Private real estate: in search of the appropriate benchmark

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Partners Group
Passion for Private Markets

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EXECUTIVE SUMMARY

Regardless of the asset class, the ability to generate superior investment performance is the measurement that separates good investors from great investors. In most asset classes, performance is easily compared and contrasted against a commonly agreed upon investment universe or an appropriate index of investment opportunities. But in private real estate, investors face the dilemma of attempting to evaluate performance without the benefit of a commonly agreed upon benchmark.

Despite greater availability of private real estate benchmarks, absolute return comparisons continue to provide investors with the most pragmatic solution to benchmark the performance of their real estate portfolios. The absolute return benchmarking approach evaluates the return of a property over a certain period of time relative to a fixed target number and is a methodology with the significant advantage of simplicity.

In this Research Flash, we intend to raise investor awareness of alternative performance measurement methods and indices. We review the challenges investors face in performance measurement, compare the historical performance of public vs. private real estate indices and evaluate some of the key merits as well as the shortcomings of a number of the private real estate indices currently available to investors. Our goal is to help investors better understand the characteristics of the indices currently available to them and make more informed performance measurement decisions going forward.

Provided in the appendix of this Research Flash are the composition characteristics and statistics of each of the following indices:

- Asian Association for Investors in Non-Listed Real Estate Vehicles (ANREV)
- Cambridge Associates Real Estate Index
- CoStar Commercial Repeat Sale Indices (CCRSI)
- European Association for Investors in Non-Listed Real Estate Vehicles (INREV)
- Global Real Estate Fund Index (GREFI)
- Green Street Commercial Property Price Index
- Investment Property Databank (IPD)
- NCREIF Closed-End Value-Add (NFI-CEVA)
- NCREIF Open End Diversified Core Equity (NFI-ODCE)
- NCREIF Property Index (NPI)
- Partners Group Thomson Reuters Private Real Estate Index (PGTR)

While the data provided highlights the continued attractiveness of private real estate as an asset class, it is our belief that the creation of truly robust, comprehensive and relevant indices will attract even more investors to private real estate over the long run.

EVALUATING PERFORMANCE: FINDING AN APPROPRIATE "INDEX"

Private real estate lacks a comprehensive benchmark that can mirror the increasingly wider range of investment strategies, the global property opportunity set and the level of granularity necessary to accommodate today's diverse array of property sectors and market dynamics. Unfortunately, real estate suffers from several unique challenges in establishing a globally comprehensive benchmark.

By definition, an index should be "passive." Yet properties are often undergoing continuous operational improvements with a high degree of active management and associated costs over extended time periods. Secondly, an index needs to be informationally efficient, but real estate is renowned as an asset class where local expertise is necessary to possess all the relevant information. Finally, no real estate universe possesses daily liquidity, where trades occur on a daily basis, making it impossible to replicate a passive index in a portfolio context. These three characteristics of real estate pose the initial challenges to investors in finding a true "index" for comparative purposes.

Despite these challenges, more real estate indices are available to investors than ever before — with differing constituent sets, fund strategies, property type inclusion parameters and regional characteristics. While these indices can provide benchmarking suitable for one specific portion of a real estate portfolio, globally comprehensive real estate return comparisons still remain elusive. Recognizing the need for a more globally inclusive data set, Partners Group established the Partners Group Thomson Reuters Private Real Estate Index (PGTR Index) in 2010, with an initial sample of 250 value-added and opportunistic funds with vintage years dating back as early as 1981. The PGTR Index sample grew to over 300 funds provided by over 60 firms with total commitments of nearly USD 200 billion. In mid-2014, the index was discontinued when Thomson Reuters entered into a joint venture with Cambridge Associates and created an index based on a more robust data set of over 700 funds.

While it may be fairly intuitive to use a benchmark related to the asset class in which you are investing, a lack of data availability has led many real estate investors to choose non-real estate related performance measurement tools. Both the Consumer Price Index and government bond yields (e.g. US Treasury) plus an appropriate hurdle rate (to reflect the specific risks associated with the real estate asset class) are regularly used to provide an estimated relative return assumption for real estate portfolios. Given the lack of a comprehensive global index, investors typically employ three divergent approaches to evaluate real estate investment performance:

- Peer comparison
- Absolute return
- Relative return

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Peer comparison

A "peer universe" is designed to reflect the performance of all managers that are effectively competitors or invest and manage real estate in the same style or specialization as the subject manager. Peer comparisons allow investors to distinguish a specific track record from a peer set and determine superior skill over extended or specific time periods. The NCREIF fund index series (comprised of predominantly core properties, performance reported on a leveraged basis, gross of fees, but inclusive of property level management fees) is a prime example of a "peer universe" that covers a relatively narrow segment of private property markets, focusing exclusively on US properties held by a small number of US tax-exempt fiduciaries. As such, the index series is missing some key components of the evaluation function such as the property level data that exists outside of the US. For example, a global property investor looking to benchmark the performance of a Chinese retail property may struggle to find an accurate comparable property within the NCREIF (or other data providers') fund universes.

Absolute return

The absolute return benchmarking approach evaluates the return of a property over a certain period of time relative to a fixed target number. This methodology has the significant advantage of simplicity. It can provide a relative value comparison when analyzing investments on a cross-border basis or across different durations. There is one significant drawback to an absolute return benchmark versus a relative benchmark, which is a potential misalignment of interests between the investor and the manager. For example, if a core investment strategy is falling short of an absolute return target, the manager may be incentivized to take on additional risk during periods of low yield, such as pursuing higher risk/higher return core-plus or value-added investment opportunities. Conversely, an opportunistic manager may not be incentivized to pursue higher yielding strategies during periods of outsized performance in order to preserve realized performance levels.

Relative return

A relative return is the return that an asset achieves over a period of time compared to a benchmark. The relative return is the difference between the absolute return achieved by the asset and the return achieved by its comparative benchmark. A relative return allows the evaluation of a manager over and above what an investor could achieve by investing directly into an index or the respective benchmark. However, defining the appropriate benchmark for relative return comparisons that meets investors' minimum data requirements, such as adequate regional coverage, strategy composition, leverage, fund level or property level data, etc., is often the difficulty with this assessment. Accordingly, if the manager is going to be evaluated relative to a benchmark, the manager should have the ability to control that relative performance as much as possible. This suggests that the manager should be free to decide whether, how and when portfolio composition should deviate from the composition of the agreed upon benchmark. For example, opportunistic managers pursuing more niche property types should not be constrained to only those property types that are held within the respective benchmark they are being evaluated against.

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EVALUATING BENCHMARKS: PUBLIC VS. PRIVATE

Public real estate indices

While the bulk of the institutional real estate investment universe remains overwhelmingly private, the listed sector has grown significantly over the last decade. As the sector gets larger, there is an increasing need to evaluate portfolio investment performance to support decision-making. However, the structural features of the different listed property companies across the world can be as diverse as the markets in which they operate.

Although a host of index providers track listed property companies, the majority of investors looking to track the performance of public global real estate securities will turn to one of two major indices: the S&P Developed Property Index or the FTSE EPRA/NAREIT Developed Real Estate Index. Only subtle differences exist between the two — eligibility criteria and geographic coverage. The S&P's criteria allow for a broader range of small- and mid-cap companies which enable it to cover roughly 70% more companies than the FTSE, which also increases the index's constituent base in regions such as Asia. Thus, this extended company coverage plays an important role in the index's performance, since small- and mid-cap stocks in both indices have generally outperformed their larger peers over the last 3-, 5- and 10-year time horizons.

Recent studies have substantiated that listed REIT returns have generally exceeded those of core private real estate funds, as shown in Exhibit 1. Returns for both private and public real estate funds are typically inclusive of leverage, magnifying the volatility of returns — intensifying the impact of negative returns in real estate downturns and improving returns in up markets. However, core private real estate funds typically operate with significantly less leverage than listed REITs (NCREIF Fund Index Open End Diversified Core Equity universe restricts leverage to a maximum of 40% for inclusion). Over the longer term, however, higher leverage has generally benefited listed REITs.

In addition to higher leverage, reviewing the constituent and sector breakdown of public REITs reveals additional characteristics that may have contributed to recent outperformance. Using the FTSE EPRA/NAREIT Developed Real Estate Index as an example, over 20% of the index is classified as "real estate holding and development", allowing REITs to invest not only in core properties such as apartment, office and retail, but also in real estate services and speculative development strategies. Simply put, a public REIT should not necessarily be comparable with core real estate investments.

