ANOTHER LOOK AT PRIVATE REAL ESTATE RETURNS BY STRATEGY

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EXECUTIVE SUMMARY

- "Another Look at Private Real Estate Returns by Strategy" is a follow up to an earlier REE paper "Real Estate Returns by Strategy: Have Value-Added and Opportunistic Funds Pulled Their Weight?" which covered the 1996-2012 period and used Townsend data, which had material survivorship bias
- This paper spans 2000-2017 and also examines risk-adjusted net-of-fee performance of non-core funds using levered Core to produce volatility-matching returns
- Similar to the earlier paper, non-core funds show serious underperformance with alpha being approximately -3% bps per annum.
- This underperformance equates to approximately $7.5 billion per year in economically unwarranted fees
- Why this underperformance persists is addressed
- Recommendations as to what can be done to mitigate this underperformance are presented

SUMMARY OF THE DATA SETS EMPLOYED

Exhibit 1: Comparison of Certain Characteristics of Various Data Sources Reporting Private-Market Real Estate Returns by Strategy

Index	Inception Date	Last Reporting Date	Reported Returns		Market Capitalization	
			Gross	Net	Amount	As of
Original Study:					(billions)	
Core:						
NCREIF ODCE	1978	2012	✓	✓	$90	2012
Non-Core:						
Value-Added:						
NCREIF-Townsend Value-Added	1996	2012	✓	✓	$38	2012
Opportunistic:						
NCREIF-Townsend Opportunistic	1996	2012	✓	✓	$107	2012
Current Study:						
Core:						
NCREIF ODCE	1978	2017	✓	✓	$190	2017
Non-Core:						
Value-Added:						
Burgiss Value-Added [a]	1993	2017		✓	$128	2017
NCREIF CEVA [b]	1997	2017	✓	✓	$14	2017
Opportunistic:						
Burgiss Opportunisitc [c]	1990	2017		✓	$117	2017

Notes:

[a] Index began in the second quarter of 1993.

[b] Index began in the third quarter of 1997.

[c] Index began in the second quarter of 1990.

