Performance of Non-Core Private Equity Real Estate Funds: *A European View*

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Real estate investments represent a large share of the wealth universe as well as of the portfolios of institutional investors (Clayton et al. [2007]), and the benefits of including real estate in a mixed-asset portfolio are widely documented in the scientific literature (e.g., Mueller and Mueller [2003]). Investors can gain exposure to real estate markets through either direct or indirect means. The direct investments are, from the investor's point of view, an active investment that requires, among other things, market and management knowledge and resources. Indirect investments, for their part, offer a passive means to gain exposure in real estate.

In the course of recent decades, private equity real estate (PERE) funds have become a popular avenue for institutional investors to gain exposure to real estate markets. Notwithstanding their growth into a several hundred billion euro asset class, until recently very little has been known about the performance of these funds. Recent findings by Tomperi [2010], Alcock et al. [2013], and Fisher and Hartzell [2013] indicate that private equity real estate funds generate only moderate after-fee returns at best. The studies by Tomperi [2010] and Alcock et al. [2013] analyzed PERE returns on an absolute basis. The limitation of these methods is that they do not make reference to the general market development or the risk–return profile of the sector (see, e.g., Phalippou [2009]). Recently, the focus on conventional private equity, venture capital, and buyout fund literature has shifted toward the analysis of relative performance benchmarks. The most commonly used relative benchmark in the private equity literature is Kaplan and Schoar's [2005] public market equivalent (PME), which is a public market adjusted-capital multiple where all flows in and out of funds are discounted with the realized public benchmark return over the life of the fund (see Aigner et al. [2008]; Diller and Kaserer [2009]; Robinson and Sensoy [2013]; Acharya et al. [2013]; Sensoy et al. [2014]; Harris et al. [2014]).

To our knowledge, there is only one study using relative benchmarks for PERE performance. Fisher and Hartzell [2013] evaluated private equity real estate fund performance relative to alternative markets by using a sample of 378 U.S. dollar-denominated value-added and opportunistic PERE funds raised during 1982–2008. In addition to the widely used private equity performance metrics IRR and equity multiple (TVPI, or total value to paid-in capital ratio),[1] Fisher and Hartzell calculated the alternative market equivalent (AME), which is similar to the PME measure of Kaplan and Schoar [2005].

Fisher and Hartzell [2013] reported an equally weighted average after-fee internal rate of return (IRR) of a mere 2% and an

average equity multiple of 1.19. Both absolute return metrics have large within-sample variation, the standard deviation of the IRR being 17.5%. With respect to the AME metric, the performance is even worse. Although private equity real estate has outperformed the general equities market as defined by the S&P 500 Index, the same is not true when comparing against the performance of public REITs (real estate investment trusts) and their NPI (net property income). The average AME for alternative real estate indexes was 0.9 or less over the whole sample period, indicating underperformance of 10% or more through the life of an average fund. The PERE funds outperformed the NAREIT and NCREIF indexes only during a few individual years.

In this article, we shed new light on the performance of private equity real estate funds by analyzing the performance of European non-core PERE funds. We use detailed and timely fund level cash flow data for European-focused, value-added, and opportunistic real estate funds provided by Burgiss covering the period from 1998 to 2009. Our article contributes to the existing literature on private equity real estate funds in two ways. First, we explore the performance of European private equity real estate funds. In addition to calculating absolute performance measures (IRR and equity multiple), we use the PME methodology, to our knowledge for the first time, to assess the European PERE.

Second, contrary to publicly traded investment media, PERE performance evaluation relies heavily on property and fund valuations. As in the private equity industry in general, the assets held by PERE funds are typically not traded in public market places and thus have no openly defined market values. Therefore, performance is based on the realized cash flows and estimated net asset values (NAVs) of fund investments during the life of the fund. Consequently, if the estimated NAV is incorrect, so is the reported interim performance. There are at least two sources of bias in the NAVs: The PE industry has traditionally operated, and to some extent still does, in an unregulated environment. In terms of NAVs and reporting, the manager can decide to mark the NAVs to market values, not mark to market and just report the appraised market values as additional information, or in extreme cases, even manipulate the NAVs. For example, Jenkinson et al. [2013] showed with a sample of nearly 700 non-real estate funds that interim NAVs understate subsequent distributions by 35% on average over the entire life of the fund.

Both general private equity and real estate valuations are subject to uncertainty. Specifically, real estate appraisals do not reflect the market values perfectly but are imposed bias due to valuation smoothing.[2] Thus, the treatment of NAVs in PERE performance calculation might affect the findings significantly.

We address the accuracy and reliability of interim fund valuations by analyzing how well fund cash-flows explain subsequent changes in NAVs. The aim of our approach is to reveal any systematic discrepancies between fund valuations and subsequent distributions to limited partners. We then recalculate the performance metrics to evaluate their sensitivity to possible biases in the interim NAVs. This is important in order to evaluate not only the overall performance of the sector but also the effect of the current industry practice of including ongoing funds in the performance evaluation.

