HANDBOOK VOLUME II: MANUALS

NCREIF PREA

Reporting Standards

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PERFORMANCE AND RISK

This NCREIF PREA Reporting Standards Manual has been developed with participation from NCREIF's Performance Measurement Committee and the leverage task force of the Reporting Standards Performance and Risk Workgroup. The Manual has been endorsed and approved by the Reporting Standards Council.

NCREIF PREA pension real estate association

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INTRODUCTION

Overview

The Performance and Risk Manual ("PRM") has been created to provide U.S. private, institutional real estate investment industry participants (collectively, the Industry) a resource to better understand, measure, and manage performance and risk within their real estate investments in a meaningful, transparent, and consistent manner. The scope of this content includes guidance related to:

- Performance and risk measurement elements in the NCREIF PREA Reporting Standards Volume I (Volume I)
- Data elements captured within the NCREIF Fund Indices (NFI) and NCREIF Property Index (NPI)
- Other less frequently reported performance and risk measures used in the Industry

Organization of Contents

It is anticipated that the PRM will primarily be used as a reference for the performance professional in the Industry. As the guidance contained in the PRM may be used for a variety of different purposes, the PRM is organized in three main sections via the Table of Contents: 1) Formulas, 2) Background & Discussion, and A) Appendices. These sections are oriented to allow the user to start with the basics expression of methodology (Formulas) before layering in more granular details relating to the calculation of performance and risk measures. The subject areas below are reviewed within the manual:

- Performance and risk measures, including, but not limited to: Time-weighted Returns, Internal Rate of Returns, equity multiples, risk, leverage, etc.
    - For each measure, specific discussions on how the measure is utilized/calculated at each reporting level, namely:
        - Fund or Account Level[1] (Volume I)
        - Investment Level
        - Property Level
- Appendices including, but not limited to: illustrative examples of certain measures including Tier 1 leverage and the Total Global Expense Ratio; information elements for performance measurement; and sample fund and property level performance presentations.

When looking at performance of a fund, real estate investing is unique in that performance can be viewed in a more granular way than the broader investment industry. For example, real estate can be analyzed at the property level to assess how well a physical property can return profit (or not) without the impacts of ownership (e.g., joint venture, operating company, etc.), investment management, and fund structure (e.g., open-end, closed-end, SMAs). Property level performance can be computed irrespective of ownership structure (e.g., the NCREIF Property Index) or adjusted for ownership share (e.g., the ODCE attribution "property at share"). At the investment level, the impact of ownership structuring, including deal level

[1] For purposes of the PRM, Fund Level includes Separately Managed Accounts (SMAs).

promotes, as well as the impact of deal level cash, other assets and other liabilities are factored in so that analytics can lead to a clearer understanding of investment management decisions. At the fund level, investments are aggregated to produce "Account level" performance. Both Fund level and Account level and can be analyzed to facilitate understanding of the interrelationships of investments in the context of the overall fund structure and strategy (e.g., core, value-add, opportunistic).

Currently, the PRM does not address investor specific reporting. This topic is on the strategic agenda for the Reporting Standards Board and Council and performance-related investor specific reporting matters will be incorporated when appropriate.

Foundational Standard for Performance: Global Investment Performance Standards (GIPS®)

As noted in Volume I, the Reporting Standards build on, but are not intended to replace, established standards issued by authoritative organizations including, but not limited to the following: the Global Investment Performance Standards (GIPS®) promulgated by CFA Institute; accounting principles generally accepted in the United States of America (GAAP) established by the Financial Accounting Standards Board (FASB); and the Uniform Standards of Professional Appraisal Practice (USPAP) developed by the Appraisal Standards Board of the Appraisal Foundation. Collectively, these established standards are referred to as the Foundational Standards throughout the Reporting Standards.

The PRM includes concepts that are consistent with the 2020 edition of the GIPS® standards and effective beginning January 1, 2020. The GIPS® standards are applied on a firm-wide basis and serve to promote consistency, transparency, and full disclosure to allow any prospect or beneficiary to understand investments which are being entered into or approved. Whereas the PRM will draw on the GIPS® standards for basic ethical principles with a focus on full disclosure and fair representation as it applies to calculation methods and disclosures, the PRM will provide best practices reporting to existing investors as those reporting needs can be different. It is important to note that the PRM does not contradict the GIPS® standards but rather supplements the GIPS® standards by providing guidance appropriate for institutional real estate reporting, which can be more granular than required by the GIPS® standards.

It is important to note that compliance with the GIPS® standards is not a requirement for compliance with the Reporting Standards. Although some of the information required for GIPS® compliance is similar to that required for Reporting Standards compliance, the compliance process for the Reporting Standards and the GIPS® standards are separate activities.

Defined Terms

Words appearing in capital letters in the PRM are defined in the Global Definitions Database or within this document.

Disclaimers

The metrics listed may not be appropriate for all fund investment structures and strategies so it is up to the user to determine the applicability of each item as it relates to each entity (the term "entity" will be used throughout the PRM most broadly to refer to a fund, investment, or property).

Contrasted with performance measured for the market driven public investments Industry, the input data that is used to calculate the various measures described in the PRM generally come directly from or can be derived from the entity's financial statements or fair value accounting books and records. The Reporting Standards require financial statements prepared in accordance with Fair Value Generally Accepted Accounting Principles in the United States (FV GAAP). Guidance related to FV GAAP for the Industry is described in the Reporting Standards Fair Value Accounting Policy Manual. Although calculated NAV should be the same in any FV GAAP, caution should be exercised when comparing performance results of components of NAV (e.g., net investment income, appreciation, expense ratios, etc.) prepared under different FV GAAP interpretations.

Rate of return formulas reference certain accounting terminology that is generally applicable to fair value reporters using the operating model (reference to reporting standards handbook accounting policy). Formulas may assume fees are a vehicle expense or in the case of promote, an equity allocation to the GP. To the extent that fees are paid directly by investors to the manager or where financial statements are presented under the non-operating model or other basis of accounting, certain adjustments and or disclosures may be required in order to stay consistent with the reporting standards principals or NCREIF index policies.

Revisions

The PRM will be reviewed for updates on an annual basis. Suggestions for improvements, clarifications and additional topics should be directed to administrator@reportingstandards.info.

SECTION 1 – FORMULAS
SECTION 1.01- TIME-WEIGHTED RETURN

Fund Level TWR

Before-fee fund level TWR

Net investment income return (before-fee)

$$\frac{NII + AF + IFE}{NAV_{t-1} + TWC - TWD}$$

Appreciation return (before-fee)

$$\frac{\text{Real Estate Appreciation} + \text{Debt Appreciation}}{NAV_{t-1} + TWC - TWD}$$

Total return (before-fee)

$$\frac{NII + AF + IFE + \text{Real Estate Appreciation} + \text{Debt Appreciation}}{NAV_{t-1} + TWC - TWD}$$

After-fee fund level TWR

Net investment income return (after-fee)

$$\frac{NII}{NAV_{t-1} + TWC - TWD}$$

Appreciation return (after-fee)

$$\frac{\text{Real Estate Appreciation} + \text{Debt Appreciation} — IFC}{NAV_{t-1} + TWC - TWD}$$

Total return (after-fee)

$$\frac{NII + \text{Real Estate Appreciation} + \text{Debt Appreciation} - IFC}{NAV_{t-1} + TWC - TWD}$$

Input Definitions

NII = Net investment income (after interest expense, advisory fees and expensed incentive fees)
AF = Advisory fee expense
IFE = Incentive fee expense and promote
IFC = Change in capitalized incentive fee and promote
NAV_{t-1} = Net asset value of investment at beginning of period
TWC = Time weighted contributions
TWD = Time weighted distributions

Investment Level TWR

Before-fee investment level TWR

Net investment income return (before-fee)

$$\frac{NII + AF + IFE}{NAV_{t-1} + TWC - TWD}$$

Appreciation return (before-fee)

$$\frac{\text{Real Estate Appreciation} + \text{Debt Appreciation}}{NAV_{t-1} + TWC - TWD}$$

Total return (before-fee)

$$\frac{NII + AF + IFE + \text{Real Estate Appreciation} + \text{Debt Appreciation}}{NAV_{t-1} + TWC - TWD}$$

After-fee investment level TWR

Net investment income return (after-fee)

$$\frac{NII}{NAV_{t-1} + TWC - TWD}$$

Appreciation return (after-fee)

$$\frac{\text{Real Estate Appreciation} + \text{Debt Appreciation} - IFC}{NAV_{t-1} + TWC - TWD}$$

Total return (after-fee)

$$\frac{NII + \text{Real Estate Appreciation} + \text{Debt Appreciation} - IFC}{NAV_{t-1} + TWC - TWD}$$

Input Definitions

NII = Net investment income (after interest expense, advisory fees and expensed incentive fees)
AF = Advisory fee expense
IFE = Incentive fee expense (includes promote (carried interest))
IFC = Change in capitalized incentive fee (including promote (carried interest))
NAV_{t-1} = Net asset value of investment at beginning of period
TWC = Time weighted contributions
TWD = Time weighted distributions

Property Level TWR

Unleveraged property level TWR

Net operating income return (unleveraged)

$$\frac{NOI}{FV_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI)}$$

Appreciation return (unleveraged)

$$\frac{(FV_t - FV_{t-1}) + PSP - CI}{FV_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI)}$$

Total return (unleveraged)

$$\frac{NOI + (FV_t - FV_{t-1}) + PSP - CI}{FV_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI)}$$

Leveraged property level TWR

Net operating income return (leveraged)

$$\frac{NOI - DSI}{FV_{t-1} - D_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI - DSI) + (1/3)(DSP) + (1/2)(PD - NL)}$$

Appreciation return (Leveraged)

$$\frac{(FV_t - FV_{t-1}) + PSP - CI - (D_t - D_{t-1} + DSP + PD - NL)}{FV_{t-1} - D_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI - DSI) + (1/3)(DSP) + (1/2)(PD - NL)}$$

Total return (leveraged)

$$\frac{NOI - DSI + (FV_t - FV_{t-1}) + PSP - CI - (D_t - D_{t-1} + DSP + PD - NL)}{FV_{t-1} - D_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI - DSI) + (1/3)(DSP) + (1/2)(PD - NL)}$$

Input Definitions

NOI = Net operating income (before interest expense)
DSI = Debt service interest expense
FV_t = Fair value of property at end of period
FV_{t-1} = Fair value of property at beginning of period
CI = Capital improvements
D_t = Debt at end of period
D_{t-1} = Debt at beginning of period
DSP = Debt service principal payments
PD = Additional principal debt payments
NL = New loan proceeds
PSP = Net sales proceeds for partial sales

Industry Guidance

Reporting Standards

All Vehicles (when TWRs are presented)

- Volume I addresses fund level TWRs only (investment level TWRs and property level TWRs are not addressed).
- PR.01 – Required; Presentation of total and component (income and appreciation) returns before and after fees.
- PR.01 – Required; Presentation of quarterly, 1-year, 3-year, 5-year, 10-year, and since inception TWRs, and returns in excess of 1 year are annualized.
- PR.01.1 – Required; Disclosure of types of fees deducted from the gross (before-fee) return to arrive at the net (after-fee) return.
- PR.01.2 – Required; Disclosure of fees on TWR (which can be expressed, at a minimum, as a basis point range).
- PR.01.3 – Required; Disclosure of periodicity of TWRs.
- PR.01.4 – Required; Disclosure of the methodology used to calculate TWR. The performance returns should use rate of return methodology that adjusts for daily weighted external cash flows to produce returns. Returns must be geometrically linked and periods of greater than one year must be annualized. Specific annualization methodology is not required.
- PR.01.5 – Required; Disclosure of valuation policy, types of fees, basis of accounting, and methodology used to record fees.
- PR.01.7 – Required; Disclosure of start date, end date, and partial period methodology.

Open-End Funds

- PR.01 – Required; Total and component (income and appreciation) returns before and after fees.
- PR.22 – Recommended; Reporting of redemptions for each quarter (PR.20) as well as the total redemption requests.

Closed-End Funds

- PR.01 – Required at investor's request; Total and component (income and appreciation) returns before and after fees.

Separate Accounts

- PR.01 – Recommended; Total and component (income and appreciation) returns before and after fees.

NCREIF Data Products

NPI

- The NPI is a property level TWR index.

- NPI is unleveraged but queries can be made to generate a leveraged property level TWR.
- NPI assumes monthly NOI distributions and mid-quarter cash flows.
- NPI uses 4/number of quarters to annualize cumulative quarterly returns.
- NPI uses 12/number of months to annualize cumulative monthly returns.
- NPI uses partial period Method III where the start date begins on the first day of the first full quarter following acquisition and the end date matches the actual disposition date.

NFI Fund Indices

- The NFI Fund Indices present TWRs except in the case of NFI-CEVA.
- NFI Fund Indices use 4/number of quarters to annualize cumulative quarterly returns.
- NFI Fund Indices use 12/number of months to annualize cumulative monthly returns.
- NFI Fund Indices use partial period Method II where the start date begins on the first day of the first full quarter following acquisition and the end date is the last day of the last full quarter prior to disposition.
- For before-fee and after-fee return purposes, the NFI Fund Indices only consider advisory fees, incentive fees, and carried interest (also known as "promote") when distinguishing between the two calculations. NFI Fund Indices generally present TWRs gross of fees while net of fee TWRs may be presented for informational purposes and as a proxy for the average fees charged.

Link to Background and Discussion

Section 2 – Background and Discussion

Section 2.01 – TIME WEIGHTED RETURN- BACKGROUND AND DISCUSSION

ERROR! REFERENCE SOURCE NOT FOUND.SECTION 1.02- INTERNAL RATE OF RETURN

IRR Formula

The IRR formula discounts Flows F_1 through F_n back to F_0.

$$F_0 + \frac{F_1}{1+IRR} + \frac{F_2}{(1+IRR)^2} + \frac{F_3}{(1+IRR)^3} + .. + \frac{F_n}{(1+IRR)^n} = 0$$

Input Definitions

F_O = Original investment in the entity

F_1 - F_n = Net Cash Flows for each applicable period

Entity not liquidated

F_n = Last period's operating cash flows plus an estimate of the net residual value

Calculation

Sample calculations of gross and net IRR are included in the Background and Discussion section.

Industry Guidance

Reporting Standards

All Vehicles (when IRRs are presented)

- PR.06 – Required; Appropriate disclosures as outlined in this section must be present when IRRs are reported.
- PR.06.1 – Required; Disclosure of the type and level of gross IRR reporting. Gross IRR reporting can be at either levels 1a, 1b or 2.
- PR.06.2 – Required; Disclosure of the types of fees deduced from the gross return to arrive at net, and the net of fees returns presented for all investor classes. The spread between gross and net must be stipulated. Net IRR reporting is required to be reported at Level 4.
- PR.06.3 – Required; The time period and frequency of cash flows for the calculation must be disclosed. At a minimum monthly cash flows must be utilized (beginning 1/1/2020).
- PR.06.4 – Required; Disclosure of the realized IRR end date. If final net assets have not been distributed when the last investment is sold or otherwise disposed, the method used in determining the final distribution and IRR end date must be disclosed.
- PR.06.5 – Required; Disclosures surrounding the use of subscription lines due to variation in practice.

Open-End Funds

- Not applicable.

Closed-End Funds

- PR.06 – Required; Since-inception IRR – Gross and Net of Fees.

Separate Accounts

- PR.06 – Recommended; Since-inception IRR – Gross and Net of Fees.

NCREIF Data Products

NFI-CEVA

- The NFI-CEVA product presents IRR information.

NPI and NFI Fund Indices

- IRRs are not presented or calculated for NPI or NCREIF fund indices other than NFI-CEVA.

Link to Background and Discussion

Section 2.02 – Internal Rate of Return – Background and DISCUSSION

Link to Formulas

SECTION 1.03 – EQUITY MULTIPLES

Equity Multiple Formulas

Investment Multiple or Total Value to Paid-In Capital Multiple (TVPI)

$$\frac{TV}{PIC}$$

Realization Multiple or Cumulative Distributions to Paid-In Capital Multiple (DPI)

$$\frac{D}{PIC}$$

Paid-In Capital Multiple or Paid-In Capital to Committed Capital Multiple (PIC)

$$\frac{PIC}{CC}$$

Residual Multiple or Residual Value to Paid-In Capital Multiple (RVPI)

$$\frac{RV}{PIC}$$

Input Definitions

TV = Total Value
Fund (or SMA) Level: Sum of residual fund net assets (NAV) plus aggregate fund distributions to investors since inception.
Investment Level: Sum of residual investment net assets (NAV) plus aggregate distributions to investors / the fund / SMA which were attributed to the investment.
Property Level: Sum of property fair value (net of debt) plus aggregate distributions paid since inception (Note: if actual property distributions are not separately maintained, estimates can be calculated by aggregating the property's net operating income (after interest expense on any debt) and subtracting principal).

PIC = Paid in Capital; All capital drawn down including the amount recalled.

D = Total Distributions
Fund Level: Aggregate fund distributions paid to investors since inception.
Investment Level: Aggregate investment distributions paid to the fund since inception.
Property Level: Aggregate property distributions paid since inception.

Note that distributions since inception within the Reporting Standards includes all distributions paid regardless of type (i.e., operations and return of capital).

CC = Committed Capital
Fund Level: Cumulative fund PIC plus unfunded capital commitments.
Investment Level: Cumulative investment PIC plus unfunded capital earmarked to the investment.
Property Level: Cumulative property PIC plus unfunded commitments from all owners (e.g., budgeted construction costs or renovation reserves)

RV = Residual Value
RV is defined as NAV representing the remaining equity of a fund, investment, or property.
Fund Level: Net asset value (NAV) of the fund.
Investment Level: Net asset value (NAV) of the investment.
Property Level: Net asset value (NAV) of the property.

Industry Guidance

Reporting Standards

All Vehicles

- PR.03 – Required; Reporting of fund level net asset value.

Open-End Funds

- Not applicable.

Closed-End Funds

- PR.07 – Required; Fund level Paid-in Capital Multiple, quarterly.
- PR.08 – Required; Fund level Investment Multiple, quarterly.
- PR.09 – Required; Fund level Realization multiple, quarterly.
- PR.10 – Required; Fund level Residual multiple, quarterly.
- PR.11 – Required; Since inception distributions, quarterly.
- PR.12 – Required; Aggregate capital commitments, quarterly.
- PR.13 – Required; Since inception paid in capital, quarterly.
- PR.20 – Recommended; Quarterly disclosure of unfunded commitments.

Separate Accounts

- PR.07 – Recommended; Fund level Paid-in Capital Multiple, quarterly.
- PR.08 – Recommended; Fund level Investment Multiple, quarterly.
- PR.09 – Recommended; Fund level Realization multiple, quarterly.
- PR.10 – Recommended; Fund level Residual multiple, quarterly.
- PR.11 – Recommended; Since inception distributions, quarterly.
- PR.12 – Recommended; Aggregate capital commitments, quarterly.

- PR.13 – Recommended; Since inception paid in capital, quarterly.

Link to Background and Discussion

Section 2.03 – Equity Multiples – Background and DISCUSSION

SECTION 1.04 – TOTAL GLOBAL EXPENSES RATIO

TGER Formula Concept

$$\frac{\text{Total Fees Charged by Investment Management + Costs Charged by Third Parties}}{\text{Gross Asset Value}}$$

or:

$$\frac{\text{Fund Level Fees and Expenses (Rolling Four Quarters)}}{\text{Gross Asset Value (Weighted Average Four Quarters)}}$$

TGER Formula

$$\frac{MF + TF + PF + VC + VT}{GAV}$$

Input Definitions

Fees Charged by the Investment Manager

MF = Ongoing Management Fees – Fund and asset management fees charged by investment managers for their services regarding the everyday running of the vehicle and its portfolio.

TF = Transaction Based Fees – Fees charged by investment managers for their services regarding the acquisition/disposition of real estate.

PF = Performance Fees – Fees charged by investment managers after a predetermined investment performance has been attained.

Costs Charged by Third Parties

VC = Vehicle Costs – Third party costs incurred predominantly at vehicle level to maintain and frow its operations.

VT = Vehicle Related Taxes – Expenses related to the tax structure and position of the vehicle.

Ratio Denominator

GAV = Gross Asset Value – Total assets derived from the vehicle accounting standards, e.g., US GAAP, IFRS, and adjusted for specific elements to arrive at a market-relevant gross asset value in accordance with INREV Guidelines/NCREIF PREA Reporting Standards.

Appendix A2 provides the details of fees and costs within each category. See Appendix A3 for the calculation of GAV. Note the contractual investment manager compensation that represents the spread between the before & after TWR may differ from the above defined Fees Charged by the Investment Manager. The Investment Manager Agreement outlines the contractual compensation that creates the spread between before and after TWR and may vary between investment vehicles or investment structure, but the intent is the same. Therefore, the contractual fee compensation that creates the return spread must be disclosed for

TWR transparency (PR.01.1). It is also recommended to disclose the types of compensation fees included in TGER (link to reporting and disclosure guidance document).