RETURN DATA AND COMPOSITE INDICES

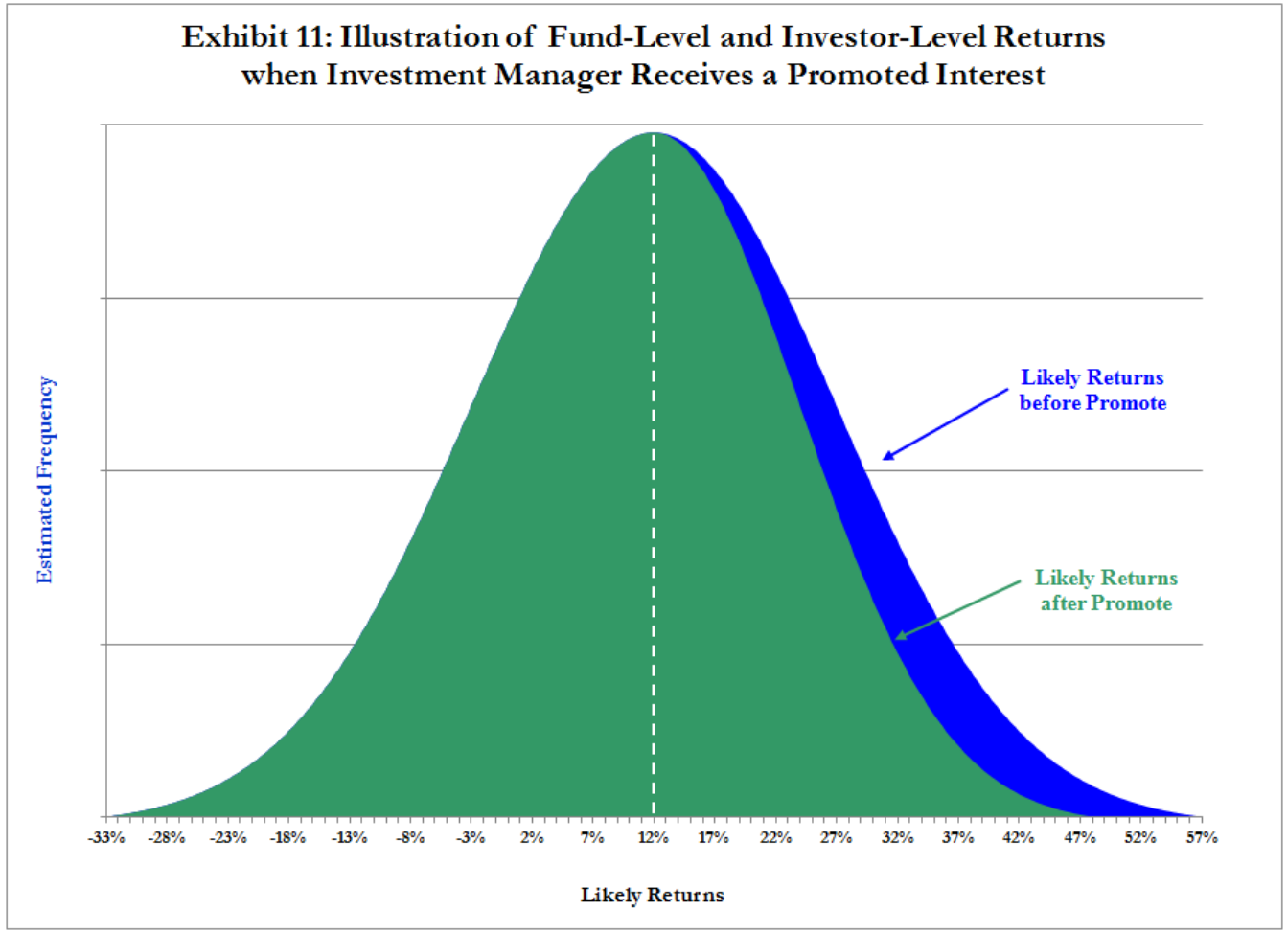
- In order to improve tractability, composite indices were created from the underlying data sets for the Value-Added and Opportunistic strategies.
- The standard deviation of net returns understates risk due to the promoted interest paid to the fund manager truncating the upside of the investor's net return.
- The true risk of the investor's capital, the investor's downside risk, is unaffected by the promote.
- Therefore, the volatility of the gross return better captures the risk of investment loss.

Exhibit 2: Comparison of Index Performance for the Period 2000-2017

Index/Fund Type	Averages Arithmetic	Averages Geometric	Standard Deviation	Serial Correlation	Annual Returns Maximum	Annual Returns Minimum
Risk Free Index:						
One-Year U.S. Treasury Bills	1.88%	1.85%	1.93%	0.80	6.19%	0.12%
Core Indices:						
NCREIF: Open-end Diversified Core Equity (ODCE)						
Gross Returns	9.05%	8.31%	11.80%	0.26	21.39%	-29.76%
Net Returns	8.03%	7.31%	11.67%	0.26	20.15%	-30.40%
Investment Management Fees & Costs	1.01%					
Value-Added Indices:						
Burgiss Value-Added Net Returns	9.53%	7.78%	17.80%	0.44	30.95%	-39.64%
NCREIF: Closed-End Value-Add (CEVA)						
Gross Returns	13.55%	11.97%	17.44%	0.46	37.99%	-35.84%
Net Returns	10.47%	9.09%	16.01%	0.46	31.17%	-36.88%
Investment Management Fees & Costs	3.08%					
Opportunistic Indices:						
Burgiss Opportunistic - Net Returns	11.50%	9.62%	18.97%	0.21	32.81%	-34.59%
Composite Indices:						
Value-Added Composite Index						
Gross Returns	12.80%		18.97%			
Net Returns	9.71%	8.05%	17.41%	0.44	31.03%	-39.09%
Investment Management Fees & Costs	3.08%					
Opportunistic Composite Index						
Gross Returns	15.50%		22.77%			
Net Returns	11.50%	9.62%	18.97%	0.21	32.81%	-34.59%
Investment Management Fees & Costs	4.00%					