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Exhibit 1: Listed REITs vs. Core Private Real Estate

	Rolling 5 Years Annualized	Rolling 10 Years Annualized	Rolling 15 Years Annualized
Listed REITs	11.3%	12.3%	12.3%
Core private real estate funds	7.8%	7.5%	7.4%
% of periods listed REITs outperform	79%	96%	97%
Number of periods starting Q1 1978	117	97	77

Source: Cohen & Steers, "Revisiting the Truth About Real Estate Allocations" June 2013; data as of 31 Dec. 2012

The results of a recent study[1] on listed US REITs (represented by the FTSE NAREIT Equity REIT Index) found that REITs have consistently outperformed US private core real estate indices (represented by the NFI-ODCE) over longer time periods. Using rolling-return analysis over rolling 15-year periods, REITs outperformed core real estate funds 97% of the time. Conversely, the study also found that REITs outperformed opportunistic funds (represented by the NCREIF Townsend Opportunistic Fund Index) only 21% of the time over the same rolling 15-year time periods, as shown in Exhibit 2.

Exhibit 2: Listed REITs vs. Opportunistic Private Real Estate

	Rolling 5 Years Annualized	Rolling 10 Years Annualized	Rolling 15 Years Annualized
Listed REITs	11.3%	11.5%	11.8%
Opportunistic private real estate funds	14.1%	15.5%	15.7%
% of periods listed REITs outperform	39%	14%	21%
Number of periods starting Q4 1988	74	54	34

Source: Cohen & Steers, "Revisiting the Truth About Real Estate Allocations" June 2013; data as of 31 Dec. 2012

The study went further, suggesting that return cycles for public and private opportunistic real estate funds have been out of sync, resulting in distinct periods of outperformance for each and creating opportunities for complementary diversification benefits between the two strategies. Because the leverage of the FTSE NAREIT Equity REIT Index (34% leverage) and the NFI-ODCE (22% leverage) differ considerably, the study adjusted the FTSE NAREIT Equity REIT Index returns for an appropriate comparison. Using the leverage-adjusted FTSE NAREIT Equity REIT Index (reduced to 22% leverage) outperformance was reduced by approximately 110 basis points. In addition, REIT outperformance was accompanied by much greater

[1] Cohen & Steers, "Revisiting the Truth About Real Estate Allocations" June 2013

quarterly volatility, but the authors acknowledged that comparing appraisal-based volatility to transaction-based volatility over shorter time periods may not be relevant for private real estate investors with a longer-term approach.

Private real estate indices

For many years, the NCREIF Property Index (NPI) had been the sole standard by which to evaluate private real estate performance. The NPI was launched in 1982 and was the first attempt to build a comprehensive index that represented the performance of the US commercial real estate market with data going back to 1977. As of the end of the second quarter of 2014, the NPI comprised over 7,000 properties with an aggregate market value of over USD 380 billion and still very much serves its originally intended purpose.

While the NPI offers the broadest measure of the US commercial real estate market, it does suffer from several inadequacies: it is not an investable index, it represents exclusively unleveraged core performance and is comprised of apartment, retail, industrial, office and hotel data only. The index is void of new development or redevelopment properties as these assets are only considered after they are at least 60% occupied or one year has passed since receiving a Certificate of Occupancy. Additionally, given the difficulties in valuing properties on an ongoing basis, the NPI was designed as an appraisal-based index, obtaining market movements from appraised property values.

To address these limitations, NCREIF launched a series of back dated "fund" indices in the late 2000s, including the NCREIF Open End Diversified Core Equity (NFI-ODCE), the NCREIF Open End Equity (NFI-OE) and the NCREIF-Townsend Fund Index series. In December 2013, NCRIEF launched the NCREIF Closed-End Value-Add Fund Index to replace the predecessor NCREIF Townsend Fund Index (which was discontinued in September 2013). Exhibit 3 highlights the differences between NCREIF's various index universes.

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Exhibit 3: NCREIF Index Universes

	NPI	NFI-ODCE	NFI-OE	NCREIF-Townsend* (discontinued)	NCREIF Closed-End Value-Add Fund Index
Property or fund level	property	fund	fund	fund	fund
Number of constituents	7,141	34	54	261	45
Strategy	core	open end core funds	open end core funds	Closed-ended value-added and opportunistic funds	Closed-ended value-added funds
Leverage	unleveraged	22.1%	24.6%	43.6% value-added/47.6% opportunistic	45.1%

Source: NCREIF data as of 30 June 2014; *As of 30 September 2013 due to discontinuation of index

Across the Atlantic, a similar effort was made to compile non-US real estate data as Robert Nabarro and Ian Cullen began generating the first reliable UK-specific commercial property index for European real estate investors in 1985. This effort evolved into the Investment Property Databank (IPD) Index, and in the 1990s, expanded beyond the UK to other countries.

IPD is for developed international markets what NCREIF is for the US: the most established provider of property data which can be used as a source for research in the real estate space. Appraisal-based, property-level performance is reported on an un-leveraged basis net of property level operational costs, but gross of asset or performance-based fees. Today, IPD, an MSCI subsidiary, is a provider of global real estate performance and risk analysis. The database holds information on 79,000 properties valued at approximately USD 1.7 trillion, located in 33 countries with select regions comprised of more than 25 years of data. It also provides indisputable evidence that global real estate markets are not perfectly correlated and perform at varying speeds over time, as illustrated in Exhibit 4. However, like the NPI Index, the IPD Global Index suffers from several inadequacies, including that it is not an investable index.

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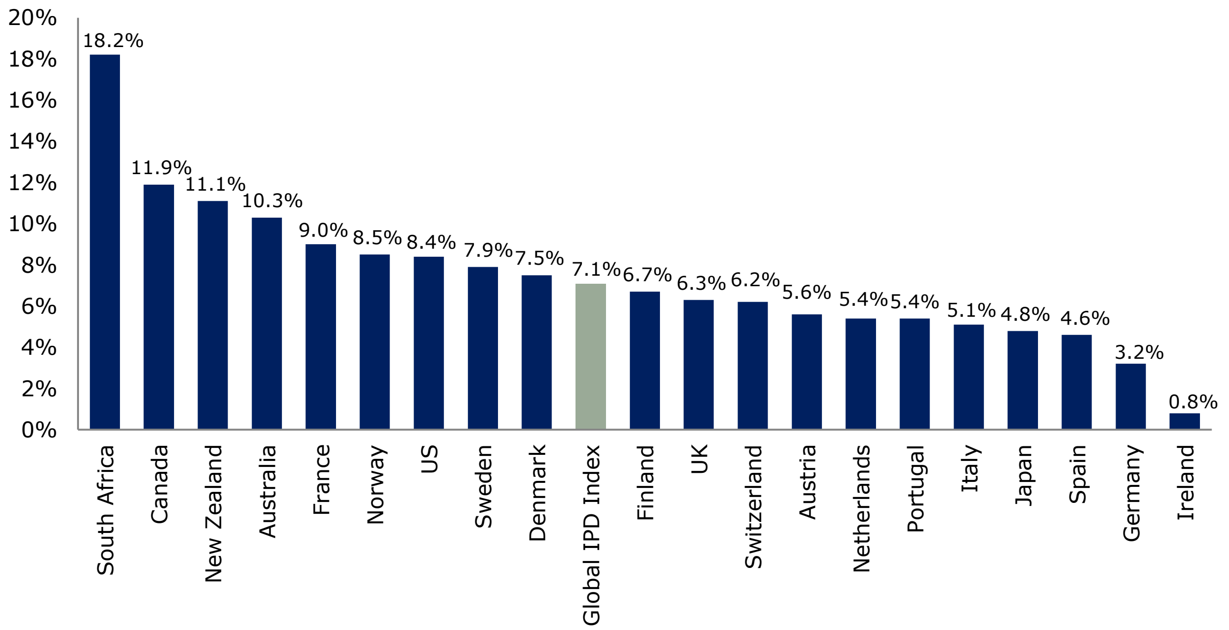
Exhibit 4: IPD 10-Year Annualized Country Performance



Source: IPD data as of 31 December 2013; countries without a 10-year track record excluded

The IPD Index also reflects the returns of core properties (e.g. generally low leverage, stabilized assets) on a gross basis. Therefore, finding an appropriate index to compare against a global portfolio comprised of value-added and opportunistic properties remains challenging. Because IPD offers the most regionally comprehensive database of properties, we were interested in what a potential "back of the envelope" return series would look like for a global data set, taking into account leverage as well as typical investment management fees. In Exhibit 5, we compare the quarterly returns of the IPD global series with an "adjusted" IPD Index, to synthetically reflect the potential returns of value-added and opportunistic strategies. We assumed an additional return premium over the core IPD Index return of 2% per annum for value-added and 4% per annum for opportunistic real estate exposure. The return series is also inclusive of higher leverage (30%), net of management fees (1.2% p.a.) and assumes a typical carry of 20% over an 8% hurdle. The index was weighted equally between the three strategies, one-third core, one-third value-added and one-third opportunistic.

