Evaluation of Private Equity Real Estate Indices

Unlike investments in stocks and bonds, private equity real estate (PERE) has no widely accepted passive index available, which is being used to measure a fund's performance against. Nevertheless, to evaluate how a fund has performed relative to other PERE funds, investors require accurate and timely information. Several alternative indices on reporting PERE funds exist.

The following article provides an analysis of currently available PERE indices and their characteristics. The pros and cons and the differences in region, style, size and methodology are being presented. Moreover, issues, which limit an index' use as a benchmark, such as investability, access or transparency are being evaluated. The focus in this article is on private equity real estate, and does not address publicly traded real estate securities. The findings are based on academic publications and data compiled by several index providers.

Overview of PERE Indices

Through a literature review and by talking to investment professionals (for global PERE investors) the four major PERE indices, from the index providers European Association for Investors in Non-Listed Real Estate (INREV), NCREIF & Townsend (Townsend), Partners Group & Thomson Reuters (PGTR), and Preqin, have been identified and analyzed. Table 1 summarizes the main attributes of the four indices.

Index name	INREV	Townsend	PGTR	Preqin
Strategy	Core Value added	Core Value added Opportunistic	Value added Opportunistic	Value added Opportunistic
Region	100% Europe	88% N. America 6% Europe 6% Asia	53% N. America 18% Europe 29% Asia	62% N. America 27% Europe 11% Asia and rest of the world
Performance measures	Money-weighted returns (IRRs), based on NAV	Time-weighted returns (gross and net), IRRs and multiples.	Net cash flows to investors, time-weighted returns, IRRs and multiples	Money-weighted returns (IRRs) based on NAV and multiples
First index data	Since 2001	Since 1989	Since 2000	Since 2001
Sample size	285 funds since 2001, GAV of currently EUR 165 billion	Currently 311 funds	290 funds since 1981, NAV of currently USD 130 billion	859 funds since 2001

Table 1: Overview of PERE Indices

Index Performance

Figure 1 shows the performance of the four PERE indices compared to other asset classes, since 2001. For Townsend, the three published indices (core, value added, opportunistic) have been aggregated, using a value weighting methodology, to generate a comparable index.

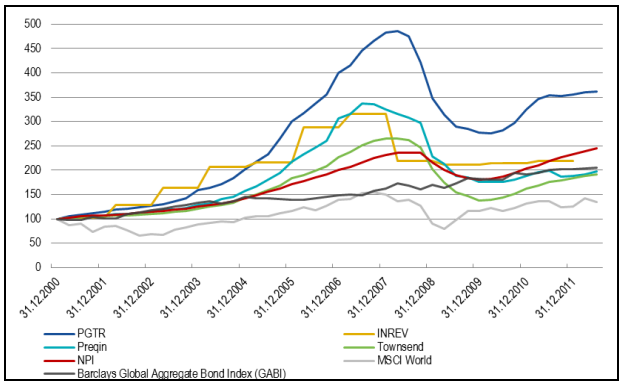
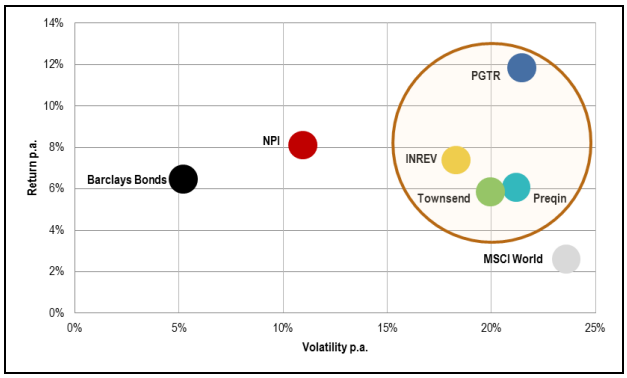


Figure 1: PERE Indices versus Stocks and Bonds

All four PERE indices increased steadily, reaching their highest valuations between 2007 and 2008. Especially PGTR could enhance its returns through the use of a higher degree of leverage in value added and opportunistic funds. However, PERE funds suffered large write-downs, due to the sub-prime mortgage crisis. The use of excessive debt has magnified the losses during the downward trend in the economy. The PERE market bottomed out in 2010.

