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Commercial Real Estate Derivatives: They're Here ... Well, Almost



“With derivatives and other innovations, we can decompose all the risks of investments, strip out and get rid of the ones we do not want or do not need, and keep the ones we do.”

—Robert Merton, Nobel Prize-winner,
from his keynote speech at the
2005 NCREIF-PREA Fall Conference



Jim Clayton

In the fall 2005 PREA-sponsored special issue of *The Journal of Portfolio Management*, Jeff Fisher introduced readers to commercial real estate derivatives in his article “New Strategies for Commercial Real Estate Investment and Risk Management.” At that time, NCREIF had recently entered into an arrangement with Credit Suisse that gave the bank exclusive rights to offer derivatives, in the form of return swaps, based on the NCREIF Property Index (NPI). For many, it seemed to be a natural next step in the evolution of the real estate finance and investment market from a private, slow-moving asset class, characterized by high transaction costs and the inability to sell short, to one with significant public-market integration and the associated fast pace of financial innovation that would result in continued improvement in price discovery and market pricing. Investors watched with interest to see

whether this new way to gain exposure to the real estate asset class and to hedge private real estate risk would take off and revolutionize the institutional real estate world, as it has stock and bond markets around the world.¹

Despite great potential, significant trading of NPI swaps did not materialize, and in October last year, Credit Suisse relinquished the exclusive license it received from NCREIF. It is widely believed that the exclusive arrangement, though helping the market cut its teeth, hindered growth and development because it prevented needed competition between investment banks and other players wishing to create derivatives on the NCREIF index. The lack of competition implied high prices (bid-ask spreads) on contracts offered and a lack of market depth required to create liquidity in the marketplace. Since that time, there have been a number of important developments as new players and new tradable indices have emerged and jostle for position in a market that appears set to take off early this year.

This article provides an update on the state of affairs in the U.S. commercial real estate derivatives market, with a focus on the emerging players, tradable indices, and the prospects for the growth and development of the synthetic real estate market. Given that real estate derivatives may be new to some readers, I begin with a brief overview, including the basic structure of return swaps as well as potential uses for individual investors and implications for the real estate market as a whole.

Real Estate Derivatives: The Basics

A derivative asset is one whose value is determined by or derives from the value of another asset or bundle of assets. Options (calls and puts), futures, and swaps are all derivative assets. The derivatives offered to date on the NCREIF index are swaps that come in two forms. One allows investors to take a position in the NPI appreciation return, buying (“going long”) or selling (“going short”) the NCREIF index return. The second type of product allows investors to swap total returns on two different NCREIF property sectors (for example, swapping office for retail).

1. In thinking about the prospects for the real estate derivatives market, some market watchers have drawn parallels to the growth and development of the credit default swaps (CDS) market. The CDS market grew from about \$180 billion in notional amount in 1997 to \$5 trillion in 2004 to an estimated \$17 trillion as of mid-2006.

Exhibit 1 shows how the appreciation return swap works. Investor L takes a long position in the index, meaning it receives the real estate return each period (quarter or year, depending on how the contract is specified) in exchange for paying LIBOR plus a spread. On the other side of the exchange, Investor S agrees to pay (that is, sell) the index return and in return receives LIBOR plus a spread. There is no up-front principal involved. The swap contract is based on a notional principal amount upon which cash flows to be exchanged are calculated. The trade might take place over the counter (OTC) or on an organized exchange and is likely to be facilitated by an investment bank, an inter-dealer broker, or both. The contract term is specified up front and typically would be for two or three years, with a cash settlement every quarter or possibly annually shortly after the index numbers are made available.

Why would these two real estate investors engage in such a derivative transaction? The return swap allows them to execute real estate strategies they cannot accomplish in the private real estate market. Investor S might be a large pension fund that is overallocated to real estate, possibly because of relatively poor performance in stock and bond markets. S can reduce exposure to the real estate asset class without having to sell properties. The swap allows Investor S to execute this strategy quickly while retaining ownership of the physical assets. Investor L could be a small pension fund looking to gain exposure to the real estate asset class. The swap allows L to get into the real estate game quickly with exposure to a diversified portfolio, the NCREIF index.

In another scenario, L and S could be two investors with different expectations about the direction of the market, with L betting that the market will rise and S that the market will take a downward turn. The two might be investment managers or pension funds with existing real estate portfolios using derivatives to fine-tune real estate allocations and manage portfolio risk as part of the overall real estate strategy. In this case, S uses the swap to reduce, or possibly even eliminate with a large enough notional position, the *systematic* real estate market component of its portfolio. This might be motivated by the goal of focusing on *alpha*, or the desire to buy portfolio-level insurance against a real estate downturn; this is similar to buying a put option on the index to provide downside protection. Of course, this story assumes the investors have portfolios that closely track the index. Alternatively, S and L could be more opportunistic players, such as hedge funds, possibly without real estate holdings at all, looking to speculate on short-term movements in the real estate index.

