Time-Weighted Return Methodology for the MSCI Property Fund Indexes

Client consultation on the implementation of the methodology including introduction of adjustment for daily-weighted external cash flows

November, 2019

This consultation may or may not lead to the implementation of any or all of the proposed changes to the MSCI property fund indexes. Consultation feedback will remain confidential. MSCI may publicly disclose feedback if specifically requested by specific market participants. In that case, the relevant feedback would be published together with the final results of the consultation.

Background

- MSCI provides Property Fund Indexes in a number of global markets with some indexes having over 20 years of history.

- The MSCI Property Fund Indexes currently use two different methodologies:
  - Time-Weighted Return Methodology with adjustment for daily-weighted external cash flows (also referred to as Modified Dietz Methodology) for US and Canada
  - Unitized (see appendix for the unitized return formula) for all other markets (Australia, France, Germany, Italy, Nordics, Pan-European, Portugal and UK)

- MSCI is proposing to move towards one single methodology: Time-Weighted Return Methodology with adjustment for daily-weighted external cash flows to:
  - Better represent property industry best practices
  - Standardize the property fund index return calculation methodology across geographies

Summary

MSCI is seeking feedback from market participants on the following proposal:

1. To change the MSCI Property Fund Indexes methodology to a Time-Weighted Return Methodology (also referred to as Modified Dietz Methodology)
   - Specific details of the implementation if the methodology change proposal is adopted

MSCI is seeking feedback from market participants on the following related proposals/topics:

2. Interpolation method for Net Asset Value (NAV) and external cashflows, where data may not be consistently available for all constituents at the proposed frequency
3. Discontinuing the adjustment for cross-holdings in the UK and Australia
4. Requirements for data provision if the new methodology is adopted, including the provision of day-dated external cash flows

Should the methodology change be adopted, the implementation will be communicated separately by MSCI Property Fund Index, as timelines may vary.

MSCI invites feedback from market participants on or before February 28, 2020 and will announce the results of the consultation on or before March 31, 2020

Overview of MSCI Property Fund Indexes

Index name	Methodology	History	Cross-holdings Adjustment
MSCI/PREA U.S. ACOE Quarterly Property Fund Index	**TWR/Modified Dietz**	**Unfrozen**	**No**
MSCI/PREA U.S. AFOE Quarterly Property Fund Index	**TWR/Modified Dietz**	**Unfrozen**	**No**
MSCI/REALPAC Canada Quarterly Property Fund Index	**TWR/Modified Dietz**	**Unfrozen**	**No**
MSCI/AREF UK Quarterly Property Fund Index	Unitized	Frozen	**Yes**
MSCI/Mercer Australia Core Wholesale Monthly Property Fund Index	Unitized	Frozen	**Yes**
The Property Council of Australia/MSCI Australia Unlisted Retail Quarterly Property Fund Index	Unitized	Unfrozen	**Yes**
APFIPP/MSCI Portugal Quarterly Property Fund Index	Unitized	Unfrozen	No
MSCI France OPCI Biannual Property Fund Index	Unitized	Unfrozen	No
MSCI Germany OFIX Monthly Property Fund Index	Unitized	Unfrozen	No
MSCI Germany SFIX Quarterly Property Fund Index	Unitized	Unfrozen	No
MSCI Global Quarterly Property Fund Index	Unitized	Unfrozen	No
MSCI Italy Biannual Property Fund Index	Unitized	Unfrozen	No
MSCI Nordic Annual Property Fund Index	Unitized	Unfrozen	No
MSCI Nordic Quarterly Property Fund Index	Unitized	Unfrozen	No
MSCI Pan-European Quarterly Property Fund Index	Unitized	Unfrozen	No

1. Time-Weighted Return Methodology Proposal

Change to the methodology for the MSCI Property Fund Indexes with adjustment for daily-weighted external cash flows for all markets which are currently based on the unitized methodology

Proposal

- MSCI is proposing to introduce the Time-Weighted Return Methodology with adjustment for daily-weighted external cash flows (also referred to as Modified Dietz Methodology) for all Property Fund Indexes to:
  - Better represent industry best practices
  - Standardize the property fund index return calculation methodology across geographies

- MSCI is proposing to have a transition period of 6 months during which market participants could compare the returns (for 3-years of history) based on the Unitized approach and the Time-Weighted Return Methodology.