Our findings show that PERE funds delivered an average (median) IRR of –1.3% (–1.7%), TVPI of 0.941 (0.933), and PME of 0.889 (0.884). In addition, we analyze the correctness of interim NAVs and find some evidence of the undervaluation of fund investment by almost 20%. We then recalculate the performance metrics using the adjusted NAVs, and find slightly stronger performance: The average (median) IRR, TVPI, and PME increase to 4% (4%), 1.06 (1.09), and 1.01 (1.01), respectively, which is a substantial improvement.

DATA

We use detailed fund level cash flow data for European focused value-added and opportunistic real estate funds provided by Burgiss, a private equity software, services, and analytics provider. The Burgiss data are collected from their software, which individual limited partners (LP) use to keep their records and monitor their PERE investments. The data comprise a full history of precisely timed in- and outgoing cash flows and interim valuations of the ongoing investments. All cash flows are on an after-fees basis, and they therefore represent the actual amounts realized by the limited partners.

The benefits of the Burgiss database as compared with other data sources have been analyzed and described in detail by Harris et al. [2010] and Harris et al. [2014]. In short, the main advantage of the database is that the data come directly from the limited partners. Compared with the alternative databases that collect their data through, for example, surveys and Freedom

of Information Act (FOIA) searches, the Burgiss data collection method is more reliable and should be less exposed to sample bias in terms of exclusion of badly performing funds.

Burgiss defines European-focused funds as those funds where the greatest amount of capital was invested in Europe, irrespective of the manager's origin or fund currency. The data comprise mostly value-added and opportunistic PERE funds, with cash-flow information available only on a few core PERE funds.[3] Thus, we limit our sample to include only value-added and opportunistic funds.

Our sample of European value-added and opportunistic PERE funds covers vintage years over the 1998–2012 time period. As the least mature vintages include hardly any cash flows, we exclude them from further analysis. Our final sample thus includes 79 non-core European-focused strategies over the 1998–2009 period, for which we have altogether 4,174 distribution, contribution, and NAV observations. All funds are closed-end funds, and the sample funds represent a total of €47.5 billion of committed capital, of which €36 billion are in opportunistic funds and the remainder are in value-added space. Exhibit 1 provides a fuller overview of the data. Due to the relative immaturity of the European PERE market, a vast majority of the funds are rather young, with only 5 funds of the 79-fund sample being fully liquidated. Many funds that were raised during the latter part of the 2000s have as of yet distributed only insignificant amounts of capital back to their limited partners (see Exhibit 2).

EXHIBIT 1
Funds Sample Overview

	A. All Funds				B. Value-Added			C. Opportunistic		
Vintage	Funds	Commitments (billions €)	Mean Size (millions €)	Fully Liquidated	Funds	Commitments (billions €)	Mean Size (millions €)	Funds	Commitments (billions €)	Mean Size (millions €)
1998–2000	5	5.9	1173	2	1	*	*	4	*	*
2002–2004	7	2.5	360	1	2	*	*	5	1.6	314
2005	12	4.4	370	1	4	*	*	8	3.5	435
2006	15	9.2	611	1	7	2.7	381	8	6.5	812
2007	15	9.2	616	0	7	2.7	385	8	6.5	817
2008	16	12.1	756	0	2	*	*	14	10.3	739
2009	9	4.2	471	0	3	*	*	6	3.1	517
1998–2009	**79**	**47.5**	**602**	**5**	**26**	**11.5**	**442**	**53**	**36.0**	**680**

** For reasons of confidentiality, fund data cannot be shown for vintages with less than five funds.*

EXHIBIT 2
Cash Flow Behavior

		PIC		DPI		RVPI				
Vintage	Funds	Mean	SD	Mean	SD	Mean	SD	RVPI<0.5	RVPI<0.25	RVPI<0.1
1998	1	1.00	–	0.92	–	0.00	–	100%	100%	100%
1999	2	0.86	0.19	2.21	0.42	0.02	0.01	100%	100%	100%
2000	2	0.93	0.34	1.65	0.28	0.01	0.01	100%	100%	100%
2002	1	0.84	–	1.83	–	0.03	–	100%	100%	100%
2003	2	1.04	0.05	1.11	0.20	0.16	0.23	100%	50%	50%
2004	4	0.96	0.21	0.56	0.36	0.27	0.18	100%	50%	0%
2005	12	0.99	0.17	0.39	0.37	0.46	0.26	50%	17%	8%
2006	15	0.87	0.11	0.13	0.14	0.67	0.43	47%	13%	7%
2007	15	0.89	0.17	0.11	0.17	0.72	0.37	27%	20%	7%
2008	16	0.71	0.24	0.12	0.13	0.76	0.24	13%	0%	0%
2009	9	0.64	0.22	0.09	0.08	0.94	0.12	0%	0%	0%

Notes: PIC = paid-in capital to committed capital multiple; DPI = Distributed to Paid-In capital multiple; RVPI = Residual Value to Paid-In capital multiple. SD = standard deviation.

