



National Council of Real Estate
Investment Fiduciaries

NCREIF

presents

NFI-ODCE Performance Attribution Report

NCREIF Members Webinar

March 8, 2017

NFI-ODCE Performance Attribution Agenda

- It's been a long and winding road
- What exactly is NFI-ODCE PA?
- Review the new pdf report
- Review the new excel file
- Roadmap for the future
- Questions?
 - Please send them in during the presentation and we will address them at the end

NFI-ODCE Performance Attribution Product Package

- NFI-ODCE Index
 - PDF report
 - Multi-years, recent four quarters and percentiles
 - NFI-ODCE property data file since 2013q1
 - Same as NPI property data file but just ODCE properties at legal (contribution) ownership share%
- Educational Document with Report User Guide
 - In members area, “products”, “fund” section

What is the source & timing of data for attribution?

NCREIF Property Data Submission

QE + 20 days

Property unleveraged returns at contribution share; Acquisitions; Property leverage, including debt mark to market

NCREIF Fund Data Submission

QE + 25 days

Fund returns, fund Net investment income, appreciation, cash balances

NCREIF Additional Data Submission

QE + 25 days

Fund Debt mark to market, interest expense, fund costs, other investments income and appreciation, average cash and debt balances

Property Level Collection and NPI Processing

NFI-ODCE Collection and Processing

Performance Attribution Reconciliation

Performance Attribution Processing

1

25

30

55

60

Days after quarter-end



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Why NFI-ODCE Performance Attribution?

- The NFI-ODCE is now the industry's premier private equity real estate benchmark
- Investors, managers, consultants need to explain their own or client's over or under-performance vs. the benchmark
- Comparison requires transparency or knowledge of the details of the benchmark
- NCREIF provides both disclosure of the calculations and transparency of the index

Background

- I. 2010 – 2011 Survey, committee discussions, ideas, etc.
- II. 2012 – 2013: NFI-ODCE task force develops property level attribution methodology and report
- III. 2014 – NFI-ODCE fund level attribution product developed
 - Task force consisted of 7 ODCE managers
 - Focused on data definitions, methodology, report
 - NCREIF signs agreement with ALTUS
- III. 2015 – NFI-ODCE Index Policy Committee (IPC) formed to improve product Governance

NFI-ODCE Governance Structure

NCREIF Board of Directors

*RECOMMENDATIONS submitted for
BOD Approval*

NCREIF ODCE Index Policy Committee

- Methodology Oversight
 - Formulas
 - Data Collection
- Product Review & Enhancement
- Fund inclusion into index
- Included:
 - Formal ODCE Index
 - ODCE Attribution