Industry Guidance

Reporting Standards

All Vehicles (when TGER is presented)

- PR.23.1-23.4 – Required; Accompanying disclosures.

Open-End Funds

- PR.23 – Required; Annually for a 12-month rolling period.

Closed-End Funds

- PR.23 – Required; For funds launched in 2020 or after, annually for a 12-month rolling period.
- PR.23 – Recommended; Since inception TGER with inception date indicated.

Separate Accounts

- Not applicable.

Link to Background and Discussion

Section 2.04 – Total Global Expenses Ratio – Background and DISCUSSION

SECTION 1.05 – MEASURES OF DISPERSION AND RISK

Measures of Dispersion

Standard deviation

$$\sqrt{\frac{\sum_{i=1}^{n} r_i - r_c}{n-1}}$$

r_i = Return of each individual entity
r_c = Equal-weighted mean or arithmetic mean return of the entities in the group
n = Number of entities in the group

Risk Ratios

Sharpe ratio

$$\frac{\overline{r}_p - r_f}{\sigma_p}$$

$\overline{r}_p$ = Expected portfolio return
r_f = Risk-free rate
σ_p = Portfolio standard deviation

Treynor ratio — (also known as the reward to volatility ratio)

$$\frac{\overline{r}_p - \overline{r}_f}{\beta_p}$$

$\overline{r}_p$ = Average portfolio return
$\overline{f}$ = Average risk-free rate
β_p = Beta of the portfolio

Tracking Error

$$\sqrt{\frac{\sum (x^i - y^i)^2}{n-1}}$$

x = Percentage return on the portfolio in period i
y = Percentage return on the benchmark
n = Number of periods over which it is measured

Correlation (ρ)

$$\frac{\text{cov}(X, Y)}{\sigma_X \times \sigma_Y}$$

cov = Covariance between the two sets of returns (X and Y)
σ_X = Standard deviation for entity X for the period
σ_Y = Standard deviation for entity Y for the period

Industry Guidance

Reporting Standards

All Vehicles

- Volume I does not require or recommend reporting of measures of dispersion. Measures of dispersion will be considered for future updates to the asset management elements within Volume I.

Link to Background and Discussion

Section 2.05 – Measures of Dispersion and Risk – Background and DISCUSSION

SECTION 1.06 – LEVERAGE

Fund Level Leverage Risk Measures

Fund T1 Leverage Percentage

$$\frac{\text{Fund T1 Total Leverage (C)}}{\text{Total Gross Assets (as defined)}}$$

Operating Model

$$\frac{\text{Fund T1 Total Leverage (C)}}{\text{Total Balance Sheet Assets – Joint Venture x Partner Economic Share of Total Assets}}$$

Non-Operating Model

$$\frac{\text{Fund T1 Total Leverage (C)}}{\text{Total Balance Sheet Assets + Fund Economic Share of Total Joint Venture x Liabilities}}$$

Fund T1 Leverage Yield

$$\frac{\text{Fund's Net Investment Income Before Interest Expense}}{\text{Fund T1 Total Leverage (C)}}$$

Weighted Average Remaining Term of Fund T1 Leverage

Calculate separately for Fixed-Rate leverage and Floating-Rate leverage.

$$\frac{P_1}{P} r_1 + \frac{P_2}{P} r_2 + \frac{P_3}{P} r_3 + ..$$

Input Definitions

Fund T1 Total Leverage (C) = P = Fund T1 leverage at cost, which is the remaining principal balance
P_i = Principal balance of each debt
r_i = Remaining term of each debt (years)

As used herein Joint Venture includes investments which are other than wholly owned by the Fund including, but not limited to: joint ventures, limited partnerships, investments in C-corporations, etc.

Investment Level and Property Level Leverage Risk Measures

Debt Service Coverage Ratio (DSCR)

$$\frac{\text{Net Operating Income (NOI)}}{\text{Debt Service Payments (principal and interest)}}$$

Debt Yield

$$\frac{\text{Net Operating Income (NOI)}}{\text{Outstanding Loan Balance}}$$

Loan to Cost (LTC)

$$\frac{\text{Outstanding Loan Balance}}{\text{Property/Investment Ending cost}}$$

Loan to Value (LTV)

$$\frac{\text{Third Party Debt}}{\text{Property/Investment Value}}$$

Industry Guidance

Reporting Standards

All Vehicles

- PR.04 – Required; T1 leverage at cost because not all debt is reported at fair value.
- PR.05 – Required; Quarterly reporting of Fund T1 Leverage Percentage.
- PR.14 – Required; Quarterly reporting of the Fund T1 Leverage Yield.
- PR.15 – Recommended; Quarterly reporting of the weighted average interest rate of Fund T1 Leverage.
- PR.16 – Recommended; Quarterly reporting of the weighted average remaining term of Fixed-Rate Fund T1 Leverage. A disclosure of the total amount of T1 leverage which is fixed-rate debt must be provided when this measure is presented.
- PR.17 – Recommended; Quarterly reporting of the weighted average remaining term of Floating-Rate Fund T1 Leverage. A disclosure of the total amount of T1 leverage which is floating-rate debt must be provided when this measure is presented.

Link to Background and Discussion

Section 2.06 – Leverage – Background and DISCUSSION

SECTION 1.07 – PERFORMANCE ATTRIBUTION

Brinson-Fachler Model with Interaction Effect

Allocation Effects	**Selection Effect**	**Interaction Effect**
(Br — BR) * (PW — BW)	BW * (Pr — Br)	(PW — BW) * (Pr — Br)

Brinson-Fachler Model without Interaction Effect

Allocation Effects (includes interaction effects)	**Selection Effect**
(Br — BR) * (PW — BW)	PW * (Pr — Br)

Contribution/Absolute Attribution

Contribution Effect

(PW * Pr)

Input Definitions

BW = Benchmark sector weight
Br = Benchmark sector return
BR = Benchmark total return
PW = Portfolio sector weight
Pr = Portfolio sector return

Industry Guidance

Reporting Standards

All Vehicles

- Volume I does not require or recommend reporting of attribution.

Open-End Funds

- PR.02 – Required; Benchmark period return that matches all actual net (or gross) period returns that are being reported, and calculation methodology of benchmark return. Alternatively, disclosure of reason there is no stipulated benchmark.

Closed-End Funds

- PR.02 – Required at investor's request; Benchmark period return that matches all actual net (or gross) period returns that are being reported, and calculation methodology of benchmark return. Alternatively, disclosure of reason there is no stipulated benchmark.

Separate Accounts

- PR.02 – Recommended; Benchmark period return that matches all actual net (or gross) period returns that are being reported, and calculation methodology of benchmark return. Alternatively, disclosure of reason there is no stipulated benchmark.

Link to Background and Discussion

SECTION 2 – BACKGROUND AND DISCUSSION

SECTION 2.01 – TIME WEIGHTED RETURN- BACKGROUND AND DISCUSSION

Link to Formulas

Section 1 – FORMULAS
Section 1.01 - Time-weighted return

Overview

A Time-weighted Return (TWR) is a rate of compound growth adjusted to eliminate the impact of external flows, typically expressed on annualized terms. Mathematically, it is the compound growth rate of a single dollar invested at the start of the investment period compounded by the rate of return calculated during each measurement period. TWRs, or more specifically, chain-linked Modified Deitz returns, are commonly used in the real estate investment industry to measure the performance of an investment, Fund or Account and are a type of day weighting methodology accepted under GIPS. Property level returns are also linked in the same manner but typically use alternative assumptions about the timing of external flows (e.g., the NPI assumes monthly NOI distributions and mid-quarter capital flows) rather than actual cash flow dates. By chain-linking or compounding individual period returns, the TWR formulas remove the timing effect of cash contributions and distributions from the entity's performance. TWRs measure performance over a specific period regardless of the size of the investment or timing of external cash flows. Generally, TWRs are used to compare manager performance.

All TWR formulas are built in a similar manner, with a numerator and denominator deriving a single period rate of return. The numerators generally represent some measure of the absolute performance of the entity over the measurement period (e.g., income, appreciation, etc.). The denominators represent a measure of the entity's average size over that same time period (e.g., weighted average net asset value).

A technical point worth remembering: "Time-weighting" refers to the process of how multiple periodic rates of return are linked together. Hence, the rate of return for a single period should not technically be referred to as a time-weighted rate of return. In fact, the popular Modified Dietz method, which is the basis for the single period rate of return used in real estate, is an IRR approximation for that single period. It is the chain-linking of such quarterly Modified Dietz returns, a process that results in a (multi-period) "time-weighted" rate of return.

Use of TWRs

TWRs are the preferred performance measure to use in open-end funds and are recommended for separately managed accounts (SMAs). TWRs can be helpful when one needs to compare performance to a benchmark or across multiple asset classes. Because of the wide-spread use of TWRs within multiple asset classes

(including mutual funds), it is commonly used as the primary measure of performance of investors' portfolios. Conversely, when an advisor controls the cash flows of the investment, as is the case in closed-end funds and discretionary SMAs, other return measures including IRR may provide additional insight. IRR is discussed further in a separate chapter within the PRM.

The NCREIF Indices present TWRs except in the case of NFI-CEVA where performance returns are IRR focused, aligning well with its closed-end structure.

Within the Industry, TWRs may be calculated at three "levels": Fund or Account, Investment, and Property[2]. The actual financial elements that are used in the numerators and denominators of each TWR differ by level and are described in greater detail in later sections. Like for like performance (same level) can be aggregated to reflect the return of a group (e.g., all value-add retail assets across portfolios, all portfolios managed to a core strategy) and is discussed further below.

Fund and Investment level TWRs are typically presented before and after-fees (e.g., advisory fees and incentive fees) and promote (e.g., carried interest) and include leverage, cash, and the impact of other assets and liabilities. Property level TWRs may be presented leveraged and unleveraged and are most often presented before fees. After fee performance may be computed as well, however this may be difficult when fees are charged at the fund level rather than by investment. Please see the section specific to each level further in this PRM.

Modified Dietz Method

The Modified-Dietz Method is the single period rate of return formula that is widely used throughout the financial Industry to combine into TWRs at the Fund and Investment level. When someone refers to a "time-weighted return formula" in general terms, they are most likely referring to a linking of periodic rates of return each of which use the formula below.

$$R_p = \frac{EFV - BFV - CF}{BFV + WCF}$$

R_p = Return for the measurement period
EFV = Ending fair value of the investment
BFV = Beginning fair value of the investment
CF = Net cash flows for the period (add if net distribution)
WCF = Sum of weighted cash flows for the period

Ideally, a time-weighted return involves breaking the holding period into sub-periods bounded by each subsequent cash flow, then chain-linking the sub-period TWRs. By valuing the portfolio at the instant just prior to any cash flow, the sub-period return for the time period leading up to that cash flow occurrence can be calculated. By then re-valuing the portfolio considering the effect of such a cash flow, a new beginning

[2] Investor specific reporting considerations will be addressed in a future edition of the PRM.

value is created for computing the rate of return for the next sub-period. Since there are no cash flows within these sub-periods, the sub-period TWRs are simply (ending value — beginning value)/beginning value.

Computing a true time weighted return requires the availability of timely pricing (e.g., valuation information) when each cash flow occurs. For example, in the stock market, many participants now routinely perform such ideal TWRs by using end of day stock pricing.

However, in markets where getting pricing data can be problematic, such as with real estate, approximations may be necessary. The most popular approximation for such markets is the Modified Dietz method, a method that has its origins in an earlier place and time when, even if timely prices were available, computing power was limited. It allows the placement of sub-period boundaries at dates when valuation data will be available, (e.g., quarterly.) Within these sub-periods, if a cash flow occurs, an implicit constant rate of return before and after is effectively assumed by time-weighting the cash flows in the denominator by the fraction of the sub-period duration that the cash flows affect the portfolio. While the most commonly used sub-period is quarterly, more frequent sub-periods can be utilized.

Cumulative and Compounded Returns

Since valuations are generally performed quarterly, the standard building block for computing real estate sub-period TWRs is the quarter. Building blocks less than a quarter, (e.g., daily or monthly), can also be used assuming the valuation cycle matches the building block. In the U.S., although monthly valuations for private real estate are becoming more common, the quarter remains the most commonly used period.

Returns for periods longer than a single quarter, known as cumulative returns (not annualized), can be calculated by geometrically by linking all quarterly returns within the measurement period. This geometric linking is applied uniformly to all quarterly sub-periods within the cumulative period. If the user has adopted a partial period policy that calls for including the partial periods in the calculation, then those partial periods would need to be geometrically linked with the full quarters as well. TWRs do not require equal length sub-periods to calculate cumulative returns correctly. For more details on partial period calculations, please refer to the partial period section below. The geometrically linked calculation of TWRs results in a compounded rate of return.

R_p = $[(1 + R_1) * (1+R_2) * (1+R_3)\ldots(1+R_n)] - 1$

R_p = Return for the measurement period

$R_{1\ldots n}$ = Quarterly return for period 1 through n

In the geometrically linked cumulative return formula above, each quarterly return in the measurement period has an equal weighting. The timing of the return and the amount invested for an individual period will have no impact on the multi-period return. In other words, every period counts as much as every other period, regardless of the entity's size in a TWR.

An example of an eight-quarter cumulative return is included below. Please note that arithmetic sum of returns for this period would be 20%, (2.5% * 8), however the compounding effect introduced by geometrically linking the returns results in an additional 1.8% of return for an ending value of 21.8%.

Cumulative return example (not annualized)			
		Return	(Return) + 1
Start	Quarter 1	2.5%	1.025
	Quarter 2	2.5%	1.025
	Quarter 3	2.5%	1.025
	Quarter 4	2.5%	1.025
	Quarter 5	2.5%	1.025
	Quarter 6	2.5%	1.025
	Quarter 7	2.5%	1.025
End	Quarter 8	2.5%	1.025
	Cumulative return		21.8%

[(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)]-1 = .218 = 21.8%

Annualization

In the financial Industry, investors and advisors tend to think in terms of annual rates of return. The Industry standard is to annualize all cumulative returns that contain four or more full quarters. Cumulative returns can be annualized using the following formula:

AR_p = $[(1 + R_p)^{(365/DHP)}] - 1$

AR_p = Annualized return for the measurement period

R_p = Return for the measurement period (non-annualized)

DHP = Number of days or periods in the measurement period

NCREIF PREA Reporting Standards do not require a specific annualization methodology but do require disclosure of TWR methodology in a compliant report (PR.01.4). Currently both the NCREIF NPI and NFI fund indices use 4/number of quarters to annualize cumulative returns. In day terms, this methodology translates to 90 day quarters and 360 day years. Similarly, annualizing monthly returns can use 12/Number of months in the measurement period. The NCREIF NPI and NCREIF fund indices use 4/Number of quarters. Using number of months or quarters may give a slightly different result than if total number of days is used, but the differences are usually immaterial.

Annual returns that cover more than one year (e.g., a five-year return) represent the average annual return over the cumulative period. An example of an eight-quarter cumulative annualized return using the same 2.5% quarter return that was seen in the previous example is included below.

Cumulative return example (annualized)				
			Return	(Return) + 1
Start	1/1/2006	Quarter 1	2.5%	1.025
		Quarter 2	2.5%	1.025

Cumulative return example (annualized)				
		Quarter 3	2.5%	1.025
		Quarter 4	2.5%	1.025
		Quarter 5	2.5%	1.025
		Quarter 6	2.5%	1.025
		Quarter 7	2.5%	1.025
End	12/31/2007	Quarter 8	2.5%	1.025
# Days	730			
		Annualized cumulative return		10.4%

{[(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)*(1.025)]^(365/730)}-1 = .104 = 10.4%

Component Returns

The reporting of TWR in accordance with Volume I requires presenting both total and component returns, with component returns classified as income and appreciation (PR.01). When component returns are presented for any full individual quarter, the sum of the income return plus the appreciation return will generally equal the total return. When component returns are geometrically linked to create cumulative compounded returns, the simple addition of the cumulative compounded income return plus the cumulative compounded appreciation return will not usually equal the cumulative compounded total return. Presenting returns with each component separately linked is acceptable and appropriate industry practice.

It is noted classification of total return into income and appreciation component returns may vary in practice due to differing accounting and performance policies. As variations in accounting practices exist, the comparability of component return performance across managers with different policies may be difficult. Care should be taken when analyzing fund and investment level component TWRs. For more details, please see the *Reporting Standards Fair Value Accounting Policy Manual*.

Treatment of Partial Periods

If an investment is made on a date other than the first day of a quarter, or sold on a date other than the last, the resulting measurement period is said to be a "partial period" because the investment does not have a full quarter's worth of activity during that period.

These partial periods can potentially create distortions in the TWR calculations. Various factors play a role in the distortion including the nature of the return (e.g., single entity calculation versus group calculation), component of the return (e.g., income versus appreciation), and time-period covered (e.g., current quarter versus annualized return).

In practice, a number of different acceptable methods are used to deal with partial periods. The method chosen should be applied consistently and properly documented in the fund's performance measurement disclosures.

The three most commonly used methods are summarized below, though other methods may also be acceptable so long as they are applied consistently and do not materially misstate the return results. For a more detailed discussion of partial period methodology including examples that support the pros and cons of each method listed below, please refer to the NCREIF Discussion Paper titled *Proposed Guidance for the Calculation of Time-Weighted Returns for Partial Periods*.

- **Method I** — Start and end dates used for TWR calculations will match the start and end dates for the entity's actual life (i.e., keep partial periods).
- **Method II** — For TWR purposes, an entity will begin on the first day of the first full quarter following acquisition and end on the last day of the last full quarter prior to disposition (i.e., drop partial periods).
- **Method III** — A hybrid of Methods I and II where the start date begins on the first day of the first full quarter following acquisition and the end date matches the actual disposition date (i.e., drop acquisition partial period but keep disposition partial period).

If partial periods are kept in the calculation, then care must be taken to ensure that the number of actual days in the measurement period is used correctly in the various calculations. For example, if the acquisition partial period is kept, then the numerator of the annualization factor should be the total number of days from the actual acquisition date (not the first day in the first full period) through the end of the measurement period. The same holds true for any disposition partial period that is kept.

In addition, if partial periods are kept in the calculation, the cash flows that are used in the denominator of the investment and fund level return calculations need to be weighted by the actual number of days that were outstanding in the partial period not the normal number of days that would be available in a full period. For example, a contribution for the first acquisition in the fund that occurs on 2/15/xx would be weighted at 100% or 44/44 days (3/31 — 2/15 = 44), not 49% or 44/90 days (3/31 — 1/1 = 90). The same holds true in the disposition period.

The chart below lists some of the pros and cons of each of the three methods above when applied to a single-entity calculation. When applied to funds, acquisition means initial fund activity and disposition means final or liquidating fund activity.

	Pros	Cons
Method I – match dates for acquisition and disposition	• No adjustments to returns data is required • All since inception cumulative annualized returns for income, appreciation and total are correctly calculated	• Partial period income returns appear different from a full quarter return • If net income is not earned ratably in the acquisition period, the annualization factor may not be able to correct for the distorted acquisition period returns

	Pros	Cons
Method II – first day of full quarter at acquisition, last day of full quarter prior to disposition	• Removes appearance of skewed quarterly income returns in the partial periods	• NOI data from partial periods is not always included in performance making SI reconciliation to financials difficult. If NOI data is included in the first full period, the annualized results may be overstated. • Creates distortion in appreciation return by artificially shortening hold-period • May lead to restatement of prior quarter returns when final quarter income and appreciation is not properly accrued in the final full quarter
Method III – hybrid; first full quarter at acquisition and match date of final disposition	• Removes appearance of skewed quarterly income returns in the partial periods • Since inception cumulative annualized appreciation returns are calculated correctly	• Inconsistent treatment of acquisition and disposition partial periods • NOI data from partial periods is not always included in performance making SI reconciliation difficult. If NOI data is included in the first full period, the annualized results may be overstated.

The chart below lists some of the pros and cons of each of the three methods above when applied to a group calculation.

	Pros	Cons
Method I – match dates for acquisition and disposition	• No adjustments to returns data is required • Annualization factor corrects any distortion caused by partial periods that occur in the beginning or end of a group's life	• Partial periods that occur mid-life still distort the group returns (income, appreciation and total) • Income returns in first/last partial period still appear different from a full period calculation • If net income is not earned ratably in the acquisition period, the annualization factor may not be able to correct for the distorted acquisition period returns
Method II – first day of full quarter at acquisition, last day of full quarter prior to disposition	• Removes appearance of skewed quarterly income returns in all acquisition partial periods • Method used by NCREIF fund indices	• NOI data from partial periods is not always included in performance making SI reconciliation difficult. If NOI data is included in the first full period, the annualized results may be overstated. • Creates distortion in appreciation return by artificially shortening hold-period • May lead to restatement of prior quarter returns when final quarter income and appreciation is not properly accrued in the final full quarter

	Pros	Cons
Method III – hybrid; first full quarter at acquisition and match date of final disposition	• Removes appearance of skewed quarterly income returns in all acquisition partial periods • Since inception cumulative annualized appreciation returns are more correct than Method II • Method used by NCREIF NPI	• Inconsistent treatment of acquisition and disposition partial periods • NOI data from partial periods is not always included in performance making SI reconciliation difficult. If NOI data is included in the first full period, the annualized results may be overstated.

