suggests that investing in real assets during high inflation periods is a prudent strategy.

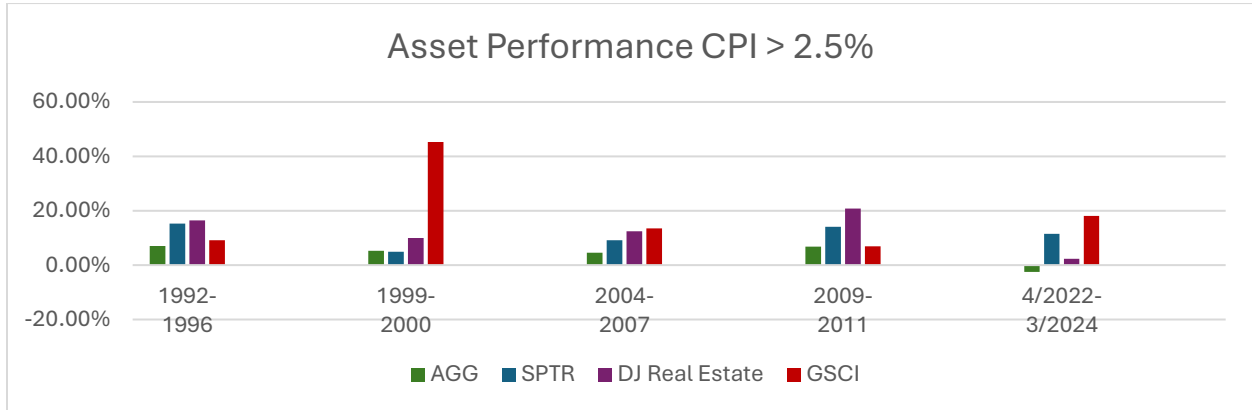


Exhibit 17: Sourced from Bloomberg. “AGG” is the Bloomberg US Agg Total Return Value Unhedged Index. “SPTR” is the S&P 500 Total Return Index. “DJ Real Estate” is the Dow Jones Real Estate Total Return Index. “GSCI” is the S&P GSCI Commodity Total Return Index Total Return. Annualized return of asset classes when CPI is greater than 2.5% between 1992 and 2024.

	1992-1996			1999-2000			2004-2007			2009-2011			4/2022-3/2024		
	Ann. Return	Ann. Volatility	IR	Ann. Return	Ann. Volatility	IR	Ann. Return	Ann. Volatility	IR	Ann. Return	Ann. Volatility	IR	Ann. Return	Ann. Volatility	IR
AGG	7.04%	4.20%	1.67	5.22%	3.22%	1.62	4.50%	3.11%	1.45	6.77%	2.82%	2.40	-2.46%	3.56%	-0.69
SPTR	15.22%	8.67%	1.75	4.89%	15.50%	0.32	9.18%	7.60%	1.21	14.11%	18.97%	0.74	11.49%	18.40%	0.62
DJ Real Estate	16.48%	11.09%	1.49	9.94%	15.03%	0.66	12.39%	17.81%	0.70	20.75%	30.58%	0.68	2.33%	18.09%	0.13
GSCI	9.21%	11.02%	0.84	45.27%	22.08%	2.05	13.49%	21.70%	0.62	6.93%	22.32%	0.31	18.05%	28.58%	0.63

Exhibit 18: Sourced from Bloomberg. “AGG” is the Bloomberg US Agg Index. “SPTR” is the S&P 500 Total Return Index. “DJ Real Estate” is the Dow Jones Real Estate Index. “GSCI” is the S&P GSCI Commodity Total Return Index. Annualized return and annualized volatility of asset classes when CPI is greater than 2.5% between 1992 and 2024.

Post-Global Financial Crisis, we have experienced low inflation rather than higher inflation as measured by the CPI. In this context, we examine how various asset classes performed during previous low inflation environments. By analyzing historical data, we gain insights into the behavior of asset classes under similar economic conditions, providing a clearer understanding of favorable strategies moving forward.