NCREIF Staff

NCREIF Membership Committees

*Accounting
Valuation
Daily Price*

*Performance Measurement
Portfolio Management
ODCE Portfolio Managers*

*Research
Plan Sponsors*



NCREIF

NFI-ODCE Index Policy Committee (IPC) Roster

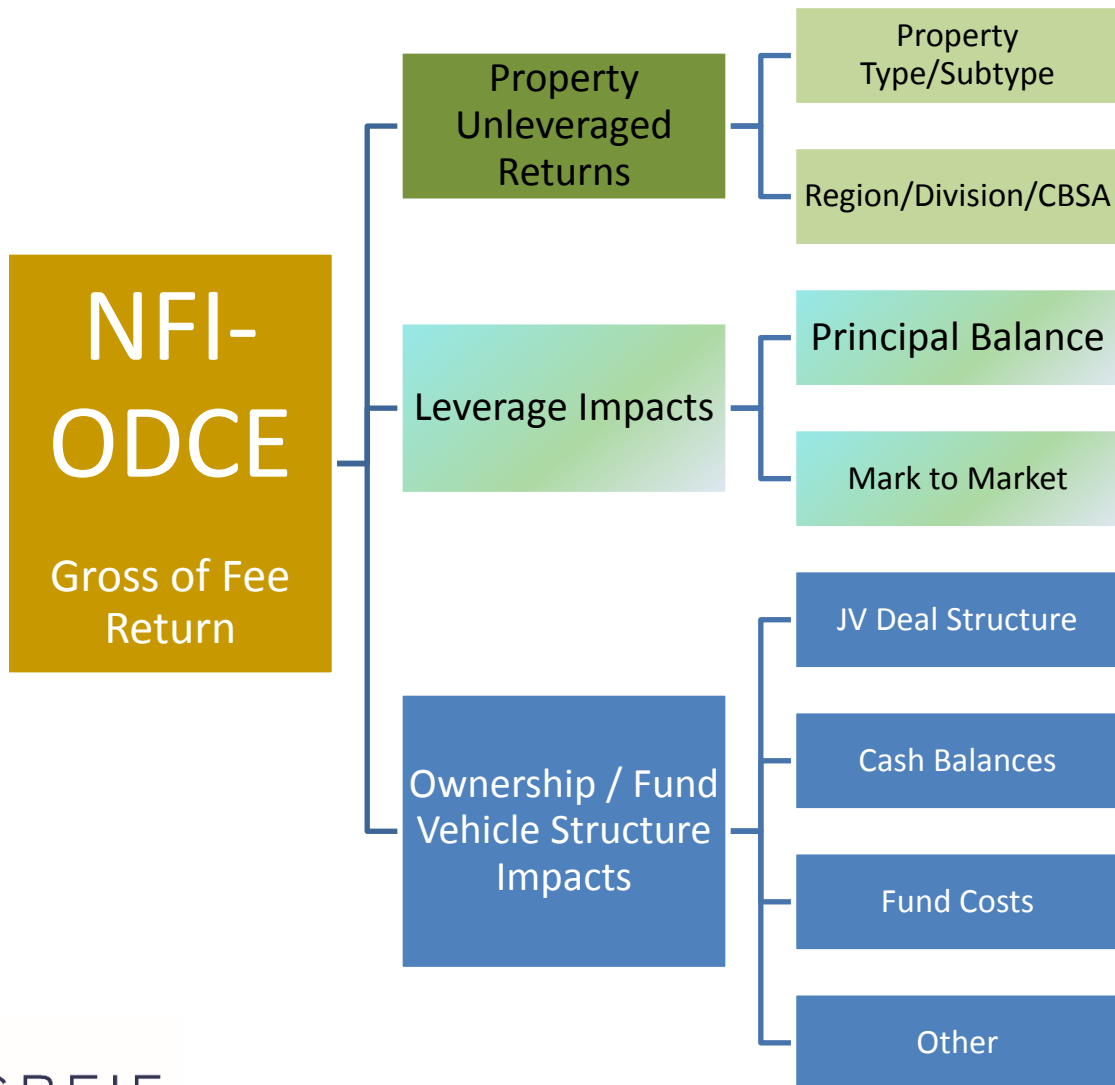
1. Cappelletti, Joe: DB RREEF - Director, Portfolio Management
2. Dipaolo, David: Clarion - VP, Performance Analytics
3. Glen, James: Prudential - Executive Director, Portfolio Manager
4. Kleinman, Rich: LaSalle - Managing Director, Research
5. Lindblade, Ingrid: Heitman - VP, Accounting
6. Malinowski, Tuba: Stockbridge - Portfolio Manager
7. Martin, Jon: AEW - Director, Portfolio Manager
8. Murrell, Samantha: JP Morgan - VP Portfolio Management
9. Phillips, Meighan: Principal - Assistant Portfolio Manager

What is NFI-ODCE Performance Attribution?

NFI-ODCE Performance Attribution is a form of ABSOLUTE Attribution that breaks down fund returns into unleveraged property returns, including property sector analysis and the impacts of leverage, fund costs, and other ownership / fund structuring components. Absolute attribution DRILLS DOWN to better understand the overall ODCE Index returns.

