





NAVIGATING THE NEXT INVESTMENT CYCLE



WELCOME TO ACTIVE CAPITAL BY ANDREW SIM, HEAD OF GLOBAL CAPITAL MARKETS

In a world transformed by an unprecedented pandemic, deciding how and where to invest capital is more complex than ever. We've faced an unexpected shock. Clarity is in short supply. Uncertainty is heightened. Investors across all asset classes are trying to navigate the unknown. But waiting for the storm to calm is no substitute for finely calibrated, logical action.

Enter Active Capital. With this latest research, we'll work with you to navigate this uncertainty, seek out investment resilience, and discover new opportunities.



Where are the world's most innovative cities? Where are the pools of sustainable assets? And how will this knowledge impact the sources and recipients of investment capital in the next cycle?

Through a combination of deep datasets, purpose-built modelling processes, and our market-leading team of experts across our global network, Active Capital brings you a set of perspectives to chart a way forward.



AGE OF UNCERTAINTY

4

HEIGHTENED UNCERTAINTY

REFOCUSING ON RESILIENCE

Economic uncertainty has hit an all-time high, and a clear by-product of this has been an evolution of the macroeconomic themes that shape investment decisions.



HEIGHTENED UNCERTAINTY



COVID-19 has plunged the world into one of the most uncertain periods on record. Gold has hit record highs, equity volatility is elevated and government bond yields around the world remain low. Yet against this backdrop, we predict that real estate investment will remain attractive, thanks to lower volatility than other asset classes, a history of strong returns through longer-term direct investment, and, crucially, its ability to generate income in a world where 60% of bond yields globally are below 1%¹ and over \$14 trillion have negative yields².

1. ICE Data Services 2. Bloomberg

LOCALISATION VS GLOBALISATION

Nationalism and the advent of trade wars were already on the ascendency, but recent disruptions to business continuity, and overseas travel caused by the pandemic will only accelerate this trend. This has prompted discussions of reshoring (bringing foreign operations back home), onshoring (bringing supply chains within national borders) and nearshoring (bringing operations closer to home).

Some types of real estate will thrive as a result. The logistics sector is seeing additional occupational requirements, which have translated into an even stronger investment demand.

GLOBAL UNCERTAINTY REMAINS A WATCH WORD Global Uncertainty Index my Mr. Mar All monthly



For the service sector, a greater domestic workforce of support staff will offer renewed demand for office space. Localised employment growth in manufacturing, storage and service sectors will also enhance demand for other types of real estate, including residential and healthcare.

There will also be indirect opportunities for international real estate investment. As an alternative to increased localisation, cross-border property investment offers global diversification and more options to meet revenue targets.

Whatever happens, real estate investors need to be innovative and adaptable, forming investment strategies which align with these structural changes.



THE RETURN OF THE **INFLATION DEBATE**

Globally, COVID-19 has led to unprecedented levels of fiscal and monetary action, raising inevitable questions over the potential for stronger inflation. The outcome in part will depend on the shape of recovery, with those countries seeing sharper recoveries somewhat more susceptible to higher inflation. Real estate can play a strong role as a hedge against such cases of demandpull inflation.

Yet our central scenario does not position inflation as the threat envisaged by some. Indeed, we expect inflation to remain below target in many countries for some time. Even where we do see higher levels of inflation, this need not lead to rising interest rates. The Federal Reserve has changed its inflation target to an average of 2% rather than a fixed target, while for those countries with fixed targets, such as the UK, there is precedent during the recovery from the financial crisis that when inflation exceeded this level, no interest rate action was taken.

CORRELATION OF RETURNS BETWEEN DIFFERENT ASSET TYPES

	10 year US gilt yield	Global REIT TR	World, Mid & Large Cap, Total Return	Global Al Property T
10 year S gilt yield	1.00	0.34	0.11	0.25
bal REIT TR	0.34	1.00	0.71	0.51
, Mid & Large Total Return	0.11	0.71	1.00	0.37
alobal All operty TR	0.25	0.51	0.37	1.00
obal Office	0.21	0.42	0.36	0.97
Global ndustrial	0.11	0.47	0.36	0.97
obal Retail	0.40	0.66	0.39	0.84
Global esidential	0.15	0.33	0.19	0.96
obal Hotel	0.18	0.40	0.26	0.92

Source: Knight Frank Research, MSCI, Macrobond Sample: 2001-2019

*Based on desmoothed real estate returns using Brown and Matysiak's time varying method.

RELATIVE ASSET DIVERSIFICATION

In an uncertain environment, it is useful to understand how different assets have performed over previous cycles and the extent to which returns have been protected against downside risk.

Direct real estate shows low correlation with other assets such as bonds, equity and indirect real estate, even accounting for the 'smoothing' introduced by the typically lower frequency of real estate data.

Global Residenti Global Office Global Global Retail Global Hotel 0.21 0.11 0.40 0.15 0.18 0.42 0.47 0.33 0.40 0.36 0.39 0.19 0.36 0.26 1.00 1.00 1.00

RISK VS RETURN

The resilience of asset returns in relation to downside risk is particularly important in times of heightened uncertainty, and can be approximated using the Sortino ratio. A higher Sortino ratio indicates higher returns relative to downside risk and is therefore preferable. Using data from the past two decades, direct real estate records a stronger Sortino ratio than REITs or global large and mid-cap equities.

SORTINO RATIOS



Source: Knight Frank Research, Macrobond, MSCI Sample: 2001-2019

*Based on desmoothed real estate returns using Brown and Matysiak's time varying method. Sortino ratios for unadjusted global real estate returns are even higher (All property 0.92, Office 0.80, Industrial 1.02, Retail 1.00, Residential 0.80, Hotel 0.97).



AGE OF UNCERTAINTY

REFOCUSING ON RESILIENCE



Asset resilience, geographic resilience and market resilience are inextricably linked and will support commercial real estate investment decision making and performance in the next stage of the cycle.

PREPARING FOR A SHOCK

Last year's Active Capital research advocated strategising for a recession and positioning for an unknown shock, mindful that at the end of a long economic growth cycle, and in an environment of low interest rates, extensive quantitative easing and debt, there were fewer 'traditional' tools left to offset a future downswing.