The treatment of partial periods by large indices may also be relevant information for users as they decide which method to apply. However, please note that the index policy may not necessarily be the best policy for the user because the sheer number of non-partial periods included in the index in any given quarter will mitigate the inclusion of a few partial periods and should make any potential distortion immaterial. Furthermore, the indices have specific inclusion requirements that may otherwise prohibit an entity from entering the index in its acquisition period further reducing the risk of distortion due to partial periods. In other words, this is one piece of information to consider when determining partial period methodology but should not be the sole determinant.

Grouping Entities

In this PRM the term "grouping" is used to describe the process of aggregating/disaggregating two or more entities (i.e., funds, investments, or properties) to evaluate performance using the time-weighted return. In this sense, the grouping guidance below can be applied very broadly to any collection of entities. Sometimes referred to as composites, grouping of entities can be done at any level (fund, investment, property) and allows the user to better understand the performance of a specific aggregation of entities outside a single portfolio return. As an example, client performance reporting often includes grouping of entities and the disaggregation of portfolios by property type and geographic region.

The mechanics for grouping are straight-forward. First, determine which entities will be included in the group. The specific, qualitative attributes utilized to determine which individual portfolios, investments, or properties are appropriate for the group being created must be pre-determined and consistent. These common attributes can be based on many different qualitative aspects including investment strategy, geography, sector, etc. Once the appropriate group of entities has been determined, the user must identify a consistent methodology to calculate returns before compiling the quarterly return numerators and denominators for all entities.

There are two main methods for aggregating entities: aggregation method and weighting method.

The aggregation method is generated by grouping together the numerators and denominators into a single portfolio before calculating performance of the entire group. The NPI Index is calculated using this methodology after considerations are taken for inclusion of individual properties as well as the treatment of partial periods.

The weighting method is built by taking the return of each constituent entity that meets the inclusion criteria, determining a weighting factor, and then aggregating the weighted returns. This can be done on either an equal-weighted basis or asset-weighted basis. Weighted returns, more closely aligned with the aggregation method, can be built utilizing a variety of valuation metrics including, but not limited to, beginning/average/ending NAV, beginning/average/ending GAV, or day-weighted equity. The equal weighted method is not typically used for reporting but can be used to remove the outsized impact of larger properties or funds.

An example of a group return containing five entities is listed below.

Group return example			
	Numerator	Denominator	Return
Property A	25	500	5.0%
Property B	100	10,500	1.0%
Property C	500	14,000	3.6%
Property D	100	5,000	2.0%
Property E	275	10,000	2.8%
Group	1,000	40,000	2.5%

Alternatively, an equal-weighted return (a return as if each entity is treated equally, regardless of size) is calculated by taking a simple average of each entity's return. In the example above, the equal-weighted return is 2.88%.

General Discussion

Considerations for which weighting factors and returns are most relevant must be made when grouping entities for return purposes. In the aggregation method, the larger an entity, the more impact it will have on the group return. Please note that the grouping described in the example above uses the entity's denominator to determine the weight that will be assigned to each entity in the group and is the most common method for grouping entities. In real estate, the denominator is traditionally a weighted-average of the entity's net asset value over the quarter and is often referred to as value-weighted or capitalization-weighted.

When building a group return, there are three main steps: 1) considerations for inclusion in the group, 2) treatment of the impact of partial periods, and 3) calculation methodology. The choices made at each of these levels should be documented and included in disclosure provided alongside the analysis. When grouping entities, returns are traditionally built on a period-by-period basis, utilizing the numerators and denominators for a single period.

Group returns for cumulative periods should be calculated by first calculating the group return for each individual quarter within the cumulative period and then geometrically linking those group quarterly returns using the same methodology described in the "Cumulative Returns" section above.

Fund Level TWR

Background

A fund level TWR is the aggregation of all investments made by the entity and the amounts earned or incurred which relate to the entity but are not specifically attributable to a specific investment. Fund level TWRs are very broad in nature and capture all activity, which includes but is not limited to, revenues and expenses applicable to the fund, taken as a whole, such as audit and appraisal fees, interest income, and portfolio borrowings. In essence, this return measures the performance of the advisor in terms of how well the management team performed its specified strategy. Fund level TWRs are usually presented on a levered basis as this coincides with the experience of a typical investor.

Before-Fee vs. After-Fee Fund Level TWR

Generally speaking, the before-fee is also known as the gross return and after-fee is also known as the net return.

For before-fee and after-fee return purposes, GIPS® only considers advisory fees, incentive fees, and carried interest (also known as "promote") when distinguishing between the two calculations and reporting to current investors and the NCREIF fund indices have followed suit. As such, fees generally do not include property management fees, construction management fees, acquisition fees, disposition fees, or any other fees or expenses that are paid to the investment advisor. If, however, these types of fees are deemed to be over-market and paid in lieu of normal advisory or incentive fees, it is acceptable to consider them to be additional advisory fees for return calculation purposes. The NCREIF position paper *Treatment of Advisory Fees* provides further clarification on acquisition and disposition transaction fees noting that these fees should not be included as advisory fees unless the fee is paid to both the advisor and a third-party (at presumed market rates). In other words, if the transaction fee is only paid to the advisor (at presumed market rates), then the portion of that fee that is considered to be at market should not be considered an advisory fee. It is up the advisor to make a determination based on the unique facts and circumstances of each transaction. NCREIF fund indices generally present TWRs gross of fees while net of fee TWRs may be presented for informational purposes and as a proxy for the average fees charged.

The formulas below define the calculation of quarterly fund level returns on a before and after-fee basis. If the advisor determines that transaction fees are indeed advisory fees, they would be included in the "AF" term in the formulas below. Volume I PR.01.1 states that fees are deducted from before-fee (gross) returns to arrive at the after-fee (net) income/appreciation. However, in practice, the calculation can start with the after-fee (net) income/appreciation and adds back fees to arrive at the before-fee (gross) income/appreciation as indicated in the calculations below.

Before-fee fund level TWR

Numerator: Net investment income (before-fee)

The net investment income numerator is the net investment income (after interest expense, advisory fees, and expensed incentive fees) that was reported by the fund during the period. Please note that net investment income rather than net operating income is used for fund and investment level returns as net investment income is more complete in scope as it contains interest expense, advisory fees, and expensed incentive fees. The net investment income should be calculated on the accrual basis of accounting in accordance with the accounting standards outlined in the *Reporting Standards Fair Value Accounting Policy Manual*. Net investment income is reported after advisory and expensed incentive fees, so those items need to be added back to the numerator to calculate a before-fee return.

Numerator: Appreciation (real estate and debt) (before-fee)

The appreciation numerator measures the change (increase or decrease) in the fund's fair value. Real estate and debt should be reported in accordance with the accounting standards outlined in the *Reporting Standards Fair Value Accounting Policy Manual* and valuation principles outlined in the *Reporting Standards Valuation Manual*. Appreciation included in the numerator should include both realized and unrealized real estate and debt appreciation (if applicable).

Generally, incentive fees and promotes (carried interest) that are earned based on changes in an investment's fair value are recorded as unrealized appreciation and impact the appreciation return, and incentive fees that result from meeting and exceeding operating result goals are expensed and impact the net investment income return.

Denominator (before-fee)

The denominator for the fund level TWR is the fund's weighted average equity over the quarter. Weighted average equity is calculated by adjusting the beginning of quarter net asset value for equity transactions (contributions and distributions) that occur during the quarter.

Each contribution or distribution that occurs during the period needs to be time weighted by multiplying it by a time weighting factor based on the date of the transaction. For return purposes: contributions include original contributions as well as reinvestments of capital; and distributions include both operating and return of capital distributions. The initial contribution is not weighted (or it can be thought of as weighted at 100%). The denominator of the time weighting factor is the actual number of days that the fund was active during the period. Usually, the denominator will equal the total number of days in the quarter, however if the transaction is either the very first or last transaction for the fund, then the denominator is adjusted to match the number of days the fund was active for the period if those partial periods are included. Please refer to the section on partial periods for more methodology detail. The numerator of the time weighting factor is the total number of days remaining in the period after the equity transaction occurs.

Contributions: Contributions in the current quarter are weighted based upon the number of days the contribution was in the fund during the quarter commencing with the day the contribution was received.

Example: Beginning Net Asset Value for 2Q 20XX $10,000,000

Contribution of $5,000,000 on 5/30/20XX

Calculation: 5,000,000*(32/91) = $1,758,241.76
Beginning NAV + Weighted Contribution = Denominator
$10,000,000 + $1,758,241.76 = $11,758,241.76

Distributions: Distributions in the current quarter are weighted based upon the number of days the distribution/withdrawal was out of the fund during the quarter commencing with the day following the date distribution/withdrawal was paid.

Example: Beginning Net Asset Value for 2Q 20XX $10,000,000
Distribution of $5,000,000 on 5/30/20XX

Calculation: 5,000,000*(31/91) = $1,703,296.70
Beginning NAV - Weighted Distribution = Denominator
$10,000,000 - $1,703,296.70 = $8,296,703.30

Note: Another factor that impacts weighted average equity is cash redemptions/withdrawals by investors, which are not cash distributions but rather an investor's removal of all or part of its equity from the fund. Such equity transactions are weighted in a manner identical to the weighting of cash distributions described above.

After-Fee Fund Level TWR

Numerator: Net Investment Income (after-fee)

The after-fee fund level net investment income numerator is the net investment income that was reported by the fund during the period. In some cases, an investment manager bills advisory fees separately and outside of the fund.

Numerator: Appreciation (after-fee)

The after-fee fund level appreciation numerator subtracts any change in capitalized incentive fee that was accrued during the quarter. Generally, incentive fees that are earned based on changes in an investment's fair value are recorded as unrealized appreciation and impact the appreciation return, and fees that result from meeting and exceeding operating result goals are expensed and impact the net investment income return. In some cases, an investment manager bills incentive fees separately and outside of the fund.

Denominator (after-fee)

Before-fee and after-fee fund level TWR denominators are the same because there is only one weighted average equity for the period. The contributions and distributions used in the denominators are most commonly after-fee and are not adjusted to be before-fee even when calculating a before-fee return.

Investment Level TWR

Background

Investment level TWRs reflect the performance of a single investment or group of investments under common ownership. Investment level TWRs differ from property level in that the full scope of the investment, including ownership level activity (use of working capital, owner expenses, etc.), is included in the calculation. The investment level TWR differs from the fund level TWR in that the fund level TWR represents the aggregation of all investments made by the entity and the amounts earned or incurred which relate to the entity but are not specifically attributable to a particular investment or group of investments such as measures of fund load (see TGER below). The investment level is often a subset of the fund level return. As such, it reflects the fund's ownership position within the investment.

Volume I is fund level standards and does not address investment level TWR. Investment level TWRs are more commonly used for multi-investment SMAs where TWR reporting is utilized for fund level reporting. For single-investment Funds which report TWR, the investment level TWR and the fund level TWR are the same.

Before-fee vs. after-fee investment level TWR

Investment level TWRs are typically reported on a before-fee basis. If after-fee investment level TWRs are reported, the method of allocation of any expenses, fees, or promote (carried interest) from the fund level to the investment level should be disclosed. It should be noted that allocation of such expenses, fees, and promote (carried interest) may be very complex and in some cases not feasible due to investment structuring.

The formulas below define the calculation of quarterly investment level return on a before and after-fee basis. Note that the formulas for investment level returns are the same formulas as the fund level returns. However, activity attributable to the investment or group of investments is used when calculating the investment level TWR.

Before-Fee Investment Level TWR

Numerator: Net investment income (before-fee)

The net investment income numerator is the net investment income (after interest expense) that was reported by or attributed to, the investment or group of investments during the period. The net investment income should be calculated on the accrual basis of accounting in accordance with the accounting standards outlined in the *Reporting Standards Fair Value Accounting Policy Manual*. (Note: If net investment income is reported after advisory and expensed incentive fees specific to the investment then those items need to be added back to the numerator to calculate a before-fee return.)

Numerator: Appreciation (real estate and debt) (before-fee)

Appreciation measures the change (increase or decrease) in investment fair value. The appreciation numerator is the appreciation reported by the investment or group of investments during the period and includes both unrealized and realized appreciation. Real estate and debt should be reported in accordance

with the accounting standards outlined in the *Reporting Standards Fair Value Accounting Policy Manual* and valuations should be completed on a quarterly basis in accordance with the valuation standards outlined in the *Reporting Standards Valuation Manual*.

Denominator (before-fee)

The denominator for the investment level TWR is the weighted average equity of the investment or group of investments over the quarter. Weighted average equity is calculated by adjusting the beginning of quarter net asset value for equity transactions (contributions and distributions) that occur during the quarter.

Each contribution (irrespective of source) or distribution that occurs during the period needs to be time weighted by multiplying it by a time weighting factor based on the date of the transaction. For return purposes, contributions include original contributions as well as reinvestments of capital and distributions include both operating and return of capital distributions. The initial contribution for the investment is not weighted (or it can be thought of as weighted at 100%). The denominator is the actual number of days that the investment was active during the period. Usually, the denominator will equal the total number of days in the quarter, however if the transaction is either the very first or last transaction for the investment, then the denominator is adjusted to match the number of days the investment was active for the period. The numerator is the total number of days remaining in the period after the equity transaction occurs.

Contributions: Contributions in the current quarter are weighted based upon the number of days the contribution was in the investment or group of investments during the quarter commencing with the day the contribution was received.

Example: Beginning Net Asset Value for 2Q 20XX $10,000,000
Contribution of $5,000,000 on 5/30/20XX

Calculation: 5,000,000*(32/91) = $1,758,241.76
Beginning NAV + Weighted Contribution = Denominator
$10,000,000 + $1,758,241.76 = $11,758,241.76

Distributions: Distributions in the current quarter are weighted based upon the number of days the distribution/withdrawal was out of the investment or group of investments during the quarter commencing with the day following the date distribution/withdrawal was paid.

Example: Beginning Net Asset Value for 2Q 20XX $10,000,000
Distribution of $5,000,000 on 5/30/20XX

Calculation: 5,000,000*(31/91) = $1,703,296.70
Beginning NAV - Weighted Distribution = Denominator
$10,000,000 - $1,703,296.70 = $8,296,703.30

After-Fee Investment Level TWR

As noted above, investment level TWRs are typically reported on a before-fee basis. If after-fee TWRs are reported, the method of allocation of any expenses, fees or promote (carried interest) from the fund level to

the investment level should be disclosed. It should be noted that allocation of such expenses, fees and promote (carried interest) may be very complex and in some cases not feasible due to investment structuring.

Numerator: Net investment income (after-fee)

The after- fee investment level net investment income numerator is the net investment income (after interest expense, advisory fees, and expensed incentive fees) that was reported by or attributed to the investment or group of investments during the period.

Numerator: Appreciation (after-fee)

The after-fee investment level appreciation numerator subtracts any change in capitalized incentive fee and promote (carried interest) that was accrued during the period. Generally, incentive fees that are earned based on changes in an investment's fair value are recorded as unrealized appreciation and impact the appreciation return, and fees that result from meeting and exceeding operating result goals are expensed and impact the net investment income return.

Denominator (after-fee)

Before-fee and after-fee investment level TWR denominators are the same because there is only one weighted average equity for the period. Traditionally, the denominator is based on net asset value as of the most recent period end. The contributions and distributions used in the denominators are most commonly after-fee and are not adjusted to be before-fee even when calculating a before-fee return.

Property Level TWRs

Background

Property level TWRs reflect the performance of an operating property or group of properties (portfolio). The property level relates strictly to property operations before structuring, and fund fees and costs including advisory fees, use of working capital, and owner income and expenses. As such, property level TWRs do not represent investors' earnings from those properties, even in single property funds, but rather the earnings (in the form of appreciation and operating income) that are generated by the property. Accordingly, property level returns are reported on a leveraged or unleveraged basis and not before and after-fees like fund level and investment level TWRs are reported. It is noted that the property level formulas are a slight, further approximation of Modified Dietz methodology wherein, rather than time-tagging the cash flows to the nearest day, contributions (for capital improvements) are assumed to always be made mid-quarter and distributions (of NOI) are assumed to be made monthly.

The NPI is a property level TWR index.

Leveraged vs. unleveraged property level TWR

Property level TWRs can be calculated on a leveraged or unleveraged basis. The NPI is unleveraged but queries can be made to generate a leveraged property level TWR.

Unleveraged property level TWR

For comparative purposes, property level TWRs are usually reported on an unleveraged basis because not all properties are leveraged and those that are, are leveraged at varying levels.

Numerator: Net operating income (unleveraged)

The net operating income (NOI) numerator is the net operating income (before interest expenses) that was reported by the property during the period. The NOI should be calculated on the accrual basis of accounting in accordance with the property level accounting standards explained in the Reporting Standards Fair Value Accounting Policy Manual.

Numerator: Appreciation (unleveraged)

The appreciation numerator measures the change in property fair value (increase or decrease) and includes unrealized as well as realized appreciation.

Denominator (unleveraged)

The denominator of the unleveraged property return is an estimate of the average gross capital invested in the property over the quarter. This is calculated by adjusting the beginning real estate value of the property for real estate related items that would partially pay back, or add to, that initial investment.

Capital improvements represent an addition to the capital invested in the property and so it is appropriate that they be added to the beginning fair value in the denominator. Since an average investment over the quarter is being calculated, the capital improvements need to be weighted to reflect the actual amount of time that they were 'invested' during the period. The most precise way to do this would be to time weight each individual capital expenditure based on the number of days that it was in service during the quarter. This could be impractical however, so it can be assumed that all capital expenditures were added at mid-period and, hence, weighted at 1/2.

The same logic applies for partial sales. Partial sales refer to the disposition of less than 100% of the property. For example, an out lot for a retail property or a single building in an industrial complex can be sold piecemeal, before the entire property is disposed. Partial sales represent a mid-period, partial repayment of the gross investment capital deployed at the beginning of the quarter. Rather than try to account for the exact day of any such partial sale(s), all partial sales may be assumed to occur at mid period and are therefore subtracted from the denominator with a weighting of 1/2.

Net operating income is subtracted from the denominator based on the assumption that the (gross) capital employed should be reduced by any withdrawals of income. The 1/3 weighting is assigned because it is assumed that income is distributed evenly at the end of each month. The math is as follows:

- 1/3 of the income is distributed at the end of Month 1 and is outstanding for 2/3 of the quarter.
- 1/3 of the income is distributed at the end of Month 2 and is outstanding for 1/3 of the quarter.
- 1/3 of the income is distributed at the end of Month 3 and is outstanding for 0/3 of the quarter.

- (1/3 * 2/3) + (1/3 * 1/3) + (1/3 * 0/3) = 1/3.

Leveraged property level TWR

The leveraged property level TWR includes the return for both debt and equity financing sources.

All of the leveraged formulas listed above begin with the unleveraged formulas and layer in data elements to account for the debt.

Numerator: Net operating income (leveraged)

The net operating income return numerator begins with NOI and subtracts debt service interest expense.

Numerator: Appreciation (leveraged)

The leveraged appreciation formula begins with the real estate appreciation calculation and adds a debt appreciation calculation to arrive at total appreciation (real estate + debt).

Denominator (leveraged)

The denominator for the leveraged property level TWRs is the property's weighted average equity over the quarter. Since property level returns focus on property operations and ignore the use of working capital, the measure of property value is defined as average real estate value less average debt value adjusted for cash flow items that affect the real estate and debt.

For the debt items, new debt loan proceeds and additional principal debt payments (i.e., balloon payments, debt pay-offs and other non-scheduled debt payments) are assumed to occur mid-period following the same logic employed for capital expenditures and partial sales, so they are weighted at 1/2. New loan proceeds are subtracted because they result in an increase to the beginning debt value and debt payments are added because they result in a decrease to the beginning balance. Another way of looking at it is that new loan proceeds result in a cash inflow to the property which is then distributed and therefore a reduction of equity. Debt payments are funded by contributions and therefore result in an increase of equity.

Regularly scheduled principal payments are added back at 1/3 based on the assumption that the principal payments are made evenly at the beginning of each month and the assumed contribution is received at the end of each month. The math is the same as the 1/3 used for the NOI deduction.

