

# Schroders

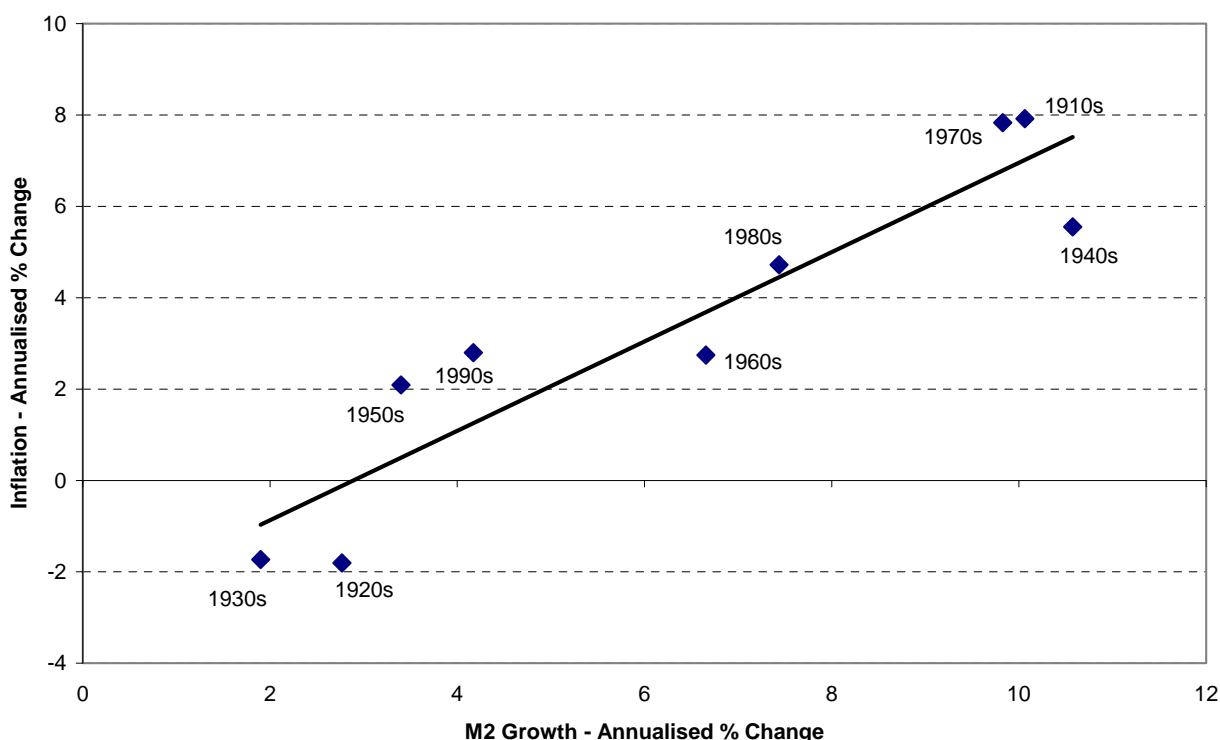
## Talking Point

### Inflation hedging for diversified portfolios

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Uncertainty about the inflation outlook has never been higher, with negative output gaps pointing to the risk of deflation, while the unprecedented fiscal and monetary policy response to the Global Financial Crisis generating concerns that inflation will be reignited. The risk of a significant rise in inflation is reflected in the long term relationship between money supply and inflation. Central banks have been aggressively stimulating money supply - US M2 is up 8% over the last year and Australian M3 is up 14%. While this expansive policy will have to be maintained to lead to a secular lift in inflation, it does highlight that the probability of an upward trend in inflation is the highest it has been in decades.

**Figure 1: US money growth and inflation**



Source: Schroders, US Census Bureau, Council of Economic Advisors

The impact of inflation on the returns of the various asset classes is an important issue for managers of diversified portfolios. The liabilities of defined benefit funds are related to wages growth, which is highly correlated with inflation, while defined contribution funds generally target a long term investment return of inflation plus 4-5% per annum. Low and relatively stable inflation has seen the general mismatch between assets and liabilities held in diversified funds to be a relatively minor issue. However, any rise in inflation and inflation volatility<sup>1</sup> would see the mismatch become a more important issue for trustees and plan

<sup>1</sup> There is a strong relationship between the level of inflation and inflation volatility.

