

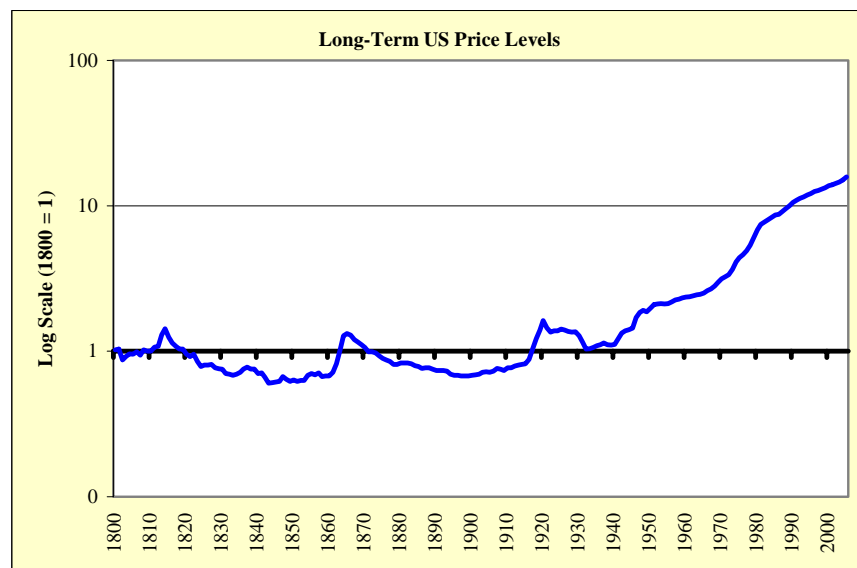
# Inflation and the Implications for Endowment Investments

## Overview

In this document, we examine inflation. We begin by showing the history of inflation in the United States. Next, we look at recent inflation and speculate on prospects of future inflation. Finally, we comment on investing to hedge against unexpected inflation. Over the intermediate-term, our best guess is that inflation reverts to between 2% and 3%, but we believe the risks to this forecast are on the upside due to uncertainty over energy and the dollar. Looking into the next decade and beyond, a concern we have is the dire projections for the Federal budget deficit. There may be a temptation to print money to cause inflation, thus lowering the real value of outstanding debt. Since the liabilities of educational institutions are sensitive to inflation, investments in real assets make sense to hedge this risk.

## A Historical Perspective

Post the Great Depression, inflation has been pervasive. Its severity has waxed and waned, but consumer price levels have risen 63 of 65 years since 1940. This wasn't always the case. Prior to WWI, periods of deflation were as common as periods of inflation. In fact, the 19<sup>th</sup> century saw *deflation* of 0.4%, annualized.



The reason for the shift from deflation to inflation can be traced to monetary policy. Throughout most of the 19<sup>th</sup> century, the US was on either the gold or

silver standard. The currency was effectively tied to silver in the first half of the century, then gold in the second half.<sup>1</sup> Money supply growth, as such, was limited to the growth in the supply of the metals. The growth in supply was less than the growth in economic output, so price levels declined throughout most of the Century. The country did experience sharp inflation during the Civil War when President Lincoln suspended gold convertibility, but there was deflation after the war as the country returned to the gold standard. The next interruption of the gold standard did not come until World War I. A return to the gold standard was completed by 1922. The Great Depression brought deflation and the end of the official gold standard in the US.<sup>2</sup> President Roosevelt and Congress outlawed the holding of gold coins and bullion by US citizens in 1933 (which wasn't rescinded until 1974), and the dollar was devalued to gold in 1934 (from \$20.67 per ounce to \$35).