During the last 11 years, all four PERE indices have outperformed stocks. In comparison to bonds, only the PGTR and the INREV index have outperformed on an absolute level. Further, only the PGTR has performed better than direct property investments (NPI[11]), but with a higher volatility (



[1] NCREIF Property Index (NPI) is being used as a measure of direct real estate investment returns. The NPI is a quarterly published index, which measures the performance of a large pool of individual commercial real estate, located in the USA, on an unlevered level (NCREIF, online). The more commonly used Global Property Index from IPD has not been used, since it is only published on a yearly basis.

Figure 2).

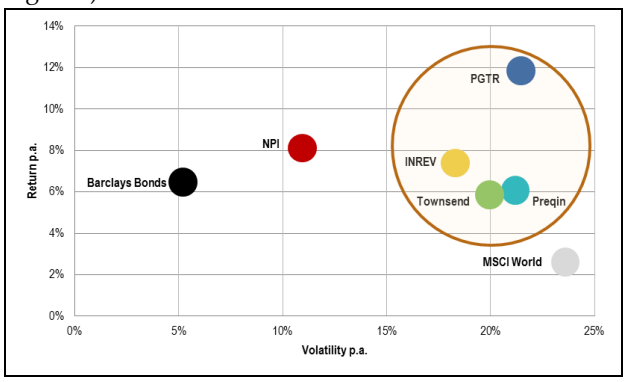


Figure 2: Historical Risk-Return Profile: Q1 2001 - Q2 2012

The PERE index returns vary between 5.85% and 11.84% p.a., whereas the annualized volatility lies within the range of 18.30% and 21.47%.

Since INREV data is only available on a yearly basis, the volatility of all indices has been measured on an annual basis in order to provide a better comparison of the risk-return profiles. Due to the use of annual data, the calculated volatility might be slightly overstated in comparison to calculations based on monthly or quarterly data.

Even though the indices use different return calculation methodologies (TWR vs. MWR), different compositions by region (North America, Europe, global) and different weightings of the strategies (core, value added and opportunistic), the indices are highly correlated (Table 2), but differ in the amplitude of the movements.

	PGTR	PrEQIn	Townsend	INREV	NPI	MSCI World	Barclays Capital GABI
PGTR	1						
Preqin	0.89	1					
Townsend	0.92	0.89	1				
INREV	0.75	0.79	0.64	1			
NPI	0.86	0.82	0.98	0.55	1		
MSCI World	0.46	0.46	0.37	0.63	0.28	1	
Barclays Capital GABI	-0.03	-0.19	-0.04	0.43	-0.06	-0.07	1

Table 2: Correlation Matrix (time period: Q1 2001 – Q2 2012)

Especially the Townsend and the PGTR indices show a very high linear relationship (correlation = 0.92). INREV shows the lowest correlation amongst the other PERE indices. This seems reasonable, since this index only includes European funds, while all the others include funds on a global level with a significant share in North American and Asian funds.

Return Drivers

An analysis of the correlation between the PERE indices and direct real estate investments (NPI) shows that the major driver of PERE index returns is the return from the underlying real estate investments (Figure 3).

The three indices (Preqin, PGTR, Townsend), which provide quarterly data, show very high correlations between 0.82 and 0.98 with the NPI. Between 67.68% and 95.87% of the variance of the index returns can be explained by the underlying real estate investments (measured as R^2). Since the INREV index invests only in European funds, an analysis with the NPI (direct property investments in the USA) would not be appropriate. Instead, the IPD Pan Europe Index has been used. INREV also shows a high correlation of 0.71 (R^2 of 0.51) with direct property investment data.