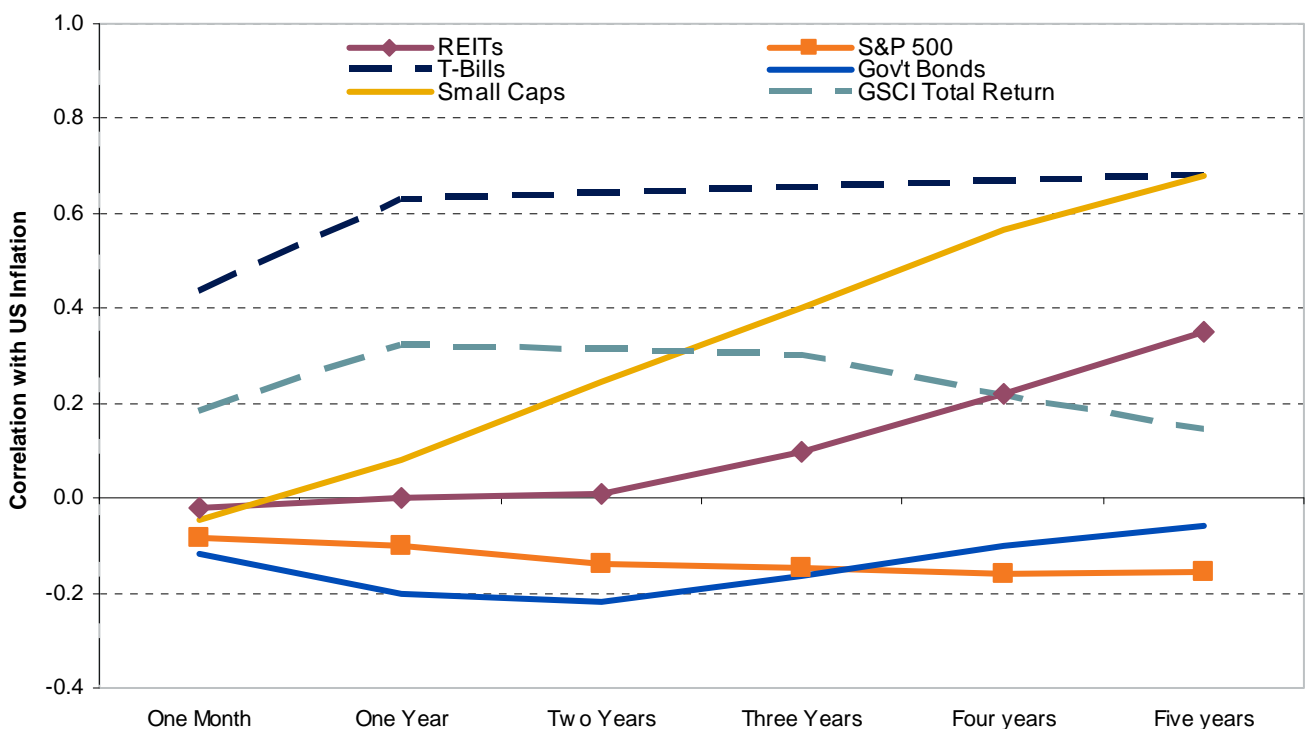
sponsors. Therefore it is important to understand the inflation matching capabilities of the various asset classes.

There has been a significant body of research into the relationship between various asset classes and inflation performance. This research has found several general themes. In this paper we explore these themes in detail and then extend it further by looking at several factors that have an influence on the inflation hedging ability of asset classes. We will look at the impact of the nature of the inflation shock, the monetary policy regime, and the valuation of the asset class.

### Inflation hedges for the short run

There have been many academic studies since the mid-1970s, both theoretical and empirical, which have looked at the relationship between various assets classes and inflation. While not in total agreement, there are several general themes, which figure 2 succinctly captures. This figure measures the historical return correlation of various asset classes with inflation in the US, where there is a significant data history for most asset classes, with the horizontal axis covering different measurement periods. If an asset class was a perfect hedge it would have a correlation of 1 with inflation.

