



Protecting Your Portfolio from Rising Inflation

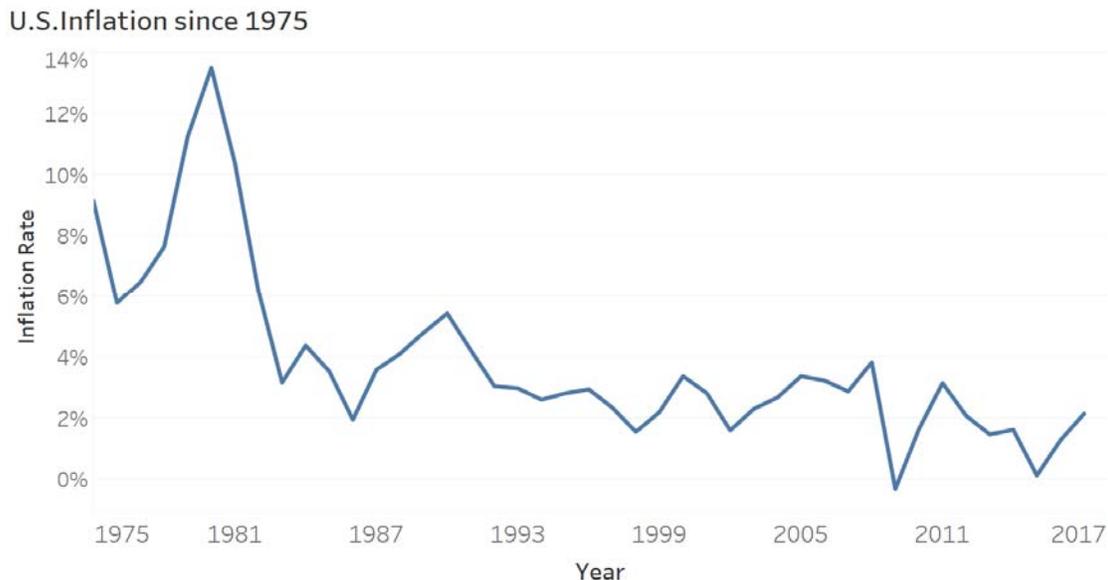
Introduction

Since the early 1980s investors generally benefitted from stable inflation levels. As inflation rates decrease, investors' purchasing power increases and vice versa. Improving economic conditions and rising prices within the past year signal an expected increase in inflation. This uptick in inflation rates poses the question "How should institutions position their portfolios during a rising inflation environment?"

What is inflation?

Inflation is the general increase in prices and subsequent decrease in the purchasing value of money. While at a glance inflation may sound bad for consumers, *moderate* inflation is often associated with a growing economy. As an economy grows, businesses and consumers spend more money on goods and services allowing producers to raise prices – increasing the rate of inflation.

Figure 1.



Source: ACG, Bureau of Labor Statistics, Federal Reserve Bank of St. Louis

Figure 1. displays the annual change in the Consumer Price Index (CPI) since 1975. CPI was created by the U.S. Bureau of Labor Statistics (BLS) during World War I for calculating cost-of-living adjustments in wages. It measures the weighted average prices of a basket of goods and services which are considered primary consumer needs. These prices include food, gas, energy, utilities, clothes, automobiles, plus transportation and medical services. Energy and food prices typically fluctuate the most out of the CPI’s basket of goods. To combat this price volatility, the BLS created a sub-index named ‘Core CPI’ that strips out food and energy prices. While other inflation measures exist, CPI remains the most widely followed inflation index and will serve as the cornerstone for the following analysis.

What causes inflation?

There are two reigning theories for what causes inflation; Demand-Pull Inflation and Cost-Push Inflation. Demand-Pull Inflation occurs when aggregate demand for goods and services in an economy rises more rapidly than an economy’s productive capacity. One potential shock to aggregate demand might come from a central bank that rapidly increases the supply of money. Cost-push inflation, on the other hand, occurs when prices of production process inputs increase. Rapid wage increases or rising raw material prices are common causes of this type of inflation.

Figure 2.

