Considerations for investing in global real estate

H2 2023

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In this paper, we consider five elements:

- Current market conditions
- Ways to invest in real estate
- The depth and liquidity benefits of global real estate market opportunities
- The case for long-term investment horizons
- How the addition of non-domestic real estate exposure may serve to enhance returns and lower risk in a multi-asset class portfolio

Many investors are familiar with the appeal of holding real estate. With a generally low correlation to other asset classes[1], it can serve as an instant diversifier in a mixed-asset portfolio. Historically, real estate has delivered strong relative performance across multiple cycles compared to other asset classes, and its characteristic stable income, underpinned by long-term leases, makes it a compelling alternative to traditional fixed-income instruments. Investors continue to allocate to alternative investments. Despite interest rate hikes and decelerating deal flows cooling the real estate market in H1 2023, real estate fundraising momentum remained steady through Q2 2023. Value-add strategies are currently the most popular amongst investors, looking to take advantage of market dislocation.[2]

Real estate investors around the world have tended to be domestically focused, but many are now investing across global real estate markets. Large institutional investors and sovereign wealth funds have been at the forefront of the shift to global real estate investment, driven by the generally stable income component and the potential for diversification benefits, risk reduction, and return enhancement. Likewise, a lack of domestic investment opportunities has played a role in investors' increasing appetite for an international portfolio as a way to broaden their opportunity set (**Figure 1**).

Assessing the global real estate market and the different means of gaining exposure through listed, unlisted, equity, and debt vehicles can be a daunting task. Investors must assess various factors before making an allocation, including the impact of currency fluctuations and foreign tax laws. They must also assess their own internal capabilities for evaluating such an allocation.

Figure 1:
Why real estate?
Investors have different motivations for considering global real estate

Key considerations

Size and performance

- Size of the real estate asset class
- Lack of domestic real estate opportunities
- Markets comparable in transparency
- Income orientation
- Strong relative return performance

Characteristics and portfolio contribution

- Different growth drivers
- Diversification with traditional asset classes
- Diversification with domestic real estate market
- Inflation hedging
- Portfolio risk reduction and return enhancement

Source: Invesco Real Estate as of October 2023.

A note on current market conditions as of Q4 2023

While the purpose of this note is to summarise the longer-term strategic considerations for investing in global real estate, some reference does need to be made to the more immediate market conditions in which we currently operate.

Investment Context and Outlook

At the time of writing, global inflationary pressures have started to abate. Financial markets have shifted from questioning how high key interest rates need to go, and are now debating how long they will remain elevated. The US success, at least to date, in starting to curb inflation without driving unemployment higher is supporting consensus expectations of a 'soft landing', although current risks remain weighted to the downside due largely to credit tightening. Current market expectations for the Eurozone overall are similarly for a period of low but positive GDP growth. Meanwhile economic growth expectations in AsiaPac remain higher than the other regions, though at lower levels than historically seen.

After a 1.1% total return in 2022, the MSCI GPFI (natural weight in US$) declined 3.6% in H1 2023, with performance weakest in North America. In contrast, developed market listed real estate saw a 1.0% total return in H1 2023 (FTSE EPRA Nareit Developed index in US$). With price discovery still ongoing in direct markets and limited liquidity, quarterly variations likely reflect timing differences rather than the relative outlook for each region. Further pressure on fundamentals and pricing will widen the window to capture value and/or stressed opportunities.

Global Real Estate Market Outlook

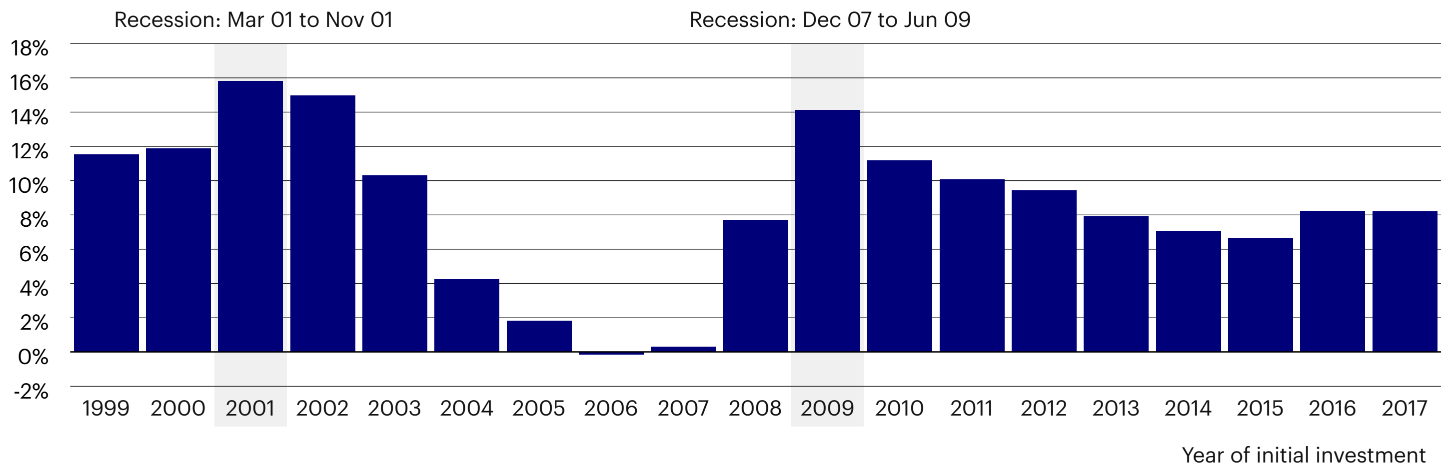
From prior expectations of interest rates rapidly reducing from peak levels, financial markets are now shifting to the realisation that rates will need to remain elevated for longer. Consensus is for a 'soft landing' in the US and Eurozone. The focus for real estate is around the longer-term interest rate outlook, particularly regarding the impact on exit cap rates 5-10 years out. While nearer term rate expectations have been volatile, longer-term interest rates have shifted upwards as financial markets price in higher-for-longer rates, essentially reducing yield curve inversion by raising the long end rather than reducing the short end.

Global GDP growth has slowed significantly in 2023 and is expected to remain low, albeit positive, for most major markets in 2024, though with risks to the downside. For real estate, while the combination of weak growth and cautious sentiment is likely to dampen some occupational demand, occupier fundamentals should remain healthy for markets without excess supply. We note however that we are seeing clear fundamental weakness in markets with excess supply. While asset values continue to reprice, banks are focused on existing loan books and so offer limited new liquidity, thereby impacting the volume of real estate transactions in all key markets.