**Figure 2: US asset class rolling return correlation with inflation, 1972 to 2009**



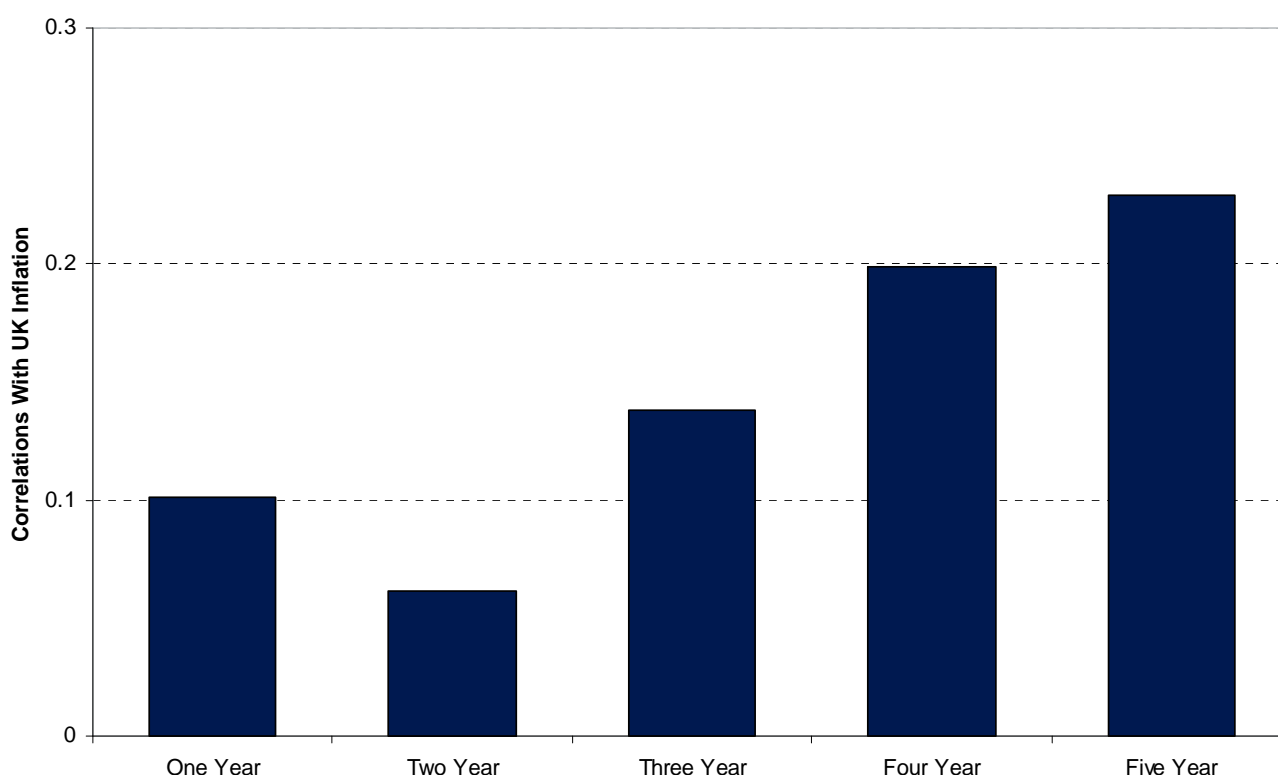
Source: Schroders, Morningstar, Datastream

Cash has been the best inflation hedge in both the short and medium term, with small cap equities a hedge over medium term time periods. Stocks and bonds were negatively correlated with inflation and have been poor inflation hedges. While collateralised commodities and REITs were modest inflation hedges over the medium term time periods, and collateralised commodities also a modest inflation hedge over short term time periods.

While TIPs have not been available over a significant period of time, given their nature they are generally believed to be a perfect hedge over the medium term. To test this thesis we looked at the relationship

between Inflation Linked Gilts and inflation, given that Gilts provide the longest time series for inflation linked securities. What it shows is that the correlation between inflation linked securities and inflation was low in the period since 1981. They did not provide a good hedge against inflation. This low correlation was because the change in capital value due to the long real yield duration swamping any accrual from inflation. For example, the current duration of the Inflation Linked Gilt market is 14 years, thus a 1% move in the average yield of the market would see a 14% change in price<sup>2</sup>. What inflation linked securities do provide is a strong hedge for long dated real liabilities given the guaranteed real return, but only if held to maturity.