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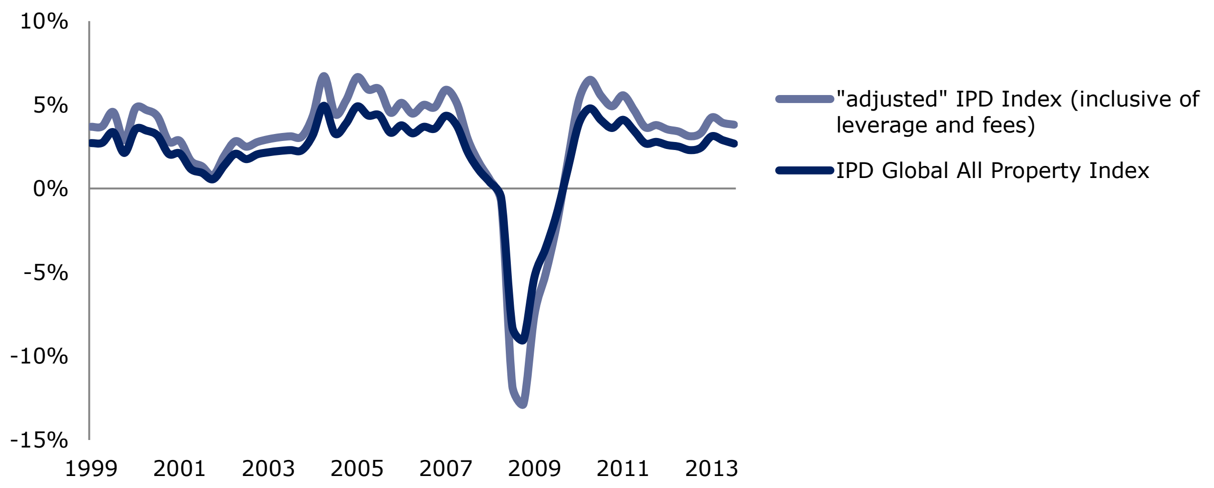
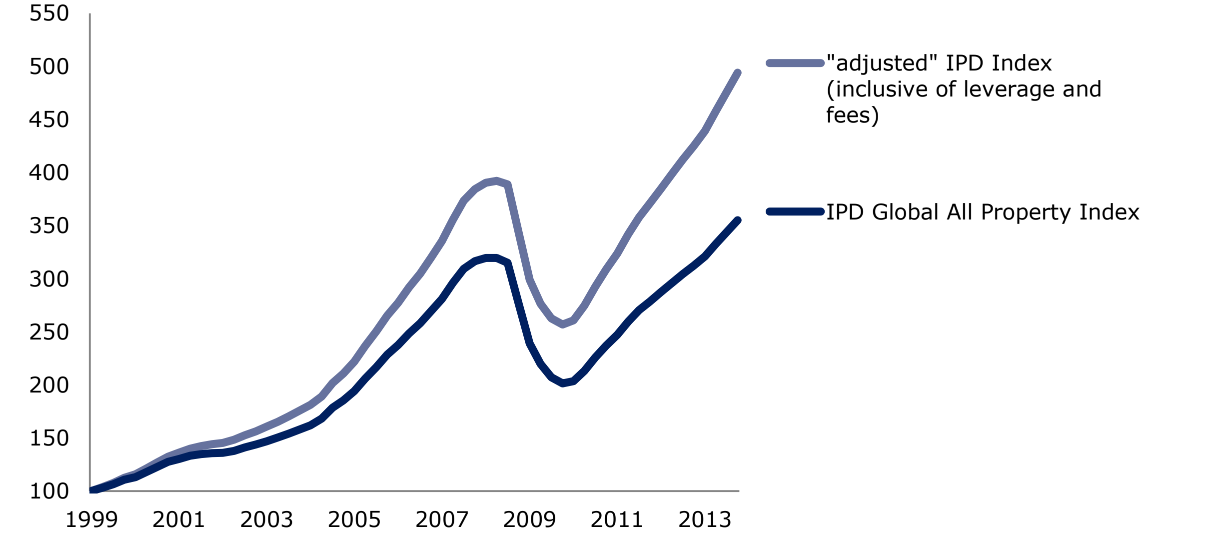
Exhibit 5: IPD vs. Adjusted IPD Index Quarter Returns



Source: IPD data as of 31 December 2013, Partners Group assumptions and calculations

Over the period from 1999-2013, the adjusted index had a maximum quarterly return of 6.7% and the largest quarterly decline of -12.9% vs. the IPD Global All Property Index which had the largest quarterly return of 5.0% and the lowest return of -9.0%. Exhibit 6 illustrates this quarterly performance compounded over time assuming a USD 100 dollar investment in both return series.

Exhibit 6: IPD vs. Adjusted IPD Index Compound Growth 1999-2013



Source: IPD data as of 31 December 2013, Partners Group assumptions and calculations

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Exhibit 6 illustrates that leverage proved positive during the rising markets of the early 2000s, but was a performance drag during the falling markets of the late 2000s. Overall, the adjusted index provides a better picture of how a portfolio comprised of higher leverage (mimicking a diversified private real estate portfolio comprised of core, value-added and opportunistic strategies), but still inclusive of typical investment fees, could have performed over this time period. What the chart does not show, is the added benefit value-added and opportunistic strategies offer in helping to mitigate a negative return environment through efforts to create value at the property level through active asset management.

The European Association for Investors in Non-Listed Real Estate Vehicles (INREV) was also early in recognizing the need for increased private real estate data, and in 2002 developed the NCREIF Fund Index European equivalent. The INREV Index is a performance index for non-listed European real estate funds investing 90% or more in Europe, measuring performance based on net asset value on a quarterly and annual basis. In Asia, the ANREV Index, INREV's local equivalent, provides a performance index for Asian non-listed real estate funds investing 90% or more in Asia using the same methodology as INREV. Together, they provide an overview of non-listed real estate vehicles active in the three areas covered: European Direct Vehicles, Asian Direct Vehicles, and Fund of Funds for Europe and Asia. The databases comprise key characteristics for all real estate vehicles like the strategy, size, allocation and contact details. Exhibit 7 highlights the differences between ANREV and INREV's various indices.

Exhibit 7: INREV Vehicles Universe

	INREV Direct Vehicles Europe (Europe)	ANREV Direct Vehicles Universe (Asia)	Fund of funds database (Europe/Asia)	INREV Debt Funds Universe (Europe)
Property or fund level	Fund	Fund	Fund	Fund
Number of constituents	451	94	59	37
Strategy	Open and closed core, value-added and opportunistic	Open and closed core, value-added and opportunistic	Non-listed funds/com-mingled funds	Closed-ended debt funds
Leverage	28.9%	30.3%	n/a	0-100%