- 1/3 of the principal is paid at the beginning of Month 1 and is outstanding for 2/3 of the quarter.
- 1/3 of the principal is paid at the beginning of Month 2 and is outstanding for 1/3 of the quarter.
- 1/3 of the principal is paid at the end of Month 3 and is outstanding for 0/3 of the quarter.
- (1/3 * 2/3) + (1/3 * 1/3) + (1/3 * 0/3) = 1/3.

Alternative Component TWR Calculations

Background

In this section, three different types of component calculations which are meant to be alternatives to the traditional income and appreciation splits that are commonly used in our Industry, are described. They are:

- Disaggregated income return
- Distribution and price change return
- Cash flow and price change return

One of the criticisms of the traditional accrual-based income TWR is that it does not provide enough information about the cash that is actually generated, so these metrics attempt to provide that missing detail. All three of these alternatives are similar in that they provide the user with a sense of how the cash flow and/or distributions of the investment are impacting total returns.

Please note that all metrics described below are expected to be used in conjunction with the traditional TWRs as supplemental information, and not meant to be a replacement for those measures.

Note that these alternative component TWRs are not included in Volume I and are not captured within the NCREIF fund or property indices.

Disaggregated Income Returns

General

Distributed and retained income returns refer to the division of fund level time-weighted income returns into two separate components. The dividend policy of the fund should be considered when calculating and interpreting the results of the return metrics below as each can be materially impacted. Please note that the aggregate dollar amount of distributed income plus retained income will equal the total income TWR at the fund level.

Distributed income return

Distributed income is defined as the amount of investment income derived from operations that is 1) actually distributed to investors or 2) credited to investors in the case of fund dividend or income reinvestment programs that are elected by the investor. (Mandatory reinvestment programs or automatic cash retention programs are not considered elective by the investor). Distributed income does not include the return of capital or principal, the distribution of realized gains from asset sales (capital gains) nor proceeds from financing activities. The objective is to present the actual cash distributions that are derived from customary and ongoing investment management operations without the distortions related to disposition and refinancing activities.

The distributed income formula is defined below:

$$\frac{\text{Distributed Income}}{\text{Weighted Average Equity}}$$

Weighted average equity is defined in the Time-Weighted Return Overview above on pages 34-35 and 37-38.

Retained income return

Retained income portion of the income return is considered materially different (in economic terms) from the distributed income portion. Retained income simply refers to the income that is earned by the entity that is not distributed. Retained income can be used in various strategic ways to manage the real estate portfolio, including but not limited to, debt repayment, acquisition of assets, and capital expenditures on existing assets.

The retained income formula is defined below:

$$\frac{\text{Retained Income}}{\text{Weighted Average Equity}}$$

Weighted average equity is defined in the Time-Weighted Return Overview above on pages 34-35 and 37-38.

Distribution and Price Change Returns – Fund Level/Investment Level/Investor Level

General

TWR indices that are used in most asset classes outside of institutional private real estate break the total time weighted return into two components; 1) dividends distributed to the investor (i.e., Distribution Return) and 2) change in market price at which the investor can buy and sell the security (i.e., Price Change Return). The sum of the Distribution Return and the Price Change Return will equal the Total Return. This method of segmenting the total return is useful in these asset classes as it provides information on the return from passive investing (i.e., dividends) versus the active investor decision on when to buy/sell the security (i.e., price change). Some of the most well-known market indices, including the S&P 500 and Dow Jones Industrial Indices actually ignore the dividend component all together and focus solely on the market price change. Other indices, including the FTSE-NAREIT indices publish total returns with both dividend yield and price change components.

The component returns used in our Industry have always been slightly different from the concepts listed above. Instead of a Distribution Return, we calculate an income return which is based on accrual basis net income earned, not cash that is actually distributed. In addition, our appreciation return is based on value change net of capital expenditures, rather than the pure market price change concept that is found in the Price Change Return.

The income and appreciation definitions that we have traditionally used serve us well and make sense conceptually when applied to a property level calculation. The split gives the user important information on the component of the return where the owner/adviser has less control (appreciation) versus the component

which can be more actively managed (income). For investment level returns however, the income and appreciation components may be less theoretically supported and there are some that would argue that the Distribution and Price Change Return components that are used prevalently in other asset classes may be more appropriate or at the very least can provide useful supplemental information.

Distribution return – Investment/Fund Level

The Distribution Return shows the amount of actual cash that is distributed to investors as a portion of weighted average equity for any given quarter. The return is meant to provide investors with a true cash basis performance measure which supplements what is currently lacking in the existing income and total return measures. This return is thought to be more comparable to the income return and/or divided yield that is reported in other asset classes than the existing income return is.

The distribution formula is as follows:

$$\frac{\text{LP Distributions of Net of Fees}}{\text{LP Weighted Average Equity}}$$

The distribution net of fees in the formula above is defined as a distribution to the limited partners that is pro-rata to the whole class of investors (excludes redemptions). This includes any distributions that are reinvested. Distributions should include the limited partner level distributions and ownership share only. Fees that are actually paid in the current period should be deducted from distributions whether those fees are withheld from the actual distributions or paid via an investor contribution.

Weighted average equity is defined in the Time-Weighted Return Overview above on pages 34-35 and 37-38.

Distribution return-investor level

The Distribution Return can be calculated before or after the impact of withholding taxes that must be paid by the investor. When reporting the Distribution Return managers should consider several points to determine how to treat withholding taxes, (i) the treatment of withholding taxes for any benchmark included in the report, (ii) investor preference in reporting or stipulated in the investment documents, and (iii) any regulatory requirements governing reporting. Regardless of how the withholding taxes are treated in the calculation, the investment manager should disclose the treatment of withholding taxes in the metrics presented. Note that for marketing purposes the GIPS® standards do not require managers to include the impact of withholding taxes on foreign investors investing in a fund that is in the same domicile as the investment manager.

Price change return –Fund Level

The Price Change Return is meant to measure the change in NAV that is not attributable to investor equity transactions (contributions, distributions, or redemptions) as a portion of weighted average equity for any given quarter. The formula is as follows:

The price change return formula is as follows:

$$\frac{\text{LP NAV}^1 \text{ ex distribution} - \text{LP NAV}^0 \text{ ex previous quarter distribution} + \text{LP redemptions} - \text{LP Contributions}}{\text{LP Weighted Average Equity}}$$

The LP NAV (Net Asset Value) in the formula above is defined as all LP assets less all liabilities reflected on a market value basis. It is assumed that these amounts should be taken directly from the fund's audited financial statements which are reported on a fair market value basis of accounting in accordance with the Volume I.

Redemptions are defined as a distribution that is not pro-rata to the whole class of investors as opposed to operating distributions. Weighted average equity is defined in the Time-Weighted Return Overview above on pages 34-35 and 37-38.

Cash Flow and Price Change Return – Property Level

Cash flow return

The Cash Flow Return shows the amount of cash from a property that is assumed to be distributed to investors as a portion of weighted average equity for any given quarter. Cash is "assumed" to be distributed because at the property level property level cash flow (net operating income less capital improvements) is used as a surrogate for actual distributions since actual distributions are not tracked as part of the property level TWR formula. This return is meant to provide investors with an estimate of cash basis performance which supplements what is currently lacking in the existing property level income and total return measures. The cash flow return is comparable to the dividend yield that is reported in other asset classes.

To calculate the cash flow return, the user needs to only make a very simple change to the existing property level income return formula. Current quarter capital improvements should be subtracted from the income return numerator instead of the appreciation return numerator, resulting in a cash flow return (and conversely the appreciation return will become a price change return). The unleveraged formula is as follows:

$$\frac{NOI}{FV_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI)}$$

NOI = Net operating income (before interest expense)
FV_{t-1} = Fair value of property at beginning of period
CI = Capital improvements
PSP = Net sales proceeds for partial sales

Price Change Return – (Property Level)

The Price Change Return is meant to measure the change in NAV that is not attributable to investor equity transactions (contributions, distributions, or redemptions) as a portion of weighted average equity for any given quarter. The formula is as follows:

$$(FV_t - FV_{t-1}) + PSP$$

$$FV_{t-1} + (1/2)(CI - PSP) - (1/3)(NOI)$$

NOI = Net operating income (before interest expense)

FVt = Fair value of property at end of period

FV_{t-1} = Fair value of property at beginning of period

CI = Capital improvements

PSP = Net sales proceeds for partial sales

For more information on the Cash Flow and Price change returns, please refer to the academic articles that were authored by Young, Geltner, McIntosh, and Poutasse in 1995 and 1996.[3]

[3] M. Young, D. Geltner, W. McIntosh, and D. Poutasse "Defining Commercial Property Income and Appreciation Returns for Comparability to Stock Marked-Based Measures" Real Estate Finance Vol. 12, No. 2, Summer 1995, pp. 19-30

SECTION 2.02 – INTERNAL RATE OF RETURN – BACKGROUND AND DISCUSSION

Link to Formulas

Overview

The Internal Rate of Return ("IRR") is perhaps the most widely accepted performance measure relied on for strategic decision making for closed-end funds, whether it is being reported for the fund's portfolio or for the investors, (in either case over a relevant holding period(s)).

The internal rate of return (IRR) is the annualized implied discount rate that equates the present value of entity cash inflows to the sum of the present value of all entity cash outflows plus the present value of unrealized assets still held in the portfolio. Said differently, the rate of return that equates the present value of contributions to the present value of realized and unrealized distributions. IRRs are commonly used in the investment Industry to measure the performance of the entity (contrasted with TWRs which are used to measure performance of the investment manager).

The IRR is:

- A type of "money-weighted" return - an IRR "follows the money" meaning the timing of the entity's cash flows do impact the IRR formula unlike with a TWR.
- The rate of return that results in a net present value of zero.

This method of return presentation is traditionally utilized to represent performance when the manager controls the timing of cash flows. In this structure, the investor cannot unilaterally exit the fund such as in a closed-end fund with non-transferable shares or units.

Solution by Financial Calculator

General

An IRR is generated utilizing a "guess and check" method. Numerical iterations can easily become cumbersome and inefficient. Therefore, using a financial calculator can simplify this process. Microsoft Excel contains two functions that can be used for this calculation: the IRR function ("=IRR") and the XIRR function ("=XIRR"). Both functions produce an IRR result, however they use slightly different calculation methodologies and assumptions, so the user needs to determine which function to use to best meet its needs. Below is a comparison of these functions:

Excel IRR function

- User inputs a series of cash flows which are assumed to occur at equal intervals (i.e., quarterly or annual).
- If a period's cash flow is zero, you must enter a zero, as a blank will result in a wrong answer.
- Does not annualize the result.
- The result of the "=IRR" calculation will be a rate "per period" regardless of whether these periods are days, months or years. If the holding period is greater than one year, then the result should be annualized as follows:
    - If quarterly cash flow: (1+IRR)^4-1
    - If monthly cash flow: (1+IRR)^12-1
    - If daily cash flow: (1+IRR)^365-1

Excel XIRR function

- User inputs multiple cash flows along with the date that each cash flow occurs.
- The periodicity of the cash flows is daily (no need to have a place holder for each day).
- Annualizes result.
- No user adjustment needed if the holding period is greater than one year. If the holding period is less than one year, then the result must be de-annualized using the formula: (1 + Rate%)^(# days/365) - 1

In certain cases, the IRR may not be able to be mathematically calculated which results in an error message displayed as "#NUM!" or "#DIV/0" by Microsoft Excel. If this occurs, the result should be shown as "n/a" and a footnote added to explain the invalid result. This is due to there being two mathematically relevant results. Often this happens when the calculated IRR is negative and changing the 'guess' within the formula to a negative value will allow for a numerical result.

The cash flows used in the IRR calculation will vary depending on the level of return that one is calculating but should be aggregated quarterly at a minimum.

After-Fee IRR – General

All IRRs mentioned below can be calculated either before or after-fees by appropriately incorporating the applicable fee items during the actual period in which the fees occur. A word of caution concerning the reporting of after-fee IRRs outside of the fund level: as fee structures become increasingly complex, a methodology for apportioning the fees to individual investments in a multi-investment fund needs to be established and documented when after-fee IRRs are reported. Although mathematically an after-fee IRR can be calculated at a property level, they generally are not because property level information is calculated at 100% ownership of an asset (and as such will not include items of structuring including but not limited to joint venture interests).

When calculating an after-fee IRR, the most precise way to incorporate fees is to use the actual fee payment date (however if advisory fees are paid on a regular basis (i.e., quarterly), using the date that the fee is accrued is also acceptable if it does not result in a material difference in the IRR calculation). The cash payment date should always be used for incentive fees as they are generally material. The method used to

account for fees (cash or accrual) should be disclosed. The GIPS® standards specifically discourage the practice of simply subtracting the cumulative fees paid from the ending residual value as this treatment delays recognition of the management fees and artificially increase the rate of return.[4]

Fund Level IRR

Background

IRRs are generally regarded as a good measure of fund performance when the investment manager has control over the cash flows (i.e., the investor cannot unilaterally exit the fund), since the timing and amount of those flows impact the IRR calculation. In the real estate Industry this is most typically seen in closed-end funds and discretionary SMAs. Accordingly, Volume I requires the reporting of IRR for closed-end funds and recommends reporting of IRR for SMAs (which can be discretionary or non-discretionary) (PR.06). The NFI-CEVA product presents IRR information. IRRs are not presented or calculated for the other NCREIF fund indices or the NPI. Fund level IRRs are used within marketing materials and are calculated using contributions and distributions from investors (including the General Partner in some cases).

Gross and Net Fund Level IRR

Even though investors often request both gross and net fund level IRRs, there are often differences in how firms are reporting these two metrics. As noted in the *Reporting Standards: Gross and Net IRR: Adding transparency and comparability to closed-end fund performance an investor specific reporting*[5], reporting can be completed at various "levels" and therefore could be utilized for distinct reporting purposes.

A summary of the levels (i.e., hierarchy) is presented below.

Fund Level Reporting Hierarchy

Level 1: Gross IRR before investment management fees and fund costs. Level 1 should be presented net of transaction related costs (other than transaction costs deemed to be transaction fees) and deal level expenses.

- The level 1 IRR can be calculated using two methods:
    - Level 1a – IRR reflects cash flows between a fund and its investments. As such the IRR start date will include any subscription lines drawn.
    - Level 1b – IRR reflects cash flows between investors and the fund.

Level 2: Fund Gross IRR after deduction for fund costs but before deduction of recurring, transactional and performance-based investment manager fees and promotes (carried interest).

[4] CFA Institute. (2006) *Global Investment Performance Standards Handbook (second Edition).*
[5] NCREIF PREA Reporting Standards: August 23, 2019

Level 3: Level 2 less ongoing and transactional investment management fees[6].

Level 4: Level 3 less performance-based investment management fees and promotes (carried interest). This level represents the return of the LPs not the LPs and the GPs and therefore should exclude the GP[7]. Level 4 is the fund level Net IRR.

Investor Specific Reporting Hierarchy

Level 5: Individual Limited Partner specific reporting which captures the experience of a single investor, including all investor specific timing, fees, and costs. (Requirement)

Relationship to Total Global Expense Ratio (TGER)

Irrespective of whether Levels 1a or 1b are utilized as a measure of IRR, Levels 2 through 5 consider the same elements of fees and costs which are considered for calculating the Total Global Expense Ratio (TGER)[8]. Therefore, the fees and costs included in TGER were mapped to the hierarchy. The associated definitions for terms included in each TGER category can be found in the Global Definitions Database.

TGER Fee Categories compared to Gross and Net IRR Levels

TGER Category	TGER Inclusion	Mapping to Gross and Net IRR paper
Property related fees	Excluded	Deducted in Level 1
Property related costs	Excluded	Deducted in Level 1
Vehicle related costs	Included	Deducted in Level 2
Ongoing Management fees	Included	Deducted in Level 3
Transaction-based management fees	Included	Deducted in Level 3
Performance fees[9]	Included	Deducted in Level 4

Please refer to the TGER discussion below.

[6] Determination of whether a transaction related charge is a transaction cost (included in level 1) or a transaction fee (included in level 3) should be treated consistently with the framework provided in the Total Global Expense Ratio (TGER).

[7] Note that in cases where the General Partner invests all or a portion of its interest in the fund pari passu to the limited partners, that portion which is pari passu is included in the limited partner amount. By deducting the non-pari passu GP interests between level 3 and level 4, the level 4 IRR should reflect the LP IRR excluding the GP entity, or portion of the GP entity, that receives incentive fee/carried interest economics. To the extent the carried interest portion of the GP cannot be separated from the pari passu GP interests, the deduction of the entire entity would be appropriate (to reflect the net LP IRR) but should be disclosed for consistency.

[8] Note that TGER is an annual measure where IRR considers TGER elements over the entire period of the IRR calculation. Therefore, the amounts may not be the same.

[9] In the context of the TGER paper, Performance Fees includes fund carried interest which may not be a "fee" for financial reporting purposes but generally serves to compensate the manager for performance over a threshold.

Investment Level IRR

Background

Investment level IRRs provide information on the contribution of performance of a single investment to the performance of the fund taken as a whole. An investment can include a single property or multiple properties as well as have multiple ownership structures. Club deals, joint ventures, wholly owned portfolios, and individual properties could all be considered investments. Returns for the investment level should include the impact of structural decisions and fees.

For funds with a single investment, the investment level IRR is similar to the fund level IRR. For funds with multiple investments, the manager determines the amount and extent that fund level fees and costs are attributed to (or allocated to) each investment. The methodology for allocation of fees and costs to the investment should be disclosed when investment level after-fee IRRs are reported. As inconsistent practices exist within the Industry, it is important to disclose the methodology for any apportionment of fund fees and costs when reporting investment level IRRs after-fees.

Property Level IRR

Background

Property level IRRs provide a measure of performance of an asset without regard to investment structuring (i.e., Investment level IRRs). As such, one can compare Property level and Investment level IRRs to determine how much structure was accretive or decretive to investment performance.

At the property level, the inputs for the IRR formula are based on property cash flows to/from the fund itself. Property level IRRs can be calculated on a leveraged or unleveraged basis.

Unleveraged property level IRR

The initial cash flow for the unleveraged IRR calculation is the total amount that is paid for the acquisition (before debt is considered) which should include the property's purchase price plus acquisition costs.

Other cash flows over the life of the property include the property's net operating income (before interest expense) reduced by the amount of capital improvements on a monthly or quarterly basis. Net operating income is depicted as a positive cash flow while net operating loss and capital improvements are shown as negative cash flows in the calculation.

The ending cash flow is the property's final real estate sale proceeds (before debt payoff) if the property has been sold. If the property has not yet been liquidated, the ending cash flow will consist of the latest period's operating cash flows plus an estimate of the residual real estate value (fair value of real estate less estimated costs to sell).

Leveraged property level IRR

The initial cash flow is the property's purchase price, less initial debt balance (equity investment only).

Other cash flows over the life of the property include the property's net operating income reduced by the amounts of capital improvements and debt service payments (principal and interest). Net income is depicted as a positive cash flow while net loss, capital improvements, and debt service payments (principal and interest) are shown as negative cash flows in the calculation. In addition, new debt placed on a property after acquisition is treated as a positive cash flow in the calculation.

The ending cash flow is the property's final real estate sale proceeds after the debt payoff amount if the property has been sold. If the property has not yet been liquidated, the ending cash flow, will consist of the latest period's operating cash flows plus an estimate of the net residual value. This estimate of net residual value must include the fair value of real estate less the impact of debt at the property level. The method for including debt (i.e., fair value or cost) and the inclusion or exclusion of estimated sales costs should be consistent across time and disclosed.

SECTION 2.03 – EQUITY MULTIPLES – BACKGROUND AND DISCUSSION

Link to Formulas

Section 1.03 – Equity Multiples

Overview

Multiples are relevant measures for fund level reporting within closed-end funds and are shown as ratios, with one financial input in the numerator and another in the denominator. Both the numerator and denominator are typically presented since inception of the entity rather than a discrete time period (month, quarter, etc.). Multiples can be presented independently but are commonly reported alongside IRRs. As a result, multiples are relevant measures for fund level reporting within closed-end funds. In addition, and as described below, investment level and property level multiples, when used in conjunction with IRR reporting, provide greater transparency when analyzing performance.

It is important to understand that the formula for each multiple is the same at the fund, investment, and property level. However, unlike the fund level where data such as capital flows to and from investors, uncalled recallable vs. non-recallable capital, aggregate fund values, and aggregate fees are known, the investment level multiples and the property level multiples may include certain assumptions. The extent of the assumptions necessary can depend on a number of factors including but not limited to: the availability of information (which may be limited by contract or systems) and choice of accounting policies. Therefore, the nature and utilization of estimates should be clearly disclosed when investment level and property level multiples are reported and used for analysis; otherwise, comparability will be compromised.

