

# Property Derivatives

## Commercial real estate derivatives begin trading

Commercial real estate property derivatives based on indices published by the National Council of Real Estate Fiduciaries (NCREIF) became available for trading in March 2007.

## Multiple motives to invest

We believe the product will become increasingly popular as a relatively efficient means of investing, hedging, re-balancing or expressing views about commercial real estate. There is a broad range of potential participants in the commercial real estate property derivatives market, including real estate owners and developers, real estate investors, portfolio managers, traders and hedge funds.

## Trading expectations of property performance

Property derivatives enable an investor to trade his expectations of property performance. One can take a long or short position on a generic bundle of commercial real estate. Trades can be based on total return, income or capital appreciation. NCREIF has sub-indices by property type and geographic region.

## Advantages to property derivatives

Property derivatives have some advantages over direct property investment, including ease of execution, customization, infinite inventory and scalability, and no property management.

## Property derivatives have risks

Investment risks and returns may not be aligned with direct property investment. Derivatives have counterparty risk, lack of control over the referenced assets and among other things there are index shortcomings.

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## Emerging, flourishing and expanding

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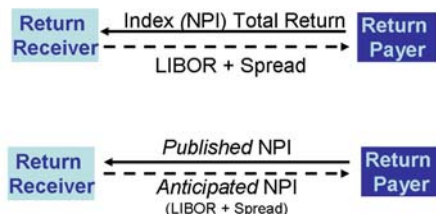
Property derivatives enable an investor to take a long or short position on a generic bundle of commercial real estate. Trades can be based on total return, income or capital appreciation. NCREIF has a total return index called the NCREIF Property Index (NPI) and sub-indices by property type (office, apartment, industrial, retail and hotel) and geographic region (East, South, Midwest and West).

The commercial real estate property derivatives business is beginning to emerge in the U.S. on the heels of an established U.K. market, recent expansion of NCREIF licensing in the U.S., greater use of derivative products and a strong appetite for investment in the commercial real estate market.

- **UK success.** Property derivatives were introduced in the United Kingdom in 2005. In 2006 commercial property derivative volume reached £3.7 billion. Growth is accelerating.
- **NCREIF licensing.** In early 2007, NCREIF expanded licensing to include multiple parties interested in using its indices for property derivatives. Currently there are seven broker-dealers trading commercial property derivatives based on NCREIF data.
- **Derivative popularity.** The use of derivatives has become a fundamental investment tool for investors in many markets. Derivatives are also a natural compliment to alternative forms of real estate investment. The commercial real estate market's increased use of the capital markets has improved market transparency, increased the sophistication of stakeholders and brought in a broad range of investors. Derivatives are most relevant in markets with multiple investor types with differing investment views, styles and goals.
- **Broad range of appeal.** There are natural users on both legs of a property derivative, and a diversity of views as to the outlook of the commercial real estate market.

We believe that the property derivative market will continue to grow in the third and fourth quarters of this year, as more investors become familiar with the product.

Figure 1: Property derivative total return swap



Source: Merrill Lynch

\* If the index performance is negative, then the return receiver pays the absolute value of the NPI to the return payor.

**Return Receiver:**

- Goes long the index
- Buys exposure to index
- Pays L + spread
- Receives index performance
  - Receives positive returns
  - Pays negative returns

**Return Payor:**

- Goes short the index
- Sells exposure to the index
- Receives L + spread
- Pays index performance
  - Pays positive returns
  - Receives negative returns

## Mechanics

Property derivatives derive their value by reference to an underlying asset, a bundle of assets or benchmark. Parties to a derivative agreement have differing views as to the future value of the reference item. The parties can document their differing views in a negotiated over-the-counter agreement based on a notional balance (no principal is exchanged). There are two legs to the agreement: a return leg and a floating rate leg. The party *paying* the return of the referenced item is the return payer. The party *receiving* the return is the return receiver. The return receiver pays the return payer a periodic floating rate of return (Libor) plus a spread in exchange for the performance of the referenced item. The return leg embodies ownership such that the return receiver will enjoy gains and suffer losses (in which case the return receiver pays the return payer). The return receiver is going long the referenced item and the return payer is going short the referenced item (relative to the floating rate leg).