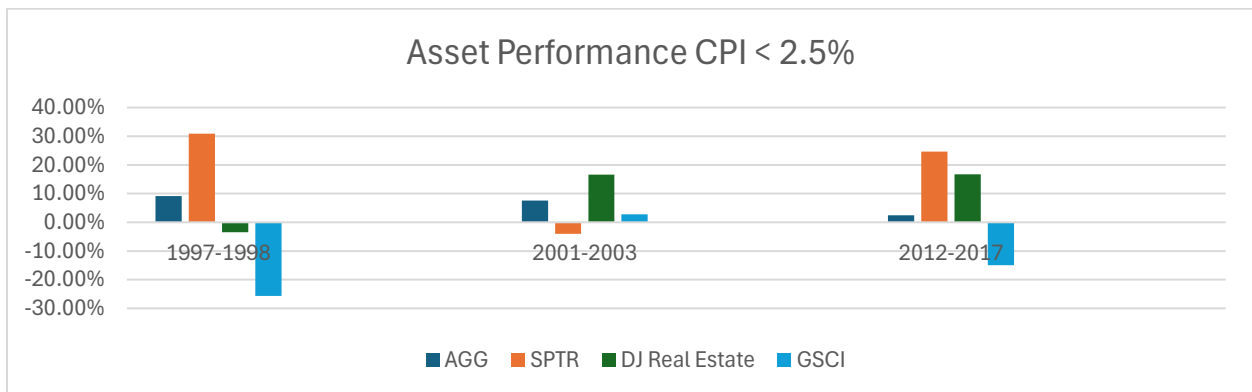


Exhibit 19: Sourced from Bloomberg. “AGG” is the Bloomberg US Agg Total Return Value Unhedged Index. “SPTR” is the S&P 500 Total Return Index. “DJ Real Estate” is the Dow Jones Real Estate Total Return Index. “GSCI” is the

S&P GSCI Commodity Total Return Index. Annualized return of asset classes when CPI is less than 2.5% between 1996 and 2024.

	1997-1998			2001-2003			2012-2017		
	Ann. Return	Ann. Volatility	IR	Ann. Return	Ann. Volatility	IR	Ann. Return	Ann. Volatility	IR
AGG	9.17%	3.14%	2.92	7.57%	4.26%	1.78	2.45%	2.72%	0.90
SPTR	30.95%	18.51%	1.67	-4.05%	18.32%	-0.22	24.65%	9.59%	2.57
DJ Real Estate	-3.49%	14.79%	-0.24	16.58%	11.23%	1.48	16.76%	12.41%	1.35
GSCI	-25.69%	17.72%	-1.45	2.76%	21.52%	0.13	-14.95%	17.91%	-0.83

Exhibit 20: Sourced from Bloomberg. “AGG” is the Bloomberg US Agg Total Return Value Unhedged Index. “SPTR” is the S&P 500 Total Return Index. “DJ Real Estate” is the Dow Jones Real Estate Total Return Index. “GSCI” is the S&P GSCI Commodity Total Return Index. Annualized return and annualized volatility of asset classes when CPI was less than 2.5% between 1997 and 2017.

1992-2024	SPTR	GSCI	AGG	DJ Real Estate	DXY Index
SPTR	1				
GSCI	0.299	1			
AGG	0.166	-0.051	1		
DJ Real Estate	0.641	0.211	0.295	1	
DXY Index	-0.260	-0.328	-0.285	-0.277	1

Exhibit 21: “AGG” is the Bloomberg US Agg Total Return Value Unhedged Index. “SPTR” is the S&P 500 Total Return Index. “DJ Real Estate” is the Dow Jones Real Estate Total Return Index. “GSCI” is the S&P GSCI Commodity Total Return Index. “DXY Index” is the ICE US Dollar Index. Correlation of asset classes from 1992 to 2024.

