New Strategies for Commercial Real Estate Investment and Risk Management

Introducing the NPI-based derivative.

Jeffrey D. Fisher

Credit Suisse First Boston (CSFB) recently announced it plans to offer several derivatives based on the National Council of Real Estate Investment Fiduciaries Property Index (NPI) to allow investors to either buy or sell the appreciation component of the NPI. Derivatives will also be offered that allow investors to swap property sector returns from the NPI.

A financial derivative is an instrument whose value is derived from another financial instrument such as a Treasury bond, cash market instrument, or stock index like the S&P 500 or New York Stock Exchange composite. Derivatives allow for the efficient transfer of risk across users and asset classes.

Derivatives markets have experienced rapid growth across asset classes and among different users as a tool for risk management. Alan Greenspan, chairman of the Board of Governors of the Federal Reserve System, has stated that their benefits have materially exceeded their costs, and derivatives play a major role in the risk management of financial institutions.

Derivatives are usually structured as either forwards or options. Forward contracts lock in a price for a reference asset or liability for some time into the future. Option contracts lock in an upper or a lower price level at an agreed-upon time in the future. Derivatives can be either listed on an exchange or traded over the counter. In the latter case, intermediaries could act as brokers and try to match transactions by arranging deals directly between counterparties. The intermediary could also serve as a

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dealer by taking the opposite sides of a transaction, and warehouse its positions until a counterparty is found. In more mature markets, dealers can manage risk by taking more of a portfolio approach to their positions in derivatives.

DERIVATIVES FOR COMMERCIAL REAL ESTATE

Despite the growth of various types of derivatives contracts, their use in commercial real estate has been very limited. To some extent various forms of real estate derivatives have been traded on the Investment Property Databank U.K. indexes for about ten years. But only recently has this market begun to grow as newer structures are developed and investors become more educated as to their potential use.

Four major banks have taken out contracts to use the IPD index for index-linked derivatives, and three more international banks are actively considering participating. Banks currently offering derivatives in the U.K. include Deutsche Bank, Euro Hypo, Barclays Capital, and Toronto-Dominion Bank. According to IPD, over the first two quarters of 2005 the market quickly rose to total 500 million pounds or about $900 million. Euro Hypo expects the deals at the end of 2005 to total over 1 billion pounds or $1.8 million (see Mallison [2005]).

The first bank to announce an offer of derivatives in the U.S. is CSFB, which plans several derivatives based on the NCREIF Property Index (NPI). NCREIF is a not-for-profit institutional real estate investment industry association founded in 1982 to collect information from its members and produce indexes and other data to provide more transparency for institutional real estate investors.

The NPI is based on total return, value appreciation/depreciation and current income, on a large pool of commercial real estate properties that constitute NCREIF's database. The index has reported returns every quarter since the first quarter of 1978. It represents the return for institutionally owned private real estate acquired in the private market. All properties have been acquired, at least in part, on behalf of tax-exempt institutional investors, the great majority of them pension funds. The NPI and its subindexes, the most widely used real estate indexes in the industry, are often used as a measure of performance (and compensation) for real estate managers.

NCREIF also publishes subindexes on a quarterly basis as follows: Property type: apartments, industrial, office, retail; Geographic region: east, west, midwest, south.

The NPI is composed exclusively of operating properties acquired on behalf of tax-exempt institutions, held in a fiduciary environment, and valued periodically. Properties under development are excluded from the index. Properties must be at least 60% occupied before inclusion. The index includes properties with leverage, but all returns are reported on a non-leveraged basis.

There are currently over 4,200 properties with a gross fair market value of close to $160 billion in the index. Quarterly returns from 1988 through 2004 are shown in Exhibit 1 for income, appreciation, and total return.

