

Real Estate – The Global Asset

1.1 THE GLOBAL PROPERTY INVESTMENT UNIVERSE

Real estate is usually identified as a discrete, or separate, component of an investment portfolio. It may be part of an allocation to ‘alternatives’ (financial assets that do not fall into one of the conventional investment categories of stocks, bonds, and cash); it may be part of an allocation to ‘real assets’ (physical assets that have an intrinsic worth and which are expected to be a hedge against inflation); or it may be part of an allocation to private markets (assets such as private equity or private debt which are not listed on a public exchange). Whichever is the case, real estate (including owner-occupied housing and farmland) constitutes a very large proportion of the world’s wealth and (excluding these asset types) a significant slice of its institutional savings base.

What proportion of an investment portfolio *should* be in real estate? What proportion of the real estate portfolio should be invested in the USA, or Russia, or continental Europe?

A new investor building a global portfolio might reasonably want to know the composition by value of the ‘market portfolio’ – the total value of all investable assets, like stocks and bonds, added together. Given this, it is possible to imagine how your portfolio might be constituted, even if you had no views about the future performance of those assets. Assuming there were no ‘friction costs’, meaning the time and cost involved in accessing certain markets, which makes some less attractive than others, constructing a market portfolio would make some sense, especially given that it appears that we are less good at forecasting market returns than we think we are.

We can estimate the size of the public equity markets at any time by adding together the market capitalisation of the various global stock markets. We can do the same with publicly listed bonds. Private equity is more of a challenge, however, and real estate also creates significant difficulties. Many of the real estate assets in the world are never valued. There is a lack of transparency in many markets, and the generally low levels of information available in Asia and the emerging markets of the world mean that we do not know much about the size of the investable property markets in China, India, and Pakistan, despite their huge populations and increasingly significant gross domestic product (GDP). Even the total value of all US housing is subject to debate.

Nevertheless, we do have something to go on. While it has been estimated that real estate might comprise as much as 50% of the total value of the world's assets, this may not represent the value of the investable stock (after all, we have no intention of selling our homes in North Carolina and Oxfordshire to a sovereign wealth fund). We have no easy way of estimating the *investable* stock either, but we can have a stab at estimating the *invested* stock and adjusting that value upwards. This is the approach typically taken by analysts.

The value of the investable stock of commercial property owned by institutional investors around the world was estimated (by CBRE, 2017) to be around \$27.5 trillion and by Property Funds Research (PFR) and others in 2019 at around £35 trillion. This is defined as stock that is of sufficient quality to become the focus of institutional investment. This estimate must be taken as the broadest possible guide. This value can be compared with a global equity market capitalisation of close to \$69 trillion in January 2019 (World Federation of Exchanges). Assuming a typical equity exposure of say 50%, this suggests a market portfolio weight for real estate of around 20–25%. Institutional exposure (averaging around 10% globally – see Figure 1.4 later) remains below the market portfolio weight, suggesting that something appears to limit institutional investors' commitment to this asset class.

It appears that 10% is a robust estimate of current allocations to real estate. The 2018 Hodes Weill Allocations Monitor (Hodes Weill/Cornell, 2018) included research collected on a blind basis from 208 institutional investors in 29 countries. The 2018 participants held total assets under management exceeding \$11.0 trillion and had portfolio investments in real estate totalling approximately \$1.0 trillion or 9% of total assets. Average target allocations to real estate increased to 10.4% in 2018, up 30 basis points (bps) from 2017 and up approximately 150 bps since 2013. Despite an increase in actual allocations, institutions remained meaningfully under-invested relative to target allocations. While 92% of institutions reported that they are actively investing in real estate, institutions remained approximately 90 bps under-invested relative to target allocations.

The \$35 trillion investable stock of property can be broken down to the regional level (see Table 1.1). According to similar sources, the global market is split by asset value into 28% North America and Europe, 32% Asia, and the remaining 11% in the other regions.

The USA and Japan are the two largest single-country markets in the world. The UK is the third largest global market.

TABLE 1.1 The global property investment universe (\$ billion)

Asia	Australasia	Europe	Latin America	Africa/ Middle East	North America	Total
\$11,490m	\$730	\$10,044	\$1,627	\$1,537	\$9,992	\$35,420

Sources: PFR, PGIM, IMF, and EPRA 2019.

The US institutional real estate investment market is measured by the National Council of Real Estate Investment Fiduciaries (NCREIF), whose NCREIF Property Index (NPI) consists of 8,289 investment-grade, income-producing properties with a total market value of \$653 billion at the second quarter of 2019. The breakdown of the portfolio is 35% office, 25% apartments, 22% retail, 17% industrial, and 1% hotels.

In 2018 The Investment Property Forum estimated the total value of all commercial property in the UK to exceed £935 billion (a figure which includes the institutional investment universe of £509 billion). Within this £935 billion, it is estimated that 34% is retail property, 42% office property, and 14% industrial property. The remaining 10% covers a wide range of property including residential, hotels, pubs, leisure, utilities, and public service buildings. The universe used to compile the MSCI (formerly IPD) UK annual index at the end of 2018 comprised over 13,130 properties worth around £220 billion.

A truly global real estate benchmark is approaching, but for now we are limited to around 25 countries for which good data is available. For example, the MSCI Global Property Index measures the combined performance of real estate markets in 23 countries. The index is based on the MSCI (formerly IPD) indices for Australia, Austria, Belgium, Canada, Denmark, France, Germany, Ireland, Italy, Japan, Korea, Netherlands, New Zealand, Norway, Poland, Portugal, South Africa, Spain, Sweden, Switzerland, UK, USA, and the KTI Index for Finland.

As we shall see in Part II of this book, ownership of this global universe is financed through equity (some private and some public, such as that raised by public property companies) and debt (some private, such as mortgages, and some public, such as commercial mortgage-backed securities). This classification is known in the USA as the ‘capital stack’, and breaks down roughly as shown in Table 1.2.

The make-up of the private equity pot has recently changed as direct property ownership has been converted into fund formats, and public equity has grown as the Real Estate Investment Trust (REIT) format has been applied to more and more countries outside its US home.

PFR estimated in 2019 that 79% of the global property universe is held directly, while 13% is held in listed form and 8% is owned by private funds. Surveys suggest that there is potential for much further growth in funds. In the long run, it is reasonable to suppose that more listed and unlisted property funds will follow to convert the huge pool of government and owner-occupier-held property into an investable form. It is expected that growth in the creation of funds will continue. Prior to the crash of 2007–9, investors were taking more risk in search of maintaining attractive return levels, resulting in an increased appetite for what are called ‘value-add’ (higher-risk)

TABLE 1.2 The global capital stack

Private equity	Public equity	Private debt	Public debt
38%	8%	44%	10%

Source: DTZ (2015).

funds and growing interest in emerging markets on the fringes of Europe, the Middle East and North Africa, Sub-Saharan Africa, South America, and Russia. That endeavour may well recommence.

1.2 MARKET PLAYERS

The property investment market is driven by investors and fund managers, guided by advisory firms.

1.2.1 Investors

The largest global real estate investors are pension funds, insurance companies, and sovereign wealth funds (also known as government funds). Tables 1.3 and 1.4 show the world's largest sovereign wealth funds and pension funds, and what we know about their property assets. (Many insurance funds are very large but more opaque.)

TABLE 1.3 The largest sovereign wealth funds and their property assets

Domicile	Name	Estimated value of fund	Invests in real estate?	Estimated value of real estate
Norway	Norway Government Pension Fund Global	\$1,053bn	Yes	\$30bn
China	China Investment Corporation	\$941bn	No	
Abu Dhabi	Abu Dhabi Investment Authority	\$696bn	Yes	\$52bn
Kuwait	Kuwait Investment Authority	\$592bn	Yes	\$15bn
Hong Kong	Hong Kong Monetary Authority Exchange Fund	\$509bn	No	
Saudi Arabia	Saudi Arabian Monetary Authority	\$506bn	No	
China	China State Administration of Foreign Exchange (SAFE)	\$441bn	No	
Singapore	GIC Private Limited	\$440bn	Yes	\$31bn
China	National Council for Social Security Fund	\$438bn	No	
Saudi Arabia	Saudi Arabia Public Investment Fund	\$320bn	Yes	

Domicile	Name	Estimated value of fund	Invests in real estate?	Estimated value of real estate
Qatar	Qatar Investment Authority	\$320bn	Yes	\$35bn
UAE	Investment Corporation of Dubai	\$240bn	Yes	\$38bn
Singapore	Temasek Holdings	\$238bn	Yes	\$40bn
UAE	Mubadala Investment Company	\$229bn	Yes	
Korea	Korea Investment Corporation	\$122bn	Yes	\$18bn

Source: PFR.

