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"Real Assets"

Real Assets – both traditional and new - are reviewed in terms of their ability to hedge inflation. It appears some hedge well, some don't, some only hedge certain types of inflation, and some do but have problems which detract from their value as hedges.

Introduction

This review, based on "The Long-Horizon Benefits of Traditional and New Real Assets in the Institutional Portfolio" by George Martin (2010), addresses an important topic in the present environment of heightened investor interest in inflation hedges. We included this in *InvestorLit* for another reason though: to highlight the Chartered Alternative Investment Analyst (CAIA) Association's *Journal of Alternative Investments,* to which I subscribe, as a CAIA Charter holder, and which I view as a very good source of papers for *InvestorLit Reviews*.

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Background

Martin notes the importance on inflation hedging assets, citing current reasons for investor concern: 1/ expansionary monetary and fiscal policy, 2/ increasing scarcity of energy, industrial metals, and agricultural resources, and 3/ the weakening of the US dollar.

Martin uses a model by Shotman and Schweitzer (2000) originally developed for use in equities, which he applies to other asset classes, both traditional and real. The key parameters in the model are 1/ the sensitivity of the level of asset returns to expected and unexpected changes in inflation (a beta-like coefficient), and 2/ the degree of persistence of inflation over time (an alpha-like parameter). Using this model and a broad survey of available academic research, Martin identifies the viability of real asset classes as potential inflation hedges. We will leave the model details to the reader to explore on their own, focusing on the conclusions of the precedent literature and Martin's modelling.

Summary of Results

Exhibit 1 is Martin's summary comments on each asset class. We have taken the liberty of simplifying the article's original table, which distinguished between short-term and long-term inflation horizons, as they were generally pretty similar. We have added some comments of our own, which we hope are helpful.

Exhibit 1: Summary Inflation Attributes by asset Class

Asset Class:	Traditional Arguments for Inflation Hedge:	Inflation Hedge:
Traditional Real		
Equities	Nominal cash flows should adjust for inflation	No (ex-Energy inflation period)
TIPs	Size of Principal adjusted for CPI	Yes (but have problems)
Commodities	Increasingly scarce inputs in industries such as: energy, manufacturing, agriculture	Yes (but low returns)
Real Estate	Essential component of economic infrastructure	Uncertain (it depends)
Timber	Scarce production input	Yes
Gold	Traditional store of value	No (At best a diversifier)
New Real		
Infrastructure	Essential component of economic infrastructure	Uncertain
Farmland	Essential component of economic infrastructure	Yes
Intellectual Property	Essential component plus increasingly large part of economy	Uncertain

Equities: Until the mid '70s, academics and practitioners considered real assets as inflation hedges, due to the offsetting impact of inflation on earnings and discount rates (inflation increased both, leaving equities more or less immune to inflation). The energy-induced rise in interest rates through the 70's challenged this notion and gave rise to research which suggested a negative relationship - Bodie (1976). This in turn inspired research on what is known as "proxy theory", or inflation-induced changes in macro- economic variables which impact equities – Fama (1981).

These proxies alone however could not fully explain the negative relationship as other research noted that pre-World War II inflation was actually positively correlated with stock returns in both US and non-US markets.

Exhibit 2: Correlations with CPI

Period	S&P 500 Correlation with CPI
1930-1944	0.14
1945-1989	-0.23
1990-2008	-0.01
1930-2008	-0.02

As Martin shows in Exhibit 2, however, correlations with inflation for S&P 500 returns are close to zero over the full period 1930-2008 and recently 1990-2008. The negative correlation from 1945-1990 indicating that equities did not hedge well during the energy-induced inflation of the 70's and 80's perhaps supports the proxy theory arguments (one recalls the very high interest rates of that period) and suggests the long term correlation is more normal.

Martin's overall conclusions include: 1/ inflation and stock return correlations vary over different macroeconomic periods, 2/ in the short term they are influenced by inflation proxies for real activity, and 3/ specific sectors of the S&P500 such as the energy sector may offer a hedge against inflation.

TIPs: Inflation-linked bonds, introduced in the UK in 1986, Canada in 1989, and the US in 1996, offer a certain "real rate" in the classic Fisher model where yield is the sum of a real interest rate, an inflation premium, and an expected interest rate. As such, TIPs are an attractive inflation hedge although, as Martin points out, certain issues detract from them as hedges for inflation. TIPs are linked to nominal bonds as the real rates they both offer are substitutes and TIPs can underperform if their real rate increases with that of nominal bonds. The TIPs market is small and illiquid relative to the size of real pension liabilities. Finally, real rates in the US are close to 0% and .5% in Canada, and both are viewed as inadequate for pension and endowment funding requirements – which are typically in the 4-5% range. On this last point, Martin notes that using TIPs plus an overlay would address this problem.