For example, a total rate of return swap based on the NCREIF Property Index (NPI) would have a total return leg and a floating rate leg.

- The total return leg of the swap is the *published* NPI.
- The floating rate leg of the swap is negotiated to be the equivalent of the *anticipated* NPI return (quoted as, LIBOR plus a spread).

If the total return amount is positive, then the receiver will receive the total return times the notional amount. If the total return amount is negative, then the receiver of the index will pay the absolute value of the total return times the notional amount to the return payor. The entity taking exposure to the index (return receiver) is paying a floating rate to go long the index. The return payor is shorting the index, believing the index will underperform the floating rate leg of the swap.

Property derivative trades can be negotiated with an investor's needs in mind, subject to the indexes constraints and the ability to find a counterparty. For example, an investor may seek to hedge retail property exposure while gaining office property exposure. Also, investors can take advantage of differences of opinions in anticipated NPI returns, whether based on total returns, by property type or by region. For example, some investors may be more bearish on the NPI than others, and those differing views of the anticipated return can be expressed through a negotiated floating rate leg of the swap. Agreements can be executed for short or longer periods of time, depending on an investor's needs or goals.

The swap agreement documents are prepared on ISDA forms. The confirmation delineates the negotiated terms of the agreement. Among other things, the parties negotiate and agree to:

- the reference item
- the notional amount of the trade
- the payment terms
- the term of the agreement (for example, 1-5 years)
- the cash flow exchange period (monthly, quarterly, at swap maturity, etc)
- calculations
- eventualities (delayed publication of index; corrections, etc)

## Multiple motives to invest

There is a broad range of potential participants in the commercial real estate property derivatives market, including real estate owners and developers, real estate investors, portfolio managers, traders and hedge funds.

Property derivatives have advantages over direct property investment and can address various investment motives, subject to index limitations. Property derivatives facilitate market timing and relative value trades for commercial real estate. Positions can be taken on total return, income or capital appreciation and can be focused based on property type or regional distinctions.

### Derivatives have some advantages

Derivatives have the advantage of ease of execution

**Ease of execution.** Derivative agreements can be executed quickly, easily and with little upfront costs. Direct property investment can be time consuming and costly because they require site selection, bidding, due diligence, zoning, building permits, appraisals, environmental reports, title insurance, legal fees, recording taxes and closing costs. Derivative agreements can be executed rapidly whereas direct property investment can take months.

**Derivatives can be customized,** subject to the ability to find a counterparty and index limitations. Derivative investors have the luxury of dictating the timing of the initial investment, its term and the amount. Derivative contracts can be made in intervals or in bulk, without the hassle of sourcing product. Derivative investors do not need to wait for assets to come to market. Derivative investors can maximize scale. In fact, property derivatives have seemingly infinite inventory and scalability.

**Diversification.** Commercial property derivatives can offer immediate diversification, while also allowing for some differentiation based on property type or region. Direct property investors may spend months or years acquiring a diverse portfolio. Property derivative investors do not need to pay a premium to acquire hard-to-find or large-scale inventory. Property derivatives can have broader or narrower diversification than REITs or real estate company equities.

**Ability to short.** Property derivatives offer a quick and efficient means of shorting a property market segment. It is not generally possible to short the physical commercial property market.

**Liquidity.** Property derivatives can be negotiated, reversed or hedged at any time. Direct real estate investment can be prone to periods of limited liquidity.

**No ratings change risk.** Property derivatives are not rated and therefore not subject to ratings changes.

**No property management.** Derivative investments eliminate the need for direct property management and hands-on real estate expertise.

**Table 1: Reasons to use property derivatives**

Express commercial real estate market view
Long position
Short position
Meet portfolio investment goals
Gain exposure
Rebalance portfolio
Free up capital
Custom trades
Manage positions
Hedge existing position
Retain excess returns
Advantages over direct property investment
Ability to short commercial real estate
Avoid intensive property management
Efficient investments (avoids long due diligence)

Derivatives deliver the ability to trade one's expectations of the property market.