**Figure 3: Inflation linked gilts rolling return correlation with inflation, 1981 to 2009**



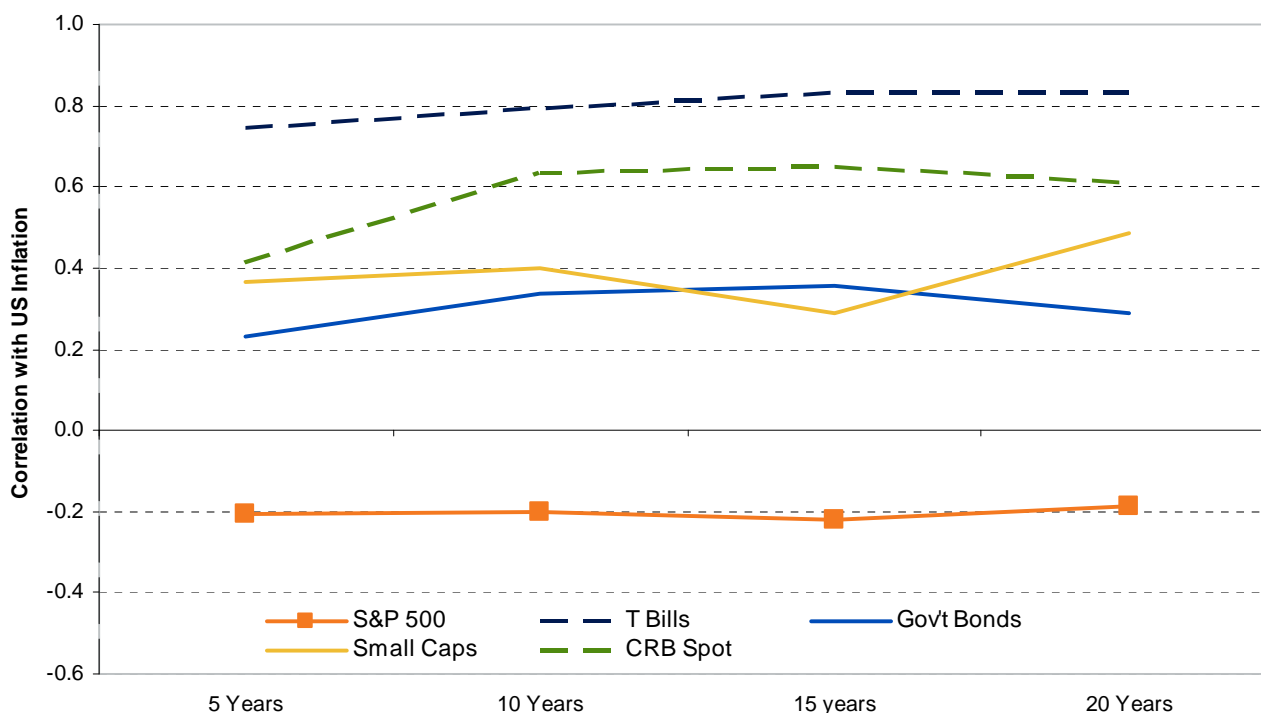
Source: Schroders, Datastream

### Inflation hedges for the long run

Some of the research has also looked at the relationships with inflation over the longer periods. This has especially been so for equity markets. Prior to the 70s it was generally believed that equity markets were an inflation hedge, given they are a claim over real assets. The experience of the 1970s showed that this didn't hold in the short run so researchers looked to see if it held over the long run.

<sup>2</sup> The Australian Index Linked Bond market has a duration of around 7.5 years while the US TIPs market has a duration of around 7.9 years.

Figure 4: US asset class rolling return correlation with inflation, 1952 to 2009



Source: Schroders, Morningstar, Datastream

While equity markets are believed to be an inflation hedge in the long run, the long run is an extremely long period of time. Equity markets continued to be negatively correlated with inflation in time periods out to 20 years since 1952.

One thing of note in the relationship between US asset class returns and inflation is the difference between the bond markets relationship with inflation from the 1972 period and the 1952 period, with the five year correlation negative in the 1972-on period but positive in the period from 1952. This is consistent with the research into inflation hedges that has found that the relationships can be far from stable. This suggests a deeper understanding of the drivers of the inflation shock and the policy regime may be beneficial.