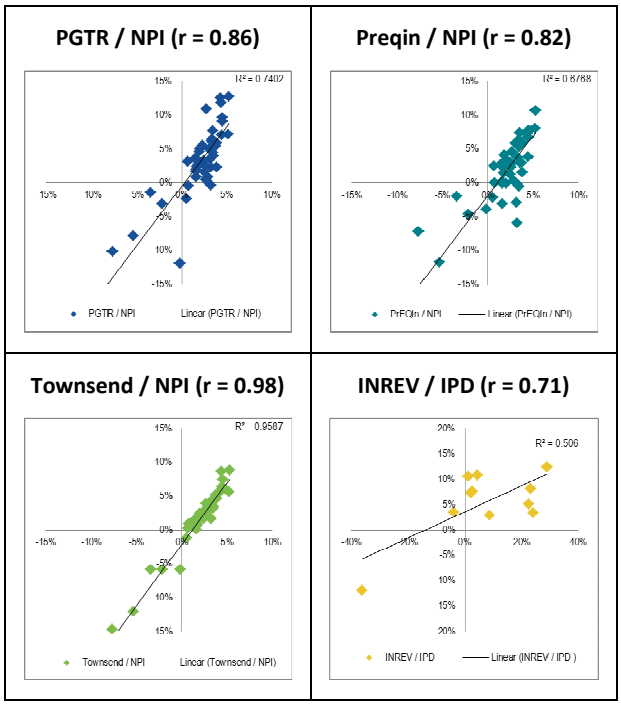


Figure 3: Correlation between PERE Indices and Direct Property Investments

Due to the high correlations with the NPI, but the significantly higher volatility, the four PERE indices could also be seen as levered direct property investments. Leveraging the NPI by using the U.S. average interest rate for adjustable-rate mortgages (Mortgage Information Service, online), leads to a close match between the PERE indices and the NPI (

Figure 4).

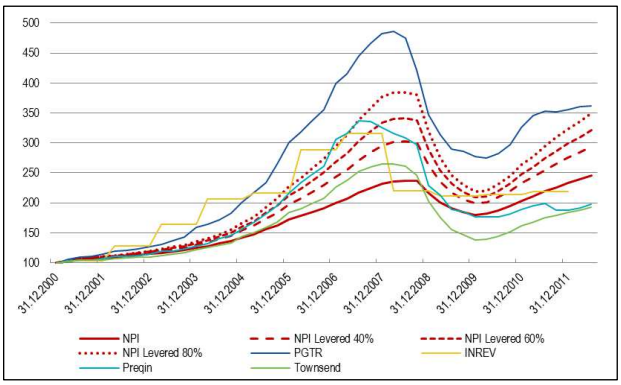


Figure 4: Levered NPI

Therefore, a customized levered direct property investment (NPI) index with the desired leverage could be used as an alternative to the PERE indices.

However, there are some drawbacks of the NPI that have to be considered when used as a benchmark. First, there are well-known appraisal and timing biases in the data. Second, this index reflects unleveraged returns on generally stabilized U.S. assets, whereas most PERE funds are heavily leveraged and not stabilized. Third, the NPI is not a relevant benchmark for funds with significant international exposure as its data reflects the performance of properties only in the United States. Fourth, many funds are exposed to a different set of risk from those reflected in the NPI due to the fact that PERE funds engage in activities such as development, redevelopment, and loan restructuring strategies (Linneman & Ross, 2002, p. 13).

Since no fund specific data has been available, but only index data, an analysis of fund specific return drivers, such as leverage, open vs. closed funds, core vs. value added vs. opportunistic, etc., has not been possible, but would contribute valuable insights.

IRR by Vintage Year

The mentioned high correlation between the different indices can also be seen by the average IRR by vintage year (Figure 5). The IRRs by vintage year show a similar development over time, again with differences in return level, due to the diverging strategies. Since Townsend only reports the IRRs by vintage year on the strategy level, it is not included in Figure 5.

