Winning in the Long Run?

A quantified approach to the drivers of sustainable financial value on real estate

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SUMMARY

This working paper describes the first empirical study measuring the impact of sustainability characteristics on the financial performance of European office and retail properties. The authors present the project, the issue and the approach of their ongoing search for a 'Green Alpha'. In a joint effort, university experts at Danube University Krems are in cooperation with Kingston University London tackling a robust analysis on hard data from real properties of institutional investment portfolios in the United Kingdom, France, the Netherlands, Germany, Switzerland and Austria. Their first results are expected by the end of 2010.

Key words: real estate, sustainable investment, financial performance, empirical analysis

THE PROJECT

Subject. Investment in sustainable real estate has been increasingly considered both in business and in literature as a way of possibly enhancing financial returns, but perhaps more importantly, as a strategy for mitigating material risks. Although pockets of evidence are slowly emerging, principally in the United States, that accredited green buildings may let more readily and even show a differential rental price, the case in Europe has not yet been justified empirically.

Trends. Recently, there have been such unprecedented changes in the investment environment that now is the time to re-appraise the opportunities and threats as well as the strategic strengths and weaknesses of pursuing a policy of green funds or sustainable property investment. After the financial crisis, institutional investors are rebalancing their strategic asset allocation, managers are choosing to launch more responsible investment products and standing portfolios are redeveloped for a sustainability repositioning.

Needs. But the market for sustainable real estate is still in its infancy, lacks transparency and is difficult to justify on the rational grounds based on established financial criteria. There is significant uncertainty as to which attributes do have a substantial impact on financial performance of sustainable investments. The manner and extent of how sustainable behaviour actually is rewarded in the property and the capital markets are still a matter for conjecture. There is indeed a need for verified market evidence.

Platform. Even those real estate institutions which have already developed leadership, expertise and innovation in sustainable investment, find it challenging to comply with new up-coming legislation, to build on their good reputation with more informed and engaged stakeholders and to successfully avoid the obsolescence within their investment stock at a time of rapidly changing occupier demand. In order to tackle these threats with strength, the real estate investment industry is keen for independent expert networking. Based on market evidence and expert networking, aligned industry initiatives can then be supported and management tools can be designed, which finally enable informed responsible decision-making (see *figure 1*).

The Need for an Independent Research Platform

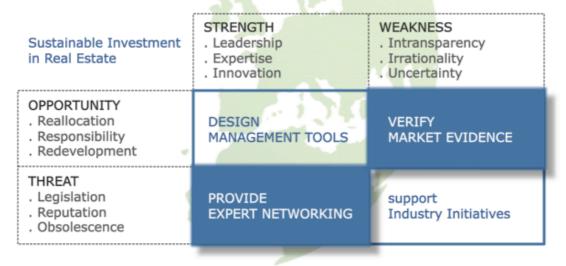| Sustainable Investment in Real Estate	STRENGTH . Leadership . Expertise . Innovation	WEAKNESS . Intransparency . Irrationality . Uncertainty
OPPORTUNITY . Reallocation . Responsibility . Redevelopment	DESIGN MANAGEMENT TOOLS	VERIFY MARKET EVIDENCE
THREAT . Legislation . Reputation . Obsolescence	PROVIDE EXPERT NETWORKING	support Industry Initiatives

Figure 1: The need for an independent research platform

Partners. In this situation, investment managers in Great Britan, France, The Netherlands, Germany, Switzerland and Austria have teamed up for a pilot research project with experts in sustainability and finance at Danube University Krems, Austria and Kingston University London. This

joint effort is the empirical search for the first market evidence of a 'green alpha' in sustainable office and retail properties in Europe. The project is part of the non-commercial research programme Sustainable Investment in Real Estate s-i-r-e. Grants are awarded from the Royal Institution of Chartered Surveyors RICS Education Trust, from the Austrian Chamber of Commerce, Federation of Real Estate Professionals and from the EURO Institute of Real Estate Management. An international group of profiled individuals from management and science is providing a sounding board for inspiring discussions on the special challenges and findings of this project.

THE ISSUE

Situation. It is only in the last three years that empirical research has begun to emerge of some limited market evidence regarding the financial performance of buildings, which carry a sustainability rating. Most of those studies concentrated on office stock in the United States, where in some areas there is a large number of buildings rated by a LEED or an Energy Star certificate. No empirical study has yet been carried out to date in relation to commercial real estate in mainland Europe, where far less buildings are certified and where there exists a wide range of different sustainability certificates. The studies that were conducted so far looked at different markets, applied different definitions and were based on different restrictions. Despite of the variety and the incompatibility of their results, they mostly reveal some statistical evidence for a positive impact of green features on investment performance, albeit with differing degrees of confidence.