Insurance companies remain important, as do high net worth individuals operating through private banks and family offices. This immediately introduces us to the concept of the intermediary or capital aggregator, which is important in real estate because of the large size of the assets involved. Insurance companies, pension funds, private banks, and wealth managers are aggregators of retail (individuals') capital, and are seen as investors, largely because they have discretion or control over investment decisions. Meanwhile, aggregators of institutional capital, such as fund managers acting for pension funds, are seen not as investors but as a particular breed of advisor.

TABLE 1.4 The largest pension funds and their property assets

Domicile	Name	Total value of fund	Invests in real estate?	Estimated value of real estate
Japan	Japanese Government Pension Investment Fund	\$1,552bn	Yes	\$77bn
Korea	Korean National Pension Scheme	\$574bn	Yes	\$28bn
USA	Thrift Savings Fund	\$558bn	Yes	
Netherlands	ABP Stichting Pensioenfondsen	\$447bn	Yes	\$51bn
USA	California Public Employees Retirement System	\$439bn	Yes	\$34bn

(continued)

TABLE 1.4 (Continued)

Domicile	Name	Total value of fund	Invests in real estate?	Estimated value of real estate
Canada	Canada Pension Plan Investment Board	\$296bn	Yes	\$37bn
Singapore	Singapore Central Provident Fund	\$284bn	Yes	
Netherlands	Pensioenfondsen Zorg en Welzijn	\$252bn	Yes	\$13bn
USA	California State Teachers Retirement System	\$227bn	Yes	\$29bn
USA	New York State Common Retirement Fund	\$221bn	Yes	\$19bn
USA	New York City Board of Education Retirement System	\$211bn	Yes	\$14bn
USA	Malaysian Employees Provident Fund	\$204bn	Yes	\$6bn
USA	Florida State Board of Administration	\$201bn	Yes	\$22bn
USA	Florida Retirement System	\$160bn	Yes	\$18bn

Source: PFR.

It can be difficult to distinguish between a sovereign wealth fund, such as the Abu Dhabi Investment Authority, and a national pension fund, such as the Japanese Government Pension Investment Fund, but pension funds generally have well-defined and immediate liabilities, specifically to pay our pensions, while sovereign wealth funds may have no defined liabilities other than a broad objective to protect the nation's wealth. This is an important distinction in real estate investing, because (as we will see later in this chapter) real estate is regarded as an illiquid, long-term asset class, more suited to the investor without short-term liabilities. Hence it appears to be especially attractive to sovereign wealth funds (see Box 1.1 at the end of this chapter).

Sitting somewhere between the investor and fund manager categories are other aggregators, including real estate fund of funds managers and other advisory firms. Whether through discretionary or advisory (non-discretionary) mandates, these groups act on behalf of smaller investors to access global real estate assets and funds.

1.2.2 Fund Managers

Property investment is illiquid and difficult to diversify. An apparently obvious solution to these problems is the use of liquid traded property vehicles in place of the direct asset. A variety of legal structures exist which are capable of providing a means for investment in domestic or international real estate investment, including REITs and the new generation of unlisted property funds, both open-ended and closed-ended. In addition, work continues on the development of synthetic vehicles (derivatives) to provide solutions to these problems. These vehicles may have the primary objective of reducing tax, achieving liquidity, or aligning the interests of the investors and the managers. They exist primarily to permit co-mingling of investors, and are more fully described in Part III of this book.

As a result of the boom in funds, there has been a shift in control of the global market away from the insurance companies and pension funds which were so dominant in 1980 towards fund managers and property companies (the distinctions between which are occasionally blurred). Through the 1980s, the institutional investor dominated the industry, controlling the larger transaction business and driving best practice. In the 1990s, the effects of privatisation and outsourcing reached down to the institutions. There has consequently been a restructuring of their investment and property divisions, with the result that the power base now lies within specialist fund management operations, which may themselves be owned by what used to be insurance companies and are now financial services groups.

Table 1.5 shows the top 15 global property fund managers and the value of the assets held by those managers in Europe, the Americas, Asia, and Australasia. Significantly, there are as yet no large Asia-based managers, but Mitsubishi (Japan) and Capitaland (Singapore) would probably be on the cusp of the top 10 if they took part fully in the PFR survey.

1.2.3 Advisors

Developments in the investor and fund manager communities have created a more complex industry structure and a confusion of ownership and management. The traditional property service providers have been severely challenged by these changes. Even so, many of these businesses have been successful in creating their own fund management operations (such as LaSalle Investment Management, Savills Investment Management, and CBRE Global Investors).

Other advisors or service providers have become essential to the working of the commercial real estate investment market. These include placement agents and promoters of property funds; lawyers; tax advisors; trustees and custodians; investment brokers and agents; valuers (or appraisers in the USA); and property and asset managers, who are most easily found within the traditional service providers, but have competition in the form of specialist facilities management businesses. Recently, the emergence of WeWork and the general growth of co-working has redefined the nature of facilities management and driven hospitality and property management sectors closer together, so that property and asset management is in a state of flux.

TABLE 1.5 The PFR global manager survey, 2019 – top 20 managers by assets under management (AuM)

	Total AuM	Europe	North America	Latin America	Asia	Australasia	Middle East/ Africa
Blackstone ¹	\$230,608m	\$60,586m	\$46,445m	–	\$14,185m	–	–
Brookfield Asset Management	\$193,276m	\$30,169m	\$146,322m	\$2,606m	\$7,357m	\$6,557m	\$265m
Nuveen/TH Real Estate	\$124,566m	\$33,262m	\$88,175m	\$143m	\$988m	\$1,998m	–
Hines	\$119,381m	\$22,384m	\$91,068m	\$2,840m	\$2,964m	\$125m	–
CBRE Global Investors ²	\$107,200m	\$58,100m	\$36,600m	–	\$12,500m	–	–
UBS Global Asset Management	\$95,413m	\$37,192m	\$38,748m	\$262m	\$17,694m	\$1,517m	–
Swiss Life Asset Managers	\$92,745m	\$92,745m	–	–	–	–	–
MetLife Investment Management	\$91,808m	\$4,107m	\$81,085m	\$813m	–	\$5,801m	\$1m
AXA Investment Managers – Real Assets	\$85,325m	\$79,104m	\$789m	–	\$1,611m	\$3,822m	–
JP Morgan Asset Management – Global Real Assets	\$84,066m	\$6,074m	\$75,734m	–	\$2,115m	\$143m	–
AEW Global	\$74,778m	\$35,858m	\$36,309m	–	\$2,218m	\$393m	–
PGIM	\$72,700m	\$8,800m	\$52,200m	\$3,200m	\$8,500m	–	–
LaSalle Investment Management	\$64,320m	\$28,452m	\$22,290m	\$21m	\$12,347m	\$1,178m	\$32m
GLP	\$62,800m	\$7,300m	\$16,400m	\$2,800m	\$36,300m	–	–
DWS	\$62,448m	\$30,150m	\$28,064m	–	\$2,309m	\$1,924m	–
Credit Suisse Asset Management	\$61,762m	\$56,265m	\$2,402m	\$1,270m	\$1,018m	\$806m	–
Invesco Real Estate	\$59,353m	\$11,710m	\$41,340m	–	\$6,303m	–	–
NYL Investors	\$54,524m	–	\$54,524m	–	–	–	–
Aberdeen Standard Investments	\$53,718m	\$51,575m	\$1,146m	–	\$997m	–	–
Prologis	\$53,127m	\$18,986m	\$20,779m	\$3,189m	\$10,172m	–	–

Source: PFR 2019.

Note:

¹ Includes \$109 billion of global assets.² Data as at 31/03/2019.