One of the nice features of most index-based derivatives is that you can either buy or sell the returns for the underlying index. That is, in the case of the NCREIF Property Index, if you think real estate values are going to increase, you can buy a derivative that has higher returns, the more property values increase. Conversely, if you think real estate values are more likely to fall, you can buy a derivative that has higher returns, the more real estate values fall—analogous to short-selling the underlying real estate. In short, a party can synthetically gain exposure, or hedge exposure, to the commercial real estate asset class without having to buy or sell the underlying real estate.

There are many ways to base derivatives on the NPI. They could be based on either the total return for the NPI or a component of the return such as the capital return, which reflects the change in the value of properties over time (net of capital expenditures). Or, the derivatives can be based on either the national index, property sector indexes such as office or retail properties, or regional indexes such as the east or west.

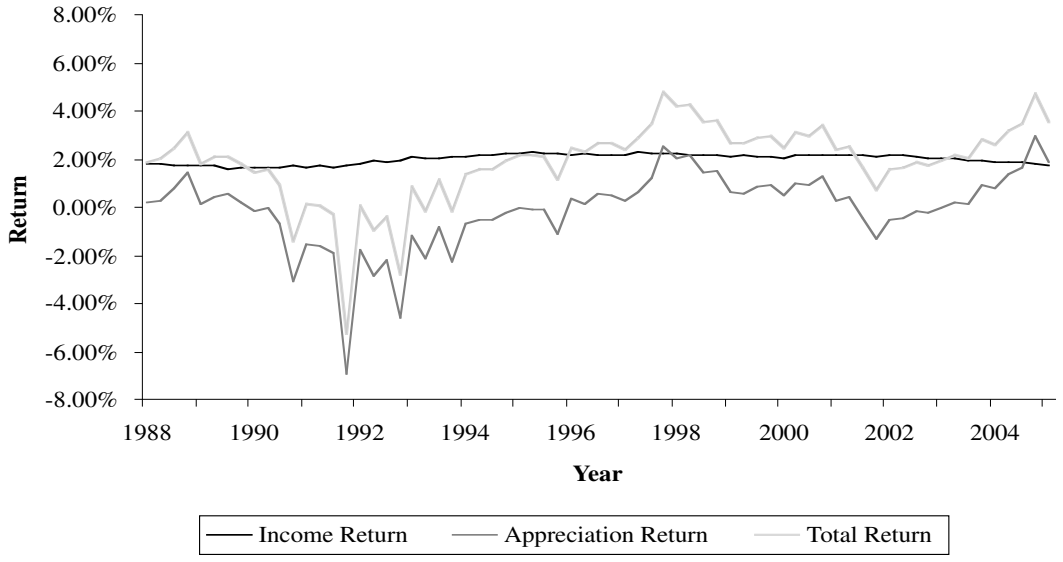
CSFB will initially offer two derivative trading opportunities involving the NPI:

1. Rate of return swap on the appreciation component of the NPI.
2. Property type swaps on the total return component of the property sectors.

All contracts will be with CSFB so the contract will be backed by its credit, currently Aa3 A+. CSFB currently executes billions of dollars of swaps on other products. It is anticipated that the minimum trade would be $25 million notional amount, and trades could easily amount to several hundred million dollars to meet the needs of pension fund clients.

I describe the two different types of derivatives in considerable detail.

EXHIBIT 1
NPI Returns (quarterly)



RATE OF RETURN SWAP ON THE APPRECIATION COMPONENT OF THE NPI

The rate of return derivative would allow investors to be either long or short the capital appreciation return component of the NPI. In effect, a long investor would enter into a contract to receive any appreciation, or positive returns, on the capital appreciation component of the NPI (the CR NPI) and, conversely, to pay any depreciation, or negative returns in the CR NPI. Thus, a long investor is buying this portion of the NPI. A short investor would enter into a contract to pay any appreciation on the CR NPI and conversely to receive any depreciation in the CR NPI. Thus, a short investor is selling the CR NPI.