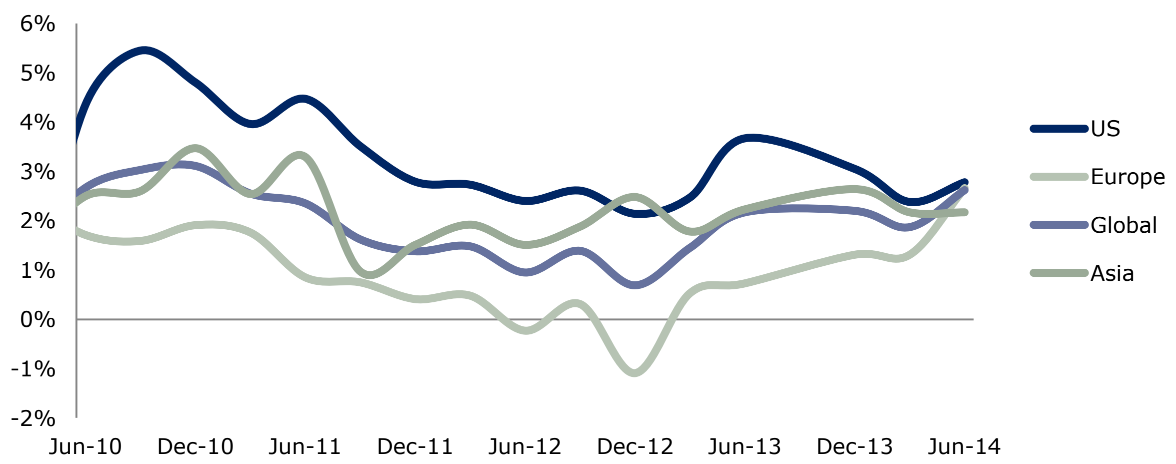
Source: INREV and ANREV, data as of 30 June 2014

Subsequent to the NCREIF and INREV fund index launches, a vast array of consultants, investment managers and data providers launched various real estate indices with varying levels of success. Two of the most promising developments for a more comprehensive global

data set include the Cambridge Associates Real Estate Index, and the Global Real Estate Fund Index announced in a collaborative effort between NCREIF, INREV and ANREV.
In November 2013, Cambridge Associates announced it would make its global private real estate investment performance benchmarks available publicly on a quarterly basis. The performance data is derived from quarterly and annual audited financial statements and cash flow information provided directly by fund managers. The benchmark is currently comprised of information from more than 700 institutional-quality funds from around the world formed between 1986 and 2013, focusing primarily on the value-added and opportunistic real estate categories.

Following Cambridge Associates' announcement, at the end of 2013, NCREIF, INREV and ANREV launched their initial collaborative effort to produce a new global real estate index. The three providers teamed up to develop a new index showing the performance of non-listed real estate funds on a global basis, the Global Real Estate Fund Index (GREFI). The GREFI provides regional and country segregation, strategy segregation (core, value-added and opportunistic) as well as structure segregation (open-ended and closed-ended). While the GREFI remains predominantly weighted to core funds, NCREIF, INREV and ANREV have acknowledged there is room for improvement in their non-core data and expect to add more value-added and opportunistic funds in the near future. Currently, a historical return series is only available from 2010 onward, but Exhibit 8 illustrates the initial product of this combined effort and shows how global real estate investors may be able to better measure the performance of their global portfolio relative to an index going forward.

Exhibit 8: Global Real Estate Fund Index Quarterly Returns



Source: NCREIF data as of 30 June 2014

Transaction-based real estate indices

In addition to the lack of an index providing comprehensive regional coverage, private real estate indices suffer from the key issue that valuations are lagged and based on appraised values (rather than transactions) and data is derived from a small sample that typically consists exclusively of large core properties. The greatest challenge index providers have faced in creating a transaction-based index is controlling for differences between the properties that transact from one period to the next. There are generally two accepted methodologies to producing transaction-based indices, hedonic[2] modeling and repeat-sales regression. The first commercial real estate transaction-based index effort used the hedonic approach, based on the properties sold from the NCREIF Index database. The index was produced by combining the NCREIF Appraisal-Based Index with regression time-dummy coefficients reflecting the differences between appraisals and transaction prices. The transaction-based index was initially launched by MIT’s Center for Real Estate (MIT/CRE) in 2006, and published quarterly until 2011, when NCREIF took over production and publication and referred to the index as the NCREIF Transaction-Based Index.

In 2006, Real Capital Analytics (RCA) sought to produce a transaction-based index and sponsored the development of a repeat-sales regression index, which was also undertaken by MIT/CRE. The methodology attempted to use repeat sales to capture properties that have sold more than once, excluding any significant change in the building characteristics between sales and therefore purely reflecting real estate market conditions. MIT/CRE launched a version of the repeat-sales regression index at the end of 2006, and in 2011 a second generation of this index was taken over by Moody’s Investors Service and Real Capital Analytics, called the Moody’s/RCA Commercial Property Price Index (CPPI). The index measures the price changes in US and UK commercial real estate based on completed sales of the same commercial property over time and provides a broad measure of commercial property price trends.

While the Moody’s/RCA CPPI was the first commercial real estate repeat-sale index, it suffered from initial limitations in its data coverage, in that it covered only ten years of historical transaction data and focused exclusively on high-value transactions (USD 5 million and over initially, which was subsequently extended to USD 2.5 million and over in 2005). RCA’s largest competitor, CoStar, shortly followed suit using a similar methodology to produce the CoStar Commercial Repeat Sales Index which consists of transactions going back over 20 years and includes commercial real estate transactions across the price spectrum.

Separately from the RCA, Moody’s and CoStar efforts, Green Street developed a commercial property price index that is a time series of unleveraged US commercial property values that captures the prices at which commercial real estate transactions are currently being negotiated

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[2] Hedonic regression equations treat certain building attributes (number of units, building quality, distance from city center, etc.) separately, and estimates prices for each of them. This information can be used to construct a price index.

and contracted. A key difference between Green Street's index and the repeat-sales indices previously mentioned is that Green Street looks at current negotiations and contracts. In addition, the aforementioned repeat sales indices give equal weight to all properties, while Green Street's methodology gives greater weight to expensive properties and lesser weight to cheaper properties. The Green Street Commercial Property Price Index captures changes in the aggregate value of the commercial property sectors more quickly (relative to other indices that are based on closed transactions from market prices from several months earlier) and allows the index to be released within days of month-end. The weighting by asset value within each property sector provides a more sensitive gauge of changes in aggregate values than equally-weighted counterparts.

Universe size and scale

To get a better sense of the size, strengths and weakness of each index, Exhibit 9 provides an illustrative example of the respective size of each universe. The smallest index (NCREIF Closed-End Value-Add Fund Index) totals USD 23 billion and the largest (IPD All Property Global Index) just over USD 1.9 trillion. They are plotted based on the comprehensiveness of the regions covered (i.e. country-specific, regionally-specific or global) as well as the type of investment data (funds, transactions or property level data).

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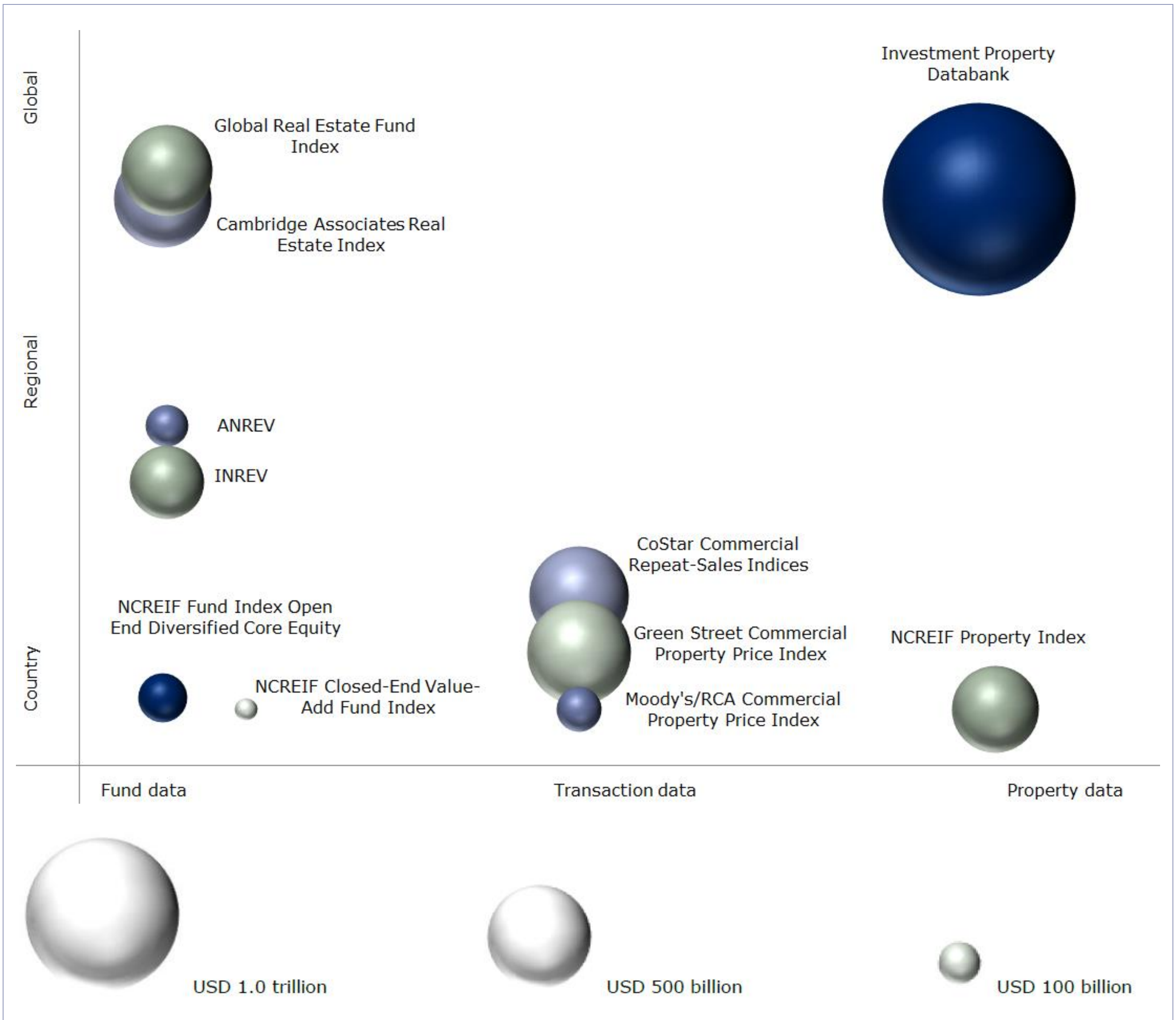
Exhibit 9: Real Estate Benchmark Universe Size and Scope



