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ECONOTE No. 72: Investing in Real Assets, Part I

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Summary	Investment Conclusions
<p>Investing in real assets (IRA/RA) is not a new concept of investing. Its importance, however, has been steadily increasing and in the post 2008-9 crisis period has opened attractive opportunities for investors in what has been called "Alternative Investments". This report, the first of three, looks at some definitional issues of RA and then at the comparative simple and risk adjusted returns versus all the other common investable assets and, finally, the cross-correlation of these returns. RA have characteristics of a separate class of assets and they can add to portfolio diversification. Investing can be in outright physical acquisition or in paper claims on the underlying assets but this can cause definitional confusion which we try to clarify.</p>	<p>RA cover a truly spectacularly broad range of assets, which creates difficulties in establishing and using indices of their return dynamics, as well as issues of liquidity. Here we begin the analysis by looking at property, timber and infrastructure, but the scope will be widened considerably in future reports to cover truly "exotics" such as stamps, antique cars and wine. For now, it is sufficient to point out that some RA produce higher risk adjusted returns than shares and bonds and that the cross-correlation of returns of some RA with those of 'plain vanilla' assets is low enough to offer diversification benefits.</p>

The basics first: Why invest in real assets?

Reasons will include the access to unusual, niche and specialist areas of investment with direct control not just over the finances of the investment project, but also of the physical underlying assets. The focused approach of RA investment opens very different vistas from those, of even well diversified companies, precisely because the focus of the activities involved can be narrower and, thereby, exploit scarce managerial and other expertise. Investing in RA make sense if this type of investment yields higher, risk adjusted, returns and offers diversification advantages not found in the more common forms of portfolios. It is to this important area where we turn next.

The space of real assets investment suffers from the absence of comprehensive and comparable indices, which make the appraisal of the performance of real assets versus their much better index-endowed "paper" assets very difficult. There are quite reliable share and bond indices to give the minimum basis for comparison, as there are property price indices as well as commodity price indices. There are also sectorial indices of stock markets, which may approximate some of the assets in the RA space. However, when it comes to very focused specifics, analysts may need to improvise in order to avoid comparing apples with bananas. The question of comparing returns has two elements. Returns on all assets are mostly presented on daily, quarterly, annually etc. basis by calculating the percent change over the period chosen.

Several indices, including equities, are calculated on a total return basis, which includes capital gains or losses and reinvested dividends. This adds to the problem of comparability with most RA indices, which are calculated on a simple "price" basis only, and very frequently on level as opposed to a percent yoy change. There is also the issue of the estimate of risk. Absence of estimated returns over long time periods will make the risk estimation difficult.

Fig.1: Comparison of returns and of risk adjusted returns 2008-2018

Index	Annual equivalent returns %	Simple Sharpe ratio
S&P 500 total	8.3	2.7
S&P UST 10Y total	3.8	8.4
S&P Real assets total	4.2	3.4
S&P Property	1.0	N/A
S&P Timber	5.6	5.4
S&P Infrastructure	3.0	10.2

Source: Bloomberg, Ecognosis estimates

Measuring returns and the indices used.

The risk of returns is calculated by estimating at the standard deviation of returns and then by utilizing the simple Sharpe ratio of the average returns divided by their standard deviation. Due to the absence of appropriate data, adjustments have been made to the calculation of the Sharpe ratio in order to estimate and compare risk-weighted returns between RA and paper assets. For example, when return percentages are not available we approximated the ratio by dividing the average level of the index by its standard deviation, instead of dividing the average return of the index by their standard deviation. We are very aware that these are only simple approximations of risk-adjusted “returns” and these are clearly indicated when they are used. We use the following comprehensive and extensive S&P indices. S&P 500 for total equities returns. S&P futures based- index for the total returns for the 10Y UST, this being the basic fixed

Fact Box: What are real assets and how does one invest?

RA can include airplanes, cargo boats, ports, airports, motorways, power plants, wind and sun energy parks, property in terms of buildings, covered areas or geographical space broadly defined, agricultural land, timber plantations, as well as wines, vintage cars, postage stamps, rare coins, diamonds and paintings. The purchase of these assets may be in their physical form or by claims on these assets, most commonly shares in quoted or unquoted companies. And herein lies a grey area in terms of definition, which will need further detailing. Investment in paper assets, such a quoted or unquoted shares, is a claim on the physical and non-physical assets belonging to a company, but it is not an itemized, specific claim as investment in a real asset could be.

Income returns. S&P Global infrastructure index, a price index, consisting of sub indices for transportation, utilities and energy. S&P index for the global Timber industry, this being a price index. S&P index for Global Property, this also being a price index. S&P Index for Real Assets consisting of sub indices for Global Properties, Infrastructure, Commodities and Inflation Linked Bonds. This is a total returns index. Figure 1 shows equivalent annual returns for 2008-18, that is the average annual returns, either total returns or returns based on prices movement and expressed as an annual equivalent. We also show the simple Sharpe ratio but without subtracting the usual risk-free UST yield. It just worth reminding that for the returns of Timber, Property and Infrastructure sectors we use the simple average price level as there are no returns data total or otherwise. Hence the Sharp index in these cases must be interpreted with caution.

Fig.2: Cross correlation of assets returns/ prices (2016-18)

Index	S&P 500	S&P 10Y UST	S&P Real Assets	S&P Property	S&P Timber	S&P Infrastructure
S&P500	1.00	-0.30	0.53	0.44	0.63	0.54
S&P 10YUST	-0.32	1.00	0.17	0.20	-0.24	0.06
S&P Real assets total	0.53	0.17	1.00	0.76	0.64	0.88
S&P Property	0.44	0.20	0.76	1.00	0.48	0.66
S&P Timber	0.63	-0.24	0.64	0.48	1.00	0.60
S&P Infrastructure	0.54	0.06	0.88	0.66	0.60	1.00

Source: Bloomberg, Ecognosis estimates

Measuring risk and some conclusions

In terms of returns the S&P500 outperforms all classes, but RA outperform UST. Property had a particularly bad decade with the 2008-9 crash being almost all property related. This explains the absence of a meaningful Sharpe estimate. Much more importantly, however, the risk-adjusted return, the Sharpe ratio, is higher for RA than shares. The high Sharpe ratio for the UST10 index is, also, explainable by the decade of nearly zero interest rates, and, hence, very low volatility. To repeat, however, RA returns on a risk-adjusted basis outperforms equities. Portfolio diversification diminishes risk if the correlation of returns of assets within a portfolio is low. Figure 2 shows the cross-correlation of the returns/price movements of the six asset classes we used in Figure 1 over a two-year period from April 2016 to April 2018. Cross correlation of Real Assets is, in general, low (that is, well less than the 0.75 generally considered to indicate a close link between the movements of prices and/or returns) with those of equities and even lower with those of Fixed Income. The presence of RA assets in a balanced portfolio will help reduce the overall risk via the diversification effect of low correlation. The cross correlation between classes of RA is also in general low, except, of course, with the index of S&P Real Assets which contains indices covering some of the RA Indices included here, such as Infrastructure and Property.

Hence the presence of one or two classes of these assets in a balanced portfolio will help reduce risk both in terms of the individual class of assets and for the portfolio as a whole as well, possibly increase of the overall returns.

Andrew Freris (writing completed on 28 May 2018)