## Expressing a view on commercial real estate market

Real estate experts may have a strong opinion about a particular component of the commercial real estate market. However, at times it may be difficult to express that view given limited amount of inventory, lengthy due diligence and highly competitive market. Derivatives will enable them to more readily put their opinion to work without delay. Through derivatives they would be able to invest in a market while looking for and competitively bidding for direct property investments. Alternatively, having already done extensive due diligence, one might want to lever that knowledge by trading one's expectations of the property market.

Similarly, a real estate investor may have concerns about a particular segment of the commercial real estate market and want to express that view. Unable to effectively short the market through direct investment, an owner may use derivatives to hedge current real estate exposure or take advantage of market knowledge. Furthermore, an owner may want to hedge against general market malaise while retaining long positions in physical assets expected to outperform market. Also, property derivatives can be designed to express views at specific points in time.

## Meeting investment goals

Commercial real estate portfolio managers may want to increase or decrease exposure to the generic property market, reallocate a portfolio among different property types or fine-tune exposure by region. Managers may want to make a temporary investment in property derivatives while searching for and evaluating suitable physical commercial real estate investments. Portfolio managers may also see advantages to hedging generic market risk while retaining excess returns or freeing up capital.

## Manage positions

Traders and hedge funds can make relative value trades through derivative products. Sophisticated players may seek to hedge their commercial real estate market risk and retain excess returns, or they may want to customize their investment (notional balance, term, property type etc) in ways that may be difficult to execute through direct property investment.

We give some examples of motives to invest in commercial real estate property derivatives in the table below.

**Table 2: Motives to invest in commercial real estate property derivatives**

Investor	Long	Short
Owner / developer	Express view on market Invest excess cash	Express view on market
Investor / REIT	Express view on market Invest excess cash Asset reallocations	Express view on market Hedge property exposure
Portfolio manager	Increase exposure Asset allocation Rebalancing Portfolio hedging	Express view on market Retain excess returns
Trader	Managing risk Express view on market	Manage risk Express view on market
Hedge fund	Relative value trades	Relative value trades

Source: Merrill Lynch

## Risks to property derivatives

There is a learning curve associated with property derivative agreements. Investors need to make sure they are fully aware of their investment risks and returns. Investment risks and returns may not be aligned with direct property investment.

### Risks to property derivatives

- Not a perfect hedge
- Not a good proxy
- Underperform individual assets
- Index shortcomings
- Counterparty risks

### Counterparty risk

Derivative agreements give rise to counterparty risk – the risk that a party to the agreement will not fulfill his contract obligations. Investors should be comfortable with the counterparty before investing in a derivative agreement. Parties that are not highly rated may need to post collateral, which will earn interest during the term of the agreement.

### Not a perfect hedge or proxy

The indices may not be a perfect hedge or a good proxy for a particular investor's needs. The NPI reflects performance of a specific bundle of assets that a particular investment base owns at a particular time, which may not be indicative of the general commercial real estate market or aligned with an investor's preferences.

### Inability to add value

A derivative investor cannot control or add value to the referenced assets. A derivative investor cannot add value to an existing derivative contract through its expertise.

### Index shortcomings

The method for calculating property indices and returns may not be ideal. For example, NCREIF returns are partially based on appraisals, a subjective opinion of value. Returns generally lag current market conditions. Given the nature of commercial real estate, each property index will have shortcomings.

### Additional risks

We review some shortcomings of the NPI in a following section.

Table 3: Derivative advantages and disadvantages over direct property investment

Advantages	Disadvantages
Quick	Counterparty risk
Cost effective	Generic bundle
Ease in execution, assignment or termination	Not available for all asset types or classes
Relative flexibility	No control over referenced assets
Avoids management	Index shortcomings
Ability to short market	Index is a trailing indicator
Avoids time delay	Relatively new product

Source: Merrill Lynch

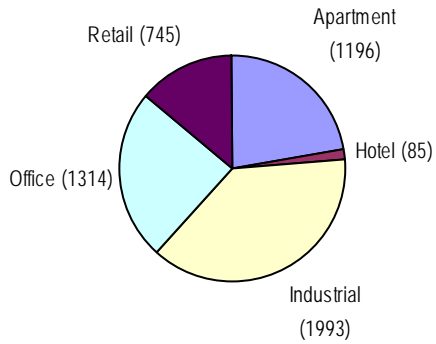
## NCREIF: a basis for property derivatives

The National Council of Real Estate Investment Fiduciaries, NCREIF, is a member-supported non-profit association that has been serving its constituents since 1977. Its members include data contributing members (such as institutional real estate investment professionals and real estate investment advisors), professional members (professional firms and individuals who provide services to institutional real estate industry) and academic members.