GRAPHICAL DEPICTION OF WHY GROSS RETURNS ARE A BETTER PROXY FOR RISK THAN NET RETURNS

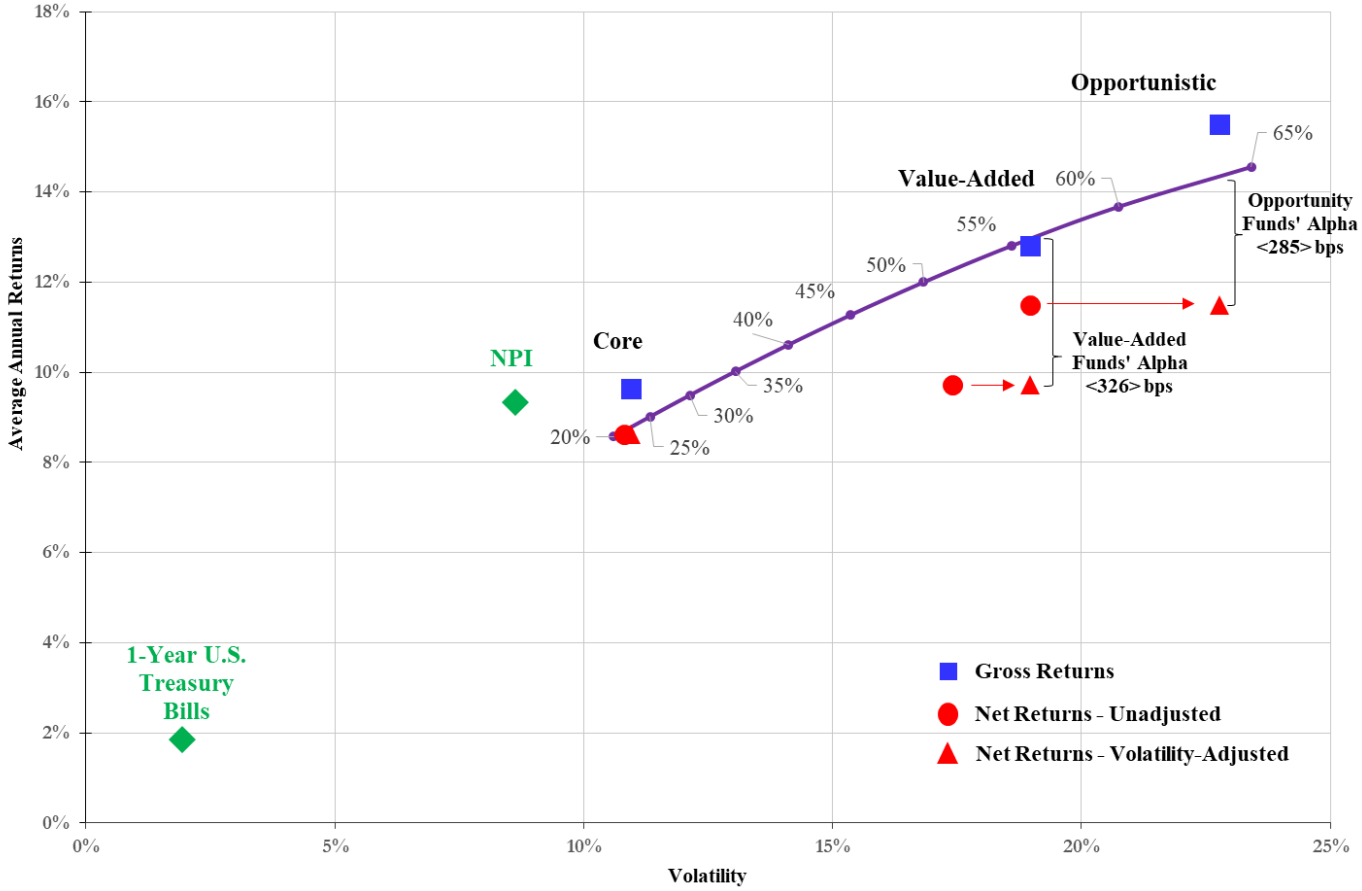
- Mathematically, it is true that the dispersion in net returns is narrower.
- However, the investor retains all the downside risk.
- Therefore, investors face the same risk as before the promote.
- This is an important point when examining index returns by strategy.
- Therefore gross return volatility is a better proxy for risk than net return volatility.



