Class Differences in Real Estate Private Equity Fund Performance

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Abstract

Real estate private equity (REPE) funds are often differentiated by risk class: core, value-added, or opportunistic. Fund class is used by investors and managers to allocate funds and to describe investment policies. In this paper, we use REPE fund cash flow data from Burgiss that allow us to calculate a variety of performance metrics. For a subset of the data, we also observe characteristics of underlying fund holdings. Despite evidence that Value-Added and Opportunistic funds differ in investment composition, we show that class does *not* do a good job of predicting differences in performance. Unsurprisingly, greater investment in development (as assessed *ex post*), predicts poor performance for funds raised just before the Great Recession.

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Introduction

While closed-end real estate private equity (REPE) funds have existed for decades, they have recently become an increasingly popular vehicle for investors seeking exposure to "alternative" investments in real estate. The current total market value of the REPE industry is difficult to estimate since they are unlisted, but Property Funds Research (2012) puts the total REPE universe at $650 billion as of the end of 2011. Preqin estimates that $725 billion was raised worldwide by REPE funds between 2000 and 2011.

As with other real estate investments, funds are often differentiated by risk class: core, value-added, or opportunistic. Fund class is used by investors and managers to allocate funds and to describe investment policies. They may also be used for purposes of benchmarking. Differences in risk distinguishing classes derive from investment in different property types, geographies, stages of building life and leverage, as well as acquisition strategies, the degree of fund focus and the timing of investment decisions by managers. It is not obvious how useful broad classifications of fund risk are for portfolio decisions when the variety of potential investment strategies is so large. To our knowledge, little empirical evidence exists as to the nature of investment strategies and realized returns across REPE fund classes.

To fill this gap, we use fund level cash flow data to calculate a variety of performance metrics in order to make comparisons between classes. The data come from Burgiss for Value-Added and Opportunistic REPE funds raised between 1980 and 2013 (third quarter). For a subset of the data (more than one-third of the full sample) we also observe the characteristics of underlying fund holdings which allows us to describe actual investments undertaken by different classes of

funds. Fund investments are described by U.S region, property type and whether in development (versus an existing asset).[3]

As depicted in Figure 1, fund class labels are intended to quantify low, medium and high risk real estate investment strategies (Baum and Hartzell 2012), and target returns are typically interpreted as gross returns. While the precise delineation of expected returns may vary, most real estate professionals will agree on the relative ranking and strategies assigned to each class. The general expectation is that Core investments are in stabilized properties with low leverage and a focus on income generation from existing rent rolls. Value-Added investment involves additional management expertise to re-lease, reposition or redevelop existing assets. Value-Added funds may also utilize greater leverage than Core investments. Opportunistic strategies are expected to undertake greater investment in land and development, distressed properties, properties in emerging markets, or perhaps with another increment of leverage. A corollary to these descriptions is that riskier strategies focus less on current income and are more reliant on pricing (or appreciation) to generate returns.

We examine absolute measures of return by fund class, but we also calculate a number of relative performance metrics designed to accommodate the irregular timing of REPE cash flows and to facilitate comparisons across calendar time. Absolute measures of return like an internal rate of return (IRR) or equity multiple fail to account for the real estate cycle and timing of investments. Therefore, we adapt the public market equivalence (PME) methodology described by Kaplan and Schoar (2005), using a variety of indices to benchmark REPE fund performance. As a further refinement, we also create "tailored" indices intended to better match the actual investment composition of funds.

[3] Detailed data on leverage is difficult to capture, and at this time, unavailable.

Despite evidence that Value-Added and Opportunistic funds differ in investment composition, we show that class does *not* do a good job of predicting differences in performance, at least historically. In our review of individual fund histories from vintages between 1980 and 2008, average performance does not differ between the two classes. This holds overall, for different periods, and for different metrics of performance. Taken together, however, Value-Added and Opportunistic funds out-performed the NCREIF ODCE index during a period of rising returns from 1980 – 2003 and under-performed the index in vintages raised on the leading edge of the Great Recession. The greater amplitude of returns over the cycle relative to this Core benchmark is consistent with our expectation that Value-Added and Opportunistic funds pursue riskier strategies as compared to Core strategies.

We also regress performance metrics on observable fund characteristics to control for variation across time, fund size and geographic focus. Even after implementing these controls, however, fund class is still uncorrelated with differences in *ex post* performance. In regressions using the subsample of funds with holdings data, the extent of investment in development assets (as opposed to existing assets) is associated with greater underperformance in both absolute and relative terms. Although development is a cited factor in industry descriptions of class, we conjecture that the exact proportion of development to be undertaken may be poorly described or anticipated *ex ante*. Therefore, inaccurate expectations about development may undermine class labels.

In the next sections, we revisit the literature on REPE performance. Then we describe our data and provide summary statistics for our full sample and the sub-sample of funds for which we have holdings information. Next we describe performance for vintages from the periods 1980-

2003 and 2004-2008, and explore alternative benchmarks against which to compare REPE returns. We then explore multivariate explanations of performance variation before concluding.

REPE Literature

To date, the main papers that have analyzed REPE performance are Alcock, Baum, Colley and Steiner (2013), Tomperi (2010), Bond and Mitchell (2007), and Hahn, et al. (2001). Additional evidence comes from Andonov, Eichholtz and Kok (2012), who assess the performance of pension fund real estate portfolios which include private equity funds.

Hahn, et al. (2001) mostly focus on the impact of sequence on performance using GP survey data from Pension Consulting Alliance for 43 managers with 100 funds with vintages between 1991 to 2001. They find, using a variety of performance measures, that the performance of a manager's most recent prior fund has a positive correlation with his current fund's performance.

Tomperi utilizes the GP-provided IRRs of Preqin to generate conclusions about REPE performance, and mostly focuses on the impacts of fund size and fund sequence (e.g. whether the individual fund is the first, second, third or later fund sponsored by a general partner) on performance. He reports average absolute returns (IRRs) of 14.61% for the 339 REPE funds in his sample, with a range of IRRs from -91.97% to 80%. The average size of the fund in the Tomperi sample is €437 million, with a range from €7 to €7,662 million. The multiple of total distributions to paid-in-capital (i.e. equity multiple) for the average fund is 1.37, and ranges from zero (full loss of capital) to six, with a sample of 513 observations. Without cash flow data, Tomperi is unable to calculate relative performance of the sample to alternative investments. He

also finds that performance increases with fund size, but decreases with fund general partner experience.

Alcock et al. (2013) take a slightly different tack, using data that was collected by Property Funds Research (PFR) from fund managers, LPs and fund reports. Their data comprise 169 core, value-added and opportunistic real estate private equity funds with a global focus. They use annual cash flows and annual end-of-year Net Asset Value estimates to calculate holding period returns for each year from 2001 to 2011. In general, they find that core funds outperformed value-added and opportunistic funds during the real estate recession in the late 2000s, and that opportunity funds outperformed during the upswing prior to that time. As expected, core funds delivered betas around 1.0, and value-added and opportunistic funds show higher betas. On a risk-adjusted basis, the performance of opportunistic funds ranked last among the three fund types during all three periods of their study. Only value-added funds show positive alpha, and only after the negative impact of leverage is removed.

Bond and Mitchell (2007) focus on managerial contributions to performance in mainly Core UK open-ended funds from the Investment Property Databank (IPD). They employ a factor model, utilizing several different benchmarks for risk-adjusting returns, and find little evidence of "alpha" contributed by managers.

Andonov et al. (2012) use defined benefit pension fund data from CEM Benchmarking Inc. which includes an estimated 30 to 40 percent of assets controlled by U.S. pension funds. Among other results, they estimate that U.S. pension funds underperformed (self-defined) benchmarks, net of fees, in their real estate private equity investments by 129 basis points over the period 1990-2009.