We define value-added and opportunistic funds together as non-core. The difference between value-added and opportunistic funds is not always clear cut. In general, they both look for significantly higher returns than core funds, but opportunistic funds tend to seek even greater returns (and risks) than value-added funds. Common to both of them is that they use significant amounts of leverage and take on investments with substantial value-enhancing potential. Value-added funds commonly target less radical value creation initiatives, such as leasing or re-positioning, and target IRRs in the range of low to mid-teens. Opportunistic strategies are at the highest end of the risk spectrum and take advantage of heavily mispriced or distressed situations or other high-yield market opportunities. Their target equity IRRs are typically around 20%.

Our data are relatively representative in terms of committed capital but are tilted toward larger funds than many other datasets. The INREV [2014a] dataset lists 113 funds with size data representing a total committed capital of €35.2 billion. Preqin, in turn, lists a remarkable 614 funds with a total committed capital of €114.2 billion. However, Preqin does not report fund style, so this number includes also core funds. Given the significance of the core fund market in Europe,[4] a large proportion of these funds are presumably of the core style.

METHODOLOGY

The precisely timed fund level cash flow data of Burgiss enables the calculation and evaluation of PERE in terms of several performance metrics. First, we evaluate the performance of PERE funds through two widely accepted industry standards: internal rate of return (IRR) and equity multiple (TVPI or total value to paid-in capital). Despite its well-documented limitations (see, e.g., Phalippou [2009]), internal rate of return retains its position as the industry standard in measuring private equity fund performance, and real estate strategies are no exception in that respect. Hence, we calculate the IRR for each fund separately and report the results by vintage and investment style. In addition, we calculate a total value to paid-in multiple (TVPI), or equity multiple in short. Equity multiple is another commonly used performance metric, which is simply the sum of all cash distributions plus unrealized investments divided by the contributions to a fund.

Second, as IRR and TVPI are both absolute measures that do not take the general investment market conditions into account, we also measure performance in terms of public market equivalent, defined by Kaplan and Schoar [2005] and subsequently used by Fisher and Hartzell [2013] for PERE funds in the U.S. market. The strength of the PME methodology lies in its ability to measure PERE performance in relation to the real estate equities market, which from an institutional investor's perspective is the only viable indirect investment alternative for PERE investments.

As discussed earlier, most of our sample funds have not been liquidated yet. There are several approaches to the treatment of NAVs of unliquidated funds in the literature, the choice between which is a question of balancing between reducing the bias due to valuation unreliability and maintaining a feasible sample size. First, arguably the least controversial way of treating unliquidated and immature funds is to leave them out of the performance evaluation, as for example, Robinson and Sensoy [2013]. The clear benefit of this approach is to completely avoid the potential NAV bias of the unliquidated funds. The second approach is to completely write off the NAVs of old and inactive funds, as for example in Phalippou and Gottschalg [2009], without remarkably compromising the credibility of the performance evaluation. This is due to the mature and inactive funds mostly representing living death investments that will eventually have little or no value to the LPs (Driessen et al. [2012]). In addition, those investments past their normal liquidation age tend to be only a fraction of the fund's total value, thus having only an immaterial impact on the performance evaluation.

A third practice is to treat the NAVs as final cash flows of the ongoing funds as in Kaplan and Schoar [2005] or Fisher and Hartzell [2013] for non-real estate and real estate funds, respectively. Often, the main driver for inclusion of the less mature funds is to preserve sufficient sample size. This is the case in particular with PERE funds as the market tends to be even more immature than the conventional private equity sector. However, larger sample size is not the only reason to retain the less-mature funds. As the industry develops quickly, the return behavior of the early vintages funds may be very different from the contemporary funds' performance. Therefore, inclusion of the immature funds, despite the inherent NAV problems, provides additional

insight in the form of covering a greater share of the market and the latest return development.

In order to keep the sample size feasible, we treat the latest net asset valuations as a final cash distribution to LPs. We recognize that our treatment of unliquidated funds comes with controversy. To evaluate and encounter the valuation-related bias in our measurements, we follow Jenkinson et al. [2013] and perform a panel data regression on the changes in the reported interim NAVs. Central to the approach is that a fund's valuation can change either due to capital distribution from a fund or contribution to a fund or a change in the value of the carried forward investments. Therefore, when an investment is sold and capital is distributed back to the LPs, if the investment is correctly valued, the decrease in NAV should be of similar size as the distribution. The aim of our approach is to reveal any systematic discrepancies between fund valuations and subsequent distributions to limited partners. We then recalculate performance metrics taking into account the valuation bias in the funds.

RESULTS

IRR and Equity Multiple

As Exhibit 3 shows, we find that an average (median) non-core PERE fund achieved –1.3% (–1.7%) IRR and 0.94 (0.93) equity multiple over the 1998–2009 time period. This is an interesting result, suggesting that PERE funds have in fact, on average, delivered negative returns in absolute terms. Furthermore, we discover that performance is not significantly different for value-added and opportunistic funds, which demonstrates that the finding is consistent for alternative fund styles. However, the top quartile of all funds delivered on average a 6.3% IRR and 1.16 equity multiple over the study period.