THE RESULTS: ALPHAS

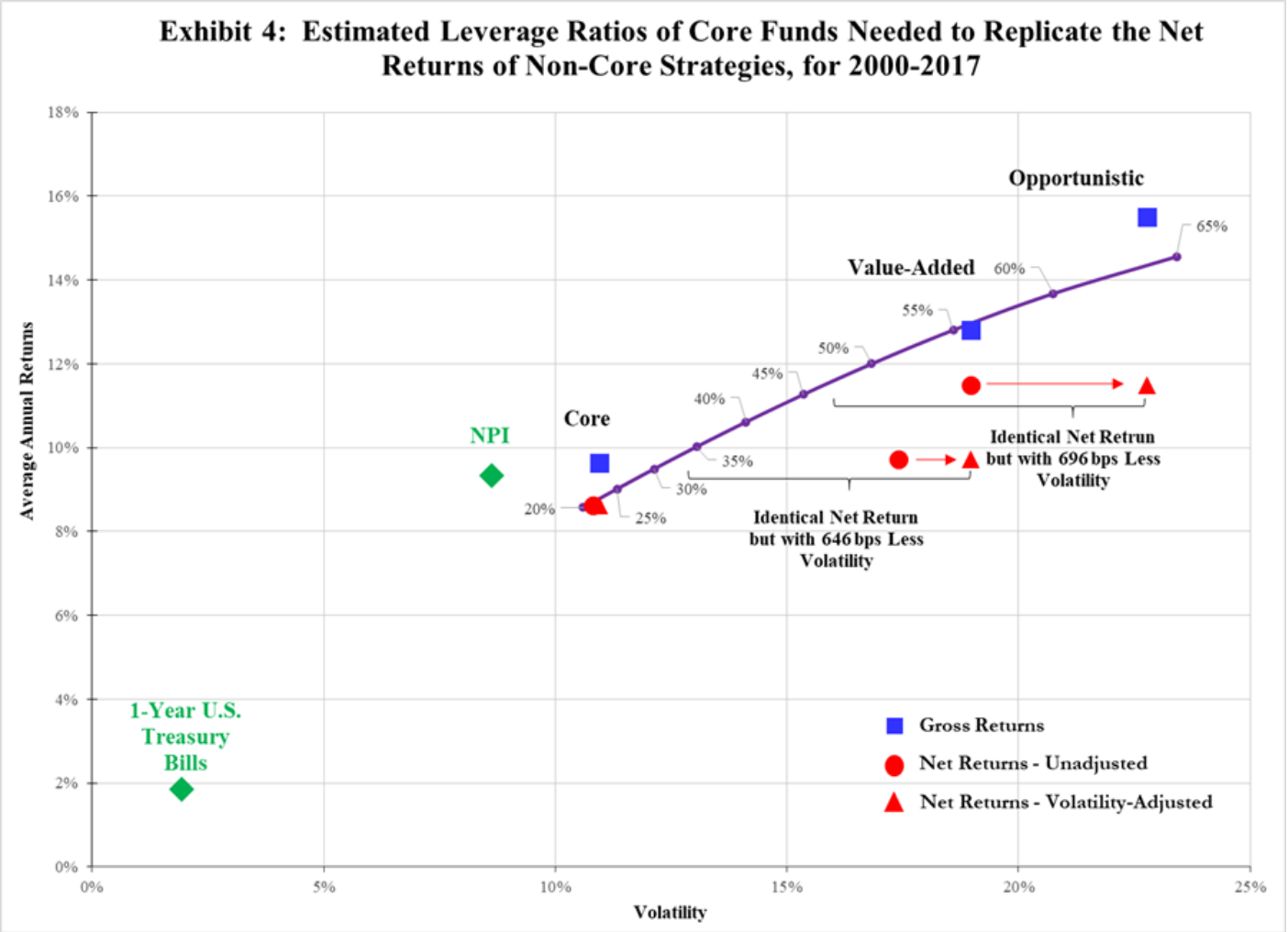
- The curve represents the risk/return continuum of core funds as more financial leverage is employed.
- Note that Opportunistic funds took more than twice the risk of Core funds and Value-Added funds took approximately 75% more risk than Core funds.
- The vertical distance between the levered core risk/return continuum and the net return of Value-Added and Opportunistic indices represent the annualized alphas generated.
- -3.26% for Value-Added Funds
- -2.85% for Opportunistic funds