Both sides of this trade would occur in an unfunded swap, where neither party would have to fund the notional amount of the trade. In other words, each trade would agree to pay or receive the return based on an agreed-upon notional amount (e.g., $100 million), but neither party would actually exchange the underlying notional trade amount, in this example $100 million. If the CR NPI has a return of 25 basis points in one quarter, the long position in this example would receive $250,000 and the short position would pay $250,000. If the CR NPI has a negative return of 25 basis points, the long position would pay $250,000 and the short position would receive $250,000.

The appreciation return of the NPI is the quarterly change in property values net of capital expenditures. The total return on the NPI is the sum of the appreciation return and the income return. The income return is fairly stable over time, and variations in the NPI from quarter to quarter are primarily a result of changes in property values.

To put this differently, the income return is based on the income from current leases, which is essentially the ratio of income (NOI) to property value. Although income varies over time with market conditions, property values adjust quickly to changes in income, resulting in a fairly stable income return. Thus, variations in the NPI from quarter to quarter are primarily the result of changes in property values as reflected in the appreciation return.

A derivative based on the appreciation return provides investors with a hedging opportunity for the short position and a unique cost-effective way to gain exposure to commercial real estate values by taking the long position.

Depending on the market interest for each side of the transaction, it may be necessary to structure all the trades over a certain benchmark. That is, if there is a substantial imbalance in the market for the long side of the CR NPI over the short, the derivative may need to be structured so that, for the term of the trade, the long receives only CR NPI over [25 basis points].

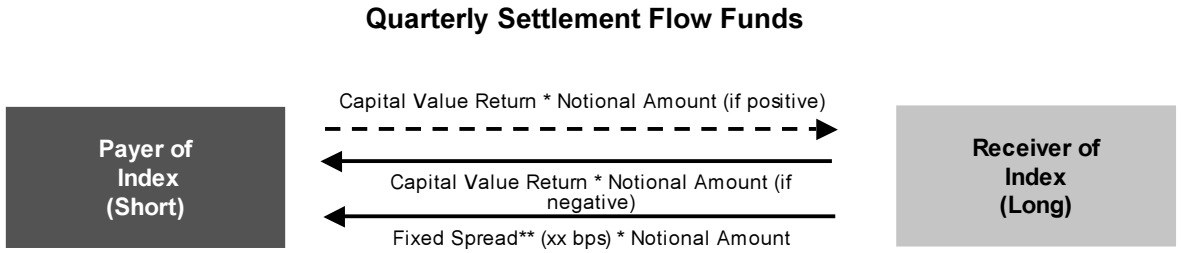
This is referred to as the fixed leg of the swap as illustrated in Exhibit 2. The floating leg is the CR NPI.

The fixed leg can be thought of as simply the expected

EXHIBIT 2

Trade #1: Trading Capital Value—Return Component

- A total return swap (TRS) transaction in which an investor receives (or pays) the quarterly *capital value return component* published by NCREIF and in return pays (or receives) a fixed spread.
- Fixed spread will be used to balance demand on both the long and short side of the trade. Depending on market conditions, it is possible that fixed spread will be flat (no spread) or negative (i.e. Payer of index would pay a fixed spread in order to pay index).
- Trades are notional based which means they are unfunded and the only dollars needed upfront to enter trades (besides fees) are margin requirements necessary to manage counterparty risk (evaluated on a counterparty by counterparty basis).
- Trades have quarterly payments.
- Term of Trade: 2 to 3 Years.



**Note that in certain market conditions, the fixed spread could be negative. In this case the payer of the index would pay the fixed spread * notional amount to the receiver of the index. Fixed spread could also equal zero (no spread).

rate of return. The bet in the case of the derivative is whether the actual return will be higher or lower than the expected return. The fixed leg is analogous to a *point spread*.

An alternative way to structure the NPI swap is obviously to base it on the total return rather than the appreciation return. Although income returns are fairly stable over time, cap rates do change, so the total return can change if there are changes in the income return. Investors who want to be sure they track the NPI as a benchmark would need to invest in a derivative based on the total return.