### Domestic versus global inflation

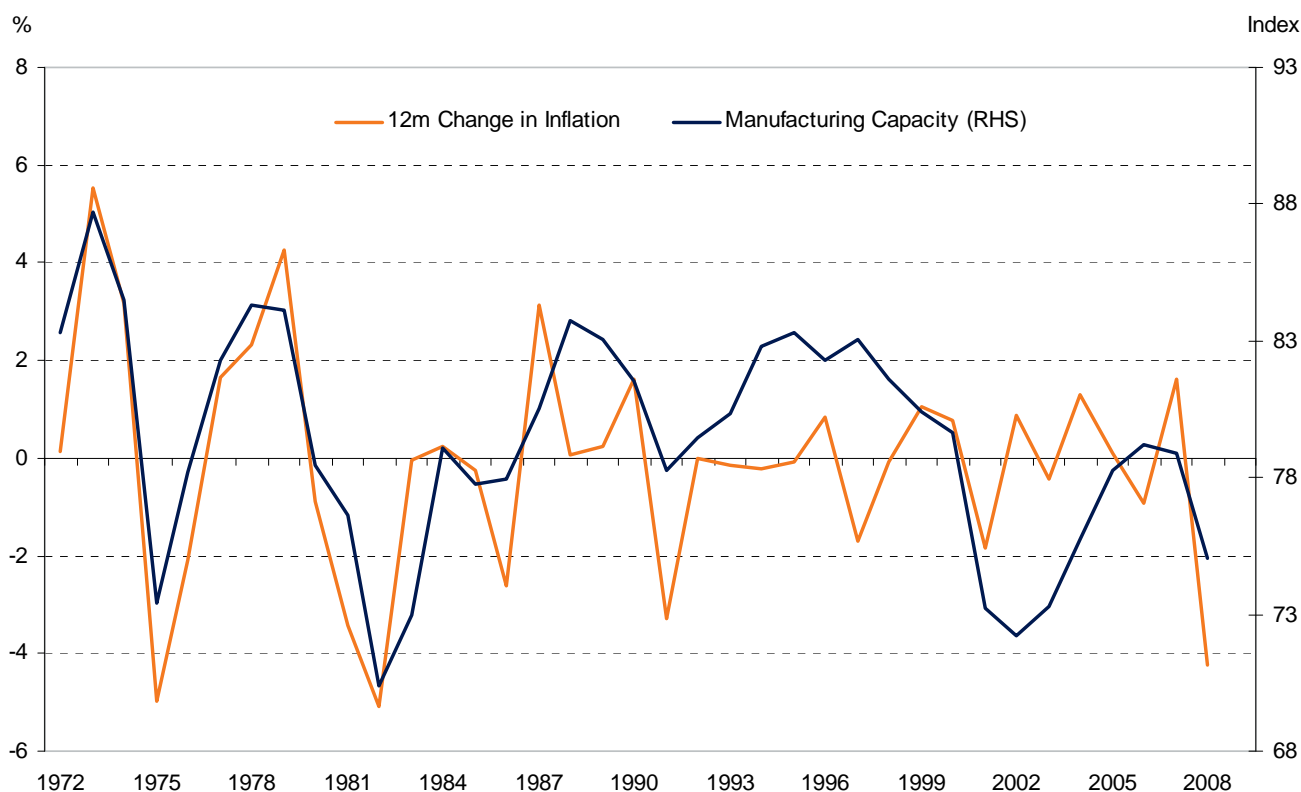
A key shock to consider is local policy generated inflation, characterised by local inflation significantly higher than the international average, given most funds liabilities will be of a domestic nature.

Given a local inflation shock will see the underperformance of domestic financial assets and usually sees a depreciation in the domestic currency. In this environment, unhedged foreign denominated bonds and equities tend to produce superior returns in domestic currency terms. Thus the risk of local inflation shock can be mitigated somewhat by international diversification on an unhedged currency basis.

## Monetary policy regimes

While international diversification provides a hedge against local inflation, it does not hedge against a broad based global inflation. This broad based inflation can arise several ways: demand pull, where inflation is driven by excess demand; and cost push, where a supply shock is the key factor (e.g. the oil shocks of the 1970s). However, given supply shocks are generally a problem during periods of high demand, it is not clear that this analysis will lead to a better understanding of inflation hedging. This can be seen by the historical relationship between measures of economic slack and changes in inflation in figure 5<sup>3</sup>.