The relationship between equities, commodities, and the US dollar is noteworthy. During the two equity bull markets, 1997 to 1998 and 2012 to 2017, commodities struggled against the backdrop of a strong US dollar. A stronger dollar typically means lower commodity prices since it makes them more expensive for international buyers, reducing demand. Conversely, the equity bear market from 2001 to 2003 experienced a weaker dollar, which generally supports commodity prices by making them more affordable for foreign purchasers, increasing demand. This correlation illustrates how closely commodities can be tied to US dollar strength. A weak dollar often leads to inflationary pressures, making real assets like commodities and real estate attractive as hedges against inflation. Therefore, investing in real assets is crucial for protecting purchasing power, especially during times of currency depreciation. Understanding these dynamics is essential for investors, as a diversified portfolio that considers the interplay among asset classes can provide stability amidst market fluctuations.

Tactical Asset Rotation Strategy

A tactical asset rotation approach, allocating to a diversified set of assets, will help navigate inflationary waves.

- Real Estate (Dow Jones US Real Estate Total Return Index)
- Commodities (S&P GSCI Commodity Total Return Index)
- TIPS (Treasury Inflation Protected Securities)
- Equities (S&P 500 Total Return Index)

We've demonstrated that real assets, including commodities and real estate, are highly correlated with the CPI and often yield considerable returns during significant movements in the CPI. This suggests that including real assets in a portfolio can be advantageous during periods of rising inflation. It can also provide benefits when the dollar is weakening. By investing in these assets, investors can effectively shield portfolios from inflationary impacts and currency depreciation, thereby improving overall portfolio stability.

In the analysis below, we examine two notable periods characterized by rising inflation, 2009 to 2011 and 2021 to the present. 2009 to 2011 was driven by monetary inflation, as Federal Reserve policies aimed at lowering the value of the US dollar. 2021 to present was driven by fiscal policy expansion, which boosted consumer demand for commodities and goods in limited supply.

In this example, we compare precious metals with a portfolio of passive commodities to illustrate how a tactical (vs passive) approach to commodity investments can yield higher returns (alpha), especially in fluctuating economic conditions. Our analysis reinforces the role of real assets in investment portfolios. Real assets, such as precious metals, play a vital role as a hedge against inflation, and as a tool for diversification. In contrast, generating similar returns in fixed income portfolios, particularly in a high-interest-rate environment will become increasingly challenging. Actively adjusting the allocation of real assets based on current inflationary or deflationary trends is essential for enhancing long-term investment outcomes.

1/2009 - 1/2012	SPX	AGG	GSCI	DJ Real Estate	Precious Metals
Annual Return	14.11%	6.77%	6.93%	20.75%	20.66%
Annual Volatility	18.97%	2.82%	22.32%	30.58%	20.05%
Information Ratio	0.74	2.40	0.31	0.68	1.03

1/2021 - 8/2024	SPX	AGG	GSCI	DJ Real Estate	Precious Metals
Annual Return	14.19%	-2.00%	17.96%	7.45%	7.71%
Annual Volatility	16.46%	6.99%	18.59%	20.84%	13.95%
Information Ratio	0.86	-0.29	0.97	0.36	0.55

Exhibit 22: Sourced from Bloomberg. “AGG” is the Bloomberg US Agg Total Return Value Unhedged Index. “SPTR” is the S&P 500 Total Return Index. “DJ Real Estate” is the Dow Jones Real Estate Total Return Index. “GSCI” is the S&P GSCI Commodity Total Return Index Total Return. “DXY Index” is the ICE US Dollar Index. “Precious Metals” is the S&P GSCI Gold Official Close TR Index. Performance (annualized returns, annualized volatility and information ratio) of asset classes from 2021 to 2024.

An Asset Class for Each Macro State

The case for adding equities in a well-diversified portfolio to maintain purchasing power over time.

At the outset of this paper, we examined the effects of supply chain disruptions and efficiencies in inventory management on global inflation and rising prices. In contrast, the onset of AI is enhancing productivity growth, with the potential to change the global economy. By increasing productivity, the adoption of AI boosts productivity which tends to be disinflationary.

We also examined the advantages and disadvantages of each real asset class and identified how these asset classes add value in an environment of increasing inflation. While it is crucial to incorporate a variety of real assets into portfolios, it is also important to include equities as a consistent safeguard against rising prices and inflation. The goal of this multi-asset portfolio is to achieve solid performance during periods of rising inflation as well as during times of disinflation.