EXHIBIT 3

IRR and TVPI Returns by Fund Style Calculated with Burgiss Data

		IRR					TVPI				
Vintage	**Funds**	**Mean**	**SD**	**P25**	**P50**	**P75**	**Mean**	**SD**	**P25**	**P50**	**P75**
Panel A: All Funds											
1998–2000	5	0.157	0.119	0.098	0.207	0.211	1.740	0.599	1.464	1.850	1.930
2002–2004	7	0.086	0.146	–0.064	0.102	0.200	1.104	0.475	0.710	1.253	1.344
2005	12	0.027	0.162	–0.057	–0.020	0.064	0.850	0.484	0.578	0.905	1.068
2006	15	–0.058	0.128	–0.166	–0.047	0.055	0.803	0.455	0.503	0.571	1.209
2007	15	–0.070	0.137	–0.147	–0.019	0.025	0.823	0.341	0.528	0.933	1.106
2008	16	–0.054	0.145	–0.141	–0.086	0.007	0.880	0.305	0.768	0.857	0.997
2009	9	0.009	0.065	–0.012	0.009	0.052	1.026	0.092	0.986	1.007	1.094
1998–2009	**79**	**–0.013**	**0.145**	**–0.109**	**–0.017**	**0.063**	**0.941**	**0.445**	**0.605**	**0.933**	**1.159**
Panel B: Value-Added funds											
1998–2000	1	–0.018	–	–0.018	–0.018	–0.018	0.917	–	0.917	0.917	0.917
2002–2004	2	0.027	0.129	–0.064	0.027	0.118	1.027	0.448	0.710	1.027	1.344
2005	4	0.110	0.239	–0.065	0.013	0.381	0.836	0.655	0.360	0.892	1.312
2006	7	–0.109	0.122	–0.194	–0.141	–0.019	0.700	0.321	0.503	0.532	0.934
2007	7	–0.021	0.109	–0.109	0.021	0.036	0.863	0.390	0.528	1.046	1.122
2008	2	0.007	0.023	–0.009	0.007	0.023	0.997	0.046	0.965	0.997	1.030
2009	3	0.034	0.040	–0.012	0.052	0.063	1.079	0.087	0.986	1.094	1.159
1998–2009	**26**	**–0.017**	**0.132**	**–0.087**	**–0.010**	**0.044**	**0.865**	**0.372**	**0.532**	**0.949**	**1.106**
Panel C: Opportunistic funds											
1998–2000	4	0.201	0.077	0.153	0.209	0.249	1.945	0.444	1.657	1.890	2.233
2002–2004	5	0.115	0.163	–0.007	0.143	0.238	1.134	0.534	0.836	1.253	1.296
2005	8	–0.008	0.125	–0.057	–0.024	0.064	0.858	0.429	0.657	0.905	1.005
2006	8	0.002	0.116	–0.110	0.045	0.060	0.893	0.554	0.539	0.889	1.223
2007	8	–0.107	0.151	–0.230	–0.036	–0.001	0.789	0.314	0.541	0.923	0.997
2008	14	–0.063	0.154	–0.160	–0.096	–0.034	0.864	0.323	0.731	0.837	0.930
2009	6	–0.004	0.074	–0.018	0.004	0.027	0.999	0.088	0.983	1.002	1.035
1998–2009	**53**	**–0.011**	**0.152**	**–0.109**	**–0.018**	**0.075**	**0.978**	**0.476**	**0.749**	**0.930**	**1.209**

Note: SD = standard deviation; P25, P50, and P75 are the 25th, 50th, and 75th percentiles, respectively.

Obviously, performance is far from constant through the review period. The early vintages of 1998–2000 succeeded fairly well with an average (median) IRR of 15.7% (20.7%) and an equity multiple of 1.74 (1.85). This is in stark contrast to mid-2000 vintages that returned negative IRRs and equity multiples below 1. Not surprisingly, the full-period average performance is depressed by the relatively high number of the financial boom-era funds. Those funds raised in the mid-2000s tended to buy at peak prices and experienced the subsequent market correction winding up in poor returns. If the return variance is large between vintages, the same holds within the vintages too. The difference between the lowest and top quartile of all funds is 17% and 0.55 on IRR and equity multiple, respectively. The remarkable between- and within-vintage performance variation suggests that timing and fund selection both play an important role in limited partners' realized PERE returns over time.

As a robustness check, we compare Burgiss-calculated IRR and TVPI against those provided by Preqin, as seen in Exhibit 4. As the data show, both our IRR and TVPI are lower than the corresponding Preqin figures. In particular, our full-sample average TVPI of 0.941 is significantly lower than that of Preqin, 1.215. Similarly, mean IRRs are –1.3% and 3.1% for Burgiss and Preqin data, respectively. One potential source of this discrepancy is that Preqin collects their data through surveys, voluntary GP reporting, and Freedom of Information Act requests. Therefore, the Preqin data are more likely to suffer from selection bias than the Burgiss data that are collected directly from limited partners. In addition, fund managers are arguably less willing to report performance during difficult times, which may induce the managers to stop reporting. In fact, as Exhibit 4 shows, the Preqin data of the funds with performance information are more tilted toward early vintages, which supports our interpretation. Furthermore, the Burgiss data are more representative of the market with performance metrics for 79 funds as opposed to 51 funds in the Preqin dataset. Therefore, we believe that our results give a sufficiently unbiased view of European non-core PERE performance.