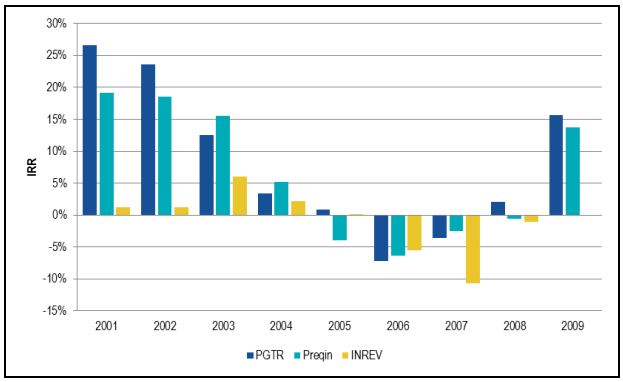
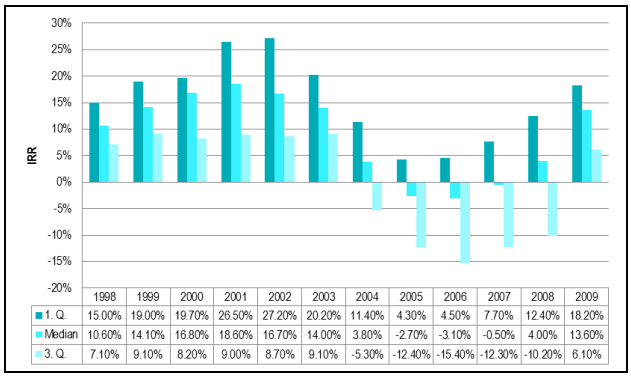


Figure 5: IRR by Vintage Year

Preqin provides even more detailed data and distinguishes between top quartile, median and bottom quartile funds (Figure 6) according to the IRR. The dispersion of the IRR widens significantly in periods with very high or extraordinarily low returns and closes during periods with near to average returns. The substantial dispersion of the fund performances illustrates that simply using the mean or median IRR can be inaccurate. Analyzing the return distribution with fund specific data or at least looking at IRR by quartiles would provide a better understanding of the PERE fund returns. The index providers did not make fund specific returns available, which could have been used for further analysis.



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1. Q.	15.00%	19.00%	19.70%	26.50%	27.20%	20.20%	11.40%	4.30%	4.50%	7.70%	12.40%	18.20%
Median	10.60%	14.10%	16.80%	18.60%	16.70%	14.00%	3.80%	-2.70%	-3.10%	-0.50%	4.00%	13.60%
3. Q.	7.10%	9.10%	8.20%	9.00%	8.70%	9.10%	-5.30%	-12.40%	-15.40%	-12.30%	-10.20%	6.10%

Figure 6: Preqin - Top, Median and Bottom Quartile Funds by IRR

NREV enables to select their index data for every vintage year separately. Figure 7 shows that the inception date of PERE funds does not greatly influence the subsequent performance.

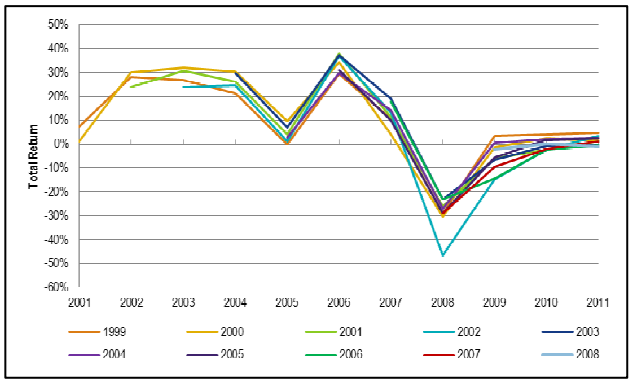


Figure 7: INREV - Returns by Vintage Year

Number of Funds by Vintage Year

The number of funds by vintage years included in the indices evolved similar to the PERE funds performances. However, since there is an overlap between the different indices, Figure 8 should not be interpreted as the development of the total number of funds, but as the development of the sample size of the four indices.