Data and Summary Statistics

Our data come from Burgiss. Burgiss provides portfolio management software, services and analytics to Limited Partners investing in private investment vehicles. Individual LPs use Burgiss software to record all valuation and cash flow events that arise from the LP's private capital fund investments over the entire life of each fund. In this sense, the data contributed to Burgiss by LPs reflect "check-book" data and include capital that is paid-in to individual private equity fund sponsors (GPs), and all distributions made from GPs in the form of returned capital, preferred return payments, and capital gains paid from realized investments as well as reported Net Asset Values (NAVs). Given that these are actual cash flows paid and received by LP investors, the data represent net cash flows after all fees and carried interest has been paid to the GP.

Data provided to Burgiss is represented by over 250 private investment programs, with program size ranging from less than $100 million to $100 billion of private capital commitments. LPs that utilize Burgiss services represent in excess of $1 trillion in committed capital. For the purposes of tracking fund performance, the LP data is scaled to reflect the total size of each individual fund. If more than one LP invests in a fund, then the data are used to cross-validate fund transaction activity, and ultimately the data from Burgiss comprises a single series of transactions for each REPE fund.

The relative benefits of the Burgiss database as compared to other data sources are explained in Harris, Jenkinson and Kaplan (2010) and Harris et al. (2013) who study buyout and venture capital funds. In a nutshell, the Burgiss data should be extremely accurate, as it reflects all actual cash flows and reported Net Asset Values (NAVs) in the transaction between a GP and an LP. In addition, fund performance is more reliably updated over time as LPs utilize Burgiss software on

a day-to-day basis to record all transactions as they occur over the life of their fund investments. Other data providers tend to source data through canvasing, surveys and Freedom of Information Act (FOIA) searches which are less reliable.[4] Nonetheless, in aggregate, our calculation of IRRs for REPE funds using Burgiss data are quite similar to those reported by Preqin.[5]

We believe that funds in the Burgiss sample typically make direct equity investments in real estate. We use the holding subsample (described in more detail below) to provide some evidence regarding this assertion. First, within this subsample only 1.8% of fund investments are in REITs or other funds on average (and the 75th percentile of the sample of 182 funds is 0). Second, on average only 2.6% of fund investments are made in debt instruments (and the 75th percentile fund holds only 7.4% in debt).

A main limitation of the Burgiss data, as with other data sources, is that the LP investments may not span the entire set of REPE funds at any point in time. Leverage is difficult to track over the life of a fund and is unavailable to us. Another potential drawback at this time is that we are unable to identify funds raised by the same GP and therefore cannot relate current performance to subsequent fund-raising and performance.

The description of fund classes in Figure 1 accords well with Burgiss' labeling process. At Burgiss, class labels are assigned by researchers according to observed fund holdings and on the basis of General Partner (GP) descriptions of fund strategy in documents like private placement memoranda. In the absence of holdings data, they rely mainly on GP representations.

[4] Burgiss retains information about resolved funds such that we do not lose information about the performance of completed funds and the sample does not suffer from survivorship bias.
[5] A comparison between Burgiss and Preqin is made in Fisher and Hartzel (2013).

Full Sample

We have data on 706 REPE funds raised over the last thirty years, comprised of Value-Added and Opportunistic funds. Figure 2 shows that the funds in our sample represent just over $440 billion in capital raised between 1980 and 2013 (third quarter). Nearly one-half of the committed capital over this period was raised between 2005 and 2008. Since 2008, $135 billion has been raised.

A main difference among fund classes in our sample is fund size. Value-Added funds raise $447 million in committed capital on average while the average size of Opportunistic funds is $746 million. Average fund size for both Value-Added and Opportunistic funds has generally been increasing since the 1980s.

Geographic focus is also correlated with fund class in this sample (Figure 3). Eighty percent of Value-Added funds focus on North America, whereas the rate is 62 percent for Opportunistic funds. Opportunistic funds disproportionately focus on Asia as compared to Value-Added funds.

For a subsample of 119 resolved funds – funds with remaining net asset value (NAV) of less than 2% of fund size – Figure 4 shows that average fund duration is quite similar between Value-Added and Opportunistic funds.[6] Value-Added funds have a longer *median* duration of 5.5 years as compared to 4.25 years for Opportunistic funds, however.

[6] By virtue of the fact that these funds are resolved, they tend be from older vintages. Therefore, these duration statistics may not capture more recent trends.

Holdings Sub-Sample

For a subset of 183 funds, we are also able to observe the characteristics of holdings. As compared to the full sample, a simple probit model reveals that these funds are more likely to be Opportunistic (as compared to Value-Added), are larger and are more likely to be focused on North America. The holding subsample is also comprised of more recent vintages with only 30 of 183 funds raised before 2004. In order to characterize a fund by the geography, property type and investment stage of its holdings, we measure the initial investment cost of a certain category relative to the total fund contributions. This provides us with a static measure of a fund's investments by category (geography, property type, investment stage), but does not account for the exact timing of such investments.

Among funds focused on the U.S. for which we have holdings data, nearly sixty percent of Value-Added funds focus investment in a particular region of the U.S (Figure 5). In this case, we call a fund "focused" in terms of U.S. geography if more than fifty percent of its investment is in one of four regions (East, South, Midwest, and West). Only 26 percent of U.S. focused Opportunistic funds concentrate investment in just one region.

The majority of Value-Added funds are highly focused in a single product type, investing more than 75% of committed capital to one type of property (Figure 6). Over 85% of these focused funds invest in Office and Industrial property types. An additional 23 percent of Value-Added funds focus between 50 and 75 percent of their investments in a single property type.

For Opportunistic funds, nearly 40 percent focus 50 to 75% of committed capital to a single property type (only 16% focus more than 75% of investments into a single type). Among the top

two focus categories, about 45% of Opportunistic funds focus on residential, retail, land or hotels as the primary area of investment. The rest focus on office and industrial property.

We create a development indicator for underlying holdings that are identified as being in the pre-development, development or initial leasing stages. Figure 7 shows that nearly 30 percent of Value-Added funds place more than 10 percent of their investments in development projects, while about 60 percent of Opportunistic funds do so. It is interesting to note that nearly 50 percent of all funds that we examine (both Value-Added and Opportunistic) allocate more than 10% of their investments to development.

On a simple descriptive basis, we find in this section that Value-Added and Opportunistic funds systematically differ in the composition of investments. Opportunistic funds are larger than Value-Added funds, less focused on specific property types and US geographies, and are more international. Focused Opportunistic fund holdings are more likely to be property types other than office and industrial properties, and they also have more significant investments in development as compared to Value-Added funds. The next question we ask is whether these characteristics translate into observable differences in performance.

Performance Metrics

Absolute Measures

The cash flow data provided to us by Burgiss allows for calculation of several different performance metrics. Among them are Internal Rates of Return (IRR) and total value returned to investors as a ratio of paid-in capital (TVPI, or equity multiple). For unresolved funds, fund Net Asset Value (NAV) is used as the terminal cash flow. Other cash flows used to compute returns

are net of fees and GP promotional returns. Reporting performance metrics prior to the end of fund life using these residual valuations is not without controversy.[7] Jenkinson, Sousa and Stucke (2013) provide some recent insights into how reported NAVs vary systematically throughout fund life for non-real estate private equity funds. In particular, they find that NAVs are typically conservative, although not when GPs are raising a subsequent fund.[8]

Relative Performance Measures

As absolute measures of return, IRR and multiples fail to account for variation in the underlying real estate cycle. Because the composition of our sample by class varies over time, we would like to control for overall trends in real estate markets. To do so, we employ a metric based on the Public Market Equivalent (PME) described and presented in Kaplan and Schoar (2005) and Harris et al. (2013). The PME generates a performance metric by calculating returns from making similarly-timed (to the REPE fund) investments in a publicly-traded index. Thus, PME gauges whether a PE investor would have been better or worse off by making the same pattern of investments and withdrawals in a comparable benchmark index.