Taking advantage of cyclicality

At the time of writing, real estate liquidity remains constrained. Combined with valuation corrections, this is presenting opportunities to secure assets which meet our long-term investment convictions. Real estate investors historically benefited from outsized returns after market corrections. **Figure 2** below shows the US NCREIF Property Index at different times by year of first investment, and a similar pattern is evident when looking at five-year forward look returns in the other regions.

Figure 2:
US NPI five-year forward unlevered total returns (%)



Based on data from NCREIF NPI, all property types, investment returns calculated from Q1 following calendar year of investment.
Source: Invesco Real Estate using data from NCREIF as of April 2023

Figure 3:
Comparison of listed and unlisted real estate

	Listed (Public) Real Estate	Unlisted (Private) Real Estate
Return	Broadly similar returns over the long term (see **Figure 5**)	
Risk (Volatility)	More volatile	Less volatile
Liquidity	Very liquid	Less liquid
Diversification benefit	Moderate but not as large as private real estate	Substantial over the long term
Investment horizon	Flexible	Generally longer term
Availability of information	Readily available, real-time transaction based	Improving but less readily available, mainly appraisal-based
Timeliness of information	Daily	Quarterly (or monthly in selected countries)

Sources: Invesco Real Estate, Bloomberg L.P. and FTSE International Limited (FTSE) © 2023.

Investment options in global real estate

Real estate as an asset class can be invested in through both equity and debt positions, and through listed or unlisted vehicles. In recent years, the potential paths to invest in real estate have become more varied; while global public real estate markets have long been accessible to investors, more recent industry fund launches now offer access to global unlisted real estate. Prior to that, unlisted real estate was accessible primarily through closed-end, higher-return strategies or through management-intensive direct ownership. This enhancement to the composition of available investment vehicles in the industry is providing investors with greater opportunities for diversification by adding unlisted global real estate to their portfolios.

It is noteworthy that while listed and unlisted real estate tend to have similar characteristics in the long term, they have varying characteristics in the short term, driven in large part by the liquidity component of each. Listed real estate offers daily liquidity, but this comes with higher volatility, whereas unlisted real estate generally offers only periodic liquidity, which underscores generally greater stability under normal market conditions (**Figure 3**). This is beginning to change. Increasingly, a range of unlisted vehicles is evolving that provides greater liquidity than the traditional closed-end and open-ended funds, often through a blend of direct and listed real estate.

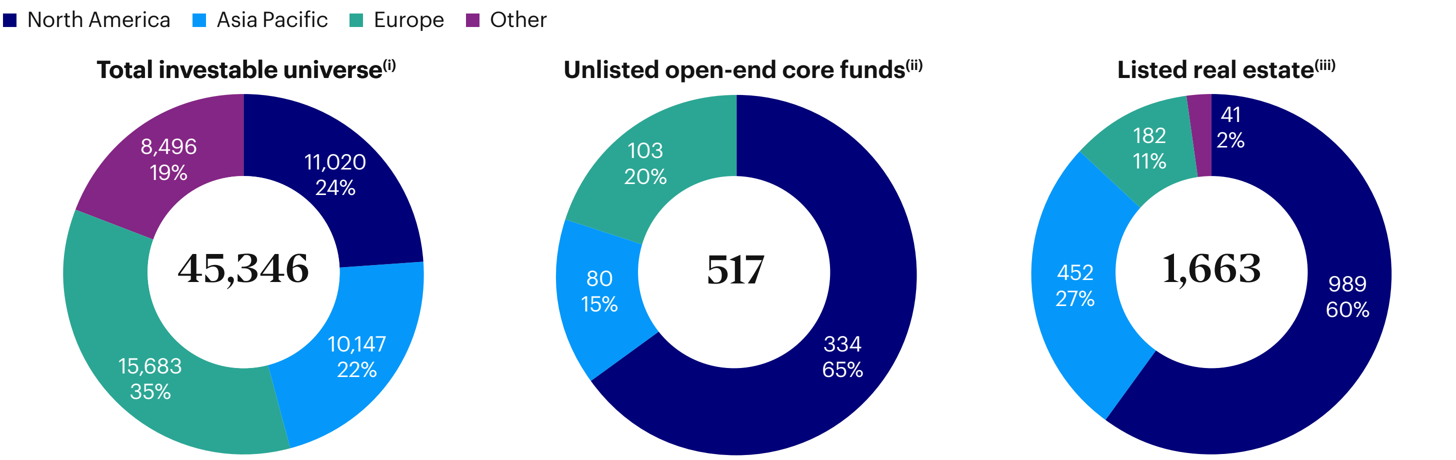
In addition to choosing an investment vehicle, various real estate strategies exist across the risk-return spectrum that may warrant consideration depending on an investor's goals and risk tolerance. The options include core, core plus, value-add and opportunistic approaches.

Core assets are generally stable, cash-flow producing assets with stable occupancy, while opportunistic assets represent the riskiest real estate approach, wherein investors look to achieve higher returns by tackling assets with structural or financial obstacles.

While it is likely that an institutional investor may pursue a combination of real estate approaches to achieve their performance objectives, in this paper our focus is on equity positions largely within private real estate, as unlisted real estate represents the largest share of the estimated global investable universe, while listed indices represent less than 5% of the universe based on their market capitalisation (**Figure 4**).

Global interest in real estate has continued to increase in recent years as investors seek yield amidst the ultra-low interest rate environment. Even though government bond yields have started to show modest increases, it seems likely that interest rates will remain moderate over the long term.