NFI-ODCE Performance Attribution is NOT RELATIVE Attribution that compares your portfolio to the index, as is done with property level Brinson attribution which deconstructs out-performance or under-performance into active portfolio management sector allocation and investment selection decisions. NCREIF, however, provides the data and math necessary to do your own relative attribution.

NFI-ODCE Performance Attribution Overview



NFI-ODCE PA Report Table of Contents

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Executive Summary Multi-years (page 3 top half)

SNAPSHOT

Much of the NFI-ODCE return comes from the underlying properties, but there are additional factors that result in additional boosts or drags on property-level returns. This report shows the impacts that affect the fund-level returns.

	Annualized	1 Yr	2 Yr	3 Yr
Total Return Net of Fees		7.79%	<i>To be completed after</i>	
Total Return Gross of Fees		8.77%	<i>reconciliation of historical data</i>	

PERFORMANCE RECONCILIATION OF PROPERTY-LEVEL TO FUND-LEVEL RETURN

This section shows the impact of various fund structure components. The analysis starts with unlevered property-level returns at ownership share, and layers in the impact of the other attributes, all of which total to the gross of fee, fund-level return. The order of the components does not matter, although interaction may occur. For multi-periods, each component is compounded separately.

	Annualized	1 Yr	2 Yr	3 Yr
NFI-ODCE Unleveraged Property-level Total Return at Ownership Share		7.94%		
Leverage		1.26%		
Acquisitions (partial period)		0.02%	<i>To be completed after</i>	
Other Non-Property Equity Investments		-0.01%	<i>reconciliation of</i>	
Cash Balances		-0.26%	<i>historical data</i>	
Other Assets and Liabilities		0.10%		
Fund Costs		-0.09%		
Other (includes Joint Venture Deal Structuring)		-0.19%		
Total Return Gross of Fees		8.77%		

Executive Summary Multi-years (page 3 bottom half)

UNLEVERAGED PROPERTY-LEVEL RETURN AND CONTRIBUTION TO RETURN (CTR)

Weights, Return and Contribution to Return (CTR) are at ownership share.

	Annualized average weight for 1 yr	1 Yr Return	CTR	2 Yr	3 Yr
Apartment	25.2%	6.94%	1.75%		
Industrial	13.2%	12.27%	1.60%		
Office	38.7%	6.92%	2.68%		
Retail	19.0%	7.94%	1.51%		
Hotel	0.9%	2.60%	0.02%		
Land	0.4%	4.79%	0.02%		
Other	2.7%	13.64%	0.36%		
Unlev Property-level Total Return	100.0%		7.94%		

To be completed after reconciliation of historical data

EFFECTS OF LEVERAGE

This section describes the effects of leverage in greater detail. This is listed in the second row of the Performance Reconciliation of Property-Level Return to Fund-Level Return.

	Annualized	1 Yr	2 Yr	3 Yr
Property-level leverage at principal balance		0.76%		
Property-level leverage marked to market		0.19%		
Fund-level leverage at principal balance		0.30%		
Fund-level leverage marked to market		0.00%		
Total effects of leverage		1.26%		

To be completed after reconciliation of historical data

Executive Summary Recent Four Quarters (page 4)

SNAPSHOT

3/31/16 6/30/16 9/30/16 12/31/16 1 Yr

PERFORMANCE RECONCILIATION OF PROPERTY-LEVEL TO FUND-LEVEL RETURN

3/31/16 6/30/16 9/30/16 12/31/16 1 Yr

UNLEVERAGED PROPERTY-LEVEL RETURN AND CONTRIBUTION TO RETURN (CTR)

Weights, Return and Contribution to Return (CTR) are at ownership share.