NCREIF is well-known for its property index, NPI, a total return index that has been quoted by real estate industry experts for years. NCREIF publishes total, income and capital appreciation returns. NCREIF also publishes returns for sub-indices by property type and region.

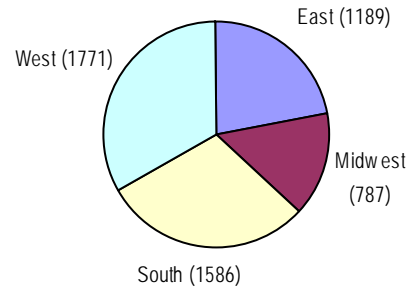
As of the year-end 2006, there were over 5300 properties in the NPI index with a gross fair market value exceeding \$247 billion. The NPI represents approximately 5% of the institutional quality commercial real estate in the United States.

Chart 1: NPI: Property type, by number of properties



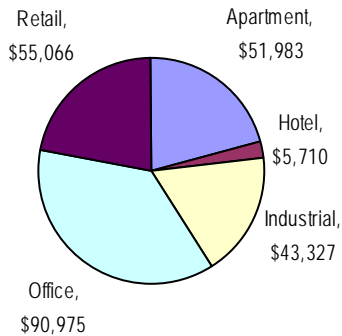
Source: NCREIF, Merrill Lynch

Chart 2: NPI: Geographic region, by number of properties



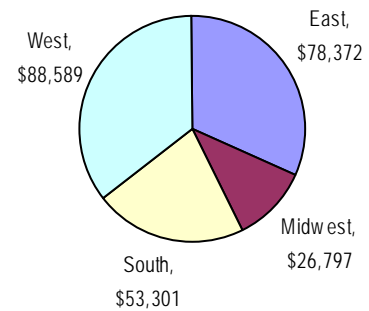
Source: NCREIF, Merrill Lynch

Chart 3: NPI: Property types by market value (\$mils)



Source: NCREIF, Merrill Lynch

Chart 4: NPI: Region by market value (\$mils)



Source: NCREIF, Merrill Lynch

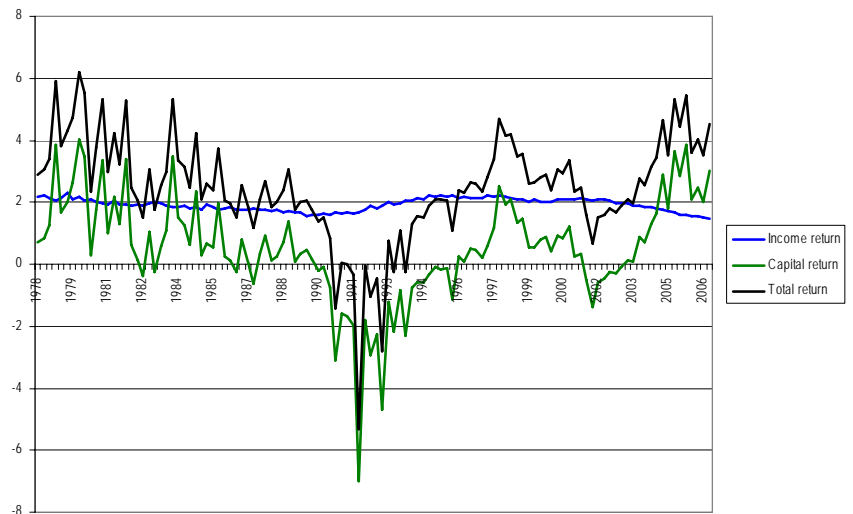
The purpose of the NCREIF property indices is to provide an historical measurement of property level returns in order to support its members and their efforts to establish real estate allocations, measure manager performance, increase awareness of commercial real estate as an institutional investment class and to educate.