In an unfunded swap, basing the derivative on total return would not necessarily change the cost—what it would do is lead to a wider fixed spread to clear the market. If the swap is funded, the short position would have to actually pay the income return, which could be expensive.

Although CSFB will initially offer a swap only on the appreciation return, if market participants demand a total return swap one would expect that to be offered at some time either by CSFB or some other party.

Dealing with Appraisal Lag in the NPI

It is well known there tends to be a lag in the appraisal-based NPI for two reasons: 1) All properties are not revalued every quarter, and 2) appraised values tend to lag transaction prices when there is a significant change in market conditions. This causes the NPI to have a lot of momentum and to be fairly predictable for one or two quarters into the future.

To deal with the lag in the index, the trade may be structured so that a two-year trade would really be a 2.5 year trade, with the first two quarters benchmarked to a predetermined hurdle based on a forecast of the NPI for

two quarters. Thus, for the first two quarters the long would receive CR NPI above an agreed-upon forecast of the return, and then starting in Q3 would receive any return above zero. Conversely, the short would pay only to the extent that the return is higher than forecast for those two quarters.

At the time of this writing, the exact structure of the derivative had not been determined. Readers should contact CSFB for details, and a special area of the NCREIF website is also being designed for derivatives investors.

The nature of private commercial real estate means that the only practical way an index can be used for a derivative is that it be appraisal-based. Although there has been research on transaction-based indexes using sold properties from the NCREIF database, transaction indexes involve econometric models that can be subjective (and difficult to explain to investors).

One of the early attempts at an index in the U.K. used a hedonic model, which is the basis for most transaction indexes for commercial real estate. It was not well received by investors.

Use of appraisal-based returns raises questions as to whether a data-contributing member could influence the index by deciding what properties are revalued during a particular quarter. While this is theoretically possible, it is not likely that a NCREIF member, as an investment fiduciary, would risk its reputation and try to game the index by investing in a derivative influenced by inappropriate appraisal practices. Furthermore, because the derivative will be a two- to three-year trade, it is not likely that not revaluing some properties during a particular quarter would have any significant effect on an index the size of the NCREIF Property Index.

Finally, NCREIF monitors the effect of revaluations on the NPI, and would likely know if a particular member has outliers in its reported valuations. Therefore it is not believed that the use of appraised values is a significant problem—especially when there is no viable alternative.

Sample Trade

To illustrate a derivative based on the NCREIF appreciation return, I assume the parameters:

- Index traded: NCREIF Capital Value.
- Term: 3 years (plus additional two-quarter extension for lag adjustment period).
- Observation date: one business day after return value is published.
- Payment date: three business days after observation date.
- Trade date: 2/15/2001.
- Effective date: 2/16/2001.
- Termination date: 7/29/2004.*
- Notional amount: $100 million.
- Fixed leg: 25 bp per quarter.
- Lag adjustment hurdle: 30 bp for quarter 1, 25 bp for quarter 2 (quarter 2 calculated after quarter 1 actual return is published).

The returns in Exhibit 3 are based on the actual returns for this time period but rounded and modified slightly to simplify the illustration. Note that the first payment is for a stub period (the payment that would have been received for full-quarter accrual is prorated for the actual number of days between the effective date and the end of the business quarter).

SWAP OF TOTAL RETURN FOR PROPERTY TYPE SUBINDEXES

In the second type of swap to be offered, the derivative will be based on the total return for a particular property-type index. Key features of this trade are shown in Exhibit 4. Investors will swap the return on one of the property indexes for the return on another property-type index. This derivative is based on the total return (not just the appreciation return), but investors must take both a long and a short position. That is, they must swap property types, not just buy a property type. Their payoff is thus based on the *difference* in the performance of the two indexes, which historically has been due primarily to movements in the price appreciation of particular asset classes.