United States. For office buildings in selected areas of the United States, Eichholtz et al. (2008) found a differential of 3-7% on rent; Fuerst and McAllister (2008) had similar results of between 4-5% on rent and 25-26% on price, although they acknowledge that the sample size on capital transactions was too small to render the figures reliable and could might be related to specifics of the market situation. Similarly, Miller et al. (2008) fund a premium of 0-3% on rent, 15% on price and 10% on value; Eichholtz et al. (2009) 3-6% on rent and 16% on price; Pivo and Fischer (2009) 6% on net income and 13% on value; Fuerst and McAllister (2009) 5-6% on rent and 31-35% on price; Fuerst and McAllister 3-8% on occupancy; and Wile et al. (2010) 7-17% on rent and 10-18% on occupancy.

Other countries. For residential properties in Switzerland, Salvi et al. (2008) identified a premium of 3-7% on price and (2010) 5-6% on rent. Also for residential properties in Germany, Leopoldsberger et al. (2010) found a premium of 0-6% on rent. However, it is recognized that drivers within residential property markets are different from those within

commercial property markets. The only study that revealed a negative impact on investment performance is by Cudworth and Graham (2009), whose figures on standing investments of all property sectors in the United Kingdom show a discount from green features of about 3% on return, but this might be caused by a skew in the sample.

Limitations. All these authors agreed in their conclusions that their results were not really robust for several reasons and that further research needs to be done in order to overcome their various limitations. One of the major problems in most of the above mentioned studies is the fact that they examined sustainability rated buildings against non-rated buildings. This implies assuming a specific definition of what would be sustainable, which afterwards may prove useless in financial terms. In order to overcome this dilemma, this project does not start with a specific definition for sustainable buildings, but it aims at finding a set of valuable sustainability characteristics as a result. Nevertheless, a certain range of potential indicators has to be preselected before any analysis can be performed.

Drivers. In this project, the financial value of a sustainable real estate investment is defined as the value of a sustained growing cash flow. According to the short-cut discounted cash flow analysis of a sustained growing cash flow, the value of a sustainable real estate investment is calculated as follows (*formulas 1.1 and 1.2*):

$$CV = \frac{CF \cdot (1+g)}{1+IRR} + \frac{CF \cdot (1+g)^2}{(1+IRR)^2} + \ldots = \sum_{t=1}^{\infty} \frac{CF \cdot (1+g)^t}{(1+IRR)^t} \qquad (1.1)$$

$$\Rightarrow \quad CV \approx CF \cdot \frac{1+g}{IRR-g} \qquad (1.2)$$

where CF is the initial cash flow, g is the sustainable net growth rate, IRR is the internal rate of return and CV is the initial capital value. The transformation of formula 1.2 delivers the internal rate of return IRR of a sustained growing cash flow, which equals it's net initial yield y plus the sustainable net growth rate g (*formulas 2.1, 2.2, 2.3 and 2.4*):

$$IRR \approx y + g \qquad (2.1)$$

$$\text{with} \quad y = CF/CV, \qquad (2.2)$$

$$CF = R - V - O - D \qquad (2.3)$$

$$\text{and} \quad g \approx \Delta R - \Delta V - \Delta O - \Delta D \qquad (2.4)$$

where D is the capital expenditure, O is the non-recoverable operating and maintenance cost, R is the gross rental and other income, V is the

vacancy cost and Δ is the sustainable growth. In the actual economic environment, this means that sustainable financial value on real estate can be created by preserving the income growth or by reducing the vacancy cost, the operating and maintenance cost or the capital expenditure or, even better, by any combination of these (see *figure 2*).
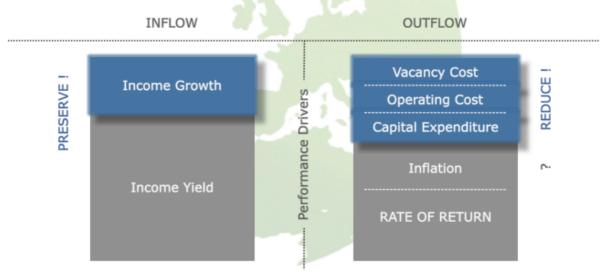

Figure 2: The business case for a sustainable investment

Question. The key question for this research is therefore: which sustainability factors contribute positively to sustainable performance by impacting the relevant financial drivers, in particular income growth, vacancy cost, operating and maintenance cost and capital expenditure.