For our sample, we calculate the PME by dividing the future value of all fund distributions (compounded at an index rate of return) by the future value of all contributions using the same index. Because we will investigate some indexes that are not publicly traded, we dub our metric the Alternative Market Equivalent (AME):

[7] Since the end of 2009, GPs are required to update NAV to "fair value" on a quarterly basis as a result of Topic 820 of the Financial Accounting Standards Board. While estimating the "fair value" of a property that is under development or undergoing a management or leasing turnaround is difficult, older funds are more likely to have distributed the majority of their value thus minimizing this source of bias in estimates of performance.

[8] Calculation of time-weighted holding period returns would provide additional insight into the performance of real estate private equity funds, as well as performance relative to widely-used private real estate indices. Because net asset values for the funds in our sample are only available as of Q42013 for non-realized funds, or as of the date of final distribution of cash flows to investors for realized funds, we are not able to make these calculations at this time.

$$AME_{iT} = \frac{\sum_{t=1}^{T} D_{it} \prod_{\tau=t}^{T}(1+r_t)}{\sum_{t=1}^{T} C_{it} \prod_{\tau=t}^{T}(1+r_t)}$$

where D_{it} and C_{it} refer to fund *i*'s distributions and contributions (calls), respectively, at time *t*. The periodic rate of compounding, r_t, is derived from a real estate index. Terminal time *T* is the final period of the fund, or the last period of observation if the fund is not resolved. If the fund is not fully resolved, then the final distribution includes the fund NAV in period *T* (as reported by Burgiss). An AME greater than one implies that the private investment returns exceeded the returns of the benchmark index. Conversely, an AME less than one implies worse performance.

The challenge in translating PMEs to real estate hinges on the choice of an appropriate index of returns. Our simple goal here is to compare performance between fund classes. Therefore, we do not attempt to arrive at an appropriate risk-adjusted measure of return through our choice of index, but rather seek indicators of overall real estate performance against which to normalize fund returns over time.

Although not publically-traded, the returns to the NCREIF Fund Index - Open End Diversified Core Equity (ODCE) can be obtained net of fees since 1978.[9] It represents net returns to core real estate assets which may serve as a reasonable baseline against which to compare (presumably) riskier and less liquid closed-end private equity investments. As of the third quarter of 2013, the properties in the ODCE index were 22 percent levered.

Publicly-traded Real Estate Investment Trusts (REITs) also represent an investable alternative to REPE funds. As a measure of REIT returns, we utilize the FTSE NAREIT All Equity REIT index (hereafter, the REIT index). A potential shortcoming of this index is that the short term volatility of REITs returns may be a poor proxy for the underlying risk represented by real

[9] We use the value-weighted returns series.

property. The correlation of between REIT and private property returns improves over longer horizons, however (Boudry, *et al.* 2012).

Beginning in 1990, we are also able to utilize FTSE EPRA/NAREIT indexes for North America, Developed Europe and Developed Asia in order capture the real estate cycle in different continents (hereafter, EPRA). In this case, we match a fund to a particular continent's index based on the fund's overall geographic focus reported by Burgiss.[10]

Performance of REPE Funds

Using the Burgiss fund level cash-flow data, we are able to follow fund performance through the third quarter of 2013 for vintages beginning in 1980 through 2008. By truncating our sample after the 2008 vintage, we allow sufficient time to observe investment performance. The 2008 vintage is also an important break point, distinguishing older funds from funds raised after the market peak. In Table 1, we report various summary statistics for absolute and relative performance measures by vintages raised before and after 2004.

We find that average Value-Added IRRs (annual) for vintages prior to 2004 are in the ball park of target returns portrayed in Figure 1, especially since the reported returns in Table 1 are net of fees. Although Opportunistic IRRs appear lower on average, the variation in returns is great enough that we cannot discern a statistical difference between the average Value-Added and Opportunistic IRRs over this period. For both classes, top quartile returns are greater than 15 percent per year.

[10] We use the North American index as the index for any fund not focused on Asia or Europe.

For vintages between 2004 and 2008, IRRs are unsurprisingly negative on average and statistically smaller than the average from earlier vintages. To be clear, many of the later funds are still unresolved and so reported performance is based to a greater extent on ending NAVs as compared to earlier funds. IRRs for these vintages are not statistically different between classes.

We also make comparisons on the basis of equity multiples, measured as the total value of distributions (including ending NAV when funds are unresolved) relative to paid-in capital. For pre-2004 vintages, the Value-Added average multiple is statistically larger than the average Opportunistic multiple: 1.7x versus 1.5x. Multiples for top quartile Value-Added funds approach 2x. On average, funds raised between 2004 and 2008 have not returned all of their LPs' contributed capital. As a testament to the variation in performance across funds, top quartile funds from this period have multiples in excess of 1.25x, whereas the bottom quartile funds have failed to return 30 percent or more of invested capital.

On a relative basis the pre-2004 vintages of funds have average returns in excess of (net) returns to the ODCE index. For the bottom quartiles, Value-Added funds underperformed the ODCE by 7 percent, and Opportunistic funds underperformed by 14 percent or more. The top quartile funds in both classes exceeded ODCE returns by 24 percent or more for vintages prior to 2004. All but the top quartile REPE funds underperformed the REIT and EPRA indexes for these same vintages.[11]

While returns from funds in vintages 2004 through 2008 were poor in an absolute sense, they also underperformed relative to all of the indexes we consider. Compared to the ODCE index, both average and median AMEs are around 0.85. In other words, the 2004-2008 vintages

[11] Because data from EPRA does not start until 1990, the EPRA AMEs excluded vintages from the 1980s.

underperformed Core funds in the ODCE index by 15 percent or more. REPE funds also under-performed the REIT index and the EPRA index by more than 20 percent, on average.

We conclude two striking things from Table 1. First, despite our findings in the previous section regarding differences between Value-Added and Opportunistic investment strategies, we find little difference in absolute or relative performance between the two classes. Within the two vintage groups, performance metrics for Value-Added and Opportunistic funds are statistically indistinguishable.[12] To check the robustness these findings, we drop funds from the 1980s, and then separately, we drop all funds with vintages before 1997. When we re-estimate average performance and T-tests for differences in means without these earlier vintages, our conclusions are unchanged. The results are similarly robust to the exclusion of internationally focused funds.

Second, the choice of index for our relative performance assessment matters. REPE funds appear to systematically under-perform the REIT index and the continent-specific EPRA indexes. They also underperformed Core properties, as represented by ODCE returns, during later vintages. While the latter may not be surprising since REPE funds are expected to pursue riskier investment strategies, the persistent underperformance relative to REITs suggest that additional work is required in order to explain this regularity.

Tailored AMEs

An obvious issue that arises from a choice of index is that the index may be comprised of a different mixture of assets as compared to a particular fund. For each index, we also know that the mixture of assets is changing over time. Therefore, we use our holdings sub-sample to assess

[12] The sole exception is with respect to the equity multiple in which case Value-Added multiples are larger on average than Opportunistic multiples in the pre-2004 vintage group.

whether further refining the index to which a fund is compared changes our conclusions about relative performance.

In order to calculate a tailored AME, we redefine the periodic return used earlier, to be a weighted average return,

$$\bar{r}_{it} = \sum_{j=1}^{p} w_{ij} \times r_t^j$$

where w_{ip} is fund *i*'s investment weight in holding type *p* such that $\sum_{j=1}^{p} w_{ij} = 1$ and r_t^p is the return at time *t* from an index for holding type *p*. Based on the sub-indexes available and the information from Burgiss about fund holdings, the holding types that we investigate are property type and US geographic regions.[13]

The National Property Index (NPI) reported quarterly by NCREIF is broken down into sub-indexes by geography and property type. The NPI represents unlevered returns to stabilized, operating real estate assets, gross of management fees. While we are unable to adjust for differences in leverage, we deduct an estimate of average management fees from NPI returns based on the average management fees over our sample period reported in the ODCE data.[14] In addition to the NPI, the FTSE NAREIT US Real Estate Index Series includes indexes by property type. Therefore, we are able to calculate three tailored-AMEs using the NPI U.S. regional indexes, the NPI indexes by property type, and the FTSE NAREIT Equity Indexes by property type.