For example, a party could short, say, $25 million of office and "buy" $25 million of retail. This also would be in an unfunded format. In effect, this would enable parties to rebalance their portfolios synthetically.

Again there would be a fixed leg (spread) of basis points to clear the market. In this case the spread would reflect the difference in expected returns for retail versus office over the term of the swap.

Property-type swaps would be particularly useful for rebalancing a portfolio and could be used as a unique risk management tool not currently available without actually buying and selling different asset classes of real estate. For example, an investor might be overexposed to office properties but underexposed to retail properties. This investor

EXHIBIT 3
Projected Returns on Sample Trade

Period	Begin Accrual Date:	Periodic Payment Date:	Reference Year / Qtr	NCREIF Capital Value Return	Fixed Leg	Lag Adjustment Hurdle	NET Short Party PMT To Long Party
1	2/16/2001	4/29/2001	2001 / 1	0.35000%	0.00000%	0.30000%	40,000.00
2	4/29/2001	7/29/2001	2001 / 2	0.30000%	0.00000%	0.25000%	50,000.00
3	7/29/2001	10/29/2001	2001 / 3	-0.50000%	0.25000%	0.00000%	(750,000.00)
4	10/29/2001	1/29/2002	2001 / 4	-1.50000%	0.25000%	0.00000%	(1,750,000.00)
5	1/29/2002	4/29/2002	2002 / 1	-0.60000%	0.25000%	0.00000%	(850,000.00)
6	4/29/2002	7/29/2002	2002 / 2	-0.50000%	0.25000%	0.00000%	(750,000.00)
7	7/29/2002	10/29/2002	2002 / 3	-0.25000%	0.25000%	0.00000%	(500,000.00)
8	10/29/2002	1/29/2003	2002 / 4	-0.30000%	0.25000%	0.00000%	(550,000.00)
9	1/29/2003	4/29/2003	2003 / 1	-0.05000%	0.25000%	0.00000%	(300,000.00)
10	4/29/2003	7/29/2003	2003 / 2	0.15000%	0.25000%	0.00000%	(100,000.00)
11	7/29/2003	10/29/2003	2003 / 3	0.10000%	0.25000%	0.00000%	(150,000.00)
12	10/29/2003	1/29/2004	2003 / 4	0.95000%	0.25000%	0.00000%	700,000.00
13	1/29/2004	4/29/2004	2004 / 1	0.75000%	0.25000%	0.00000%	500,000.00
14	4/29/2004	7/29/2004	2004 / 2	1.30000%	0.25000%	0.00000%	1,050,000.00

could then enter into a trade to pay the NCREIF office index but receive the NCREIF retail index, and thereby adjust exposure to the different property sectors without actually selling the properties. This also would avoid the transaction costs of selling the property at a time that may not be optimal.

And if you think the returns on the properties you own are going to do better than returns on the same property-type in the NPI, you would capture the excess return or alpha by holding the property but selling the index for that property type.

Exhibit 5 illustrates the *relative* performance of retail and office properties over the history of the NCREIF Property Index. The returns show how much each property type did better or worse than the NPI. Returns are rolling one-year total based on compounding the quarterly returns.

What is particularly interesting about Exhibit 5 is that over the history of the NPI, from 1978 to 2004, when office properties did better than the NPI, retail properties did worse and vice versa. Of course this may not occur in the future, but to track the NPI as a benchmark, if investors were overexposed in, say, retail because of past investment decisions and performance, it may make sense to swap retail returns for office returns through a derivative. By doing so they would *pay* the retail return to CSFB based on the notional amount of the derivative and *receive* the return on office.

Assume in an example that ABC Investors decides to enter into a derivative transaction on January 1, 2000, that would swap office returns for retail returns. That is, it would *pay* the return on the NCREIF office index but receive the returns on the NCREIF retail index. The term of the contract is five years terminating December 31, 2004. What return would the investor earn on this strategy?