With that in mind, we suggested that investors would:

- Focus on local market dynamics
- Examine market liquidity
- Explore asset classes that align with structural changes, such as an ageing population
- Consider accessing real estate lower down the capital stack through debt

Roll forward to 2020 and we have faced a significant global shock with the advent of COVID-19, bringing worldwide health and economic consequences. A wide range of measures has been employed globally in an attempt to rein in the economic fallout of pandemicdriven lockdowns. Central banks have reduced interest rates, where possible, and quantitative easing has been pushed even further, both in the amount and type of instruments open for purchase.

With limited scope for more traditional measures, some governments have deployed 'helicopter money' and other fiscal and monetary support at levels not seen for decades, ranging from financially supporting millions of workers, to directly backing lending.

WHERE ARE WE NOW?

The influence of the pandemic continues to be felt throughout financial markets, economies, and society in the broadest sense.

Optimists point to the unwinding of lockdowns, the reopening of trade, and a return to a degree of 'normality'. High-frequency indicators report a sharp rise in economic activity, as people return to work, and the worst predictions for output reductions have not come to pass. Pessimists highlight the long road to recovery for GDP levels, the risk of a second wave of infections, and disruptions to previously accepted norms in almost all walks of life.

Those charged with making real estate decisions will be familiar with the difficulties of weighing both perspectives. Yet perhaps the most fundamental challenge is that of rising complexity: navigating real estate markets has become more complicated since the onset of the pandemic and requires a greater depth of analysis than ever. At the heart of this decision making will be the need to consider how innovation, sustainability and leverage can influence the resilience of real estate performance.

Navigating real estate markets has become more complicated since the onset of the pandemic and requires a greater depth of analysis than ever. At the heart of this decision making will be thinking innovatively and building resilience into the real estate decisions made.

WHAT LASTING IMPACT COULD THE PANDEMIC HAVE ON COMMERCIAL REAL ESTATE?

Governments and central banks have provided historic levels of support, which will shape the economic and financial environment for years to come. We expect interest rates to remain low and governments around the world to function at 'new-normal' levels of debt. Even if this debt is not paid down, interest will need to be serviced, which will mean lower government spending, future tax rises, or both. At a corporate level, many firms are operating at eroded margins and with increased debt that will also need to be serviced and repaid, potentially slowing their pace of growth.

The pandemic has also provided a shock to typical human and corporate activity on which real estate is dependent. This is accelerating the structural changes we were already seeing across the world; for example, the rise of online shopping and working from home. We do not expect the adoption levels of these behaviours will be maintained to the same extent they were in the early stages of the pandemic. Nevertheless, real estate investors need to be innovative and adaptable, forming investment strategies which align with these structural changes.

Whatever happens, real estate investors need to be innovative and adaptable, forming investment strategies which align with structural changes.

WHICH TYPES OF REAL ESTATE WILL INVESTORS TARGET?

Real estate which harnesses asset, geographic and market resilience will continue to be a draw for investors. This includes:

- Core, 'safe-haven' income-producing real estate, such as offices, in the most liquid global centres such as London and Paris, which demonstrate market resilience.
- Real estate assets across broad sectors, in geographically-resilient locations that are rich in drivers of innovation and research. Locations underpinned by innovation should continue to see the necessary wealth and population growth to drive demand for real estate, both in the occupier and investment markets. Identifying such locations was already important in a lower-for-longer growth environment. Knowing that innovation often arises out of economic dislocation, identifying these phoenixes becomes ever more important.
- Resilient assets which tap into the multiple government and central bank policies, which are mandating that the recovery should be green.
 For example, the European Union has launched a recovery package with tackling climate change at its heart, which the World Bank calls "the largest green stimulus programme in history". Aligned with this, Christine Lagarde, President of the European Central Bank, recently announced a €2.8 trillion asset purchasing scheme to pursue green objectives. In Asia, South Korea has similarly announced its 'Green New Deal', equal to 5.8 trillion South Korean won (\$5.9 billion) to be spent by 2022, covering green buildings and infrastructure, and almost the same amount for renewable energy creation.³

3. https://www.carbonbrief.org/coronavirus-tracking-how-the-worlds-green-recovery-plans-aim-to-cut-emissions



CAPITAL GRAVITY

FORECASTING CAPITAL FLOWS IN 2021

Using a bespoke 'capital gravity' model, we have been able to forecast the likely flows of capital between countries, as well as their estimated sizes for 2021. Due to the dramatic impacts COVID-19 has had on real estate investment and global mobility, we predict that cross-border flows to safe-haven locations and flows between 'near-neighbours' are set to dominate, led by investment from Canada to the US and from the US to the UK.

We have also examined real estate transactions from 2016, many of which would have been financed over five years, and so have predicted the types of assets coming to market over the next year.

We also note that, in a climate of flatter returns on investment, changes in currency and hedging benefits may divert investment flows to cross-border markets that offer such extra gains from real estate transactions.



CAPITAL GRAVITY

FORECASTING CAPITAL FLOWS IN 2021



FORECASTING CAPITAL FLOWS IN 2021

Our capital gravity map predicts the major flows of foreign capital for 2021.

The map shows that over the coming year, the focus of capital flows will principally be between liquid, global safe-havens, as investors continue to seek out true diversification. Nevertheless, core, income-producing assets in 'near-neighbour' locations will also attract demand at a time when some physical travel remains subject to restrictions.

With the potential for more distress to be seen in 2021, investors from private equity funds, private capital and debt funds could also consider cross-border transactions further afield.

The United States, Germany, United Kingdom and Singapore are likely to be major players in cross-border activity. But if oil prices remain depressed, we expect that the deployment of capital from oil-dependent countries will accelerate too.

FORECASTS FOR MAJOR GLOBAL CAPITAL FLOWS IN 2021



THE PREDICTED TOP 10 FLOWS FOR CROSS-BORDER CAPITAL **IN 2021 FOR CROSS-BORDER CAPITAL IN 2021**

01	Canada ———	\$13.3bn	\rightarrow	United States
02	United States ———	\$10.1bn	\rightarrow	United Kingdom
03	United States ——	\$8.1bn	\longrightarrow	Germany
04	United States ——	\$4.9bn	\rightarrow	France
05	United States ——	\$4.7bn	\rightarrow	Japan
06	Germany	\$4.2bn	\rightarrow	United States
07	Singapore ———	\$3.8bn	\rightarrow	Australia
08	Singapore	\$3.1bn	\longrightarrow	United Kingdom
09	South Korea ———	\$3.1bn	\rightarrow	United States
10	United States ——	\$3.0bn	\rightarrow	Netherlands

HOW GLOBAL CAPITAL FLOWS ARE CHANGING

Global capital flows for H1 2020 were 23% lower than the same period in 2019 as the economic effects and physical restrictions imposed by the pandemic spread. Just over 26% of transactions were cross-border – a similar level to 2019. However, this is largely due to a combination of locations outside the initial epicentre of the pandemic seeing strong first-quarter inflows, and transactions commenced before COVID-19 disruption bolstered the figures.