Potential enhancements

Potential benefits of the proposed Time-Weighted Return Methodology with adjustment for daily-weighted external cash flows relative to Unitized methodologies include:

- Alignment with Global Investment Performance Standards (GIPS), see appendix for the GIPS standards. The CFA Institute Global Investment Performance Standards (GIPS®) are globally accepted standards considered industry best practice for investment performance reporting and presentation.
- Income return is more comparable amongst funds which are not (or are partly) distributing their income due to the use of Net Investment Income (NII) instead of using distributions. (The distribution would be used to calculate the capital employed.) The income return is therefore an additional measure which is more comparable amongst funds compared to the dividend yield.
- Using daily-weighted external cash flows in the capital employed calculation is anticipated to be more accurate for funds with significant capital flows, particularly for value-add and opportunistic funds. The timing of the cash flows assumes that there is a constant return over a specified period.

Potential enhancements(continued)

Potential benefits of the proposed Time-Weighted Return Methodology with adjustment for daily-weighted external cash flows relative to Unitized methodologies include:

- Timing of distributions and therefore taking into consideration if distributions are made at the start of the period or at the end of the period and therefore anticipated to have a more accurate capital employed. The timing of the cash flows assumes that there is a constant return over a specified period.
- A fund level return calculation instead of a unitized return calculation because it considers the overall fund level returns and not the individual investors returns. Therefore, anticipated to be more accurate for fund level return calculations for funds with different share-classes for different investors with different fees and/or distributing and non-distributing shares.
  - For the Unitized methodology it would consider only the return for one single share-class while the returns could vary per share class within one fund.
  - Unitized approach would not consider deviations between unit price for new units compared to the NAV per unit for return calculations.
- Potentially enhanced asset to fund asset reconciliation. Because the fund return is anticipated to be more accurate the residual by comparing the fund return and the bottom-up return calculations (based on the direct property level returns and other investment and portfolio level items) is anticipated to show a smaller residual. For the bottom-up calculations asset purchases and sales are already monthly dated (rather then end of period).

Proposed methodology

MSCI proposes the Time-Weighted Return Methodology with adjustment for daily-weighted external cash flows index return calculations as shown below:

$$Total\ Return_t = \left(\frac{Appreciation_t + \sum NII_t}{WtdEq_t}\right) * 100$$

(simplified formula)

Where:

$$WtdEq_t = NAV_{t-1} + \sum_{i=1}^{n}\left[Days_{i,t} * NCI_{i,t}\right] - \sum_{i=1}^{n}\left[Days_{i,t} * Dist_{i,t}\right]$$

And:

$Appreciation_t$ (capital return) is the $NAV_t - NAV_{t-1}$ - $\sum NCI_t$- ($\sum NII_t$ - $\sum Distributions_t$)
NII_t is the Net Investment Income in month t;
WtdEq is weighted equity (capital employed);
$Days_{i,t}$ is the number of days as a portion of the number of days in the month;
$NCI_{i,t}$ is the net capital invested.

Index returns would be calculated on a monthly basis.

MSCI is not proposing to increase the frequency of the index release to become monthly although external cash-flows would be collected on a day-dated basis. MSCI's current understanding is that the underlying direct property portfolio in most cases is only valued quarterly.

MSCI is proposing to change the calculation of other measures that are currently being calculated on a per unit basis into a non-unitized equivalent. (for example the distribution yield).

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Proposed methodology

Index returns would be calculated on both gross and net of fees.

For the Gross Fund Return the net income before fees would be used as the NII_t and for the Net Fund Return the net income after fees would be used as the NII_t.

The introduction of Gross and Net Fund Returns would allow more transparency on the management fees for individual indexes and also to compare those globally.

In addition the Gross Fund Returns may allow clients to better measure risk and potentially provide track record data for investment managers while institutional investors might be more interested in Net Fund Returns.

Currently for the below indexes the Gross and Net Fund Returns are already available:

- MSCI/PREA U.S. ACOE Quarterly Property Fund Index
- MSCI/PREA U.S. AFOE Quarterly Property Fund Index
- MSCI/REALPAC Canada Quarterly Property Fund Index
- MSCI/Mercer Australia Core Wholesale Monthly Property Fund Index
- The Property Council of Australia/MSCI Australia Unlisted Retail Quarterly Property Fund Index

Proposed methodology – worked example*

Input data:

- NAV_t = 1200
- NAV_{t-1} = 1000
- $\sum NCI_t$ = 100 (invested half of the month)
- $\sum Distribution_t$ = 10 (distributed at start of the month)
- $\sum$Net Investment $Income_t$ = 20

Derived:

- Retained $Income_t$ = $\sum$Net Investment $Income_t$ - $\sum Distribution_t$ = 20 -10 = 10
- $WtdEq_t$ = 1000 + 1/2 * 100 – 1*10 = 1040