Abbreviations Key

PORTFOLIO PROFILE	ABBREVIATION
33% COMMODITIES + 33% REAL ESTATE + 33% TIPS	COM/RE/TIPS (33%)
50% COMMODITIES + 50% TIPS	COM/TIPS (50%)
50% REAL ESTATE + 50% TIPS	RE/TIPS (50%)
25% EQUITIES + 25% COMMODITIES + 25% REAL ESTATE + 25% TIPS	EQ/COM/RE/TIPS (25%)

Each of these portfolios features a distinct combination of real assets with the fourth portfolio incorporating equities. Including equities alongside real assets enhances the overall quality of the portfolio’s risk-return metrics, particularly when evaluated over a longer timeframe. This structure allows for active management of the equity portion to capitalize on varying market conditions, while the fixed-income component (TIPS) ensures consistent returns, leading to a balanced strategy that performs well across different market environments.

We analyze the performance of these four portfolios using data that begins in January 1998, which is when the Bloomberg US Treasury Inflation-Linked Bond Index was established and serves as a proxy for Treasury Inflation Protected Securities (“TIPS”).

PORTFOLIO ANALYSIS PERIOD (1998-2023)	ANNUAL RETURN	ANNUAL VOLATILITY	INFORMATION RATIO
COM/RE/TIPS (33%)	5.05%	11.87%	0.43
COM/TIPS (50%)	3.22%	12.35%	0.26
RE/TIPS (50%)	6.59%	11.33%	0.58
EQ/COM/RE/TIPS (25%)	6.05%	11.75%	0.51

Exhibit 23: Sourced from Bloomberg. “COM” is the S&P GSCI Commodity Total Return Index. “RE” is the Dow Jones US Real Estate Total Return Index. “TIPS” is the Bloomberg US Treasury Inflation Notes TR Index. EQ is S&P 500 Total Return Index. Performance from 1998 to 2023.

Long-term data (1998 to 2023) shows that a diversified portfolio with equities delivers competitive returns with a strong information ratio, indicating good risk-adjusted returns.

Equities introduce a growth component that, when combined with lower-risk assets like TIPS and real estate, provide a good balance between risk and return. Equities tend to outperform other asset classes in the long run, particularly during periods of economic growth. Including equities boosts the overall portfolio return, especially when commodity prices or real estate markets underperform.

PORTFOLIO ANALYSIS PERIOD (2019-2023)	ANNUAL RETURN	ANNUAL VOLATILITY	INFORMATION RATIO
COM/RE/TIPS (33%)	7.30%	13.79%	0.53
COM/TIPS (50%)	6.84%	13.24%	0.52
RE/TIPS (50%)	5.64%	12.75%	0.44
EQ/COM/RE/TIPS (25%)	9.52%	14.38%	0.66

Exhibit 24: Sourced from Bloomberg. “COM” is the S&P GSCI Commodity Total Return Index. “RE” is the Dow Jones US Real Estate Total Return Index. “TIPS” is the Bloomberg US Treasury Inflation Notes TR Index. EQ is S&P 500 Total Return Index. Performance from 2019 to 2023.

From 2019 to 2023, the **EQ/COM/RE/TIPS (25%)** portfolio achieved the highest annual return and Information Ratio, confirming equities’ role in bolstering and managing risk effectively. While portfolios with higher real estate or TIPS allocations showed lower volatility, the inclusion of equities was crucial for higher returns, making them a valuable addition to a multi-asset portfolio designed to weather diverse economic scenarios.

We now examine various periods from 1998 to 2023, categorizing them into equity bull markets, equity bear markets, rising inflation, and falling inflation. We compare the performance of these portfolios during these different phases to draw meaningful insights.

YEAR	COM/RE/TIPS (33%)	COM/TIPS (50%)	RE/TIPS (50%)	EQ/COM/RE/TIPS (25%)	CPI
1998	-18.6%	-17.8%	-9.1%	-8.4%	1.6%
1999	11.8%	20.9%	-1.3%	14.3%	2.7%
2000	30.3%	31.1%	20.5%	19.7%	3.4%

Exhibit 25: Sourced from Bloomberg. “COM” is the S&P GSCI Commodity Total Return Index. “RE” is the Dow Jones US Real Estate Total Return Index. “TIPS” is the Bloomberg US Treasury Inflation Notes TR Index. EQ is S&P 500 Total Return Index. Performance from 1998 to 2023.

