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# Norwegian Government Pension Fund

Real Estate Portfolio Report, 2013

November 2014

## Executive summary

This report, commissioned by the Ministry of Finance, has been prepared by IPD to provide quality assurance of Norges Bank's return calculations and to provide a return objective (benchmark) with corresponding benchmarking analysis of the Government Pension Fund Global ("GPF") real estate portfolio.

In the report, IPD verifies Norges Bank's calculations of total return for the real estate portfolio at 20.6% and 11.8% measured in NOK, and the GPF's currency basket respectively. This Net Asset Value (NAV) return is based upon fund subsidiaries and structures used for holding real estate assets, taking into account the effects of leverage, other assets and liabilities, fees, and any other financial structuring.

Separate to this report, Norges Bank have been verified as being GIPS (Global Investment Performance Standard) compliant. The balance sheet and income statement have been subject to external audit by Deloitte AS.

IPD's methodology begins with the calculation of direct property level returns which is then subsequently built up via adding elements of fund structures to a fund level return ("Bottom-up approach"). As explained in the report, this may lead to different return figures between the bottom up IPD approach and the Norges Bank methodology. The reasons behind them are covered in the report, although as calculations span longer time horizons and asset specific factors become smaller relative to the overall portfolio size, they should become of less importance. Such differences are therefore to be expected,

and relate to the dual role of the report, to provide both quality assurance of the Norges Bank return calculations and the benchmarking of real estate performance.

Beyond the differences in the methodology, it is important to recognise that in the early stages of building up a real estate portfolio there are likely to be wide differences between the portfolio and benchmark performance. These differences, which arise due to the high concentration of the portfolio on a small number of assets and the acquisition costs associated with building the real estate portfolio, become less significant once the portfolio has moved beyond its construction phase.

IPD's methodology gives a total return of 19.2% and 15.4% measured in NOK, for the real estate portfolio and the benchmark respectively. All returns are based on data held throughout the year ending December 2013 except where stated differently. The outperformance of the real estate portfolio relative to the benchmark is mainly a result of FX impact and allocation to segments that have had beneficial currency movement in 2013, measured in NOK. In local currency however, the portfolio shows a small underperformance, mainly due to an overweighting in some underperforming markets. However, such benchmark comparisons should, as highlighted in the report, be interpreted with caution at this early stage. The variation in market performance also within countries, particularly evident at a city level, is covered in the market review section.



## List of contents

<b>Executive summary</b>	2
<b>Explanatory section</b>	4
Background and role of IPD	4
Components in Net Fund Return	4
Difference in Methodology	4
<b>Quality assurance calculations</b>	5
<b>IPD performance analysis</b>	6
Real estate benchmarking	6
Real estate market review	7
Portfolio and relative performance	11
Balance sheet	12
Components of Net Fund Return	13
Currency Impact	15
Attribution analysis	16
<b>Appendix: Technical note</b>	17

## Explanatory section

### Background and role of IPD

This report has been commissioned by the Ministry of Finance of Norway ('MoF') and has been prepared by IPD.

The scope of the report which incorporates the two approaches to performance measurement is as follows:

- Quality assurance on the performance calculations carried out by Norges Bank,
- The calculation of the direct property performance of the Government Pension Fund Global ('GPF') Property Portfolio (the 'Portfolio') relating to the return objective (benchmark) as described in the 'real estate benchmarking' chapter.

IPD does not perform an audit control on the underlying data provided by Norges Bank or any other third party, which has been required to perform relevant calculations, and this should not be seen to fall under the scope of this report. Separately to this report however, the GPF balance sheet and income statement have been subject to external audit.

### Components of Net Fund Return

Within the components of Net Fund Return analysis, we begin to link the unleveraged direct property-level performance to the overall fund-level performance via different fund structures. Elements of fund structure includes impact of leverage, cash, tax and other expenses, management fees and capital recognition policy.

The analysis shows the impact of each element of the fund structure in percentage points, indicating whether it had a positive or negative contribution to the overall fund performance.

The methodology impact element reflects the quantifiable differences between IPD bottom-up methodology and NBIM top-down methodology. This particular difference relates to the calculation methodology of Time Weighted Returns as NBIM calculates a performance at month end as well as capital transfers whereas it is IPD methodology to only calculate performance at month end.

### Differences in methodology

Following comparative reviews of the Norges Bank and IPD standard performance calculation methodologies, the differences can be summarised as follows:

Difference	Norges Bank	IPD
Foreign exchange rates	GPF values in both NOK and Currency Basket (CCY); converted monthly, and upon significant capital transfer events.	Values converted to Norwegian Kroner (NOK) at WM/Reuters end-month closing spot rates.
Acquisition & valuation	Acquisition price, then held down until next valuation.	Acquisition price, then interpolated between valuations.
Calculation method	Time Weighted Returns (TWR) calculated at month end, and capital transfer events.	Time Weighted Returns (TWR) calculated at month end.

## Quality assurance calculations

The publication of the GPFG annual report makes the investment return performance across all asset classes publically available, along with all of the calculation methodologies used in generating these returns. For the real estate asset class, IPD has performed a control function to validate the performance calculations of Norges Bank, the purpose of which is a level of quality assurance that calculations have been performed to the stated methodology. This part of the report forms the basis for our top-down analysis.

For the year to December 2013, the GPFG annual report states these total returns as 20.6% and 11.8% calculated in NOK and the funds international currency basket (CCY) respectively. The high-level performance calculation of the return is the result of two primary inputs, the Net Asset Value (NAV) which is the total value of the assets less the value of the liabilities, and the transfer of capital into and out of the fund, and so the verification of these components has been central to the quality assurance function. The review of the NAV component was conducted in the context of its composition; this being bank deposits, real estate assets and investment properties,

and all other financial assets and liabilities. The second primary input relates to the transfer of capital into and out of the real estate portfolio, most particularly the acquisitions of financial assets and investment properties throughout the year.

Using the input data alongside supplied foreign exchange rates and accounting adjustments, IPD have verified the calculation methodology on which the performance results are based in relation to the NAV and capital transfers provided at each month and transfer event. Furthermore, upon rolling up the inputs into a set of performance returns for the construction of the published annual return, IPD is able to replicate the published results on both a NOK and CCY denominated basis.

On the basis of these quality assurance calculations, it is the opinion of IPD that the performance statements and headline results published by Norges Bank on its real estate investments has been calculated consistently and in accordance with the methodology required by the Norwegian Ministry of Finance.

Performance calculation (year to Dec-12)	Norges Bank	IPD	Difference
Net asset value as at Dec-13 (NOK), millions	51,794	51,794	0.00
Net transfers into the portfolio (NOK), millions	18,951	18,951	0.00
Annual return (NOK)	20.6%	20.6%	0.00
Annual return (CCY)	11.8%	11.8%	0.00

Source: IPD, Norges Bank

\* Top-down NAV figure may differ with the NAV used in the bottom-up approach. This is down to the difference between NBIM Real Estate values and the direct-level valuations IPD receives from each joint venture.



## IPD performance analysis

### Real estate benchmarking

Given the maturing nature and globalization of real estate markets, there is scope to measure and compare performance across global markets. Benchmarking is a well-established tool in liquid asset classes and has started to be applied for direct real estate. As for other asset classes, the benchmarking of real estate portfolios may enable investors to monitor their investments in a wider context, and provide useful insights into the reasons for over or under-performance.