Calculation of returns:

$$Income\ return_t = \left(\frac{20}{1040}\right) * 100 = 1.92\%$$

$$Appreciation_t = \left(\frac{1200-1000-100-(20-10)}{1040}\right) * 100 = 8.65\%$$

$$Total\ return_t = \left(\frac{1200-1000-100-(20-10)+20}{1040}\right) * 100 = 10.58\%$$

*** In the appendix an equivalent worked example for the Unitized methodology is provided**

Discussion points - methodology

a) Do you prefer the Time-Weighted Return Methodology with adjustment for daily-weighted external cash flows compared to the Unitized Methodology for Property Fund Indexes? If not please provide a reason why not.

b) Do you have any feedback regarding the formula for the return calculation for the new methodology?

c) Do you support the proposal to change the calculation of other measures that are currently being calculated on a per unit basis into a non-unitized equivalent? (for example the distribution yield). If not please provide a reason why not.

d) Do you support the proposal to provide both Gross and Net Fund Returns for all Property Fund Indexes? If not please provide a reason why not.

e) MSCI is not proposing to increase the frequency of the index to become monthly although external cash-flows would be collected on a day-dated basis. However, MSCI welcomes any market participants feedback on this.

Specific question for the Australian market:

f) For the MSCI/Mercer Australia Core Wholesale Monthly Property Fund Index, do you agree that the returns should be weighted using the capital employed based on the beginning period NAV? (currently the end NAV is being used for the weighting)

Proposal – Implementation

- MSCI is proposing to implement the methodology moving forward for official index return series. Details on the implementation are listed below:
  - Historical provision by the data providers of required data for the full history would not be required.
  - For the comparison of returns based on the Unitized approach and the Time-Weighted Return Methodology data providers would be required to provide 3 years of historical data (see data provision section of this consultation).
  - MSCI expects that data providers would require time to collect the required data (see data collection section of this consultation for more details) and share the data with MSCI. After the data has been provided to MSCI it would follow MSCI's normal quality review process before being used. Together this is expected to be a period of 6 to 12 months.
  - After that MSCI is proposing to have a transition period of 6 months during which market participants could compare the returns (for 3-years of history) based on the Unitized approach and the Time-Weighted Return Methodology.
  - During the transition period data providers would be required to provide data based on the current methodology as well as the proposed methodology. After the transition period the data collection for the Unitized approach would be discontinued.

Proposal – Implementation (continued)

- MSCI is proposing to implement the methodology moving forward for official index return series. Details on the implementation are listed below:
  - No restatement of earlier published index results due to the methodology change would happen. The frozen (fixed) index results therefore won't change at all and unfrozen index results would only be impacted by data changes and by data for any additional new fund.
  - For the official index series the results based on the different methodologies would be spliced
  - After the transition period the return based on the proposed methodology would become the official results.
- For certain MSCI products the results might be shown including history to be able to have like for like comparisons of results.
- New funds being included in an index are required to provide historical data for both the current as well as the proposed methodology. Therefore new funds with history would be included in the indexes based on the current methodology.
- For clarity, indexes with unfrozen history incorporate all available data, including historical data corrections, at each index update.

Discussion points – methodology implementation

g) Do you support the proposal there should be a transition period with a parallel run of the index results? Would a transition of 6 months be appropriate in your view for this with 3-years of history?

h) Do you support the proposal that the methodology change to index results should be implemented forward only? If you don't agree, should history be restated? If in your view the history should be restated would that differ with frozen (fixed) and unfrozen (history updated with each index release) results?

i) Do you support splicing the index series based on the current methodology and the proposed methodology to provide longer term index returns? If not do you propose to have two separate time-series or do you propose a different approach?

j) Do you support the proposal to report both the fund results and the index results based on splicing the index series? This relates to both market information product and enterprise analytic products including asset to fund level reconciliation analyses. If not do you propose to have two separate time-series or do you propose a different approach?

2. Proposed interpolation for certain data

Net Asset Value (NAV) and External Cashflows at the fund level

Fund level NAV

- Fund level Net Asset Value (NAV) is a key component of the Time-Weighted Return calculations.
- The NAV is already being used for the unitized methodology and is also used as a basis for the provision of the average weighted equity for the existing Modified Dietz methodology.
- For the Time-Weighted Return calculations, MSCI proposes to use monthly NAVs when available.
- MSCI is not proposing to change any inclusion criteria for the Property Fund Indexes regarding revaluation frequency requirement at the NAV or the underlying portfolio as part of this consultation.

Discussion points – Monthly NAV

a) Do you produce monthly NAVs? If not at which frequency are NAVs available. MSCI is proposing an interpolation in the absence of the monthly NAV, see next slides for a proposal on the interpolation.

b) Is the (monthly or different frequency) NAV used for other purposes? Is it published (readily available) and/or communicated to investors?