Exhibit 1: Basic Structure of A Property Return Swap



*LIBOR: London Interbank Offered Rate

$LIBOR + Spread_{Ask}$ is the price that the intermediary is asking to receive to sell (i.e., pay) the property return index.

$LIBOR + Spread_{Bid}$ is the price that the intermediary is willing to pay to receive the property return index.

$(Spread_{Ask} - Spread_{Bid})$ is the bid-ask spread—it reflects the intermediary's costs of doing business, including compensation for taking risk and creating liquidity (i.e., making the market), plus differences in expectations about future returns.

Of course, demand must exist on both the long and short sides of the market deriving from either portfolio adjustment motivations or disagreement about the direction of the market or both; it is a two-sided market that requires enough breadth and depth to create the requisite liquidity.

What does the real estate investment industry gain? Index return swaps allow investors to adjust exposure to real estate without buying or selling properties, thereby creating flexibility for portfolio management while eliminating the required physical delivery of the asset. Derivatives, therefore, help overcome the main disadvantages of private real estate investment, including high transaction costs, long transaction lead time, lack of liquidity, and then inability to sell real estate “short.”² Once sufficient liquidity is achieved in the marketplace, investors will be able to act quickly on both the short and the long sides of the market, resulting in significant improvement in price discovery and ultimately efficiency in the private real estate market. In addition, as derivatives markets continue to develop around the world, swaps should prove to be an efficient and economical way to gain exposure to international real estate markets.

Is Now the Right Time?

Recent developments in the UK commercial real estate derivatives as well as the U.S. housing derivatives markets suggest that the U.S. commercial real estate derivatives market could be ready to take off. In May 2006, the Chicago Mercantile Exchange (CME) announced its listing of house price futures contracts based on Case-Shiller/S&P repeat-sales house price indices at the national level and ten major metropolitan areas. Approximately \$340 million worth of derivatives contracts traded on the CME in 2006. Although

2. Property derivatives would therefore help investors manage the two top risk factors in real estate, liquidity risk and lack of reliable valuation data, as identified in the PREA-sponsored report *Institutional Perspectives on Real Estate Investing: The Role of Risk and Uncertainty*, by Ravi Dhar and William Goetzmann, May 2005.



... investors can choose to execute derivative strategies on the index that best suits their specific situations ... the presence of multiple indices with differing characteristics allows investors to trade across the indices to exploit arbitrage opportunities that might exist.

this is certainly not a huge number, there is good reason to believe this market is poised to expand. A number of investment banks have announced new plans to initiate OTC trading of housing derivatives on the same indices. In addition, the Case-Shiller/S&P indices have recently been expanded to include a larger number of metropolitan areas.

Potentially more relevant is the recent experience of the UK commercial derivatives market, where at least 12 banks are now licensed to trade index return swaps based on the IPD index. Exhibit 2 provides UK trading volume data. Since the end of 2004, nearly 250 individual trades totaling more than £3.5 billion of IPD index swaps have taken place. After a slow start, with four trades in the first quarter of 2005, OTC trading exhibited a sharp uptick in 2006, with 65 trades totaling £1.4 billion, occurring in the third quarter of 2006. In December, the first French derivatives trade took place, based on the French IPD index.

The increased activity in 2006 UK derivatives trading along with the start-up of the French market suggest a growing familiarity with and acceptance of property derivatives. Further evidence to support this claim comes from recent trades on IPD subindices in the UK. Though most trades have been based on the IPD UK Annual All-Property Index, early January marked the first swap based on the IPD Central London Office Index.

The emergence of a viable housing derivatives market in the United States and commercial property derivatives in the United Kingdom has led many of the players active in these sectors to look to the U.S. commercial market. Here are some examples:

- In September 2006, the CME announced plans to begin trading commercial property futures based on an index of average property sales prices per square foot at the national level and in major regions in the United States in the first quarter of this year (more on this index later).

- In November 2006, CB Richard Ellis Group, Inc., announced it was forming a joint venture with inter-dealer broker GFI Group Inc. to develop a commercial real estate derivatives program in the United States following the success of a similar partnership in the UK derivatives market. GFI is also active in Hong Kong residential property derivatives in a partnership with Colliers International.

- Other inter-dealer brokers readying to facilitate trading in commercial property derivatives include Traditional Financial Services (TFS) and Vyapar Capital Market Partners. TFS is active in the United Kingdom in both the residential and the commercial derivatives markets as well as in CME housing futures and OTC housing swaps and options.

These firms seem to be gearing up to begin trading sometime during the first quarter of this year. The question is, on which index or indices?³ Although in the United Kingdom, trading has been based exclusively on IPD indices, the U.S. environment is shaping up to have a different look. Multiple indices have been developed for the purpose of facilitating derivatives trading.