[13] For property types, we are able to use sub-indexes for residential, hotel and resort, industrial, office and retail in creating a "tailored" index. We use the overall REIT or EPRA index in proportion to the weight of any residual property type in fund portfolios.

[14] As in Ling and Naranjo (forthcoming), we calculate this average as 96 basis points per year or 24 basis points quarterly based on the equally-weighted ODCE data.

Tailored AMEs are reported in Table 2 for the holdings subsample of Burgiss funds. We repeat our results with respect to AMEs based on the ODCE index for comparison. In the next column we report summary statistics for AMEs calculated with the (net) NPI index. Then we display the NPI tailored AMEs in which the compounding rate is a weighted average of the returns to the property type indexes corresponding to each fund's composition. In column 4 we list statistics for the REIT AME again before showing the tailored AME constructed from the FTSE NAREIT property type indexes.

The (net) NPI AME is consistent with AMEs based on the ODCE index for each class of funds in each vintage group. (Tailoring the AME based on region does not change our interpretation of relative performance very much and we do not report these results in Table 2.) Tailoring AMEs based on FTSE NAREIT sub-indexes by property type results in improvements in our assessment of the relative performance of REPE funds across the distribution of returns relative to the non-tailored approach.

Explaining Performance

To check whether our simple investigation of average performance fails to capture more nuanced issues within the data, especially with respect to the timing of investment, we also run regressions of each performance measure against multiple fund characteristics. In Table 3, we report regression results in which we investigate class differences while controlling for fund size, main continent of focus (North America is omitted) and vintage year. Thus, the regressions examine whether there are class differences in performance conditional on fund size *within the same vintage year*. We still do not find any difference between Value-Added and Opportunistic performance, except in the case of equity multiples in later vintages. Funds focused on investing

in Europe had higher IRRs and REIT AMEs. The Europe factor is reduced in size and significance once we adjust for the continent of investment using the EPRA index in the last specification.

For vintages since 2004, we find evidence that European funds also exhibited worse performance when not benchmarked against the EPRA index (and which is statistically significant in the case of IRRs). Large Value-Added funds performed worse than smaller funds in the same class in the case of multiples and the ODCE AME.

In our final Table 4, we perform several additional regressions on performance measures for the holdings subset of funds. These regressions are pooled across all vintages and include vintage year controls.[15] First we replicate the regressions in the prior table for this subsample. Next, we consider two additional hypotheses. First, we ask whether fund focus improves performance. To specify this test, "focus" refers to more than 75 percent of investments in any single region or property type, or in development. Second, we consider whether a high focus on a particular region or property type improved performance. In this case, we again specify "high" as 75 percent or more of investments. We also distinguish funds with more than 75 percent and more than 10 percent development as arbitrary cut-offs intended to flag development as an important component of fund strategy.

The first specification in Table 4 is quite similar to findings in Table 3 for the 2004-2008 vintages. The second specification incorporates our holdings based measures of focus. None of these newly introduced focus variables differentiate fund performance. Moving to the third specification, a highly focused portfolio on office properties is related to lower multiples and

[15] We only include the EPRA AME, and not the REIT AME, because we think this is the preferred benchmark for our international set of funds.

AMEs based on a comparison to ODCE, and may explain the underperformance of larger Value-Added funds observed in the first specification of this table. Our striking finding, however, is that across both absolute and relative metrics, funds with between 10 and 33 percent of investments in development underperform relative to funds with less development. This finding suggests that Value-Added and Opportunistic designations may not do an adequate job capturing the expected development activity to be undertaken by a fund. Thus expected investment in development, and not class labels, may be a particularly useful for identifying fund risk.

Conclusion

In this paper we carefully assess the performance of Value-Added and Opportunistic real estate private equity funds. We show that Opportunistic funds are larger than Value-Added funds, less focused on specific property types and US geographies, and are more likely to be focused outside of North America. Opportunistic holdings are more likely to invest in different property types besides traditional office and industrial, and they also have a more significant investment in development as compared to Value-Added funds. In a variety of tests, however, performance within each class is simply too noisy to allow class to be a meaningful differentiator of ex post returns. In particular, we find that average IRRs, equity multiples, and Alternative Market Equivalent measures are statistically indistinguishable between classes.

As a group, however, Value-Added and Opportunistic funds outperformed Core assets in the ODCE index in the pre-Recession era and under-performed it in the 2004-2008 vintages. This overall pattern is consistent with higher risk/reward strategies relative to Core investments.

Further examination of the sample of funds for which we can describe specific holdings suggests that fund investment in development activities was negatively correlated with returns. Because this subsample of funds vintages are heavily tilted toward 2004-2008, these results likely identify the more extreme losses associated with development during the economic downturn that ensued. To the extent that fund class was a poor predictor of investment in development during the time period examined, this may partly explain why class does not differentiate performance outcomes.

We also suspect that financial leverage may play a limited role in class attribution. Leverage is an important explanatory variable that we are also unable to capture in this study. Another omission of our study is that we do not observe the performance of prior funds raised by a particular management team. Taken together, leverage, investment in development and management quality are likely to be important determinants of risk that are only imperfectly impounded into class labels. Insights into real estate private equity fund performance could also be gained from an analysis of quarterly holding period returns using end-of-quarter estimates of net asset value for the funds in our sample.

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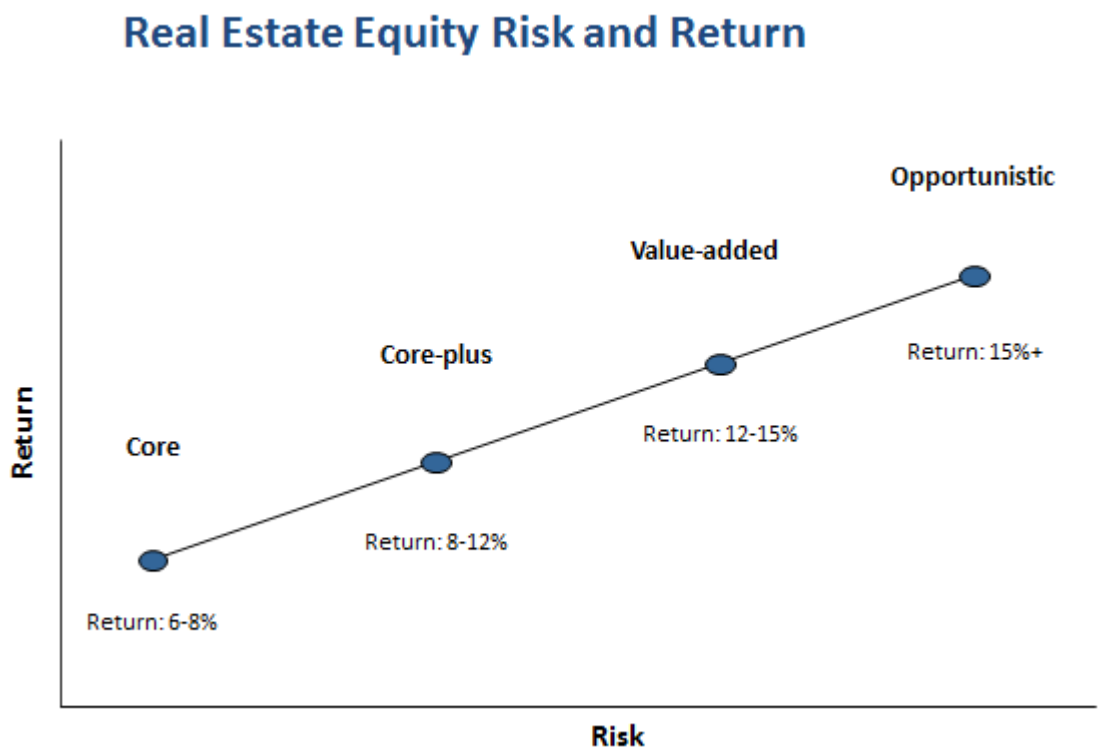