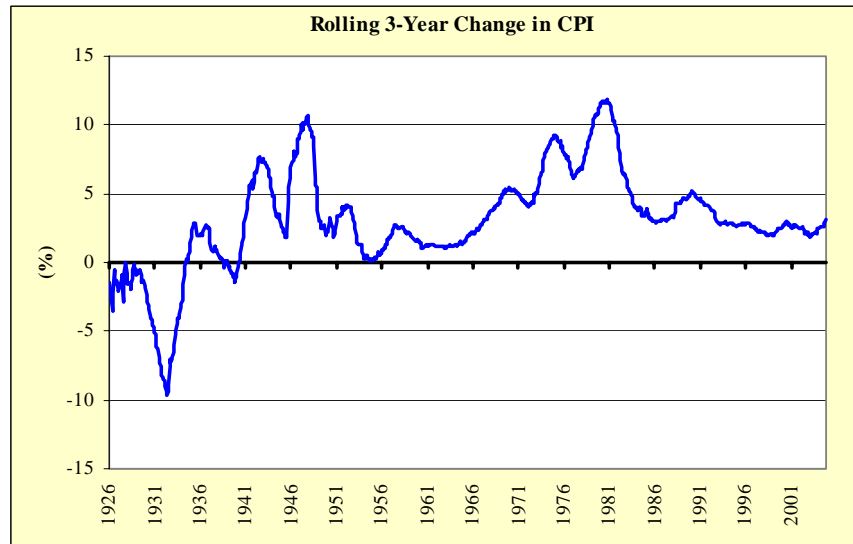
The Bretton Woods system, which came in force after World War II, returned the country to a quasi-gold standard. Foreign central banks could exchange dollars for gold at \$35 per ounce, and the dollar became dominant international reserve currency. This system allowed the US to expand the supply of dollars without the market check from gold prices (only foreign central banks could exchange dollars for gold), which resulted in inflation. Inflation was modest from the mid-50s through the early-60s, but began to accelerate in the late 1960s when the US expanded money supply at an increasing rate. The Bretton Woods system collapsed in the early 1970s as the dollar became substantially overvalued versus gold, resulting in a run on the currency by central banks. President Nixon suspended gold convertibility in 1971, ending the dollar's last link to the metal and switching to a fiat money system. When combined with the effects of the energy embargo, the 1970s saw a rapid increase in inflation, reaching a peak of 13% in 1979. By 1981, a dollar from 1934 was worth just \$0.12.

Paul Volcker took over the Chairmanship of the Federal Reserve in 1979 and helped to bring inflation back under control. Inflation averaged less than 4% from 1982 through 1989, and by the late 1990s, inflation was averaging close to 2%.

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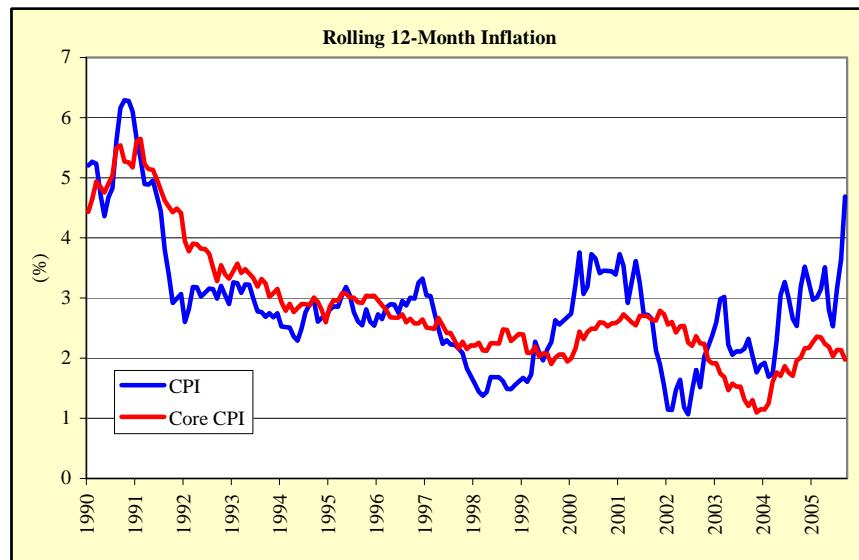
<sup>1</sup> The US was on a bimetallic system of silver and gold from the late 18<sup>th</sup> century up to 1873. There was a set exchange rate of 15 to 1 of silver to gold. Whichever metal was overvalued to the set exchange rate became the defacto currency, as the other metal flowed out of the country. In the first half of the century, silver was overvalued, so silver flowed into the country and gold went out. Following the California gold rush in the middle of the century, gold became overvalued relative to silver, resulting in a scarcity of silver. Therefore, gold became the effective currency. The US officially went onto the gold standard in 1873.