Focus. For practical reasons, the pilot study is restricted in terms of investors, sectors, regions, scope, stage and structure. The research partners include institutional real estate funds committed to internationally recognized leadership in sustainability. Office and retail properties are being analysed, both single-let and multi-let. The focus is concentrated on the countries of Great Britain, The Netherlands, France, Germany, Switzerland and Austria. The scope is on ownership, management and partly on occupancy, but it excludes the upstream and downstream value chain. Only existing buildings in-use are studied, either standing, retro-fitted or redeveloped. No single fund is providing more than a quarter of the research portfolio and a minimum of two funds is participating in every country, so that no back-tracking is possible from aggregated project results to individual assets or funds.

Deliverables. The expected outcome of this project is a tested, quantified approach to the drivers of sustainable financial value on real estate. This approach is supposed to be applicable to markets and portfolios of properties in-use, which are usually not rated by sustainability certificates, but can provide robust data on selected sustainability criteria. The three main elements of such an approach are (I) a financial sustainability scorecard for the data collection, (II) an integrated analytical model for the systematic analysis and (III) a list of driving sustainability indicators which have tested positive for empirical evidence of a measurable impact on financial performance.

THE APPROACH

Framework. The set of potential sustainability indicators to be analysed in this study is chosen from the existing frameworks that are currently evolving in Europe. The wide range of institutions, who are actually involved in the development of sustainability metrics and related subjects for real estate, does not only include international regulators, rating bodies and auditors, but also investor platforms, lobbying councils, professional associations, market analysts and universities (see *table 1*).

ROLE	INSTITUTION	FRAMEWORK
INTERNATIONAL REGULATORS	European Commission	European Directive on the Energy Performance of Buildings EPBD
		Green Building Programme GBP
		Energy Performance Certificate EPC
		Display Energy Certificate DEC
		Environmental Product Declaration EPD
		European Union Emissions Trading Scheme EU ETS
	International Organisation for Standardization ISO	Global Green Standards ISO 14000
		Sustainability in Building Construction ISO 15392
	European Committee for Standardization CEN Technical Committee TC 350	Sustainability of Construction Works prEN 15643
LOBBYING	United Nations Environment	Financial and Sustainability

COUNCILS	Programme UNEP Finance Initiative FI	Metrics Report
		Metrics for Performance Measurement
	United Nations Environment Programme UNEP Sustainable Buildings and Climate Initiative SBCI	Common Carbon Metric
	World Resources Institute WRI and World Business Council for Sustainable Developent WBCSD	Greenhouse Gas Protocol GHG
	Sustainable Building Alliance SBA	Common Metrics Framework
INVESTOR PLATFORMS	Investment Property Forum IPF	IPD/IPF Sustainable Property Index ISPI
		Green Building Alliance Common Metrics
	International Sustainability Alliance ISA	BRE Environmental Assesment Method BREEAM
	Green Rating Alliance	Green Rating
AUDITORS	Global Reporting Initiative GRI	Global Reporting Index G3
		Construction and Real Estate Sector Supplement CRESS
	Bureau Veritas	
	KPMG	
	CB Richard Ellis	
PROFESSIONAL ASSOCIATIONS	Royal Institution of Chartered Surveyors RICS	Valuation Information Paper 13
		Carbon Profiling
	International Council of Shopping Centers ICSC	BRE Environmental Assessment Method BREEAM
	Urban Land Institute ULI	
	European Association for Investors in Non-listed Real Estate Vehicles INREV	
	European Public Real Estate Association EPRA	
RATING BODIES	Britisch Research Establishment BRE	BRE Environmental Assessment Method BREEAM
	Green Building Certification Institute GBCI	Leadership in Energy and Environmental Design LEED
	Deutsche Gesellschaft für	Deutsches Gütesiegel

	Nachhaltiges Bauen DGNB	Nachhaltiges Bauen DGNB
	Association Haute Qualité Environmentale AHQE	Haute Qualité Environmentale HQE
	Minergie	Minergie P ECO
MARKET ANALYSTS	Investment Property Databank IPD	IPD Environment Code
		IPD/IPF Sustainable Property Index ISPI
	Jones Lang LaSalle JLL	Office Service Charge Analysis Report OSCAR
		The Third Dimension
	Feri Eurorating	
UNIVERSITIES	Kingston University London KU	Sustainable Property Appraisal Project SAP
	Center for Corporate Sustainability and Responsibility at University of Zurich CCSR	Economic Sustainability Indicator ESI
	Danube University Krems DUK (Austria)	Sustainable Investment in Real Estate SIRE
	Henley Business School at University of Reading	
	Maastricht University	
	Karlsruher Institut für Technologie KIT	