Figure 1. Real Estate Risk and Return

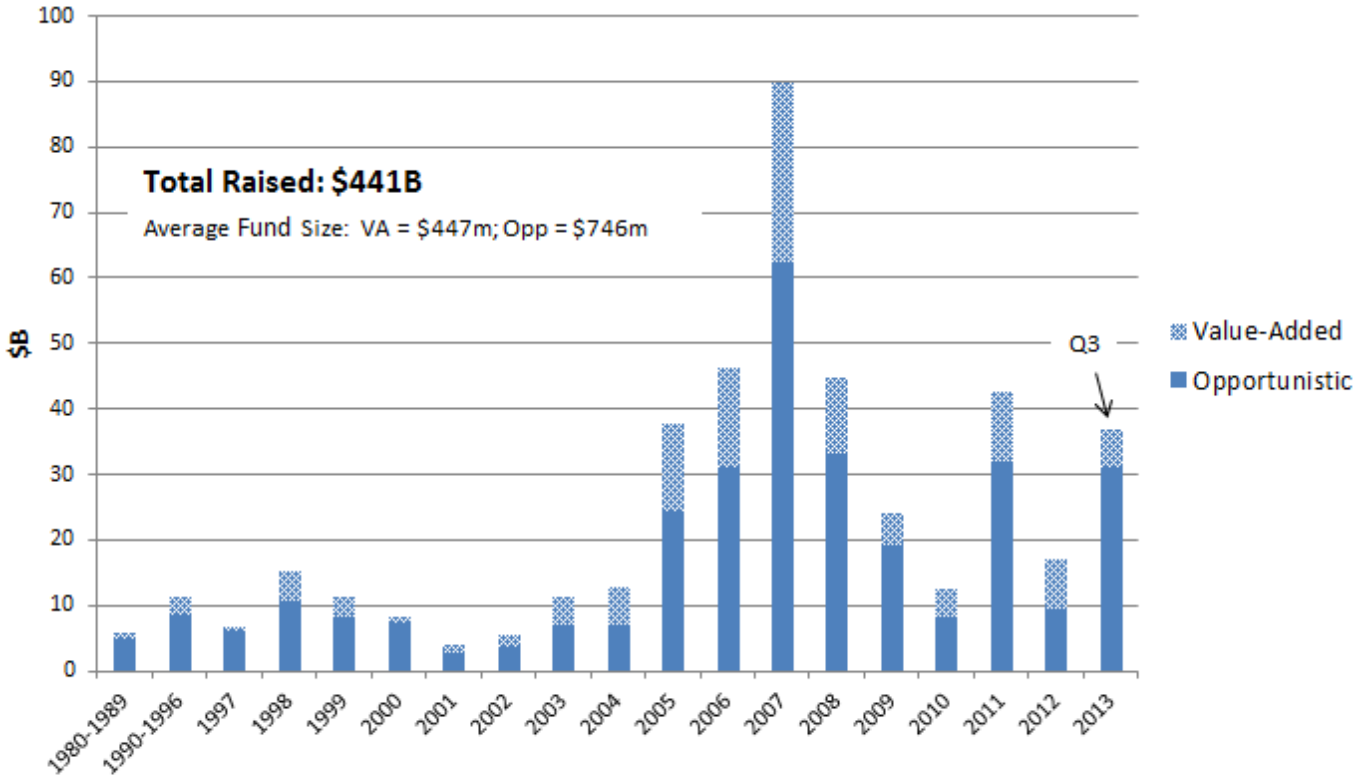

Figure 2. REPE Committed Capital by Vintage Year and Class

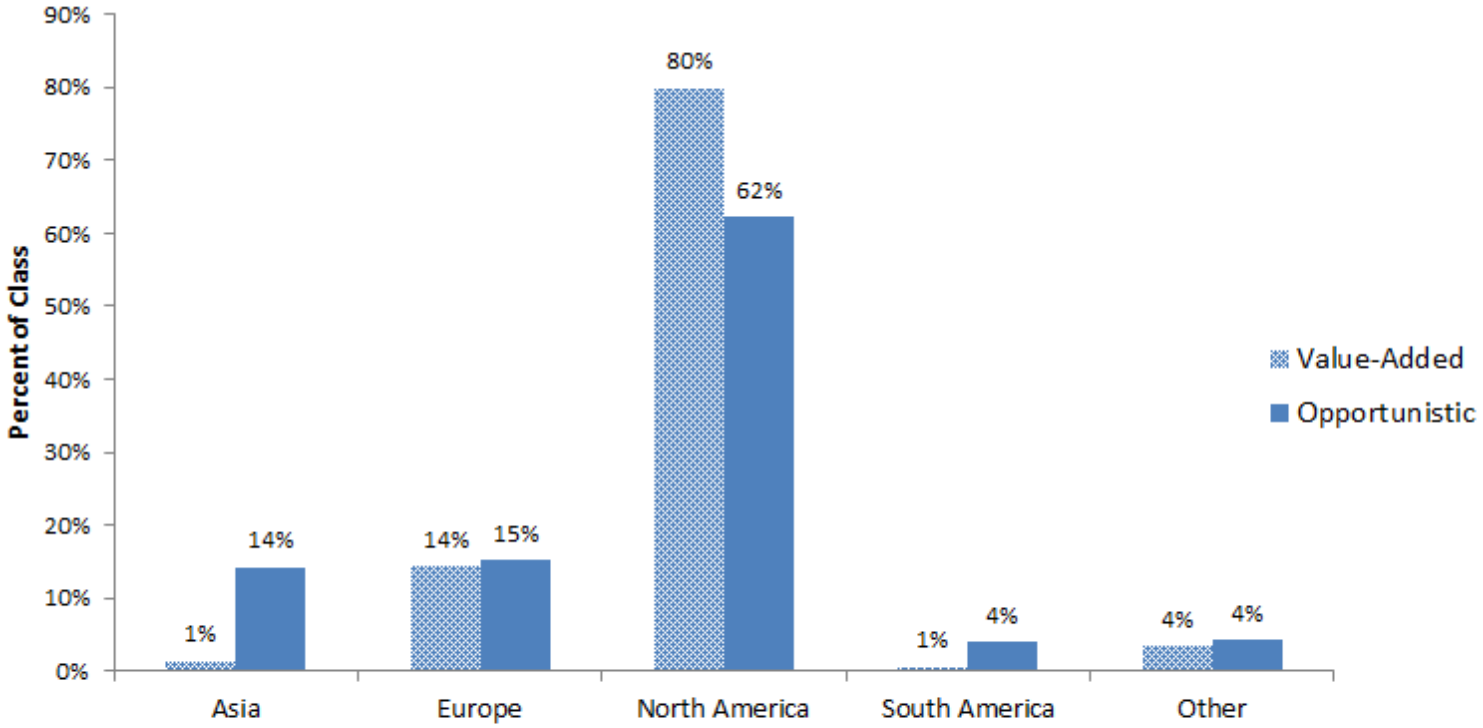

Figure 3. Geographic Focus

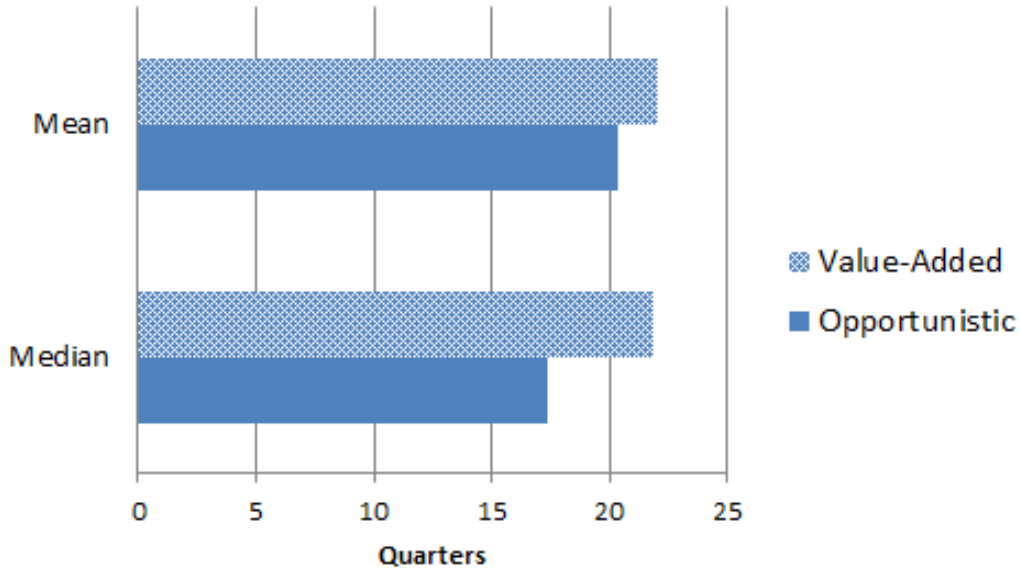

Figure 4. Fund Duration By Class

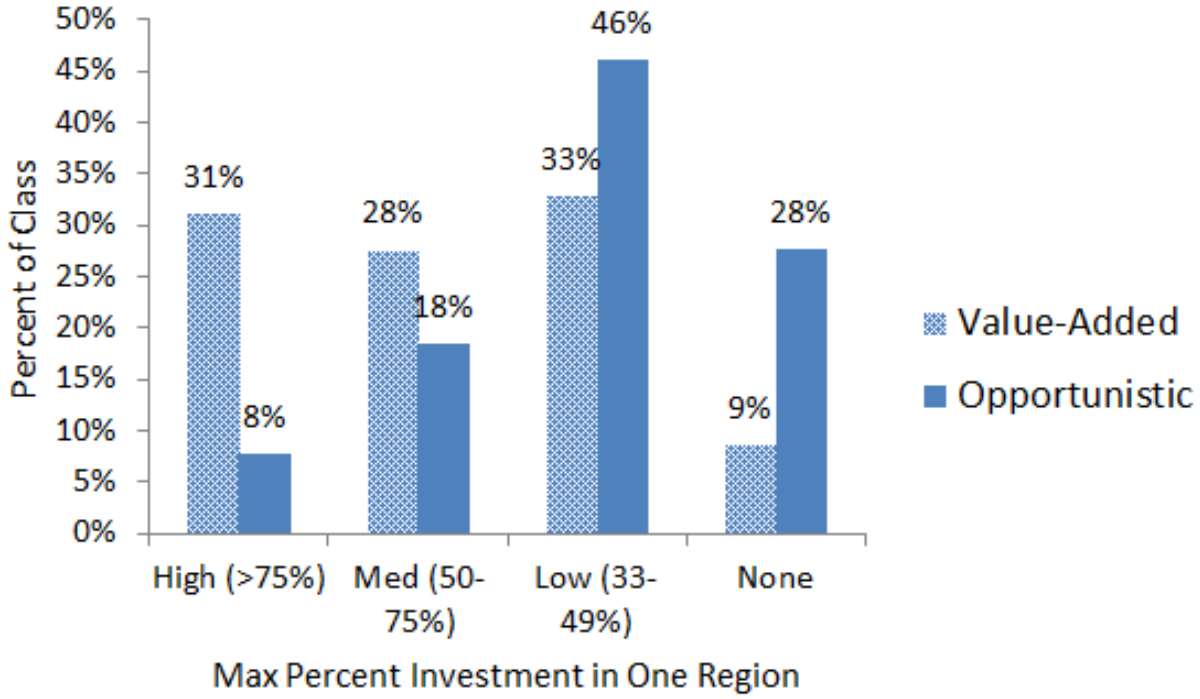

Figure 5. Geographic Focus of US Funds

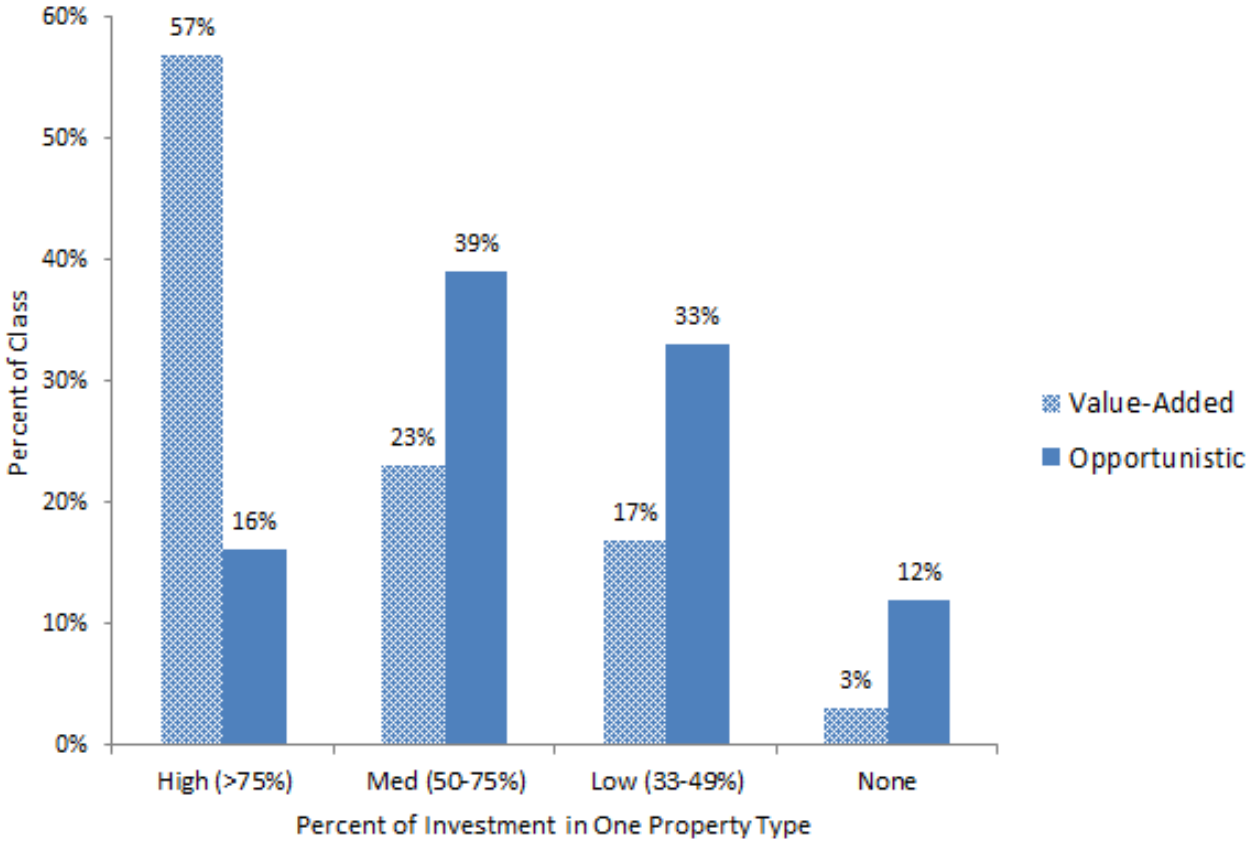

Figure 6. Property Type Investment Focus

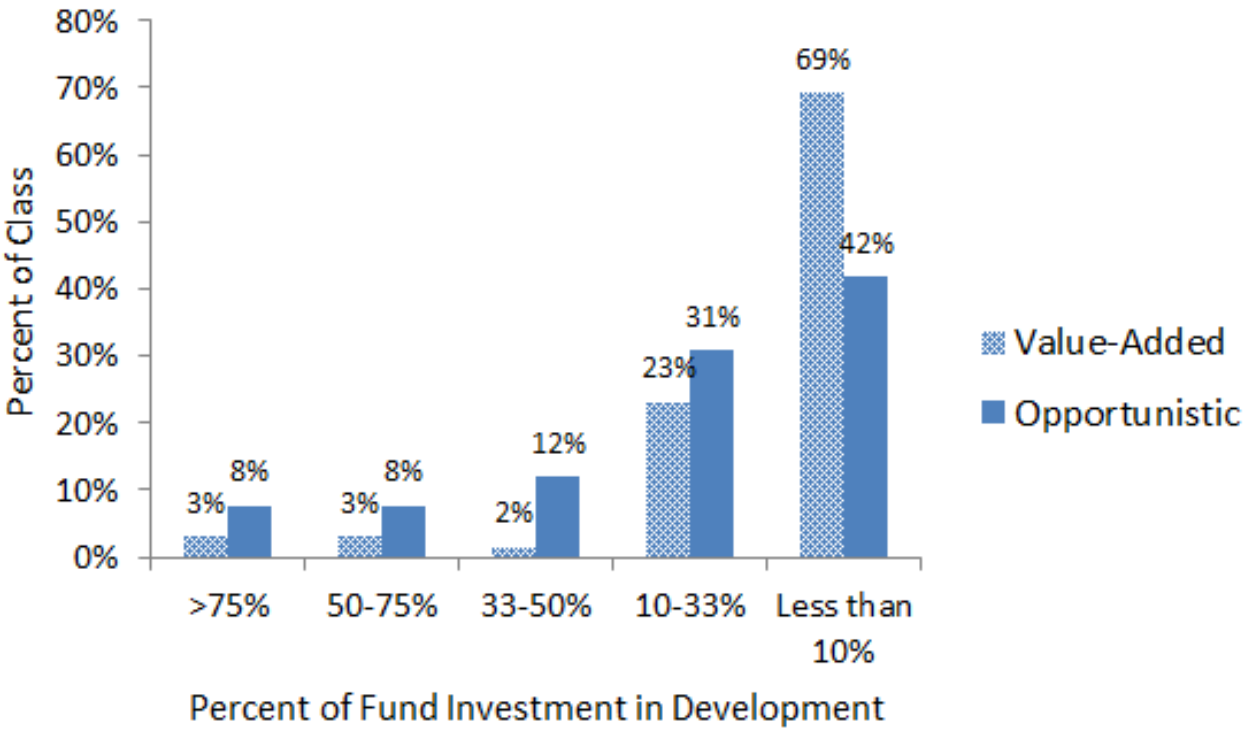

Figure 7. Development Focus

Vintages 1980-2003

			AME		
Value-Add (N = 79)	IRR	Multiple	ODCE	REIT	EPRA
Mean	12.09%	1.70	1.11	0.90	0.93
St. Dev.	10.73%	0.61	0.34	0.31	0.29
25th %	6.44%	1.36	0.93	0.71	0.77
Median	11.32%	1.59	1.10	0.92	0.90
75th %	15.46%	1.97	1.29	1.09	1.09
Opportunistic (N = 115)					
Mean	9.76%	1.51	1.05	0.85	0.90
St. Dev.	11.90%	0.45	0.29	0.30	0.29
25th %	4.43%	1.23	0.86	0.63	0.70
Median	9.58%	1.52	1.06	0.90	0.92
75th %	16.27%	1.80	1.24	1.07	1.06

Vintages 2004-2008

			AME		
Value-Add (N =133)	IRR	Multiple	ODCE	REIT	EPRA
Mean	-2.28%	0.98	0.85	0.72	0.76
St. Dev.	17.51%	0.40	0.34	0.31	0.33
25th %	-7.50%	0.67	0.59	0.53	0.54
Median	-0.44%	0.98	0.87	0.73	0.77
75th %	6.88%	1.27	1.11	0.93	0.97
Opportunistic (N = 184)					
Mean	-1.74%	0.97	0.88	0.74	0.79
St. Dev.	18.30%	0.43	0.43	0.40	0.41