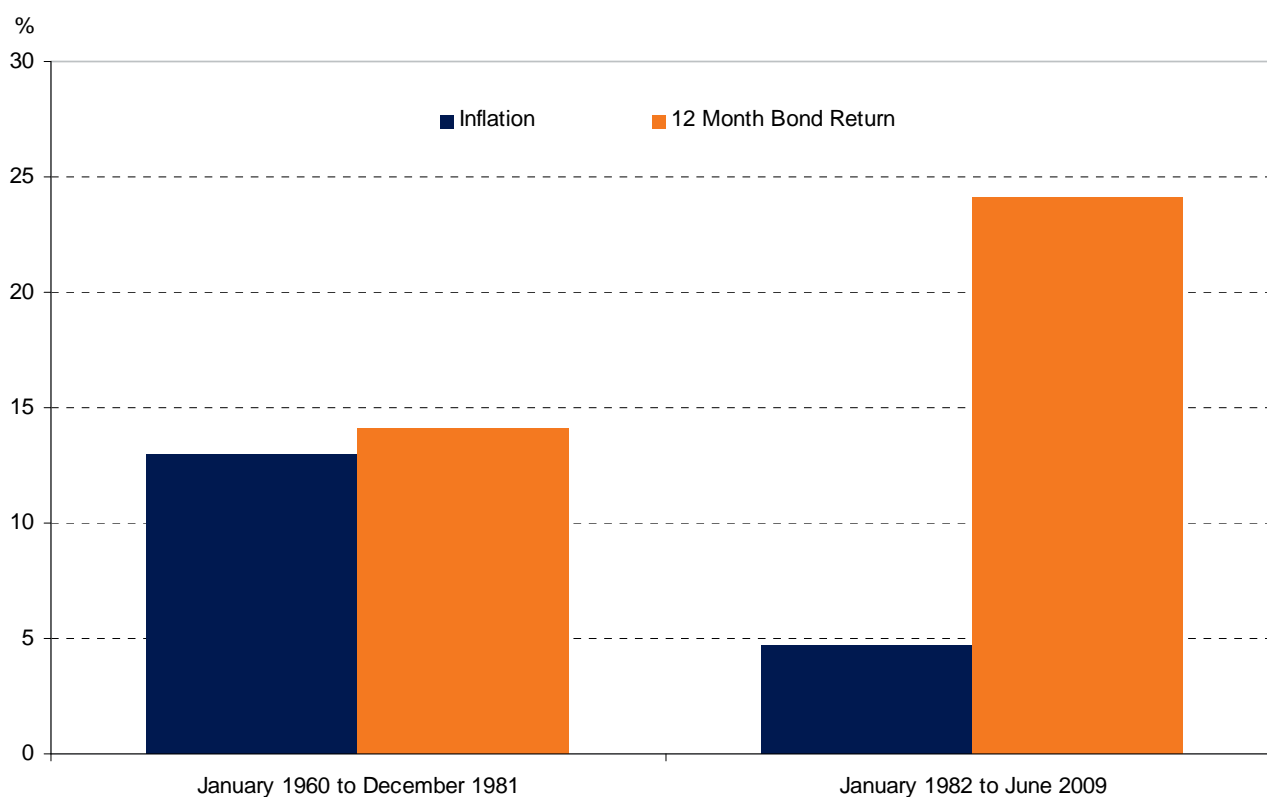
**Figure 5: US capacity utilisation and change in inflation**



Source: Schroders, Datastream

What is more fruitful is thinking about the policy response to the inflation shock. The policy response can be placed into two broad categories: passive and pre-emptive. Passive policy is where monetary policy responds to realised inflation, while pre-emptive monetary policy aims at proactively preventing inflation. The key difference between the two regimes is the relationship between the volatility in the real interest rate and inflation. In the passive regime the volatility of inflation dominates, while in the pre-emptive regime the volatility of the real interest rate dominates. This can be seen in figure 6, while inflation volatility is lower in the pre-emptive period relative to the passive period, the volatility in bond returns is higher. Also of note, is that during the passive period the volatility of inflation and bond returns is relatively equal.

<sup>3</sup> While the relationship is weaker in the 90s, this was the period through which methodological changes to the CPI were implemented following from the Boskin Commission Report.