Investment multiples use a consistent grouping of fund metrics to create a better understanding of capital generated through an investment vehicle. These metrics are defined as follows:

Committed Capital (CC)

- Fund Level: Cumulative fund PIC plus unfunded capital commitments.
- Investment Level: Cumulative investment PIC plus unfunded capital earmarked to the investment.
- Property Level: Cumulative property PIC plus unfunded commitments from all owners (e.g., budgeted construction costs or renovation reserves).

Total Value (TV)

- Fund (or SMA) Level: Sum of residual fund net assets (NAV) plus aggregate fund distributions to investors since inception.
- Investment Level: Sum of residual investment net assets (NAV) plus aggregate distributions to investors / the fund / SMA which were attributed to the investment.

- Property Level: Sum of property fair value (net of debt) plus aggregate distributions paid since inception (note: if actual property distributions are not separately maintained, estimates can be calculated by aggregating the property's net operating income (after interest expense on any debt) and subtracting principal).

Residual Value (RV)

- Fund Level: Net asset value (NAV) of the fund
- Investment Level: Net asset value (NAV) of the investment
- Property Level: Net asset value (NAV) of the property

Total Distributions (D)

- Fund Level: Aggregate fund distributions paid to investors since inception
- Investment Level: Aggregate investment distributions paid to the fund since inception
- Property Level: Aggregate property distributions paid since inception
    - Note: if actual property distributions are not separately maintained, estimates can be calculated by aggregating the property's net operating income (after interest expense) and subtracting principal payments. This presumes a contribution was made for all capital expenditure that would reduce the distributable proceeds potentially

Note that capital contributed to the investment includes both capital from investors as well as any portfolio level financings attributed to the investment. When reported in that fashion, the TV numerator will also be increased by an equal amount.

Presented below as investment level and property level multiples are those which can be calculated when cash flows can be allocated to specific investments or properties. Suggestions for proxies for property level cash flows are provided. Future updates to the PRM will consider guidance relating to proxies for investment level multiples.

The four commonly used multiples are presented below.

Commonly Used Multiples

Investment Multiple or Total Value to Paid-In Capital Multiple (TVPI)

This investment multiple gives users information regarding the value of the entity relative to its cost basis, not taking into consideration the time invested. It is equal to the sum of the total distributions since inception and the residual value divided by the total paid in capital since inception. As an example, a fund level TVPI multiple equal to 1.50 is typically indicates that the investors have $1.50 of value in the fund for every $1 invested. In addition, assuming a joint venture interest (investment level) in a property (100% of property is reported at property level) with an investment level TVPI of 1.25 and a property level TVPI of 1.5, indicates that some of the profit on the 100% property was given up through waterfalls at the investment level.

Realization Multiple or Cumulative Distributions to Paid-In Capital Multiple (DPI)

The fund level DPI measures what portion of the contributed capital has been returned to the investors in the form of distributions. The DPI will be zero until distributions are made. As the fund matures, typically the DPI will increase. When the DPI is the equivalent of one, the fund has broken even. Consequently, a DPI of greater than one suggests the fund has generated profit to the investors. The investment level DPI provides the same type of information from the perspective of the fund's investment. Comparing the property level DPI to the investment level one can provide the level of realized return at the property level versus the investment level, again reflecting the waterfall effects at the investment level.

Paid-In Capital Multiple or Paid-In Capital to Committed Capital Multiple (PIC)

At the fund level, this ratio gives information regarding how much of the total commitments have been drawn down.

The paid in capital is the cumulative drawdown amount, or the aggregate amount of committed capital actually transferred to a fund by investors or by a fund to an investment. For a fund level PIC, typically a number such as .80 is read as 80% of the fund's capital commitments have been drawn from investors. At the property level, for construction projects, this multiple can be used to track actual costs versus the project's budgeted construction capital. This can track how well the project is tracking its budget on construction costs.

Residual Multiple or Residual Value to Paid-In Capital Multiple (RVPI)

This ratio provides a measure of how much of the return is unrealized. As the fund matures, the fund level RVPI will increase to a peak and then decrease as the fund eventually liquidates to a residual fair value of zero. At that point, the entire return of the fund has been distributed.

Residual value is defined as remaining equity in the fund or investment. At the fund level, an RVPI of .70 would indicate an amount equal to 70% of the fund's paid-in capital remains unrealized. The property and investment levels would show similarly and is most relevant to construction projects and budgets.

Before-Fee vs. After-Fee Multiples

After-Fee Multiples

Fund level multiples are always presumed to be shown after all fees and carried interest unless stated otherwise. This includes acquisition, investment management, disposition, incentive fees, and carried interest/promotes. In addition, fees and carried interest paid both within and outside the fund are included in the fee definition for multiple purposes.

Fees may reduce future distributions or increase the amount of capital called in a given notice and the method will impact the presentation of an equity multiple. The two most common are 1) the investment advisor will pay themselves via a withholding from a client distribution, or 2) the investor will pay the investment advisor via a capital contribution. Since equity multiples are ratios, the placement of the fee

within the calculation can greatly impact the result particularly early in the life of a fund. For example, the payment of a large incentive fee by a fund can potentially yield vastly different results in the DPI if it is subtracted from the distributions in the numerator versus if it is added to the contributions in the denominator.

The placement of the fees in the equity multiple calculations must follow the actual fee payment method used by the entity for which the calculation was made. A fund that pays fees via method #1 above must subtract those fees from the distribution term in all of the multiple calculations. Likewise, a fund that pays fees via method #2 must add those fees to the contribution term in all of the multiple calculations.

Before-Fee Multiples

Property level multiples are generally reported before fees and carried interest. Investment level multiples can be calculated both before and after fees and carried interest, provided that actual fees and carried interest can be attributed to the investment in a consistent manner. Before fee investment multiples can be challenging to calculate for funds or SMAs which include multiple investments and complicated fee structures as there is a need to unwind fees from the capital calls and distributions. Disclosures of methodology should be provided when this information is reported.

Before fee multiples are used in analysis. In order to calculate before fee fund level multiples, the after-fee ratios need to be adjusted. Distributions must be increased for cumulative fees which were withheld from prior distributions, or capital contributions must be reduced for cumulative fees contributed. The adjustment for fees should follow how fees were actually paid or accrued in the case of unrealized investments; some fees may be paid with distribution (i.e., performance fees or promotes) while others are paid by contributions (i.e., management fees). In addition, the NAV used as the residual value must also be increased for any accrued fee liabilities.

Reinvested Distributions

Some real estate funds may have distribution reinvestment plans (DRIPs) in which a distribution is declared but the cash from the distribution is reinvested automatically in the Fund rather than being paid out to the investor. For equity multiple calculation purposes, the DRIP distributions are to be included as both a distribution and contribution in the calculations even though the investor never has access to the cash.

The underlying economics of the transaction represent a distribution from the fund to the investor and a decision by the investor to contribute back into the fund and should be treated as such in the fund level multiple calculations. The fact that the investor and fund agreed that the contribution would be made automatically which eliminated the back-and-forth flow of cash is merely an efficiency in the process and does not change the fact that both a distribution and contribution occurred.

Recallable / Recycled Capital

Through the standard course of investment in a closed-end fund, investment managers have the opportunity to receive distributions from investments during the reinvestment period. If allowed within the fund documents, the investment manager can call this distributed capital down a second time for further use. This

is considered recycled or reinvested because it was contributed a first time, sent from the investment back to the fund, and then potentially used towards a second investment.

Accounting for recallable capital within reported equity multiples requires additional consideration as to how the re-contribution is handled from an accounting perspective. While recycling capital includes a recontribution of capital, there are times where the capital never leaves the fund before it is contributed to a new investment. Investment managers must choose how to present the equity multiple as the total contribution of capital will not be picked up from an investor perspective if the recallable capital is not distributed back to investors before being called back. The most conservative approach would be to consider any re-contributed capital as a new part of the denominator as this would be a "dollar being used again." This can be challenging depending on how the accounting relating to the recalled capital is done; if the capital never leaves the fund there may need to be an outside adjustment to be able to accurately reflect the contribution when it is recalled.

SECTION 2.04 – TOTAL GLOBAL EXPENSES RATIO – BACKGROUND AND DISCUSSION

Link to Formulas

Summary

TGER is principles-based measure which was developed to facilitate comparison of fees and costs between real estate investment vehicles that operate across different regions of the globe. The fees and costs included in TGER are all components of the investment vehicle load. As such, TGER is a measure of the fund's load. TGER was developed in collaboration with INREV, ANREV, and the Reporting Standards.

Although rooted in authoritative guidance and industry standards, it is not meant to be prescriptive thus diversity in practice may occur as with application of any principles-based guidance. TGER is a stand-alone metric and does not conflict with other Industry standards that include fee and expense information such as Related Party disclosures required by GAAP (see the *Reporting Standards Fair Value Accounting Policy Manual*.)

For fiscal years beginning on or after December 15, 2019, TGER is a required element in Volume I for all open-end funds and for closed-end funds which launched in 2020 or after (PR.23). TGER is required to be reported annually and for a 12-month rolling period. (A prior year comparison of fees and costs can be reported quarterly.) For closed-end funds, TGER is best looked at over a time horizon and accordingly, in addition to annual reporting of TGER, it is recommended that a since-inception TGER is also reported in order to show the trending of expense burden over a period of time or at any given point within a fund's lifecycle. A since-inception based TGER must be clearly labeled as such. The since- inception date must be indicated.

For older closed-end funds, information necessary to calculate TGER may not be readily available.

There is no requirement or recommendation for TGER for SMAs because of the nature of the portfolios as being structured between a single investor and an investment manager.

TGER bridges the gaps in terminology and definitions for the most widely used categories of vehicle fees and costs that may be charged (directly and indirectly) by investment managers and service providers. Additionally, the ratio promotes consistent treatment and improved disclosure of vehicle fees and costs, facilitating further transparency and cost control.

The summary information on TGER and related ratios included below is an abstract from the Guidance Paper *Total Global Expense Ratio: a globally comparable measure of fees and costs for real estate investment vehicles*. The Guidance Paper can be found in Volume II.

TGER measures the fees and costs related to participation in an investment vehicle and enables comparison across products, regardless of the vehicle domicile, structure, and management activities. These fees and costs, defined in the chart below, are applied against the time-weighted average Gross Asset Value (GAV). (See Appendix A3 for the calculation of GAV.). Please note that a NAV based TGER may also be reported in addition to the required GAV-based TGER and must clearly be labeled as such.

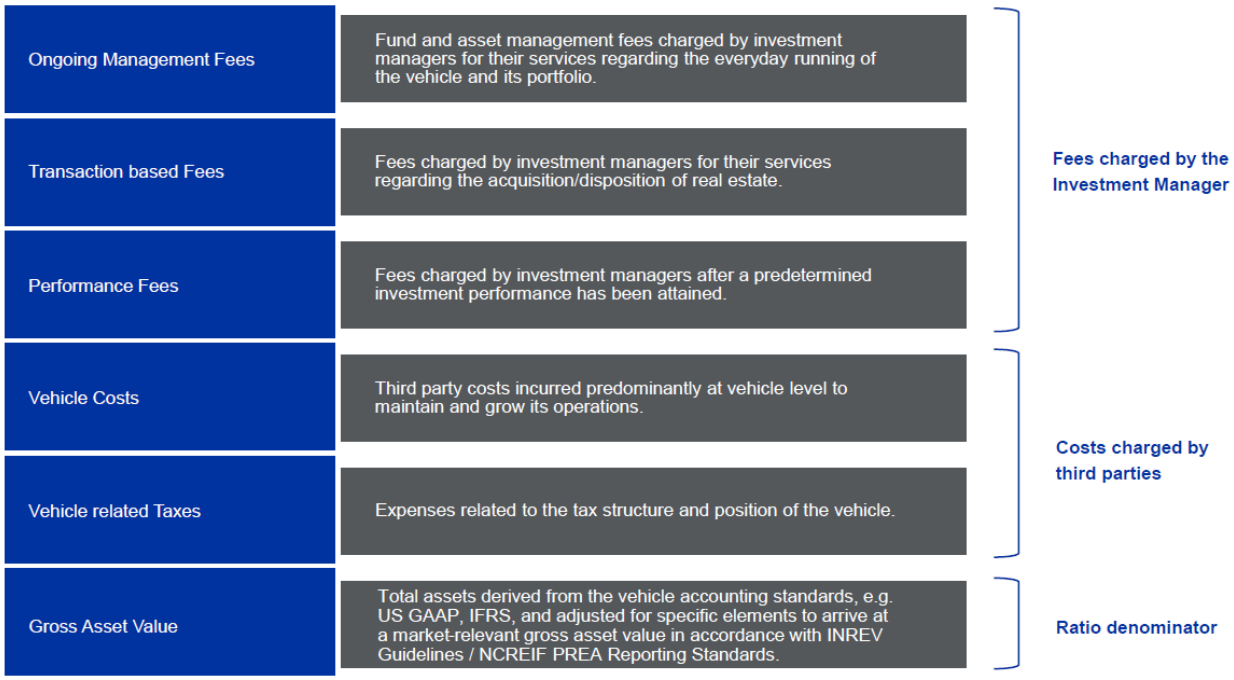
See Appendix A2 for a detailed listing of fees and costs included and excluded from TGER. Note that definitions for all fees and costs are included in the Global Definitions Database

Calculation

The chart below shows the main components of the ratio. Appendix A2 provides the details of fees and costs within each category.

Main components of the ratio

A description of the main fees and costs categories included in the TGER is presented below.



In order to develop a global measure of load, one must understand not only the nature of the fees and costs but also the treatment of such fees and costs within the accounting records which vary around the world. Fees and costs to be included in TGER are based on the nature of the service regardless of the entity at which they are recorded (e.g., fund, special purpose vehicle, property). Managers may need to apply judgment as to whether an expense is considered a fund expense or an individual investment expense.

To illustrate, consider audit costs relating to the annual audit of the vehicle. In some cases, these costs are allocated to each investment by the investment manager; in other cases, a manager may not allocate these costs to the investment. TGER looks at the nature of the cost rather than where the cost is recorded on the

books and reflects the costs of the annual audit in relation to the vehicle accordingly. Fees and costs are categorized according to the respective nature of the underlying services.

It is also important to note that some Investment Managers may charge fees within the Fund where other Investment Managers charge fees separately. For the sake of comparability, fees that are paid by investors outside of the fund should be included in TGER. Fees should include rebates (i.e., a reduction of the fee) if applicable.

Any additional fees and costs charged at the specific investor feeder level should be excluded from TGER. This is because not all investors in a fund participate in all feeder vehicles the fund may establish.

Disclosures

As fund strategies, transactions, and manager compensation become more and more complex, it is important that disclosures accompany TGER reported results. Accordingly, when TGER is reported, the following disclosures are required (PR.23.1-23.4).

- Use of rebates. Fund management fees may be adjusted for rebates, fee reductions, fee waivers, and transaction costs. Therefore, the management fees included in TGER include these reductions (i.e., net).
- Types of fees and costs included in the calculation. Please note that fees paid to the Investment Manager are captured within related party disclosures in the financial statement footnotes.
- Use of estimates: In some cases, estimates of the constituent elements of TGER may be necessary.
- Fees paid in lieu of third-party services. In some cases, fees that are paid to the Investment Manager that would otherwise be paid to third parties and are not included in TGER costs must be disclosed. An example of such fees are property management fees paid to an affiliate of the Investment Manager.

Estimated TGER for Non-Operating Model Reporters

Non-operating model reporters that follow a strict interpretation of Accounting Standards Codification (ASC) 946, Financial Services, Investment Companies, are required to report expense ratios within their financial statement disclosures. These expense ratios are intended to measure the fund's fee and expense load. Although these expense ratios may be similar in some ways to TGER, the components of the GAAP ratio may be different.

The operating and non-operating models of reporting are described in detail within the Fair Value Accounting Policy Manual.

SECTION 2.05 – MEASURES OF DISPERSION AND RISK – BACKGROUND AND DISCUSSION

Link to Formulas

Measures of Dispersion

Overview

Dispersion is a statistical measure of volatility using a range of returns across either the same time period for multiple investments / funds or the same investment / fund over multiple time periods. Measures of dispersion may include but are not limited to the methods described below.

High/Low

The simplest method of expressing the dispersion is to disclose the highest and lowest annual return earned amongst a group of entities for the entire year or, in the case of a fund return, the highest and lowest annual return earned by investments in the fund for the entire year. It is also acceptable to present the high/low range, defined as the arithmetic difference between the highest and the lowest return. It is easy to understand the high/low disclosure but there is a potential disadvantage. If during any annual period there is an outlier (a portfolio or investment with an abnormally high or low return), then this presentation may not entirely represent the distribution of the returns. Other measures, which are more difficult to calculate and interpret, are statistically superior.

Interquartile Range

Another dispersion measure is a range. An example of such a range is an interquartile range. An interquartile range (IQR) is the difference between the first and the third quartiles of the distribution. The distribution of returns is divided into quarters to create quartiles. The first quartile will have 25 percent of the observations falling at or above the first quartile. The third quartile will have 25 percent of the observations fall at or below it. So, the interquartile range represents the length of the interval which contains the middle 50 percent of the observations (data). As the IQR it does not utilize values at either extreme of the return distribution, the interquartile range will not be skewed by outliers. One drawback to this measure is that clients may not be familiar with the methodology used to calculate the IQR. Additionally, significant dispersion occurring at the tail ends of the distribution yet not considered outliers will almost surely be ignored.

Standard Deviation

Standard deviation is the most commonly accepted measure of dispersion. In groups, the standard deviation measures the cross-sectional dispersion of returns to a group of entities.

If the individual portfolio returns are normally distributed around the mean return, then approximately two-thirds of the portfolios will have returns falling between the mean plus the standard deviation and the mean minus the standard deviation.

The standard deviation of portfolio returns is a valid measure of group dispersion. Most spreadsheet programs include statistical functions to facilitate the calculation (such as the STDEV function in Microsoft Excel).

At a minimum, quarterly data points should be used for calculating the standard deviation since valuations must be completed at least quarterly for compliance with Volume I. The resulting quarterly (or more frequent as appropriate) calculation should then be annualized. The NFI-ODCE only reports standard deviations for periods containing at least 20 full quarters (five years) as any measurements of smaller time periods are thought to produce results that are statistically insignificant.

Risk Ratios

Overview

Listed below are several ratios that can be used to evaluate fund performance and to measure and compare portfolio risk. Please note that the measures listed below are widely used in financial circles but their applicability to real estate is highlight debated as real estate returns are typically asymmetric, and certain measures of dispersion (i.e., standard deviation) that are used in the risk measures below are thought to be most suitable for investments that have normal expected return distributions.

Sharpe Ratio

The Sharpe Ratio was invented by Nobel Laureate and U.S. Economist William Sharpe. It can be calculated for expected returns or for historic returns. It is a ratio defined as the performance in excess of the risk-free rate divided by the volatility of the returns as measured by the standard deviation of the portfolio's (or fund's) return.

Risk free rates are typically presumed to be short term U.S. treasury rates. Sharpe ratios should also be shown on an annualized basis. For example, if monthly performance is used in the above calculation, multiply the calculated Sharpe ratio by the square root of time: monthly return periodicity would utilize '12' to annualize the ratio. The higher the Sharpe ratio, the better the fund's historical risk-adjusted performance. A ratio of 1.0 indicates one unit of return per unit of risk; 2.0 indicates two units of return per unit of risk. Negative values indicate loss, or that a disproportionate amount of risk was taken to generate positive returns. Generally, a measure of above 1 is considered good, and above 3 is considered excellent.

Treynor Ratio — (also known as the Reward to Volatility Ratio)

The Treynor Ratio measures returns earned in excess of the risk-free rate per each unit of market risk. It is similar to the Sharpe ratio, but uses beta as the measure of volatility.

Tracking Error

The Tracking Error measures how closely a portfolio (or fund) performs compared to its benchmark. Tracking errors are typically only reported for periods of greater than five years, because of the volatility in shorter period returns. Although there are several variations of the tracking error formula, the most commonly used in the Industry simply calculates the standard deviation of the difference between the return of the fund and the benchmark.

Tracking error percentages should also be shown on an annualized basis. For example, if quarterly performance is used in the spreadsheet calculation, multiply the calculated Tracking Error by the square root of 4 to annualize the results. Assuming normal distribution of the return differences, the Tracking Errors can be used to set general returns expectations. For example, a Tracking Error of .02 would indicate that 66.7% of the time, the return would be within +/- 2% of the benchmark return.

Correlation

Correlation is a statistical measure of the degree to which two investments move relative to one another. This measure is often used when comparing portfolio returns against appropriate benchmarks. The Pearson Correlation Coefficient is frequently used as it is nonparametric and requires no normal distribution.