Fund level NAV - interpolation

MSCI is consulting on the data treatment for the NAV that would be used in the circumstances that no monthly NAV is available. The standard practice would allow comparable NAVs (and returns) for the funds included in an index on a monthly basis.

MSCI is proposing that in the case the NAV is not available on a monthly basis to derive the NAV based on the below interpolation:

- Use the latest available NAV, because the asset and liabilities haven't been revalued. This approach is similar to the approach for the current unitized approach, see appendix for more details (except for bi-annual and annual data provision). See next slide for two alternative interpolation methodologies.
- Adjust for the day-dated external cash-flows (Capital invested, Capital returned and Distributions)
- Adjust for the non-distributed income (Net Investment Income – Distribution)

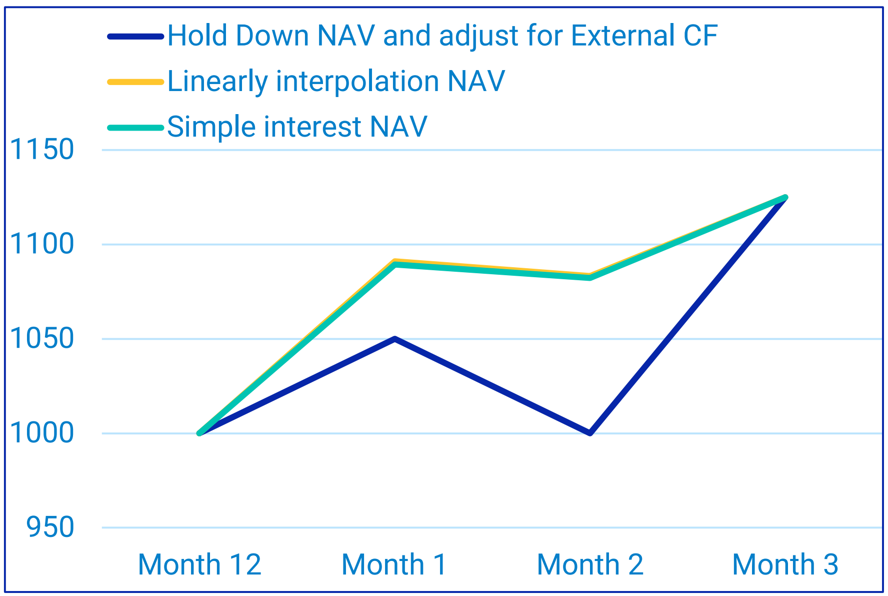
Fund level NAV - interpolation

MSCI is proposing to **hold down the NAV and adjust for external cash-flows and non-distributed income** in the absence of a monthly NAV.

There are two alternatives for interpolation, which both would also correct for external cash-flows and non-distributed income:

- Linearly interpolated (same absolute change each period)
- Simple interest (equal return in each month)

Please see below an example for the different options:



$NAV_{t-3} = 1000$

$NAV_t = 1175$

NCI = -50 (month 2)

Retained income = 50 (month 1)

Discussion points– NAV interpolation

c) Do you support the proposal to hold down the NAV and adjust for capital invested and returned and non-distributed income in the absence of a monthly NAV? If not should the NAV be interpolated linearly, simple interest or do you have a different proposal?

d) Do you support the NAV interpolation proposal for all index frequencies (quarterly, bi-annual or annual) or would there be a difference between the frequencies?

e) If adjustments need to be made for the non-distributed income MSCI proposes to use the distribution and the net income after fees on a monthly basis to derive the non-distributed income. Do you support this proposal?

f) Do you support the proposal to equally spread the net income amongst the months during the period when provided on a less than monthly basis? If not please provide your preferred data treatment for the net income.

Fund Level external cash flow – proposed interpolation

MSCI proposes data collection for the external cash flows between the fund and the investors on a day-dated basis and to provide the fund level NAV on a monthly basis.

For the avoidance of doubt, MSCI is not proposing to make any changes to any data collection at the direct property level.

In the absence that data providers can't provide fund level data on a day-dated basis MSCI is proposing to equally spread the cash flows across the quarter and time them at the middle of the month. This would be done for the below external cash flows:

- Capital invested
- Capital returned
- Distributions

Discussion point – External Cash Flows

g) Do you support the proposal that if data providers can't provide the data on a day-dated basis to equally spread the external cash flows over the months and time them at the middle of the month? If not please provide your preferred data treatment for the external cash-flows.