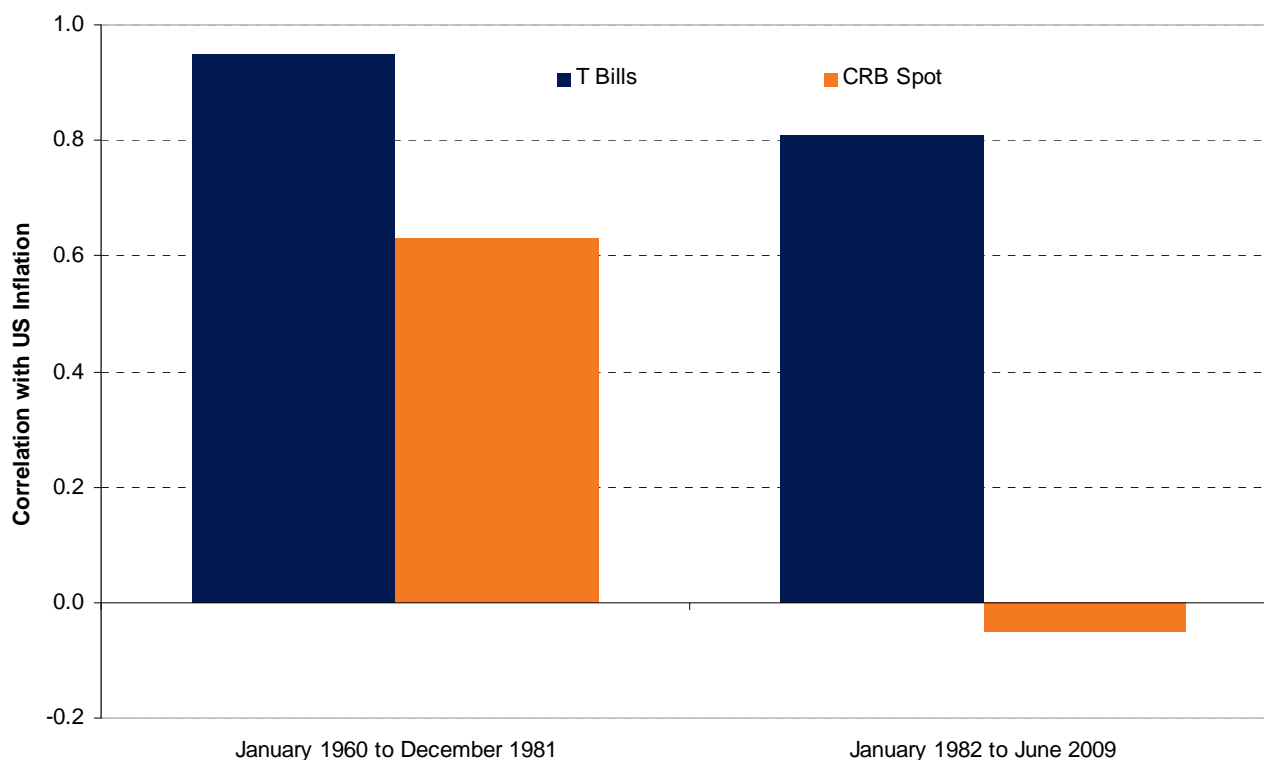
**Figure 6: Standard deviation of 12 month CPI versus rolling 12 month Government bond return**

Source: Schroders, Morningstar, Datastream

This will have a significant impact on the short to medium term performance of inflation hedges. In a passive monetary policy regime, assets with a relationship with realised inflation: cash, inflation linked instruments, physical commodities, and direct property; will perform well. This can be seen in figure 7, where we show the strong relationship between inflation, spot commodities and cash, during the passive monetary policy regime.

In a pre-emptive environment, inflation risk will remain but it will be realised through real interest rate risk as policy makers act proactively. In this environment cash will be far and away the superior performing inflation hedge. Longer duration assets will suffer due to the volatility in real interest rates causing short term pricing volatility. Thus inflation linked instruments, direct property and commodities may disappoint as an inflation hedge. This can be seen in figure 7, where inflation and spot commodity prices were uncorrelated over the pre-emptive policy regime.

Figure 7: US asset class rolling 5 year return correlation with inflation



Source: Schroders, Morningstar, Datastream

## Valuations

One important point to consider when investing in inflation hedges is valuations of the underlying assets. This will also have a significant impact on the performance of the various inflation hedges. An overvalued inflation hedge would be expected to perform poorly in real terms and an undervalued inflation hedge would be expected to outperform. A good example would be inflation linked bonds in a pre-emptive policy regime. In this environment the impact of real yields will dominate. However if real yields are exceptionally high, you will be more than compensated for the real yield volatility, and you would therefore expect inflation linked bonds to be a superior inflation hedge even in an environment that is generally not conducive to this asset class.