Even before COVID-19, global capital flows and demand for real estate were already facing a range of structural changes, from changing demographics, responses to climate change, and evolving technology, including the growth of e-commerce, to changes in employment patterns and a focus on supply chain resilience amid a heightened trade war rhetoric. This has opened up investment opportunities in a multitude of new and emerging sectors. Our prediction is that the onset of COVID-19 is likely to accelerate, rather than change the impact of these structural changes on real estate.

Illustrative of this, in last year's Active Capital, we used an augmented Black Litterman portfolio optimisation model to simulate future optimal commercial real estate allocations for global private equity investors. The model predicted a rotation over time towards non-traditional real estate sectors, such as student housing, data centres, various types of income-producing residential assets, and industrials, with somewhat reduced weightings over time towards retail and office.

The office sector will continue to play a prominent role in global allocations, however, particularly in global gateway markets. Looking back over previous cycles, investment flows into specific office geographies have demonstrated particular resilience. The most historically resilient office location is the UK, which has uniquely been in the top five destinations of global cross-border capital in every guarter but two since before the GFC. The US office sector dipped out of the top destinations during the early part of the GFC, but by Q3 2009, demand recovered. Similarly, office transactions in France and Germany led cross-border capital in the recovery from the Eurozone crisis.

The office sector was the most active in the first half of 2020, followed by residential and industrial.



FORECASTING THE 10 LEADING FLOWS FOR CROSS-BORDER CAPITAL IN 2021

By continuously enhancing our capital gravity model, first used in 2018. to analyse cross-border real estate investment inflows, we can predict the leading flows for cross-border capital and their estimated size. Gravity models are common in international trade, yet there has been little application of them to real estate investment.

THE TOP 10 SOURCES OF CAPITAL IN 2021

United States

Canada

Germany

Singapore

United Kingdom

Switzerland

Hong Kong

France

Sweden

Israel

01

02

03

04

05

06

07

08

09

10

ACTIVE CAPITAL

THE TOP 10 DE **OF CAPITAL IN**

01	United State
02	United Kingo
03	Germany
04	Australia
05	France
06	Japan
 07	Netherlands
08	China
09	Canada
10	Finland

ROTATION OF REAL ESTATE PROJECTIONS

Another potential source of supply comes from the rotation of real estate assets. Assuming a typical five-year hold or financing period, by looking at 2016 transactional activity, we can predict the types of assets for the coming year. For example, in the US, 2016 saw \$145 billion of office transactions, spanning the country, including the strong innovation-led cities (ILC) of New York, Palo Alto, San Francisco and Atlanta. Additionally, \$61 billion of industrial assets were purchased throughout the country.

- Using the Poisson pseudo-maximum-likelihood, a recommended method for estimating real estate capital flows⁴, we estimate the key flows for the coming year.
- We focused on identifying the main factors behind the largest variation in direct real estate investment flows. These are GDP, foreign direct investment as a percentage of GDP, exchange rate, world share price index, the distance between two countries, common languages, common borders and historic ties. We also included a 'shock' variable, as the period being forecast follows a significant disruption.

4. McAllister and Nanda (2016)

STINATION	IS
2021	

om		

In many destinations, the lack of stock available for sale has limited transactional volumes. While governments and central banks support economies – although many are now in recession - we have yet to see much fallout in real estate. However, as fiscal and monetary support unwinds, we can expect more distressed assets coming to the market next year.

- In short, we should expect to see a range of assets from traditional office and through to the industrial, residential and alternatives sectors coming to the market for rotational reasons in 2021, even if some investors extend their business plans. These should offer a mix of cyclical and core opportunities.
- It is also useful for investors to monitor private equity activity, which is often the first mover into a market and therefore a leading indicator. Japan, for example, has seen a significant increase in cross-border transactional activity during Q2 2020 by private equity investors, (\$3.4 billion in Q2 2020, vs \$975 million in Q1 and \$161 million Q2 2019) notably a portfolio of apartments purchased by Blackstone from Anbang Insurance. Private equity activity has risen across sectors in the UK, and a large rise in Switzerland is centred around the purchase of a retail portfolio, with units in some innovation-led cities.

FURTHER INFLUENCES ON CAPITAL FLOWS

As models carry an inherent amount of uncertainty, the task of predicting the future when the market is faced with a major shock, such as COVID-19, is even more difficult. While our capital gravity model includes a 'shock' component to capture this impact, we also highlight three further influences on capital flows over the coming year.

1. CURRENCY AND HEDGING BENEFITS

Currency hedging has seen marked swings over the last few years. In May 2018, the currency hedging benefits for a US dollar investor targeting the UK on a five-year currency swap was as high as 2.3% p.a. (per annum) with an exchange rate of \$1.33. By September 2020, the currency hedging benefits were closer to 0.25% p.a. at broadly the same exchange rate. Similarly, the currency hedging benefits for a US dollar investor targeting mainland Europe in September 2018 was almost 3.5% p.a. on a five-year basis, with an exchange rate of \$1.16. In February, just before the onset of the pandemic, hedging benefits were still over 2%. By September 2020, these benefits were just over 1%, with an exchange rate of \$1.18.

This has the potential to impact the focus of capital flows. In core locations where prime yields can be lower than 3%, some cross-border investors have been able to find additional return through currency hedging. Without that, they may choose to direct their capital to other locations.

Some investor groups are more sensitive to changing currency impacts than others. For example, South Korean investors shifted the focus of transactions from the US to the UK (activity for which peaked in 2015/16) from 2017 onwards as sterling weakened. Last year, they shifted again to mainland Europe with \$6 billion of investment to take advantage of currency favourability. We have already seen that the US, UK and other key countries in mainland Europe are considered resilient safe-havens for capital in uncertain times. Depending on the path of the pandemic, a recovery of currency hedging benefits, along with a strengthening dollar, could further enhance investment into Europe or the UK. A weaker dollar may encourage more cross-border activity into the US.