3. Cross-holdings proposal

Discontinuation of the adjustment for cross-holdings in UK and Australia for the Time-Weighted Return Methodology

Background

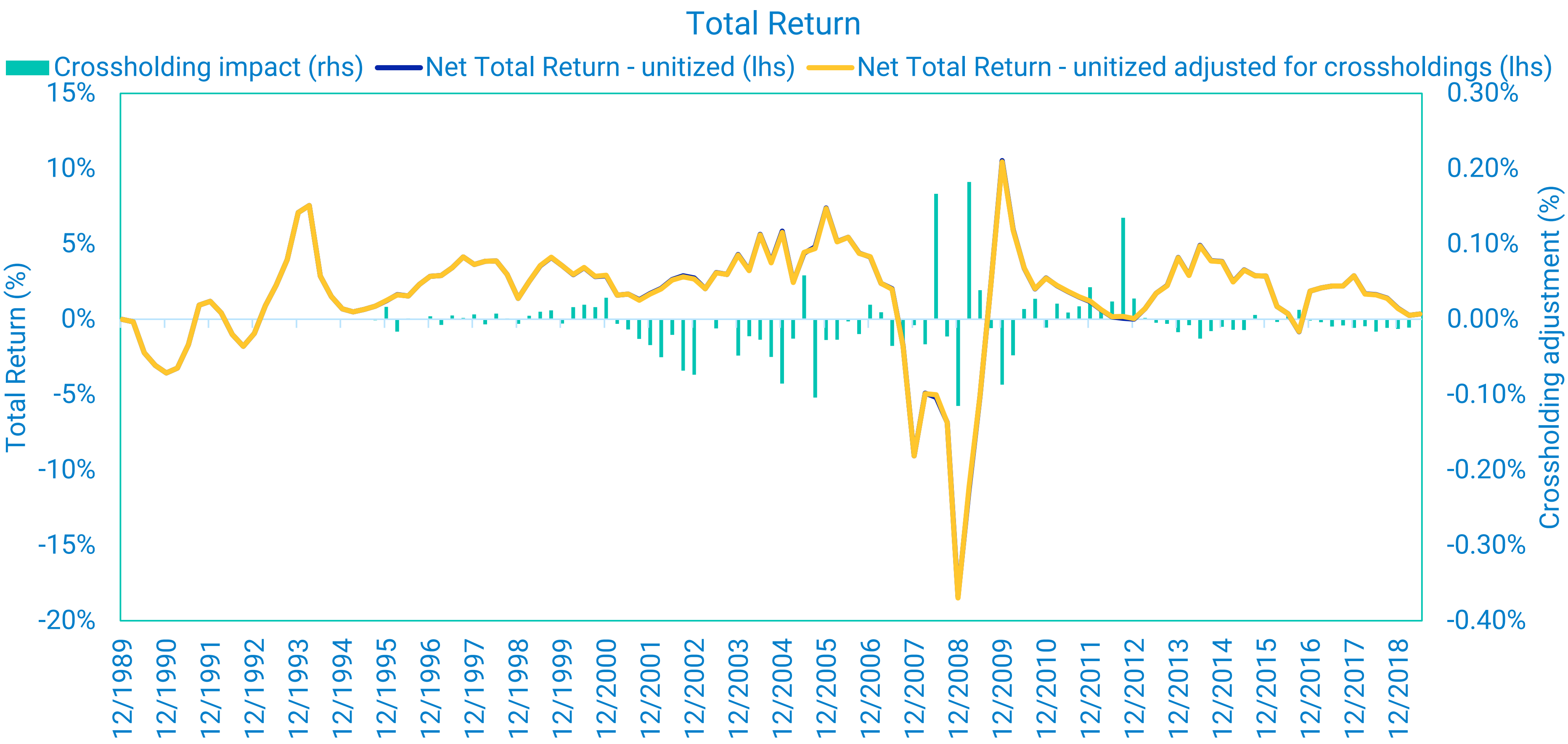
When one fund in a Property Fund Index has an interest in another fund included in the same index (the cross-held fund), the second fund's performance will be double counted unless an adjustment is made. The fund which is cross-held will contribute directly at a weight of 100% as well as indirectly by the ownership percentage of the fund that holds an interest. The current adjustment reduces the weight of the cross-held fund by reducing the number of units for that fund for index calculations.

MSCI currently adjusts the weights for the below indexes:

- MSCI/AREF UK Quarterly Property Fund Index (~1% at Q2 2019), see next slides for impact analysis
- MSCI/Mercer Australia Core Wholesale Monthly Property Fund Index (~4% at August 2019), see next slides for impact analysis
- The Property Council of Australia/MSCI Australia Unlisted Retail Quarterly Property Fund Index (currently there aren't any cross-holdings in the index – Q3 2019)

MSCI/AREF UK Quarterly Property Fund Index

Impact of adjustment for cross-holdings in all periods was less than 20 basis points.