					<i>CTR</i>	<i>Return</i>	<i>Average</i>
	<i>3/31/16</i>	<i>6/30/16</i>	<i>9/30/16</i>	<i>12/31/16</i>	<i>1 Yr</i>	<i>1 Yr</i>	<i>Weights</i>
							<i>1 Yr</i>

EFFECTS OF LEVERAGE

3/31/16 6/30/16 9/30/16 12/31/16 1 Yr

Index Performance Percentiles One Year (page 5 top half)

One Year Ended December 31, 2016

Group	Item	Total	75th	Median	25th	Equal	Std Dev
			Percentile		Percentile	Avg	
<i>Returns and Impacts on Returns</i>	NFI-ODCE Unleveraged Property-level Total Return at Ownership Share	7.94%	8.57%	8.11%	7.63%	8.14%	1.03%
	Leverage	1.26%	1.93%	1.39%	1.23%	1.55%	0.60%
	Acquisitions (partial period)	0.02%	0.00%	-0.05%	-0.15%	-0.05%	0.18%
	Other Investments	-0.01%	0.01%	0.00%	-0.03%	-0.04%	0.28%
	Cash Balances	-0.26%	-0.18%	-0.23%	-0.28%	-0.25%	0.10%
	Other Assets and Liabilities	0.10%	0.21%	0.12%	0.05%	0.15%	0.16%
	Fund Costs	-0.09%	-0.07%	-0.11%	-0.16%	-0.11%	0.05%
	Other (includes JV Deal Structuring)	-0.19%	0.01%	-0.07%	-0.34%	-0.11%	0.31%
	Total Return Gross of Fees	8.77%	10.12%	9.18%	8.73%	9.27%	1.45%
	Total Return Net of Fees	7.79%	9.19%	8.44%	7.91%	8.36%	1.51%
<i>Additional Information</i>	Property-level Income	4.50%	4.83%	4.59%	4.36%	4.56%	0.44%
	Property-level Appreciation	3.33%	3.75%	3.48%	3.02%	3.46%	0.82%
	Fund-level Income	4.50%	4.99%	4.69%	4.32%	4.65%	0.57%
	Fund-level Appreciation	4.12%	5.11%	4.49%	3.89%	4.46%	1.11%
	Property leverage at principal balance	0.76%	1.24%	1.03%	0.63%	0.99%	0.55%
	Property leverage marked to market	0.19%	0.25%	0.17%	0.09%	0.18%	0.20%
	Fund leverage at principal balance	0.30%	0.66%	0.25%	0.11%	0.37%	0.34%
	Fund leverage marked to market	0.00%	0.01%	0.00%	0.00%	0.01%	0.09%
	Total Leverage	1.26%	1.93%	1.39%	1.23%	1.55%	0.60%



Index Performance Percentiles One Year (page 5 bottom half)

One Year Ended December 31, 2016

Group	Item	Total	75th	25th	Equal	Std Dev	
			Percentile	Percentile	Avg		
<i>Balance Sheet, Cash Flows and Other (quarter-end averages)</i>	Gross Real Estate	\$213,549	\$10,102	\$6,118	\$2,485	\$8,898	\$9,288
	Net Assets	\$163,385	\$7,173	\$4,932	\$1,638	\$6,808	\$7,193
<i>\$ millions</i>	Net Real Estate	\$170,773	\$8,353	\$5,068	\$1,697	\$7,116	\$7,205
	Cash Reserves %	3.00%	3.14%	2.56%	1.99%	2.79%	1.09%
	Leverage	21.97%	26.67%	23.63%	20.79%	23.71%	4.51%
	Contributions	\$4,404	\$255	\$109	\$39	\$183	\$187
	Distributions	\$4,185	\$231	\$109	\$18	\$175	\$200
	# of Investments	2528	146	76	43	106	85
	Occupancy Rate	92.84%	94.26%	93.08%	91.20%	92.67%	2.51%

Property Performance Multi-years and Quarterly (page 6)