2. OIL

As lockdown curtailed economic activity around the world, oil demand slumped. Despite there being only 254 active oil rigs in the US in August 2020 – 650 fewer than one year ago – and internationally, 743 rigs in July 2020 – down 419 on July 2019 – the oil price has dropped significantly.

At the start of the year, it was upwards of \$60 per barrel. Now, it is around \$45 per barrel. This may encourage oildependent countries to accelerate diversification plans and look for the safe-haven, long-term, secure income that real estate can provide.

3. GEOPOLITICS AND TRAVEL DISRUPTION

The last few years have seen a shifting of long-standing global ties, such as US trade agreements and the relationship between Europe and the UK. This uncertain environment has accelerated the move to more local supply chains in the service and manufacturing sectors and there could be further surprises ahead. We may see an increase in intracontinental investing over the coming year, for example, within Europe or between the US and Canada, where the potential operational barriers are lower, and risks are more readily understood. This includes well-located, income-producing real estate in safe-havens.

In 2021, we predict that a key focus of capital flows will be to safehaven countries as well as 'nearneighbours', where the potential operational barriers are lower, and risks are more understood.





BUILDING RESILIENCE

GEOGRAPHIC RESILIENCE - INNOVATION

ASSET RESILENCE - SUSTAINABILITY

MARKET RESILIENCE - LEVERAGE

In an uncertain environment with a backdrop of a health-led global economic shock, positioning for resilience is key for real estate investors. Resilience in real estate entails assets which are able to sustain tenant demand and support rents, underpinning capital values and ultimately returns for investors. It is these types of assets which are best-placed to weather shocks and benefit from the recovery and wider structural changes.

So what makes for resilient real estate, and where can it be found? Resilience can be considered geographically, by looking at innovation-led cities which will attract and retain the population and wealth needed to support well-functioning real estate markets.

Resilience is also driven at an asset level by considering the sustainability of buildings and tenants. Sustainable buildings are more resilient to climate change legislation amendments, have access to new pools of finance and increasingly align with the corporate ethos of tenants. Tenant resilience is often considered by looking at covenant strength. However, governance, in terms of how business decisions are made, and the checks and balances in place and acted on, also play a significant and growing role.

Finally, market resilience relates to the ability of assets to attract financing, a crucial consideration as lenders become even more discerning. Resilience in this sense involves real estate that has the appropriate characteristics to support lending, be that in terms of location, asset quality or increasingly, sustainability credentials.



BUILDING RESILIENCE

FINDING REAL ESTATE **RESILIENCE THROUGH INNOVATION-LED CITIES**

Innovation drives growth and supports the population and wealth needed for well-functioning real estate markets

To quote Professor Nathan Rosenberg of Stanford University: "Innovative activity has been the single, most important component of long-term economic growth."

Amid this global pandemic, it will be innovative organisations - focused on sectors such as life sciences - that will make new breakthroughs, attract new swathes of funding, and generate new demand for space.

Knowing that innovation often arises out of economic dislocation and that innovation is a key driver of growth means that identifying innovation-led cities (ILCs) becomes ever more important for real estate investors. In the current uncertain environment, it will be these



innovation-led locations which attract and retain the population and wealth necessary for resilient, wellperforming real estate markets. In real estate terms, this resilience is demonstrated by cities that can sustain tenant demand, support rental levels and capital values, and ultimately returns for investors.

Knight Frank's research into innovation-led cities has collected over 100 different indicators, including data on almost 100,000 research institutions globally. From a long-list of 750 cities, these indicators have been applied to 288 cities worldwide to determine which lead innovation and growth, and therefore offer the greatest prospects for resilience for commercial real estate investors.

"History shows that our economy is sometimes the most innovative when faced with the greatest dislocations."

Joe Zidle, Blackstone

CITY INNOVATION AND REAL ESTATE LIQUIDITY SCORES

In the scatter plot (on the next page) we compare city innovation scores with real estate liquidity rates. Lower risk investors are likely to favour cities with aboveaverage innovation scores and higher liquidity scores, which lie to the right. The cities scoring higher for innovation, but which are less liquid, seen towards the left of the chart, attract those willing to take more risk, such as private equity investors, for example.

The innovation score comprises four components: i) quality of innovation factors, ii) innovation infrastructure, such as the number of different research organisations in a city, iii) funding and iv) drive to innovate, which looks at data around motivation to innovate. The score is between 0 and 10, with 10 being highest.

The liquidity score for a city is based on factors including the number of commercial real estate assets, the average annual transaction volume and the ease of doing business. The same 0-10 rating is used.

According to the Centre for Entrepreneurs, more than 221,000 new business were formed in London during 2019.

The cities in the top right quadrant have a combination of above-average innovation and above average liquidity. They include London, UK, as the stand-out performer for innovation as well as New York, US and Tokyo, Japan. While these cities may undergo short-term shocks, they have the greatest potential to remain economically resilient in the longer term.

For example, according to the Times Higher Education, London has three universities in the top 100 ranked globally against the United Nation's Sustainable Development Goal 9: Industry, Innovation and Infrastructure.

These universities drive research that advances industry innovation and infrastructure, generates patents and creates spin-offs. They also undertake industry-backed research.

Meanwhile, according to the Centre for Entrepreneurs, more than 221,000 new business were formed in London during 2019, approximately one-third of the UK total. Of these, 17,400 were tech businesses, providing a rich pool for potential links to London's world-leading universities.

However, smaller cities in the UK also score highly for innovation. Oxford and Cambridge sit at each end of the Brain Belt, benefiting from up to £5.5 billion of infrastructure investment. They also form the top side of the 'Golden Triangle', which is the unofficial term for research universities between these innovation hotspots and London. These cities illustrate how a strong research-led university sector can help build market resilience. During the Global Financial Crisis, Cambridge saw stable-to-increasing rents and compressing prime yields, while Oxford had only one year of negative rental growth and saw yields rise by only 25 bps.

New York is the top city in the **US for innovation and ranks** at number two globally, while Toronto takes the top spot in Canada and ranks 8th globally.

Asia-Pacific is represented in the top 20 most innovative cities by Tokyo, Melbourne, Canberra and Sydney. One example of the impact innovation has on commercial real estate is Sydney's Ultimo district. This is where the University of Technology's faculties of Science, Health, Arts and Social Sciences, Engineering and IT, and Design, Architecture and Building are based. In the last three years, Ultimo has seen office rental growth of over 50%.