For simplicity, we will assume the market was balanced at the time so no fixed spread is necessary. Recall that the fixed spread captures the expected return—or in this case the difference in expected returns for the two property types. Having no fixed spread implies that the expected return is the same for both over the term of the swap.

Over this particular five-year period, retail returns outperformed office returns. The office index increased at an 8.15% average annual return. Over the same period, the retail index increased at an average annual return of 13.67%. Thus, the investor who swapped office for retail would earn an average annual return of 13.67% while paying 8.15% for a net return of 5.52%.

Note that the investor is not taking the risk of the returns on real estate as reflected by the NPI in this case. The investor is taking the risk related to the *relative* performance of retail versus office—in this case betting that retail will outperform office. If the investor had been overexposed to office and underexposed to retail, it would then earn a return that is closer to the NPI return by using this strategy.

CONCLUSION

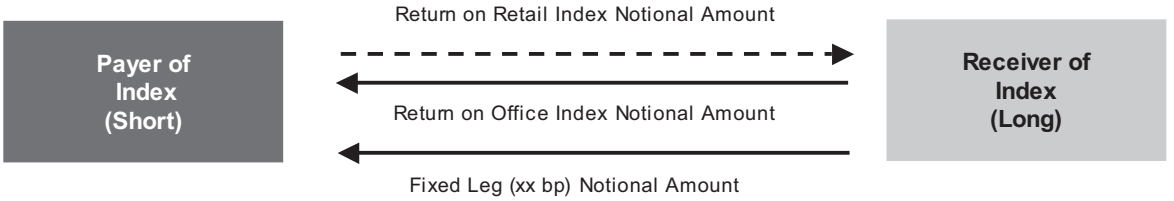
The derivatives to be offered by CSFB are likely to be the first of many different types of derivatives and CSFB the first of several institutions to offer derivatives.

EXHIBIT 4

Trade #2: Property Type Swap of Total Return

- Transaction where investor takes a long position in one property type and a short position in a different property type. Requirement of trade is to take one long and one short position.
- In this Total Return Swap (TRS) transaction, the investor receives the total return for one property type and pays total return on a different property type for the same notional amount. Consists of the *total return* of applicable property type subindex (Income and Capital Value). Depending on the property type swap entered into, investor will either pay or receive a fixed spread to enter into such property type swap. Fixed spread will be determined by market clearing levels (and thus, could be positive, negative, or zero).
- Trades are notional based.
- Trades will settle quarterly.
- Choose from the property types: retail, office, industrial and apartment.
- Term of Trade: 1 to 3 years.

Quarterly Settlement Flow Funds (ex. Retail/Office Swap)



As the market for derivatives expands and other types of derivatives are introduced, we are sure to see many strategies evolve for hedging and speculating on commercial real estate returns and values.

NCREIF has been approached by other institutions and exchanges that are also interested in offering derivatives ranging from additional OTC structures to exchange-traded derivatives. There may also be options that pay only if the NPI is above a certain index level or pay if it drops below a certain level.

This is a start to putting commercial real estate on a par with other asset classes where the use of derivatives is commonplace. Initially there is not expected to be much if any liquidity with the derivatives, but this may change over time.