1.3 PROPERTY – ITS CHARACTER AS AN ASSET CLASS

Institutional investors appear to hold less property than would be indicated by its neutral market weighting. This under-weighting can be attributed to several factors. These include the following:

1. The operational difficulties of holding property, including illiquidity, lumpiness (specific risk), and the difficulties involved in aligning the property and securities investment management processes.
2. The introduction of new alternative asset classes, some offering the income security and diversification benefits associated with real estate, including index-linked gilts, private equity, infrastructure, and private credit.
3. A lack of trust in property data, due to the nature of valuations, suspicions of smoothing in valuation-based indices, and the lack of long runs of high-frequency return histories.

The result, as we have seen, is a mismatch between the importance of the asset class in value and its weighting in institutional portfolios. Between 1980 and 2000, insurance companies reduced their property holdings from allocations as high as 10% (USA) and 20% (UK) to much lower levels. The case for property may have been overstated in the past, but suspicion regarding the asset class has reduced its appeal to institutions.

This is despite the fact that property investment has become better managed and more professionally packaged, and many of the problems associated with property investment appear to have found workable (if imperfect) solutions. By 2000, the measurement, benchmarking, forecasting, and quantitative management techniques applied to property investments had become more comparable with other asset classes. Advances in property research had provided ongoing debates with a foundation of solid evidence, and produced a clear formulation of many relevant issues. The result was an early 2000s boom in commercial and residential real estate investment across the globe, accompanied by such excellent returns that by 2005 property had become a high-performance asset class. However, the crash of 2007–9 pointed to cracks in the foundations.

By 2007, inevitably, clear overpricing had become evident in housing and in commercial property of all types in the UK, USA, and elsewhere. The ability of property investors and homeowners to take on debt secured on the value of property, coupled with the ability of lenders to securitise and sell those loans, created a wave of capital flows into the asset class and a pricing bubble. Professional responsibility took a back seat to the profit motive. Boardrooms lacked the detached yet experienced voices that advances in information and research should have made available.

London and New York had become the main centres for creative property structuring through REITs, unlisted funds, property derivatives, and mortgage-backed securities, and became the eye of the financial storm that followed. The technical advances made in information and research, and the spreading of risk made possible by the development of property investment products, did not prevent a global crisis from being incubated in the world of property investing. Worse, the global financial crisis

of 2008 had its very roots in property speculation, facilitated by the packaging and re-packaging of equity, debt, and risk. It is essential, as a result of this noise, to re-examine the fundamental character of real estate as an asset class.

As with all equity-type assets, the performance of property is ultimately linked to some extent to the performance of the economy (see Chapter 3), and like all assets its performance is linked to the capital markets (see Chapter 4). The economy is the basic driver of occupier demand, and in the long term, investment returns are produced by occupiers who pay rent. However, in the shorter term – say up to 10 years – returns are much more likely to be explained by reference to changes in required returns, or yields. Required returns do not exist in a property vacuum but are instead driven by available or expected returns in other asset classes. As required returns on bonds and stocks move, so will required returns for property, followed by property prices.

Nonetheless, history shows that property is distinctly different from equities and bonds. The direct implication of property being different is its diversification potential, perhaps the strongest justification for holding it within a multi-asset portfolio. Generally, the impact of the real economy and the capital markets on the cash flow and value of real estate is distorted by several factors. It appears to be the case that these distortions contribute to the return diversity that investors crave, leading to inevitable disappointment when they reveal themselves.

1.3.1 Property Depreciates

- *Property is a real asset, and it wears out over time, suffering from physical deterioration and obsolescence, which together create depreciation.*

Commodities (say coffee, or oil) are by nature different from paper assets. Commodities will normally depreciate over time; they can have a value in use that sets a floor to minimum value; and they are generally illiquid. Finally, they may have to be valued by experts rather than priced in a secondary market. Examples include property of all types (that is, both real and personal).

Real property is, unlike equities and gilts (Treasuries in the USA), a physical asset. While, unlike personal property, it is durable (and immovable), the physical nature of buildings means that they are subject to deterioration and obsolescence, and need regular management and maintenance. Physical deterioration and functional and aesthetic obsolescence go together to create depreciation, defined as a fall in value of a piece of real property or real estate relative to an index of values of new buildings.

The problem of building depreciation or obsolescence of freehold buildings is often understated. All things equal, buildings located in areas of low land value will suffer more deterioration in performance over time than will buildings located in areas of high land value, so that poor-quality suburban offices located in out-of-town business parks with no local transport infrastructure will out-depreciate prime retail property, even in the face of attack from on-line retailing.

A failure to identify the potential impact of depreciation is very dangerous. Before the boom of 2004–7, the UK office sector failed to outperform the UK IPD universe in every year except two since 1981: depreciation was probably one of the major causes.

1.3.2 Lease Contracts Control Cash Flows

- *The cash flow delivered by a property asset is controlled or distorted by the lease contract agreed between owner and occupier.*

Unlike equities, property's income stream is governed by lease contracts, and, unlike bonds, the income from a freehold is both perpetual and may be expected to increase at lease events (rent reviews and lease ends in the UK; lease rollovers in the USA). Property's cash flow and investment characteristics flow partly from the effects of the customary occupational lease.

In a typical US lease of 3–5 years, rents will often be indexed to the consumer price index or escalated according to a fixed schedule. In continental Europe, leases of between 3 and 10 years will usually be indexed, although the degree of inflation captured by the lease rent will not always be 100%. In the UK, the initial rental income is usually fixed for the first 3–5 years, with uplifts to market rents at each rent review, sometimes upwards only. This creates a low-risk option or convertible asset. In many markets, turnover or percentage rents are adjusted to top up a base fixed amount with a percentage of the occupier's turnover, another form of option.

In Asia, commercial leases tend to be shorter, between 2 and 3 years, given the greater volatility of the emerging markets in the region. As leases are shorter, they are also not normally linked to any rental index. In Australia, larger-area office leases tend to be for 10 years with the tenant having the right of a 10-year extension, with annual rent increases. For smaller areas, the lease structure would more typically be for 3 plus 3 or 5 plus 5 years. Rent increases would normally be annual, based on CPI or fixed percentage rises, with market reviews at the beginning of the lease extension.

We deal more fully with leasing in Chapter 6. It can be seen that the precise nature of real estate as an asset in any location will vary by leasing practice and the jurisdiction which interprets those leases.

1.3.3 The Supply Side is Inelastic

- *The supply side is controlled by zoning or planning regulations, and is highly price inelastic. This means that a boom in the demand for space may be followed by a supply response, but only if permission to build can be obtained and only after a significant lag, which will be governed by the time taken to obtain a permit, prepare a site, and construct or refit a property.*

The supply side of property is regulated by local and central government. The control of supply complicates the way in which an economic event (such as a positive or negative demand shock) is translated into return. A loosening of planning policy, such as happened in many locations in the mid-1980s, created the conditions for an immediate building boom, which, in the case of the USA, was accompanied by tax breaks, further distorting supply. Nonetheless, it is difficult to vary the supply of property upwards, and even more difficult to vary it downwards. This is termed supply inelasticity.

The supply side can be both regulated and inelastic, and will sometimes produce different return characteristics for property from equities – which is otherwise the

natural property analogy – in the same economic environment. More elastic supply regimes, such as those pertaining in loose planning environments in parts of Texas, or for industrial property in regeneration cities, will produce different cash flow characteristics for property investments than will highly constrained environments, such as central Paris or the West End of London. The typical industrial investment will typically deliver less-volatile rents, and will show less rental growth in times of demand expansion, than will the less elastic Paris or West End office.

1.3.4 Valuations Influence Performance

- *The returns delivered by property are likely to be heavily influenced by appraisals rather than by marginal trading prices.*

In the absence of continuously traded, deep, and securitised markets, commercial property valuations perform a vital function in the property market by acting as a surrogate for transaction prices. Property asset valuations are central to the process of performance measurement, but within both the professional and academic communities there is considerable scepticism about the ability of appraisals or valuations to fulfil this role in a reliable manner.

There is a consensus that individual valuations are prone to a degree of uncertainty. At the macro-level, it is clear that few analysts accept that appraisal-based indices reflect the true underlying performance of the property market. It is commonly held, for example, that such indices fail to capture the extent of market volatility and tend to lag underlying performance. As a consequence, issues such as the level and nature of valuation uncertainty and the causes and extent of index smoothing have generated a substantial research literature.