25th %	-8.38%	0.71	0.64	0.51	0.56
Median	-0.22%	0.99	0.87	0.74	0.77
75th %	7.47%	1.28	1.10	0.95	0.97

Difference of Means: Significance of T-Tests

			AME		
	IRR	Multiple	ODCE	REIT	EPRA
Between Class					
Vintage 1980-2003		**			
Vintage 2004-2008					
Between Vintage Groups					
Value-Add	***	***	***	***	***
Opportunistic	***	***	***	**	**

*** p<0.01, ** p<0.05, * p<0.1

Table 1. Absolute and Relative Performance, Full Sample

Vintages 1980-2003

	AME				
All Funds (N = 30)	ODCE	NPI	NPI Type	REIT	REIT Type
Mean	1.05	1.02	1.03	0.89	0.92
St. Dev.	0.29	0.28	0.29	0.29	0.31
25th %	0.88	0.85	0.89	0.68	0.67
Median	1.09	1.07	1.07	0.92	0.94
75th %	1.25	1.23	1.21	1.08	1.14

Vintages 2004-2008

	AME				
Value-Add (N = 56)	ODCE	NPI	NPI Type	REIT	REIT Type
Mean	0.86	0.80	0.81	0.73	0.80
St. Dev.	0.31	0.30	0.30	0.29	0.30
25th %	0.59	0.54	0.55	0.53	0.59
Median	0.86	0.78	0.79	0.72	0.78
75th %	1.12	1.07	1.06	0.98	1.04
	AME				
Opportunistic (N = 97	ODCE	NPI	NPI Type	REIT	REIT Type
Mean	0.90	0.85	0.86	0.77	0.81
St. Dev.	0.46	0.41	0.40	0.42	0.46
25th %	0.66	0.63	0.64	0.53	0.55
Median	0.87	0.81	0.83	0.76	0.79
75th %	1.12	1.11	1.11	0.95	1.00

Difference of Means: Significance of T-Tests

			AME		
	IRR	Multiple	ODCE	REIT	REIT Type
Between Vintage Groups					
All Classes	***	***	**	*	