Figure 4:
Different measures of the global real estate universe – estimated size (US$ billions)



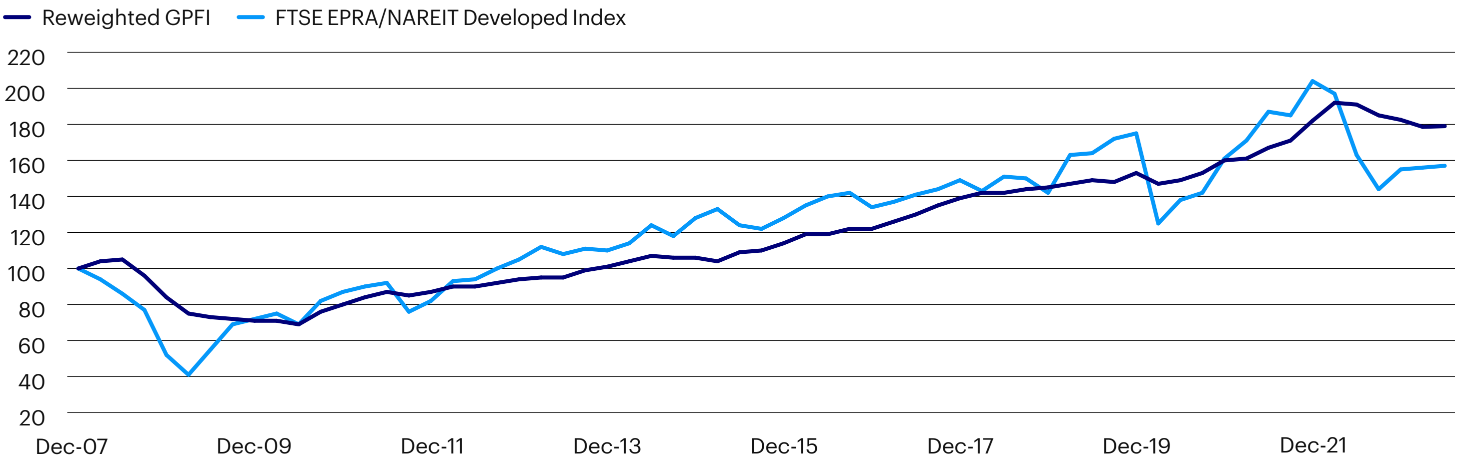
Sources: Invesco Real Estate based on data from PWC market size report, MSCI Global Quarterly Property Fund Index, and FTSE EPRA/NAREIT Global Real Estate Index as of March 2023.

Depth and liquidity issues

While listed and unlisted real estate assets perform somewhat similarly, they bring different qualities to a portfolio (**Figure 5**). Unlisted assets are less volatile, while listed real estate offers greater liquidity. Going global can open additional investment opportunities to access quality real estate investments. The majority of all commercial property transactions, as reported by Real Capital Analytics, take place in 34 Transparent and Highly Transparent markets (**Figure 6**). As such, it is not surprising that many investors around the world are looking abroad to source real estate deal flow.

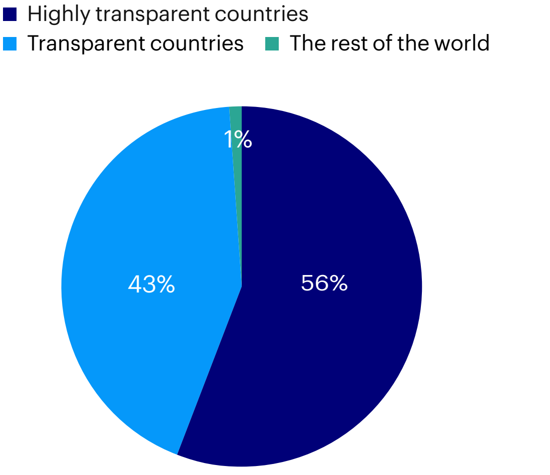
This elevated external focus has spurred growth in transaction volumes globally. According to Real Capital Analytics, global quarterly transaction volumes have ranged from US$129 billion to US$822 billion since 2010 (**Figure 7**). In 2021, property transactions totaled US$2.1 trillion, an increase of 40.7% year over year. Property transactions subsequently fell in 2022 to US$1.8 trillion, a 15.6% decrease year over year.[3]

Figure 5:
Listed and unlisted real estate performance
Unlisted global real estate performance 2007-2023 Q2, December 2007=100



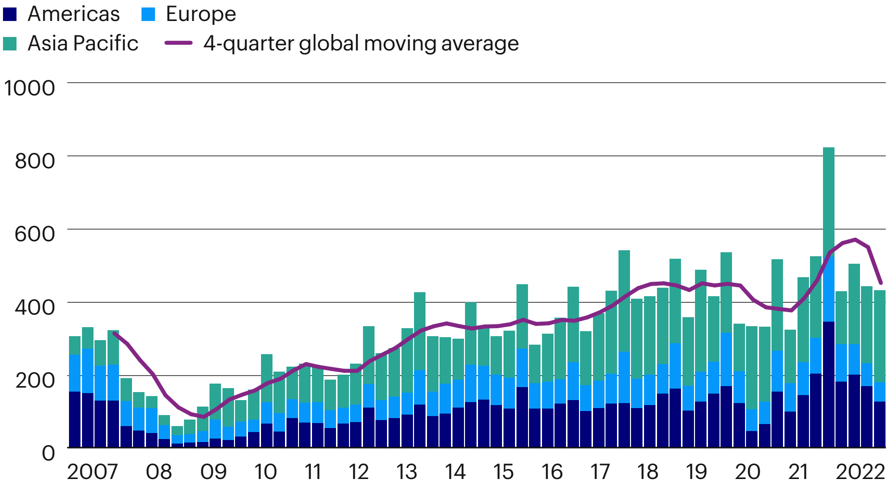
Note: All returns shown in USD.
Source: Invesco Real Estate based on data from MSCI Global Quarterly Property Fund Index and Macrobond as of June 30, 2023. "Reweighted GPFI" refers to the MSCI Global Quarterly Property Fund Index (GPFI) reweighted to 25% Asia Pacific, 25% Europe and 50% North America. Past performance is not a guide to future returns.

Figure 6:
Average transaction volume 2020-22 in transparent and highly transparent countries (%) (iv)



Source: Invesco Real Estate using data from JLL Transparency Index 2022 and Real Capital Analytics as of October 2023.