Public Market Equivalent

Arguably, one of the key difficulties with both of the conventional private equity performance metrics (IRR and equity multiple) is that they gauge absolute return, with no reference to any benchmark or alternative asset class. PME methodology provides an improvement in that respect. PME is simply a market-adjusted equity multiple, in which all distributions including any unliquidated assets are discounted at proper market index, summed up, and then divided by the sum of market-return discounted contributions. If the resulting multiple is above 1, the PERE market has outperformed the public markets and vice versa.

Given the European focus of the data, we use the NAREIT/EPRA Developed Europe real estate equities index as the benchmark. The index provides the best comparable market coverage and is available for all vintages in our data. It tracks both publicly traded real estate operating companies and real estate investment trusts. In addition to euro-denominated funds (51), our sample includes British pound-denominated funds (10)

EXHIBIT 4
Burgiss-Calculated IRR and TVPI vs. Returns Provided by Preqin

	Panel A: IRR						Panel B: TVPI			
	Number of funds		Mean		P50		Mean		P50	
Vintage	Burgiss	Preqin	Burgiss	Preqin	Burgiss	Preqin	Burgiss	Preqin	Burgiss	Preqin
1998–2000	5	6	0.157	0.178	0.207	0.195	1.740	2.195	1.850	1.510
2002–2004	7	9	0.086	0.121	0.102	0.039	1.104	1.529	1.253	1.330
2005	12	7	0.027	–0.014	–0.020	–0.001	0.850	1.050	0.905	1.000
2006	15	13	–0.058	–0.012	–0.047	–0.002	0.803	0.992	0.571	0.990
2007	15	12	–0.070	–0.060	–0.019	0.010	0.823	0.840	0.933	1.015
2008	16	2	–0.054	0.074	–0.086	0.074	0.880	1.170	0.857	1.170
2009	9	2	0.009	0.125	0.009	0.125	1.026	1.195	1.007	1.195
1998–2009	**79**	**51**	**–0.013**	**0.031**	**–0.017**	**0.037**	**0.941**	**1.215**	**0.933**	**1.140**

Note: Burgiss and Preqin returns are not fully comparable as the Preqin data also include core PERE funds. P50 is the 50th percentile.

and U.S. dollar-denominated funds (18) for which we use currency-adjusted index returns according to each fund's reporting currency.

Panel A in Exhibit 5 reports calculated PMEs for different vintages. We find that the average (median) PME for all non-core funds through the 1998 to 2009 period is 0.89 (0.88). This result implies that an average PERE fund has clearly underperformed the real estate equities market. Even more interesting is that none of the vintages attained a PME of greater than 1, showing that the underperformance is consistent across vintages. This finding contrasts with those of the IRR and equity multiple performance measures, which show significant variation across time. This implies that market-adjusted performance is independent from market cycles, as weak performance is sustained throughout the evaluation period. Furthermore, our findings indicate that the strong performance (in terms of IRR and equity multiple) of the early PERE vintages was to a great extent driven by favorable overall capital markets conditions. Our results remain materially unchanged when we assess value added and opportunistic funds separately in Panels B and C of Exhibit 5. In addition, our findings are consistent with those of Fisher and Hartzell [2013] for U.S. PERE funds.

The PME approach comes with some critique, too. It implicitly assumes that PERE funds and the market return share the same risk profile, namely, the equity beta. Obviously, this is often not the case. There might be differences in the portfolio composition in terms of property type and the riskiness of the assets, as well as the amount of leverage used. Furthermore, the methodology fails to account for the illiquid nature of PERE funds compared with publicly traded real estate equities. Finally, given that a part of our sample is non-euro-denominated funds, it is not clear how much the results have been affected by the changes in currency exchange movements during each funds' life. Despite these limitations, the results are still applicable to an investor comparing the two forms of investment.

EXHIBIT 5

Calculated PMEs and Detailed Burgiss Cash Flow Data for Non-Core PERE Funds, 1998–2009

Vintage	Funds	Mean	SD	P25	P50	P75
Panel A: All funds						
1998–2000	5	0.952	0.171	0.889	0.979	1.091
2002–2004	7	0.918	0.346	0.843	0.846	1.233
2005	12	0.929	0.532	0.716	0.969	1.152
2006	15	0.888	0.551	0.526	0.711	1.183
2007	15	0.869	0.446	0.345	0.921	1.088
2008	16	0.827	0.273	0.675	0.812	1.014
2009	9	0.920	0.084	0.865	0.919	0.973
1998–2009	**79**	**0.889**	**0.397**	**0.676**	**0.884**	**1.088**
Panel B: Value–Added funds						
1998–2000	1	0.691	.	0.691	0.691	0.691
2002–2004	2	1.131	0.405	0.845	1.131	1.418
2005	4	0.828	0.575	0.475	0.991	1.180
2006	7	0.670	0.259	0.525	0.608	0.814
2007	7	0.856	0.453	0.344	1.020	1.193
2008	2	1.031	0.260	0.848	1.031	1.215
2009	3	0.966	0.044	0.919	0.973	1.006
1998–2009	**26**	**0.842**	**0.368**	**0.608**	**0.883**	**1.088**
Panel C: Opportunistic funds						
1998–2000	4	1.017	0.103	0.934	1.035	1.100
2002–2004	5	0.832	0.326	0.843	0.846	0.916
2005	8	0.979	0.542	0.716	0.964	1.141
2006	8	1.079	0.679	0.594	1.023	1.646
2007	8	0.881	0.470	0.580	0.878	0.998
2008	14	0.798	0.271	0.675	0.776	0.939
2009	6	0.897	0.093	0.854	0.882	0.924
1998–2009	**53**	**0.911**	**0.412**	**0.743**	**0.884**	**1.059**

Note: SD = standard deviation; P25, P50, and P75 are the 25th, 50th, and 75th percentiles, respectively.