		ANNUALIZED RETURNS			QUARTERLY AVERAGES						
GROUP	ITEM	1 Yr	2 Yr	3 Yr	Quarterly Trends	Quarterly Avg	Min Return & QE Date	Max Return & QE Date	Std Dev	Avg Count	Avg Denom (\$ millions)
All	Total	7.94%				1.93%	1.56% 12/16	2.15% 06/16	0.24%	2,760	\$198,689
Property Type	A	6.94%				1.69%	1.20% 12/16	1.90% 06/16	0.29%	618	\$50,045
	H	2.60%				0.65%	0.22% 12/16	0.90% 06/16	0.28%	17	\$1,746
	I	12.27%				2.94%	2.85% 12/16	3.07% 06/16	0.08%	925	\$26,181
	L	4.79%				1.18%	0.77% 06/16	1.90% 03/16	0.43%	81	\$819
	O	6.92%				1.69%	1.32% 12/16	1.98% 03/16	0.28%	541	\$76,792
	R	7.94%				1.93%	1.59% 12/16	2.17% 06/16	0.23%	390	\$37,817
	X	13.64%				3.25%	2.64% 12/16	3.69% 06/16	0.39%	188	\$5,290
NPI Qualifying	A	6.30%				1.54%	1.11% 12/16	1.79% 06/16	0.26%	543	\$45,491
	H	2.60%				0.65%	0.22% 12/16	0.90% 06/16	0.28%	17	\$1,746
	I	12.04%				2.88%	2.80% 09/16	2.93% 12/16	0.05%	838	\$24,740
	O	6.77%				1.65%	1.30% 12/16	2.03% 03/16	0.29%	516	\$74,817
	R	7.68%				1.87%	1.59% 12/16	2.11% 03/16	0.20%	370	\$144,677

Also shown are Property Subtypes, Regions, Divisions, Life Cycle, Markets, Structure and Appraisal

Property Performance Percentiles One Year (page 7)

ONE YEAR RETURNS								
Group	Item	Total	75th Percentile	Median	25th Percentile	Equal Avg	Std Dev	Fund Count
ALL	Total	7.94%	8.57%	8.11%	7.63%	8.14%	1.03%	24
Property Type	A	6.94%	7.66%	6.86%	6.05%	6.81%	1.54%	24
	I	12.27%	13.62%	11.85%	10.48%	12.31%	2.78%	24
	L	4.79%	5.23%	0.99%	-2.66%	-2.74%	14.18%	12
	O	6.92%	8.72%	7.62%	5.85%	7.50%	1.83%	24
	R	7.94%	9.27%	8.23%	7.54%	8.12%	1.66%	24
NPI Qualifying	A	6.30%	7.07%	6.59%	6.00%	6.36%	1.41%	21
	I	12.04%	13.54%	11.63%	10.64%	11.88%	2.23%	21
	O	6.77%	8.70%	7.79%	5.75%	7.48%	1.78%	21
	R	7.68%	9.10%	7.92%	7.31%	7.68%	1.81%	21

Also shown are Property Subtypes, Regions, Divisions, Life Cycle, Markets, Structure and Appraisal