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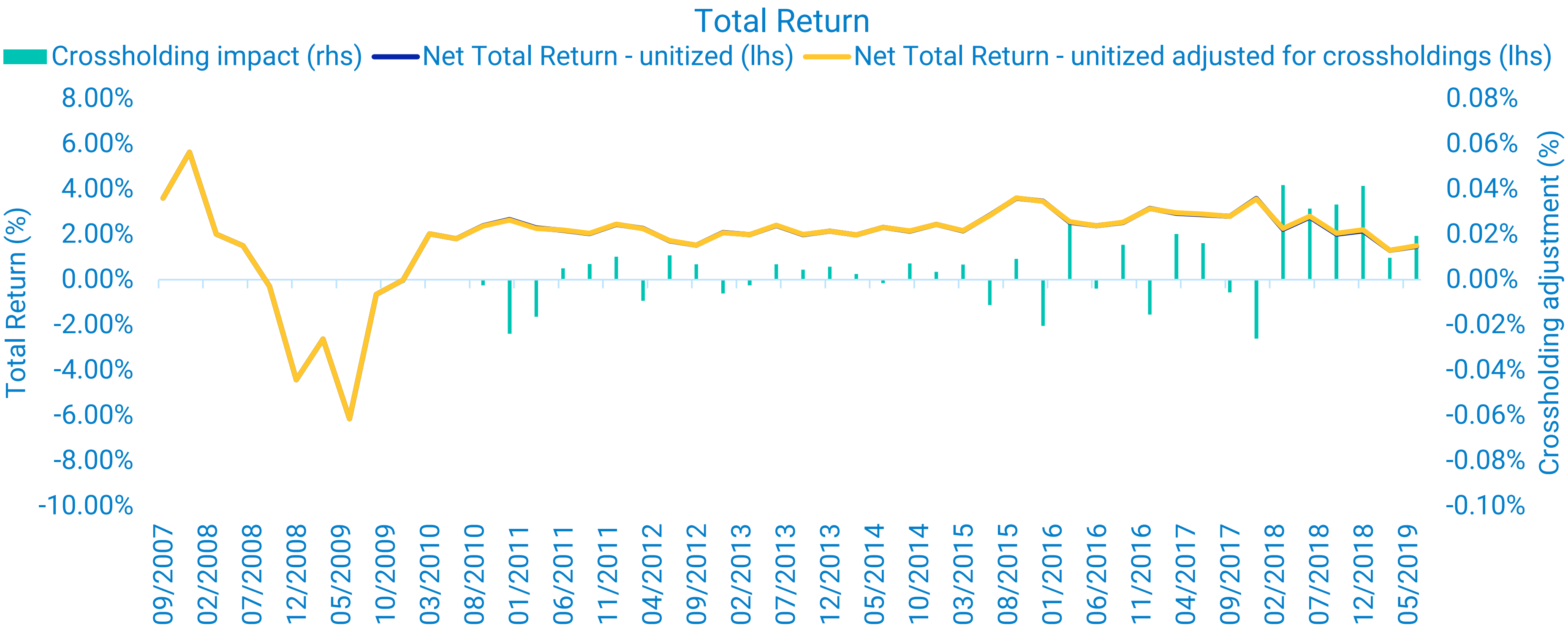
MSCI/Mercer Australia Core Wholesale Monthly Property Fund Index

Impact of adjustment for cross-holdings in all periods was less than 5 basis points.



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Cross-holdings adjustment discontinuation

MSCI is proposing to discontinue with making adjustments for cross-holdings for Property Fund Indexes based on:

- Real estate is an illiquid asset class and therefore liquidity requirements by adjusting for cross-holdings is not necessary.
- Although cross-holdings exists, investments could be made in both funds.
- By discontinuing the adjustments for cross-holdings the sum of the individual funds equals the index composition.
- By discontinuing the adjustments for cross-holdings the sum of the sub-indexes equals the index composition. There are instances where there is no cross-holdings in a subindex, but there is a cross-holding in the national level or international composite index.
- The impact of cross-holdings didn't have a material impact to the index returns.

MSCI is still of the view that fund of funds should not be included in any MSCI Property Fund Index.

Discussion points – cross-holdings adjustment

a) MSCI proposes to discontinue to adjust for cross-holdings for the index return calculations. Do you support this? If not please provide a reason why not.

b) If MSCI based on the consultation feedback decides not to discontinue the cross-holdings adjustment, MSCI needs to adjust for cross-holdings. Could you provide the total NAV you hold in another fund on a monthly and/or quarterly basis in that case? If not please provide a reason why not.