<sup>2</sup> While the gold standard kept long-term inflation in check, its great shortcoming was it caused the economy to be prone to depressions. In times of liquidity crunches, there was no way to increase the money supply. In fact, the gold standard arguably amplified downturns because the resulting deflation increased the propensity to save. Many economists believe that the return to the gold standard in US and other countries following World War I helped to usher in the Great Depression. There were numerous depressions in the 19<sup>th</sup> century.



***Inflation Outlook***

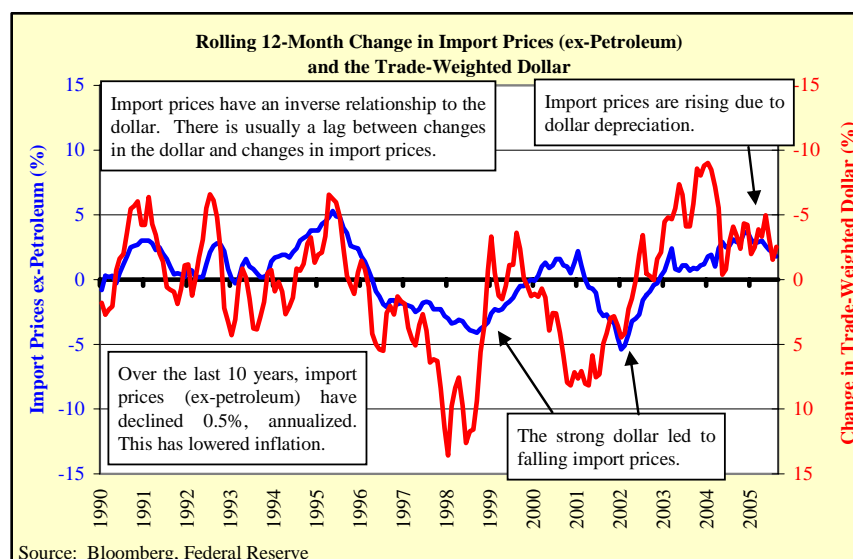
The rate of inflation has been increasing over the last few years. Over the 12-months ended September 2005, CPI inflation was 4.7%, which was the highest rate for a 12 month period since 1991. The increase in inflation has largely been driven by energy prices. The core CPI, which excludes food and energy, has risen by a more modest 2% over the last twelve months. While the core CPI should not be relied upon as a long-term inflation measure, it is useful as a smoother measure of underlying price trends. If energy prices level off or fall, the headline CPI rate should trend towards the core rate. Below we comment on some of the macro-economic factors affecting inflation.



*Energy* – Energy has been the primary cause of the spike in inflation over the past year. The surge in demand for oil from China and other emerging market countries in the face of tight supplies (worsened by the hurricanes) has driven prices higher. It’s anybody’s guess where prices are going from here. The

good news is that high prices are attracting new investment. As new production comes on-line, price pressures may decrease. Cambridge Energy Research Associates estimates that capacity could exceed demand by 6 to 7.5 million barrels per day. High prices are making “unconventional” oil projects profitable, such as Canadian oil sands, ultra-deepwater drilling, and coal gasification. Over the short-term, there will be a race between rising demand and new supply. A long-term concern is that some analysts believe we may be within a decade or two of peak worldwide oil production. The possibility of political upheaval in producing countries is perhaps the largest risk. With little margin between capacity and demand, a political event (particularly in Saudi Arabia) could send prices skyrocketing.

*Global Labor Arbitrage* – A deflationary force in the world, as coined by Stephen Roach of Morgan Stanley, is “global labor arbitrage.” The abundant, low-cost labor force in emerging markets, particularly in China, has a couple of ramifications. First, it has a direct effect of encouraging a shift in manufacturing to these lower cost countries. These savings are passed along, at least in part, to consumers. Over the last decade, import prices (excluding petroleum) have declined 0.5%, annualized. At the same time, imports’ share of the economy has increased by about 25%. A second indirect effect is that it acts to keep a lid on costs for manufacturers outside of emerging markets because of competition. Domestic companies competing against Chinese manufacturers, for instance, may not have the same pricing power as in years past. Furthermore, they must keep a lid on costs, particularly labor costs. Hourly earnings growth has been depressed in recent years.