Table 1: Roles, institutions and frameworks of sustainability metrics

Concept. As these institutions by their nature are following quite different intentions, there is no single standard in sight for common real estate sustainability metrics in the near future. But the huge variety of existing indicators can be structured into tree main aspects relevant to sustainability and financial performance: the property, the environment and the management. Performance information on these aspects is consolidated to mandatory financial reports for shareholders and to optional sustainability reports for other stakeholders (see *figure 3*).
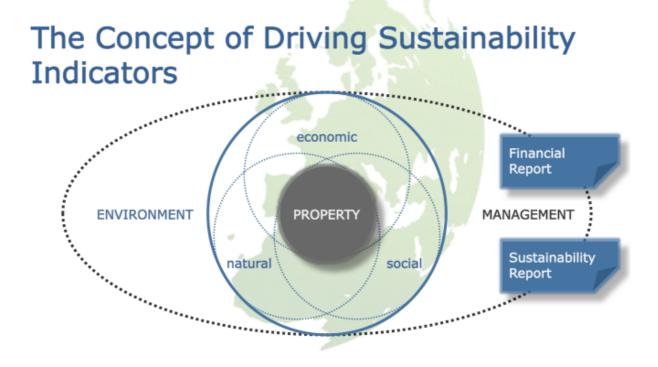
The Concept of Driving Sustainability Indicators

Figure 3: The concept of driving sustainability indicators

Scorecard. The property aspect includes all relevant physical features of the asset. The environment aspect accounts for the triple bottom line from economic, natural and social characteristics. And the management aspect is about the governance of the legal and financial facts. The information flow of data on all relevant topics in this research is controlled in a financial sustainability scorecard. For further aggregation and analysis the scorecard includes information on the record set, the asset identity, the reporting period, the data source, the file update and the explanatory notes. Each topic consists of several items, which have their own code, metric and definition (see *figure 4*).

The Financial Sustainability Scorecard

Property		Environment		Management	
PHYSICAL	ECONOMIC	NATURAL	SOCIAL	LEGAL	FINANCIAL
Record	Asset	Period	Numerator ▶	Amount	Source	Date	Notes

ID	TOPIC	ITEM	METRIC	DEF
N1	Energy	Total energy used	kWh	.....
N2		Renewable energy used/produced	kWh	.....
N3		Greenhouse gases emitted	t CO2e	.....
N4	Water	Total water used	m3	.....
N5		Water recycled/harvested	m3	.....
N6		Flood risk registered	yes/no	.....
N7	Waste	Total waste disposed	t	.....
N8		Waste recycled/composted	t	.....

Figure 4: The financial sustainability scorecard

Natural. For example, the natural environment aspect includes the topics energy, water and waste with the respective items N1 total energy used in kWh, N2 renewable energy used or produced in kWh, N3 greenhouse gases emitted in t CO2e, N4 total water used in m3, N5 water recycled or harvested in m3, N6 flood risk registered as yes/no, N7 total waste disposed in t and N8 waste recycled or composted in t.

Financial. The financial management aspect includes the topics inflow, outflow and other with F1 gross rental income, F2 other income, F3 vacancy cost, F4 non-recoverable operating cost, F5 maintenance cost, F6 capital expenditure, F7 recoverable operating cost and F8 initial capital value. Financial items are in 000 EUR, except F8 which is in mEUR.

NEXT STEPS

Model. The next steps in this project are the collection of the research data and the development of the research model. The analytical model will be testing for potential links between the sustainability data and the financial data. In this model the financial drivers are used as the dependent variables and the sustainability indicators as the independent variables. The mathematical functions are built on discounted cash flows, on multi-factor regressions and on real option analysis considering the

flexibility and the uncertainty inherent in any sustainability related events and choices.

Figure 5: The analytical model of an integrated approach

Results. The integrated approach is expected to prove for a first sample of commercial real estate in Europe, if there is a 'Green Alpha' and which sustainability indicators do have a positive impact on financial performance. The pilot study will by it's nature suffer from numerous restrictions. But as it is based on real hard data, it might well point to the characteristics of attractive investment opportunities, which capitalize on a verified growth potential, that is not yet priced in market valuations.

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