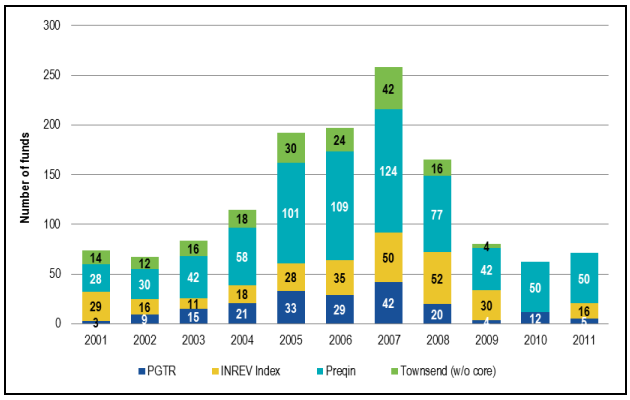


Figure 8: Number of PERE Funds by Vintage Year

From 2001 until 2007, the number of funds increased constantly, but then dropped rapidly at the beginning of the sub-prime crisis. A comparison of the four indices shows that Preqin includes by far the highest number of funds for every vintage year.

In addition, important to notice is that the index composition by regions changed over time. Figure 9 shows PGTR's funds by vintage year, separated by region. Until 2002, the index included only North American funds. From 2003 until 2007 European and Asian funds were included. From 2008 on, again, no additional European funds have been included. This inconsistency in the regional allocation, to a certain degree, distorts the interpretation of the index performance.

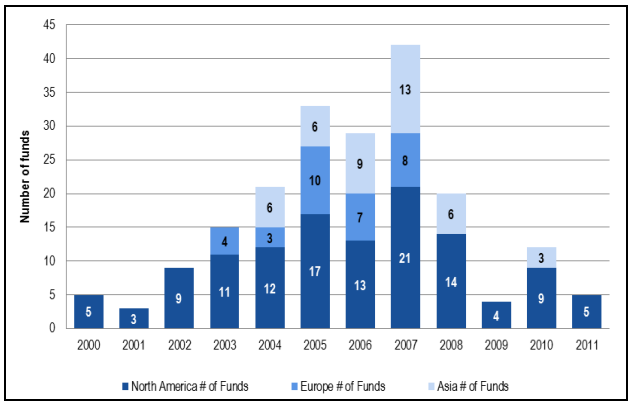


Figure 9: Number of Funds PGTR

Figure 10 shows that also Preqin's regional composition has changed over time significantly. Nevertheless, Preqin includes a considerable higher number of funds compared to PGTR.

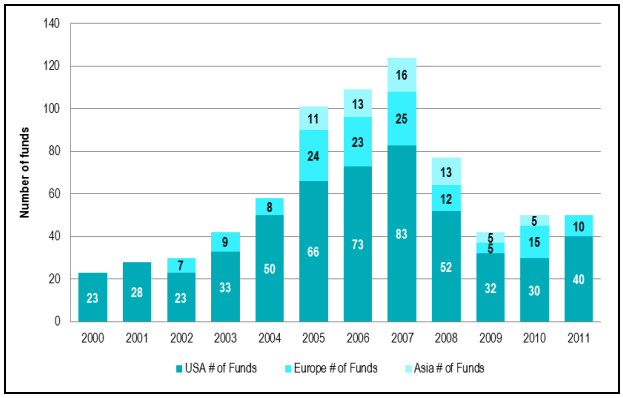


Figure 10: Number of Funds Preqin

As INREV (Europe) and Townsend (mainly USA) specifically focus on certain regions, their indices might be less biased by those changes of the regional allocation. But since the needed data has not been available, no analysis has been done to clearly answer this hypothesis.

Biases and Limitations

The analysis of the four PERE indices shows that they violate the majority of the desirable requirements of a good benchmark.

Investible and accessible: It is not possible to simply invest in private capital. This is only possible via individual funds. Also, not all investors have equivalent access to underlying funds (FLAG Capital Management, LLC, 2009, p. 5).