The covariance statistic used in the calculation of correlation is not especially intuitive nor are covariances comparable across data sets. The correlation coefficient is straight forward as the measure will always yield a value between -1.0 and +1.0. A minimum of ten periods must be used in for the correlation calculation to be statistically significant. A perfect correlation of +1 indicates that both investments always move together, whereas a correlation of 0 indicates there is no relationship between the two, and a negative correlation indicates an inverse relationship between the two. It is important to note that when calculating the correlation of a fund's return to a benchmark's return, the result does not necessarily indicate the degree of out/underperformance, but rather can only be used to predict that the returns move in the same or opposite direction as the benchmark.

SECTION 2.06 – LEVERAGE – BACKGROUND AND DISCUSSION

Link to Formulas

Section 1.06 – Leverage

Overview

This section of the PRM responds to increased investor demand for more information to better understand, measure, and manage debt-related investment risks. It recognizes the fundamental role that debt strategy plays in the commercial real estate Industry.

Leverage is an important component that increases the volatility of returns. In economic upturns, increased leverage increases returns exponentially. In economic downturns, increased leverage lowers returns exponentially. When leverage is utilized, it can significantly alter the risk and return profile of the investment and the related portfolio. For example:

- Leverage directly affects (increases) return volatility.
- Secured, non-recourse debt can provide the borrower with a "put option" limiting borrower downside to the value of its equity.
- Collateralized borrowing frees up equity capital for deployment in new investments.
- Under negative scenarios, leverage can lead to financial distress, force suboptimal investment decisions, and distract investment advisors from seeking profitable ventures.

Because of these factors, consultants, fund investors, and prospective fund investors view leverage reporting with great interest. Providing definitional clarity and consistent disclosure will lead to increased homogeneity of reporting helping investors better understand potential fund risk, its expected return for the risk taken, the potential for investment loss, and the fund's risk and return expectations compared with other investment options.[10]

Defining Leverage

Definition

Per Eugene F. Brigham, in his textbook *Fundamentals of Financial Management*[11], leverage is defined as a general term for any technique to multiply gains and losses. Common methods to attain leverage are to borrow money or to use derivatives.

[10] *Risk Webb 2.0: An investigation into the causes of Portfolio Risk*, March 2011, published by the Investment Property Forum and based on data from IPD.

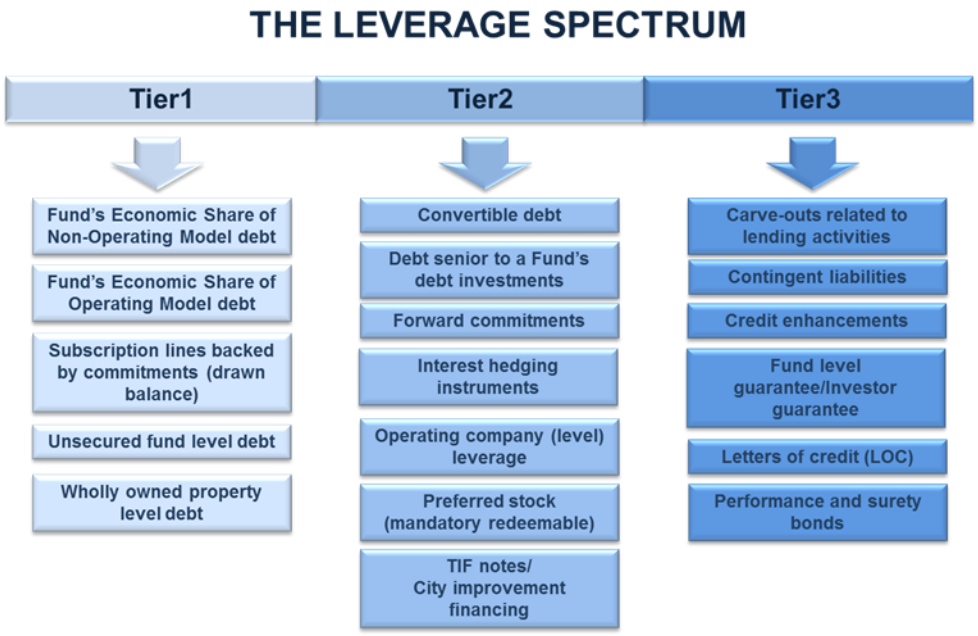
[11] Eugene F. Brigham and Joel F. Houston, *Fundamentals in Financial Management*, Cincinnati: South-Western College Pub, 199

Confusion may arise when people use different definitions for leverage. The term is used differently in investments and corporate finance, and has multiple definitions in each field, giving rise to varying names such as "accounting leverage", "economic leverage", "financial leverage", etc.

In institutional real estate investment arena, leverage is typically referred to as using debt and other debt-like instruments to acquire, update, and/or operate assets. In essence, the use of leverage lowers the equity required to fund an investment by sharing the risk of the investment with the lender. Leverage may decrease or increase returns beyond what would be possible through an all-equity investment.

Leverage Spectrum

The Leverage Spectrum (Exhibit 1[12] below) illustrates the variety of complex debt structures that can be utilized by institutional real estate advisors on behalf of investors. The Leverage Spectrum serves to facilitate clear understanding, comparability, and consistency of leverage positions within funds thereby fostering effective qualitative and quantitative analysis and monitoring.



The elements on the left side of the spectrum are generally reported within the fair value GAAP based financial statements and usually can be identified directly on or embedded within the Statement of Net Assets. Fund advisors frequently use these leverage elements to calculate leverage ratios and other measures of leverage risk. Moving towards the right side of the spectrum, the elements become increasingly opaque, not easily quantifiable, and/or may not be identified within the financial statements or footnotes. Elements in Tier3 are disclosed to investors in a variety of ways, be it in the periodic reporting package, investment summaries, or presentations, etc.

[12] The elements within each tier were identified through research, analysis and discussions with industry participants.

It is important to note that in some cases fund management may not be contractually entitled to the information necessary to calculate or extract the leverage within the investment (e.g., an investment in a joint venture with a foreign partner). In such cases, disclosures are appropriate and suggestions are provided within this guidance. In addition, in some cases the timing for receipt of this information may lag investor report deadlines. In those instances, reporting such information on a lag basis may be appropriate.

A discussion of the elements included in the three tiers follows.

Tier1

Tier1 (T1) elements are generally utilized to invest in real estate within more traditional investment structures such as investments which are wholly owned or acquired through joint ventures. Also, T1 leverage is more commonly used for operating properties (as opposed to development) within the office, retail, apartment, or industrial property types. Generally, T1 leverage elements are found on the face of the Fund's Statement of Net Assets for wholly owned and consolidated joint ventures or are reported net for either equity joint ventures, other equity investments, or investments made by investment companies (depending on whether the Operating or Non-Operating reporting model is utilized). In addition, T1 elements include debt secured by the Fund for whatever purpose.

It should be noted that T1 leverage can be calculated based on either cost (T1 leverage (C) or fair value (T1 leverage (FV)).

The following are common T1 elements:

Fund's Economic Share of Non-Operating Model debt

As consolidation is generally not allowed under the Non-Operating Model, the assets and liabilities associated with any investment are shown net. The T1 leverage includes the Fund's Economic Share of leverage elements that are embedded in these investments.

Fund's Economic Share of Operating Model debt

Funds that are reporting under the Operating Model may have interests in an entity (e.g., joint venture), which itself (or through another entity) invest in real estate assets, which are leveraged. T1 leverage should include the Fund's Economic Share of leverage elements that are reported on the Fund's Statement of Net Assets for consolidated entities and leverage elements that are embedded in unconsolidated equity investments.

When calculating the Fund's economic share of debt, it is important to understand how joint ventures are reported and consolidation rules apply under both the Operating and Non-operating models.

Subscription lines backed by commitments (drawn balance)

Subscription-secured credit facilities are revolving lines, drawn upon to make acquisitions and then paid down from capital calls and/or asset-level borrowing. Typically, their terms coincide with a Fund's investment period during which capital can be called.

The collateral is a pledge of investors' capital commitments to the Fund, the Fund's rights to call that capital and enforce the investors' capital funding obligations, and the accounts into which capital is funded. In most instances, the ''borrowing base'' is limited to a certain percent of the amount of unfunded capital commitments of creditworthy investors (called ''Included Investors''). Thus, subject to the credit line's maximum loan amount, the amount a Fund can borrow grows as more Included Investors are closed into the Fund, and then ultimately shrinks as more capital is called over time.

Subscription lines usually are put in place amidst a series of fundraising closings and are sized accordingly. The lead lender(s) may first do a ''bridge facility'' that is replaced by a larger, ''permanent facility'' as the Fund reaches the necessary size and syndicated co-lenders are added. Fund documents often limit the amount of time that subscription line borrowings may be outstanding (e.g., 90 or 120 days) and many fund advisors use a subscription line as a means to manage the capital call process and attempt to limit capital calls to once a quarter to ease the administrative burden for its investors. As a Fund acquires assets and matures, it may obtain an unsecured credit line that can be tapped to manage liquidity needs as the subscription line tails off.

Only the drawn balance of subscription lines that have the ability to be outstanding for more than 90 days and/or when the advisor has the ability to extend the term is included in Tier1 debt. In these cases, the subscription line has more leverage characteristics.

It should be noted that disclosures surrounding the terms and use of sub lines are a hot topic within the Industry. As the situation warrants, additional disclosures will be added to the PRM.

Unsecured Fund Level Debt

Unlike subscription lines back by investors' commitments, unsecured fund level debt is any liability at the fund level that is not secured by collateral.

Wholly- Owned Property Level Debt

Funds may be directly invested in real estate assets and debt reported on the Fund's Statement of Net Assets for wholly-owned properties should be included in T1 leverage. Other property level debt such as second mortgage liabilities and mezzanine debt liabilities should also be included in T1.

Tier2

Generally, the elements in Tier 2 (T2) are "debt-like," as subject to certain conditions and contingencies, and have the same impact as debt in that they put the Fund investor's capital at additional risk. Unlike Tier 1, these items are generally not thought of as traditional debt. In addition, unlike elements in Tier 3 below, the amount of the leverage in Tier 2 is more easily quantifiable.

T2 leverage elements are generally associated with more complex investment structures and less traditional investments. In some cases, quantitative and qualitative information about the leverage associated with these investments may be contained in the footnotes to the financial statements (e.g., forward contracts). In other cases, quantitative and qualitative information may not be reported within the financial statement report but are likely available (e.g., debt senior to debt investments made by a Fund) within the investment advisor's organization.

It should be noted however, that if leverage is utilized to make the investment, then that leverage is included in T1 above. For example, if the Fund made an investment in a second mortgage using both cash and debt, the debt would be in T1. However, the first mortgage that is senior to the Fund's second mortgage investment would b be in T2.

The following are common T2 elements.

Convertible Debt

Convertible debt in the form of a mortgage gives the lender an option to purchase a full or partial interest in the property (or the entity that owns it) after a specified period of time allowing the lender to convert the mortgage into equity ownership. Usually, with this type of purchase option, the lender will accept a lower interest rate in exchange for the conversion option.

Debt Senior to a Fund's Debt Investments

Funds invest in real estate through a variety of investment structures including investments in debt instruments. These debt investments may take the form of senior debt, subordinated debt, participating mortgages, etc. With some debt investments, the Fund's investment is subordinated to other debt on the property. This other debt is senior to the Fund's debt investment and accordingly, depending on the performance of the asset on which the Fund's debt investment was made, the Fund's equity holders are at risk. As an example, although the investment in mortgages is an indirect investment in real estate, the risk taken by investors in these transactions is similar to the risk taken by the Fund when equity investments are made in joint ventures which hold leveraged properties. It should be noted that the amount of debt which is senior to a Fund's debt investment is not shown on the face of the financial statements for either the Operating or Non-Operating Model and may not be disclosed in the footnotes since the Fund has not made a direct investment in the debt which is senior to the Fund's debt investment.

For more information on subordinated debt, see the research paper in Volume II, *Assessing and Measuring Financial Risk Related to Subordinated Debt Investments in Private U.S. Institutional Real Estate Funds*.

Forward Commitments

Real estate investment advisors, on behalf of the Funds and accounts they manage, periodically enter into forward commitments (contracts) to acquire, for a fixed price, real estate investments to be constructed in accordance with predetermined plans and specifications. Such forward contracts are subject to satisfaction of various conditions, including the completion of development of the underlying real estate project pursuant

to approved plans and specifications within prescribed budget and time limits. Failure of a project to satisfy these conditions generally provides the Fund with the option not to fund the investment. For each project, the amount of the Funds' investment and conditions under which it will invest are the subject of formal documentation between Fund, the developer, and the construction lender.

In addition to the risks inherent in any real estate investment, there are additional risks related to the development of new property. Under the forward contract structure, each partner accepts specific risks related to their role in the partnership. For example, the primary risks of development, cost overrun and completion risks, could be retained by the developer; and in this case, the developer would be responsible for the project costs in excess of an investment budget approved by the investor at the commencement of development. The Fund provides the capital commitment and may accept the leasing risk by pledging to acquire the asset upon construction completion. The Fund provides a construction lender guarantee, which mitigates the repayment risk and allows the lender to offer favorable construction financing terms to the developer. Upon acquisition of the new property, the Fund typically invests a majority of the equity.

Interest Hedging Instruments

A hedging instrument is a financial instrument whose cash flows should offset changes in the cash flows of a designated hedged item (asset, liability, or investment). Two commonly used types of interest hedging instruments are:

- Interest Rate Caps: Maximum increases allowed in interest rates, payments, maturity extensions, and negative amortization on reset dates.
- Interest Rate Swaps: Two parties exchange a floating interest rate for a fixed interest rate or vice-versa.

Operating Company (Level) Leverage

Operating company leverage is the Fund's Economic Share of the leverage reported on the books of the Operating Company. If an investment is made by the Fund in an operating company using cash and leverage, then that leverage is included in T1. The leverage which the operating company has on its corporate books should be included in T2.

Preferred Stock (Mandatory Redeemable)

Preferred stock is frequently used to capitalize operating companies or public REITs. In addition, a Fund can be structured as a corporation and capitalized with preferred stock. In all cases, preferred stock has preference over common stock in the payment of dividends in the Fund and in the distribution of corporation assets in the event of liquidation. Preference means the holders of the preferred stock must receive the dividend before holders of common shares. Normally this type of stock comes with a fixed dividend rate and may or may not come with voting privileges. From a legal and tax standpoint, preferred stock is considered equity not debt even though it has characteristics of debt (through dividends) and equity (through potential appreciation). Because of its debt-like characteristics, preferred stock is included in T2.

TIF Notes/ City Improvement Financing

"TIF" or Tax Incremental Financing is a public financing method used for redevelopment, infrastructure, and other city improvement projects. This type of financing uses future gains in taxes to subsidize current improvements that are projected to create those gains.

Tier3

Tier3 (T3) leverage includes the leverage within investments that is not readily or easily quantifiable due to their contingent nature; however, the use of any of these instruments by the Fund is generally disclosed within the footnotes to the financial statements.

The following are common T3 elements.

Carve-Outs Related to Lending Activities

When the term carve-out is used within lending, it describes provisions within nonrecourse commercial real estate loans where the borrower may become personally liable in the event of certain egregious acts (e.g., fraud). In recent years, many lenders have expanded the scope of such "carve-outs" to include risks of exposure to the property's economic deterioration or neglect. Some nonrecourse provisions provide that the borrower is liable for the specific damages resulting from the violation or breach of a carve-out, while others state that the entire loan becomes recourse to the borrower if any of (or certain of) the excepted acts occur.

Contingent Liabilities

A contingent liability is defined as an existing condition, situation, or set of circumstances involving uncertainty as to possible outcome (such as Guarantees and/or Carve-Outs) to an enterprise that will ultimately be resolved when one or more future events occur or fail to occur.

Credit Enhancements

Credit enhancement is additional collateral, insurance, or third- party guarantee required by the borrower generally in exchange for a lower interest rate or cost of capital.

Fund Level Guarantee/Investor Guarantee

Guarantee is a credit enhancement by an issuer (in this case, either the investor or the fund). Examples include:

- a guarantee of timely payment and/or;
- a guarantee of payments to the security holder in the event of a cash flow shortfall from the mortgage pool jeopardizing promised coupon payments, and/or;
- a guarantee of repayment of principal to the security holder. Such guarantees may be limited and they may be provided in part by the issuer with a third-party guarantee for any losses in excess of

some specified limit. In any case, the ability of the issuer or third party to perform on the guarantee must be considered by the investor.

Letters of credit (LOC)

Letters of credit are often used in real estate transactions to secure obligations. Instead of providing a cash deposit, a buyer, borrower, or tenant may secure its obligations under a contract of sale, loan commitment, or lease with a letter of credit.

A letter of credit is a commitment made by a bank or other party (the "issuer"), upon the application of the issuer's client (the "applicant"), to pay the amount of the letter of credit to a third party (the "beneficiary") upon the beneficiary's submission to the issuer of the documents listed in the letter of credit. By separate reimbursement agreement, the applicant agrees to reimburse the issuer for any liability incurred by the issuer under the letter of credit.

Performance Bonds

A type of surety bond that guarantees the contract will be completed according to its terms and conditions of the contract.

Surety Bonds

A surety bond ensures contract completion or compensation in the event of a default by the contractor. A project owner (often in development projects) seeks a contractor to fulfill a contract. In the event of the contractor defaulting, the surety company will be obligated to find another contractor to complete the contract or provide compensation to the project owner.

Fund Level Leverage Risk Measures

Fund T1 Total Leverage

Fund T1 Total Leverage includes all T1 elements shown in the chart above. Fund T1 Total Leverage must include any Fund-level debt, but not other liabilities such as accounts payable or accrued expenses. Total leverage is not reduced by the Fund's cash balances. An illustration of the Fund T1 Total Leverage can be found in Appendix A4.

Note that Fund T1 Total Leverage can be calculated on either a cost basis (Fund T1 Total Leverage (C), that is, the remaining principal balance, or on a fair value basis (Fund T1 Total Leverage (FV)).

Fund T1 Leverage Measures

Background

The Fund T1 leverage measures presented below have been derived from measures commonly used by lenders to understand the risk associated with making a loan on an investment. The Fund T1 Leverage Percentage has been derived from the Loan to Value Ratio (LTV) and the Fund T1 Leverage Yield has been

derived from the Debt Yield. As with many measures of performance and risk, attribution analysis would be necessary to analyze contributors to the fund's performance and facilitate the development of appropriate strategies beneficial to the fund's equity holders.

Fund T1 Leverage Percentage

Overview

The Leverage Percentage is arguably the most widely used measure of leverage for monitoring financial risks in a real estate portfolio. The Leverage Percentage indicates what proportion of debt a fund has relative to the value of its assets. This measure shows stakeholders in the fund the level of fund leverage along with the potential risks the fund faces in terms of its debt load. When Fund T1 Total Leverage (C) is used in the numerator, the stakeholders gain an understanding of the fund's ability to pay the lender. Used in conjunction with other measures of financial health, the Fund T1 Leverage Percentage can help investors determine an entity's level of financial and potential default risk. The measure is sensitive to changes in cap rates (i.e., valuation changes).

The real estate Industry utilizes two primary reporting models – Operating and Non-Operating. In order to calculate a Fund T1 Leverage Percentage which is model-neutral and considers the Fund's Economic Share of leverage on investments, adjustments are required to be made to the denominator of the Fund T1 Leverage Percentage (i.e., Total Gross Assets) as illustrated in Appendix A3.

Note that total assets, rather than real estate assets are used as an indicator of the amounts available to satisfy debt liabilities. In addition, since cash and other assets are frequently part of equity (e.g., joint venture) investments and such investments can be presented and accounted for differently depending on which model is used by the Fund, including all gross assets enhances the comparability of the ratio across funds.

If Tier1 leverage associated with investments is excluded from the calculation, disclosures should be made including an explanation of why the leverage is being excluded from the leverage calculation, along with what percent or dollar amount of the investment is included in total gross assets. (See the Leverage Spectrum discussion above.)

Illustrations and disclosures

Illustrations of the Fund T1 Leverage Percentage calculations under both reporting models along with related disclosures can be found in Appendix A4.

Fund T1 Leverage Yield

Overview

The higher the Fund's T1 Leverage Yield the better because risk is lowered. For example, a Fund may have a leverage yield which is significantly higher than current rates because it has a low leverage percentage. Depending on weighted average interest rates on existing debt and weighted average remaining term, Fund management can decide to finance or refinance to increase equity. Whereas the fund's leverage percentage

provides a measure of exposure to leverage and is sensitive to changes in value, the Fund's leverage yield provides an indication of an ability to pay (or cover) loan principal balances when due and is not sensitive to changes in value.

Depending on the reporting model presented (operating vs. non-operating) the Fund's T1 Leverage Yield may not be comparable across funds. One should consider this when trying to compare fund performance.

Weighted Average Interest Rate of Fund T1 Leverage

Overview

The weighted average interest rate provides a measure of impact of debt service on income. The weighted average interest rate is defined as the average interest rates of both fixed and floating rate debt at period end weighted by the outstanding principal balances at period end. Premiums or discounts associated with the valuation of debt should be excluded from this measure.