Some of this research indicates that valuations both lag the market and smooth the peaks and troughs of 'real' prices. Valuations – and, if valuations affect market psychology and hence prices, real estate prices – can be 'sticky'.

In many jurisdictions, the fiduciary responsibility of the valuer (appraiser) towards the client is an important influence on valuer behaviour. Claims based on accusations of professional negligence are rare but not unknown, and judicial precedent is a powerful influence on the valuation process, as is 'anchoring'. (Anchoring is a general psychological tendency by which individuals are influenced by an initial value and adjust that value to account for changes. Once the anchor – like the price you paid for your house – is set, there is a strong and continuing bias toward that value, for example in your subsequent asking price.)

It is not therefore surprising if a valuer, retained to produce a portfolio valuation on a 3-year contract, pays attention to his/her year-end 2010 valuation when undertaking the 2011 equivalent and ensures continuity by limiting the number and size of shocks a client might suffer. This can reduce changes in valuation from one period to the next.

In addition, real estate valuation is founded primarily on the use of comparable sales evidence. Similarity in property characteristics is paramount. The currency of the transaction may not be easy to control. Hence, the evidence used to value a property as at 31 December 2020 may use evidence collected over the period July to December. In a rising or falling market, this will again result in a lower variance of prices.

Hence, valuations will be based on the previous valuation plus or minus a perception of change. The perceived changes, unless based on very reliable transaction evidence, will be conservative.

The resulting issue of valuation ‘smoothing’ has been widely analysed. It is generally presumed to reduce the reported volatility – or risk – of real estate investment below the real level of risk suffered by investors who have to sell in a weak market or buy in a strong one.

1.3.5 Property is Not Liquid

- *Property is highly illiquid. It is expensive to trade property, there is a large risk of abortive expenditure, and the result can be a very wide bid–offer spread (a gap between what buyers will offer and sellers will accept).*

It costs much more to trade property than it costs to trade securities. There are both direct and indirect costs. Table 1.6 shows that the direct costs include taxes paid by buyers on property transactions (real property transfer taxes in the USA vary from state to state, but stamp duty in the UK is as much as 5% of the purchase price for larger commercial transactions) and fees paid by both buyers and sellers. In addition to taxes, buyers will incur survey fees, valuation fees, and legal fees, totalling (say) 1.75%. The buyers’ costs, including tax, can therefore be 6.75% in the UK. Sellers will incur legal fees (say 0.5%) and brokers’ fees (say 1%), so that 1.5% can be the total sellers’ cost, and a round-trip purchase and sale can cost 8.25%.

These costs, which can be even higher in other jurisdictions, define one cause of the ‘bid–offer spread’ which inhibits liquidity. It is natural for a seller to wish to recover his total costs, so that having bought a property for £1 million he will wish to get back £1.0825 million in order not to have lost money. But in a flat or falling market buyers will not pay this price, and sellers are tempted to hang on until the selling market is stronger. Hence, liquidity will be positively related to capital growth in the market.

There are also indirect costs of transacting property. Every property is unique, which means that time and effort have to be expended on researching its physical qualities, its legal title, and its supportable market value. In addition, the process by which

TABLE 1.6 Real estate transfer costs, Europe (purchaser, % of purchase price)

Country	Due diligence costs	Agent’s fee	Property transfer tax	Total cost
France	0.6%	1%	6.7–7.3%	8.6%
Germany	0.75%	1%	3.5–6.5%	6.8%
Netherlands	0.5%	1%	6%	7.5%
Poland	0.5%	1–3%	2%	4.5%
Spain	0.5%	1–3%	6%	8.5%
UK	0.8%	1%	5%	6.8%

Source: CBRE Global Investors.

properties are marketed and sold can be very risky to both sides. In many markets, including the USA and England and Wales, there is a large risk of abortive expenditure, because buyers and sellers are not committed until contracts are exchanged, and last-minute overbids by another buyer, or a price reduction (or 'chip') by the buyer, are common. The role played by professional property advisers, and the integrity of all parties who may wish to do repeat business with each other, create a sensitive balance and risk control in the transaction process. This transaction risk must also be built into a bid-offer spread (the gap between what buyers will offer and sellers will accept).

It seems obvious that an increasingly digitalised world will one day deliver instant, costless real estate transactions. Businesses will innovate ways of extracting and transferring digital data across platforms, and creating products which will encourage transaction efficiency (e.g. insurance-backed property passports). Industry groups will develop standards and protocols encouraging common standards for digital data and record-keeping, including the intelligent application of distributed ledger technology.

However, human beings will protect themselves in a *caveat emptor* world by taking their time and being thorough in the research process before committing large capital sums. Until we arrive at the instantaneous transaction, buyers and sellers will wish to pay professional advisors for risk mitigation and, on occasion, risk transfer (Baum and Saull, 2019).

Finally, the lack of a formal market-clearing mechanism for property, such as is offered by the stock market for securities, means that on occasion there may be few or no transactions, reducing the flow of comparable sales information and further increasing the perceived risk of a transaction, creating a feedback loop and self-sustaining illiquidity. This appeared to be the case, for example, in most global markets in 2007–9.

1.3.6 Large Lot Sizes Produce Specific Risk

- *Property assets are generally large in terms of capital price. This means that property portfolios cannot easily be diversified, and suffer hugely from specific risk.*

Property is heterogeneous, meaning that an investment can do well when markets do badly, and *vice versa*. Property is also 'lumpy'. Lumpiness – the large and uneven sizes of individual assets – means that direct property investment (buying buildings) requires considerably higher levels of capital investment when compared with securities, and even with significant capital investment, diversification within property portfolios may prove to be more challenging than in equity and bond portfolios. As a result, typical property portfolios contain high levels of specific risk.

This fact, coupled with the growing globalisation of property portfolios, largely explains the boom in indirect vehicles such as REITs and unlisted funds since 1990. There is also some evidence that large lot sizes have been high-beta investments (more responsive to the economy and to rises and falls in the investment market). This adds a further risk level.

Specific risk in property, whether measured as a standard deviation or as a tracking error against a benchmark (see Chapters 4 and 17), is a key problem, especially for international investors. Unlike securities, large average property capital values, an uneven distribution of these values, and the unique or heterogeneous nature of property

assets creates very different real estate portfolios across investors. Property funds offer a way to limit this problem, as all three issues are minimised by investing indirectly by using diversified funds. But specific risk varies significantly between sectors, and unlisted funds (which add other risks) may be more useful in some sectors and countries than others. This is not simply a function of lot size, but also of ‘diversification power’ within sectors, defined as the efficiency of specific risk reduction through adding properties (Baum and Struempell, 2006; Baum, 2007).

Investors who have targeted low-risk or ‘core’ property as an asset class will most likely be seeking to replicate the benchmark performance with few surprises; after all, the decision to invest in property is often based on an analysis of historic risk and return characteristics produced from a market index or benchmark. The tracking error of a portfolio is therefore likely to be seen as an additional and unrewarded risk. As a result, managers may be charged with minimising tracking error – but with limited sums to invest. This is a very difficult challenge: how many properties are needed to reduce tracking error to an acceptable level?

Various studies, all of which concentrate on portfolios of properties of mixed types and geographies, have suggested that the appropriate number of properties is very large. Relevant sources include the seminal work of Markowitz (1952), Evans and Archer (1968), and Elton and Gruber (1977). A limited number of studies investigate risk reduction and portfolio size in the property market. They include Brown (1988), Brown and Matysiak (2000), Morrell (1993), and Schuck and Brown (1997). It is concluded that many assets are needed to reduce risk to the systematic level when value-weighting returns, depending on the degree of skewness of property values in the portfolio.

It is also well known that the necessary level of capital required to replicate the market will be greatly dependent on the segments of property in which one wishes to invest, as different segments of the property market exhibit vastly different lot sizes. For example, it appears obvious that a very large allocation of cash may be needed to invest in a sufficient number of shopping centres to replicate the performance of that segment with a low tracking error.

In addition, there are significant differences in the performance characteristics of properties within the different segments. Properties in some segments – for example, London offices – may experience higher variations in return than others, resulting in the probability that more properties will be needed to minimise tracking error within the segment. If London offices are also relatively expensive, the problem of assembling a market-tracking portfolio at reasonable cost is magnified.