Exhibit 3: Estimated Alphas of Non-Core Funds, Using Their Volatility-Adjusted Performance and the Law of One Price, for 2000-2017



THE RESULTS: ALPHAS

- Another perspective is to calculate the reduced risk investors could have taken to produce similar results to Value-Added and Opportunistic funds
- Investors could have levered core funds to approximately 33% and generated similar returns to Value Added funds while experiencing 650 bp less volatility
- Investors could have levered core funds to approximately 47% and generated similar returns to Opportunistic funds experiencing 700 bp less volatility



COMPARISON WITH RESULTS OF INITIAL STUDY

- The largest overlapping time period of the initial study and this study is 2000-2012.
- The initial study utilized NCREIF-Townsend data which is not used in this study.
- The initial study provided a sensitivity of Opportunistic alphas to the percent of assets recovered by funds that stopped reporting.
- The alpha of Opportunistic funds in the first study for 2000-2012 assuming funds that stopped reporting lost all of their invested capital was -2.04% which is similar to -1.96% in this study.
- The results are similar using different data sets.

Alphas for the 2000-2012 Period		
	Value-Added	Opportunistic
Initial Study	-1.63%	-2.04%
This Study	-2.73%	-1.96%

SUB-PERIOD ALPHA CALCULATIONS FOR VALUE-ADDED FUNDS

- See below the mountain chart which represents a similar analysis for all sub-periods of the study period of 6 year or greater sub-periods.
- In no sub-periods did Value-Added funds create positive alpha.
- Value-Added funds underperform before, during & after the financial crisis.
- Note that the alpha of -3.26% in the lower right corner ties to the alpha for the whole study period.

Exhibit 5: Value-Added Funds' Estimated Alpha (with Confidence Level) for Various Holding Periods

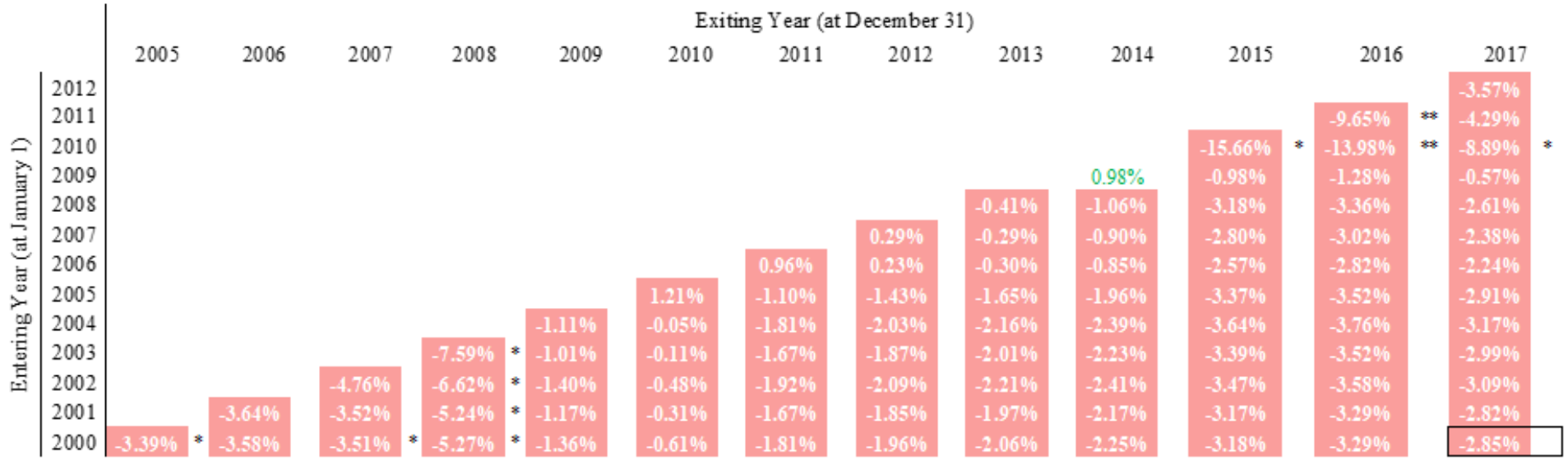
Entering Year (at January 1) \ Exiting Year (at December 31)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
2012													-0.60%
2011												-5.71%***	-1.07%
2010											-8.48%***	-5.17%***	-0.60%
2009										-3.83%**	-3.90%***	-3.75%***	-3.05%**
2008									-6.17%**	-5.51%**	-5.64%***	-5.44%***	-4.72%**
2007								-5.52%**	-5.95%**	-5.45%**	-5.61%***	-5.43%***	-4.78%***
2006							-3.34%	-3.85%	-4.62%*	-4.48%*	-4.84%**	-4.80%**	-4.28%**
2005						-4.06%	-4.39%	-4.64%*	-5.18%**	-4.98%**	-5.23%**	-5.16%***	-4.64%**
2004					-1.87%	-3.10%	-3.53%	-3.88%	-4.48%*	-4.38%*	-4.68%**	-4.68%**	-4.22%**
2003				-6.07%	-2.06%	-3.10%	-3.48%	-3.81%	-4.35%*	-4.26%**	-4.54%**	-4.55%**	-4.13%**
2002			-3.85%	-5.02%	-1.88%	-2.84%	-3.21%	-3.52%	-4.03%*	-3.97%**	-4.25%**	-4.27%**	-3.90%**
2001		-0.65%	-1.41%	-3.40%	-1.06%	-2.02%	-2.41%	-2.75%	-3.27%*	-3.26%*	-3.55%**	-3.61%**	-3.31%**
2000	-0.52%	-1.06%	-1.63%	-3.52%	-1.22%	-2.05%	-2.42%	-2.73%	-3.21%*	-3.21%*	-3.48%**	-3.55%**	-3.26%**