	Demand-Pull Inflation	Cost-Push Inflation
Characteristics	<ul style="list-style-type: none"> • Excess demand and ‘too much money chasing too few goods’ • The economy is at full employment/full capacity • The economy is growing at a rate faster than its long-run trend 	<ul style="list-style-type: none"> • Demand is inelastic • Prices increase • Supply of goods decrease
Causes	<ul style="list-style-type: none"> • Lower interest rates • Rise in housing prices • Rising real wages • Devaluation in exchange rate 	<ul style="list-style-type: none"> • Natural disasters - rising commodity prices • Monopolies • Higher taxes and increased regulation • Import inflation from currency devaluation
Examples	<ul style="list-style-type: none"> • UK economy during the 1980s • US economy during the 1960s 	<ul style="list-style-type: none"> • OPEC increasing price of oil by 300% in 1973 • Japan’s economy after 2011 Tsunami

Source: ACG, Bankrate, Investopedia

Why is inflation rising today?

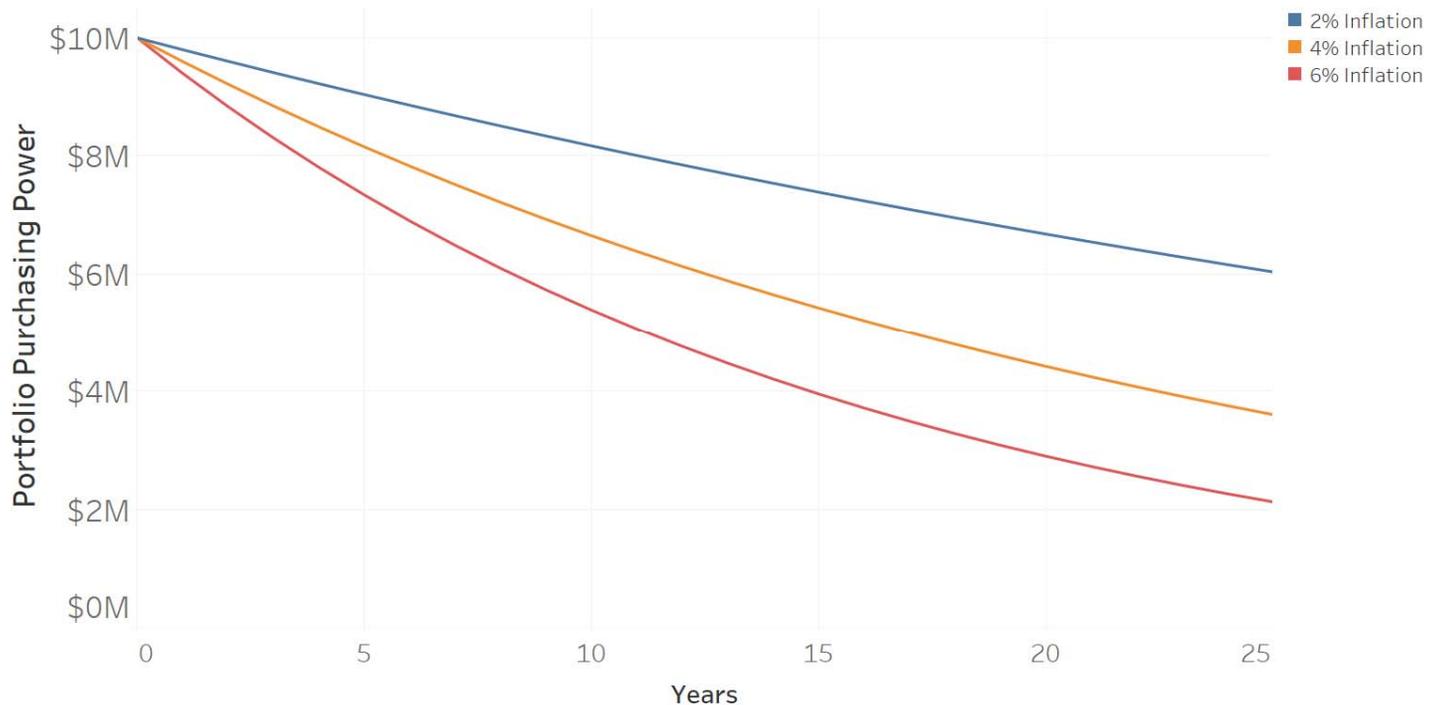
Inflation rates nudged up to 2.5% in October due to an increase in energy prices and shelter costs. A recent study of labor participation conducted by the Federal Reserve Bank of San Francisco stated, “We find that the [labor force participation] rate is at its trend of 62.8% in the first half of 2018. Combined with the low unemployment rate, this argues that the U.S. labor market is operating at or beyond its full potential.” An overly-tight labor market can lead to higher wage gains that eventually show up as unwanted inflation if wages gain too fast. U.S. unemployment is currently 3.7%, the lowest level since 1969, and inflation remains at or near the Fed’s 2% target. This recent uptick in inflation would fall under the category of demand-pull inflation.