Methodology to Calculate Impacts

PERFORMANCE RECONCILIATION OF PROPERTY-LEVEL TO FUND-LEVEL RETURN	
Description	Formula
NFI-ODCE Unleveraged Property-level Total Return at Ownership Share	$\frac{NOI + RealEstateAppreciation}{BegMarketValue + \frac{1}{2}CapX - \frac{1}{2}PartialSales - \frac{1}{3}NOI}$ <p>Note: all components are at ownership share %</p>
Property-level leverage at principal balance	$Impact \% = \frac{ODCE\ Numerator}{ODCE\ Denominator} - \frac{ODCE\ Numerator + Property\ Level\ Int\ Exp\ and\ Financing\ Costs}{ODCE\ Denominator + Average\ Property\ Debt\ Bal\ BV}$ <p>Note: all property components are at ownership share %</p>
Property-level leverage marked to market	$Impact \% = \frac{ODCE\ Numerator}{ODCE\ Denominator} - \frac{ODCE\ Numerator + Property\ Level\ Int\ Exp\ and\ Financing\ Costs - Property\ Debt\ Appreciation}{ODCE\ Denominator + Average\ Property\ Debt\ Bal\ MV}$ <p>Impact % of Prop Leveraged at Principal Balance (above)</p>
Fund-level leverage at principal balance	$Impact \% = \frac{ODCE\ Numerator}{ODCE\ Denominator} - \frac{ODCE\ Numerator + Fund\ Level\ Int\ Exp\ and\ Financing\ Costs}{ODCE\ Denominator + Average\ Fund\ Debt\ Bal}$
Fund-level leverage marked to market	$Impact \% = \frac{ODCE\ Numerator}{ODCE\ Denominator} - \frac{ODCE\ Numerator + Fund\ Level\ Int\ Exp\ and\ Financing\ Costs - Fund\ Debt\ Appreciation}{ODCE\ Denominator + Average\ Fund\ Debt\ Bal} - Impact\ \%\ of\ Fund\ Leveraged\ at\ Principal\ Balance\ (above)$
Acquisitions (partial period)	$Impact \% = \frac{ODCE\ Numerator}{ODCE\ Denominator} - \frac{ODCE\ Numerator - Acquisitions\ Income + Appreciation\ at\ Own\ Share\ \%}{ODCE\ Denominator - Acquisitions\ Weighted\ Net\ Asset\ Value\ at\ Own\ Share\ \%}$ <p>Note: Acquisitions are not included in the starting property returns because of NCREIF's policy to exclude initial acquisition periods in the NPI. Disposition partial periods are included in the starting property unleveraged returns.</p>
Other Investments	$Impact \% = \frac{ODCE\ Numerator}{ODCE\ Denominator} - \frac{ODCE\ Numerator - Other\ Investments\ Income + Appreciation}{ODCE\ Denominator - Other\ Investments\ Average\ Balance}$
Cash Balances	$Impact \% = \frac{ODCE\ Numerator}{ODCE\ Denominator} - \frac{ODCE\ Numerator - Interest\ Income\ on\ Cash\ Balances}{ODCE\ Denominator - Average\ Cash\ Balance}$

Glossary and Abbreviations

Glossary of Terms

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Ownership Share

Also known as *contribution share*. The percent of property owned by the fund according to the amount of capital the fund is required to contribute to the venture. For properties wholly-owned by the fund, the ownership share will be 100%. For pari-passu joint ventures, ownership share will likely be the same as the distribution share. Where joint venture distributions are non-pari-passu, ownership share will be different than distribution share.

Abbreviations

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<i>Structure</i>	
JV	Joint Venture
WO	Wholly-owned

<i>Appraisal</i>	
E	External
I	Internal

Excel File for NFI-ODCE PA

- Index property sector data
 - Same as NPI property data spreadsheet, but all information is at legal contribution share
 - This data will tie out to the starting point of the property to fund reconciliation that is the Property Unleveraged Return at Ownership Share
- Property data goes back to 2013q1, even-though the data has not be officially reconciled / validated.