Figure 7:
All property transaction volume 2007-22
US$ billions, quarterly



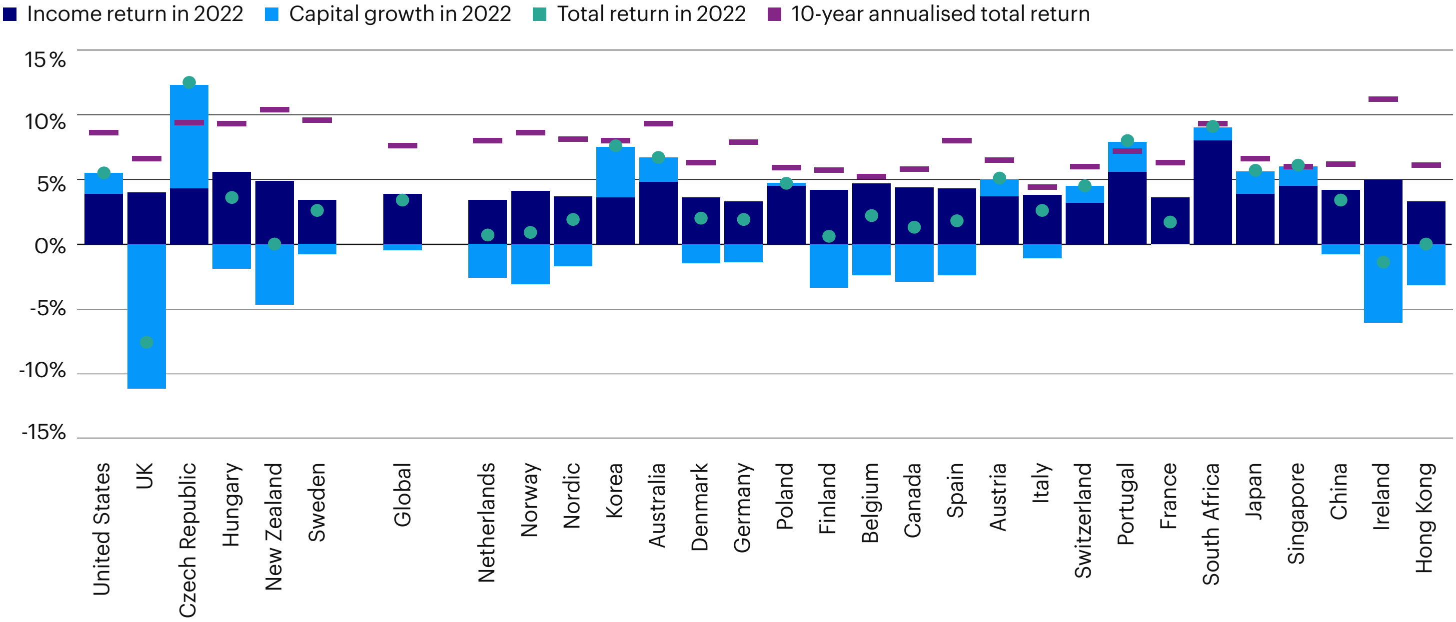
The figure relates to direct transactions involving all property types including land.
Source: Invesco Real Estate based on data from Real Capital Analytics as of December 2022.

Diversification

Investors' appetite for real estate is spurred in part by the asset class's generally stable income component. Across the globe, income returns as a share of private real estate total returns are generally quite high (**Figure 8**). Except for a few high-growth markets such as Hong Kong, annualised total returns are driven primarily by income.

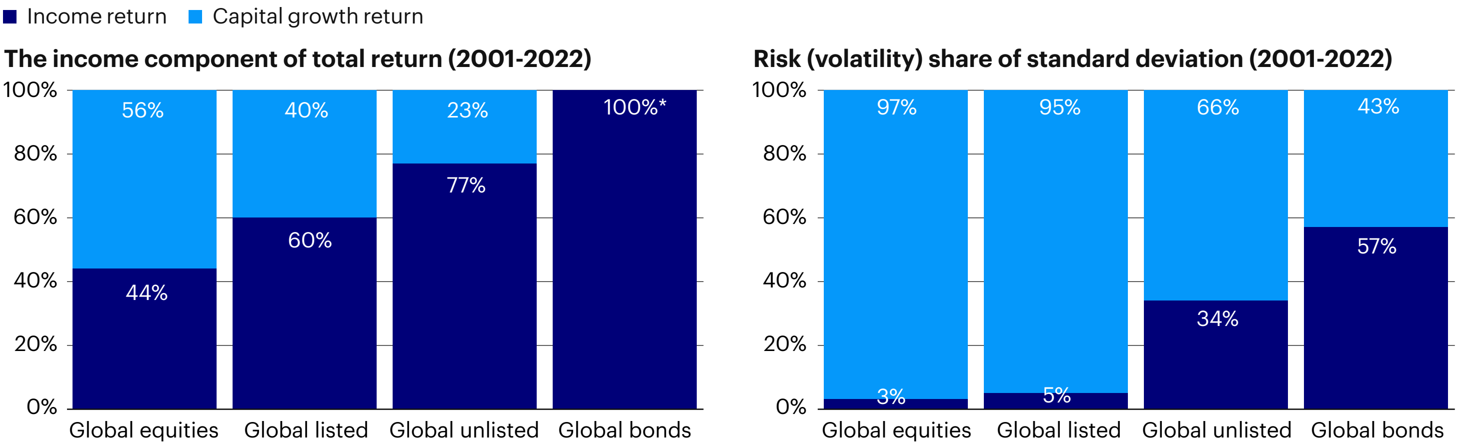
Furthermore, when considered as part of a mixed-asset portfolio, the income return from real estate, both public and private, becomes even more compelling. Over the period 2001-22, global equities derived 44% of their total return from income, with 56% from capital appreciation. That 56% from appreciation was responsible for 97% of equities' total return volatility (**Figure 9**). By comparison, for real estate globally, income contributed a greater share of total return (60% for listed and 77% for unlisted real estate) and was only modestly responsible for the volatility of returns (**Figure 9**). This suggests that a portfolio that adds global real estate may diminish risk through lower volatility.

Figure 8:
Total returns in 2022 and annualised averages of 2013-22 (local currency, % per annum) (v)



Sources: Invesco Real Estate using data from MSCI as of May 2023. **Past performance is not a guarantee of future results.**

Figure 9:
Income and capital growth return (vi)



Source: Invesco Real Estate based on data from MSCI, Bloomberg L.P. and Macrobond as of May 2023. * Global bonds over the period delivered a -18% capital growth return.

At its core, real estate is a local asset class, driven by local demographic and economic trends. The lack of synchronisation in economic cycles globally reduces the correlation in real estate returns; thus, moving beyond one's domestic market can offer significant diversification benefits and dampen volatility. As evidenced by correlation data from unlisted property returns across 16 sizable real estate markets, there is a clear diversification of property returns around the world. Of the 16 countries shown, each had correlations below 0.8 with at least 13 other countries. Since 2007, Canada China, Hong Kong, Korea, and the United Kingdom had property return correlations below 0.8 for all of the other 15 markets and Japan, Italy and Poland for 14 of the other 15 markets (**Figure 10**).

Beyond country-to-country diversification benefits, expanding one's real estate portfolio outside of one's home country to include a global mandate can also produce a smoothing effect on returns. **Figure 11** reflects unleveraged real estate total returns for 32 countries around the globe, with the purple lines each reflecting different countries' historical returns.