How does inflation affect investment portfolios?

As inflation rises, the purchasing power of the assets within an investor’s portfolio decreases. For example, take an economy with 2% inflation. In this economy, a 100% cash portfolio of \$10 million today will be worth \$9.98 million in one year. In other words, the portfolio would lose \$200,000 worth of purchasing power in one year’s time. While this might not seem like a material change initially, these small changes compound over time and can significantly decrease asset values. The graph below demonstrates how the value of a \$10 million portfolio erodes over 2%, 4%, and 6% inflation regimes.

Figure 3.

Effect of Inflation on \$10 Million



Source: ACG

In just five years’ time the cash portfolio loses roughly 10% of its original purchasing power in the 2% constant inflation environment. At the extreme end of the spectrum, a constant 6% inflation regime results in purchasing power erosion to the tune of 27% in that same 5-year time frame. Bottom line – constant inflation negatively affects portfolios holding cash reserves.

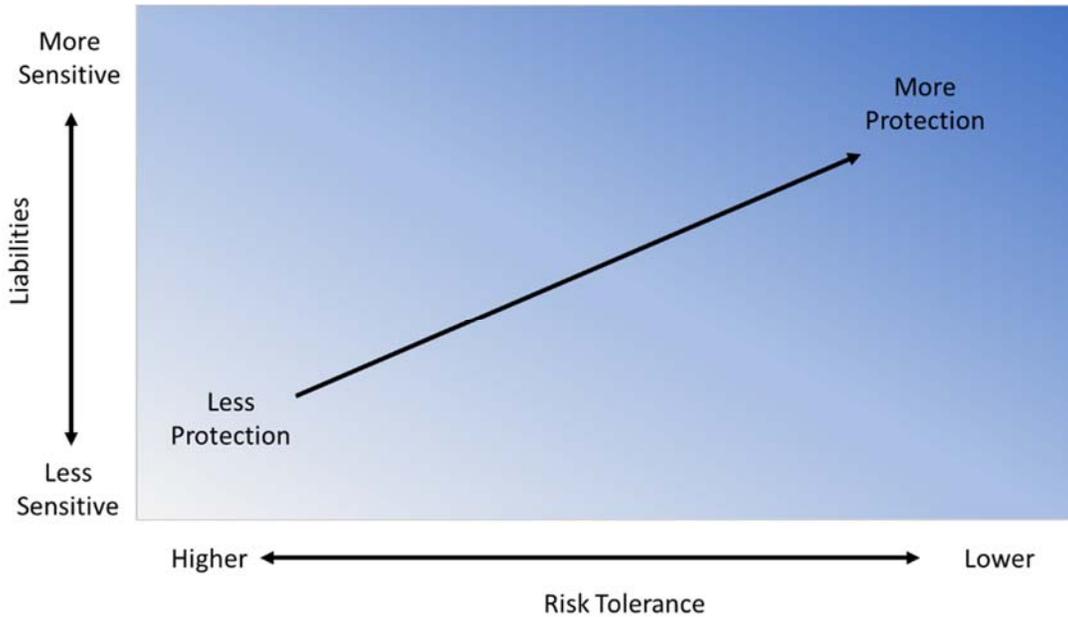
Which investors are affected the most by rising inflation?

Investors with inflation-sensitive liabilities and/or spending policy requirements tend to feel effects of inflation more than investors without these constraints. These types of investors include Defined Benefit Plans with cost of living adjustments (COLA), Defined Contribution Plan Participants, and Endowments/Foundations/Non-Profits. Defined Benefit Plans with COLA need to manage inflation risk as they index their benefit payments to long-term inflation. Defined Contribution Plan Participants’ income needs grow as they near retirement, increasing the need for their income to rise with inflation. Many Endowments/Foundations/Non-Profits base

their spending policy on inflation, ex: CPI + 5%, which makes *real* (inflation adjusted) growth more important than *nominal* (non-inflation adjusted) growth.