Appropriate: PERE indices often combine several underlying investment styles, which are not uniform. For example, the INREV index consists of 66% core

investments and 34% value added, whereas Townsend's index comprises 64% opportunistic, 29% value added, and 7% core funds. Thus, they represent different patterns of cash flows and return objectives, which might not be appropriate for a specific PERE fund. Due to changes in the index constituents, the composition by strategies and regions changes over time.

Unambiguous: The unambiguousness for private capital benchmark providers is not given, as they often do not disclose fund constituents (FLAG Capital Management, LLC, 2009, p. 5) and, the exact calculation methods are often not clearly defined, such as which type of IRR is being used.

Specified in advance: The examined index providers added (incl. backfilling) and deleted constituent funds over time, based on the availability of data. In the case of PGTR and Preqin the regional composition changed significantly, which might account for a portion of the change in the benchmarks performance.

Measureable and independent: PERE investments rely on subjective interim valuations. Their measurement is imprecise until a fund is completely wound down and the final cash flows are known with certainty. Additionally, the data of the analyzed indices are calculated on a quarterly basis, leading to a time lag. In the case of INREV, publicly available data is even only updated annually.

Besides the above-stated violations of various benchmark attributes, the analyzed PERE indices are upwardly biased relative to the universe of PERE funds due to mainly four reasons:

Reporting and selection bias: Only certain funds of the PERE fund investment universe are included in the indices. Different approaches in data submission could lead to potential significant biases, as each provider is able to aggregate only the data it can gain access to. Also, fund managers are more likely to report on better performing funds and only in good performing periods (Studer & Kraemer, 2012, p. 4). Moreover, inconsistency over time in terms of regional or strategic allocation, leads to a biased sample.

Survivorship Bias: Funds, which get liquidated, are likely not to provide this information to the index providers. Therefore, there can be a tendency for failed funds to be excluded from historical index return series. Usually, failed funds do not report the last periods of performance as they are failing. Thus, the representation of only surviving funds might lead to an overestimation of the historical index returns (Dorsey, 2007, pp. 359-360).

Backfill Bias: When index providers add a fund to an index, they often backfill the fund's historical returns. Funds submitting performance histories to the database for the first time, can include as much of their earlier history as they want (Ilmanen, 2011, p. 231). The index is biased upward, as the fund would not report its data unless it was favorable (Dorsey, 2007, p. 351).

Size bias: Index providers that receive source data via their outsourced reporting and monitoring relationships with large institutional investors are likely to create a sample of large sized funds (FLAG Capital Management, LLC, 2009, p. 4).

Recommendations

Despite the biases and limitations listed above, the following section describes which index is most suitable to be used as a benchmark for PERE investments, according to the index composition.

There is not one specific index, which can be identified as the most suitable PERE index to be used as a benchmark. The choice of the benchmark depends on the investment, against which the benchmark is being used. As the most important characteristic, the strategy, respectively the leverage of the investment, should match the benchmark as close as possible, since this factor leads to significant differences in returns and volatility. Moreover, every performance evaluation should be made on a risk-adjusted level, by also comparing the volatility of the investment and the benchmark. Using the NPI and leveraging it by the desired level could be seen as an alternative, instead of using a rather intransparent PERE index. As already mentioned above, however, there are some drawbacks of the NPI that have to be considered when used as a benchmark.

Ross and Mancuso (2011) advise investors to select real estate benchmarks that are appropriate for the specific structure of their real estate allocation. Furthermore, investors should consider a long-term absolute performance return target, rather than rely on specific benchmarks for comparison purposes (p. 8). Moreover, investors should be aware of the limitations and biases of the available benchmarks, which often lead to an upward bias in the index performance measurement. Linneman and Ross (2002) state that the most approp-

riate benchmark for PERE funds is whether they are achieving their target returns using the strategies and leverage they have promised their investors (p. 14). In other words, investors should verify whether funds are doing what they have promised. Thus, consistent and detailed reporting to investors is required, so that they can assess whether the fund is performing in line with their expectations.

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