Note: * indicates a 10% confidence level, ** indicates a 5% confidence level and *** indicates a 1% confidence level. The test statistic for alpha uses a two-sided critical value based on the *t* distribution.

SUB-PERIOD ALPHA CALCULATIONS FOR OPPORTUNISTIC FUNDS

- Similarly, Opportunistic funds returned persistently large negative alphas during the study period.
- Note that the periods of statistical significance are greatly reduced for Opportunistic funds which will be explained in the following slides.

Exhibit 6: Opportunity Funds' Estimated Alpha (with Confidence Level) for Various Holding Periods



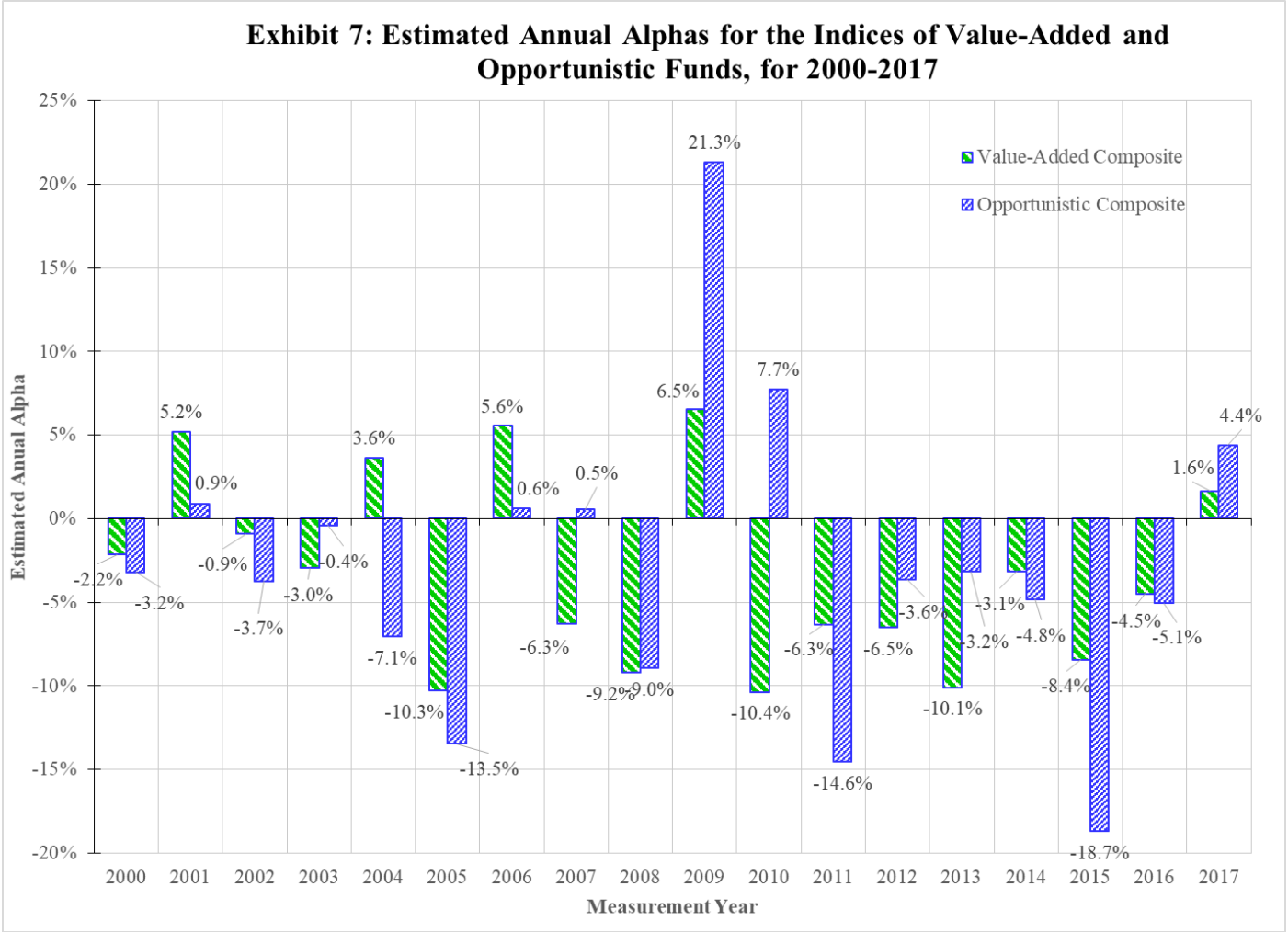
Note: * indicates a 10% confidence level, ** indicates a 5% confidence level and *** indicates a 1% confidence level. The test statistic for alpha uses a two-sided critical value based on the *t* distribution.

WHY THE NON-CORE ALPHAS MAY BE OVER-STATED

- Five potential adjustments which are not made here would likely reduce non-core alphas:
  - Volatility artificially dampened for non-core funds
    - Core funds provide quarterly liquidity at NAV so capital is transacting at their marks as opposed to most non-core funds which do not transact at their marks which is further detailed in the next slide.
  - Larger Idiosyncratic risk for non-core funds
    - It is much harder for investors in non-core funds to diversify away their idiosyncratic risk than for core fund investors.
  - Less liquidity for non-core funds
    - Core funds generally provide quarterly liquidity whereas non-core funds generally provide liquidity upon asset sale which has little certainty to it.
  - Investors in closed end non-core funds have to address uncalled capital
    - Non-core funds generally have capital committed to their funds then call it later which requires investors to have liquid capital in anticipation of the call.
  - Serial correlation is materially higher for Value-Added funds
    - Value-Added funds have much higher serial correlation than Core funds which implies that the measured volatility of Value-Added funds understates their risk in comparison to the measured volatility of core funds.

MARK TO MARKET DELAY OF OPPORTUNISTIC FUND EFFECT ON STATISTICAL SIGNIFICANCE

- See the bar chart which shows the annual alphas generated by both Value-Added and Opportunistic funds over the period.
- Note the large positive alpha generated by Opportunistic funds in 2009 followed by the large negative generated in 2011.
- This is due to the delay in taking the large mark downs by Opportunistic funds in comparison to Core funds.
- This dramatically increases the standard error of the estimated alpha and therefore reduces the ability of the test statistic to exceed conventional confidence levels.



WHY DOES THE UNDER-PERFORMANCE PERSIST?