## NPI calculations

According to NCREIF, the NCREIF Property Index (NPI) is a quarterly time series composite total rate of return measure of investment performance of a very large and dynamic pool of individual commercial real estate properties acquired in the private market for investment purposes only on behalf of tax-exempt institutional investors (mostly pension funds) and held in a fiduciary environment. NPI measures property level performance without regard to investment purpose or capital structure. The NPI has been published quarterly since 1978.

Performance is calculated based on quarterly returns at the property level (before the deduction of portfolio-level management fees, but inclusive of property level management fees) and in adherence to strict reporting requirements.<sup>1</sup> Performance of individual properties is calculated on an unleveraged basis and then weighted by its market value. Market value is based on appraisals and transaction prices.

Chart 5: NCREIF Returns



Source: NCREIF, Merrill Lynch

Eligible property types include office, hotel, retail, industrial and apartment. A property must be operating or generating income and generally properties are at least 60% occupied at the time of inclusion. Properties under development are not included. Each property must be owned by a qualified tax-exempt institutional investor or its designated agent. The property may be wholly owned or in a joint venture structure.

The NPI index is set at 100 for the fourth quarter of 1977. The index is increased by the return for each quarter, thereby assuming quarterly compounding. Annualized returns are calculated by chain linking quarterly rates. For more information on property eligibility and calculations see the NCREIF website ([www.ncreif.com](http://www.ncreif.com)).

The NPI generally increases through (1) the acquisition of more properties by its existing members and (2) the addition of new members and their properties. Sold

<sup>1</sup> Reporting must adhere to Real Estate Investment Standards (REIS).

properties are removed from the index in the quarter they were sold, but their historical data remains in the index. In recent years, approximately 11% of the properties have been sold and removed from the index each year.

Figure 2: NPI Returns

$\text{Total return} = \frac{(MV_1 - MV_0) + \text{NOI} + \text{Sales} - \text{CapX}}{MV_0 + \frac{1}{2} \text{CapX} - \frac{1}{2} \text{Sales} - \frac{1}{3} \text{NOI}}$
$\text{Income return} = \frac{\text{NOI}}{MV_0 + \frac{1}{2} \text{CapX} - \frac{1}{2} \text{Sales} - \frac{1}{3} \text{NOI}}$
$\text{Capital return} = \frac{(MV_1 - MV_0) + \text{Sales} - \text{CapX}}{MV_0 + \frac{1}{2} \text{CapX} - \frac{1}{2} \text{Sales} - \frac{1}{3} \text{NOI}}$

Source: NCREIF, Merrill Lynch  $MV_0$  = beginning market value,  $MV_1$  = ending market value, NOI = net operating income, CapX = capital expenditures

### Total return

The NPI total return represents the capital appreciation or depreciation, realized capital gains or losses and income of a bundle of commercial real estate properties. The quarterly total return equals the quarterly income return plus the quarterly capital appreciation return. The quarter-to-quarter return assumes (a) net operating income is received at the end of each month and (b) capital expenditures and partial sales occur at mid-quarter, as an estimate of average quarterly investment. NCREIF explains that the NPI formula can be thought of as calculating an internal rate of return for each property each quarter as if each property were purchased at the beginning of the quarter and sold at the end of the quarter, with cash flows occurring throughout the quarter.

### Income return

The NPI income return measures return based on a property's net operating income (NOI). NCREIF members calculate the return by dividing the NOI of a property by its average quarterly investment in the related property.

### Capital appreciation return

Capital appreciation returns measure change in market value. Each property must be valued quarterly and independently appraised at least once every three years. Market values can appreciate or depreciate. NCREIF members calculate the return based on appraisals, adjusted for capital improvements and partial sales. Market values are adjusted to transaction value upon sale of the asset.<sup>2</sup>

### NPI: bias and concerns

Given the nature of commercial real estate (non-homogenous assets, large private ownership, complexity, infrequent transaction), benchmarks for generic commercial real estate are an inexact science. However, like all commercial real estate indices, it may not behave like the general commercial real estate market or related sub-sectors because of its composition and methodology. Understanding its embedded bias and shortcomings is a key to appreciating and utilizing the NPI indices as benchmarks for commercial real estate investment. The NCREIF indices have several advantages, including a long history and transparency. Still, there are some bias and concerns.

