The primary aim of the Centre is to build and maintain a stream of applied real estate research that is innovative, interdisciplinary and industry-relevant

AN APPLIED RESEARCH AGENDA IN REAL ESTATE

The Cambridge Real Estate Research Centre (CRERC) co-ordinates and acts as a focus for applied research in real estate within the Department of Land Economy and across the University of Cambridge. It aims to ensure that real estate research in the University is “world class” and to raise the profile and impact of real estate research by members of the University in the wider academic, policy and business communities. The Centre works with other academic organisations, professional bodies and industry to ensure research is of the highest quality, is relevant and has maximum impact.

The Centre was established in 2013 to respond to the broadening of the national and international research agenda in real estate and to bridge the gap between academic theory and commercial practice in the sector. As part of the Department of Land Economy, the Centre leverages the unique resources of the University of Cambridge to deliver world-class research on real estate, commercial real estate and other investment property and real assets.

The Centre is extremely grateful for the financial and broader support of its partners and other supporters including the Cambridge Land Economy Advisory Board (CLEAB) that have helped fund and enable its activities. This brochure aims to give an overview of the most recent activities of the Centre and highlight key initiatives and priorities for the future.

Research on real estate within the Centre and the department is broad ranging and international in scope. The Centre’s current main areas of research activity relate to:

- Analysis of real estate investment vehicles
- The interaction of real asset and credit/capital markets
- The role and performance of real assets in investment portfolios
- Loan and mortgage finance
- Sustainability and environmental performance
- Urban development and interaction with real estate
- Digital and machine learning technology and its use in real estate
- Behavioural influences in finance

The work of the Centre will drive forward the latest, informed thinking around real estate policy and practice, with a global outlook, but with a natural specialisation in UK real estate

CRERC is a non profit making organisation with any surpluses used to support further research and education in the Centre, the Department of Land Economy and wider University of Cambridge
RESEARCH PROJECTS

The Centre’s research projects, whether independent, conducted collaboratively with industry, chosen by our advisory board of industry experts or bespoke — are rigorous, objective and focused on the key issues for industry and our partner organisations.

Recent research projects include a study on management of currency risk in international real estate investment for the Investment Property Forum (IPF); a project on whether and how behavioural insights can be used to help rural residents in China make sound financial decisions; a 3-year EU-funded project by a consortium of 11 institutes in 8 countries on a European rental housing framework for the profitability calculation of energy efficiency retrofitting investments, a collaboration with colleagues at the University of Melbourne on the impact of sea level rise on Australian house prices and research on Machine Learning, Architectural Styles and Property Values.

Long-term Value Methodologies in Commercial Real Estate Lending Analysis Allocations

A project for the Investment Property Forum

Following on from the Property Industry Alliance Report 2014, A Vision for Real Estate Finance, and the subsequent Long-term value methodologies and real estate lending Report 2017, the main aim of this new research was to examine and test different methodologies for assessing long-term value along with other indicators of when the probability and scale of potential falls in commercial real estate values is high.

Machine Learning, Building Vintage and Property Values

This paper by Thies Lindenthal (CRERC) and Erik B Johnson (University of Alabama) makes three contributions: First, it introduces an algorithm that collects pictures of individual buildings from Google Street View. Second, it trains a deep convolutional neural network (CNN) to classify residential buildings into architectural styles, taking into account spatial dependencies of building vintages. Third, it investigates whether architectural styles influence house prices. For re-sales, the architectural style is a significant determinant of transaction prices while no such effect is found for new buildings.

This indicates that any premia are for vintage-related quality characteristics and not for a home’s beauty.
Our Research Priorities

Risk Characteristics of Real Estate: It is increasingly recognised that the risk and return of real estate depends not only on the income and capital appreciation of the underlying assets but also on the vehicle in which the properties are held: its institutional and capital structure. Meanwhile, investors increasingly are looking beyond traditional asset class boundaries to classify assets into groupings that reflect their sensitivity to particular types of risk factors. The Centre is continuing to extend its work on capital structure and real estate, and drivers of risk.

Real Assets and Non-Traditional Real Estate Investments: Linked to the previous theme and developing prior research work, we will continue to investigate the performance and risk characteristics of non-traditional real estate investment areas in relation to the traditional core investments of office, retail and industrial property and to explore the relationship between real estate and other real assets.

Sustainability, Resilience and Performance: The Centre researches sustainability and real estate markets at different scales - energy performance and environmental sustainability at building level and its link to value and return, complemented by a broader perspective on sustainability and urban resilience, promoted by, for example, the Urban Land Institute and by the World Economic Forum’s Agenda Council on the future of cities and real estate.

Ownership, Globalisation and Yield Structures: Prompted by the growing dominance of non-domestic purchasers in London (and other world gateway cities), the focus of this research includes attempting to understand the implications of global capital flows on market performance and values. For example, what is the basis of investment yields when global investors with lower costs of capital are not tied into the local market become significant in a particular city sub-market?

