Impax
ASSET MANAGEMENT

Quantifying "green alpha"

MEASURING THE EXCESS RETURNS GENERATED THROUGH SUSTAINABILITY

For Professional Investors

Green alpha is a relatively new concept but is quickly becoming a critical metric for investors in sustainable property. Green alpha quantifies what proportion of total ungeared differential returns from an individual asset investment can be attributed to sustainability and energy efficiency initiatives. In this article, we explore how green alpha can be derived from reviewing environmental financial performance at individual asset level using robust data.

While sustainability specialists have been talking about this concept for some time, to date its quantum has been based on anecdotes and estimates. A robust, quantitative, replicable methodology has proved elusive. This measurement of excess returns from sustainability led asset management has been a Holy Grail for investors in this rapidly growing asset class. Investors want to know what percentage of a delivered total return has been generated from enhanced sustainability, and how to estimate it in future returns in a predictive modelling tool.

Our experience for the core plus assets that we have assessed has shown that approximately 10-15% of the total ungeared differential return is attributable to green alpha. This percentage is likely to be greater for value add strategies where there is a greater level of capex involved in retrofitting older buildings to meet exacting sustainability standards.

1. THE EMERGENCE OF SUSTAINABLE PROPERTY AS AN ASSET CLASS

It is hard to identify when the idea of sustainable property started to take hold in the European property market. The publication of the Stern Review of the Economics of Climate Change in October 2006 was certainly an important trigger in raising investor awareness of the possible impacts of climate change on property portfolios. Since then, the growing scientific evidence of man-made climate change has further highlighted the investment risks across many asset classes, while investors have also come to realise that there are compelling opportunities to invest in solutions such as greener buildings.

2. REGULATION

Property has traditionally been considered a high carbon asset class. It is therefore inevitable that the ever tightening ratchet of global environmental policy and the subsequent implementation of stricter policies will impact the sector increasingly in the future. The UK government is leading the way with some of the strictest property environmental regulations in the world. Energy Performance Certificates ("EPCs") were introduced in the EU in 2007 and are now mandatory for all new commercial buildings. In 2008 the UK went a step further with the requirement for all public sector buildings to have Display Energy Certificates (DECs) to demonstrate real operational data. Additional proof of the UK Government's commitment to improving the sustainability credentials of the property sector was the adoption of the Energy Efficiency Regulations 2015. Under these regulations, all non-domestic rental properties will be required to have a minimum EPC of "E" by 1 April 2018. It is estimated that a fifth of all EPC rated buildings in the UK may not meet the standard and risk becoming unlettable in 2018. This legislation poses a considerable threat to the value of many commercial property portfolios.

3. DOES IMPROVING THE ENERGY EFFICIENCY OF A BUILDING REALLY ADD SIGNIFICANT VALUE OVER AND ABOVE STANDARD BETA RETURNS?

Most new buildings are now constructed to high sustainability specifications. However, considerable scope exists to create value for investors through adapting existing buildings from "brown to green". Reducing carbon and energy costs through comprehensive retro-fits and engaging in environmental improvement discussions with tenants is clearly of value but can be costly and time consuming.

Investment theory suggests that sustainable buildings should command a rental premium from high quality tenants, experience shorter vacant periods, slower depreciation and reduced obsolescence, and ultimately secure higher capital values.

Figure 1: Why green buildings should command higher values

If...	Investment implications	Underlying effects on 'green' assets
Tenants prefer to occupy 'green' buildings	Rental differentials should emerge between green and non-green buildings	Either rental growth higher or asset depreciation lower
Tenants prefer to occupy 'green' buildings	Green assets re-let more quickly	Shorter interruptions to cash-flow should attract lower risk premium
Green buildings have lower running costs	More tenant money is available for rent	Rental growth should be higher for 'green buildings'
Impending government regulation and legislation	Greener assets become de-risked because they are more attractive to and retain tenants better	Risk premium is lower than for 'brown' buildings
Investors prefer 'green' buildings	Green properties prove quicker to transact for banks and investors	Green properties are more liquid and should, therefore, attract a lower risk premium

Source: IIGCC Climate Impact Reporting for Property Investment Portfolios – A guide for pension funds and their trustees and fund managers (2010)

4. THE RESEARCH TO DATE

Since 2007, a number of academic studies[1] have been published seeking to investigate the economic value of sustainability. These have typically been conducted at multiple property level, using eco labels such as BREEAM (Building Research Establishment Environmental Assessment Methodology), LEED (Leadership in Energy and Environmental Design), Energy Star and EPC as a proxy for sustainability – and as a predictor of improved environmental and energy performance. This research can only be as good as the methodology employed by these eco-rating labels. To date, comprehensively benchmarked data of Institutional quality has been in short supply in the UK commercial property market.