From 1998 to 2000, inflation rose moderately, peaking at 3.4% in 2000. In 1998, all portfolios saw negative returns, with the diversified portfolio, **EQ/COM/RE/TIPS (25%)**, declining the least at 8.4%. In 1999, the **COM/TIPS (50%)** portfolio led with a 20.9% return, driven by rising commodity demand. Including equities reduced volatility and provided a buffer against downturns, maintaining stability across fluctuating market conditions.

YEAR	COM/RE/TIPS (33%)	COM/TIPS (50%)	RE/TIPS (50%)	EQ/COM/RE/TIPS (25%)	CPI
2001	-5.8	-13.9	10.1	-7.1	1.6
2002	17.2	24.5	10.2	6.6	2.4
2003	22.2	15.1	22.1	24.2	1.9
2004	19.7	13.5	19.7	17.7	3.3
2005	13.3	14.5	6.5	11.4	3.4
2006	5.7	-7.1	17.0	8.3	2.5
2007	7.6	22.2	-3.8	7.2	4.1
2008	-29.5	-26.0	-21.6	-31.5	0.1
2009	20.9	13.1	23.7	22.5	2.7

Exhibit 26: Sourced from Bloomberg. “COM” is the S&P GSCI Commodity Total Return Index. “RE” is the Dow Jones US Real Estate Total Return Index. “TIPS” is the Bloomberg US Treasury Inflation Notes TR Index. “EQ” is S&P 500 Total Return Index. Performance from 1998 to 2023.

From 2001 to 2009, portfolios faced high volatility. The **COM/RE/TIPS (33%)** and **COM/TIPS (50%)** portfolios saw strong gains in 2002-2003 but suffered major losses in 2008 due to the financial crisis. The **RE/TIPS (50%)** portfolio remained stable until 2008’s real estate downturn, while the diversified **EQ/COM/RE/TIPS (25%)** portfolio grew steadily until a sharp 2008 drop, followed by recovery in 2009. Diversification helped manage risk better through these economic fluctuations.

YEAR	COM/RE/TIPS (33%)	COM/TIPS (50%)	RE/TIPS (50%)	EQ/COM/RE/TIPS (25%)	CPI
2010	14.4	8.5	16.8	14.7	1.5
2011	6.5	6.4	10.3	5.4	3.0
2012	8.8	4.0	13.0	10.7	1.7
2013	-2.4	-4.8	-3.4	5.4	1.5
2014	-3.3	-16.2	15.0	0.7	0.8
2015	-11.1	-17.9	0.5	-8.1	0.7
2016	8.4	8.4	6.4	9.4	2.1
2017	6.3	4.5	6.4	10.0	2.1
2018	-6.0	-7.4	-2.5	-5.5	1.9

Exhibit 27: Sourced from Bloomberg. “COM” is the S&P GSCI Commodity Total Return Index. “RE” is the Dow Jones US Real Estate Total Return Index. “TIPS” is the Bloomberg US Treasury Inflation Notes TR Index. “EQ” is S&P 500 Total Return Index. Performance from 1998 to 2023.

From 2010 to 2018, diversified portfolios showed resilience amid market recovery and low inflation. The **COM/RE/TIPS (33%)** portfolio gained in 2010 and 2012 but struggled in 2013 and 2015. The **COM/TIPS (50%)** portfolio saw significant losses in 2014 and 2015. In contrast, the **RE/TIPS (50%)** portfolio performed steadily. The **EQ/COM/RE/TIPS (25%)** portfolio delivered consistent growth, benefiting from its balanced allocation. Low inflation and commodity volatility highlighted the value of diversified portfolios.