*** p<0.01, ** p<0.05, * p<0.1

Table 2. Tailored AMEs, Holdings Sample

Vintages 1980-2003					
	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	IRR	Multiple	AME - ODCE	AME - REIT	AME - EPRA
Opportunistic	-0.0911	-0.6908	-0.2352	-0.1768	0.0198
	[0.078]	[0.458]	[0.252]	[0.181]	[0.309]
VA x ln(fund size)	-0.0029	-0.0696	-0.0312	0.0017	-0.0056
	[0.010]	[0.062]	[0.040]	[0.032]	[0.062]
Opp. x ln(fund size)	0.0078	0.0162	-0.0015	0.0235	0.006
	[0.009]	[0.066]	[0.041]	[0.040]	[0.029]
Europe	0.0824*	0.2504	0.1683	0.1599*	0.0744
	[0.042]	[0.184]	[0.130]	[0.084]	[0.060]
Asia	0.0065	-0.0987	-0.0545	-0.1394	-0.1295
	[0.037]	[0.127]	[0.155]	[0.146]	[0.115]
Other, Not NA	0.0737	0.0593	0.1541	0.0452	0.0158
	[0.097]	[0.226]	[0.235]	[0.168]	[0.164]
Constant	0.0658	1.9522***	1.1925***	0.5515***	0.9188***
	[0.059]	[0.329]	[0.202]	[0.160]	[0.140]
Vintage Year Controls	Y	Y	Y	Y	Y
Observations	194	194	194	194	194
R-squared	0.176	0.116	0.095	0.331	0.062

Robust standard errors in brackets (clustered at the vintage level)

*** p<0.01, ** p<0.05, * p<0.1

All specifications include vintage year controls. The dependent variables are fund IRR, Equity Multiple, and Alternative Market Equivalent (AME) ratios calculated based on the total returns to NCREIF's ODCE index, the FTSE NAREIT All Equity REIT index and the EPRA REIT Index.