Although improvements have been made in developing real estate benchmarks, there remain limitations due to the uniqueness and potential large scale or “lumpiness” of individual real estate assets. These difficulties are compounded when building benchmarks across national real estate markets due to differences in the quality of data and the frequency with which the benchmarks are released. A further factor to consider is that individual assets can have a significant influence on a portfolio’s return during the early stages of building up a real estate portfolio. In addition, real estate benchmarks are likely to comprise of mostly held investments, and thus a smaller proportion having been subject to transaction or development than a portfolio under construction. The level of acquisition costs in the benchmark will therefore be limited compared with those of that portfolio.

At this stage of portfolio construction there are likely to be wide differences between the portfolio and benchmark due to asset-specific factors. For this combination of reasons, the results of the analysis need to be interpreted with care.

For more information on real estate benchmarking [www.ipd.com/about/ipd-guides-and-standards/](http://www.ipd.com/about/ipd-guides-and-standards/)

In this report the benchmark determined by MoF includes countries where IPD is represented globally, excluding Norway, and is adjusted to the IPD estimated market weights applied to the IPD Global Annual Property Index ([www.ipd.com/globalindex](http://www.ipd.com/globalindex))

Given that the GPF is benchmarked against the wider Global real estate market, including countries where the fund is not currently represented, it is important to understand the main trends in the market during the course of the year. For this reason, the following section provides a broad review of the Global real estate during the course of 2013.

## Real estate market review

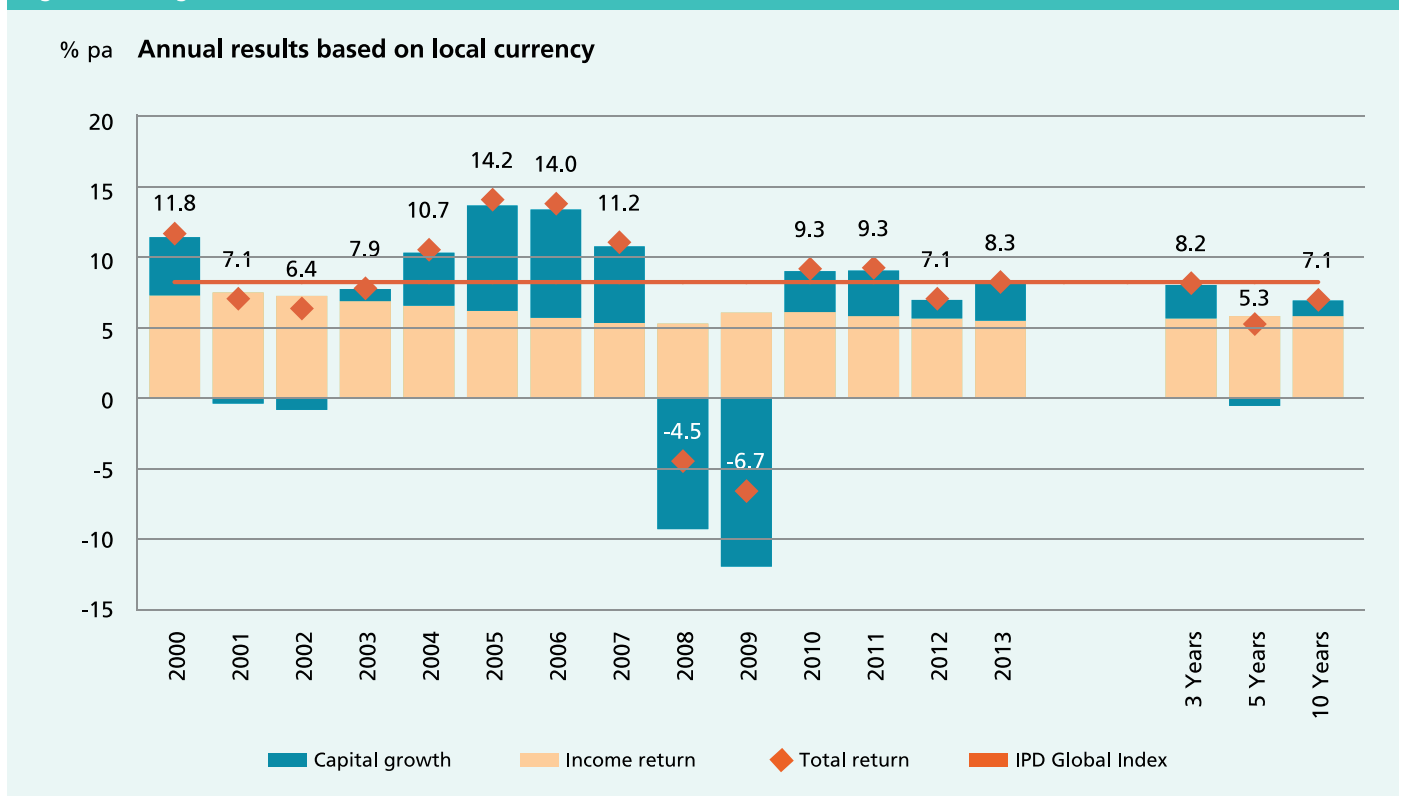
The global private real estate market generated a relatively strong return of 8.3% in 2013, a moderate improvement on the 7.1% return in 2012, and the fourth consecutive year of returns achieving 7-9% pa.

The improvement in 2013 was driven by continued strong performance in North America and Australasia. Europe still dragged on the high performance seen in these regions, but less so than in previous years. In fact, for the first time since 2006, all 25 countries covered by IPD produced positive returns. Moreover, the majority of the lagging markets improved in 2013, especially Spain and Hungary. Only in Canada did momentum slow significantly, though

returns were still high at 10.7%, down from 14.2% in 2012. Eight markets in Europe performed worse in 2013 than in 2012. Whilst none fell dramatically from the previous year, the performance in France continued to slow to 5%, down from 8% in 2011 and 6.5% in 2012.