New York is the top city in the US for innovation and ranks at number two globally, while Toronto takes the top spot in Canada and ranks 8th globally.

In mainland Europe, the 25 most innovative cities include Paris, Berlin, Munich, Zurich, Geneva, Stockholm. Berlin and Stockholm have seen strong rises in transaction volumes over recent years.

WHAT IS INNOVATION AND WHY DOES IT MATTER **TO INVESTORS?**

Innovation can be described as the combination of labour and capital employed in new ways to drive growth or do more with a given set of factors of production or inputs. This is distinct from invention, which is the generation of ideas. Innovation takes those ideas and amplifies them, generating momentum - and in the commercial arena, monetisation. Tom Grasty, of The Grasty Group explains: "If invention is a pebble tossed in the pond, innovation is the rippling effect that pebble causes." Knowledge combined with creativity leads to innovation, innovation to productivity and productivity to economic growth and resilience.

31

30

Innovation rarely happens in isolation, and, agglomeration effects arise from innovators clustering together. These clusters are often centred around one or more universities. Successful innovation clusters monetise ideas and generate strong local economic growth. This innovation also attracts and retains the population and wealth needed for well-functioning commercial real estate markets.

Gaining exposure to locations which are innovating also helps shield the investor from some of the disruptive effects that large-scale innovations can have. This is because it is the cities which are creating the disruptive innovation that are the ones monetising it.

The research also indicates that in innovation-led cities, tech and life sciences businesses are looking for an educated workforce as well as reputable universities that can work closely with industry to innovate and generate commercial benefits from their research.

Knowledge combined with creativity leads to innovation, innovation to productivity and productivity to economic growth and resilience.

METHODOLOGY

Starting with a long-list of 750 global cities, we excluded those that had seen fewer than 10 deals or \$75 million of transactions over the previous 12 months. Cities with fewer than 150,000 households, a population of less than 250,000, and employment of 200,000 or lower forecast in five years, were also removed. That left 288 cities, for which we collected over 100 variables relating to innovation.

As innovation is somewhat intangible and difficult to measure directly, we used statistical modelling techniques to find which observable variables best represented innovation and so created an innovation score for each city.

This comprised four components:

- 1. Quality of innovation; including the guality of academic research, the international repute of universities and the quality of life in the city to attract talent.
- 2. Innovation infrastructure; the quantum of different research organisations and groups.
- 3. Funding; biomedical research funding.
- 4. Motivation to innovate; grassroots motivation to innovate.

Sources include Oxford Economics, Numbeo, Meet-up, Grid.ac, World RePORT, startupblink, Real Capital Analytics and The World Bank.

We used statistical modelling techniques to find which observable variables best represented innovation and so created an innovation score for each city.

INNOVATION-LED CITIES



Source: Knight Frank Research



Source: Knight Frank Research

Liquidity

Liquidity

BUILDING RESILIENCE

THE GLOBAL RISE OF SUSTAINABLE BUILDINGS



GREEN BUILDING HOTSPOTS AROUND THE WORLD

There are more than 120,000 green-rated buildings worldwide, giving investors a wide choice of sustainable assets. But which cities should they consider first? We highlight 15 top choices from the Americas, EMEA and Asia-Pacific.

Sustainability is crucial, as the built environment contributes an estimated 40%⁵ of carbon emissions.

5. UN Environment Programme 2019 Global Status Report for Buildings and Construction

15 SUSTAINABLE BUILDING HOTSPOTS AROUND THE WORLD



THE AMERICAS EMEA REGIONS

ASIA-PACIFIC REGIONS

Source: Knight Frank Research

Our selection of 15 green building hotspots features top cities around the world for green-rated real estate, including projects registered as being planned or in progress as well as finished, certified buildings. We have included five cities each from the Americas, EMEA and Asia-Pacific. In addition to the major global certifications of BREEAM and LEED, other prominent national certifications that investors might come across are highlighted.

THE AMERCIAS

WASHINGTON, DC

Washington, DC became the world's first LEED platinum city. Leadership in Energy and Environmental Design (LEED) was formed in the early 1990s by the United States Green Building Council (USGBC) which is based in the capital. Worldwide, LEED standards have been applied to over one billion square metres of space. Washington, DC was also the first location in the US to legislate for green building certification in the public and private sector, with the Green Building Act 2006. The city has the most LEED and ENERGY STAR-certified square footage on a per capita basis and the most LEED and ENERGY STAR-certified projects of any large city. ENERGY STAR was formed in 1992 by the United States Environmental Protection Agency (EPA) and covers homes and commercial real estate.

NEW YORK

The five boroughs of New York contain around 1,000 LEED rated buildings. More than 70 enjoy the highest Platinum certification and more than 400 are certified as Gold. One World Trade Center is the tallest building in the western hemisphere to achieve the LEED gold certification. The iconic Empire State Building was also awarded LEED gold status in 2011. Additionally, five universities in New York have been accredited by the AASHE STARS framework, which measures sustainability performance for colleges and universities.

LOS ANGELES

The City of Angels contains almost 800 LEED-rated real estate sites and over 400 ENERGY STAR-rated assets. Despite COVID-19, between April and July 2020, \$600 million of green-rated office assets in the city were transacted⁶.

6. Real Capital Analytics

CHICAGO

There are approximately 1,000 green-rated real estate assets across Chicago, most of which are LEED and ENERGY STAR-rated. Over 70% of office space in Chicago – covering 15.5 million square metres⁷ – is green-certified. In recognition of the fact that large buildings contribute a significant proportion of carbon emissions in the city the Chicago Energy Rating System for buildings more than 50,000 square feet was launched in 2019. This initiative rates more than 3,400 buildings using energy data⁸.

7. International Green Building Adoption Index 2018 Maastricht University and CBRE8. Chicago Office of the Mayor

HOUSTON

Like Chicago, Houston has approximately 1,000 greenrated real estate projects and most are LEED and ENERGY STAR-rated. In 2019, Houston's 35-storey Bank of America Tower (formerly Capitol Tower), became the first Platinum certification under LEED Version 4.1, the newest (and more stringent) update to LEED. Hines' 47-storey, one million square foot Texas Tower, has also been pre-certified as LEED Platinum.

EMEA REGION

LONDON

The UK has led the global charge for environmental assessment of real estate. The first building assessment was undertaken by Watford-based Building Research Establishment in 1990, which has since morphed into BREEAM, one of the most recognised international certifications. Unsurprisingly, therefore, London ranks number one globally for sustainable real estate with over 3,000 green-rated buildings. Even so, with almost 65% of London's commercial buildings being completed before the year 2000, there are many opportunities to bring them in line with carbon-reduction targets.