4. Data provision proposal

Data provision requirements for the new methodology (collection of day-dated external cash flows)

Data provision proposal

The proposed global introduction and standardization of the Time-Weighted Return Methodology would require changes to the data collection to be able to calculate the returns.

MSCI is consulting amongst data providers on the proposed data collection.

For the indexes that are currently already using the Modified Dietz methodology (US and Canada) the proposal is also to change the data collection for those indexes. This change would allow to calculate monthly returns and allow for the introduction of additional market information including information on capital investment flows.

MSCI is not proposing to change the frequency of the data provision although the index results would be calculated on a monthly basis and includes day-dated cash-flows.

Data provision

Proposed options for data collection at vehicle level (not bottom-up or per unit basis) to calculate the fund and index returns are:

1. Clients would provide the underlying data to calculate a fund return

The proposal for the data collection would also allow for the introduction of additional market information including information on capital investment flows. Also the collecting day-dated external cash-flows is anticipated to be more accurate for the index results.

Two alternative data collection practices that currently exists are:

I. Clients provide gross and net **returns** and the average capital invested (current data collection practice in the US)

II. Clients provide **numerator** (return) and **denominator** provided (current data collection practice in Canada)

Data collection proposal and alternatives

Underlying data (Average Weighted Equity and appreciation derived)

> proposal

Data field (at the fund level)
Net Asset Value (monthly)
New Capital Invested > day-dated (aka Contributions)
Capital Returned > day-dated (aka Redemptions)
Distributions > day-dated
Net Investment Income (before fund-level fees) (monthly)
Net Investment Income (after fund-level fees) (monthly)

Current data collection of returns (US)

Data field (at the fund level)
Average Weighted Equity
Gross Total Return (%)
Net Total Return (%)

Current data collection numerator and denominator (Canada)

Data field (at the fund level)
Average Weighted Equity
Net Investment Income (before fund-level fees)
Net Investment Income (after fund-level fees)
Total appreciation (real estate and debt)

The proposed definitions are included in the appendix

After the transition period the data collection for the Unitized approach as well as the current data fields collected in the US and Canada would be discontinued.

Discussion points – data provision

a) Could you provide all fund-level external cash flows (New Capital Invested, Capital Returned and Distributions) on a day-dated basis? If not, at which frequency is this information available?

b) Could you provide the net investment income both before and after fees on a monthly basis? If not, at which frequency is this information available?

c) What do you report to investors? Return, Fund Level NAV, weighted equity and on which frequency?

d) MSCI is proposing to collect historical data with three years history. Could you provide this information for your portfolio?

Appendix

GIPS 2020 – Input data and calculation methodology

Global Investment Performance Standards (GIPS®) for Firms

Private Market Investments

2.A.40 When calculating TIME-WEIGHTED RETURNS for PRIVATE MARKET INVESTMENT PORTFOLIOS that are included in COMPOSITES, PRIVATE MARKET INVESTMENT PORTFOLIOS MUST be valued:

a. At least quarterly.[20]

b. As of each quarter end or the last business day of the quarter.[21]

2.A.41 When calculating TIME-WEIGHTED RETURNS for PRIVATE MARKET INVESTMENT PORTFOLIOS that are included in COMPOSITES, the FIRM MUST:

a. Calculate returns at least quarterly.[22]

b. Calculate quarterly returns through the calendar quarter end or the last business day of the quarter.[23]

c. Calculate PORTFOLIO returns that adjust for daily-weighted EXTERNAL CASH FLOWS.[24]

d. Treat EXTERNAL CASH FLOWS according to the FIRM'S COMPOSITE-specific policy.

e. Geometrically LINK periodic and sub-period returns.

f. Consistently apply the calculation methodology used for an individual PORTFOLIO.

2.A.42 COMPOSITE TIME-WEIGHTED RETURNS for PRIVATE MARKET INVESTMENT COMPOSITES MUST be calculated at least quarterly.

GIPS 2020 – Input data and calculation methodology

Real Estate

2.A.43 REAL ESTATE investments in a REAL ESTATE OPEN-END FUND MUST have an EXTERNAL VALUATION at least once every 12 months.[25]

2.A.44 REAL ESTATE investments that are not in a REAL ESTATE OPEN-END FUND MUST:[26]

a. Have an EXTERNAL VALUATION at least once every 12 months unless client agreements stipulate otherwise, in which case REAL ESTATE investments MUST have an EXTERNAL VALUATION at least once every 36 months or per the client agreement if the client agreement REQUIRES EXTERNAL VALUATIONS more frequently than every 36 months; or

b. Be subject to an annual financial statement audit performed by an independent public accounting firm. The REAL ESTATE investments MUST be accounted for at FAIR VALUE, and the most recent audited financial statements available MUST contain an unmodified opinion issued by an independent public accounting firm.