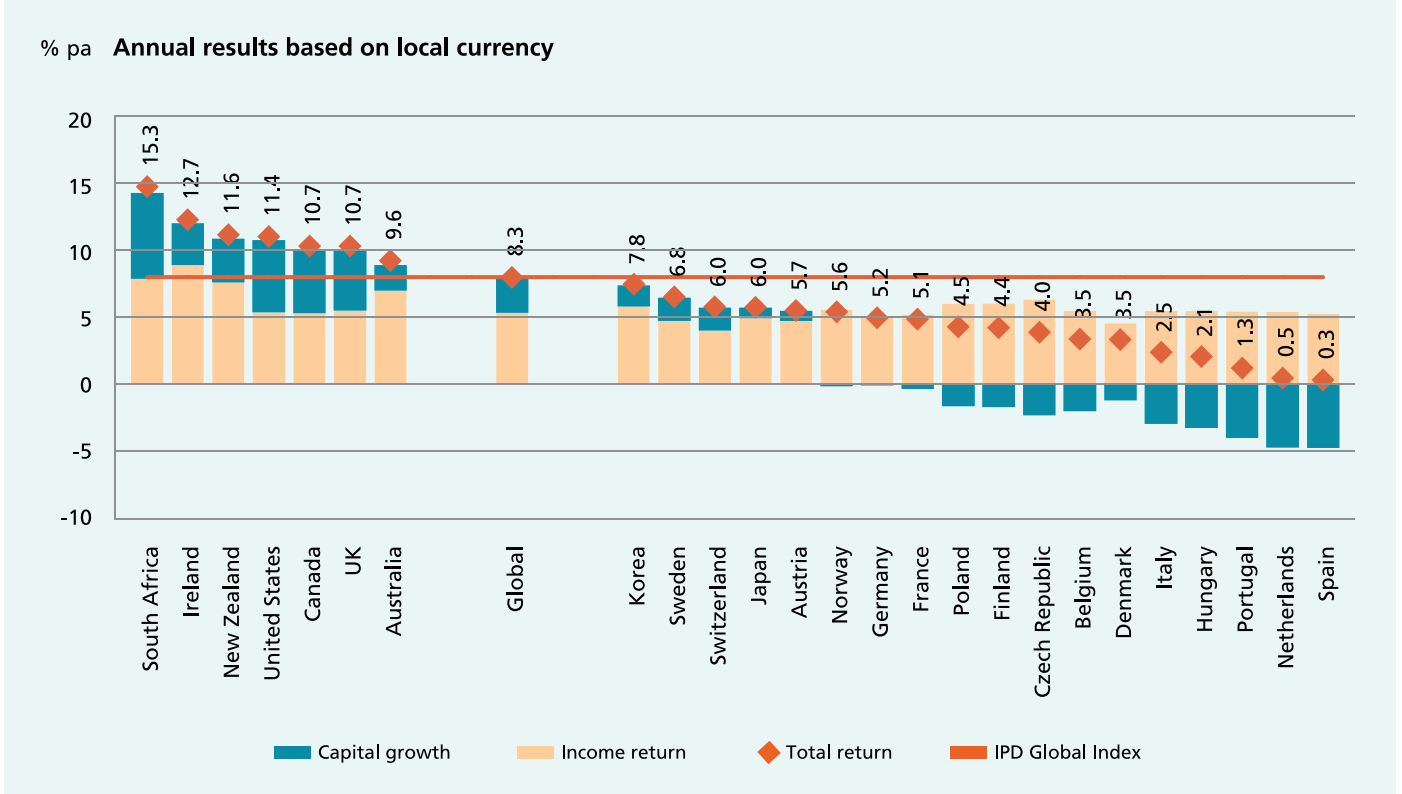
Thirteen of the 25 countries covered by IPD, all in Europe, experienced some capital declines over the year, though this was modest in all countries, with only seven markets seeing values fall by more than 2%, and none falling by more than 5%. The most severe declines occurred within the euro zone. Weak capital growth kept Spain, Italy, and the Netherlands ranked among the bottom five markets recording a total return for the year of between 0% and 2.5%.

Figure 1: Total global returns



Source: IPD

Figure 2: Total global returns by country, 2013



Source: IPD

Other parts of Europe enjoyed much stronger performance in 2013 than for a number of years. The second best performing market in the global 25 was Ireland which saw total return rebound to a positive 12.7% following five years of sub-par results. The UK also provided a boost to the global average with a 10.7% return. The strong performance of the US and Canada, both of which returned around 11% pa, helped distinguish North America as the best performing region. All four of the countries in the Asia Pacific region performed better in 2013 than in 2012. Japan, the second largest market in the index, saw a solid 6% performance as a strengthening domestic economy halted capital declines.

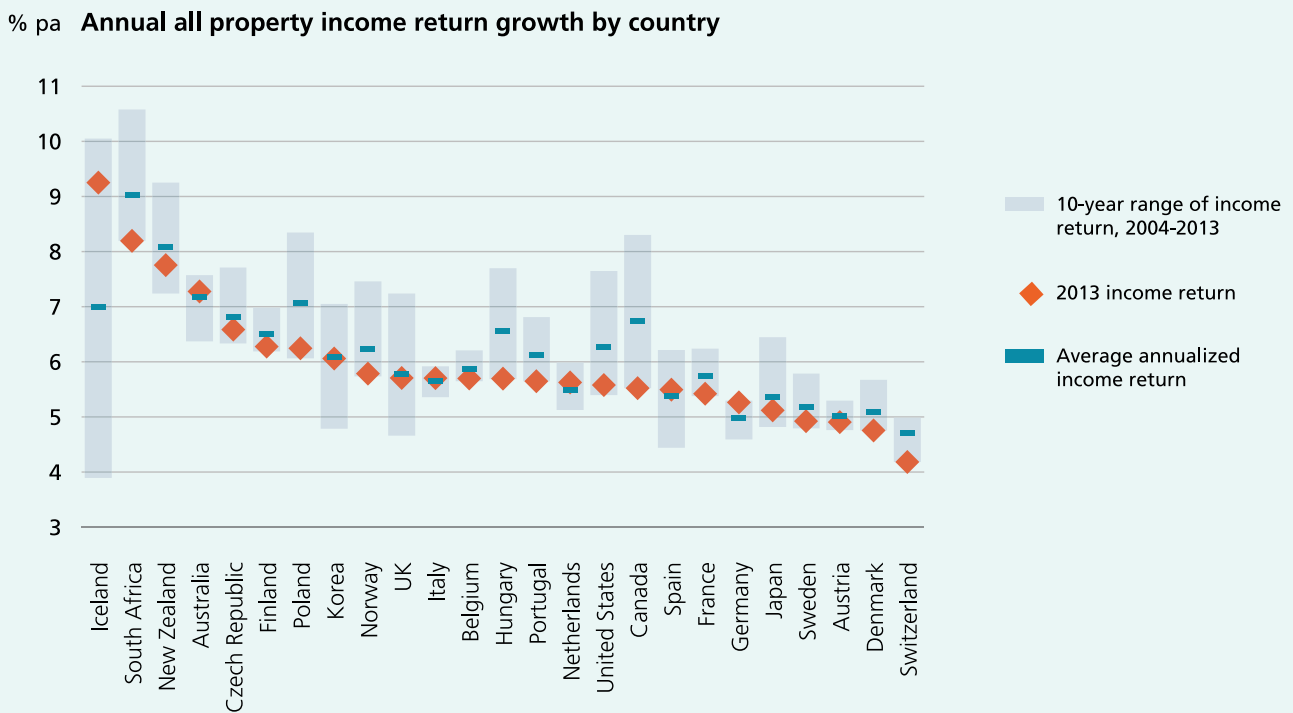
In terms of property types, Industrial was the best performer at 11.4% compared with Offices at 7.4%. The strength of the large US Industrial market drove this performance, but Industrial also emerged as the best performer in seven other markets. Although Industrial was the best performer globally, Residential (termed 'multifamily' in many markets) was the best performer in eight markets during 2013. Following the pattern of recent years, the Office sector turned in the weakest global performance.