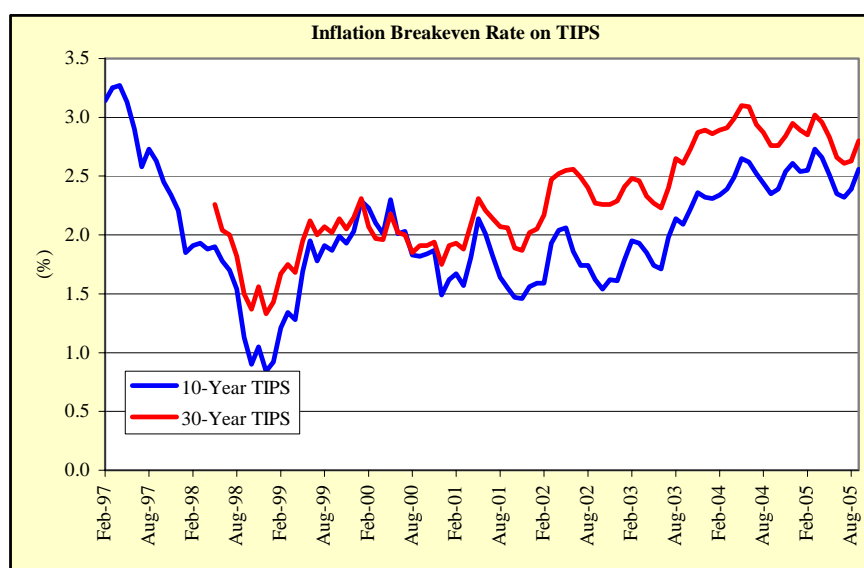
*Dollar Weakness* – Due to our massive current account deficit, we suspect that the dollar will resume its downward trend. It likely must become significantly undervalued to reduce the deficit to a more sustainable level. This will have an inflationary effect because import prices will rise (or not fall as much as they

would otherwise). The steep decline in the dollar since 2002 has already led to a modest increase in import prices, whereas import prices were declining before the dollar's depreciation.

*Monetary Policy* – As shown in the prior section, monetary policy is a key long-term determinant of inflation. Over the short-term, the effect is fuzzier because of all the other moving parts. Greenspan showed his willingness to ease aggressively to avoid any possibility of a Japan-styled deflation. Ben Bernanke's ascension to Federal Reserve chairmanship will likely continue this trend (based on his "helicopter drop" of money comment). Overall, it seems likely that the Fed will err on the side of inflation over deflation to avoid Japan's experience.

*Savings Rate* – A potential deflationary factor is a rebound in the personal savings rate. The savings rate has been declining for the past two decades and is now negative.<sup>3</sup> If that rate rebounds sharply because of a correction in housing prices or other events, it would mean reduced demand growth. An unexpected decline in demand growth could lead to falling prices because of excess capacity.