This issue, amongst others, explains a consistent push towards the unitisation, fractionalisation, or democratisation of individual real estate assets. This push has consistently proved unsuccessful, either because market conditions have not been right, limiting either or both of the demand and supply sides, or because regulatory and tax issues have not been dealt with. In 2019, IPSX, a regulated exchange, was set up in London to trade shares in single-asset property companies. At the same time there has been a lot of noise made about the digital tokenisation of assets. Given the thoughtful approach taken by IPSX to regulation and tax transparency, this has the best chance of some success, but history has taught us to be sceptical about the likely scale of such a unitised market.

1.3.7 Leverage is Commonly Used in Real Estate Investment

- *Leverage is used in the vast majority of property transactions. This distorts the return and risk of a property investment.*

‘Gearing’ and ‘leverage’ are terms used to describe the level of a company’s debt. This is typically compared with its total debt or its equity, usually expressed as a ratio or percentage. So, a company with gearing (debt to equity) of 60% has levels of debt that are 60% of its equity capital. Alternatively, gearing might be expressed as the level of a company’s debt compared with its gross assets (debt plus equity). In that case, the above example would produce a gearing (debt to gross assets, or loan to value) ratio of 30%. Throughout this text we use gearing and leverage interchangeably to mean the relationship of debt to gross assets.

This concept (or these concepts) translate directly into the world of commercial real estate investment. In the right market conditions, banks have been willing to lend more against the security of property than against other assets such as equities. This is a result of property’s income security and the land, bricks, and mortar salvage value of a non-performing property loan.

Banks have typically been keen to lend against the collateral security offered by real estate assets, especially when the rental income more than covers the interest payments on the loan (see Chapter 8). But the use of gearing will change the financial mathematics of the real estate investment. It reduces the amount of equity that needs to be invested; it reduces the net cash flow available to the investor by the amount of interest paid; and it reduces the net capital received by the investor on sale of the asset by the amount of the loan still outstanding. This has some complex tax and currency effects in the international context (see Chapter 16) and allows more diversification of specific risk at the asset level, because the investor can buy more properties for the same total outlay of equity. It also has two more direct implications, on return and risk.

If the prospective return or IRR on the investment without using leverage is higher than the interest rate charged, then leverage will be return-enhancing; and the greater the leverage, the greater will be the return on equity invested. In addition, the risk of the investment will be greater. The chance that the investor will lose his equity is greater the higher is the level of gearing, and the sensitivity or volatility of the prospective return will be greater. This is illustrated in Table 1.7, which shows how changing capitalisation rates (yields) on the sale of a specific property (more fully described in Baum and Crosby, 2008) produced a wider range of returns on equity (using 70% debt) than on the unleveraged investment.

TABLE 1.7 The impact of exit yields on the risk to equity (70% leverage)

Exit yield	IRR	IRR on equity
7.50%	12.00%	18.77%
8.50%	10.00%	15.10%
10.50%	6.00%	3.90%

Source: Baum and Crosby (2008).

The history of ungeared direct property returns, such as is produced by IPD in Europe and NCREIF in the USA, disguises the returns that have been available to investors' equity over most subperiods of the past 25 years. Just as homeowners can, in times of rising house prices and low interest rates, significantly enhance the return on the cash they invest by borrowing, property companies and private commercial property investors use debt finance to (hopefully) increase returns on equity – always at the cost of increasing risk.

By using rents to pay interest and (if possible) some capital repayment (amortisation), investors can enjoy a return on their equity investment in excess of the reported total return available to whole-equity investors, such as pension funds. These geared returns are rarely reported, but explain most private capital investments in global commercial property. Leverage is discussed in more detail in Chapter 9.

1.3.8 Property Appears to be an Inflation Hedge

- *Property rents appear to be related to inflation in the long run, producing a reasonable but imperfect hedge.*

For many investors, particularly pension funds which have liabilities linked to future wage levels, the need to achieve gains in money value (in nominal terms) is of less concern than the need to achieve gains in the purchasing power of assets held (in real terms).

Many investors appear to believe that there is a strong correlation between rents and inflation in the long run, and that the cash flow produced by real estate might (although subject to deterioration and obsolescence) be expected to increase in line with inflation over a long period. This is somewhat supported by theory, as the profit of an operation before rent should be positively correlated with inflation and so, therefore, should rent and profit after rent (see Chapter 3).

This belief is exemplified by the clear (73%) correlation between UK real estate and index-linked government bond yields as shown in Figure 1.1. The prices of these two

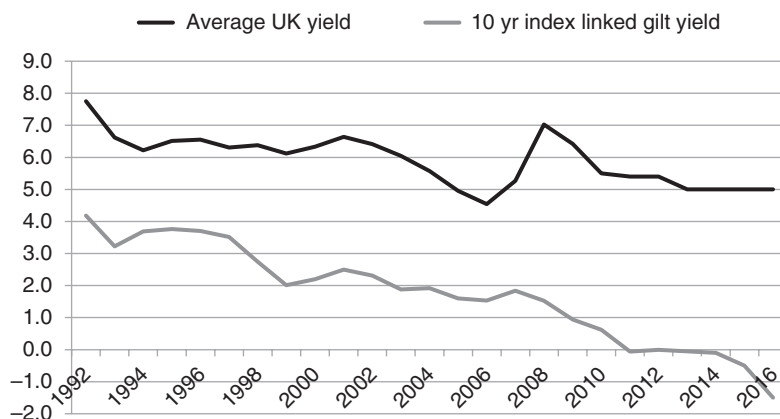


FIGURE 1.1 UK real estate and index-linked government bond yields, 1992–2017

Sources: MSCI, PFR.

asset types are strongly connected, suggesting that investors believe that the income streams and capital values are also connected. Given that the income from, and the redemption value of, index-linked government bond yields are formally indexed to inflation, investors appear to believe that property rents and prices are also linked.

The empirical evidence is, however, much less clear. Figure 1.2 shows that there has been zero correlation on an annual basis between the growth in UK commercial property rents and CPI (consumer price inflation) growth over the 35 years leading up to 2017.

It has to be said that it would be surprising if there were a contemporaneous relationship. Rents over this 35-year period were typically agreed every 5 years for 5 years in advance, and there is no formal link between the rate of inflation in any year and the rental values agreed in that year. Indeed, the parties negotiating the rent (or the valuers estimating rental values) may not have been aware of the inflation out-turn for that year until well after the negotiations were complete.

Nevertheless, and despite the complete absence of any contemporaneous correlation, it is interesting to note that annual CPI growth over this period averaged 3.23% while annual rental growth averaged 3.17%. While there is no annual correlation, there is evidence of a more complex statistical relationship.

There are many academic references to this topic, with varying conclusions, but most find a stronger long-term connection between rents and inflation than between annual returns and annual inflation.

Finally, it is common practice in many countries, including most of mainland Europe, to formally connect rents with inflation, sometimes a proportion of inflation, defined either in terms of construction cost inflation or CPI. Where leases are for 9 or

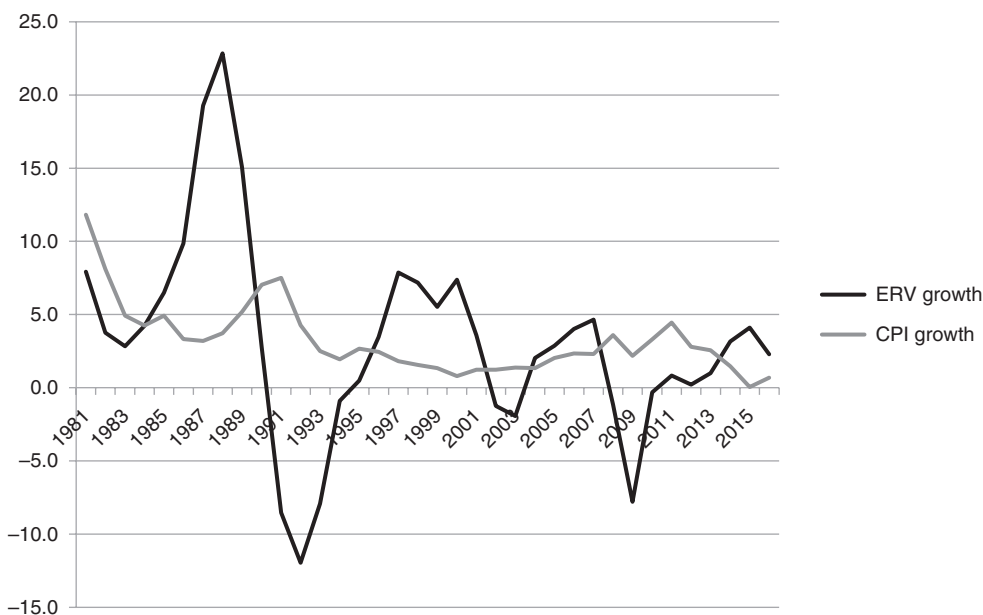


FIGURE 1.2 Are rents an inflation hedge? UK evidence, 1981–2017
Sources: MSCI, PFR.