How True Are the NAVs?

As discussed, the correctness of manager-reported interim valuations has a significant impact on reported performance. We follow Jenkinson et al. [2013] and perform a panel data regression on the changes in the reported interim NAVs. For systematic undervaluation to exist, the coefficients for the capital distributions should be statistically significantly different from 1.

Exhibit 6 shows the panel data regression results. The first and second columns supply the results for the baseline regression, where NAV changes are explained only by capital distributions and contributions. Column 1) gives the results for the full sample of 79 funds and more than 1,700 observations, and Column 2) shows the results for the subsample of quasi-liquidated funds whose residual value to paid-in capital (RVPI) is less than 0.25 with more than 500 observations.

Quite unexpectedly, capital contributions are on average associated only with a 49.9% increase in a fund NAV. However, this coefficient turns out to be statistically insignificant. Our full sample data are relatively immature and many funds made significant numbers of capital calls in the latter part of the 2000s, during times when property values plummeted rapidly across Europe.

EXHIBIT 6
Panel Data Regression of NAV Changes to Fund Cash Flows

	Change in NAV			
	Baseline Regression		Regression with Equity Index as Explanatory Variable	
	Full Sample (1)	Subsample (2)	Full Sample (3)	Subsample (4)
Contribution	0.499	0.946	0.516	0.967
	[0.403]	[0.224]	[0.392]	[0.224]
Distribution	–0.844	–0.813	–0.819*	–0.804
	[0.0852]	[0.124]	[0.0837]	[0.114]
EPRA/NAREIT index			0.163*	0.141**
			[0.0786]	[0.0359]
Constant	–0.320*	–0.116	–0.321*	–0.121
	[0.122]	[0.144]	[0.122]	[0.144]
Number of funds	79	16	79	16
N	1767	528	1767	528
R-squared				
Within	0.0773	0.3301	0.0834	0.3523
Between	0.0037	0.3226	0.0078	0.3656
Overall	0.0725	0.3215	0.079	0.3463

*Notes: This table presents the results of a panel data regression model for quarterly change in a fund's valuation. Independent variables are quarterly contributions and distributions of the fund capital and EPRA/NAREIT index return. For contribution and distribution coefficients, the tested null hypothesis is that the coefficient is equal to 1. In all the alternative specifications, we control for the fund age and fund fixed effects and for serial correlation. Clustered and robust standard errors are shown in brackets. *, **, and *** indicate statistical significance at the 0.05, 0.01, and 0.001 levels, respectively.*

Presumably, devaluations of existing investments partially offset and distort the impact of capital contributions on NAVs resulting in a dubious coefficient. This view gains support when we repeat the regression for a subsample of quasi-liquidated funds whose residual value to paid-in capital (RVPI) is less than 0.25. Now, the coefficient for capital contributions increases to 0.946 but remains statistically insignificant.

Arguably even more interestingly, capital distributions are on average associated with 84.4% and 81.9% decreases in funds' net asset valuation for, respectively, the full sample and subsample of quasi-liquidated funds. Neither of the coefficients in the regressions turns out to be statistically significantly different from 1 at 0.05 level, the coefficient of capital distributions for the full sample (–0.844), being statistically significant only at the 0.1 level.

As in Jenkinson et al. [2013], we run the regression with the equities index (EPRA/NAREIT real estate in our case) as one of the explanatory variables. The results are shown in Columns (3) and (4) in Exhibit 6. The motivation is to analyze whether the general development of the real estate investment market, as measured by the public real estate equities, is reflected in the NAV changes. The results indicate that there is only a somewhat weak positive connection between the index return and NAV change. Again, the coefficients of capital contributions remain statistically insignificant, but the coefficient for capital distributions in the full sample is statistically significant with a coefficient of –0.819. The coefficient for capital distributions in the quasi-liquidated sample is statistically significant only at the 0.1 level.

In sum, we find some evidence that reported NAVs are conservative. This is an important finding and indicates that our performance results may understate the true performance of the European PERE industry. Our findings are similar to those of Jenkinson et al. [2013], who identified a systematic undervaluation of 35% for non-real-estate private equity funds.

Performance Sensitivity to Alternative Valuations

Motivated by the indications of conservative valuations, we repeat our performance analysis with alternative NAV values. In addition to reported NAVs, we use adjusted NAVs varying from 80% to +120% of the manager-reported values. We define the upper boundary by the panel data regression results, whereas the lower boundary is chosen arbitrarily. Exhibit 7 reports the impact of NAV changes on all three performance figures across different vintages. The later the vintage, the more the performance is sensitive to changes in NAV. However, already the 2007 vintage proves moderately insensitive to variations in NAV.