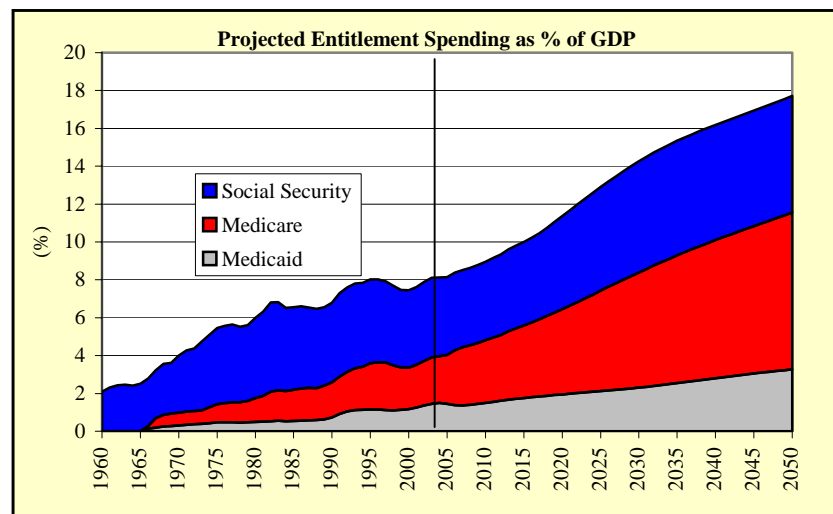
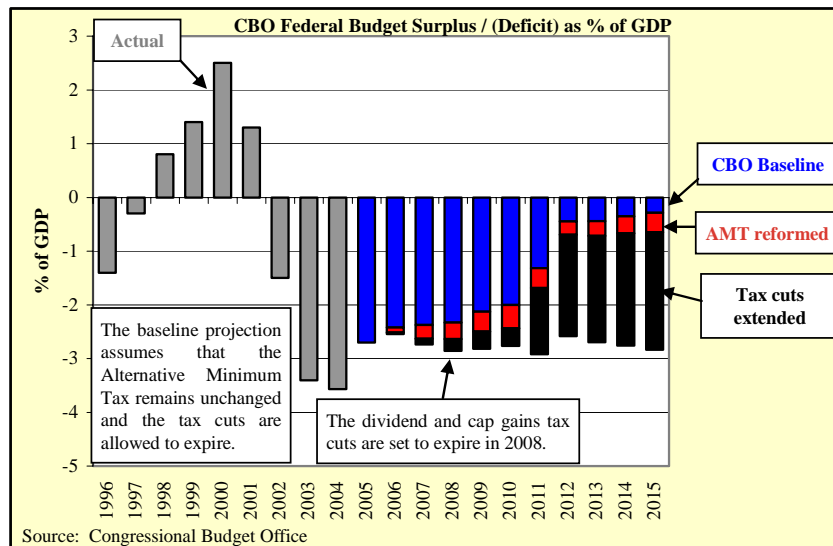
The bond market does not appear concerned about inflation. The breakeven inflation rate on 10-year TIPS, which represents the difference in the Treasury yield and the real yield on TIPS, stands at only 2.4%. This rate on 30-year TIPS is 2.6%. The breakeven rate should include not only expected inflation, but also an inflation risk premium. **Over the intermediate-term, our best guess is that inflation reverts to 2.5%, but we believe the risks to this forecast are on the upside due to energy and the dollar.**



<sup>3</sup> This has not led to inflation, perhaps due to the other factors noted.

***A Long-Term Concern***

Looking into the next decade and beyond, a concern we have is the dire projections for the Federal budget deficit. Over the next ten years, it seems likely that the budget balance will remain deep in the red. Beyond that, demographics and entitlement spending could make matters even worse. Social Security and Medicare will become a huge burden for the Federal government.<sup>4</sup> There may be a temptation to print money to cause inflation, thus lowering the real value of outstanding debt. We hope that the Federal Reserve retains its independence and does not resort to default through inflation. However, history is rife with examples of governments using the printing press (and debasement of coins in earlier times) to pay burdens.