Calculation

The following is an example of the calculation:

	Average Interest Rate @ Period End	Outstanding Principal Balances @ Period End	Weight*	Weighted Average Interest Rate
Fund's Economic Share of debt	5.50%	20,000,000	0.29851	0.0164
Subscription line backed by commitment	6.25%	15,000,000	0.22388	0.0140
Wholly owned property level debt	4.15%	32,000,000	0.47761	0.0198
T1 Total Leverage		**67,000,000**	**1.00000**	**0.0502**
				5.02%

*outstanding principal balance for each debt divided by the total outstanding balance

Weighted Average Remaining Term of Fixed-Rate Fund T1 Leverage

Overview

The weighted average remaining term provides a measure of determining exposure to refinancing risks associated with fixed-rate debt. Generally, the classification of a loan as fixed rate debt depends upon what is stipulated in the loan documents without regard to triggers associated with the breach of loan covenants.

Calculation

The weighted average remaining term of fixed-rate Fund T1 Leverage is the average remaining term until the maturity date weighted by the outstanding principal balances. The remaining term is defined as the period between the period end and the maturity date measured in years and fractional months. Extension periods that have not been formally exercised should not be included in the remaining term measure. The weighted average remaining term of fixed rate Fund T1 Leverage is calculated using Fund T1 leverage which has a fixed interest rate.

Weighted Average Remaining Term of Floating-Rate Fund T1 Leverage

Overview

The weighted average remaining term provides a measure of determining exposure to refinancing risk. Generally, the classification of a loan as fixed rate debt depends upon what is stipulated in the loan documents without regard to triggers associated with the breach of loan covenants.

Calculation

The weighted average remaining term of floating-rate Fund T1 Leverage is the average remaining terms until the maturity date weighted by the outstanding principal balances. The remaining term is defined as the period between the period end and the maturity date measured in years and fractional months. Extension periods that have not been formally exercised should not be included in the remaining term measure. The weighted average maturity of floating rate Fund T1 Leverage is calculated using Fund T1 leverage which has a floating rate of interest.

Investment Level and Property Level Leverage Risk Measures

The leverage measures included in this section are suitable to analyze the impact of leverage at the investment level and the property level.

Debt Service Coverage Ratio (DSCR)

Overview

The debt service coverage ratio is used to measure the amount of cash flow from the property/investment's operations that is available to meet annual interest and principal payments on debt. A DSCR of greater than 1 would mean there is a positive cash flow and conversely less than 1 would imply a negative cash flow. For example, a DSCR of .95 would suggest that there is only enough net operating income to cover 95% of annual debt payments (i.e., principal and interest). This would mean that the borrower would have to source funds elsewhere to keep the project meeting its debt payment obligations.

A potential drawback of the DSCR is that under low interest rate environment, the DSCR ratio can be misleading by implying that there are enough cushions to cover debt payments. For this reason, Debt Yield is a complementing and important metric to look into when evaluating the impact of the amount and structure that leverage has on cash flows.

Debt Yield

Overview

The use of this measure is more common since the global financial crisis. Previously, the debt service coverage ratio and the LTV were the most common measures utilized. The debt yield provides an additional measure of leverage risk.

Whereas the debt service coverage ratio (DSCR) measures the ability to pay principal and interest currently, the debt yield measures the expected return to the investor in the event of default by the borrower. As an example, assume that a DSCR on a loan dips below 1 - a signal that the loan cannot be paid currently. The loan could be refinanced by either a reduction in interest rate, or an extension of term. Further, if net operating income is unchanged, the DSCR could rise above 1. Without consideration of the impact on the debt yield, it may appear that the risk to the lender is reduced. However, in this example with no other changes, the debt yield would drop signaling that the lender would need to accept a lower return in the event of default.

Contrasted with Loan to Value (see below), the debt yield is not sensitive to capital value changes (i.e., cap rates). The debt yield focuses on the comparison of net investment income to total leverage. Accordingly, a reduction in the debt yield is immediately triggered if net investment income falls. The LTV changes as valuation changes are recognized, which may lag.

In summary, the higher the debt yield, the lower the risk. The debt yield is useful for three reasons:

- Provides an assessment of the ability to pay currently by focusing on net operating income:
  - Ignores appraised value
  - Is not sensitive to changes in interest rates
- Provides information on real time changes in net operating income
- Provides assessment of ability to pay back principal when due
  - Helps to assess refinancing risk by comparing result with current market interest rates

Ability to pay

It is important to note that the debt yield does not look at: the cap rate used to value the property/investment; the interest rate on the commercial lender's loan; and does not factor in the amortization of the lender's loan. The only factor that the debt yield ratio considers is how large of a loan the commercial lender is advancing compared to the property's NOI. It ensures that low interest rates or rising values do not cause more leverage to be introduced at a potentially bad time in the cycle.

Refinancing risk

An example of how the debt yield helps to assess refinancing risk follows. Assume a commercial property has an annual NOI of $4,500,000, and the lender has been asked to make a loan in the amount of $60,000,000. Under this scenario, the debt yield ratio is 7.5%. This means that the lender would receive a 7.5% cash-on-

cash return on its money if it foreclosed. Currently, a Debt yield ratio of 10% is considered by most lenders the lowest number that most are willing to advance. Therefore, refinancing may not be possible without other consideration.

Loan to Cost (LTC)

Overview

Loan-to-cost at the investment/property level is a ratio used to compare the amount of the loan used to finance a project to the cost to build the project. LTC does not change based on changes in valuation. For example, if the project cost $100 million to complete and the borrower was asking for $80 million, the loan-to-cost (LTC) ratio would be 80%. The costs included in the $100 million total project cost would be land, construction materials, construction labor, professional fees, permits, landlord contributions toward lease up, and so on.

The LTC ratio helps commercial real estate lenders assess the risk of making a construction loan. The higher the LTC ratio, the higher is the risk.

Loan to Value (LTV)

Overview

Loan to value ratio at the investment/property level represents how much of a property is being financed. Higher loan to value ratios mean higher risk for the lender. For example, a $120,000 mortgage on a $200,000 investment has a loan to value ratio of 60%.

SECTION 2.07- PERFORMANCE ATTRIBUTION- BACKGROUND AND DISCUSSION

Link to Formulas

Overview

There are many ways to calculate performance attribution. Below are four of the more popular methods. Each investment manager needs to create performance attribution tools that best support the firm's decision-making process.

Performance attribution is an analysis of the performance of an investment against its benchmark. It quantifies and explains the returns of a portfolio when compared to its appropriate benchmark. It facilitates understanding of what decisions or events lead to the performance. Volume I requires that identification and comparisons of fund performance against a benchmark is reported quarterly and is presented for all periods that returns (net and gross) are presented (PR.02). NFI-ODCE is the most widely used Industry benchmark.

Equity Attribution

The sources of active returns are identified into 3 categories that attempt to explain the active decisions of a portfolio against a benchmark.

Allocation effects (sector) — the under/over weighting of a property sector to increase alpha.

Selection effect (property selection) — the active selection of an asset/property to increase alpha.

Interaction/Other effects — the combination of both allocation and selection decisions being made simultaneously. This can be imbedded into selection effects or displayed as a standalone effect.

The interaction effect is the mathematical "cross product" which measures the residual piece not accounted for under allocation and selection. The interaction effect represents the difference in sector weight multiplied by the difference in sector return.

Contribution/Absolute Attribution

Contribution Effect aims to quantify an assets and sectors contribution to the total return of the fund. It does not compare the performance against a benchmark but instead looks to how much each asset/sector contributed to the fund's total return. It should always equal the portfolio's total return. The NFI-ODCE Performance Attribution Report presents contribution/absolute attribution of the index.

APPENDICES

A1: GROSS-NET HIERARCHY ILLUSTRATIVE EXAMPLE

Illustrative Example - The Gross - Net Heirarchy[1,2,3]

Level	Level Description	TGER Alignment and Other Notes[4]	IRR (%)	Nominal Amount ($)	3/31/2015	6/30/2015	9/30/2015	12/31/2015	3/31/2016	6/30/2016	9/30/2016	12/31/2016	3/31/2017	6/30/2017	9/30/2017	12/31/2017	3/31/2018	6/30/2018	9/30/2018	12/31/2018	3/31/2019
Level 1a	Gross IRR before investment management fees and fund Costs but net of tranaction costs.	Consistent with TGER, Fund Gross IRR should be net of property-related costs and property related "fees in lieu" of costs. See TGER detailed Fee and Cost Matrix for details	16.73%	794	(500.00)	(500.00)	-	-	6.50	6.50	10.00	7.50	7.50	6.50	10.00	7.50	10.00	6.50	10.00	7.50	1,697.50
Subtract:	Cash flow Adjustments related to fund or subscription leverage or timing differences of investor capital flows vs investment capital flows	In the instance of fund leverage, Draws, Principal repayments and interest are treated as if it were equity.		4	(500.00)	(500.00)	503.50	500.00		-											
Level 1b	Gross IRR before investment management fees and fund Costs but net of tranaction costs.	Consistent with TGER, Fund Gross IRR should be net of property-related costs and property related "fees in lieu" of costs. See TGER detailed Fee and Cost Matrix for details.	19.40%	790.00			(503.50)	(500.00)	6.50	6.50	10.00	7.50	7.50	6.50	10.00	7.50	10.00	6.50	10.00	7.50	1,697.50
Subtract:	Vehicle-related costs	See TGER detailed Fee and Cost Matrix		(2.50)					(0.50)				(0.50)			(0.50)			(0.50)		(0.50)
Subtract:	Vehicle-related taxes	See TGER detailed Fee and Cost Matrix		(1.00)					(0.25)	(0.25)				(0.25)				(0.25)			
Level 2	Fund Gross IRR after deduction for fund costs but before deduction of recurring, transactional and Performance fees	IRR after the deduction of vehicle related costs.	19.30%	786.50			(503.50)	(500.00)	5.75	6.25	10.00	7.50	7.00	6.25	10.00	7.00	10.00	6.25	9.50	7.50	1,697.00
Subtract:	Investment management fees	See TGER detailed Fee and Cost Matrix Includes all ongoing and transactional based fees, regardless of whether paid in fund, directly to to manager, or through feeder vehicle. Transaction fees charged by manager above market transaction costs should be deducted here. Transaction fees in lieu of transaction costs, should be included in the Fund		(45.31)			(1.56)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)	(3.13)
Level 3	Fund Net IRR before Performance-based fees. Level 2 less ongoing and transactional investment management fees		18.06%	741.19			(505.06)	(503.13)	2.63	3.13	6.88	4.38	3.88	3.13	6.88	3.88	6.88	3.13	6.38	4.38	1,693.88
Subtract:	GP Incentive Fees and Carried Interest	Includes all performance related fees (incentive, promotes, carried interest, etc, net of rebates, regardless of whether paid in fund, directly to to manager, or through feeder vehicle.		(133.41)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	(133.41)
Level 4	Fund Net IRR. Net of transaction costs, Fund costs, Ongoing, Transactional and Performance fees		15.29%	607.77			(505.06)	(503.13)	2.63	3.13	6.88	4.38	3.88	3.13	6.88	3.88	6.88	3.13	6.38	4.38	1,560.46
Adjust	Investor specific adjustments	Filter level 5 to individual investor specific timing, costs and fees.		(508.81)			429.30	427.66	(2.23)	(2.66)	(5.84)	(3.72)	(3.29)	(2.66)	(5.84)	(3.29)	(5.84)	(2.66)	(5.42)	(3.72)	(1,318.59)
Level 5	Individual Investor Net IRR	Net of fund load, fees and promote as experienced by the individual investor.	16.39%	98.97			(75.76)	(75.47)	0.39	0.47	1.03	0.66	0.58	0.47	1.03	0.58	1.03	0.47	0.96	0.66	241.87

The illustrated example is supported by an xlsx document that is available upon request.

A2: DETAILED FEE AND COST MATRIX FOR TGER

This matrix is intended to help users when allocating fees and costs to TGER. It is not meant to be an exhaustive description of all the possible fees and costs that could be incurred by a real estate investment vehicle. Definitions for these terms can be found in the Global Definitions Database.

Included in TGER	
Vehicle-related fees charged by manager	**Vehicle-related costs charged by third parties**
Ongoing management fees	Audit costs
Fund management fee/asset management fees	Bank charges
Fee reductions/transaction offsets	Custodian costs
Fee waivers	Debt arrangement costs
Distribution fees	Other/misc. vehicle costs
Commitment fees	Placement agent costs
Redemption fee	Professional services costs
Transaction offsets	Securities handling charges
Transaction-based management fees	Staff costs (if applicable)
Wind-up fee	Vehicle administration costs
Debt arrangement (financing) fees	Vehicle formation costs
Subscription fee	Transfer agent costs
Project management fee	Dead deal costs
Property acquisition fee	
Property disposition fee	
Other manager services not related to fund management (in addition to third party service/cost)	**Other manager services not related to fund management (in lieu of third-party service/cost)**

Included in TGER	
Vehicle-related fees charged by manager	**Vehicle-related costs charged by third parties**
Performance fees	
Incentives and promotes	
Carried interest	
Other performance fees	

Excluded from TGER	
Property-related fees charged by manager	**Property-related costs charged by third parties**
Internal leasing commissions	CAPEX/ tenant improvements
Property management fee	External leasing commissions

Excluded from TGER	
Development fee	Property acquisition costs
	Property disposition costs
	Property insurance costs
	Property management costs
	Utilities, repair and maintenance costs
	Property-related taxes
	Property taxes on the owner
	Wealth taxes on real estate

Excluded from TGER	
Vehicle-related fees charged by manager	**Vehicle-related costs charged by third parties**
Fee rebates	
	Corporation tax
	Income tax
	Non-resident landlord tax
	Other taxes based on gross profit
	Net wealth tax
	Deferred taxes**
	VAT or other sales tax (only non-recoverable portion)
	Withholding tax
	Capital gain taxes
	(Transfer) taxes on real estate transactions

**In accordance with the INREV GAV and INREV NAV guidelines and for the US – the GAV and NAV described by NCREIF PREA Reporting Standards.

A3: CALCULATION OF GROSS ASSET VALUE (GAV)

Overview

GAV is the denominator for the formulas for T1 leverage percentage (PR.05) and TGER (PR.23) in Volume I. The GAV calculations serve to represent the Fund's Economic Ownership of the total gross assets of the Fund on an apples-to-apples basis.

It is important to consider that the Operating Model may include some investments that are subject to consolidation and other investments are subject to equity method accounting. Separate adjustments to the denominator need to be made on an investment-by-investment basis. Investments subject to consolidation will be adjusted using the formula for the Operating Model and those investments subject to equity method accounting will need to be adjusted using the formula for the Non-Operating Model.

Note that in some cases, information necessary to calculate GAV may not be contractually available. When that is the case, the investment manager should use estimates.

Calculations

Under the Operating Model (see Fair Value Accounting Policy Manual) GAV is calculated as:

$$Total\ balance\ sheet\ assets - Joint\ Venture\ partner's\ economic\ share\ of\ total\ assets.$$

Under the Non-operating Model, GAV is calculated as:

$$Total\ balance\ sheet\ assets + Fund\ Economic\ Share\ of\ Total\ Joint\ Venture\ liabilities + liabilities\ of\ consolidated\ entities.$$

*As used herein Joint Venture includes investments which are other than wholly owned by the Fund including, but not limited to: joint ventures, limited partnerships, investments in C-corporations, etc.

A4: FUND T1 LEVERAGE PERCENTAGE CALCULATIONS AND DISCLOSURES

Operating Model

Sample Reporting Disclosure[13]

Fund T1 Total Leverage (C)

Fund's Economic Share of Operating Model debt

	Economic Share (ES)				
consolidated	95%	**Apt2**	14,763	**A * ES**	*
consolidated	95%	**Hotel1**	24,273	**B * ES**	*
consolidated	92%	**Retail1**	14,168	**C * ES**	*
unconsolidated	50%	**Other**	-	**D * ES**	**
unconsolidated	50%	**Office1**	600	**E * ES**	**
				$ 53,804	
+ Subscription lines backed by commitments (drawn balance)				10,000	
+ Wholly owned property level debt					
		Apt1	10,000	**F**	*
		Indus1	4,270	**G**	*
				14,270	
				$ 78,074	

* Information contained in the consolidating balance sheet

**Information is from asset-level balance sheets

Total Gross Assets

Total balance sheet assets				$ 421,430	
- Joint Venture partner Economic Share of total assets					
	Economic Share				
consolidated	95%	**Apt2**	(2,285)	**H*(1-ES)**	*
consolidated	95%	**Hotel1**	(3,160)	**I*(1-ES)**	*
consolidated	92%	**Retail1**	(2,632)	**J*(1-ES)**	*
				(8,077)	
+ Fund's Economic Share of total Joint Venture liabilities					
	Economic Share				
unconsolidated	50%	**Other**	500	**K*(1-ES)**	**
unconsolidated	50%	**Office1**	1800	**L*(1-ES)**	**
				2300	
				$ 415,653	

* Information contained in the consolidating balance sheet

**Information is from asset-level balance sheets

Fund T1 Leverage Percentage:

Fund T1 Total Leverage (C)	=	$ 78,074	= **18.8%**
Total Gross Assets		$ 415,653	

Calculation Support for disclosures of T1 information under the Operating Model

[13] The information presented herein is a suggested reporting disclosure which satisfies the Reporting Standards requirements for the Tier 1 leverage elements. It is management's decision to determine the extent of disclosure necessary to satisfy the requirements.

BALANCE SHEET	Other 20X3		Office1 20X3	
Real estate investments				
Cost	25,000		68,700	
Fair value adjustment	2,000		6,300	
Fair value	27,000		75,000	
Cash	3,000		3,500	
Marketable securities	-		-	
Accrued investment income	-		-	
Prepaids and other assets	-		2,500	
TOTAL ASSETS	30,000		81,000	
Mortgage loans and notes payable at fair value				
Cost	-	D	1,200	E
Fair value adjustment	-		(200)	
Fair value	-		1,000	
Accrued real estate expenses and taxes	1,000		2,600	
Accrued incentive fees	-		-	
Other liabilities	-		-	
TOTAL LIABILITIES	1,000	K	3,600	L
XYZ	14,500		38,700	
NCI	14,500		38,700	
NET ASSETS	29,000		77,400	
	-		-	

Calculation Support for disclosures of T1 information under the Operating Model

	Fund	Apt1	Apt2	Hotel1	Indus1	Retail1	TOTAL	Eliminations	Consolidated Total
BALANCE SHEET									
Real estate investments									
Cost	129,100	24,800	22,400	38,500	6,200	24,100	245,100	(129,100)	116,000
Fair value adjustment	57,388	50	5,300	6,700	2,800	8,800	81,038	(57,388)	23,650
Fair value	186,488	24,850	27,700	45,200	9,000	32,900	326,138	(186,488)	139,650
Unconsolidated real etate joint ventures									
Cost	46,850	-	-	-	-	-	46,850		46,850
Fair value adjustment	6,350	-	-	-	-	-	6,350		6,350
Fair value	53,200	-	-	-	-	-	53,200	-	53,200
Mortgages and other loans receivable									
Cost	11,200	-	-	-	-	-	11,200		11,200
Fair value adjustment	900	-	-	-	-	-	900		900
Fair value	12,100	-	-	-	-	-	12,100	-	12,100
Other real estate investments									
Cost	18,550	-	-	-	-	-	18,550		18,550
Fair value adjustment	3,575	-	-	-	-	-	3,575		3,575
Fair value	22,125	-	-	-	-	-	22,125	-	22,125
Cash	40,635	15,000	10,000	12,000	13,000	-	90,635		90,635
Marketable securities	-	43,100	-	-	-	-	43,100		43,100
Accrued investment income	18,620	-	-	-	-	-	18,620	-	18,620
Prepaids and other assets	12,500	5,000	8,000	6,000	10,500	-	42,000		42,000
TOTAL ASSETS	345,668	87,950	45,700	63,200	32,500	32,900	607,918	(186,488)	421,430
Mortgage loans and notes payable at fair value		F	A	B	G	C			
Cost	10,000	10,000	15,540	25,550	4,270	15,400	80,760		80,760
Fair value adjustment	-	(500)	(780)	(1,280)	(210)	(770)	(3,540)		(3,540)
Fair value	10,000	9,500	14,760	24,270	4,060	14,630	77,220	-	77,220
Accrued real estate expenses and taxes	-	-	1,350	-	-	-	1,350		1,350
Accrued incentive fees	260	-	-	-	-	-	260		260
Other liabilities	500	-	-	1,900	500	-	2,900		2,900
TOTAL LIABILITIES	10,760	9,500	16,110	26,170	4,560	14,630	81,730	-	81,730
			H	I		J			
XYZ	318,162	78,450	28,111	35,179	27,940	16,809	504,650	(186,488)	318,162
NCI	16,745	-	1,480	1,852	-	1,462	21,538	-	21,538
NET ASSETS	334,908	78,450	29,590	37,030	27,940	18,270	526,188	(186,488)	339,700

Non-Operating Model

Sample Reporting Disclosure[14]

Fund T1 Total Leverage (C)						
Fund's Economic Share of NonOperating Model debt						
	Economic Share (ES)					
	95%	**Apt2**	14,763	**a x ES**		*
	95%	**Hotel1**	24,273	**b x ES**		*
	92%	**Retail1**	14,168	**c x ES**		*
	50%	**Other**	-	**d x ES**		*
	50%	**Office1**	600	**e x ES**		*
					$ 53,804	
+	Subscription lines backed by commitments (drawn balance)				10,000	
+	Wholly owned property level debt					
		Apt1	10,000	**f**		*
		Indus1	4,270	**g**		*
					14,270	
					$ 78,074	

*Information is from asset-level balance sheets

Total Gross Assets						
	Total balance sheet assets				$ 345,668	
+	Fund's Economic Share of total Joint Venture liabilities					
	Economic Share (ES)					
	95%	**Apt2**	15,305	**h x ES**		*
	95%	**Hotel1**	24,862	**I x ES**		*
	92%	**Retail1**	13,460	**j x ES**		*
	50%	**Other**	500	**k x ES**		*
	50%	**Office1**	1,800	**l x ES**		*
+	Fund's Economic Share of total liabilities - wholly owned properties					
	100%	**Apt1**	9,500	**m**		*
	100%	**Indus1**	4,560	**n**		*
					69,986	
					$ 415,654	

*Information is from asset-level balance sheets

Fund T1 Leverage Percentage:			
Fund T1 Total Leverage (C)	= $ 78,074 =		**18.8%**
Total Gross Assets	$ 415,654		

[14] The information presented herein is a suggested reporting disclosure which satisfies the Reporting Standards requirements for the Tier 1 leverage elements. It is management's decision to determine the extent of disclosure necessary to satisfy the requirements.