Source: Partners Group data as of 31 December 2013

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In the Appendix, we detail the universe, available sub-indices, time period of coverage, as well as important issues in interpretation and comparison for each of the following indices:

- Asian Association for Investors in Non-Listed Real Estate Vehicles (ANREV)
- Cambridge Associates Real Estate Index
- CoStar Commercial Repeat Sale Indices (CCRSI)
- European Association for Investors in Non-Listed Real Estate Vehicles (INREV)
- Global Real Estate Fund Index (GREFI)
- Green Street Commercial Property Price Index
- Investment Property Databank (IPD)
- NCREIF Closed-End Value-Add (NFI-CEVA)
- NCREIF Open End Diversified Core Equity (NFI-ODCE)
- NCREIF Property Index (NPI)
- Partners Group Thomson Reuters Private Real Estate Index (PGTR)

CONCLUSION

It is our belief that absolute return comparisons provide investors with the best solution to benchmark the performance of their global real estate portfolios, due to their simplicity and global applicability. However, despite greater availability of real estate benchmarks, there is regrettably no definitive answer to the performance measurement dilemma facing today’s private real estate portfolios. Irrespective of this, the data provided in this Research Flash highlights the continued attractiveness of the private real estate asset class.

We have highlighted some promising new efforts in benchmark construction, which have been driven by greater demand for a widely accepted benchmark in real estate; one that parallels the type of transparency and granularity that is available for investors in public markets. It is our belief that robust, comprehensive and relevant indices will lead to a better understanding of real estate's performance attributes and attract more investors to the asset class over the long run.

The continued effort to compile real estate data will ultimately provide the necessary depth and breadth of market coverage to facilitate the creation of a benchmark solution for broader aspects of private real estate investment. It is in real estate managers’ own interests to continue to provide data to index providers that both demonstrate the compelling return characteristics of private real estate and also facilitate the creation of a truly global and representative benchmark.

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Asian Association for Investors in Non-Listed Real Estate Vehicles (ANREV)

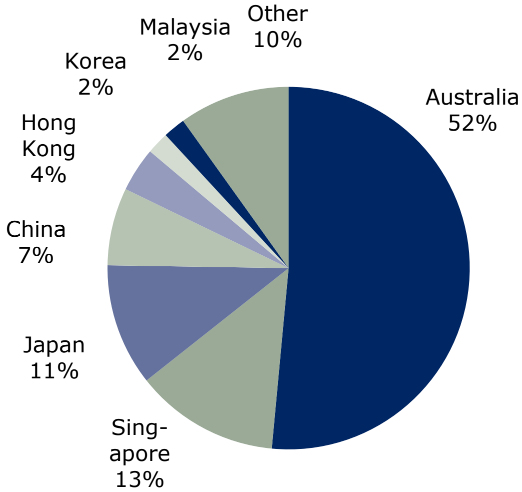
Description:

ANREV is the Asian association for investors in non-listed real estate vehicles. ANREV's vehicles universe is comprised of Asian direct vehicles (90% or more of their GAV is targeted to be invested in Asia Pacific). The index was launched in 2011 with data going back to 2006 and applies the same approach and methodology as the INREV Index for European funds. The database is comprised of key characteristics for all non-listed real estate vehicles including strategy, size and allocation.

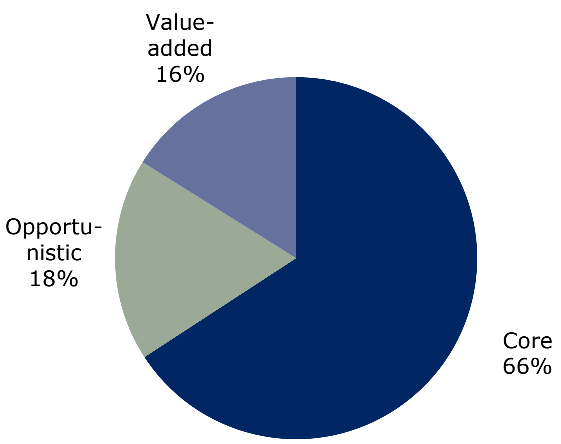
Benchmark statistics:

Market capitalization:	USD 88 billion
Sample size:	94 funds
Year of inception:	2006
Investment universe:	Core, value-added and opportunistic

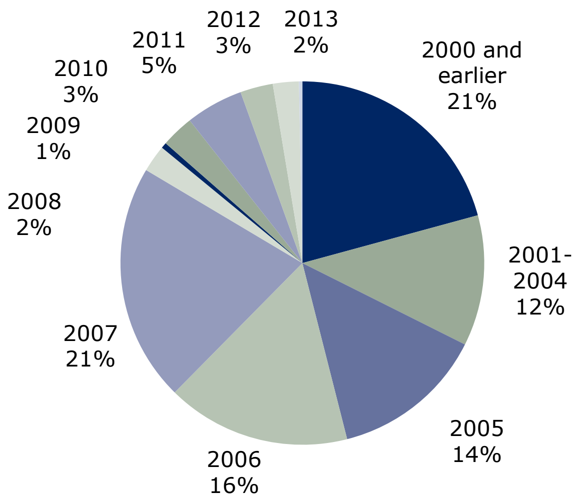
Geographic composition:



Strategic composition:



Vintage year composition:



Source: ANREV as of 30 June 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

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Cambridge Associates Real Estate Index

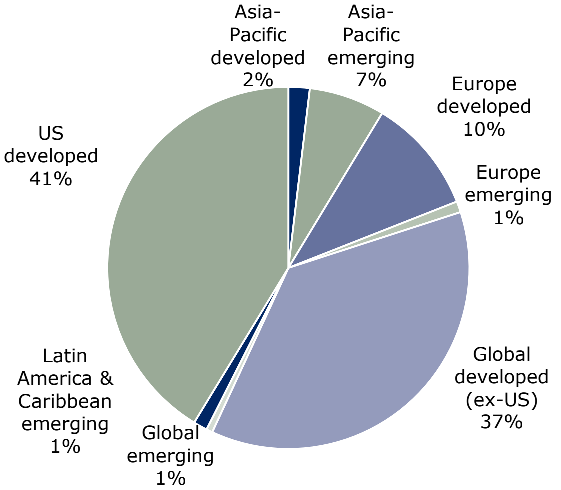
Description:

The Cambridge Associates Real Estate Index is comprised of 748 funds and represents USD 475 billion of capital raised. The index benefits from Cambridge's proprietary database. Cambridge Associates' Benchmark Calculator enables investors to calculate internal rates of return (IRRs), multiples and end-to-end returns for a customized universe.