PARIS

The Haute Qualité Environnementale (HQE) certification is widely used across France and accounts for 85% of office products, according to a report released in 2017. There are currently 13% that are BREEAM-rated and 2% LEED-rated, but these proportions are rising. In Paris, although most green-certified buildings are HQE, over 600 real estate assets are certified using BREEAM, with a smaller proportion using LEED. Approximately 9% of office space in the French capital is green-certified, and this has increased considerably over the last 13 years.⁹ Many assets, including the 44-floor Majunga tower, in the La Defense business district, are dual-rated or even triplerated. Majunga has also been rated BBC, a French label (Bâtiment Basse Consommation) or low-energy building.

9. International Green Building Adoption Index 2018 Maastricht University

STOCKHOLM

The Swedish capital is home to over 400 BREEAM-rated real estate projects and more than 100 LEED-rated ones. However, other green certifications are used both in Stockholm and across the country. For example, 1,500 residential and commercial buildings have been rated by the Miljöbyggnad standard, a certification system developed by the Sweden Green Building Council to account for local government regulations and Swedish construction practices. The council also certifies the sustainable building management standard, Miljöbyggnad iDrift, which covers indoor environment, health, climate impact, resource, and the condition of the building.

ABU DHABI

Abu Dhabi, which hosts the International Renewable Energy Agency (IRENA), launched its Estidama sustainability framework in 2008 as part of the Abu Dhabi Vision 2030. The Estidama Pearl Rating System (PRS) for green buildings was developed by the Abu Dhabi planning council a few years later. In 2010, a 1-Pearl rating (the maximum is 5-Pearl) became mandatory for all applicable new buildings, with a minimum 2-Pearl for government-funded buildings. Now, there are over 1,000 design or construction-rated buildings with a 2-Pearl rating and above and another 1,400, with a 1-Pearl rating. The green rating system also applies to villas and 20,000 are currently Pearl rated[1]. In addition to the local rating, LEED certification is also popular, with circa 40 certified buildings and 100 registered buildings. The Siemens Headquarters in Masdar City was the first Platinum-certified LEED building in the Abu Dhabi in 2014.

DUBAI

Government-owned buildings have been subject to Green Building Regulations and Specifications (GBR&S) since 2011, as have all new buildings since 2014, as part of UAE and City visions for sustainable development. Dubai has since introduced the AI Sa'fat Rating System for real estate to further reflect sustainability goals, which includes 30% energy and water savings by 2030 and 75% clean energy fuel mix by 2050.

There are over 1,500 registered and certified LEED projects in Dubai, which was the first city in the region to receive a Platinum LEED city level rating.¹⁰ Of note is the 46-hectare Sustainable City in Dubai, the Emirates' first fully operational net-zero energy community. Meanwhile, the 53-storey, 1.1 million square foot ICD Brookfield Place at the Dubai International Financial Centre (DIFC) was recently awarded LEED-Platinum status, making it the tallest and largest building to achieve this level of certification in the region and places it among the top 20 largest LEED-Platinum certified buildings globally.

10. Green Building City Market Brief 2019

ASIA-PACIFIC REGION

SINGAPORE

As part of accelerating Singapore's green building agenda, the 2008 Building Control Act made it mandatory for new buildings and substantially refurbished existing buildings to be certified under the Green Mark scheme. As a result, there are more than 2,000 green-rated buildings across the city. Several buildings also hold LEED ratings.

BEIJING

Buildings across Beijing utilise a combination of global, regional, and national ratings. There are over 300 real estate projects across the city using LEED, with a small number rated using BREEAM. In 2016, there were 180 Green Building Evaluation Label (GBEL) projects in Beijing.

SHANGHAI

A combination of global, regional, and national ratings are used in Shanghai buildings. There are over 500 real estate projects across the city with LEED certification and a minority using the BREEAM assessment. In 2016, in Shanghai, there were over 260 Green Building Evaluation Label (GBEL) projects, which is China's national green building rating programme. More widely across China, there are more than 4,500 GBELevaluated buildings, with over 900 such buildings in the Jiangsu province, north of Shanghai.

MELBOURNE

Across Melbourne, there are over 120 Green Starcertified buildings, with 275 buildings rated using NABERS and a small number of LEED-rated buildings.

SYDNEY

The Green Building Council Australia is responsible for administering and rating the sustainability and performance of buildings design and fit-out under the voluntary Green Star certification. Across the nation, there are almost 3,000 Green Star certifications, covering more than 26 million square metres of space. This is 40% of all office and retail space across the country.¹¹ In Sydney, there are over 100 Green Starcertified buildings. Complementary to Green Star is the National Australian Built Environment Rating System (NABERS), which measures the ongoing operational efficiency of a building.

There are around 450 NABERS-rated buildings in Sydney, along with a small number of LEED-rated buildings. The Commercial Building Disclosure Program, which mandates energy efficiency disclosure of office space in Australia, is unique in the world. Two other schemes, GRESB, an investor-led organization assessing the sustainability performance of real estate and infrastructure portfolios and assets, and the WELL rating scheme, a performance-based system for measuring, certifying and monitoring features of the built environment that impact human health and wellbeing, are also used in Australia.

11. Green Building Council Australia

FINDING THE BEST GREEN INVESTMENT

The sustainable real estate movement is often viewed as a nascent or fringe alternative investment choice mainly focused in Europe, but as our research shows, the reality is quite different.

In fact, investors already manage \$120 trillion of financial assets (including real estate) under voluntary climate change disclosures, and there are now more than 120,000 green-rated real estate assets in clusters spread around the world.

Investing sustainably in real estate can take many forms, from improving existing buildings to developing (or investing in) newer certified or certifiable assets. To find out more, see Knight Frank's green benchmarking tool.

But the myriad global, regional, and national green building certifications present a confusing mix to those seeking to invest in these sustainable assets.

LEED and BREEAM are two of the most widely-used standards internationally, but there are many other ratings around the world, as detailed in the previous section. Overlaid with this are investor-led sustainability ratings, such as GRESB. Key challenges for cross-border real estate investors are knowing how to match and compare criteria across different standards and deciding which matter most in which areas around the world.