Figure 4.

How much Inflation Protection is needed?



Source: ACG

Figure 4. provides investors with a basis for gauging how much inflation protection is necessary within a portfolio given the investor’s risk tolerance and liability sensitivity. Investors with liabilities more sensitive to inflation and an overall lower risk tolerance will require more inflation protection than investors with higher risk tolerances and liabilities that are less sensitive to inflation.

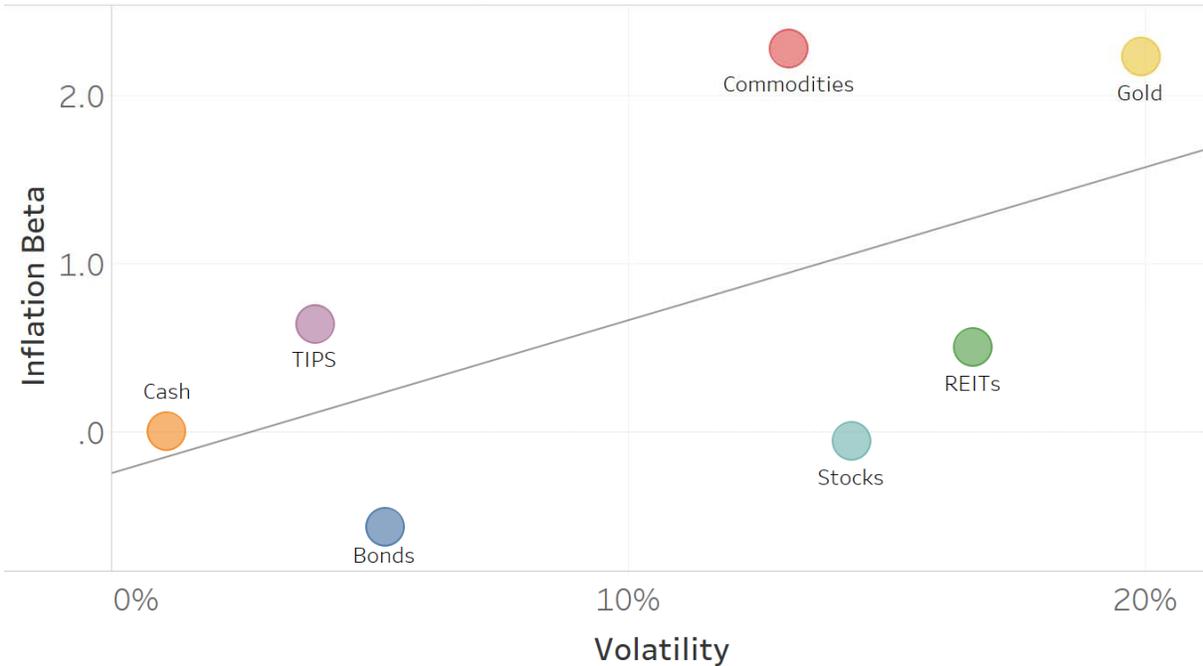
How do I protect/hedge my investment portfolio from inflation?

Add or increase portfolio allocations to asset classes that have a high beta to inflation. Inflation beta is a measure that shows how much an asset class’s return increases when inflation goes up by 1%. Put simply, an asset class with an inflation beta of 1.0 will see its return *increase* by 1% given a 1% rise in inflation. Conversely, an asset class with an inflation beta of -1.0 will see its return *decrease* by 1% given a 1% rise in inflation. Asset classes with inflation betas less than 1.0 would not keep up with rising inflation and experience a reduction in overall purchasing power. Using inflation beta is advantageous when comparing different asset classes because it illustrates both the direction and magnitude of the co-movement between the asset class’s returns and inflation.

Figure 5. charts inflation betas and volatility of asset classes commonly held portfolio assets as well as asset classes typically referred to as “inflation hedges”. The commonly held portfolio assets consist of stocks, bonds, and cash. The “inflation hedging” asset classes refer to commodities, gold, Real Estate Investment Trusts (REITs), & Treasury Inflation Protected Securities (TIPS).

Figure 5.