The results confirm the significant variations in performance across countries, and this supports one of the compelling strengths of the real estate asset class: it tends to benefit from more geographic diversification than equities and bonds. Beyond national differences, the variations are almost as wide within as between countries. Within the US, Houston generated a total return over 17%, placing it a full 10% higher than Washington DC, the US laggard in 2013. The UK exhibited similar dispersion of returns with London strongly outperforming the national average and all the second tier cities underperforming. Resource driven cities in the US (Houston), Canada (Calgary), and Australia (Perth) outperformed their national averages in 2013. A clear intra-national dispersion of returns appeared in 2013 even in Germany, with Munich's solid 7% total return significantly outperforming Germany's weakest city, Frankfurt, with a 3% total return for the year.

Beyond these variations in performance by country, property type and city, a major theme for 2013 was the continued compression of real estate income yields, driven by the strong investor appetite for the asset class. This trend was apparent in 2012 and continued through 2013 with many markets having income yields at or very close to their historic lows. Although the spreads between government long dated bond yields and real estate income returns remained relatively wide, the rise in bond yields and the continued compression of income returns mean this was less attractive than at the end of 2012. By year end, spreads had narrowed to roughly 270bp in the US and the UK down from the 400bp at the end of 2012.

Figure 3: Range of income return over 10 years, 2004 - 2013



Note: Average annualized income return is 10 years for all countries except Poland, Hungary, Czech Republic (9 years) and Korea (8 years).

Source: IPD

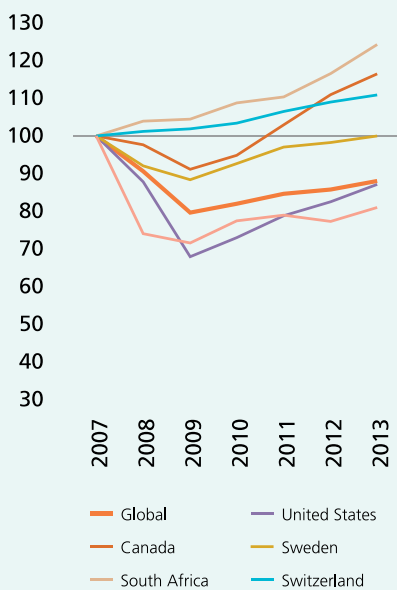
Above all, however, 2013 demonstrates the continued variations in performance across markets. This is well-illustrated by comparing value change since 2007 that reveals three different types of market through the current cycle. Six markets progressed very well in recent years, with some bouncing back strongly from a severe downturn (the US, the UK, and Sweden) and some continuing to perform well through a relatively mild downturn (Canada, Switzerland, and South Africa). Another six markets (including Australia, Korea, and Norway) experienced more modest recoveries.

The remaining 13 regained less of their peak values, with many continuing to experience value decline. For this latter group there are some signs of a turnaround, as illustrated by the strong performance of Ireland during 2013. This recovery is likely to be supported by the surge of capital headed to most of these markets. Conversely, increasing questions are being raised as to the ability of the strongest performing markets to maintain their recent trajectories.

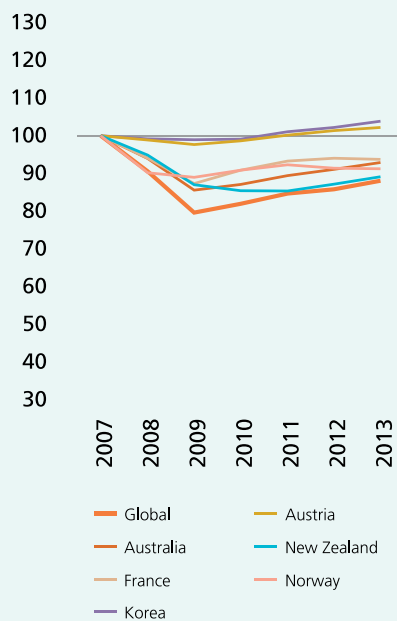
Figure 4: Capital value performance in this cycle

All property 2007 capital growth indexed to 100

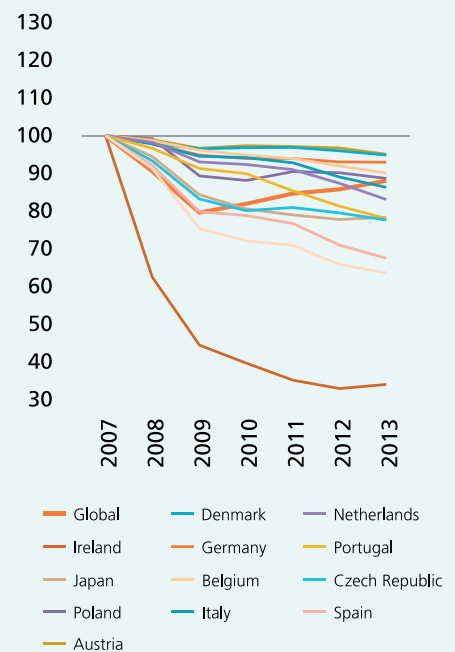
Progressed recoveries  
2007 = 100



Moderate recoveries  
2007 = 100



Lagging recoveries  
2007 = 100



Source: IPD



## Portfolio and relative performance

IPD is best known for the indices and benchmarks it provides on direct real estate, on portfolios of property held by investing institutions, and this forms the basis for the “bottom-up” approach to performance measurement in this report. This focuses on the performance of direct real estate investment based on the Gross Asset Value (GAV) of the properties and their relative performance against comparable benchmarks. One of the key strengths with this methodology is the analytical capabilities it presents.

The difference in the timing of the investments needs to be taken into account in calculating performance relative to the benchmark. A more fundamental caveat relates to the early stage and high asset concentration of the portfolio. At the early stages of building up a real estate portfolio it is likely that there will be wide differences between the portfolio and benchmark performance due to the high concentration and property risks. These asset specific factors become less significant once the portfolio has moved beyond its construction phase.

The overall portfolio and benchmark return were 19.2% and 15.4% respectively on a NOK basis and 7.1% and 8.3% on a local currency basis. This gives us a FX impact of 12.1% for the portfolio and 7.2% for the benchmark with a relative difference of 5%.

This outperformance in FX impact stems from the fact that the portfolio is invested in specific countries which has had a stronger currency return compared to other market which negatively affected the benchmark impact most notably the rest of the world segment in the report.

Looking at the direct-level local currency returns of 7.1% and 8.3% for the portfolio and benchmark respectively represents a relative return of -1.1%. This under performance was largely driven by the weaker capital growth of 1.7% for the portfolio compared to the 2.8% growth seen in the benchmark. The income return was the same between the portfolio and the benchmark at 5.3%.

Within the attribution analysis the portfolio has a property and structure score of 0.6% and -1.2% respectively. The lower structure score of -1.2% explains most of the total under performance of -1.1%. The structure score explains how a different sector weight in the portfolio compared to that of the benchmark could have a positive or negative impact on the portfolio.

In France and Switzerland/Germany the portfolio was heavily weighted in these markets which subsequently underperformed relative to the overall benchmark return. The portfolio was also underweight in the US market which was an outperforming market compared to the overall benchmark, both of which contributed to the negative structure score of -1.2%.

The UK sector had a positive structure score as the portfolio was overweight in a sector which outperformed the benchmark. The property score represents how assets within the portfolio performed compared to similar assets in the benchmark. Within this aspect the UK and Switzerland/Germany investments outperformed that of the benchmark.