In 2015, Cambridge University[2] published an empirical study seeking to prove the link between sustainability improvements and the financial performance of global REITs. This considered both the operational performance, including ROA (Return on Assets) and ROE (Return on Equity), together with stock market performance represented by the annualised stock market return. This research attempted to link the financial performance of REITS against their GRESB (Global Real Estate Sustainability Benchmark) ratings (which provides a measurement of the environmental policies and carbon emissions of a portfolio). This work was a useful development in measuring sustainability returns. However, again these results were only applicable at portfolio level using a generalised sustainability benchmark that does not link environmental performance with value.

A new and more detailed approach and methodology is required to generate a robust quantification of green alpha at individual asset level using actual benchmarked financial data. To achieve this, two principal data sets are needed:

- The detailed measurement and data for energy and resource use of a building
- The property investment market returns from the asset over the hold period

5. THREE STEP METHODOLOGY

Step 1 - energy performance analysis

Advances in technology and software can now facilitate detailed environmental performance measurement. Investors today can have immediate online access to a full suite of verifiable energy and property market data. Data collection can begin when an asset is acquired and continue until exit offering the opportunity to identify and isolate where capital expenditure on sustainability re-fits has led to tangible operational savings.

Active energy management means that buildings are equipped or retrofitted with sub-metering and half hourly data loggers. The property is subject to continuous monitoring and subsequent EPC and DEC and relevant benchmarking and re-rating, corroborating any energy efficiency improvements and associated carbon reductions.

Cost savings and sustainability key performance indicators ("KPIs") over the holding period of the investment can then be benchmarked against the market. Furthermore, Department of Energy and Climate Change (DECC) energy-pricing forecasts can then be used to estimate potential future savings for the building for 5 years after its sale, to reflect the short term future benefit to landlord and tenant.

Impax data
- Capex in energy efficiency measures
- Calculation of energy savings
- Benchmarking sustainability KPIs over hold period
- Property performance analysis against comparable transactions
- IPD benchmarking and JLL forecast comparison

Step 2 - investment performance analysis

In order to isolate the impact of the sustainability led capital expenditure on income, capital or total returns it is necessary to account for the impact of macro and micro-economic cycles. With respect to the achievable price on any given asset, there is also the need to check for special purchasers (who may be inclined to pay a premium for a specific reason), competitive bidding and other market factors.

Using databases of local rental and capital growth and yield movements over a 20 to 30 year period, as used here by JLL, it is possible to account for the impacts of potential variability within the market up until the asset disposal. Using a discounted cash flow (DCF) valuation model, together with rent and yield forecasts at the date of acquisition for the local market, it is possible to use Monte Carlo simulation to identify the most likely or median exit value for the asset at any given date.

This analysis can then be adjusted for the many other possible factors that could impact returns; the greatest of which is usually inflation. To address this, both the nominal delivered returns from the asset are adjusted for Consumer Price Inflation (CPI) as are the results of the Investment Property Databank Index (IPD) over the hold period. This isolates the 'real' performance differential of the asset against the market otherwise known as "alpha".

There are of course many factors that contribute to the total overall observable alpha of any given asset. These include the perceived impacts from reduced letting risk, tenant goodwill, lower exposure to carbon tax and enhanced yields from a stronger defensive position at rent review and all need to be accounted for.

DCF model
- Statistical analysis of 30 years of yield and rental growth data
- Comparing probability distribution curves against JLL forecasts
- Controlling for inflation and IPD market movement using real value
- Isolation of outperformance over and above the market that highlight alpha

Step 3 - attributing green alpha

Green alpha can finally be estimated using future tangible cost savings accruing from the point of exit for a five-year period, using a Net Present Value (NPV) calculation. This NPV figure is then expressed as a proportion of the total alpha described above.