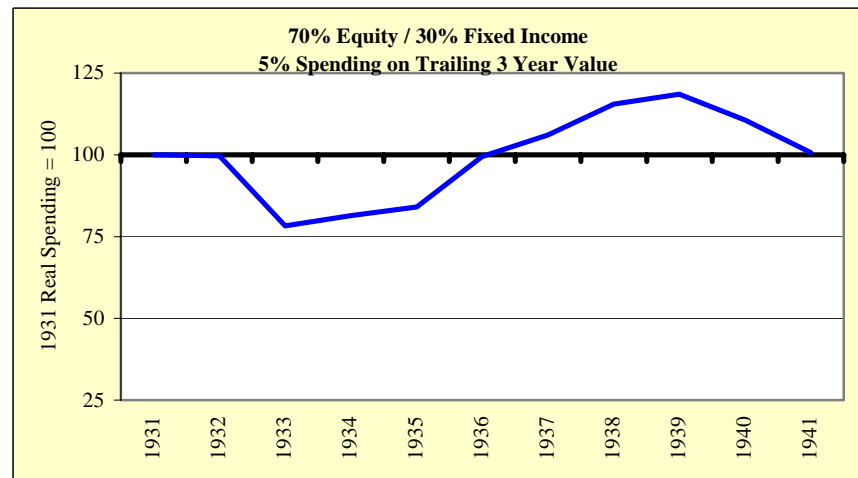
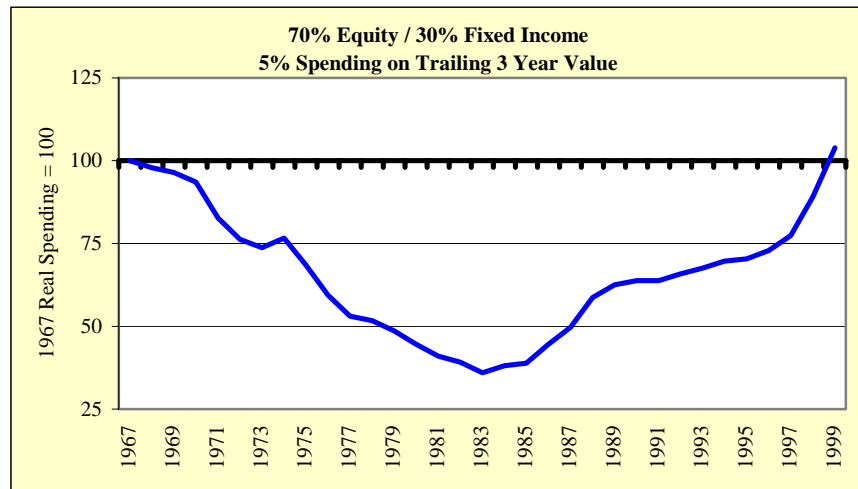


<sup>4</sup> See "The Impact of an Aging Population," Hammond Associates Research Note, March 2004

*Inflation,  
Liabilities, and  
Endowment  
Investments*

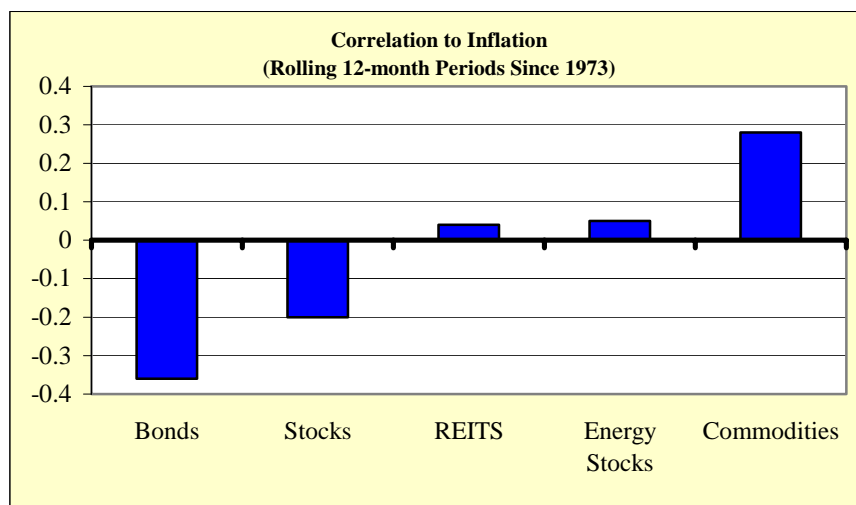
Liabilities, and the ease by which they are met, are largely affected by future price levels. Inflation is a significant risk for endowments because costs will increase, requiring ever larger distributions from the endowment to keep services the same. Deflation is positive in some ways, because it reduces cost pressures on the budget, and distributions from the endowment go further. Admittedly, this view is too simplistic in many respects. However, we believe it is reasonable to assume that inflation is a larger risk for most endowments than deflation when liabilities are considered. For this reason, **endowment investments should be tilted towards assets that protect against inflation.**

Comparing real spending in the 1930s to the 1970s illustrates the impact of deflation versus inflation. An institution with a 70% equity and 30% fixed income portfolio with a 5% spending rate (on a trailing 3 year market value) would have seen the real value of its endowment spending drop by 65% from 1967 through 1983. The institution had to wait until 1999 to reach the real value of 1967 spending again. The Great Depression was comparatively mild because of deflation. The real value of spending declined by only 21% from 1931 through 1933 and completely recovered by 1936.