Although it can be challenging to assess these different ratings, what their prevalence demonstrates is a vast pool of green-rated real estate assets globally. Gaining exposure to these assets will become increasingly important for those targeting resilient returns, for three main reasons. Firstly, the legislative tide is turning; it increasingly favours sustainable assets. Given that the built environment contributes an estimated 40%¹² of global carbon emissions, multiple governments are targeting carbon reduction. Future regulatory and tax changes are likely to favour green real estate investment and disadvantage assets that cannot demonstrate compliance.

Indeed, this is already happening in some countries; new buildings in locations such as Singapore and Abu Dhabi require minimum green ratings to be granted approval. Likewise, countries such as the Netherlands will require minimum energy performance certificate (EPC) ratings from 2023.

Secondly, sustainable buildings will drive greater tenant retention and income resilience. As we discuss extensively in (Y)OUR SPACE, businesses increasingly see real estate as a strategic device for furthering corporate goals. Buildings need to reflect the ethos of brands that operate within them and as these brands – along with their workforces and their customers – increase their focus on sustainability, the occupation of green buildings becomes a very visible way to demonstrate a commitment to this cause.

Thirdly, a broader range of financing options will be available to developers of and investors in sustainable buildings in the future. Consequently, these assets will enjoy a deeper potential demand-base compared to others, and will ultimately benefit from more resilient pricing.

12. UN Environment Programme 2019 Global Status Report for Buildings and Construction

WELL Building Standard GOBAS EEWH Living Building Challenge Of SICES GBEL PBRS G-SEED OF LiderA Green Star Parksmart SBTool OF BEAM LEED OF BEAM LEED OF DGNBOOD AND GHEM LEED OF DGNBOOD AND GHEM LEED OF SPEAR® BREEAM MINERGIE GreenGlobes BREEAM MINERGIE TBO Energy BEE Star BERDE Energy Star TBO Energy BEE Star BERDE Energy Star TACA IREM Certified Sustainable Properties OKOPTOTION

38



HOW WILL REAL ESTATE **DEBT MARKETS RESPOND TO COVID-19?**



HOW LEVERAGE INFLUENCES MARKET RESILIENCE

Traditionally, commercial real estate is heavily reliant on debt. Therefore, it is critical for real estate investors to consider how the real estate debt market will respond in the near and longer term to COVID-19 and what it means for the resilience of the markets they are operating in.

There will be a further polarisation between the funding opportunities for well-located, income-producing real estate and assets which do not share these qualities, the entry of new debt funds, an increased focus on the sustainable credentials of assets, and other innovative financing strategies.

Q&A

Knight Frank's Victoria Ormond, CFA and Lisa Attenborough discuss the outlook and impact of the lending market on direct real estate and outline three key changes. Head of Commercial Research, William Matthews, asks the questions.

Victoria Ormond, CFA, Partner, **Capital Markets Research**

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William Matthews: What impact could COVID-19 have on bank lending to commercial real estate?

Victoria Ormond: A. The pandemic has dealt a significant shock to the leverage market, which is yet to feed through in a significant way to the commercial real estate sector. Banks' equity prices broadly remain below where they were at the start of the year, even as other sectors such as tech have seen growth. For example, at the time of writing, the Nasdaq 100 Technology Sector Index was up by more than 25% since the start of the year, while the Nasdaq banking index languished onethird lower. Similarly, the European banking index is 36% lower.

However, banks are generally in a better position in terms of their balance sheets than during the GFC. Globally, there has been extensive fiscal, monetary and regulatory support, ranging from government underwritten loans to the temporary reduction or removal of Countercyclical

The loan market could also contribute to an increase in transactional activity in the direct real estate market over the coming 18-24 months as direct and indirect loan distress and refinancing challenges feed through.

"In time, there will likely be more loans breaching covenants, which could provide the impetus for more direct property transactions."

Victoria Ormond, CFA, Partner, **Capital Markets Research**

Capital Buffers (CCB) across several countries. For example, in the UK and Germany, the CCB is now 0%. This, in effect, increases banks' lending capacity by circa ten times what was lent in 2019. Similarly, in Hong Kong, the CCB has been halved to 1%.13

Therefore, while banks are already undertaking provisioning and seeing subdued equity performance, lending distress may not appear in a significant way until 2021 or beyond. Several regulatory authorities have also encouraged banks to waive lending covenant breaches where the breach is due to general market conditions. However, in time, there will likely be more loans breaching covenants due to borrower circumstances. At this point, we may see more loan restructuring, enforcement, and asset sales. Loans against poorer performing real estate, which struggle to be refinanced, could provide the impetus for more direct property transactions over the coming 18 months or so.

13. https://www.bis.org/bcbs/ccyb/

WM: What are the implications for non-bank lenders?

VO: A. Many global non-bank lenders, such as debt funds, only came into existence following the GFC and the implementation of amended regulatory capital rules for banks. As a result, it is a largely untested market, under stressed conditions.

Because non-bank lenders are not subject to the same regulatory capital rules as banks, many debt funds have higher loan-to-value (LTV) and risk exposures, so are more endangered by the fallout from the pandemic and may need to manage down their risks. Additionally, those debt funds which had purchased non-performing loans (NPLs) from traditional banks may need to reassess their business plans in the light of COVID-19.

However, more positively, due to not being impeded by the same rules as bank lenders, we do expect that many debt funds could have greater opportunity to work with existing loans, but also to continue lending, albeit potentially more selectively than previously.

We also expect new non-bank lenders to enter the commercial real estate market over the coming 18-24 months to fill both the lending gap (as existing lenders retrench) and to target non-performing loans.

WM: What impact is sustainability having on access to commercial real estate financing?

VO: A. Real estate with effective sustainability credentials could also be a draw to successfully securing finance over the longer term. Many central banks are including climate change and carbon benchmarking into financial stability reporting, incentivising green real estate assets. The European Central Bank (ECB) has indicated that green bonds could become part of its €2.8 trillion asset purchase programme. Green bonds are also in increasing circulation and despite the onset of COVID-19, \$50 billion were issued globally in Q2 2020, the third highest guarter on record. Green bonds form part of a wider group of sustainable finance. Europe currently dominates overall sustainable financing, having issued 63% of the world's sustainable loans and 46% of the world's sustainable bonds over the year to date.

Within real estate specifically, despite the pandemic, green financing has continued in 2020. For example, in May Guocoland secured a green club loan for a new 30-storey mixed-use commercial and residential development in Singapore and in Ireland, property company IPUT, agreed a green facility as part of a wider revolving credit facility. In June, Link REIT also secured a sustainability-linked loan, with the loan interest rate tied to ESG performance. This suggests that real estate with truly green credentials, could find it easier to access funding in the future.