10 years, as is typical in France and Germany, this establishes a strong link between rents and inflation, although rental values may need to be reset at the lease end if inflation has outpaced rental values affected by obsolescence.

1.3.9 Property is a Medium-Risk Asset

- *The risk of property appears low. Rent is paid before dividends, and as a real asset property will be a store of value even when it is vacant and produces no income. The volatility of annual return also appears to be lower than that of bonds. But this measure is distorted somewhat by appraisals, and the performance history of real estate suggests a medium return for a medium risk.*

Property is usually described as a medium-risk asset. In finance theory, risk and return are strongly and positively connected, so real estate returns should therefore be expected to lie between those produced by equities and those produced by bonds, and its risk profile should be similarly middling. The reported risk of property has certainly been lower than the risk of the equity market, and some data suggests a risk even lower than that of the bond market.

Rent is a superior claim on a company's assets, and paid before dividends. Property's downside risk is limited, because as a real asset property will be a store of value even when it is vacant and produces no income. In addition, leases determine the delivery of income and can produce short-term bond-like income characteristics, although returns should be more equity-like (driven by the real economy) in the longer term.

The total returns delivered by UK commercial property over the period 1971–2018 (see Table 1.8) have been less volatile even than the returns from gilts.

This data is supported by US data shown in Table 1.9, using the period 1979–2018 for US equities (S&P 500), treasuries (US 10-year Treasury 10-year index), and real estate (NCREIF NPI). This time, property has a slightly higher risk than treasuries.

Despite the UK data, any conclusion to the effect that property returns have been less volatile than the returns from gilts or treasuries is flawed. Low volatility of delivered nominal returns disguises the illiquidity of property, which introduces a risk not reflected in the volatility of notional returns based solely on valuations from period to period. In addition, valuation-based returns are themselves believed to be biased towards lower volatility than typical underlying market conditions support. There are several reasons for this, discussed above, but the effect is serial or auto-correlation between consecutive values. Where this is present, the current valuation (V_t) is a

TABLE 1.8 UK assets risk and return, 1971–2018

	Return	Risk
Equities	11.7%	27.5%
Gilts	9.3%	12.8%
Property	10.6%	10.5%

Sources: MSCI annual index, FTSE all-share index, FTSE 15-year gilt index.

TABLE 1.9 US assets risk and return, 1979–2018

	Return	Risk
Equities	11.6%	16.0%
Treasuries	7.0%	6.2%
Property	9.0%	7.4%

Sources: NCREIF property index, S&P 500, Barclays Capital US 10-year Treasury 10-year index.

weighted function of the present market value (V_t^*) and the immediate past valuation (V_{t-1}), so that:

$$V_t = aV_t^* + (1-a)V_{t-1}$$

Using this formula, a series of valuations can be ‘unsmoothed’ to present a representation of the imagined (unobservable) market values. Given V_t and V_{t-1} , we need to assign weights (a and $(1-a)$) to each. If $a = 0.5$, then the current valuation (say \$10 million) is 50% of last year’s valuation (say \$8 million) and 50% of the present market value, which solves to \$12 million. The unsmoothed series will consequently demonstrate greater volatility.

The uncertainty of the nominal dividend income produced by equities over a given holding period compares with the absolute certainty of nominal income produced by a fixed-interest security held to redemption. Commercial property falls somewhere between the two in terms of certainty of income.

Where leases are longer, such as the 10 years typical in the UK for prime or core real estate, and fixed or indexed, the principal return to the investor is an income return which is reasonably certain; and the value of the reversion at the expiry of the lease (while largely uncertain) is of reduced importance. So, the risk of commercial property, generally a medium-risk asset, depends on the lease contract, with the result that some markets compare with bonds at the least risky end of the spectrum and others with equities at the most risky end.

1.3.10 Real Estate Cycles Control Returns

- *Unlike stocks and bonds, real estate returns appear to be controlled by cycles – of 8–9 years.*

It has been suggested (e.g. by MacGregor, 1994) that repeatable patterns, or cycles, can be seen in the history of development, occupier, and investment markets. These are expressed in the form of construction activity, rents, and cap rates (initial yields), with these in turn driving capital values and returns.

The inelasticity of property supply in response to price changes is perhaps the most important variable that explains the existence of a cycle of supply, rents, capital values, and returns. Empirically, a cycle in property development is apparent, and most

obvious in the London office market. Barras (1994) identified short cycles (4–5 years, the classic business cycle operating on occupier demand), long cycles (9–10 years, a tendency for severe oversupply in one cycle to feed part of the next demand cycle), long swings (20 years, associated with major phases of urban development), and long waves (50 years, technology-based). More recent data suggest cycles of 7–8 years from peak to peak of development activity.

Figure 1.3 illustrates what many would describe as a cycle in UK property returns over the period 1971–2018, with three distinct troughs.

Development activity appears to be highly pro-cyclical with GDP growth and property values (rising and falling at the same time), but exhibits sharper rises and falls. As property values rise in a strong economy, developers gain confidence and construction activity increases. Hence, current development profits have been a good explanatory variable for development activity.

There is a strong relationship between office development and changes in rents, suggesting a degree of adaptive behaviour among lenders, investors, and developers, with a tendency to follow the market, often in an exaggerated fashion. As prices rise, prices are more likely to be expected to continue to rise; development profits are a function of continued price rises; hence price rises lead to ever-increasing supply levels, which create the conditions for lower prices (this is called disaster myopia). The time lag between the inception and completion of developments creates an inevitable supply cycle.

Rents have also been strongly pro-cyclical with GDP (see Chapter 3). Barras (1994) shows how periods of growth in GDP above the long-term trend rate of growth have been coincident with periods of growth in rents above long-term trend growth. The demand side is pro-cyclical with economic growth indicators, but the inelasticity of supply means that even highly regular demand cycles can generate irregular rental

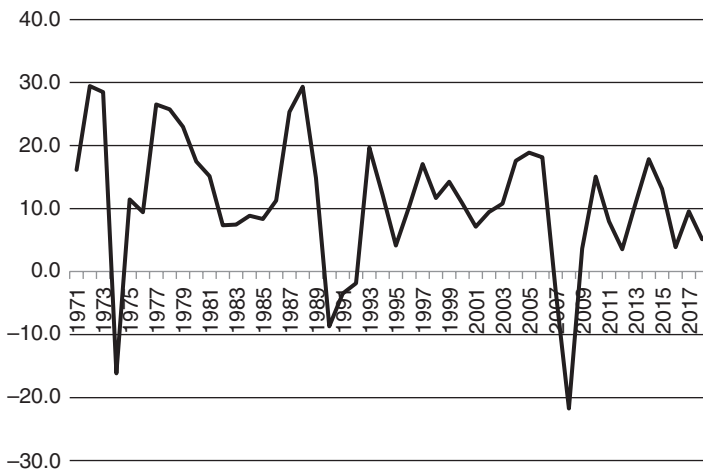


FIGURE 1.3 UK property returns, 1971–2018 (%)

Sources: MSCI 2019, Scott (1998).

cycles. Hence, rents will rise in response to economic growth and a static supply in the short term, and will continue to rise as construction activity gathers momentum; but the peak in construction activity may arrive after the peak in GDP growth, and an oversupply will result.