# Balance sheet

January to December 2013

The Portfolio balance sheet shows the composition of the Portfolio. Starting from the overall exposure or Gross Asset Value (GAV), the Net Asset Value (NAV) is derived from deducting the total liabilities.

The GAV is a composition of Direct Property Investments (DIP) and Other Investment Assets (OIA).

All figures shown in NOK million	Capital value	Capital value	Net investment	Value change	
	Dec '12	Dec '13		FX Impact	Local Currency Value Change
<b>Gross asset value (GAV)</b>	29490.1	58555.6	22902.3	5498.8	664.6
<b>Direct property investments (DIP)</b>	26320.9	57204.7	24975.3	5052.5	856.0
<b>France</b>	<b>8268.3</b>	<b>11956.1</b>	<b>2375.9</b>	<b>1407.6</b>	<b>-95.7</b>
Retail	1016.2	1155.5	0.2	141.6	-2.5
Office	7252.1	8460.9	257.1	1020.4	-68.8
Industrial	-	2339.8	2118.6	245.5	-24.4
Residential	-	-	-	-	-
Other	-	-	-	-	-
<b>US</b>	-	<b>10120.3</b>	<b>9771.8</b>	<b>291.3</b>	<b>57.3</b>
Retail	-	-	-	-	-
Office	-	10120.3	9771.8	291.3	57.3
Industrial	-	-	-	-	-
Residential	-	-	-	-	-
Other	-	-	-	-	-
<b>UK</b>	<b>11738.2</b>	<b>18216.8</b>	<b>3882.0</b>	<b>1633.1</b>	<b>963.5</b>
Retail	10286.5	12377.9	208.5	1154.0	728.9
Office	1360.7	2564.2	1052.6	152.7	-1.7
Industrial	17.6	3184.5	2617.5	318.1	231.3
Residential	34.5	45.0	3.5	4.1	2.8
Other	38.8	45.2	-0.1	4.3	2.1
<b>Switzerland &amp; Germany</b>	<b>6314.4</b>	<b>11624.3</b>	<b>4055.6</b>	<b>1178.7</b>	<b>75.5</b>
Retail	-	1610.1	1403.1	174.9	32.0
Office	6314.4	9545.4	2229.9	957.8	43.2
Industrial	-	468.8	422.6	46.0	0.3
Residential	-	-	-	-	-
Other	-	-	-	-	-
<b>Rest of the World</b>	-	<b>5287.2</b>	<b>4890.0</b>	<b>541.8</b>	<b>-144.6</b>
Retail	-	-	-	-	-
Office	-	-	-	-	-
Industrial	-	5287.2	4890.0	541.8	-144.6
Residential	-	-	-	-	-
Other	-	-	-	-	-
<b>Other Investment assets</b>	<b>2916.2</b>	<b>613.5</b>	<b>-2557.6</b>	<b>0.0</b>	<b>254.9</b>
<b>Total liabilities</b>	<b>-3365.7</b>	<b>-6077.3</b>	<b>2299.6</b>	-	-
Cash	252.9	737.4	-484.4	-	-
Debt	-3523.0	-6307.1	2784.0	-	-
Other Financial Liabilities	-95.5	-507.6	-	-	-
<b>Net asset value (NAV)</b>	<b>25871.5</b>	<b>51740.9</b>	<b>24717.3</b>	<b>5498.8</b>	<b>919.5</b>

# Components of Net Fund Return

January to December 2013

The table below shows the build of NAV return from the direct investment property return. The impact from each fund structure is represented in percentage points starting with Leverage to Capital Recognition Policy.

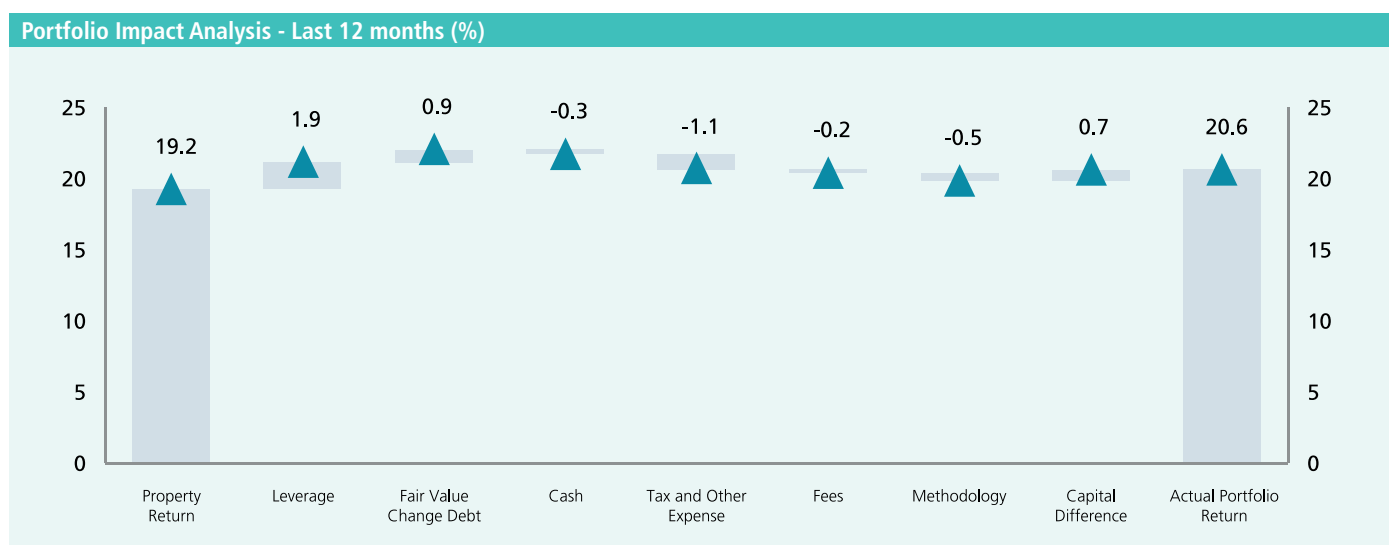
The NAV return calculated bottom up would therefore be the sum of direct investment return and total contribution from the fund structures.

Components of Net Fund Return (Bottom-up Approach)	Global - Portfolio	IPD Global - Benchmark*	Difference
Direct Investment Property Return (%)	19.2	15.4	↑ 3.8
<b>Contribution from Fund Structure</b>			
Leverage	↑ 1.9	↑ 0.6	
Fair Value Change Debt	↑ 0.9	→ 0.0	
Cash	↓ -0.3	→ 0.0	
Tax and Other Expenses	↓ -1.1	→ 0.0	
Fees	↓ -0.2	↓ -0.2	
Methodology	↓ -0.5	→ 0.0	
Capital Recognition Policy	↑ 0.7	→ 0.0	
<b>Total</b>	↑ <b>1.4</b>	↑ <b>0.5</b>	

Net Fund Return (Top-Down Approach) (%)	Global - Portfolio	IPD Global - Benchmark*	Difference
Actual Portfolio Return	20.6	15.9	↑ 4.7
Reconciliation	0.0	0.0	

All figures shown in NOK

**Note:** The graph below displays the breakdown of the Portfolio NAV return by each individual component. Starting with direct property investment on the left, each component adds either a positive or negative return (bar) to the cumulated NAV return (dot). The sum of the components results in the total NAV over the period which is shown by the bar on the right.