Table 3A. Full Sample Performance Regressions: 1980 – 2003 Vintages

Vintages 2004-2008					
	(1)	(2)	(3)	(4)	(5)
Dependent Variable:	IRR	Multiple	AME - ODCE	AME - REIT	AME - EPRA
Opportunistic	-0.2579	-0.9593*	-0.7129	-0.4402	-0.5025
	[0.148]	[0.390]	[0.382]	[0.257]	[0.292]
VA x ln(fund size)	-0.0234	-0.1142*	-0.0991*	-0.0604	0.0145
	[0.017]	[0.051]	[0.046]	[0.041]	[0.044]
Opp. x ln(fund size)	0.0196	0.0396	0.0186	0.0151	-0.0696
	[0.022]	[0.051]	[0.049]	[0.045]	[0.048]
Europe	-0.0834***	-0.1481	-0.1143	-0.0937	0.0461
	[0.016]	[0.080]	[0.064]	[0.047]	[0.071]
Asia	-0.0231	-0.0337	-0.0058	-0.0057	0.0395
	[0.033]	[0.084]	[0.095]	[0.081]	[0.067]
Other, Not NA	0.0095	0.1482	0.2297	0.1675	0.1636
	[0.082]	[0.270]	[0.336]	[0.278]	[0.277]
Constant	0.1662	1.7337***	1.4589***	1.1657***	1.2182***
	[0.088]	[0.268]	[0.240]	[0.203]	[0.234]
Vintage Year Controls	Y	Y	Y	Y	
Observations	317	317	317	317	317
R-squared	0.072	0.083	0.060	0.049	0.029

Robust standard errors in brackets (clustered at the vintage level)
*** p<0.01, ** p<0.05, * p<0.1

All specifications include vintage year controls. The dependent variables are fund IRR, Equity Multiple, and Alternative Market Equivalent (AME) ratios calculated based on the total returns to NCREIF's ODCE index, the FTSE NAREIT All Equity REIT index and the EPRA REIT Index.

Table 3B. Full Sample Performance Regressions: 2004 – 2008 Vintages

	(1)				(2)				(3)			
			AME				AME				AME	
	IRR	Multiple	ODCE	EPRA	IRR	Multiple	ODCE	EPRA	IRR	Multiple	ODCE	EPRA
Opportunistic	-0.0035	-0.8579*	-0.4968	-0.1746	0.0186	-0.8553	-0.4908	-0.1243	0.0362	-0.8083*	-0.4201	-0.0686
	[0.214]	[0.405]	[0.312]	[0.250]	[0.264]	[0.483]	[0.385]	[0.329]	[0.252]	[0.435]	[0.351]	[0.310]
Size												
VA x ln(fund size)	0.0116	-0.0910*	-0.0604*	-0.0015	0.0136	-0.0988*	-0.0668	-0.0083	0.0176	-0.0801	-0.0493	-0.0215
	[0.027]	[0.043]	[0.029]	[0.021]	[0.035]	[0.051]	[0.041]	[0.024]	[0.035]	[0.054]	[0.046]	[0.048]
Opp. x ln(fund size)	0.0122	0.0377	0.0202	-0.0342	0.0105	0.0253	0.0099	-0.032	0.0138	0.0414*	0.0212	-0.0019
	[0.011]	[0.026]	[0.025]	[0.032]	[0.010]	[0.026]	[0.023]	[0.042]	[0.013]	[0.023]	[0.019]	[0.023]
Int'l Focus												
Europe	-0.071	-0.1395*	-0.1204*	0.0024	-0.0713	-0.1502*	-0.1323*	-0.0052	-0.0562	-0.1016	-0.0895	0.0301
	[0.044]	[0.066]	[0.060]	[0.062]	[0.048]	[0.080]	[0.068]	[0.066]	[0.046]	[0.075]	[0.063]	[0.068]
Asia	-0.0496	-0.0456	-0.0343	0.0015	-0.0366	0.0086	0.0165	0.0497	-0.0432	-0.0119	0.0007	0.0265
	[0.061]	[0.156]	[0.155]	[0.149]	[0.057]	[0.149]	[0.148]	[0.141]	[0.046]	[0.119]	[0.122]	[0.121]
Other Int'l	0.081	0.3954	0.5104	0.4059	0.096	0.4539	0.5687	0.464	0.0807	0.4008	0.5151	0.4101
	[0.094]	[0.284]	[0.374]	[0.325]	[0.090]	[0.266]	[0.365]	[0.320]	[0.090]	[0.276]	[0.378]	[0.329]
U.S. Focus												
Any US focus > 75%					0.0143	-0.0102	-0.0153	0.0173				
					[0.033]	[0.078]	[0.054]	[0.048]				
US West > 75%									0.0411	0.0947	0.0839	0.1122
									[0.032]	[0.073]	[0.062]	[0.074]
US East > 75%									0.0235	0.0373	0.0422	0.0489
									[0.059]	[0.129]	[0.095]	[0.091]

Table 4. Holdings Sample Performance Regressions
(continued on next page)

	(1)				(2)				(3)			
			AME				AME				AME	
	IRR	TVPI	ODCE	EPRA	IRR	TVPI	ODCE	EPRA	IRR	TVPI	ODCE	EPRA
Property Type Focus												
Any focus > 75%					-0.0153	-0.0908	-0.0659	-0.0418				
					[0.026]	[0.064]	[0.058]	[0.061]				
Industrial > 75%									0.0507	0.0141	-0.0069	0.0339
									[0.054]	[0.141]	[0.119]	[0.140]
Office > 75%									-0.0582	-0.2200*	-0.1770*	-0.1349
									[0.046]	[0.103]	[0.097]	[0.100]
Residential > 75%									0.0153	0.0476	0.033	-0.015
									[0.040]	[0.131]	[0.162]	[0.129]
Development focus												
Development > 75%					-0.0415	-0.191	-0.2098	-0.2016				
					[0.029]	[0.125]	[0.146]	[0.129]				
Development > 33%									-0.0242	-0.0668	-0.088	-0.0628
									[0.026]	[0.084]	[0.075]	[0.070]
Development (33%,10%]									-0.0801**	-0.1927**	-0.1972**	-0.1754**
									[0.028]	[0.074]	[0.072]	[0.070]
Constant	0.0448	2.3749***	1.3744***	1.0691***	0.0409	2.4654***	1.4439***	1.0773***	0.0394	2.4222***	1.3989***	1.0633***
	[0.155]	[0.245]	[0.167]	[0.183]	[0.206]	[0.310]	[0.257]	[0.266]	[0.213]	[0.340]	[0.296]	[0.304]
Vintage Year Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	183	183	183	183	183	183	183	183	183	183	183	183
R-squared	0.18	0.29	0.15	0.10	0.19	0.31	0.17	0.12	0.24	0.35	0.21	0.15

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

All specifications include vintage year controls. The dependent variables are fund IRR, Equity Multiple, and Alternative Market Equivalent (AME) ratios calculated based on the total returns to NCREIF's ODCE index, and the EPRA REIT Index.

Table 4. Holdings Sample Performance Regressions (continued)