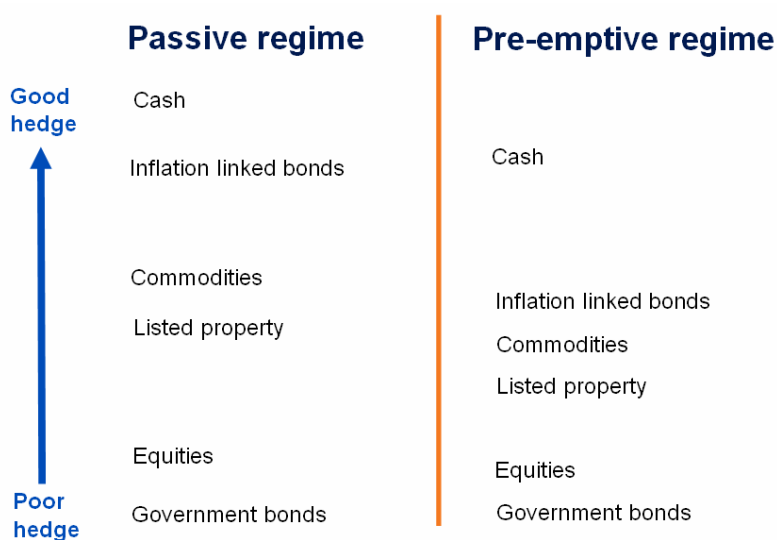
More broadly the key factor is: is the inflation expected or unexpected. The impact of inflation on asset class performance will be different if the inflation is expected against whether it is unexpected. This will be reflected in the valuation of the market. The impact of expected inflation being priced into asset valuations can be seen in the difference in equity performance between the first and second half of the 1970s. In the first half of the 70s, the equity risk premium was low, hence the high realised inflation was a shock and the performance of equities was low, a compounded return of 5.6% p.a. (-2.2% real) from 1970 to 1975. In the late 70s, equity markets were pricing in a high inflation environment as reflected in the high equity risk premium, during this period the US equity market provided a compounded return of 14% p.a. (4.3% real).

## Summary

Overall the best inflation hedges are inflation linked bonds and cash, the poorest performing assets in inflationary periods are equities and bonds, while real assets and securities linked to real assets, are somewhat in between. However, these relationships are far from stable and therefore an understanding of other factors is important. Consideration must be given to the source of the shock, is it local or global, the response to the shock by authorities, and the valuations of the various asset market and the extent to which the inflation shock is already priced in.

The risk of local inflation shock can be mitigated somewhat by international diversification on an unhedged currency basis and valuations must be taken into account when considering an appropriate inflation hedge. For global inflation shocks the key consideration is the nature of the policy response, is it passive or pre-emptive. Figure 8 provides a stylised representation of the various asset classes' performance as an inflation hedge in the different regimes.

**Figure 8: Asset class inflation hedge performance**



Source: Schroders

Given the global nature of the current crisis, it can be argued that the most important impact on inflation hedges performance will be whether we remain in a pre-emptive policy regime or move to a passive regime. It is interesting that the key US economic officials that are experts on the Great Depression<sup>4</sup> have commented on how the pre-emptive removal of expansionary policy led to the relapse into depression in 1937. Thus, signalling the risk of a regime change. However, given the dominant paradigm in central banking is inflation targeting, it may be premature on assuming a move to a more passive policy regime. Therefore, real yield volatility is likely to remain the dominant factor in inflation hedge returns. The key signal to look out for to confirm that we are remaining in the pre-emptive regime will be the draining of excess reserves in the banking system once the US comes out of recession.

For Australia we have also seen an aggressive policy response to the global recession, with the official cash rate at 3%, which is 1.25% lower than previous cash rate low of 4.25% since rates have been announced. Glenn Stevens has also commented on the current "emergency" level of policy. All indications

<sup>4</sup> Both Federal Reserve Chairman Ben Bernanke and Chair of the Council of Economic Advisors Christina Romer researched the causes of the Great Depression as academics.

are that monetary policy will remain pre-emptive in Australia. Therefore any inflation shock will likely be global and not locally driven. Unhedged international exposures will therefore not be required on a purely inflation hedging basis.

Valuations of markets are the last factor to discuss. Looking across the various markets, while valuations are not generally at fair value, the extremes of mis-valuation that tend to occur from time to time do not seem to be an issue at the current point in time. Measures of inflation expectations and break even inflation rates from the inflation linked market suggest that the market is pricing in a benign outlook for inflation. Thus, if inflation does become an issue, inflation hedges should perform strongly in this environment.

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