NCREIF Market Value Index (MVI)

The NCREIF Property Index (NPI) has achieved preeminence as an indicator of the investment performance of institutionally held commercial property in the United States. It was designed to be a measure of the quarterly <u>return</u> on the properties that are included in the index.

The return for each property is calculated as follows:

$$R_t = \frac{MV_t - MV_{t-1} + PS_t + NOI_t - CI_t}{MV_{t-1} - (PS_t / 2) - (NOI_t / 3) + (CI_t / 2)}$$

Where:

R_t is the Total Return for period t,

MV_t is the Market Value at the end of period t,

MV_{t-1} is the Market Value at the beginning of period t,

PS_t is any Partial Sales in period t,

NOI_t is the Net Operating Income in period t, and

CI_t is the Capital Expenditures (Improvements) in period t.

This NPI formula is designed as an approximation of a quarterly Internal Rate of Return (IRR) when NOI is assumed to be received monthly during the quarter and any Capital Expenditures (CapEx) or Partial Sales occur mid-quarter. The formula is based on the "Modified Dietz" formula developed by Dietz (1966) and commonly used for performance measurement in the institutional arena.[1]

The assumption that NOI occurs at the end of each month is what results in the 1/3 adjustment in the denominator and the assumption that CapEx and Partial Sales occur mid-quarter is the reason for the ½ adjustment. The main point is that this formula was designed for *returns*, i.e., to provide an approximation of an IRR.

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[1] Dietz, P.O., Pension Funds: Measuring Investment Performance, The Free Press, 1966.

Market Value Index (MVI)

The NCREIF Market Value Index (MVI) was developed to provide a measures property value change each quarter.

The MVI formula is:

$$(MV_t - MV_{t-1} + PS_t) / MV_{t-1}$$

or alternatively:

$$[\ (MV_t + PS_t) / MV_{t-1}\ ] - 1$$

Where

MV is Market Value and PS is Partial Sales reported to NCREIF in quarter t.

MV_{t-1} is the Market Value at the end of the prior quarter (beginning of the current quarter).

PS_t is any partial sales that ocurred during the quarter.[2]

Because the MVI is not intended as estimates of a quarterly IRR, no adjustment has to be made to the denominator of the NPI's formula. The denominator is simply the Beginning Market Value. This results in a pure index of changes in the market value of the properties over time. This treatment is consistent with the way price indices are calculated for other asset classes.[3]

Another important distinction between the MVI and the NPI is that the MVI excludes quarters during which an individual property incurred a major new investment of capital such as an expansion of space. This quarter is excluded because the change in value would include the additional investment in the property and not reflect the change in value on a "same store" basis. In any given quarter, this has historically been a very small percentage of properties (less than one percent).

[2] A partial sale is when a portion of the property (but not the entire property) is sold. If the entire property is sold, that will be reflected in the ending market value.

[3] The MVI should not be confused with other measures that have historically been reported by NCREIF such as a so called "appreciation" or "capital" return which simply leaves out the NOI in the NPI formula shown above. This is a component of the NPI return but NOT a pure change in value.

Equal-Weighted versus Value-Weighted

The headline NPI returns are value-weighted as they represent the universe of properties reported to NCREIF. That is, the return for each individual property is weighted by its market value. The NPI can be thought of as the return for the "portfolio" of NCREIF properties. NCREIF members also have access to an equal weighted version of the NPI that weights each property the same as if it was a sample from a broader population.

Similarly, NCREIF produces both equal and value weighted versions of the NPI. The choice of which one to use depends on whether it is to be interpreted as the change in the market value of the NCREIF portfolio of properties or as a sample that might be interpreted as representative of a broader population of institutional commercial real estate properties.

The "headline" published version of the MVI is the equal-weighted version and as noted above may be more representative of a broader universe of properties. But for other purposes such as duETS based on the performance of the MVI where the intent is to capture the change in the value of just NCREIF properties, the value weighted version is used.

Conclusion

The NCREIF MVI has been designed as an indication of changes in the market value of properties in the NCREIF Property Index (NPI). Quarters during which a particular property had capital expenditures to expand the space are omitted so the MVI better reflects changes in value due to market conditions and not new investment. The MVI is produced on both an equal and value weighted basis. The choice between the two depends on how the index is intended to be used.