Real Estate Risks in a Multi-Asset Class Portfolio Context: This work explores a number of approaches to identifying both known risk factors and uncertainties in investment and how to integrate real estate into multi-asset class frameworks.
The Centre is keen to collaborate with industry on research

Technology, Risks and Opportunities: An emerging theme is the impact of technology on all real estate markets and the performance of real estate portfolios. This encompasses the risk to traditional real estate formats and cashflows from technology e.g. new working practices and new patterns of consumption, but also includes opportunities e.g. the potential benefits of smart building technologies in driving greater efficiency of usage and more focussed management to maximise returns, and the use of machine learning in assessing real estate.

Long run capital growth and depreciation: This research theme explores very long run performance across property segments and examines the factors that have led that performance.

Placemaking and regeneration:
This theme looks at mixed use developments both in terms of performance and impact relative to smaller single use developments and their interaction with local economies, infrastructure and policy.

Research Associates and doctoral students associated with the Centre also work on a wide range of topics, including: land value taxation models, mean variance models and forecasting, international REIT risk decomposition, housing supply, bank debt covenants and real estate lending.

The Centre is able to draw on the expertise of a wide circle of industry experts, academics and expert researchers from across the University.
**NETWORKS AND EVENTS**

The Centre is part of the Department of Land Economy of the University of Cambridge and our work within the Real Estate and Urban Analysis Research Group combines the perspectives of the Faculty and School notably finance, economics, planning, environmental policy and spatial analysis. The Centre works closely with other research centres and networks to maximise the value of the research produced. These include, within the Department and wider University: The Cambridge Centre for Housing and Planning Research (CCHPR) and the Centre for Digital Built Britain (CDBB).

Our annual Cambridge Real Estate Research Club brings together Heads of Research, Strategy and Risk and CIOs across the industry and is a chance to share and discuss investment issues and research ideas in a relaxed College environment. In 2019, themes of the one-day conference were:

- Placemaking, Inclusivity and Town Centre/Retail in the Future
- New Data Sources and New Methods
- Behavioural Insights
- Political Risk and Real Estate
- Wellness and Sustainability

All presentations can be viewed/downloaded from our CRERC website.

The Centre also hosts a range of academic events such as international symposia and seminars.

**SPONSORSHIP AND PARTNERS**

The Centre is grateful for sponsorship and donations, and is also keen to discuss working with partners.

This may include:

- Access to a unique real estate research facility—research, data and the expertise
- Bespoke, joint or collaborative research projects focused on key strategic issues for the individual organisation
- Consultancy, support and advice for industry research teams and management
- Bespoke executive training and development, conferences or events
- Assistance in building awareness and providing a potential talent pipeline for organisations amongst the international student cohort

*If you would like to find out more about sponsoring the Centre please email Nick Mansley, Executive Director of the CRERC via nm558@cam.ac.uk*
The Centre is led by Colin Lizieri (Centre Director) and Nick Mansley (Executive Director) who both have over 30 years of real estate research experience. The Centre also has a number of departmental staff with the expertise and proven capability of delivering the highest calibre of applied research and a breadth of research interests.

**Our People**

The Centre aims to foster the development of well-trained professionals and researchers and offer them career progression within the University and real estate sector.

Colin Lizieri is Grosvenor Professor of Real Estate Finance and was Head of the Department (Jan 2016-Dec 2019). Over 30-years he has advised international bodies, governments, professional bodies and private organisations on real estate investment, and has published widely on real estate finance, investment risk management and office market dynamics.

Nick Mansley draws on extensive experience in investment management including as head of the global multi-manager business at Aviva Investors responsible for c.$20 billion of investments across all asset classes as well as a long track record of applied economics and real estate research.

Dr Helen Bao is University Senior Lecturer in Real Estate Finance, and Fellow in Land Economy at Newnham College. Helen is a real estate economist with a research focus on behavioural finance and real estate/housing markets, urbanization in China and has strong links with Chinese state and private organisations, research institutes and real estate investors.

Franz Fuerst is Professor of Real Estate and Urban Economics, and has an extensive portfolio of research on sustainable/green buildings and the impact on rent and value, on the drivers of property company and real estate market performance and on the relationships between knowledge industries and real estate values.

Dr Thies Lindenthal, University Lecturer in Real Estate Finance works on very long-run real estate performance and on the impact of technology on the analysis and behaviour of property markets.

Dr Ozge Oner is University Lecturer in Real Estate and Spatial Economics and Fellow in Economics and Land Economy at Sidney Sussex College. Her research includes: Placemaking, inclusivity and Town Centre/Retail in the Future. Ozge was also recently given the prestigious "Unga forskapriset" award for outstanding research in her home country, Sweden.

Dr Zilong Wang is Senior Research Associate and his specialism is Finance and Risk. He also teaches quantitative methods on the MSt programme. Prior to his PhD, Zilong worked in investment banking as a financial analyst.

Dr Christina Li recently moved from her role as a Research Associate to being an Unestablished Lecturer in Real Estate Finance within the Department. Christina works closely with Helen Bao on her research project “Nudging Towards a Better Financial Future: Applying Behavioural Insights in the Development of Financial Systems in Rural China", and has a number of her own working papers in progress.