Calculation Support for disclosures of T1 information under the Non-Operating Model

BALANCE SHEET	APARTMENT 2 20X3	HOTEL 1 20X3	Retail1 20X3	Other 20X3	Office1 20X3	Apt1 20X3	Indus1 20X3
Real estate investments							
Cost	22,400	38,500	24,100	25,000	68,700	24,800	6,200
Fair value adjustment	5,300	6,700	8,800	2,000	6,300	50	2,800
Fair value	27,700	45,200	32,900	27,000	75,000	24,850	9,000
Cash	10,000	12,000	-	3,000	3,500	15,000	13,000
Marketable securities	-	-	-	-	-	43,100	-
Accrued investment income	-	-	-	-	-	-	-
Prepaids and other assets	8,000	6,000	-	-	2,500	5,000	10,500
TOTAL ASSETS	45,700	63,200	32,900	30,000	81,000	87,950	32,500
Mortgage loans and notes payable at fair value							
Cost	15,540 a	25,550 b	15,400 c	- d	1,200 e	10,000 f	4,270 g
Fair value adjustment	(780)	(1,280)	(770)	-	(200)	(500)	(210)
Fair value	14,760	24,270	14,630	-	1,000	9,500	4,060
Accrued real estate expenses and taxes	1,350	-	-	1,000	2,600	-	-
Accrued incentive fees	-	-	-	-	-	-	-
Other liabilities	-	1,900	-	-	-	-	500
TOTAL LIABILITIES	16,110 h	26,170 i	14,630 j	1,000 k	3,600 l	9,500 m	4,560 n
XYZ	28,111	35,179	16,809	14,500	38,700	78,450	27,940
NCI	1,480	1,852	1,462	14,500	38,700		
NET ASSETS	29,590	37,030	18,270	29,000	77,400	78,450	27,940
	-	-	-	-	-	-	-

A5: SAMPLE PERFORMANCE MEASUREMENT DISCLOSURES

These disclosures are intended to be used in performance presentations for U.S., institutional real estate assets. Disclosures, like the one listed below, would typically accompany any performance presentation that is made in a client report. These disclosures are intended for illustrative purposes only and are not meant to reflect the only correct presentation of these items. Disclosures relating to risk measurement will be added at a future date.

Property Level Disclosures

1. Unleveraged property level performance return [EXAMPLE]

- Performance results are before the effect of leverage and calculated using the Property-Level return methodology outlined in the Reporting Standards Performance and Risk Manual.
- Performance results are before deduction of advisor asset management and performance incentive fees and after deduction of advisor acquisition fees.
- Performance results are before the effect of operating partner/joint venture partner fees and distribution waterfalls. (Only use if applicable.)
- Performance results do not include cash and cash equivalents, related interest income and other non-property related income and expenses.
- The inputs to the performance return calculation are calculated in accordance with the Reporting Standards. The Net Operating Income component of the return is based on accrual recognition of earned income. Capital expenditures, tenant improvements, and lease commissions are capitalized and included in the cost of the property; are not amortized; and are reconciled through the valuation process and reflected in the capital return (appreciation) component.
- Annual performance returns are time-weighted, calculated by geometrically linking quarterly returns. Income and capital returns may not equal total returns due to compounding effects of linking the quarterly returns.
- The time-weighted return calculations begin on the acquisition date for each property and end on the disposition date. Partial periods are not dropped.

If a property level internal rate of return ("IRR") is presented, a disclosure describing the calculation methodology is needed.

2. Leveraged property level performance return [EXAMPLE]

Same as above except for the first disclosure.

- Performance results are after the effect of leverage and calculated using the Property-Level return methodology outlined in the Reporting Standards Performance and Risk Manual

3. Property level valuation policy [EXAMPLE]

If presenting performance on a stand-alone basis (not in conjunction with financial statements) a valuation policy should be disclosed. Otherwise, reference can be made to the accompanying financial statement footnotes.

- Real property assets are internally valued quarterly by the advisor and appraised no less frequently than every three years by an independent member of the Appraisal Institute.
- Both the internal and external property valuations rely primarily on the application of market discount rates to future projections of unleveraged cash flows and capitalized terminal values over the expected holding period of each property.
- Property mortgages, notes, and loans with maturities greater than one year from the date of the balance sheet are marked to market using prevailing interest rates for comparable property loans. Loan repayment fees, if any, are considered in the projected year of sale.

4. Property level benchmark disclosure [EXAMPLE]

- The benchmark for this group is the National Council of Real Estate Investment Fiduciaries ("NCREIF") Property Index ("NPI").
- The NPI benchmark has been taken from published sources.
- The NPI is an unleveraged, before-fee index of operating properties and, includes various operating real estate property types, excludes cash and other non-property related assets and liabilities, income, and expenses.
- The calculation methodology for the NPI is consistent with the calculation methodology for all properties presented herein.
- The NPI data, once aggregated, may not be comparable to the performance of the properties presented herein due to current and historical differences in portfolio composition by asset size, geographic location, and property type.

5. Investment level disclosures

Investment level represents a discrete asset or group of assets held for income, appreciation, or both and tracked separately. Investment level performance is typically presented at the fund level. Please refer to the disclosure section below.

Fund Level Disclosures

1. Unleveraged fund level performance return [EXAMPLE]

Hypothetical, unleveraged fund returns are often presented as supplemental reporting. To calculate these returns, adjustments to the numerator are made which remove interest expense and appreciation related to the value of the debt. Adjustments to the denominator are made which increase contributions and distributions by the amount of debt placed, loan fees incurred, interest expensed, and debt repaid. The disclosures follow those described in the disclosure section below, except for the first bullet point, which is replaced with a description of the assumptions used to de-lever the portfolio.

2. Leveraged fund level performance return [EXAMPLE]

- Performance results are presented net of leverage.
- Performance results include cash and cash equivalents and related interest income.
- Net returns are after investment management fees and performance incentive fees. Annual investment management fees are 1% of invested capital. No incentive fees have been earned.
- Income return is based on accrual recognition of earned income in accordance with U.S. GAAP.
- Capital expenditures, tenant improvements, and lease commissions are capitalized and included in the cost of the property; are not amortized; and are reconciled through the valuation process and reflected in the capital return component.
- Performance results are calculated on an asset-weighted average basis using beginning of period values adjusted for time-weighted external cash flows.
- Annual returns are time-weighted rates of return calculated by linking quarterly returns. Income and capital returns may not equal total returns due to compounding effects of linking quarterly returns.
- The time-weighted return calculations begin on the date of the portfolio's first external cash flow and end on the date of the last external cash flow. Partial periods are not dropped.
- The annualized internal rate of return (IRR) is calculated using monthly cash flows. The terminal value utilized in this calculation is equal to the net asset value as of the reporting date. Before-fee cash flows are derived by adding accrued investment management fees and cash basis incentive fees to after-fee cash flows.

In some cases, a fund may commence operations and incur income and/or expense prior to the initial cash contribution from the investor(s). For example: A commingled fund which utilizes a subscription line of credit to fund operations and purchase properties prior to the first capital call. When this occurs, a disclosure is needed to explain how the activity related to the period before the initial capitalization is treated in the return calculation. Two examples follow.

- The closing date of the fund was December 15, 200XX. The first capital call occurred on May 4, 20XX. For performance return purposes, income and expense incurred from the date of closing through May 3, 20XX has been allocated to the numerator of the June 30 return calculation.
- The closing date of the fund was December 15, 20XX. The first capital call occurred on May 4, 20XX. For performance return purposes, income and expense incurred from the date of closing through May 3, 20XX has been allocated to the denominator of the June 30 return calculation.

3. Fund level valuation policy [EXAMPLE]

If presenting performance on a stand-alone basis (not in conjunction with financial statements) a valuation policy disclosure should be provided. Otherwise, reference can be made to the accompanying financial statement footnotes.

- Assets are valued quarterly by the Company and appraised no less frequently than annually by an independent member of the Appraisal Institute.

- Both the internal and external property valuations rely primarily on the application of market discount rates to future projections of unleveraged cash flows and capitalized terminal values over the expected holding period of each property.
- Property mortgages, notes, and loans are marked to market using prevailing interest rates for comparable property loans if the terms of existing loans preclude the immediate repayment of such loans. Loan repayment fees, if any, are considered in the projected year of sale.
- Cash equivalents are stated at fair value, which is equivalent to cost. All other assets and liabilities are stated at cost, which approximates fair value, since these are the amounts at which they are expected to be realized or liquidated.

4. Fund level benchmark disclosure [EXAMPLE]

- The benchmark for this group is the National Council of Real Estate Investment Fiduciaries ("NCREIF") Fund Index Open-Ended Diversified Core Equity ("NFI-ODCE").
- The NFI-ODCE benchmark has been taken from published sources.
- The NFI-ODCE is a pre and post-fee index of open-ended funds with lower risk investment strategies, utilizing low leverage and equity ownership of stable U.S. operating properties. The index is capitalization-weighted, based on each fund's net invested capital.
- The NFI-ODCE data, once aggregated, may not be comparable to the performance of the fund presented herein due to current and historical differences in portfolio composition by asset size, geographic location, property type and degree of leverage.

A6: PERFORMANCE AND RISK MEASUREMENT INFORMATION ELEMENTS[15]

Information providers should maintain the following information as these elements are commonly used in the various formulas:

Property level information

- Net Operating Income
- Net Cash Flow
- Debt Service (Interest)
- Debt Service (Principal)
- Additional Loan Principal Pay-downs
- New Loan Proceeds
- Capital Improvements
- Net Sales Proceeds (Partial Sales)
- Gross Fair Value at Beginning and End of Period
- Equity Value at Beginning and End of Period
- Outstanding Debt Balance-cost and fair value
- Estimate of Current Cost to Sell Property
- Income Return (Before-fee) — Quarterly
- Appreciation Return (Before-fee) — Quarterly
- Total Return (Before-fee) — Quarterly
- Internal Rate of Return — Since Inception
- Historical Component Returns (Before-fee) — 1-Yr, 3-Yr, 5-Yr, 10-Yr, and other 5-yr increments
- Distributed and Retained Income Returns

Investment and fund level information

- Net Investment Income
- Fair Value at Beginning and End of Period
- Capital Contributions — Amounts and Dates
- Capital Distributions and Redemptions — Amounts and Dates
- Capital Distributions Resulting from Financing and Investing Activities — Amounts and Dates
- Investment Management Fees
- Estimate of Current Costs to Sell Investments
- Weighted Average Equity
- Capital Appreciation

[15] The list of performance and risk measurement information elements is intended to identify specific return and data components that should be collected and retained by information providers. This list is not exhaustive and is not intended to define all information that is necessary to manage the investments or comply with all regulatory requirements.

- Paid in Capital
- Income Return (Before and After-fee) — Quarterly
- Appreciation Return (Before and After-fee) — Quarterly
- Total Return (Before and After-fee) — Quarterly
- Internal Rate of Return — Since Inception
- Historical Component Returns (Before and After-fee) — 1-Yr, 3-Yr, 5-Yr, 10-Yr, and other 5-yr increments
- Distributed and Retained Income Returns
- Distribution and Price Change Returns

A7: SAMPLE PRESENTATIONS

Sample Fund Level Presentation for Client Reporting

XYZ FUND, L.P.

Historical Performance, 20XX-20XX — **Dollar Amounts in Thousands**

	Year End		Before Fee Returns			NFI-ODCE	After Fee Returns			Multiples			
Year	Net Assets	Percent Leveraged	Investment Income (Loss)	Appreciation (Depreciation)	Total Gross Returns	Index Benchmark	Investment Income (Loss)	Appreciation (Depreciation)	Total Net Returns	Investment Multiple (TVPI)	Realization Multiple (DPI)	PIC	RVPI
20XX	$ 125,213	56 %	6.15 %	3.00	9.15 %	13.06 %	5.15 %	3.00 %	8.15 %	1.03	-	0.24	1.03
20XX	449,809	37	6.07	7.00	13.07	21.39	5.07	7.00	12.07	1.24	-	0.73	1.24
20XX	562,550	28	6.45	8.00	14.45	16.32	5.45	8.00	13.45	1.44	0.19	0.90	1.25
20XX	532,547	19	6.19	8.00	14.19	15.97	5.19	8.00	13.19	1.68	0.61	1.00	1.07
20XX	265,460	16	5.45	(9.00)	(3.55)	(10.01)	4.45	(9.00)	(4.55)	1.44	0.91	1.00	0.53
Annualized Time Weighted Returns Since Inception (January 1, 20XX)			6.05	3.19	9.24	10.75	5.06	3.19	8.24				
Annualized Internal Rate of Return Since Inception (January 1, 20XX)					9.45 %				8.45 %				

TVPI = Total Value to Paid-In Capital
DPI = Distributed Capital to Paid-In Capital
PIC = Paid-In Capital to Committed Capital
RVPI = Residual Value to Paid-In Capital

Notes:

1. Returns presented are net of leverage.
2. Performance results include cash and cash equivalents and related interest income.
3. Net returns are after investment management fees and performance incentive fees. Annual investment management fees are 1% of invested capital. No incentive fees have been earned.
4. The income return is based on accrual recognition of earned income.
5. Capital expenditures, tenant improvements and lease commissions are capitalized and included in the cost of the property; are not amortized; and are reconciled through the valuation process and and reflected in the capital return component.
6. Performance results are calculated on an asset-weighted average basis using beginning of period values, adjusted for time-weighted external cash flows.
7. Annual returns are time-weighted rates of return calculated by linking quarterly returns. Income and capital returns may not equal total returns due to compounding effects of linking quarterly returns.
8. The time-weighted return calculations begin on the date of the portfolio's first external cash flow and end on the date of the last external cash flow. Partial periods are not dropped.
9. The annualized internal rate of return ("IRR") is calculated using monthly cash flows. The terminal value utilized in this calculation is equal to the net asset value as of December 31, 20XX.
10. Assets are valued quarterly by the General Partner and appraised annually by an independent member of the Appraisal Institute.
11. Additional information, including the Fund's valuation policy, capitalization policy regarding capital expenditures, tenant improvements, lease commissions and information related to investment management and incentive fees is presented in the notes accompanying the financial statements.
12. The National Council of Real Estate Investment Fiduciaries ("NCREIF") Fund Index Open-Ended Diversified Core Equity ("NFI-ODCE") has been taken from published sources. The NFI-ODCE is a before-fee index of open-ended funds with lower risk investment strategies, utilizing low leverage and equity ownership of stable U.S. operating properties. The Index is capitalization-weighted, based on each fund's net invested capital.
13. The NFI-ODCE data, once aggregated, may not be comparable to the performance of the XYZ Fund due to current and historical differences in portfolio composition by asset size, geographic location,

Sample Property Level Presentation for Client Reporting

ABC SEPARATE ACCOUNT
UNLEVERED PROPERTY PERFORMANCE RETURNS

Periods Ended June 30, 20XX

	ABC Account Before Fee Returns			NCREIF Property Index		
	Operating Income %	Appreciation (Depreciation) %	Total Returns %	Operating Income %	Appreciation (Depreciation) %	Total Returns %
20XX						
First Quarter	1.62	(2.56)	(.94)	1.37	(8.70)	(7.33)
Second Quarter	1.74	(3.28)	(1.54)	1.50	(5.20)	(6.70)
Rolling						
One Year	6.19	(19.60)	(14.35)	5.49	(24.04)	(19.56)
Three Year	5.42	(3.80)	1.48	5.56	(4.39)	.99
Five Year	5.60	3.01	8.75	6.05	1.50	7.61
Ten Year	7.54	1.65	9.30	7.18	1.26	8.50
Annualized Time-Weighted Return Since Inception (9/9/XX)	8.29	1.86	10.28	7.75	1.60	9.44
Annualized Internal Rate of Return Since Inception			9.15			n/a

Notes:

1. Performance results are before the effect of leverage and calculated using the property level return methodology outlined in the Real Estate Information Standards ("REIS") Performance Measurement Resource Manual.
2. Performance results are before deduction of advisor asset management and performance incentive fees and after deduction of advisor acquisition fees.
3. Performance results do not include cash and cash equivalents, related interest income and other non-property related income and expenses.
4. The inputs to the performance return calculation are calculated in accordance with the Real Estate Information Standards ("REIS"). The operating income component of the return is based on accrual recognition of earned income. Capitalized expenditures, tenant improvements and lease commissions are capitalized and included in the cost of the property; are not amortized; and are reconciled through the valuation process and reflected in the appreciation/(depreciation) component.
5. Annualized performance returns are time-weighted, calculated by geometrically linking quarterly returns. Income and appreciation/(depreciation) returns may not equal total returns due to compounding effects of linking the quarterly returns.
6. The time-weighted return calculations begin on the acquisition date for each property and end on the disposition date. Partial periods are not dro
7. The annualized internal rate of return ("IRR") is calculated assuming that net cash flow is distributed quarterly. For purposes of this calculation, net cash flow is defined as operating income minus capitalized costs. The terminal value utilized in this calculation is equal to the fair value of the properties as of June 30, 2009.
8. Additional information, including the ABC Account's valuation policy, is presented in the notes accompanying the financial statements.
9. Capital expenditures, tenant improvements and lease commissions are capitalized and included in the cost of the property; are not amortized; and are reconciled through the valuation process and for the NPI is consistent with the time-weighted calculation methodology for all properties presented herein.
10. Performance results are calculated on an asset-weighted average basis using beginning of period values, adjusted for time-weighted external cash flows.
11. Annual returns are time-weighted rates of return calculated by linking quarterly returns. Income and capital returns may not equal total returns due to compounding effects of linking quarterly returns.

Sample Fund Level Presentation for IRR Reporting

Fund XYZ

Since Inception Internal Rate of Return (IRR)

	Inception to date
Gross of Fee [1], [2]	19.30%
Net of Fee [3]	15.29%

[1]Gross IRR

The Gross Fund IRR has been calculated using the level 1a Fund IRR methodology described by the NCREIF PREA Reporting Standards. Gross returns are presented net of transaction costs but do not reflect the deduction of investment management fees or fund costs. Results are presented gross (before the impact) of the subscription line but net (after the impact) of all property leverage.

[2]Subscription Line

The fund utilizes a subscription line of credit. In January 2015 the fund utilized a subscription line of credit to purchase it's first investment. The first capital call from investors was September 2015.

[3]Net IRR

The Net Fund IRR has been calculated using the level 4 Fund IRR methodology described by the NCREIF PREA Reporting Standards. The Net IRR reflects the deduction of all fund costs, transaction costs, and investment management fees. Carried interest to the general partner and its affiliates has been accrued based on the hypothetical liquidation value of the fund at fair value. Limited partners pay ongoing asset management fees ranging between 0 and 150 basis points. Carried interest is charged to investors based on the waterfall hurdle and range between 0 and 200 basis points based on the hypothetical liquidation of the fund at fair value.