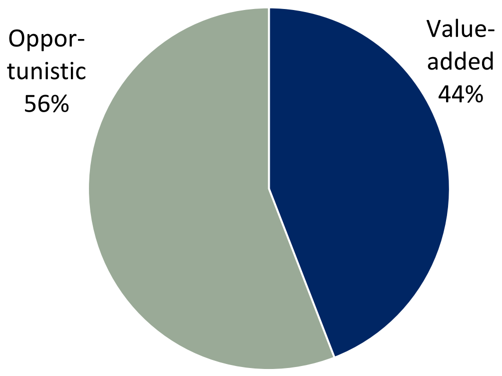
Benchmark statistics:

Market capitalization:	USD 475 billion
Sample size:	748 funds
Year of inception:	1986
Investment universe:	Opportunistic and value-added

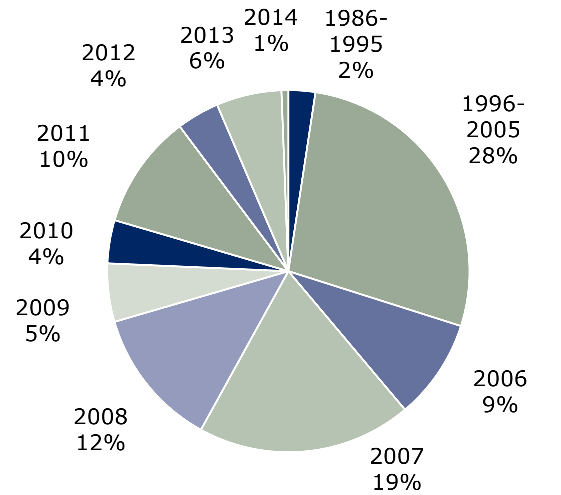
Geographic composition:



Strategic composition:



Vintage year composition:



Source: Cambridge Associates, ThomsonOne as of 31 March 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

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CoStar Commercial Repeat-Sales Indices (CCRSI)

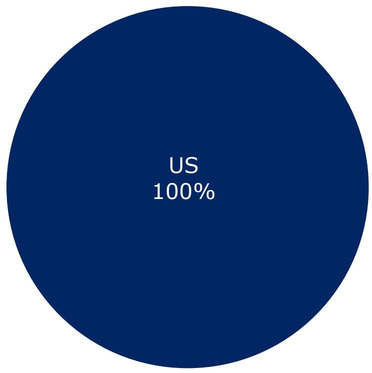
Description:

The CCRSI tracks commercial property price movement back to 1996.The index consists of four national indices: a U.S. Composite Index, a U.S. Investment Grade Index, a U.S. General Commercial Index and 34 sub-indices by property type, region and by cluster (prime vs. non-prime). The CCRSI is produced using property sales transaction data from CoStar Group.

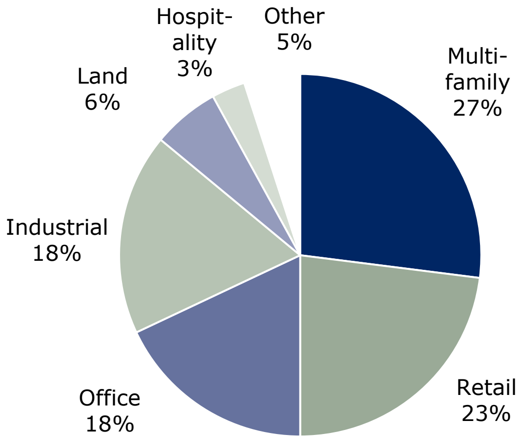
Benchmark statistics:

Market capitalization:	USD 500 billion
Sample size:	Over 125,000 commercial property transactions
Year of inception:	1996
Investment universe:	Hospitality, industrial, land, multifamily, office, and retail

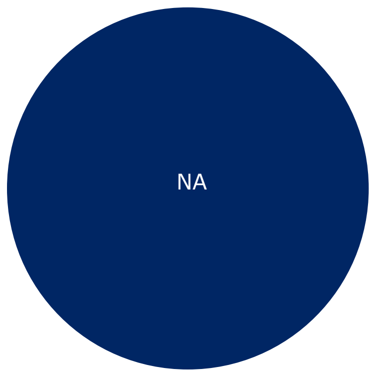
Geographic composition:



Strategic composition:



Vintage year composition:



Source: CoStar as of 30 June 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Private real estate: in search of the appropriate benchmark

European Association for Investors in Non-Listed Real Estate Vehicles (INREV)

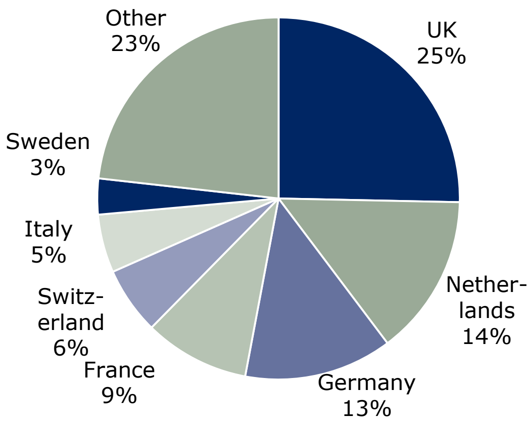
Description:

INREV is the European Association for Investors in Non-Listed Real Estate Vehicles. INREV's Vehicles Universe is comprised of European Direct Vehicles. The database is comprised of key characteristics for all real estate vehicles including strategy, size and allocation. INREV is committed to improving transparency and promoting best practices across the asset class, making it more accessible and attractive to investors.

Benchmark statistics:

Market capitalization:	EUR 274 billion
Sample size:	451 funds
Year of inception:	2001
Investment universe:	Core, value-added and opportunistic

Geographic composition:



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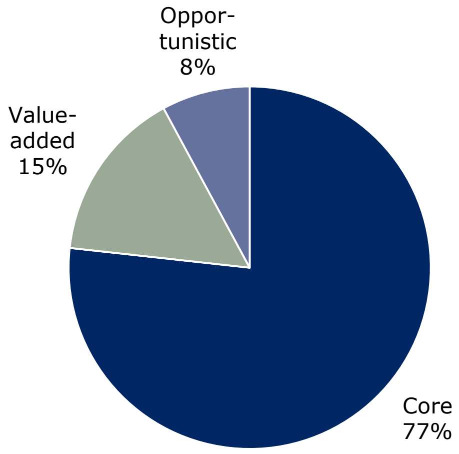
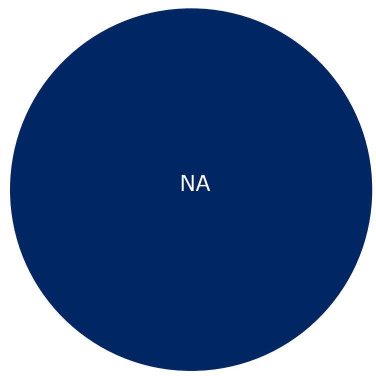


Vintage year composition:



Source: INREV as of 30 June 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Private real estate: in search of the appropriate benchmark

Global Real Estate Fund Index (GREFI)

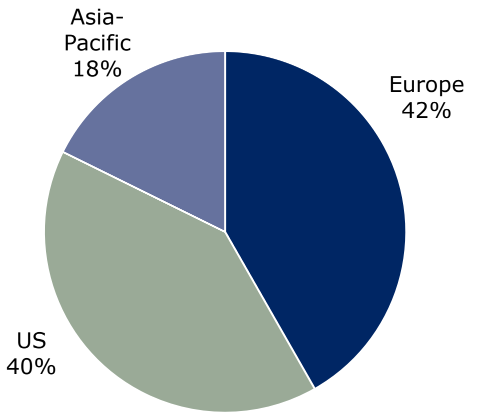
Description:

The Global Real Estate Fund Index is a distillation of information provided to ANREV, INREV and NCREIF by non-listed property vehicles in order to give a view on the performance of the non-listed property funds over a particular period of time. There is a widespread use of leverage within the Global Real Estate Fund Index, and it is mainly driven by the European and Asian fund components.