Over the period from 2012 to 2021, the global unlisted real estate portfolio returned an annualised average of 8.0% with a standard deviation of 2.8%. In any given year there are markets that exhibit significant outperformance and those that reflect underperformance. However, given the difficulty in timing country peaks and troughs, particularly without local expertise, a diversified global portfolio suggests a smoother trend line.

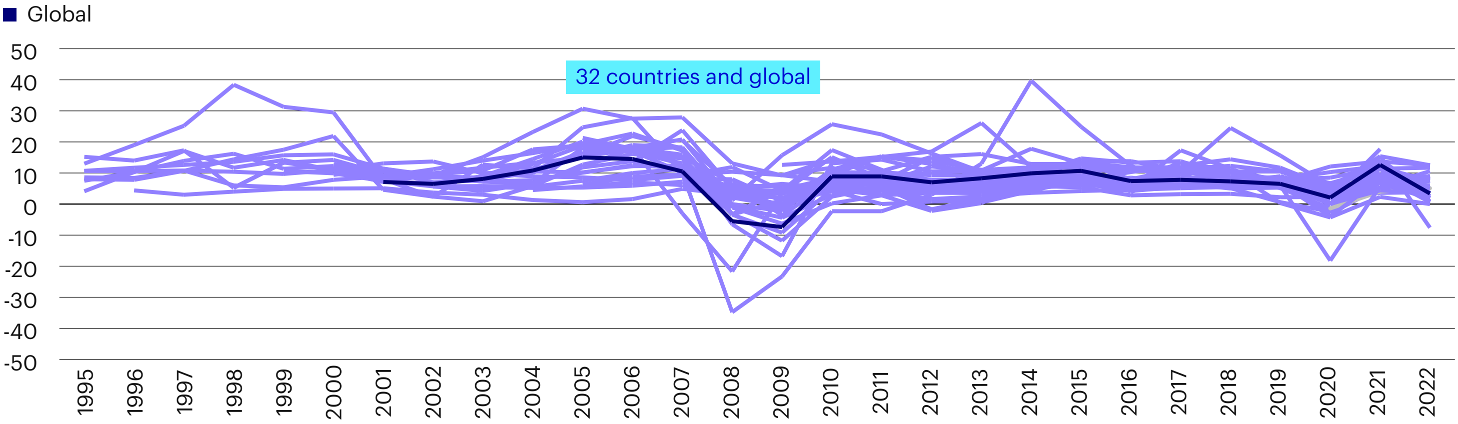
Figure 10:
Correlations of annual country all property unleveraged total returns 2007–22 – MSCI Global Property Index (vii)

■ Correlation (<0) ■ Correlation (<.80) ■ Correlation (>.80)

		Americas		Asia Pacific						Europe							
		Canada	US	Australia	China	Hong Kong	Japan	Korea	Singapore	United Kingdom	France	Germany	Italy	Spain	Sweden	Poland	Netherlands
Americas	Canada	1.00															
	United States	0.71	1.00														
Asia Pacific	Australia	0.74	0.86	1.00													
	China	0.57	0.25	0.29	1.00												
	Hong Kong	0.69	0.26	0.40	0.63	1.00											
	Japan	0.36	0.73	0.80	-0.11	-0.12	1.00										
	Korea	0.39	0.40	0.54	-0.10	0.20	0.51	1.00									
	Singapore	0.77	0.64	0.73	0.41	0.47	0.58	0.77	1.00								
Europe	UK	0.34	0.54	0.47	0.14	0.42	0.22	-0.04	-0.01	1.00							
	France	0.73	0.77	0.88	0.34	0.49	0.69	0.67	0.82	0.37	1.00						
	Germany	0.07	0.40	0.41	-0.18	-0.25	0.51	0.04	-0.05	0.41	0.36	1.00					
	Italy	0.43	0.53	0.66	0.23	0.19	0.50	0.68	0.60	0.17	0.76	0.52	1.00				
	Spain	0.30	0.65	0.81	0.11	0.03	0.83	0.37	0.43	0.38	0.74	0.67	0.67	1.00			
	Sweden	0.53	0.77	0.86	0.12	0.30	0.69	0.44	0.45	0.63	0.85	0.65	0.72	0.84	1.00		
	Poland	0.72	0.75	0.72	0.37	0.24	0.58	0.63	0.86	0.02	0.77	0.28	0.76	0.53	0.54	1.00	
	Netherlands	0.15	0.38	0.54	-0.02	-0.10	0.57	0.35	0.24	0.17	0.56	0.85	0.81	0.78	0.71	0.49	1.00

Source: Invesco Real Estate based on NCREIF and MSCI as of May 2023. Note: Korea = South Korea.

Figure 11:
MSCI direct real estate total return by country (%, local currency, all property types)



Note: Each purple line represents the annual total return series over time for an individual country. (viii)
*For the US the total returns are to the year 2021 due to availability of data.
Source: Invesco Real Estate using data from MSCI as of May 2023. **Past performance is not a guarantee of future results.**

A case for long-term investing

As **Figure 11** demonstrates, local real estate market performance varies. Yet, despite a dip during the global financial crisis (GFC), the MSCI Global Quarterly Property Fund Index (an index of total returns for global open-ended core funds) has increased steadily, by more than 113% since the beginning of 2013 (**Figure 12**). This would suggest that investors with a longer-term hold horizon for real estate may fare better than those who seek to time their investments.

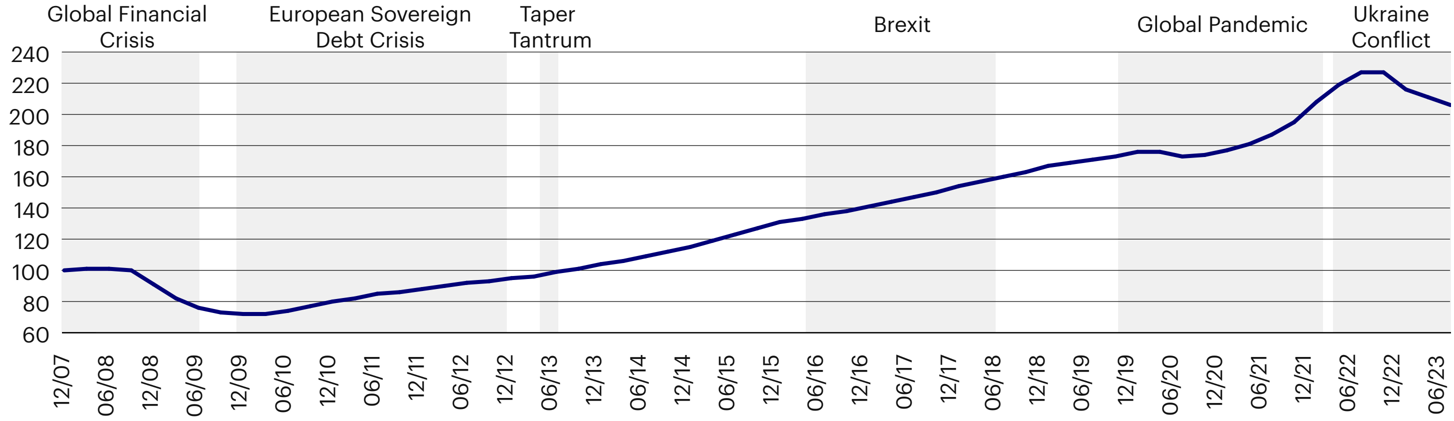
To illustrate the impact of trying to "time the market" versus taking a long-term, disciplined approach to investing in real estate, we have sought to demonstrate several hypothetical investment scenarios yielding different results.