2.A.45 EXTERNAL VALUATIONS for REAL ESTATE investments MUST be performed by an independent third party who is a professionally designated or certified commercial property valuer or appraiser. In markets where these professionals are not available, the FIRM MUST take necessary steps to ensure that only qualified independent property valuers or appraisers are used.

2.A.46 The FIRM MUST NOT use EXTERNAL VALUATIONS for REAL ESTATE investments when the valuer's or appraiser's fee is contingent upon the investment's appraised value.

Proposed methodology – simplified return formula

Simplified total return formula which doesn't separate income and capital growth components

$$Total\ Return_t = \left(\frac{NAV_t - NAVt_{-1} - \sum NCIt + \sum Distributionst}{WtdEq_t}\right) * 100$$

Where:

$$WtdEq_t = NAV_{t-1} + \sum_{i=1}^{n}\left[Days_{i,t} * NCI_{i,t}\right] - \sum_{i=1}^{n}\left[Days_{i,t} * Dist_{i,t}\right]$$

And:

WtdEq is weighted equity (capital employed);
$Days_{i,t}$ is the number of days as a portion of the number of days in the month;
$NCI_{i,t}$ is the net capital invested.

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Current Unitized Methodology- Return Formula

At the fund level, for the Unitized return methodology, total return is defined as:

$$Fund\ Return_t = \left(\frac{UtNAV_t - UtNAV_{t-1} - UtNCI_t + UtDist_t}{UtNAV_{t-1}}\right) * 100$$

Where:

$UtNAV_t$ is the net asset value per unit in month t;
$UtNCI_t$ is the net capital invested per unit in month t;
$UtDist_t$ is the distribution per unit in month t.

The index return is then calculated as:

$$Index\ Return_t = \left[\frac{\sum_{i=1}^{n}(UtR_{i,t} * Units_{i,t-1})}{\sum_{i-1}^{n}(UtCapEmp_{i,t-1} * Units_{i,t-1})}\right] * 100$$

Where:

n is the number of funds in the index sample;
UtRi,t is the return per unit in month t of fund i;
UtCapEmpi,t-1 is the capital employed per unit in month t-1 of fund i; in Australia the capital employed per unit in month t is used;
Units are the current number of units in issue by each fund in the universe, less cross-holdings (U.K. and Australia only).

Current Unitized Methodology - worked example

Input data:

- NAV_t = 1200 (11 units) > $UtNAV_t$ = 109.09
- NAV_{t-1} = 1000 (10 units) > $UtNAV_{t-1}$ = 100
- $\sum NCI_t$ = 100 (1 unit at 100)
- $\sum Distribution_t$ = 10 > $UtDistribution_t$ = 1

Calculation of returns:

$$\text{Fund Return}_t = \left(\frac{109.09 - 100 + 1}{100}\right) * 100 = 10.09\%$$

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Current Unitized Methodology- NAV interpolation

Current interpolation of the NAV for the unitized methodology:

INTERPOLATION OF DATA FOR UNITIZED INDEXES

As stated above, regardless of the frequency of the index, monthly returns are calculated. This may require the interpolation of provided data, and assumptions about the timing of cash flows.

For funds included in quarterly indexes where no data is received monthly:

- the NAV of the previous period is held down (kept unchanged) and the new data is used only at quarter end.
- distributions provided are included in the calculation at the end of the quarter.

For biannual and annual indexes, the NAV is linearly interpolated, and the distributions are apportioned equally over the months concerned.

Proposed definitions

Data fields	Data Definition
New Capital Invested	New capital raised by the vehicle during the period, timed on a day-dated basis.
New Capital Invested Date	Date for each new capital invested
Capital Returned	Capital returned to investors (redemptions) by the vehicle during the period, timed on a day-dated basis.
Capital Returned Date	Date for each capital returned
Distributions	Income distributions payable, gross of tax, net of expenses, timed on a day-dated basis.
Distributions Date	Date for each distribution has been accrued
Net Investment Income After Fees	Total investment income that was reported by the vehicle during the period net of fund operating costs, and net of any advisory and incentive fees (unless the incentive fees are netted off the capital side).
Net Investment Income Before Fees	Total investment income that was reported by the vehicle during the period net of fund operating costs, but gross of any advisory and incentive fees (if the latter is applicable).
Net Asset Value	The NAV of a vehicle is its Gross Asset Value less all liabilities as per the chosen valuation principles

About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 45 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process. To learn more, please visit www.msci.com.

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