Some evidence of cyclicity in property yields (or cap rates – see Chapter 2) around a flat (mean-reverting) trend may be discernible over a long period. The long-run flatness of yields results in an extremely strong relationship between rental growth and capital value growth, both strongly pro-cyclical, although some extreme market movements have been strongly yield-driven (a good example being many markets in 2004–7).

Work by IPD (drawing on historic data from Scott, 1998) provides the fullest picture of long-term UK performance yet available. Data assembled from various sources covering the period 1921–2010 shows 16 ‘fairly distinct’ peaks and troughs in the market. IPD identify six completed cycles, which ranged in length from 4 to 12 years, with an average of 8 years. The average cycle length of 8 years is interesting, as after roughly two more 8-year periods beyond 1989, the next peak of 2006–7 emerged.

1.3.11 Property Appears to be a Diversifying Asset

- *Property returns have been less well correlated with returns on equities and gilts than returns on equities and gilts have been correlated with each other. In other words, while equities and gilts have usually performed well or badly at the same time, property has outperformed or underperformed at different times, thus smoothing out the overall performance of a portfolio with assets of all three classes.*

Mathematical models based on modern portfolio theory (MPT) play an important role in the investment market, especially in the advice on investment strategy and asset allocation given by actuaries and consultants to pension funds and insurance companies (see Chapter 4).

MPT reflects the desire of investors to achieve higher returns, low individual asset risk, and (more importantly) a smooth return on the entire portfolio. Asset allocation advice has, since the acceptance of MPT, traditionally required a view on three values: the likely future return on an asset class; its risk (usually defined as volatility and measured in units of standard deviation of return over a given period); and its correlation with other asset classes. This last factor measures the extent to which upward and downward movements in the values of two variables are linked together.

MPT has both led to, and been further encouraged by, the development of asset allocation models. Strong prospective returns, coupled with low standard deviation of returns and a low correlation with equities and gilts, would provide a very strong argument for holding an asset.

When assets are combined in a portfolio, the expected return of a portfolio is the weighted average of the expected returns of the component assets. However, unless the assets are perfectly correlated, the risk is not the weighted average: it is determined by the correlations of the component assets. The way in which assets co-vary is central to portfolio risk, as low covariance produces diversification opportunities.

Correlations of 1.0 indicate perfect co-movement, correlations of 0.0 indicate independence of the returns of two assets, and correlations of –1.0 indicate that returns

move in exactly opposite directions. Generally, adding assets that exhibit lower (ideally negative) correlations to a portfolio provides the greatest diversification benefits.

MSCI's UK annual index provides the longest available run of consistent annual data describing the performance of a well-diversified portfolio of real properties. The results show the following:

- Property returns have been below the return on equities but competitive with the return on gilts (see Table 1.7).
- Property volatility has been less than the volatility of equities and comparable to that of gilts (see Table 1.8).
- Property returns have been less well correlated with returns on equities and gilts than returns on equities and gilts have been correlated with each other. In other words, while equities and gilts have usually performed well or badly at the same time, property has outperformed or underperformed at different times, thus smoothing out the overall performance of a portfolio with assets of all three classes.

This is illustrated in Table 1.10. UK data suggests that property offers portfolio risk reduction to holders of bonds and equities, as property has been less highly correlated with gilts and equities than they have been with each other.

However, the reported returns on US equities, treasuries, and real estate shows a somewhat different result. There has been close to zero correlation between equities and treasuries, and also between property and treasuries, with a low positive correlation between property and equities (see Table 1.11).

The result of using UK return, risk, and correlation data (see Tables 1.8 and 1.10) in an MPT framework is a high property allocation, as shown in Table 1.12. We constructed the optimal (lowest-risk) portfolios for portfolio target returns of 10%, 10.5%, and 11%. The low return/risk portfolio not surprisingly has plenty of gilts (45%), but the optimiser selects 55% property, as this reduces the portfolio risk even below the risk of

TABLE 1.10 UK asset class correlations, 1971–2018

	Gilts	Property
Equities	0.55	0.27
Property	0.04	

Sources: IPD annual index, FTSE all-share index, FTSE 15-year gilt index.

TABLE 1.11 US asset class correlations, 1979–2018

	Treasuries	Property
Equities	0.02	0.14
Property	−0.03	

Sources: NCREIF property index, S&P 500, Barclays Capital US 10-year Treasury index.

TABLE 1.12 Optimised asset class allocations (UK)

Target return	Volatility	UK property	UK stocks	UK gilts
10.00%	8.3%	55%	0%	45%
10.50%	9.6%	80%	7%	13%
11.00%	14.4%	62%	38%	0%

TABLE 1.13 Optimised asset class allocations (USA)

Target return	Volatility	US property	US stocks	US bonds
8.00%	4.6%	39%	5%	56%
9.25%	6.2%	58%	24%	18%
10.50%	10.3%	41%	59%	0%

a portfolio of 100% gilts. The high return/risk portfolio – not surprisingly, again – has plenty (38%) of stocks, but the optimiser selects 62% property, as this again reduces the portfolio risk without excessively damaging returns. Property comprises between 55% and 80% of the optimal or efficient portfolio at all target return levels.

A similar optimisation using the more plausible US data produces similar, albeit slightly less extreme, results (Table 1.13). The recommended property allocation in the optimal portfolio varies from a minimum of 39% to a maximum of 58%.

Yet a typical allocation for institutional investors has been around 10%, around one-fifth of the optimised level (see Figure 1.4). What explains the huge difference between unconstrained theory and practice?

Valuation smoothing is a large problem colouring this data. In some years, property yields do not appear to change; and it is clear that this can be the result of a scarcity of transaction evidence and the behaviour of valuers rather than a steadily performing market.

The smoothing problem also affects the correlation numbers. Reported property correlations, such as volatility, may be artificially low. The greater the fixity of the property return series – the greater the amount of smoothing, or serial correlation – the greater will be the tendency of the correlation of that series with returns in efficient markets to be close to zero. (The correlation coefficient is determined by the covariance of two series divided by the product of their standard deviations. Low volatility depresses both the numerator and the denominator of this equation, but the impact of the covariance is likely to be greater.)

Given that three indicators are needed for assessing the appropriate weight of property in a multi-asset portfolio, two of which present two large problems, it is not surprising that property allocations in practice do not match the MPT solution. Standard deviations of returns from year to year understate true property risk; and correlations between property and the other assets may be unreliable. For this reason, various efforts have been made by academics to improve the position, which usually imply the use of statistical techniques to adjust the data (e.g. see Brown and Matysiak, 2000).

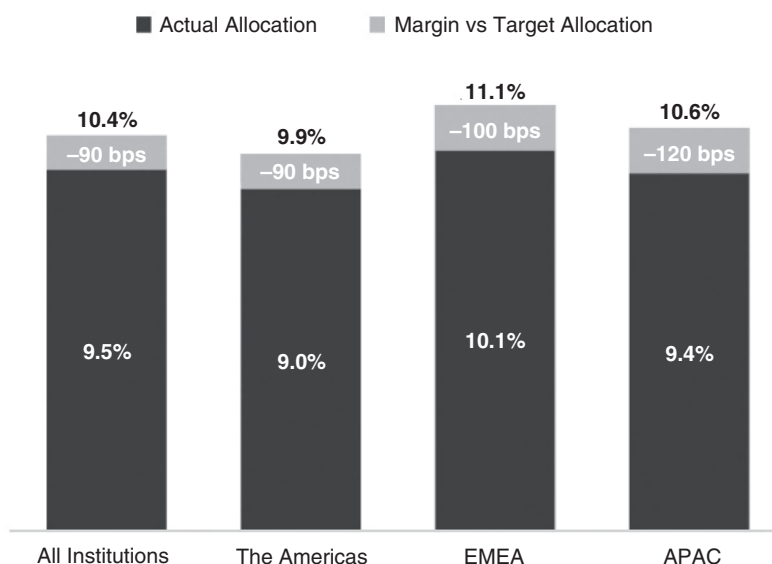


FIGURE 1.4 Actual and target real estate allocations – institutional investors

Source: Cornell Baker Program in Real Estate, Hodes Weill & Associates, 2018.

In addition, year-on-year correlations between the asset classes may be said to be of limited interest to pension funds and insurance funds with longer-term liabilities. They are more likely to be concerned with their ability to match long-term liabilities (wage inflation-linked pensions or nominally fixed endowment mortgages) without increasing the contribution rate of the employer or employee.