An investor with the worst timing, i.e., one that invested once only at the exact peak of the last cycle (assumed to be March 2008 for these purposes) but who held on to the investment through the subsequent decade, would have achieved a 4.9% per annum total return (**Figure 13**). And this would have included a healthy annual dividend payment, likely in the range of 3-5% over the period.

Extending the thought experiment, if another investor had also invested at the exact same peak of the market in 2008, but then had invested equal amounts each subsequent year and held until 2023 Q2, the more active investor would have achieved a 6.6% total return, again with a likely 3-5% annual dividend payment.

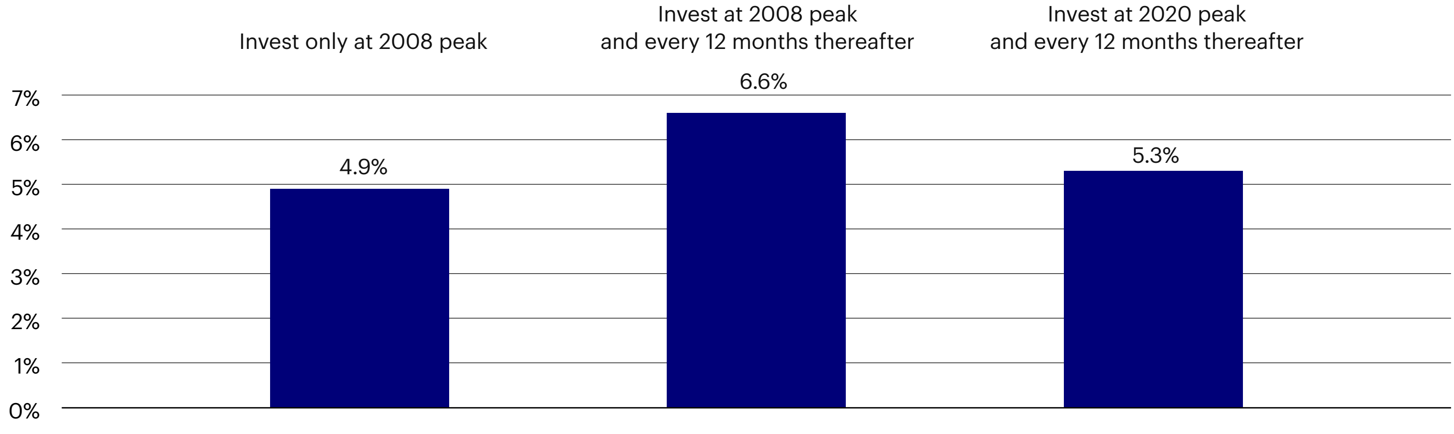
Given the difficulty in successfully timing the market, this example suggests that an investor able to weather potential short-term volatility may yield greater returns by making a consistent allocation to real estate, regardless of the original cyclical starting point.

Figure 12:
Global real estate performance since 2008 MSCI Global Quarterly Property Fund Index (reweighted by region, local currencies) [ix]



Source: Invesco Real Estate using data from MSCI Global Quarterly Property Fund Index as of June 30, 2023. **Past performance is not a guarantee of future results.**

Figure 13:
The case for long-term investing: Investment performance if you had invested US$100 million into the reweighted GPFI at the 2008 peak (Q1 2008 - Q2 2023, % per annum)
IRR for $100m investment at 2008 peak



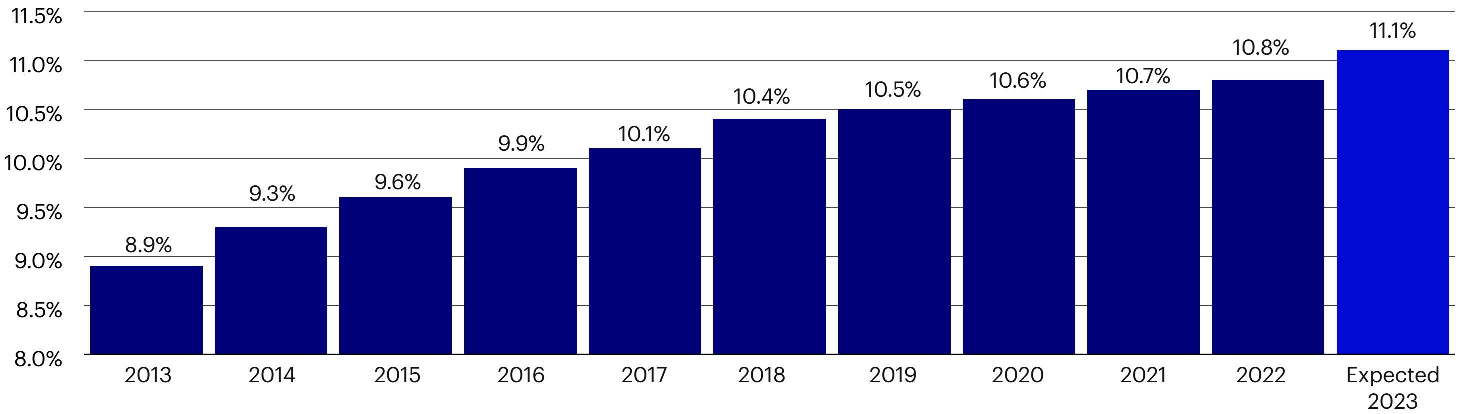
Hypothetical US$100 million investment into the reweighted GPFI not including the re-investment of dividends.
Reweighted GPFI refers to the MSCI Global Quarterly Property Fund Index (GPFI) in local currency being reweighted to 25% Asia Pacific, 25% Europe and 50% North America.
Source: Invesco Real Estate using data from MSCI Global Quarterly Property Fund Index as of June 30, 2023.