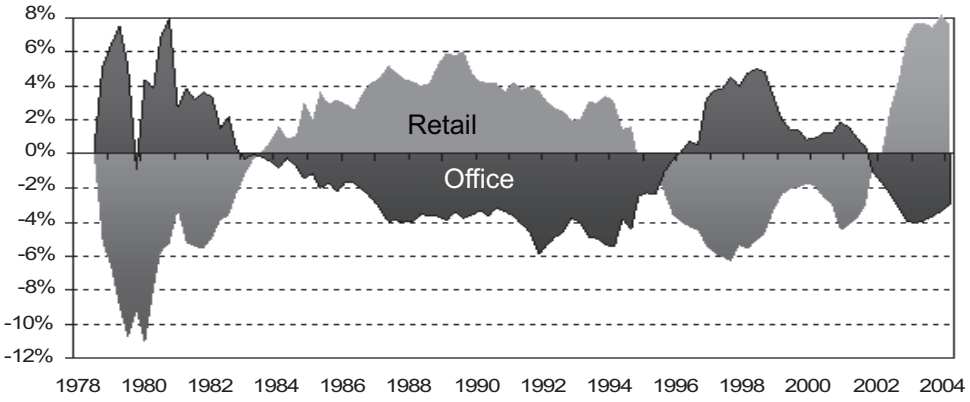
A number of pension plan sponsors would also like to enter the real estate market for the first time, or want to add to their real estate investment allocation, by purchasing shares in an open-end fund that offers a well-diversified portfolio. Today there are long queues to get into most of these funds. By purchasing a derivative on the appreciation component of the NPI, these plan sponsors can start getting exposure to real estate right away while waiting to get into the open-end fund.

And while there are many investors who currently want to increase their real estate exposure—especially if they don't already have real estate in their portfolio—others may want to reduce their exposure to real estate if they are concerned about current pricing levels or simply feel they have too much real estate exposure because of the recent run-up in prices. These investors may not want to sell their properties or may not be able to because they are invested in a fund that is locked in for several more years. Or they may feel they have an excellent manager who can deliver above-average returns but at the same time want to reduce their real estate risk exposure.

Selling a derivative rather than selling the underlying property may be an excellent way to reduce the effec-

EXHIBIT 5

Property Sector Hedging (rolling one-year total return relative to NPI)



Sources: NCREIF; Prudential Real Estate Investors

tive allocation to real estate without actually selling the properties or the fund. This may be particularly useful for investors in closed-end funds where shares cannot be liquidated until the date the fund matures.

We have seen how the derivative can be used in a hedging strategy to reduce risk. If an investor is long the asset and short the derivative, this reduces exposure to real estate risk. Similarly, if the investor swaps one property sector for another, this can increase the chance of performing at least as well as the NPI as a benchmark. But investors without any exposure to real estate who feel that it is overvalued could short real estate in the hope that prices and returns will fall relative to other investment alternatives. If they think interest rates are going to rise because of economic events that would cause real estate values to fall, they could purchase a LIBOR-based security and simultaneously short the NPI.

It has also been suggested that derivatives will be useful for investors pursuing portable alpha strategies. These strategies involve ways of separating the search for alpha or excess return from deciding on the level of market risk or beta that investors are willing to incur. Derivatives usually play an important part in these strategies. As one example, it may be more likely active managers can be found who can generate alpha for private commercial real estate than for publicly traded stocks because of the nature of private markets and commercial real estate. Thus, portfolio managers may want to increase their investment with active real estate managers but not change their overall allocation to real estate as an asset class. They could hire an active real estate investment manager and at the same time short the NCREIF Property Index. This would keep their allocations to real estate the same, but allow them to capture the alpha without affecting their beta.

We used to say that you cannot short-sell private real estate investments. This is no longer true, with introduction of the derivative. The types of hedging and risk management strategies that have been available to investors in stocks and other asset classes, including credit instruments and commodities, are now becoming available to commercial real estate investors. This opens up a wide array of new investment strategies not previously available.

Such a development should ultimately encourage the investment of additional capital in real estate, because it provides more options to invest, to rebalance a portfolio, and to hedge positions. It may also lead to speculators using derivatives, but this is what makes a complete capital market and helps maintain liquidity.

ENDNOTE

*Maturity date of 7/29/04 is derived as follows: Effective date of 2/16/01 results in first two quarterly payments (4/29/01 and 7/29/01) with the lag adjustment hurdle. After the lag adjustment hurdle period expires, the trade would have 12 full quarters (3 years) of full index exposure.

REFERENCE

Mallison, Simon. "Derivatives: IPD's UK Experience." Presentation to National Council of Real Estate Investment Fiduciaries, June 2005.

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