### Single class of investors

The NPI reflects property returns from a single class of investors. Properties held by other ownership structures (such as hedge funds, REITs, commercial real estate companies and other taxable entities) are not included in the database.

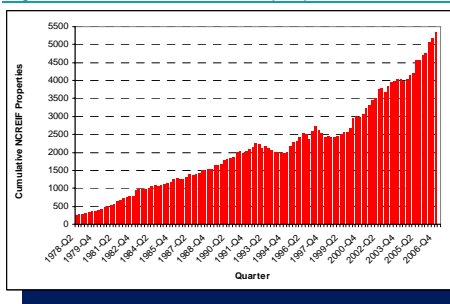
### Limited scope and concentrations

The NPI reflects a small subset of the entire U.S. commercial real estate market. As of year-end 2006, there were 5,333 properties with a market value of \$247 million in the NPI. Total commercial real estate properties are estimated to be worth over \$5 billion, with a portion of that attributed to institutional or high-quality properties.

<sup>2</sup> At times, the adjustment from appraised value to sales price can create a material change in value used to calculate the capital appreciation return.

The NPI may not reflect generic commercial real estate performance.

Figure 3: NCREIF number of properties



Source: NCREIF, Merrill Lynch

There are a limited, albeit growing, number of properties represented in the index. As the number of properties grows and becomes a larger percentage of the overall institutional commercial real estate market, the NPI gains appeal. The greater the percentage of the market the index represents, the more likely it is to behave like the broader market.

The NPI is concentrated by geographic location and property type. Institutional investors tend to own larger, high-quality assets located in certain urban locations. Concentrations can skew the index and can create distortions in reported returns given that the overall performance is value-weighted. Moreover, weightings can change. For example, Dallas/Houston/Austin constituted 20% of the apartment data at year-end 2006, but after the inclusion of the eligible portion<sup>3</sup> of the Peter Cooper Village and Stuyvesant Town complex (at \$5.4 billion, the largest single property sale) the apartment index will be more heavily weighted to New York.

### Institutional assets

The NPI portfolio has a bias in favor of larger, high quality commercial real estate. NCREIF properties may behave differently than the national average. For example, Class A properties may have more volatile market values or may be more likely to reap gains in an improving economy.

### Trailing indicator

The NPI reports aggregate returns of the prior quarter; it is not an indicator of current or future performance. In periods of rapid change, the NPI may not be a good hedge. The capitalization rates reported by NCREIF are calculated based on actual trailing numbers. Capitalization rates reported by other data vendors or brokers may take a forward view of projected first-year income.

### Market values are subjective

NCREIF is referred to as an appraisal-based index. However, it is important to note that the index also reflects sales prices. Appraisals or valuations are subjective. Appraised values are “corrected” upon the sale of an index property. The conversion to the transaction value can add considerable volatility in the capital appreciation index. However, we would argue the appraisals offer the benefit of reporting interim trends in valuation and therefore could minimize the volatility found in purely transaction-based indices. In this sense, one could think NCREIF as a transaction-based index, supplemented with interim appraisal valuations or trends.

Members report their own data and interim values. Self-reporting may have certain inherent risks but REIS reporting standards and required independent appraisals (every three years) serve to mitigate and identify the risks.

### Event risk

The most common reason for volatility has been the conversion of a property value from a subjective appraised value to the transaction sale price. The sale of large assets, mergers or a portfolio of assets can lead to apparent event risk given incongruent opinions of value.

### Complex formula and reporting requirements.

Among other things, there is a changing mix of assets. As properties are acquired by members, the assets are added to the index, and similarly, as assets are sold by members the assets are removed from the index.

<sup>3</sup> A portion of the complex may not be considered eligible. For example, a portion may be classified as development property (condo conversion).

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