However, there are more limitations to this type of optimisation analysis that need to be considered, especially in a global context. These are as follows.

Specific Risk

The data used describes the returns available on the index universes of asset classes. For stocks and bonds, it is possible for investors to replicate these universes in an investment portfolio, as they are highly divisible assets and index-tracking products are available. For property, the universe used to compile the UK annual index at the end of 2018 comprised over 13,000 properties worth around £220 billion; over 7,000 properties and \$640 billion comprise the US NPI universe. These universes are not investable. The investor therefore faces an additional layer of risk, which is the sampling error created by the heterogeneity and specific risk of real estate.

Leverage

The majority of property transactions involve the use of leverage (see Chapter 9). Even where the institutional investor does not use leverage on direct property acquisitions, unlisted funds will commonly be used for specialist or international investments (see

Chapters 10 and 11), and these will typically be geared. Hence, ungeared returns may not be fully representative of the risk and return profile of the investment vehicles used by investors.

Illiquidity

Real estate, unlike securities, is not a liquid asset class. This is not reflected in the volatility and correlation data. The introduction of liquidity into a property structure can significantly change the return characteristics of real estate to the point that it ceases to be attractive. Arguably, therefore, illiquidity is a necessary evil in justifying the role of real estate, but it is an evil that clearly reduces the attraction of the asset class.

Taxes, Currency, and Fees

Property investment may require the services of specialist fund managers who will typically charge *ad valorem* and performance fees. Taxes may be paid, even by tax-exempt investors, when investing internationally, and in such cases unhedged currency risk (see Chapter 16) will colour the returns.

These variables all challenge the value of a single-country, gross of tax and fees, domestic currency, unleveraged, universe of returns in deciding on an allocation to commercial property. Adding the operational challenges of investing in real estate alongside faster-moving securities, it is not surprising that allocations do not reflect the outputs of an MPT optimiser.

Alternative approaches to asset allocation do exist. The most popular alternative is the so-called 'equilibrium approach' (Litterman, 2003), which advocates a neutral position determined by the size by value of the asset class (see Chapter 4), with positions taken against that neutral weight determined by the attractiveness of market pricing. This more closely reflects the practice of professional and institutional market participants, but (as we suggested at the beginning of the chapter) still produces a higher weighting to the asset class than is observed in practice.

1.4 CONCLUSION

The cult of the equity has dominated western investment strategy in the 1980s and 1990s to the extent that equities now dominate most institutional portfolios, especially in the USA, UK, and Hong Kong. On the contrary, in Germany and some other continental European countries, bonds have always been the largest component of the mixed-asset portfolio.

The experience of property investors in the early 1990s was enough to persuade many of them that it was time to abandon the asset class. Several property companies became bankrupt; many banks developed severe shortfalls in their loan books through exposure to property loans; many householders found they owed more than they had borrowed by developing negative equity; and, worst of all, it became acutely apparent that the liquidity of property was not the same as the liquidity of equities and bonds.

Because of the liquidity and management problems associated with direct real estate ownership, the property investment market became mesmerised by the potential for securitisation or unitisation of real estate. Over the period 1990–8, real estate investment trusts in the USA and listed property trusts in Australia each saw explosive growth in markets where the legal and regulatory framework permits privately held real estate assets to be transferred into tax-efficient public vehicles. Following a boom in the creation of unlisted funds in the 1999–2006 period (see Chapter 11), the UK and Germany introduced REITs in 2007 (see Chapter 13). Property derivatives became the focus of innovation in the UK in 2005 and by 2007, swaps, structured notes, and even futures traded globally. In addition, the search for return and diversification led to globalisation, meaning a transfer of attention from domestic investors and investments to international investors and assets (see Chapter 16). But we must remember what makes real estate attractive to these investors, which is low volatility and the opportunity to diversify a securities portfolio.

Property is illiquid. This means that its required – and expected – return is higher than it would otherwise be. Innovative investment approaches incubated within the meeting rooms of US endowment funds, the Yale Investment Office being the most well-known, CPPIB (a Canadian Pension Fund), and others have emphasised the value of illiquid assets and pushed their real estate allocations to 20% plus, albeit often within a real estate private markets allocation including private credit, private equity, and infrastructure. As a result, by 2020 the dominance of benchmarks and MPT as drivers of investment allocations had weakened.

Introducing liquidity to real estate in the form of fractionalisation or securitisation may damage returns. The largest impact of improved liquidity, however, would be upon risk and diversification. Surveys have consistently shown that diversification is a powerful driver for investors to become involved with real estate as an investment. Diversification surely works only as long as the asset is truly different. Property can be a diversifier away from equities because it has bond and commodity characteristics. Taking away the illiquidity and the physical, heterogeneous, commodity nature of real estate would take away a large part of its diversification potential, and a large part of its appeal. It appears to be the case that these distortions contribute to the return diversity that investors crave, yet lead to inevitable disappointment when they reveal themselves.

Box 1.1: Sovereign Wealth Funds and Real Estate Investment

Sovereign wealth funds (SWFs) have taken on increased importance in global investment markets in recent years, operating as significant long-term investors, including real estate. According to Pensions and Investments Online (2018), sovereign wealth fund assets increased globally by 13% to a record \$7.45 trillion in the year ended 31 March 2018. The largest sovereign wealth funds are shown in Table 1.14.

SWFs are government investment vehicles funded from government reserves, which are managed separately from the country's central bank. The funding sources

(continued)

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for these government reserves come from natural resource reserves (e.g. oil and gas), foreign exchange reserves, or pension fund reserves where there are no explicit pension liabilities.

The strategic objectives of SWFs include the management of government holdings, wealth optimisation through diversification (offsetting possible future declines in the value or stock of the country's natural resources), and supporting the development of the local economy.

SWFs have operated for over 50 years. The Kuwait Investment Authority (KIA) was established in 1953, and the 1970s increase in oil prices saw further SWFs established (e.g. the Abu Dhabi Investment Authority, ADIA), with the 1970–90 period seeing SWFs established in growing Asian economies (e.g. the Government Investment Corporation of Singapore, GIC). Since 2000, with further increases in oil prices and significant trade surpluses, a large number of new SWFs were established, over 50% of the current roster of SWFs. The Middle East and Asia now dominate the SWF universe, with several countries (including Singapore and Abu Dhabi) having more than one SWF.

TABLE 1.14 Top 10 sovereign wealth funds

Rank	Profile	Total assets	Region	Current real estate share	Total value of real estate
1	Norway Government Pension Fund Global	\$1,072,840m	Europe	4%	\$40,767.92m
2	China Investment Corporation	\$941,417m	Asia	3%	\$28,242.51m
3	Abu Dhabi Investment Authority	\$696,660m	Middle East	5%	\$34,833.00m
4	Kuwait Investment Authority	\$592,000m	Middle East	5%	\$29,600.00m
5	Hong Kong Monetary Authority I	\$509,353m	Asia	3%	\$15,280.59m
6	SAFE Investment Company	\$439,836m	Asia	3%	\$13,195.08m
7	National Council for Social Security Fund	\$437,900m	Asia	5%	\$21,895.00m
8	GIC Private Limited	\$390,000m	Asia	7%	\$27,300.00m
9	Temasek Holdings	\$374,896m	Asia	16%	\$59,983.36m
10	Public Investment Fund	\$320,000m	Middle East	5%	\$16,000.00m

Source: PFR.

Sovereign wealth funds are known to be active in real estate investment. The more established SWFs such as ADIA and GIC are experienced and sophisticated investors, with institutional maturity, performance-focused objectives, professional investment standards, and extensive risk management procedures, and we know that SWFs have increasingly adopted an active management strategy which sees them including property and private equity amongst their mandated asset classes. Strategies for property investment cover direct property, REITs, joint ventures, and co-investment with other SWFs or pension funds, unlisted property funds, equity stakes in property companies/REITs, as well as debt financing.

Through a phenomenon in international finance known as the reverse capital flow, developing countries have constantly net negative foreign investment flows to the developed countries, especially countries like China, Qatar, and UAE. The leading explanation of such capital flows is that poor institutions and a lack of protection of property rights in developing countries has led investors to seek the more stable developed countries for safe investments, including real estate and infrastructure.