Commodities: The Dow Jones-UBS Commodity sectors show positive correlation with inflation –especially for the Energy sector – over 1991 to 2008. Martin cites a study by Attie and Roache (2009) using monthly data over 1956-2008 for the CRB (an index which under weights energy), which also finds similar good short-term hedging against inflation, although not in the long term. Martin notes the normally positive roll-yields of

commodities make them somewhat bond like in providing a stream of premiums. Overall though, despite their short their inflation hedging characteristics – especially energy - commodity returns are still fairly low.

Real Estate: Martin reviews the extensive literature on this subject, starting with the difference between REITs and real estate. Attie and Roache (2009) and other studies find that REITs' inflation hedging properties are similar to that of stocks: mildly negatively correlated with inflation. (The CAIA course section on REITs teaches the same similarity between REITs and stocks). Commercial real estate, though different from REITs, still does not provide a consistent inflation hedge. Martin notes that appraisal-based valuations are subject to substantial smoothing, which reduces correlations, so he places more emphasis on transaction-based indices where available. Martin's conclusions on the literature and his own modelling are: 1/ in periods of high inflation persistence (such as the 70's), real estate prices tend to be positively correlated with inflation, 2/ in normal times, real estate prices are likely to experience short term negative correlation with inflation due to macroeconomic variables associated with inflation – those same "proxy" effects noted in the equity discussion and 3/ the long-term inflation hedging properties of real estate are uncertain, depending on many parameters that are uncertain. On this last point, Martin cites one study that finds real estate income returns are uncorrelated with inflation insensitive, although capital returns are.

Timber: Martin notes the relatively scare literature on timber-related assets in spite of their attractiveness to long duration liability investors- such as pension funds. Timber is attractive as: 1/ costs are low so inflation boosts profitability, 2/ timber products are homogeneous and widely used, and 3/ the timing of harvesting presents owners with a "real option" – exercisable at times of elevated demand. Martin cites a leading study which concludes that timber assets are a good hedge against both expected and unexpected inflation – especially the latter. This study, by Washburn, D'Anieri, and Aronow (2004), examined returns to timberland assets using the John Hancock Timber Index from 1960-1986 and the RCREIF Timberland Property Index from 1987-2004 (a mix of timber plus land and timber only).

Gold: Martin notes that, despite conventional wisdom that gold is a hedge to dollar price inflation, the literature on gold as an inflation hedge is at best mixed, and mildly negative. Blose (2008), surveying 11 articles on gold prices and expected inflation finds 3 in favour, 4 mixed, and 4 against. A separate study finds little correlation between gold and inflation rates post 1989 – the period after energy induced inflation, and a period of generally tame inflation. Overall, Martin suggests gold's role as a real asset is at best, a diversifier.

Infrastructure: As with timber**,** Martin notes the scare literature on infrastructure, despite its appeal to long duration investors seeking stable inflation-sensitive cash flow. His conclusions from available literature include: 1/ despite little empirical work in this area, infrastructure's correlation with the utility sector is evident and consistent with its utility-like nature, and 2/ infrastructure can provide a significant inflation hedge provided cash flows are at least partially linked to the pricing of its services.

Farmland: Literature on farmland is more extensive as farmland is about 6% of the aggregate value of US real estate plus about 50% of total US land. NCREIF offers a Farmland Index for both row crops (e.g., corn, wheat) and permanent crops (e.g., fruit, nuts). Arguments for farmland and farm-related assets as hedges against

inflation include: 1/ farmland is a tangible and scarce resource, 2/ it offers the option to plant what is in demand, 3/ it also offers the option of alternate uses, and 4/ demand from developing countries is strong. Studies cited include Kaplan (1988) and others, whose conclusions plus Martin's own modelling find that farmland, and to a lesser degree farm-related assets, provided a hedge against inflation.

Intellectual Property: Martin notes that a significant portion of GDP is now made up of intangible assets, such as intellectual property. These have formerly been bundled with tangible assets but are now being unbundled for stand-alone investment purposes. This being a fairly new field, Martin acknowledges the scarcity of empirical work on its inflation hedging properties, despite well developed literature on the economic terms of patents and R&D. Martin notes a discussion of his own firm's white paper: "Intellectual Property Asset Management: Capitalizing on Innovation" (2008).

Conclusions:

Real assets appear to be an area of increased investor interest. This paper discusses six traditional and three new real asset classes, summarizing existing literature and applying an equity-based model to draw conclusions as to the value of these as inflation hedges. An additional purpose of this review is to highlight the quality and relevance of the CAIA Association's *Journal of Alternative Investments* and note its value as a source for future *InvestorLit Reviews*.

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