- Perhaps neither institutional investors nor their consultants had previously rigorously examined the alpha of such funds?
  - Instead, many investors and much of the consultancy seem obsessively preoccupied with assessing the general partner's process and the quantiles associated with past performance.
  - The focus on relative performance has obscured the larger story about the substantial negative alpha of noncore strategies.
  - The Uniform Prudent Investor Act "The trade-off in all investing between risk and return is identified as the fiduciary's central consideration."
  - For those who have neglected the consideration of risk by using metrics that do not incorporate risk such as IRR, vintage year percentiles and return multiples, this seems a partial abdication of their fiduciary responsibilities.
- It is difficult to distinguish investing luck from skill in small samples
  - Perhaps institutional investors have been heretofore reluctant to believe that this underperformance was something other than merely a run of bad luck.
  - With nearly 20 years of data (longer if the predecessor study is included), it is difficult to argue for merely a run of bad luck.

WHY DOES THE UNDER-PERFORMANCE PERSIST?

- Behavioral finance: "mental accounting"
  - In the case of real estate investing, perhaps institutional investors are guilty of irrationally creating mental accounts for Core, Value-Added, and Opportunistic buckets without much thought given to the largely interchangeable nature of these investments.
- Behavioral finance: "leverage aversion"
  - Certain investors, who are unwilling or unable to use leverage, seek higher returns via higher-risk assets thereby driving the price of these higher risk/higher returns above their equilibrium prices.
  - Although institutional investors seem to display a variation of this leverage aversion with regard to their investments in core properties, these same investors display an affinity for leverage with regard to their noncore investments.
- Responding to incentives: under-funded pension plans
  - The political pressures of increasing state and local governmental organizations have led to a shift toward greater allocations to alternative investments, including real estate.
  - Greater allocations to real estate have been accompanied by an increasing share of the real estate allocation being devoted to non-core investments with higher expected rates of return.

WHAT MIGHT BE DONE TO MITIGATE UNDER-PERFORMANCE?

- The simplest approach, assuming the future resembles the past, is to allocate more capital to Core funds with the sorts of leverage ratios identified herein while allocating less capital to non-core funds.
- Investors should demand more and better data with regard to the performance of noncore funds and be more discerning when evaluating fund performance.
- Replace the fixed preference (e.g., 8% per annum on invested capital) with an index (e.g., the NPI levered to a certain degree, the NAREIT Equity Index, and so on) with risk–return characteristics similar to the noncore fund thereby rewarding investment managers for performance generating true alpha.
- Advocate for a reduction in the fees charged by noncore investment managers.
- The combination of a base fee and an incentive fee is a long-standing approach for extracting costly effort from the agent for the benefit of the principal. However the study finds that core funds, very few of which employed an incentive fee, generated persistently large positive alphas in comparison to non-core funds.

FOLLOW ON RESEARCH

- This paper measured the alphas of private real estate funds in aggregate but did not examine the cross sectional alpha generated by funds or persistence of alpha by manager
- Professor Pagliari and I have submitted a research request to PERC to gain access to Burgiss data to examine the alpha of individual funds and managers
- A similar research paper has been written for PE titled "Has Persistence Persisted in Private Equity? Evidence From Buyout and Venture Capital Funds" by Harris, Jenkinson, Kaplan and Stucke
- This follow on paper would present a methodology to measure the alpha of an individual fund by using a combination of the direct alpha Private Market Equivalent methodology and the levering up of core assets technique employed in the previous paper
- We anticipate presenting results similarly to those presented in the aforementioned PE paper which is shown in the next slide
- The main difference is that instead of separating funds into PME quartiles, we will separate funds into alpha quartiles
- The PE paper showed that there is little persistence in PME quartile performance from managers

FOLLOW ON RESEARCH

Panel A: Buyout Funds

		Current Fund Quartile 1	2	3	4	N	Average Current Fund IRR	Average Current Fund MOIC	Average Current Fund PME
				Whole Sample					
Previous Fund Quartile	1	27.5%	27.5%	26.4%	18.7%		13.2%	1.59	1.34
		25	25	24	17	91			
	2	26.3%	22.4%	31.6%	19.7%		10.3%	1.42	1.23
		20	17	24	15	76			
	3	17.9%	26.9%	35.8%	19.4%		10.2%	1.44	1.21
		12	18	24	13	67			
	4	19.6%	19.6%	31.4%	29.4%		7.8%	1.28	1.10
		10	10	16	15	51			

Source: "Has Persistence Persisted in Private Equity? Evidence From Buyout and Venture Capital Funds"