YEAR	COM/RE/TIPS (33%)	COM/TIPS (50%)	RE/TIPS (50%)	EQ/COM/RE/TIPS (25%)	CPI
2019	18.3	13.4	18.4	21.7	2.3
2020	-5.2	-5.7	3.3	0.4	1.4
2021	27.9	22.7	21.7	28.4	7.0
2022	-5.0	6.1	-18.5	-8.3	6.5
2023	4.5	0.1	8.4	9.7	3.4
2024	6.5	4.4	6.9	9.7	2.5

Exhibit 28: Sourced from Bloomberg. “COM” is the S&P GSCI Commodity Total Return Index. “RE” is the Dow Jones US Real Estate Total Return Index. “TIPS” is the Bloomberg US Treasury Inflation Notes TR Index. “EQ” is S&P 500 Total Return Index. Performance from 1998 to 2023.

From 2019 to 2024, portfolios reflected economic shifts and inflation spikes, particularly in 2021-2022. The **COM/RE/TIPS (33%)** and **RE/TIPS (50%)** portfolios saw gains but were hit hard in 2022. The diversified **EQ/COM/RE/TIPS (25%)** TIPS portfolio performed best overall, benefiting from strong diversification, especially in recovery years (2023-2024). Lower inflation in these years supported improved returns across portfolios, with equity-inclusive portfolios showing the most resilience. Portfolios, with a mix of equities and real assets generally outperform, providing a buffer against inflation. The 25% equities diversified portfolio showed consistent performance, particularly in high-inflation years, proving its resilience to economic fluctuations. Commodities excelled as an inflation hedge, while equities added stability and enhanced long-term returns, making diversified portfolios with equities a balanced and effective investment approach.

Conclusion

We examined changes that have occurred in the global supply chain, lower costs and improved profitability. Further, we observed the vulnerability of these changes to macro events such as a pandemic, war, and sanctions. While not a new concept that inflation comes in waves, what we point out is that these relatively recent changes have had the effect of both increasing the speed *and* the amplitude of inflationary waves. We believe that it is more important, now more than ever, to utilize a tactical strategy rather than a “set-it and forget-it” approach to inflation. Lastly, we examined the roles that various asset classes play in protecting from, and even benefiting from, inflation. To conclude, while real assets are best at protection against inflation shocks, equities play a very important role, over the long run, in maintaining a portfolio’s purchasing power.

IMPORTANT DISCLOSURES:

The information contained herein, including any attachments, is provided by Passaic Partners LLC (“Passaic” or the “Adviser”) on a confidential basis to the intended recipient solely for informational purposes. Any dissemination, re-distribution, or other use of this message by any recipient is unauthorized.

This document may contain expressions of opinion, which are subjective and may be unsubstantiated, and should not be relied upon in making an investment decision or for any other purpose. This document should not be the basis of an investment decision and does not constitute an offer to sell or solicit an offer to buy any security. Although the information in this document has been obtained from sources believed to be reliable, Passaic makes no representation or warranty, express or otherwise, and no reliance should be placed on the fairness, accuracy, completeness, or timeliness of the information contained herein. Forward-looking statements contained herein, including those relating to future financial expectations, involve certain risks and uncertainties that could cause actual results to differ materially from such statements. This material should not be viewed as advice or recommendations with respect to asset allocation or any particular investment. No assurance can be given that any account will meet its investment objectives or avoid losses. Different time periods and market or economic conditions may yield different results. There are substantial risks to investing in the strategy or strategies described herein, which should be considered speculative and may only be appropriate for part of an investor’s portfolio. There is always the possibility of loss of investment. The strategy may be leveraged and/or may engage in other speculative investment practices that may increase the risk of investment loss. Investing in options involves risk of loss, and an investor must be prepared to bear the loss of his/her entire investment. This material is not intended to represent the rendering of accounting, tax, legal or regulatory advice. A change in the facts or circumstances of any transaction could materially affect the accounting, tax, legal or regulatory treatment for that transaction. Potential investors should consult, and must rely on their own professional tax, legal and investment advisors as to matters concerning the strategy and their investments in the strategy. Please consider investment objectives, time horizon, risk tolerance, and fees prior to investing in any investment.