### Time Series - Annual Return (%)

	Top-Down in NOK		Bottom-up in NOK		Bottom-up in Local Currency	
	2012	2013	2012	2013	2012	2013
	Portfolio	2.6	20.6	2.8	19.2	7.1
Benchmark	-0.4	15.9	-0.7	15.4	7.1	8.3
Relative	3.0	4.7	3.5	3.8	0.0	-1.1

**Note:** All calculated periodic returns are linked geometrically.

\* Benchmark adjusted by the same level of Debt and Fees components (as a percentage of value), as reported for GPFG

\*\* In this report the benchmark has changed from European countries to all global countries where IPD is represented, excluding Norway and is adjusted to the IPD estimated market weights applied to the IPD global Annual benchmark.

\*\*\* Historical returns are subject to change due to data restatements by benchmark participants.

# Currency Impact

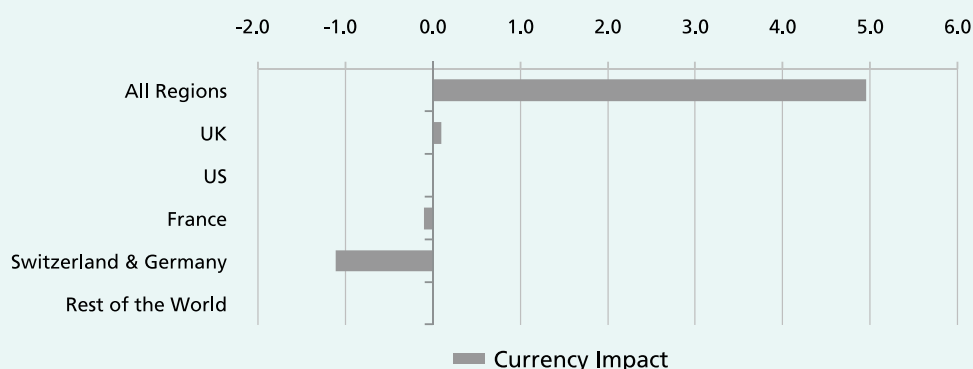
January to December 2013

The table below shows the returns for the Portfolio and Benchmark in NOK and local currency. The FX impact expresses the difference between the returns in NOK and local currency for the portfolio and benchmark.

The difference in FX impact between the portfolio and benchmark explains the out or underperformance caused by the currency exchange.

All figures shown in %	Total Return NOK			Total Return Local Currency			FX Impact		
	Portfolio	Bmk	Difference	Portfolio	Bmk	Difference	Portfolio	Bmk	Difference
<b>Global</b>	<b>19.2</b>	<b>15.4</b>	<b>3.8</b>	<b>7.1</b>	<b>8.3</b>	<b>-1.1</b>	<b>12.1</b>	<b>7.2</b>	<b>5.0</b>
<b>France</b>	<b>18.9</b>	<b>19.5</b>	<b>-0.5</b>	<b>4.5</b>	<b>4.9</b>	<b>-0.4</b>	<b>14.5</b>	<b>14.6</b>	<b>-0.1</b>
Retail	18.8	21.7	-2.9	4.3	6.9	-2.7	14.5	14.8	-0.3
Office	18.8	18.8	0.0	4.4	4.3	0.0	14.4	14.5	0.0
Industrial	-	17.7	-	-	3.3	-	-	14.4	-
Residential	-	19.5	-	-	4.9	-	-	14.6	-
Other	-	19.6	-	-	5.1	-	-	14.6	-
<b>US</b>	<b>-</b>	<b>21.3</b>	<b>-</b>	<b>-</b>	<b>11.4</b>	<b>-</b>	<b>-</b>	<b>9.9</b>	<b>-</b>
Retail	-	23.1	-	-	12.9	-	-	10.1	-
Office	-	20.6	-	-	10.8	-	-	9.8	-
Industrial	-	23.8	-	-	13.6	-	-	10.2	-
Residential	-	19.9	-	-	10.3	-	-	9.7	-
Other	-	17.2	-	-	7.6	-	-	9.6	-
<b>UK</b>	<b>23.5</b>	<b>23.4</b>	<b>0.2</b>	<b>11.2</b>	<b>11.2</b>	<b>0.1</b>	<b>12.3</b>	<b>12.2</b>	<b>0.1</b>
Retail	22.6	20.4	2.2	10.4	8.5	1.9	12.2	11.9	0.3
Office	23.4	28.2	-4.7	11.3	15.5	-4.2	12.2	12.7	-0.5
Industrial	26.6	25.1	1.4	14.8	12.8	1.9	11.8	12.3	-0.5
Residential	22.4	25.0	-2.7	10.5	12.7	-2.2	11.9	12.4	-0.5
Other	24.6	21.4	3.2	12.1	9.5	2.6	12.4	11.9	0.5
<b>Switzerland &amp; Germany</b>	<b>18.1</b>	<b>19.3</b>	<b>-1.2</b>	<b>5.2</b>	<b>5.3</b>	<b>-0.1</b>	<b>12.9</b>	<b>14.0</b>	<b>-1.1</b>
Retail	19.8	20.8	-0.9	6.5	6.5	0.0	13.3	14.3	-1.0
Office	17.7	17.5	0.2	4.9	3.6	1.3	12.8	13.9	-1.2
Industrial	-	22.5	-	-	7.8	-	-	14.7	-
Residential	-	20.5	-	-	7.1	-	-	13.5	-
Other	-	18.9	-	-	4.7	-	-	14.2	-
<b>Rest of the World</b>	<b>-</b>	<b>6.8</b>	<b>-</b>	<b>-</b>	<b>6.0</b>	<b>-</b>	<b>-</b>	<b>0.8</b>	<b>-</b>
Retail	-	9.4	-	-	7.2	-	-	2.2	-
Office	-	5.6	-	-	5.1	-	-	0.5	-
Industrial	-	6.0	-	-	7.3	-	-	-1.3	-
Residential	-	6.2	-	-	5.8	-	-	0.4	-
Other	-	5.4	-	-	5.6	-	-	-0.2	-