All in all, for the full sample of 1998–2009 over which performance is evaluated, the mean (median) IRR changes by –6% (–8%) and 5% (6%) when we let NAV vary from 80% to 120%. Results for TVPI

EXHIBIT 7

Fund Performance Sensitivity to Changes in Manager-Reported NAVs

	Mean Reported					Median Reported				
Vintage	**–20%**	**–10%**	**NAV**	**10%**	**20%**	**–20%**	**–10%**	**NAV**	**10%**	**20%**
Panel A: IRR										
1998–2000	0.16	0.16	0.16	0.16	0.16	0.21	0.21	0.21	0.21	0.21
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
2002–2004	0.07	0.08	0.09	0.09	0.10	0.09	0.09	0.10	0.11	0.12
	(–0.01)	(–0.01)	(0.00)	(0.01)	(0.01)	(–0.02)	(–0.01)	(0.00)	(0.01)	(0.01)
2005	–0.01	0.01	0.03	0.04	0.06	–0.07	–0.04	–0.02	0.00	0.02
	(–0.04)	(–0.02)	(0.00)	(0.02)	(0.03)	(–0.05)	(–0.02)	(0.00)	(0.02)	(0.04)
2006	–0.09	–0.06	–0.06	–0.04	–0.03	–0.07	–0.05	–0.05	–0.03	–0.04
	(–0.03)	(–0.01)	(0.00)	(0.02)	(0.02)	(–0.03)	(–0.00)	(0.00)	(0.02)	(0.01)
2007	–0.10	–0.08	–0.07	–0.06	–0.03	–0.10	–0.05	–0.02	0.01	0.05
	(–0.03)	(–0.01)	(0.00)	(0.01)	(0.04)	(–0.08)	(–0.03)	(0.00)	(0.03)	(0.07)
2008	–0.15	–0.10	–0.05	–0.01	0.03	–0.20	–0.14	–0.09	–0.03	0.01
	(–0.10)	(–0.05)	(0.00)	(0.04)	(0.08)	(–0.11)	(–0.06)	(0.00)	(0.05)	(0.10)
2009	–0.15	–0.07	0.01	0.08	0.16	–0.15	–0.07	0.01	0.09	0.14
	(–0.16)	(–0.08)	(0.00)	(0.07)	(0.15)	(–0.16)	(–0.08)	(0.00)	(0.08)	(0.14)
1998–2009	**–0.07**	**–0.04**	**–0.01**	**0.01**	**0.04**	**–0.09**	**–0.05**	**–0.02**	**0.01**	**0.04**
	(–0.06)	**(–0.02)**	**(0.00)**	**(0.03)**	**(0.05)**	**(–0.08)**	**(–0.03)**	**(0.00)**	**(0.03)**	**(0.06)**
Panel B: TVPI										
1998–2000	1.74	1.74	1.74	1.74	1.74	1.85	1.85	1.85	1.85	1.85
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
2002–2004	1.06	1.08	1.10	1.12	1.14	1.23	1.25	1.25	1.25	1.25
	(–0.04)	(–0.02)	(0.00)	(0.02)	(0.04)	(–0.02)	(0.00)	(0.00)	(0.00)	(0.00)
2005	0.76	0.80	0.85	0.90	0.94	0.81	0.85	0.90	0.96	1.00
	(–0.09)	(–0.05)	(0.00)	(0.05)	(0.09)	(–0.09)	(–0.06)	(0.00)	(0.05)	(0.10)
2006	0.67	0.74	0.80	0.87	0.94	0.52	0.55	0.57	0.62	0.67
	(–0.13)	(–0.07)	(0.00)	(0.07)	(0.13)	(–0.05)	(–0.02)	(0.00)	(0.05)	(0.10)
2007	0.68	0.75	0.82	0.90	0.97	0.76	0.84	0.93	1.02	1.11
	(–0.14)	(–0.07)	(0.00)	(0.07)	(0.14)	(–0.18)	(–0.09)	(0.00)	(0.09)	(0.18)
2008	0.73	0.80	0.88	0.96	1.03	0.70	0.77	0.86	0.94	1.03
	(–0.15)	(–0.08)	(0.00)	(0.08)	(0.15)	(–0.16)	(–0.08)	(0.00)	(0.09)	(0.17)
2009	0.84	0.93	1.03	1.12	1.21	0.83	0.92	1.01	1.11	1.20
	(–0.19)	(–0.09)	(0.00)	(0.09)	(0.19)	(–0.17)	(–0.09)	(0.00)	(0.10)	(0.20)
1998–2009	**0.82**	**0.88**	**0.94**	**1.00**	**1.06**	**0.81**	**0.88**	**0.93**	**1.01**	**1.09**
	(–0.12)	**(–0.06)**	**(0.00)**	**(0.06)**	**(0.12)**	**(–0.13)**	**(–0.05)**	**(0.00)**	**(0.08)**	**(0.16)**
Panel C: PME										
1998–2000	0.95	0.95	0.95	0.95	0.95	0.98	0.98	0.98	0.98	0.98
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
2002–2004	0.87	0.89	0.92	0.94	0.96	0.85	0.85	0.85	0.91	0.92
	(–0.05)	(–0.02)	(0.00)	(0.02)	(0.05)	(0.00)	(0.00)	(0.00)	(0.06)	(0.07)
2005	0.82	0.87	0.93	0.99	1.04	0.89	0.93	0.97	1.03	1.09
	(–0.11)	(–0.06)	(0.00)	(0.06)	(0.11)	(–0.08)	(–0.04)	(0.00)	(0.06)	(0.12)
2006	0.74	0.81	0.89	0.96	1.04	0.59	0.65	0.71	0.77	0.83
	(–0.15)	(–0.08)	(0.00)	(0.08)	(0.15)	(–0.12)	(–0.06)	(0.00)	(0.06)	(0.12)
2007	0.73	0.80	0.87	0.94	1.01	0.74	0.83	0.92	1.01	1.10
	(–0.14)	(–0.07)	(0.00)	(0.07)	(0.14)	(–0.18)	(–0.09)	(0.00)	(0.09)	(0.18)
2008	0.68	0.76	0.83	0.90	0.97	0.68	0.75	0.81	0.88	0.95
	(–0.14)	(–0.07)	(0.00)	(0.07)	(0.14)	(–0.13)	(–0.06)	(0.00)	(0.07)	(0.13)
2009	0.75	0.84	0.92	1.00	1.09	0.74	0.83	0.92	1.01	1.09
	(–0.17)	(–0.08)	(0.00)	(0.08)	(0.17)	(–0.17)	(–0.09)	(0.00)	(0.09)	(0.17)
1998–2009	**0.76**	**0.83**	**0.89**	**0.95**	**1.01**	**0.74**	**0.83**	**0.88**	**0.95**	**1.01**
	(–0.12)	**(–0.06)**	**(0.00)**	**(0.06)**	**(0.12)**	**(–0.14)**	**(–0.05)**	**(0.00)**	**(0.06)**	**(0.13)**