An institution that wants to protect their portfolio against unexpected inflation to hedge liabilities should underweight nominal bonds, especially those with long duration. TIPS are a better fixed income vehicle because they more closely match liabilities. Stocks are traditionally considered an adequate inflation hedge. From a theoretical perspective, this is sound. Companies' property, plant and equipment are unaffected by inflation. They should also be able to pass along higher inflation through high prices, meaning that earnings should grow faster.<sup>5</sup> This was the case in the 1970s. Earnings for the S&P 500 grew at a 10% annualized rate during the decade and at 3% adjusted for inflation (which was slightly better than the long-term average). A problem with this is that the stock market has historically exhibited "money illusion"—valuations have been affected by inflation even though they shouldn't be. When inflation is rising, the P/E ratio tends to fall. This helps explain why stocks were trading at single-digit P/Es in the early 1980s. Still, stocks remain a good long-term inflation hedge.

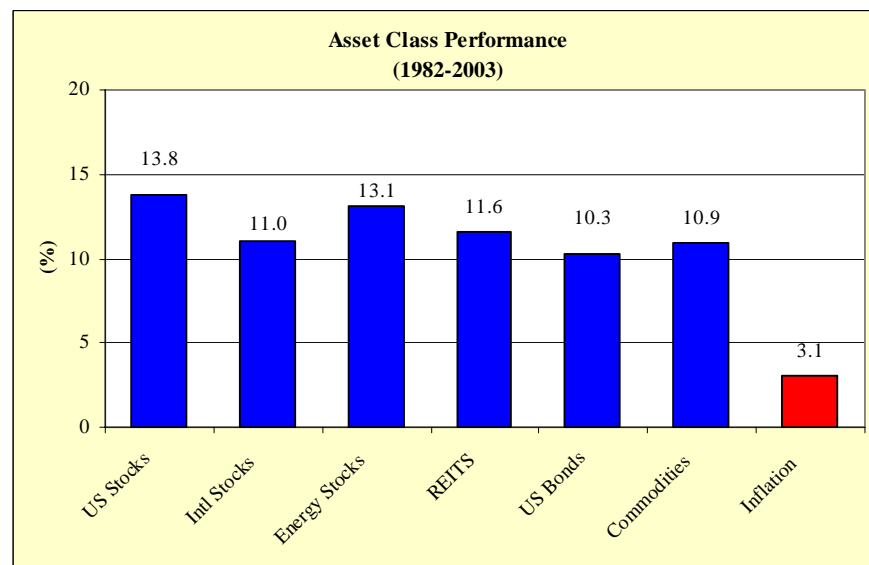
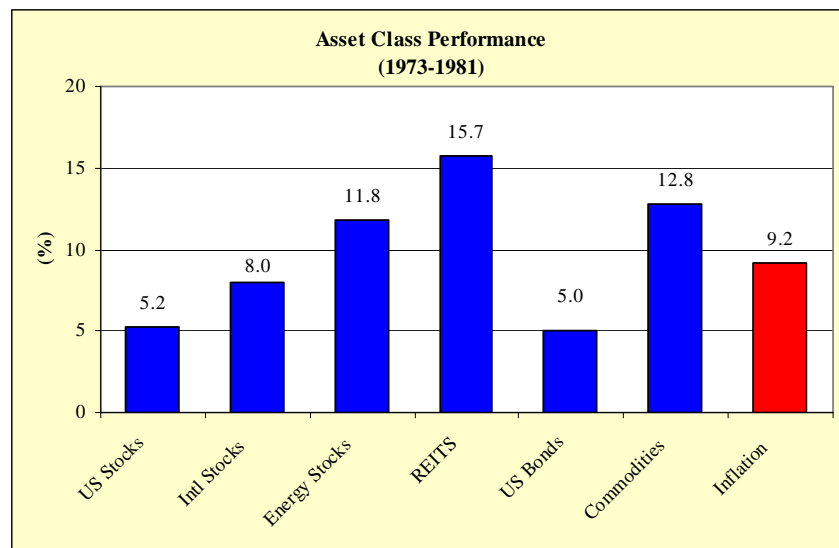
Historically stocks and bonds have exhibited negative correlation to inflation. Real asset-oriented liquid investments show improved correlations to inflation. REITS and energy stocks are virtually uncorrelated to inflation.<sup>6</sup> REITS (and private real estate investments) should be able to pass along higher inflation through rents, and the earnings of energy stocks naturally receive a boost to the extent inflation is caused by higher energy prices. A direct investment in commodities represents the best inflation protection, since commodities are often the source of unexpected inflation. Commodities have exhibited positive correlation to inflation of 0.3.