## Relative impact of currency on returns



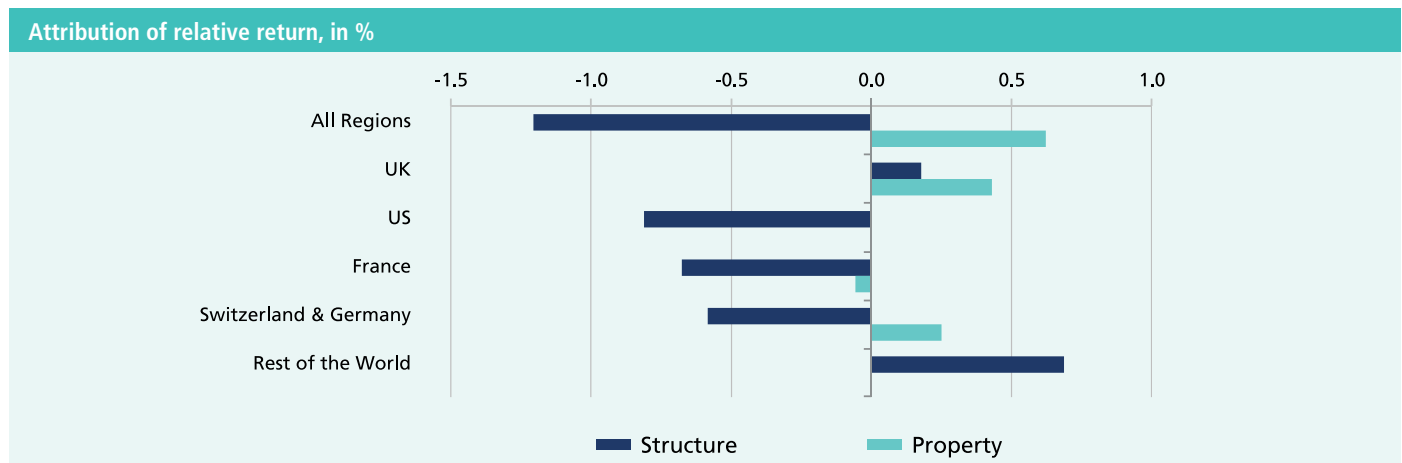
# Attribution analysis

January to December 2013

The attribution technique calculates that part of the relative return derived from the Portfolio's Gross Asset Value relative weighting in the strong or weak sectors of the market

(structure component), and that portion which is due to the exceptional performance of the Portfolio's own assets within each segment of the market (property component).

All figures shown in %, returns in NOK	Total return local currency			Attribution analysis		Percentage of capital employed		
	Portfolio	Bmk	Rel.	Property	Structure	Portfolio	Bmk	Difference
<b>Global</b>	<b>7.1</b>	<b>8.3</b>	<b>-1.1</b>	<b>0.6</b>	<b>-1.2</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>
<b>France</b>	<b>4.5</b>	<b>4.9</b>	<b>-0.4</b>	<b>-0.1</b>	<b>-0.7</b>	<b>24.5</b>	<b>6.4</b>	<b>18.1</b>
Retail	4.3	6.9	-2.7	-0.1	0.0	2.5	1.4	1.1
Office	4.4	4.3	0.0	-0.0	-0.5	17.8	3.5	14.3
Industrial	-	3.3	-	-	-0.2	4.2	0.5	3.7
Residential	-	4.9	-	-	0.0	0.0	0.9	-0.9
Other	-	5.1	-	-	0.0	0.0	0.2	-0.2
<b>US</b>	<b>-</b>	<b>11.4</b>	<b>-</b>	<b>0.0</b>	<b>-0.8</b>	<b>10.0</b>	<b>36.2</b>	<b>-26.2</b>
Retail	-	12.9	-	-	-0.3	0.0	6.9	-6.9
Office	-	10.8	-	-	-0.1	10.0	13.5	-3.5
Industrial	-	13.6	-	-	-0.3	0.0	6.0	-6.0
Residential	-	10.3	-	-	-0.1	0.0	8.0	-8.0
Other	-	7.6	-	-	0.0	0.0	1.7	-1.7
<b>UK</b>	<b>11.2</b>	<b>11.2</b>	<b>0.1</b>	<b>0.4</b>	<b>0.2</b>	<b>33.0</b>	<b>10.0</b>	<b>23.0</b>
Retail	10.4	8.5	1.9	0.5	0.0	25.3	4.7	20.5
Office	11.3	15.5	-4.2	-0.1	0.1	3.4	2.6	0.8
Industrial	14.8	12.8	1.9	0.1	0.1	4.2	1.5	2.7
Residential	10.5	12.7	-2.2	0.0	0.0	0.1	0.5	-0.4
Other	12.1	9.5	2.6	0.0	0.0	0.1	0.7	-0.6
<b>Switzerland &amp; Germany</b>	<b>5.2</b>	<b>5.3</b>	<b>-0.1</b>	<b>0.3</b>	<b>-0.6</b>	<b>23.1</b>	<b>10.9</b>	<b>12.2</b>
Retail	6.5	6.5	-	-	0.0	3.4	2.8	0.6
Office	4.9	3.6	1.3	0.3	-0.6	18.9	4.7	14.3
Industrial	-	7.8	-	-	0.0	0.8	0.6	0.2
Residential	-	7.1	-	-	0.0	0.0	2.2	-2.2
Other	-	4.7	-	-	0.0	0.0	0.6	-0.6
<b>Rest of the World</b>	<b>-</b>	<b>6.0</b>	<b>-</b>	<b>0.0</b>	<b>0.7</b>	<b>9.4</b>	<b>36.5</b>	<b>-27.1</b>
Retail	-	7.2	-	-	0.1	0.0	10.4	-10.4
Office	-	5.1	-	-	0.5	0.0	16.5	-16.5
Industrial	-	7.3	-	-	-0.1	9.4	2.8	6.6
Residential	-	5.8	-	-	0.1	0.0	4.9	-4.9
Other	-	5.6	-	-	0.0	0.0	1.8	-1.8





## Appendix: Technical note

All calculations within the report and specified in this section are in line with IPD standard methodology if not stated otherwise. Further information on IPD applied methodologies can be found in the IPD Index Guide available from [www.ipd.com/about/ipd-guides-and-standards/](http://www.ipd.com/about/ipd-guides-and-standards/)

### Total return (direct property/other indirect assets)

The return on an asset is the capital appreciation net of capital expenditure and receipts plus net income generated from the asset expressed as a percentage of capital employed during the holding period. Capital employed is the capital invested in an asset during the analysis period, that is, the capital value of the asset at the start of the holding period and any additional investments to the asset during the holding period.

In other words, total return is the total money return ('numerator') as a percentage of the capital employed ('denominator').

$$TR_{GAV,t} = \frac{(CV_t - CV_{(t-1)} - CEXP_t + CREC_t + NI_t)}{(CV_{(t-1)} + CEXP_t)} \times 100$$

$CV_t$  = Current Capital Value

$CV_{(t-1)}$  = Previous Month Capital Value

$CEXP_t$  = Total Capital Expenditure during month (incl. purchase, development and capital expenditure)

$CREC_t$  = Total Capital Receipts during the month (including sales and other receipts)

$NI_t$  = Net Income Receivable over the month

### Capital growth

The capital growth component is defined as following

$$CG_{GAV,t} = \frac{(CV_t - CV_{(t-1)} - CEXP_t + CREC_t)}{(CV_{(t-1)} + CEXP_t)} \times 100$$

### Income return

The income return component is defined as following

$$IR_{GAV,t} = \frac{NI_t}{(CV_{(t-1)} + CEXP_t)} \times 100$$

## Total return (NAV)

Total return on NAV level is an extension of the GAV total return formula. The existing methodology is enriched by including fees, tax and debt. The net asset value in each time period is calculated as the difference between current GAV and net debt.

$$NAV_t = GAV_t - NetDebt_t$$

Where net debt is calculated as follow

$$NetDebt_t = Debt_t - Cash_t$$

The NAV total return is defined as

$$TR_{NAV,t} = \frac{(NAV_t - NAV_{(t-1)} - CEXP_t + CREC_t - RP_t + DD_t - Tax_t - Fees_t) + (NI_t - I_t)}{(NAV_{(t-1)} + CEXP_t - DD_t)} \times 100$$