Note: The figures shown in parentheses indicate the change to the benchmark regression.

and PME are shown in Panels B and C of Exhibit 7. Presuming that the 120% valuations represent the true values of fund investments, our results indicate that an average (median) fund returns 4% (4%), 1.06 (1.09), and 1.01 (1.01) IRR, TVPI, and PME, respectively. As compared with –1% (–2%), 0.94 (0.93), and 0.89 (0.88), our results indicate that the true returns may have been stronger than those reported.

CONCLUSIONS

In this article, we analyze the performance of European private equity real estate funds using precisely timed cash flow data over the 1998–2009 period. When measured in absolute terms, the performance of PERE funds is rather weak during the study period, with an average (median) IRR and equity multiple of –1.3% (–1.7%) and 0.941 (0.933). However, we find that the returns significantly vary over time and show a U-shaped pattern over the study period. The early vintages delivered very strong performance that was then followed by financial-crisis-era successors with low, often negative, performance. The most recent vintages again showed signs of stronger returns. In fact, it seems the average performance of the sector during the study period is significantly dragged down by the relatively high number of crisis-era funds.

A more informative measure of performance is the public market equivalent, which measures the performance in reference to the development of a benchmark market, in our case the European REIT/REOC market. Our results show that under the study period PERE funds constantly and significantly underperformed the public market: The average (median) PME was 0.889 (0.884), and did not exceed 1 at any point in time. Furthermore, as PERE funds are commonly more exposed to leverage, information, and liquidity risks than the publicly traded REITs and REOCs used as benchmarks, the results may underestimate underperformance in relative terms.

Acknowledging that interim performance evaluations are subject to potential valuation bias, we analyze how well the fund's cash flows explain subsequent changes in its NAVs. Our findings provide some indication that the fund valuations are, on average, conservative, as they underestimate the future distributions by nearly 20%. This naturally affects the performance metrics. We recalculate both the absolute and relative metrics assuming 20% inflation in the NAVs. When using the corrected NAVs, the performance certainly improves: average (median) IRR rises to 4% (4%), TVPI to 1.06 (1.09), and PME 1.01 (1.01).

Finally, given that the cash flow data used in the study are net of manager's fees, the average performance may not necessarily be driven by weak underlying real estate performance but can at least partly be due to the manager's fees. It is widely accepted that PERE fund manager fees can be quite significant, and therefore, what LPs realize from the fund can be very different from what the actual investments have returned.

ENDNOTES

[1]TVPI is the ratio of all fund distributions plus remaining unrealized investments within a fund divided by the total capital contributions to the fund. The terms "equity multiple" and "TVPI" are used interchangeably in this article.

[2]For examples, see Diaz and Wolverton [1998], Clayton et al. [2009], Cannon and Cole [2011], Bond et al. [2012], and Cho et al. [2014].

[3]The 1998–2009 time period included seven core funds that were omitted from the analysis.

[4]In the INREV database, 57.2% of all unlisted property funds (both closed and open ended) are denoted as core (INREV [2014a]).

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