Inflation Beta and Volatility by Asset Class



Jan 1977- Sept 2018

Source: ACG

Based on annualized CPI inflation using monthly data from January 1977 to December 2017. Asset classes represented by: Stocks (MSCI ACWI GR Index); bonds (Bloomberg Barclays US Aggregate TR Index); TIPS (since 1972 Kothari & Shanke TIPS Model Index and since 1997 Bloomberg Barclays U.S. TIPS TR Index); REITs (FTSE NAREIT All Equity REITs Total Return Index); Commodities (since 1951 Commodity Systems Inc. Index & since 1990 Bloomberg Commodity Index TR); Gold (S&P GSCI Gold Spot Index TR); Cash (FTSE Treasury Bill 3-Month Index TR).

As evidenced in **Figure 5.**, stocks, bonds, and cash (T-bills) do a poor job of hedging inflation on a standalone basis. REITs and TIPS offer positive inflation hedging properties but end up falling short of the desired 1.0 inflation beta. Gold and commodities stand-out as the asset classes possessing the best inflation hedging characteristics. Furthermore, commodities exhibit a higher inflation beta than gold while providing less risk.

To gain a better understanding as to how these asset classes interact within a portfolio context, two portfolios are compared against each other in five different interest rate environments. The first portfolio (“Balanced portfolio”) is a typical ‘balanced’ portfolio containing 60% stocks and 40% bonds. The second portfolio (“Inflation hedged portfolio”) is comprised of 55% stocks, 35% bonds and a 10% allocation to inflation hedging assets consisting of an equal weighting of TIPS, gold, commodities, and REITs. **Figure 6a.** displays the average annual U.S. inflation rates from 1977-2017 broken down into quintiles with quintile 1 having the lowest average annual inflation rate and quintile 5 having the highest average inflation rate. **Figure 6b.** compares the balanced portfolio to the inflation hedged portfolio. The risk reduction column shows how much less volatility the inflation hedged portfolio provides in the different inflation rate scenarios, and the inflation beta improvement column is calculated as the percent change in inflation beta from the balanced portfolio to the inflation hedged portfolio.

Figure 6a.
Quintile Analysis

Average Annual Inflation Rate	
Quintile 1	1.22%
Quintile 2	2.03%
Quintile 3	2.87%
Quintile 4	3.85%
Quintile 5	8.22%

Figure 6b.
Comparison of Balanced Portfolio to Inflation Hedged Portfolio

	Risk Reduction ¹	Inflation Beta Improvement ²
Quintile 1	-1.83%	16%
Quintile 2	-0.52%	8%
Quintile 3	-0.55%	12%
Quintile 4	-5.05%	14%
Quintile 5	-5.89%	89%

Source: ACG as of September 30, 2018

Based on annualized CPI inflation using monthly data from January 1977 to December 2017. Asset classes represented by: Stocks (MSCI ACWI GR Index); bonds (Bloomberg Barclays US Aggregate TR Index); TIPS (since 1972 Kothari & Shanko TIPS model index and since 1997 Bloomberg Barclays U.S. TIPS TR Index); REITs (FTSE NAREIT All Equity REITs Total Return Index); Commodities (since 1951 Commodity Systems Inc. Index & since 1990 Bloomberg Commodity Index TR); Gold (S&P GSCI Gold Spot Index TR)

¹Risk Reduction is calculated as the standard deviation of the 55% stock, 35% bond, 10% inflation hedge portfolio less the standard deviation of the 60% stock 40% bond portfolio.

²Inflation beta improvement is calculated as the percent change in inflation beta from the 60% stock 40% bond portfolio to the 55% stock, 35% bond, 10% inflation hedge portfolio.

In each inflation environment, the hedged portfolio provides a higher inflation beta than the balanced portfolio. In the highest inflation rate environment (Quintile 5), the inflation hedged portfolio produced roughly the same return as the balanced portfolio, while providing less risk and a higher beta to inflation. This analysis suggests that adding inflation sensitive assets to a portfolio can help mitigate inflation risk especially in environments where inflation rates are much higher than average.

Conclusion

Traditional stocks and bonds do a poor job of hedging inflation on a standalone basis. Investors wanting to hedge inflation risk should consider adding inflation sensitive assets to a portfolio comprised of traditional assets. A constant allocation to a broad basket of real-return assets such as commodities, gold, TIPS, and REITs provides positive inflation hedging benefits without adding unnecessary risk in high inflationary environments.

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