The role of global real estate within a mixed-asset portfolio

Real estate has played an increasing role in investor portfolios over the years. According to the 2022 Institutional Real Estate Allocations Monitor, which tracks 224 institutional investors representing over US$13.4 trillion in total assets and real estate assets of approximately US$1.2 trillion, investors' target allocations to real estate have increased from 8.9% to 11.1% since 2013 (**Figure 14**).

Figure 15 illustrates the correlations between global real estate and various global traditional asset classes. A global private real estate portfolio (represented as the Custom MSCI Global Property Index) produces very low correlations with global bonds (0.23), and low correlation with global equities (0.50) and global public real estate (0.54) suggesting a blend of public and private real estate can also create diversification benefits.

Figure 14:
Target allocations to real estate: Weighted average target allocation to real estate, all institutions, 2013-22



Source: 2022 Institutional Real Estate Allocations Monitor published by Cornell University's Baker Program in Real Estate and Hodes Weill & Associates as of November 2022.

Figure 15:
Correlations of global real estate and other asset classes (local currency returns – Q1 2008-Q2 2023) (X)
Global direct real estate weights: 25% Asia Pacific, 25% Europe, 50% North America

Market sector index	Global Direct Real Estate Index	Global REIT Index	Global Infrastructure Index	Global Equity Index	Global Bond Index
Global Direct Real Estate Index Custom MSCI Global Property Index[4]	1.00				
Global REIT Index FTSE EPRA/NAREIT Developed Index[5]	**0.51**	1.00			
Global Infrastructure Index Dow Jones Brookfield Global Infrastructure Index[6]	**0.54**	0.88	1.00		
Global Equity Index MSCI World Index GR[7]	**0.50**	0.88	0.86	1.00	
Global Bond Index Bloomberg Global Aggregate Bond Index[8]	**0.23**	0.40	0.39	0.34	1.00

Sources: MSCI, Bloomberg and FTSE EPRA/NAREIT Index as of June 2023 and in US dollars. **Past performance is not a guarantee of future results.**

Real estate as an inflation hedge

Figure 16 shows that direct and listed real estate assets have been mildly positively correlated to inflation since 2010, rather than the typically negative correlation seen in equities or bonds. While the table shows the relationship for the past decade, we are clear that this is a period when inflationary pressures were relatively benign, and inflation globally was largely trending lower. Taking a long-term view that the post-2020 global economic environment is expected to follow a similar pattern to the post-GFC recovery, with steady economic growth while countries seek to effect a gradual, controlled reversal of the recent balance sheet expansion, the period shown provides a useful guide to the expected performance of real estate going forward.

Global real estate as a diversifying investment

To help to visualise the impact of adding real estate, **Figure 17** shows an efficient frontier comprised of a series of "traditional" equities/bonds portfolios at various weightings. The light green line then shows clearly that by adding global real estate to a maximum possible allocation of 20%, the efficient frontier is improved with the potential to achieve either a higher return or the same level of return at lower risk.

Another way to look at this topic is to consider the effect of adding a given percentage of global real estate to a portfolio, say 10 or 20% (**Figure 17**). What could be the impact on a traditional global stocks and bonds portfolio over the next 10 years? Two conclusions are clear:

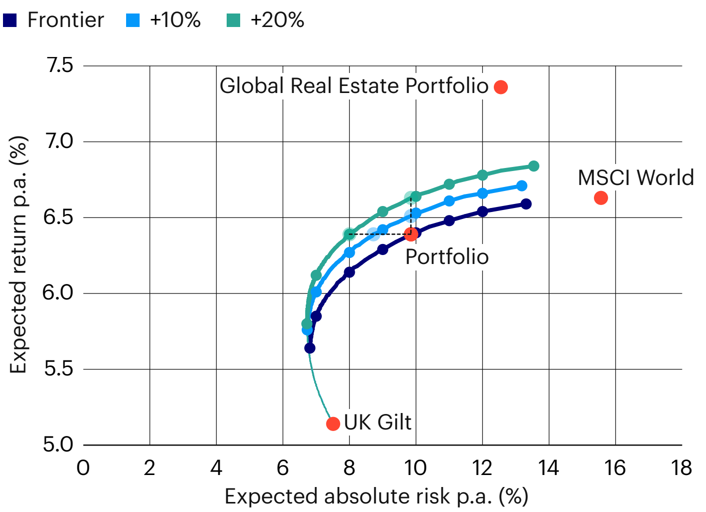
- Adding global real estate could enhance the total expected return of the portfolio for the same level of expected risk: 13bps per annum at the 10% allocation level for real estate to 25bps at the 20% level (enhanced return portfolio)
- Adding global real estate could also more meaningfully potentially reduce the total expected risk of the portfolio for the same level of expected return: 113bps per annum at the 10% allocation level for real estate to 186bps at the 20% level (enhanced return portfolio)

Figure 16:
Correlations with inflation (Local currency, Q3 2009 - Q2 2023)

	Global-CPI	US-CPI	Europe-CPI	APAC-CPI
Global Direct RE	0.14	0.21	0.06	0.20
Global REITS	-0.19	-0.21	-0.19	-0.34
Global Equities	-0.23	-0.16	-0.21	-0.30
Global Bonds	-0.36	-0.29	-0.46	-0.32

Source: Invesco Real Estate using data from MSCI, Macrobond and Bloomberg as of June 2023. **Past performance is not a guarantee of future results.**

Figure 17:
Diversification: risk/return profile
Adding global real estate has offered a better risk-adjusted portfolio return (xi), (xii)



Enhanced return portfolio Expected			Reduced risk portfolio Expected	
Risk p.a. %	10 year returns %	Allocation	Risk p.a. %	10 year returns %
9.9	6.5	10%	8.7	6.4
9.9	6.6	20%	8.0	6.4

Source: Invesco Real Estate using data from Bloomberg L.P. and MSCI as of October 2023. **Past performance is not a guarantee of future results.**

The “enhanced return” portfolio uses less equity than the comparable original pure equity/bond portfolio portfolio and considerably less fixed income whilst global real estate is maximised (whether 10 or 20% constraint is applied) due to its attractive return expectations.