Benchmark statistics:

Market capitalization:	USD 420 billion
Sample size:	376 funds
Year of inception:	2010
Investment universe:	Non-listed open and closed-ended real estate funds

Geographic composition:



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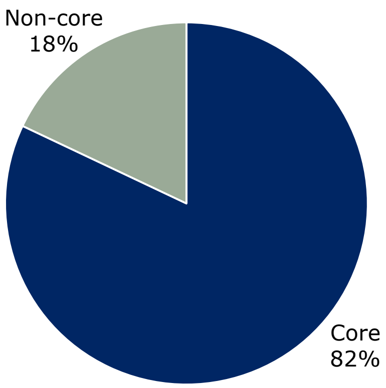
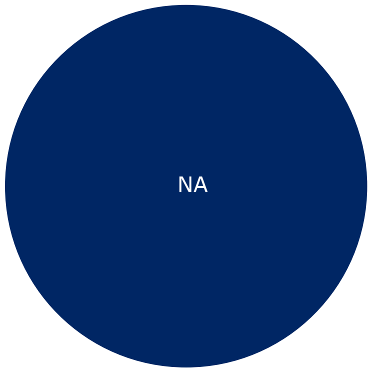


Vintage year composition:



Source: NCREIF as of 30 June 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Private real estate: in search of the appropriate benchmark

Green Street Commercial Property Price Index

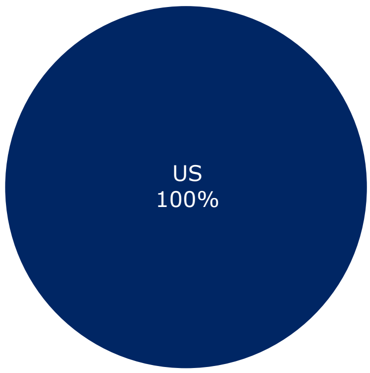
Description:

Green Street's Commercial Property Price Index is a time series of unleveraged US commercial property values that captures the prices at which commercial real estate transactions are being negotiated and contracted. The index provides monthly data with an emphasis on high-quality properties, and its ability to capture timely changes in the aggregate value of the commercial property sector.

Benchmark statistics:

Market capitalization:	USD 550 billion
Sample size:	50 REITs
Year of inception:	1997
Investment universe:	Apartment, industrial, mall, office and retail strip centers

Geographic composition:



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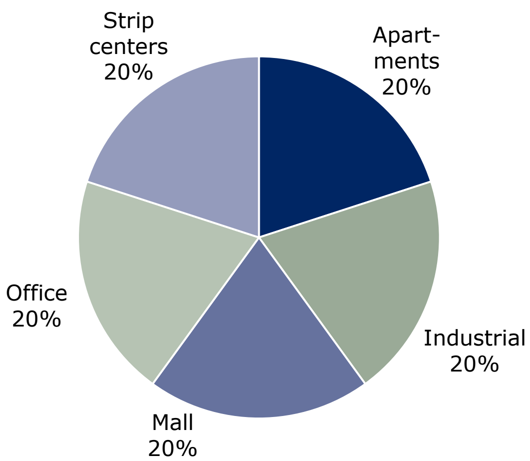
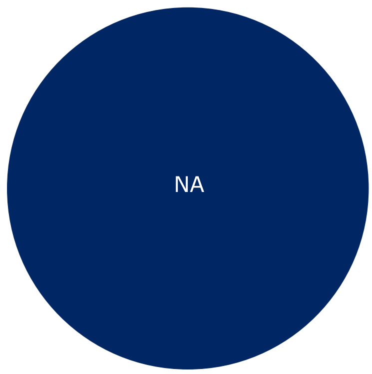


Vintage year composition:



Source: Green Street as of 30 June 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Private real estate: in search of the appropriate benchmark

Investment Property Databank (IPD)

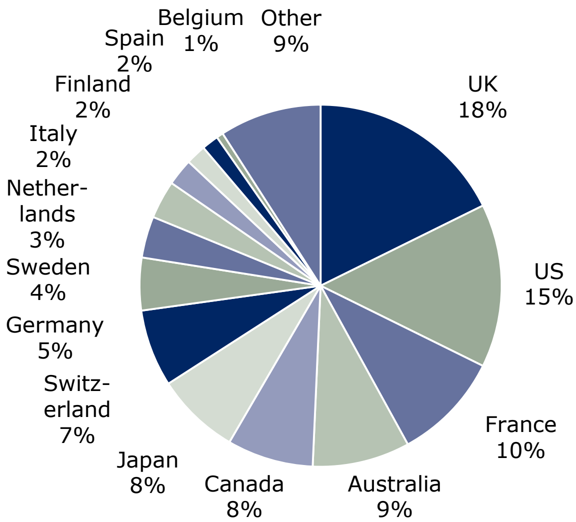
Description:

IPD produces more than 120 indices, as well as almost 600 portfolio benchmarks, across 33 countries enabling real estate market transparency and performance comparisons. IPD property indices are calculated at the property level, excluding the impact of debt, fund management fees, taxation and cash on property portfolios.

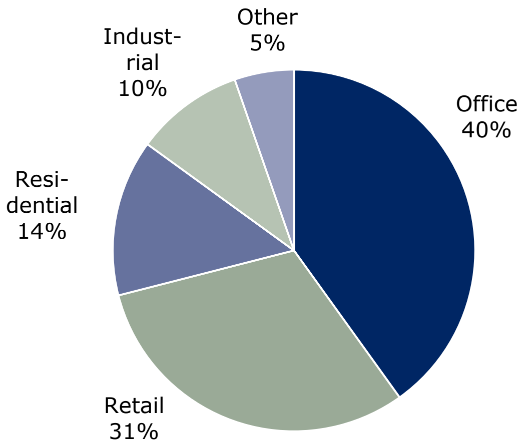
Benchmark statistics:

Market capitalization:	USD 2 trillion
Sample size:	1,245 funds/79,000 properties
Year of inception:	1986 (UK)
Investment universe:	Retail, office, industrial, residential and other

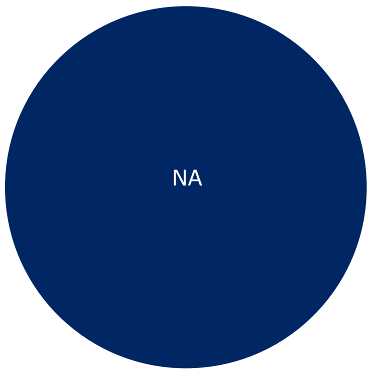
Geographic composition:



Strategic composition:



Vintage year composition:



Source: IPD as of 31 December 2013
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Private real estate: in search of the appropriate benchmark

NCREIF Closed-End Value-Add Index (NFI-CEVA)

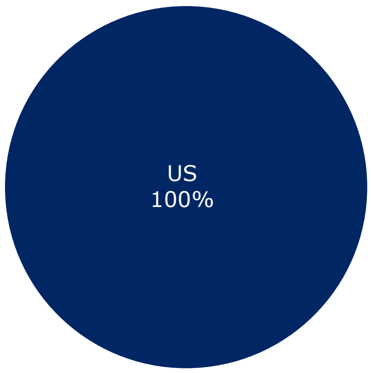
Description:

The NCREIF Closed-End Value-Add Index is comprised of the historical performance information of 45 value-added investment strategies using closed-ended structures. The performance data is comprised of active and inactive funds, which have either completed their full lifecycle or discontinued operation.

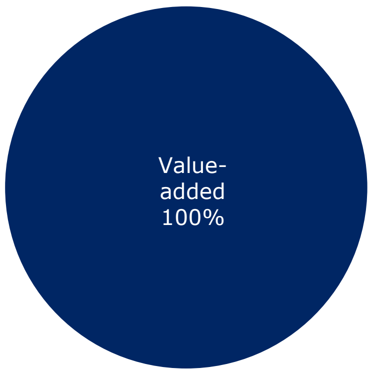
Benchmark statistics:

Market capitalization:	USD 24 billion
Sample size:	45 funds
Year of inception:	1999
Investment universe:	Active and inactive closed-ended value-added funds

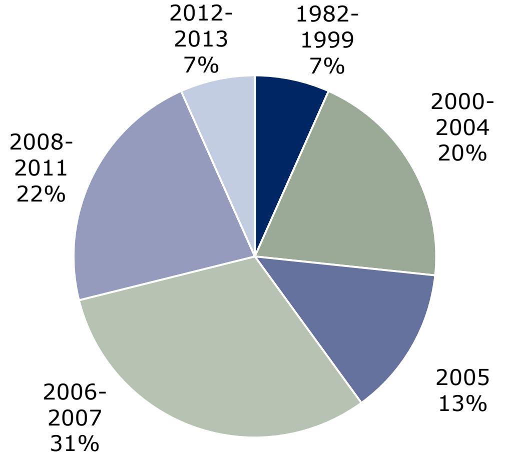
Geographic composition:



Strategic composition:



Vintage year composition:



Source: NCREIF as of 30 June 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Private real estate: in search of the appropriate benchmark

NCREIF Open End Diversified Core Equity (NFI-ODCE)

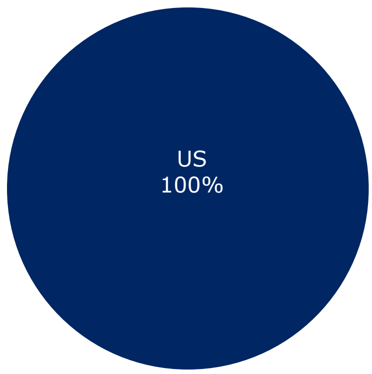
Description:

The NFI-ODCE is an aggregate of open-ended, commingled equity real estate funds with diverse investment strategies. The NFI-ODCE is a subset of the NFI-OE. The NFI-ODCE, like the NCREIF Property Index (NPI) and other stock and bond indices, is a capitalization-weighted index based on each fund's net invested capital, which is defined as beginning market value assets, adjusted for weighted cash flows during the period. Total return of any capitalization-weighted index is, therefore, more influenced by the larger funds included in the index.

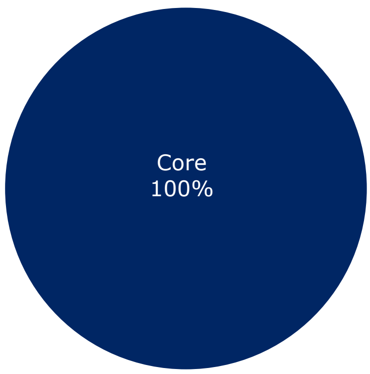
Benchmark statistics:

Market capitalization:	USD 116 billion
Sample size:	34 funds
Year of inception:	1978
Investment universe:	Core open-ended funds

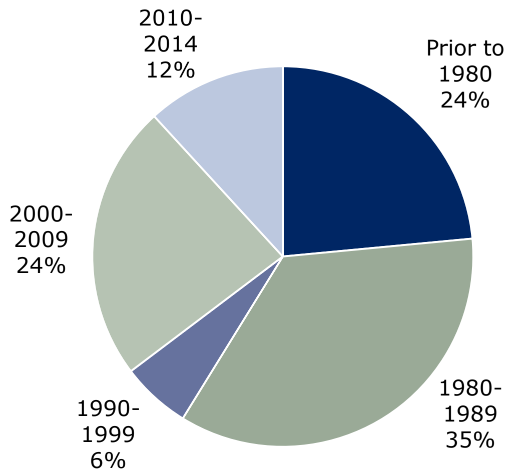
Geographic composition:



Strategic composition:



Vintage year composition:



Source: NCREIF as of 30 June 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Partners Group
Passion for Private Markets

Private real estate: in search of the appropriate benchmark

NCREIF Property Index (NPI)

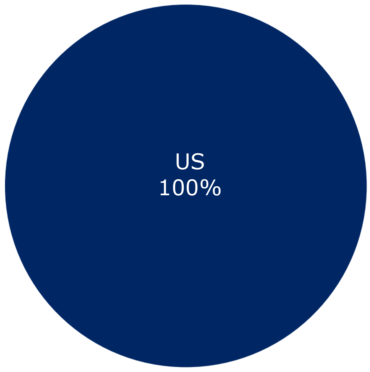
Description:

The NPI is the flagship index of the NCREIF, a quarterly index tracking the performance of core institutional property markets in the US. The index is comprised exclusively of operating properties acquired, at least in part, on behalf of tax-exempt institutions and held in a fiduciary environment. The NPI index includes properties with leverage, but all returns are reported on an unleveraged basis.

Benchmark statistics:

Market capitalization:	USD 383 billion
Sample size:	7,141 properties
Year of inception:	1977
Investment universe:	Apartment, hotel, industrial, office, and retail properties

Geographic composition:



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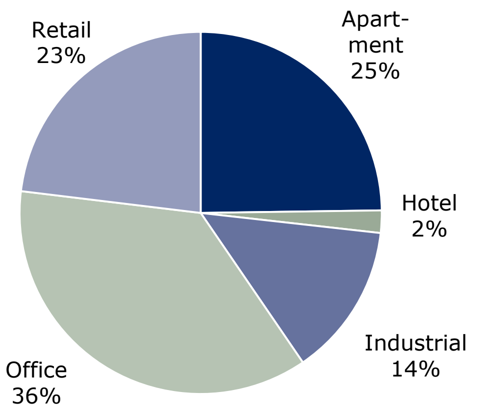
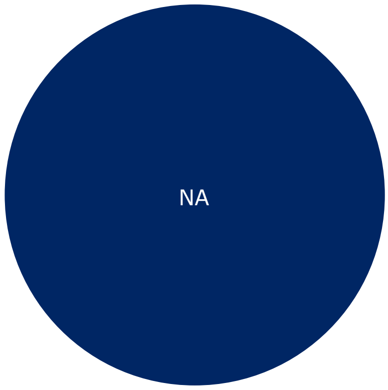


Vintage year composition:



Source: NCREIF as of 30 June 2014
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Private real estate: in search of the appropriate benchmark

Partners Group Thompson Reuters Index (PGTR)

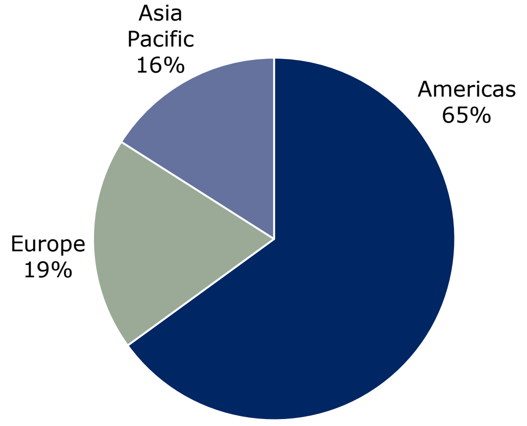
Description:

Historically, Partners Group collected and maintained proprietary industry-wide real estate data for in-house use and research projects. In order to leverage these insights, in 2010 Partners Group teamed up with Thomson Reuters to develop an index for private real estate investments. The PGTR Index provides global performance data, based on net cash flows and net asset values, for a sample of nearly 300 opportunistic and value-added funds from over 60 firms.

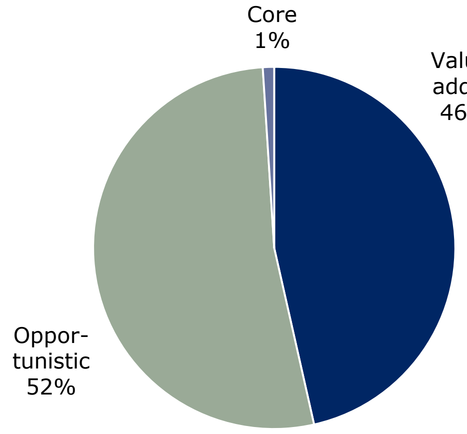
Benchmark statistics:

Market capitalization:	USD 198 billion
Sample size:	309 funds
Year of inception:	1992*
Investment universe:	Core, value-added and opportunistic funds

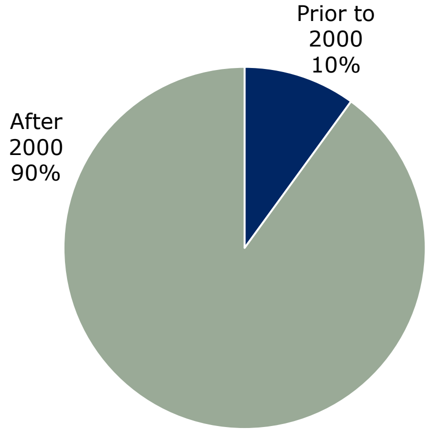
Geographic composition:



Strategic composition:



Vintage year composition:



*Availability of data; year of benchmark inception is 2010
Source: ThomsonOne as of 31 December 2013
Note: Figures provided have been rounded for presentation purposes and in certain instances rounding anomalies may arise.

Private real estate: in search of the appropriate benchmark

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