Sample Excel File for NFI-ODCE PA

iname	type	region	division	yyq	count	emv	income	capimp	psales	treturn	ireturn	areturn
ODCE_TOT	-	-	-	20131	2183	109,605,451,753	1,445,348,790	673,378,448	1,765,806,704	2.16060088	1.328870026	0.831730855
ODCE_TOT	-	-	-	20132	2167	114,456,119,466	1,510,784,826	1,035,806,977	1,360,639,522	2.797459847	1.343168588	1.454291259
ODCE_TOT	-	-	-	20133	2253	123,381,897,123	1,596,494,424	954,732,986	1,487,651,124	2.885155698	1.317071927	1.568083771
ODCE_TOT	-	-	-	20134	2290	127,104,184,844	1,605,583,460	1,007,288,399	1,680,080,460	2.619487574	1.282101849	1.337385725
ODCE_TOT	-	-	-	20141	2365	133,648,996,169	1,639,952,552	702,719,013	760,471,950	2.359902804	1.245558516	1.114344288
ODCE_TOT	-	-	-	20142	2393	138,742,435,800	1,760,453,215	952,668,098	1,044,992,572	2.662007039	1.29128877	1.370718269
ODCE_TOT	-	-	-	20143	2468	144,851,061,707	1,789,087,659	1,122,127,249	1,732,345,421	2.828664447	1.257061035	1.571603412
ODCE_TOT	-	-	-	20144	2483	153,135,425,958	1,842,400,885	1,359,690,673	2,384,455,135	3.038261421	1.225739893	1.812521528
ODCE_TOT	-	-	-	20151	2523	160,766,580,483	1,868,160,265	1,032,121,434	1,396,365,829	3.029330016	1.186696986	1.84263303
ODCE_TOT	-	-	-	20152	2546	166,749,129,580	1,971,461,379	1,120,670,464	2,401,490,989	3.272980832	1.206840842	2.06613999
ODCE_TOT	-	-	-	20153	2569	174,814,573,180	2,017,751,056	1,236,809,759	1,397,445,744	3.339444264	1.183120764	2.156323499
ODCE_TOT	-	-	-	20154	2624	182,098,975,336	2,033,675,458	1,655,694,222	3,183,184,615	2.898414046	1.135944407	1.762469639
ODCE_TOT	-	-	-	20161	2737	194,259,467,835	2,139,638,680	1,118,112,805	1,568,429,846	2.123021066	1.115334555	1.007686511
ODCE_TOT	-	-	-	20162	2775	199,496,760,903	2,245,095,935	1,396,616,011	2,597,159,860	2.153683252	1.137658304	1.016024948
ODCE_TOT	-	-	-	20163	2761	203,102,118,242	2,231,518,032	1,664,259,719	2,873,328,978	1.876778035	1.107924695	0.768853339
ODCE_TOT	-	-	-	20164	2767	203,865,812,766	2,176,767,867	1,624,179,460	5,702,527,859	1.564873609	1.066200046	0.498673563

Preview NFI-ODCE PA Methodology Webinar

- Methodology webinar next week on Wednesday March 15th at 1:00pm CDT
- Exclusion method for fund level impacts
- Contribution to return for property level analysis
- Multi-period linking methods for each

NFI-ODCE PA Next Steps Roadmap

- Publish key valuation statistics
- Backfill historical data
 - Work with NFI-ODCE managers current quarter reconciliations + one prior quarter
 - Reconcile 2014 by end of 2017
 - Reconcile 2015 by end of 2018
 - Resulting in 5 years by end of 2018
- Enhance excel data to allow users to do more analysis on their own

NFI-ODCE PA Key Points Recap

- NFI-ODCE PA is a form of Absolute Attribution.
- The 3 primary components of NFI-ODCE Index level attribution are 1) property unleveraged returns, 2) leverage impacts, and 3) ownership / fund structure impacts.
- Fund level attribution starts with Property Unleveraged Returns at Contribution Share.
- Fund level attribution uses the Exclusion method to calculate impacts.
- Property level attribution uses contribution to return for analysis.
- Different multi-period linking methods are used for fund impacts and property sector contributions to return.
- The data, calculations, report are all transparent.
- You can now perform absolute and relative attribution of your fund or portfolio on a consistent basis as the overall Index and your peers.

NFI-ODCE PA Questions

- The End!
- Any Questions?

NFI-ODCE Performance Attribution

prepared exclusively for NCREIF Members – Do Not Distribute
NCREIF Member Report



As of December 31, 2016