The “reduced risk” portfolio increases fixed income and significantly reduces equity exposure (due to being generally higher risk as well as higher returning). However, to ensure the return expectation levels remain constant equity exposure is substituted for global real estate given its more attractive risk/ return profile.

Conclusion

While there are several potential motivations for investing in global real estate, an investor will also need to assess various other factors before making an allocation such as the impact of currency, tax, liquidity and pricing, as well as an assessment of internal capabilities.

Analysing global real estate markets and the different ways to invest can be a large task. An investor should assess what resources and capabilities they have to execute a global real estate allocation. Most investors may choose to participate via listed real estate, separate accounts, unlisted commingled funds or fund of funds in order to gain access to global real estate without the extensive time required to build out dedicated internal resources, much less the lead time to deploy capital at scale.

For investors considering expanding their exposure beyond their home country, listed and unlisted global real estate may potentially offer attractive returns derived from generally stable income streams, while simultaneously lowering portfolio volatility. The depth and transparency of many international markets makes cross-border investment increasingly accessible, while low correlations to other countries and alternative asset classes makes it a key tool for diversification. For many, time in the market, rather than market timing may be the simpler, better way to achieve portfolio benefits.

References

1 See Global real estate: true diversification amidst looming inflation; Risk and Reward Q4 2021 for further details.
2 Preqin Real Estate Q2 2023: Preqin Quarterly Update.
3 Real Capital Analytics, as of March 2023.
4 The custom index is based on the MSCI Global Quarterly Property Fund Index (GPFI) reweighted to 50% North America, 25% Europe and 25% Asia Pacific. The GPFI is a consultative index of 101 capitalization weighted, core, open ended, quarterly valued direct real estate funds from around the world.
5 The index is an equity market capitalization-weighted index composed of property company constituents that trade on several global exchanges. The returns are used here to represent global real estate investment trust returns (GREITs). (N.B. GREITS are a publicly liquid equity security whose underlying assets are real estate investments. GREITs are often viewed as the liquid proxy for real estate investing).
6 The index is designed to measure performance of pure-play infrastructure companies domiciled globally and covers all sectors of infrastructure, including MLPs and other equities.
7 This index is a market capitalization-weighted index designed to capture large and mid-cap publicly traded equity representation across 23 developed markets. The index covers approximately 85% of the free float-adjusted market capitalization of the public equity markets in each country. The returns are used here to represent global equity market returns.
8 The index is a market capitalization-weighted index that includes Treasury securities, Government agency bonds, mortgage-backed bonds, corporate bonds, US traded investment grade bonds, and some foreign bonds traded in the US.

Notes

(i) Total investable universe market size is estimated based on each region’s investable stock as defined by latest PwC real estate report as of year-end 2020, Real Estate 2020: Building the future. (ii) Regional compositions of the MSCI Global Quarterly Property Fund Index are estimated based on fund-level Net Asset Value (NAV) as of Q4 2022. Sum of parts may not add to total due to rounding. (iii) Regional market capitalization of the FTSE EPRA/NAREIT Global Real Estate Index is estimated based on the free float method as of March 2023. (iv) “Transparent universe” is estimated based on the JLL Transparency Index 2022 Edition. The JLL index was derived based on factors such as investment performance, market fundamentals, listed vehicles, regulatory/legal environment, and transaction processes in 2020. For this analysis, the transparent universe includes 33 countries, which were categories as either “Highly transparent” or “Transparent” according to JLL. Highly transparent countries include Australia, Canada, France, Germany, Ireland, Netherlands, New Zealand, Sweden, United Kingdom and United States. Transparent countries include Austria, Belgium, China, Czech Republic, Denmark, Finland, Hong Kong, Hungary, Italy, Japan, Luxembourg, Malaysia, Norway, Poland, Portugal, Singapore, Slovakia, South Africa, South Korea, Spain, Switzerland, Taiwan, and Thailand. Transaction data is based on the average of 2019-2022 data reported to Real Capital Analytics as of October 2023. (v) Annualized averages are generally calculated based on the geometric averages of total returns in 2013-2022. (vi) Shares of total returns are approximate values which exclude residual effects. Both returns and standard deviations were derived based on 20 years (2001-2022) of annual income return and capital growth histories or longest history available. Global equity performance is calculated based on the MSCI World Index. Global bond performance is calculated based on the Bloomberg L.P. Global Aggregate Index. Global public real estate performance is calculated based on the FTSE EPRA/NAREIT Global Developed Index. Global private real estate performance is calculated based on the MSCI Global Property Index. (vii) Correlations generally use the longest available common time period (2007-2022). Correlations involving China are calculated using the longest available period (2007-2022). The MSCI Global Property Fund Index (GPFI) incorporates a consistent dataset of unlisted core open-ended funds across the globe and tracks core real estate performance in the primary investment regions – Asia Pacific, Europe and North America. (viii) Australia, Austria, Belgium, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Hong Kong, Hungary, Indonesia, Ireland, Italy, Japan, Malaysia, Netherlands, New Zealand, Norway, Poland, Portugal, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, UK, USA, Global. (ix) MSCI Global Quarterly Property Fund Index (GPFI) was reweighted to 50% North America, 25% Europe and 25% Asia Pacific. (x) Correlations were calculated using the longest available common time period from 1Q 2008 through 2Q 2023. (xi) Analysis - We have taken the portfolio analysis, using proxy assets, within our Vision work space. Invesco Vision is a portfolio management decision support system which provides insightful information about the risks and return trade-offs presented by individual assets and portfolios. Evaluating risk - Vision uses a robust risk model called MSCI BarraOne for estimating risk by extrapolating factor exposures of the various portfolio investments. These BarraOne factors are used as building blocks to represent each investment. We estimate long-term potential risks based on current positioning, as opposed to measuring the realised standard deviations. The risk statistics are calculated using an exponentially-weighted covariance matrix with an 8-year half-life. This means that all data points are used with the more recent data points assigned a greater weighting. Estimating returns - Invesco Investment Solutions develop proprietary capital market assumptions that provide long-term estimates for the behaviour of major asset classes globally. The assumptions, which are based on a 10-year investment time horizon, are then applied to the portfolio to estimate long-term portfolio returns. (xii) For illustrative purposes only. Portfolio data presented does not constitute investment advice nor investment recommendations. The expected return and risk is not a guarantee. An investment cannot be made into an index. Please note the non-GBP exposures have been hedged. The risk model is based on the Barra one model. Forecasts are not reliable indicators of future performance. UK gilt = Bloomberg Global Aggregate Bond Index, global equities = MSCI World Index.

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