Q WM: What are the implications of the changing debt landscape on commercial real estate lending?

VO: A. We expected a more squeezed lending environment and lenders will not consider all real estate equally. This could lead to a bifurcation in performance of direct real estate between assets which are more easily lent against versus those that are not.

We expect traditional lenders to target the most core, liquid, lower-risk assets to lend against, while debt funds consider the geographical resilience, as they lend to a wider type of assets and risk profiles. This could mean that prime assets in core areas of global safe-haven cities will be at an advantage for funding. We also expect assets in good locations with strong sustainability credentials to have more options when it comes to lending.

In the short-to-medium-term, a funding gap could arise while banks retrench and non-bank lenders assess their loan books. If equity investors step in, they will be choosy over the type and location of real estate.

Over the long-term, we expect significant growth of new alternative lenders, such as debt funds, as debt offers a way to gain exposure to real estate and generate income, but is lower down the capital stack than direct investment. New debt funds may also purchase NPLs, providing an opportunity for enhanced returns for investors with higher-risk appetites.

Lisa Attenborough, Head of Debt Advisory

William Matthews: How have you seen lender appetite impacted since the pandemic?

Lisa Attenborough: A. In the UK, lenders paused on most, if not all, new lending opportunities to assess the risk on their loan books, although many have since begun to consider new lending opportunities, albeit rebasing pricing and leverage to reflect the higher risk environment.

Clearing banks were initially focussed, and still are to a degree, on their existing client base. These banks crucially need to carefully manage their balance sheets and must consider their wider loan book exposures outside of commercial real estate, for example, to the retail sector at a corporate level.

Debt funds which are financed by private capital and not constrained by the same Basel regulatory capital requirements do not have the same restrictions and considerations and as such, are busier than ever.

The reactions of UK lenders have been echoed elsewhere around the world. For example, across Europe, retail banks initially reined in their financing on amortising loans to around 55% LTV or 50% on an interest-only basis. We have started to see higher LTVs achieved across Europe since lockdown began, however this has been for absolute prime deals in the most resilient sectors.

In the US, federally backed Fannie Mae and Freddie Mac now account for upwards of 60% of borrowing, compared to below 40% in a 'normal' market. This is largely due to alternate lender groups pulling back and lending on a more selective basis. Large banks with greater exposure to sectors such as retail and hospitality are also now taking a cautious approach to balance sheet management and as such, to originating new loans.

WM: Are there specific property types that lenders are more willing to lend against today? Has that changed in recent months?

LA: A. Logistics real estate and residential investment opportunities are underpinned by solid underlying demand, so continue to attract lender interest.

Student accommodation, on the other hand, saw lenders initially pull back, but this may well change, particularly if we see increased demand due to gap year students cancelling their plans due to restrictions on travel. Some traditional office space lenders are unsure about investing, but the full effect is yet to be seen.

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WM: How has pricing been impacted? How much is additional risk a premium applied by lenders, and how much is it a function of market interest rates?

LA: A. Broadly speaking, lenders are following varying pricing strategies:

Insurance lenders: Insurance lenders are pricing on relative value, with corporate bond spreads initially spiking upon the announcement of lockdown. As a result, insurers increased their real estate debt pricing. Corporate bond spreads have now returned to more 'normal' levels, so debt pricing has come down (but not to pre-COVID-19 levels).

Investment banks: Several investment banks have introduced pricing floors. Loan syndication (the process by which investment banks distribute and manage their exposure) slowed significantly during Q2 this year. This led to congestion in the market and investment banks are managing their balance sheet cautiously.

Debt funds: Debt funds target returns remain the same, but leverage has reduced, therefore achieving the same level of return for lower risk transactions.

More generally, we have seen lenders apply a countryrisk premium for those countries which may be worst impacted by the pandemic.

German real estate lenders appear to have bounced back the guickest. Margins tightened at the height of the pandemic, but we have since seen them soften with competitive terms still available for low risk or longincome core assets.

0 WM: What about future appetite for lending? How do you expect the pool of lenders to evolve over the next year?

LA: A. Much depends on what happens with the expected second wave of COVID-19 and the shape of the economic recovery, and how both of those impact the amount of bad debt banks will have to deal with.

We are already hearing of clearing banks provisioning for losses which will impact future lending appetite. In the UK, Barclays has set aside a higher than expected £1.6 billion to cover a possible rise in loan losses in the second quarter and Lloyds has announced recently an impairment charge of £2.4 billion for the three months to June 30 – a significant increase from the £1.4 billion in the first three months of the year.

In Europe, Banco Santander reported the highest provisions by a bank in continental Europe so far. The bank is holding back €1.6 billion for losses linked to the virus. This will impact the appetite for commercial real estate lending in the coming months and years.

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WM: Do you envisage a more competitive environment as debt funds raise more capital?

LA: A. Not immediately. One lender told us recently: "We have money to invest, but we're in no hurry to invest it." For the short-term, there will be a flight to quality both in terms of deals and sponsors who are being backed. That said, we have seen several new debt funds being set up, which eventually will drive competition, but I do not expect that will result in more competitive terms until the economy begins to recover.



We have entered a new age of uncertainty, but one which will see investors continue to target real estate globally, with a focus on innovation, sustainability and leverage as the keys to resilient performance. So, what next? The insights within Active Capital represent just a small fraction of the underlying data, analysis and global market expertise that facilitates our ongoing research. Contact us to understand how you can utilise these insights to navigate a path forwards.

CONTACTS





ANDREW SIM Head of Global Capital Markets & Managing Director Europe

andrew.sim@

knightfrank.com

ANTHONY **DUGGAN Commercial Chief**

Strategy Officer & Head of Global Capital Markets Research

> anthony.duggan@ knightfrank.com

CONTRIBUTORS

With thanks to Lisa Attenborough, Daniel Tomaselli, Antonia Haralambous, Maiia Sleptcova, Lily Nguyen, Nicholas Holt, Taimur Khan, and David Bourla.

WHAT NEXT?





WILLIAM **MATTHEWS**

Head of UK Commercial Research

william.matthews@ knightfrank.com



VICTORIA **ORMOND, CFA**

Partner, Capital Markets Research

victoria.ormond@ knightfrank.com

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