<sup>5</sup> There are other benefits of inflation for stocks. One benefit is debt devaluation. Since most corporations are net borrowers, unexpected inflation reduces the real value of outstanding debt. A second is the potential for real wage reduction. High inflation makes it easier to reduce real wages because nominal wages can still rise modestly.

<sup>6</sup> We examined liquid real asset equivalents because of data availability. Private real asset data is not available back to 1973. Private assets may show a higher correlation to inflation because of the absence of mark to market effects.

Correlations may not show the full benefit of real assets as an inflation hedge. We examined the returns of asset classes during the inflationary period of 1973 to 1981. Here, the liquid real asset proxies performed well. Over this period, inflation was 9.2% annualized. Stocks earned only 5.2% and bonds earned 5.0%. Energy stocks, REITs, and commodities all outperformed inflation, earning 11.8%, 15.7% and 12.8% annualized, respectively. We must strongly caution that this is only one observation. We do not have sufficient data to test the performance of the real assets during previous secular inflationary environments. In the disinflationary period of 1982-2004, the liquid real asset proxies underperformed stocks, but not by an unreasonably wide margin.



We should note that a major determinant of how investments perform during an inflationary period is the source of inflation. For instance, if an inflationary period is caused because of strong economic growth pushing energy prices ever

higher, then stocks could continue to perform well. Economic growth may keep investors optimistic over future earnings growth. This is the environment we've been in the last two years. Real estate may also perform well because employment growth will remain strong. Energy investments should also thrive in such an environment. If inflation is caused by a dollar collapse or a supply shock in energy, which leads to another stagflationary period and higher interest rates, then stocks would likely suffer as they did in the 1970s. We would also expect real estate to underperform because of slower employment growth and higher interest rates. (Real estate apparently performed well in the 1970s, but we suspect there is less margin for error in pricing today.) Energy and other commodity investments should perform well in this environment, because a weak dollar or a supply shock would likely push prices higher.

A concern we have over real assets in the current environment is their strong recent performance. REITs and private real estate investments have been very strong performers over the past 5 years, but capitalization rates are now very low. Relative to interest rates, capitalization rates are not overly concerning. However, if inflation causes a spike in interest rates, we would not be surprised to see both public and private real estate investments suffer. Commodities have also been strong performers since 1998, driven by the performance of energy and industrial metals. A cyclical pull back is a distinct possibility. Nevertheless, in a world where nearly everything appears expensive, real asset investments still appear to be a prudent hedge to liabilities. Even in a modest inflation environment, we believe their returns will be competitive with traditional stocks.

### *Conclusion*

We don't know where inflation is going from here. However, based on implicit market forecasts, it appears there is more upside inflation risk than downside. Endowments and other institutions whose liabilities are sensitive to inflation should strongly consider a real asset allocation to hedge against unexpected inflation. While traditional stocks should act as a reasonable long-term inflation hedge, they have fallen short when needed the most. In the 1970s, both stocks and bonds performed dismally versus inflation.

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