$I_t$  = Interest payments on NetDebt<sub>t</sub>

$RP_t$  = Repayment on NetDebt<sub>t</sub>

$DD_t$  = Drawdown / Increase in NetDebt<sub>t</sub>

$Tax_t$  = Tax payments in period t

$Fees_t$  = Fees in period t

## Impact of debt

IPD uses the ratio method to calculate impact of debt. However, in this report, the impact of debt (IDt) is the arithmetic difference between the leveraged direct property returns and the total return on GAV basis.

$$ID_t = TR_{Leveraged,t} - TR_{GAV,t}$$

Leveraged returns are calculated similar to the NAV calculation, but ignore tax and fees.

$$TR_{Leveraged,t} = \frac{(NAV_t - NAV_{(t-1)} - CEXP_t + CREC_t - RP_t + DD_t) + (NI_t - I_t)}{(NAV_{(t-1)} + CEXP_t - DD_t)} \times 100$$

## Relative return

IPD standard methodology for calculating relative returns is by taking the ratio of the fund return to the benchmark return. In this report, the relative return is the arithmetic difference between the fund performance and the chosen benchmark performance.

$$RR_t = TR_{fund,t} - TR_{benchmark,t}$$

$RR_t$  = Relative return

$TR_{fund,t}$  = Total return of fund (NAV)

$TR_{benchmark,t}$  = Total return of benchmark (NAV)

## Compounded performance measures

All IPD measures are calculated on monthly basis. In order to produce measures on a higher time denomination, the concept of compounding is applied. Compounding is performed as following (taking the annualised total return measure as an example):

$$100 \times \left[ \prod_{i=0}^{11} \left( 1 + \frac{TR_{t+i}}{100} \right) - 1 \right] = 100 \times \left[ \left( 1 + \frac{TR_t}{100} \right) \times \left( 1 + \frac{TR_{t-1}}{100} \right) \times \dots \times \left( 1 + \frac{TR_{t-11}}{100} \right) - 1 \right]$$

$TR_t$  = Total return

## Attribution analysis: structure score

Structure Score provides information on whether, compared with a peer group, an individual portfolio is best allocated to take advantage of market conditions.

IPD standard methodology for relative return is the geometric method which stands in contrast to the arithmetic approach used in this formula.

Structure Score is the proportion of the relative return attributable to the weightings of the portfolio relative to the benchmark in each of the segments used in the analysis.

$Weighting_{Fund,t}$  = Weighting of the fund by Capital Employed

$Weighting_{Market,t}$  = Weighting of the market by Capital Employed

$TR_{Market\_Segment,t}$  = Market Total Return per segment in period t

$TR_{Market,t}$  = Market Total Return in period t

$$\left[ Weighting_{Fund,t} - Weighting_{Market,t} \right] \times \left[ TR_{Market\_Segment,t} - TR_{Market,t} \right]$$

## Attribution analysis: Property score

Property scores indicate how well individual assets are performing when compared with their peers.

IPD standard methodology for relative return is the geometric method which stands in contrast to the arithmetic approach used in this formula.

Property score is the proportion of the relative return attributable to the performance of the fund's properties relative to the benchmark in each segment.

$$\text{Weighting}_{\text{Fund},t} \times \left[ \text{TR}_{\text{Fund\_Segment},t} - \text{TR}_{\text{Market\_Segment},t} \right]$$

$\text{Weighting}_{\text{Fund},t}$  = Weighting of the fund by Capital Employed

$\text{TR}_{\text{Fund\_Segment},t}$  = Fund Total Return per segment in period t

$\text{TR}_{\text{Market\_Segment},t}$  = Market Total Return per segment in period t

## Attribution analysis: Foreign exchange (FX) impact

IPD standard methodology for relative return is the geometric method which stands in contrast to the arithmetic approach used in this formula.

The FX impact in context with the attribution analysis explains the contribution of the relative out- or under-performance of the fund's FX impact with the benchmark's FX impact. FX impact behaves qualitative as the property score, but is solely focused on FX.

$$\text{Weighting}_{\text{Fund},t} \times \left( \text{TR}_{\text{FX,Fund},t} - \text{TR}_{\text{no-FX,Fund},t} \right) - \text{Weighting}_{\text{Market},t} \times \left( \text{TR}_{\text{FX,Market},t} - \text{TR}_{\text{no-FX,Market},t} \right)$$

$\text{Weighting}_{\text{Fund},t}$  = Weighting of the fund by Capital Employed in period t

$\text{Weighting}_{\text{Market},t}$  = Weighting of the market by Capital Employed in period t

$\text{TR}_{\text{FX,Fund},t}$  = Fund Total Return in period t, with currency impact

$\text{TR}_{\text{no-FX,Fund},t}$  = Fund Total Return in period t, without currency impact

$\text{TR}_{\text{FX,Market},t}$  = Market Total Return in period t, with currency impact

$\text{TR}_{\text{no-FX,Market},t}$  = Market Total Return in period t, without currency impact



## Currency Exchange Rates

All foreign currencies are converted to the reporting currency at the WM/Reuters end-month closing spot rates.

## Components of Net Fund Return

IPD calculates real estate investment performance at the asset and fund level. The components of Net Fund Return analysis attempts to bridge the gap between the underlying unleveraged property returns to the Net of Fee fund level return by analysing the impact of separate fund level structures highlighted below.

**Leverage:** The impact of debt associated with the fund, the pure leverage element accounts for the nominal effect of leverage.

**Fair Value Change Debt:** The impact of the profit and loss associated with Marked to Market debt compared to the book value.

**Cash:** Layering cash immediately after leverage impacts allows the undistorted analysis of the net debt position.

**Tax and Other Expenses:** Impact of Tax exhibited on the fund, although most funds are tax exempt if present they will reduce returns.

**Management Fees:** Fund management fees are then deducted as this allows the calculation of a net fund return, which an average investor will receive once the manager has been remunerated for managing the fund.

**Methodology:** The effect of different calculation methods between IPD and NBIM as IPD employs a monthly based calculation and NBIM calculates on a daily basis.

**Capital Recognition Policy:** The impact of returns due to the differences in IPD and NBIM capital employed.



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## About IPD | An MSCI Brand

IPD is a leading provider of real estate performance and risk analysis, providing critical business intelligence to real estate owners, managers, brokers, lenders and occupiers worldwide. Our unique database holds searchable information on 79,000 properties, valued at approximately USD 1.7trillion, which are located in 33 countries, with a long performance history (25+ years) and which are mostly appraised quarterly.

IPD is well known for its sophisticated research capability and provides fundamental analysis that can be applied across all types of real estate: direct property, listed and unlisted vehicles, joint ventures, separate accounts and debt. IPD's clients are global industry leaders and we have a symbiotic relationship with them. This includes nine of the top ten global fund managers\* and nine of the largest ten European REITs\*\*.

IPD does not participate in real estate investment markets and does not offer consultancy advice on investment decisions.

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\* INREV/ANREV Fund Manager Survey 2012

\*\* MSCI 2013

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