'Green alpha' total return attribution
- NPV of energy savings as % of total alpha
- Isolation of outperformance from Monte Carlo analysis
- External valuation opinion regarding overall green alpha

6. PUTTING IT INTO PRACTICE

The following case history demonstrates current best practice in how to future proof a building in order to maximise sustainability performance and returns, and optimise green alpha generation.

Figure 2: 5 St Philip's Place, Birmingham

An extensive sustainability audit of the building was carried out when the building was acquired in 2009. The new landlord and tenant collaborated under a "green lease" arrangement to share data and manage the building to top quartile as measured by the Display Energy Certificate (DEC) environmental standards.

At acquisition the building had a DEC of G, but within 3 years was re-rated to a C following an extensive retrofit of the building out of hours with the tenant remaining in full occupation. The retrofit included full re-metering of the building with the installation of half hourly data loggers and an upgrade of all the heating, lighting and cooling controls. The number of boilers was reduced with more efficient models and the building was entirely re-lit using LED lighting. A total of £700,000 was invested in the property by landlord and tenant. The carbon emissions (and energy costs) were reduced by 63% over the Investment hold period. Full payback on this investment (through reduced energy bills) was achieved in less than five years.

Figure 3: case history (5 St Philip's Place, Birmingham)

Acquisition date	February 2009
Acquisition price	£31.5m
Size (sq. ft.)	80,358
Disposal date	June 2014
Disposal price	£38.0m
Disposal gain	£6.5m

Figure 4: summary of the investment performance and the attributable green alpha (5 St Philip's Place, Birmingham)

Monte Carlo	5 St Philips Place, Birmingham
Disposal price- nom (actual)	£38,000,000
Disposal price- nom (median)	£36,229,685
Disposal price- nom (difference)	£1,770,315
CPI movement	17.1%
Market movement	7.5%
Disposal price- real (actual)	£29,315,247
Disposal price- real (median)	£27,949,530
Disposal price- real (difference)	£1,365,716
NPV of energy savings	£151,787
EPC/DEC change	G - D
% carbon reduction	-63%
Total Ungeared Differential Return	**11.1%**

7. CONCLUSION

The application of this ground breaking methodology leads to the quantification of green alpha at individual asset level. The hypothesis that sustainable buildings are better investments than buildings with poor energy efficiency can now be quantified and proven. Investors now have their Holy Grail.

This work highlights how green alpha is created predominantly through active energy management. The remainder of the excess returns are generated by other positive externalities which are more likely to occur with more sustainable properties. These attributes may for example mean that greener buildings are more attractive from a Corporate and Social Responsibility (CSR) perspective. In theory, these buildings will attract and retain stronger covenants and ultimately stave off rental depreciation and rental obsolescence.

Proving to what extent these additional factors have contributed to the excess or overall alpha remains a work in progress as the data set of greener buildings increases. However, for now, energy cost reductions are real and quantifiable and can be expressed as a percentage of the ungeared net differential total return.

Investors can apply this method of isolating green alpha from market beta performance to any assets and use it as a predictive tool to assess the probable monetary value of investment returns before commencing a retrofit or investing in a sustainable property.

References
[1] Eichholtz, Kok, Quigley (2010) Doing Well by doing Good? Green Office Buildings.
Eicholtz, Chegut, Kok (2012) Supply, Demand, and the Value of Green Buildings
[2] Fuerst.F. (2015) The Financial rewards of Sustainability. A global performance study of real estate investment trusts.

CONTACT INFORMATION

Ian Simm
Chief Executive
Impax Asset Management
Norfolk House
31 St James’s Square
London, SW1Y 4JR

+44 (0) 20 7434 1122

i.simm@impaxam.com

Timothy Mockett
Managing Director
Impax Asset Management
Norfolk House
31 St James’s Square
London, SW1Y 4JR

+44 20 3179 4200

t.mockett@impaxam.com

Esme Lowe
Managing Director
Impax Asset Management
Norfolk House
31 St James’s Square
London, SW1Y 4JR

+44 (0) 20 3179 4209

e.lowe@impaxam.com

Nicholas Burlington
Associate Director
Impax Asset Management
Norfolk House
31 St James’s Square
London, SW1Y 4JR

+44 20 7432 2623

n.burlington@impaxam.com

+44 (0) 20 7434 1122

www.impaxam.com