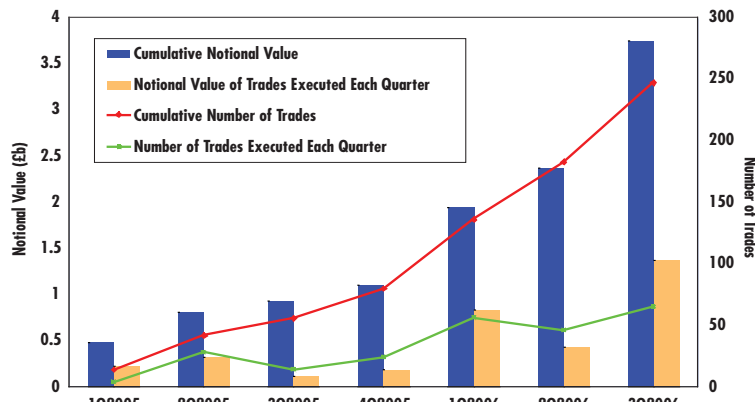
Tradable Commercial Property Return Indices

Four very different indices have emerged as the front runners upon which commercial property derivatives trading may be based. The NPI appears to be at the forefront, given its familiarity to institutional investors and widespread use as a benchmark return index. Industry buzz indicates that NCREIF is close to finalizing licensing agreements with a number of investment banks and, though not a certainty, the first derivatives trades are likely to be based on the NPI. The three additional indices developed for derivatives trading are these:

- Global Real Analytics (GRA) indices based on average sales price per square foot. The GRA indices are being developed through a partnership with Standard & Poor's.
- Real Capital Analytics (RCA) indices derived from repeat sales (same property realized price changes) of properties in RCA's transaction database.
- REXX indices based on metropolitan area rents as well as capital values.

Exhibit 3 provides an overview of each, including information about the index provider as well as index characteristics with an emphasis on the features that differ among the indices. It also contains URLs of the index providers, where readers can obtain additional details and in many cases white papers on the index methodology as well as data. It is not my intention to critically analyze the indices but to simply educate readers about them and point out key differences.

Exhibit 2: UK Commercial Property Derivatives Contract Trading Volume



Source: IPD

3. Derivatives on a public REIT index are also set to begin trading. On January 9, 2007, the Chicago Board of Trade announced plans to launch a new futures contract based on the Dow Jones U.S. Real Estate Index, an index comprising primarily public REITs.

At first glance, it might seem that with four indices at the outset, the market could be spread too thin, inhibiting the scale and liquidity each needs to achieve and hence market development. The presence of multiple indices might also initially cause confusion, especially among nontraditional real estate players. However, the presence of multiple indices is a positive in terms of the long-term development of the market for two reasons. First, at the micro or individual investor level, investors can choose to execute derivative strategies on the index that best suits their specific situations. Second, at the macro level, the indices' coexistence may help quicken the pace of development of the derivatives market. Specifically, the presence of multiple indices with differing characteristics allows investors to trade across the indices to exploit arbitrage opportunities that might exist. This type of trading will bring additional capital into the real estate investment industry quickly through derivatives, not property, transactions, thereby improving price discovery and the efficiency of the private property market.

Final Thoughts

Commercial real estate is an important asset class but one in the United States that does not yet have a well-

developed derivatives market. It appears that this is about to change as the real estate finance and investment sectors continue to innovate and evolve. There is significant interest in the development of commercial property derivatives and a strong belief by many that the market is ready. Derivatives allow investors to gain or reduce exposure to the real estate asset class quickly and without directly buying or selling properties. The greater liquidity and reduced up-front capital requirement provide added flexibility in executing real estate investment strategies, including the management of risk. Although many important details remain to be worked out, such as how the use of derivatives by investment managers impacts fees based in part on assets under management, we appear to be past the tipping point. Even if investors do not think they will employ property derivatives, they must understand them. If the swap and futures markets become large enough, then derivatives trading will provide information about expectations of future real estate pricing and investment performance, information that in turn will impact capital flows and pricing in both the private (direct) and public (REIT) markets. ■

Exhibit 3: The Four Emerging U.S. Commercial Real Estate Indices for Derivatives Trading

Indices	Provider Information	Basic Index Characteristics
NCREIF	National Council of Real Estate Investment Fiduciaries Property Index (NPI) derived from the performance of institutional class properties owned by investment managers and pension funds (plan sponsors). www.ncreif.org	<ul style="list-style-type: none"> ■ Quarterly unleveraged returns (total, income, and appreciation) at the national and regional level by property type back to 1978. MSA-level returns as well. ■ Appraisal-based: Capital returns are derived from changes in appraised values. NCREIF returns tend to lag "true" market returns due to the nature of the appraisal process and the fact that not all properties are reappraised each quarter. ■ As of third quarter 2006 comprising 5,162 properties with an estimated aggregate market value of \$232.5 billion. ■ The benchmark for most institutional core real estate portfolios.
S&P/GRA	Standard & Poor's (S&P) has partnered with Global Real Analytics (GRA) to produce the S&P/GRA Commercial Real Estate Indices (SPCREX), which are to begin trading on the Chicago Mercantile Exchange (CME). www.cme.com/trading/prd/re/uscre19624.html www.graglobal.com/index.php?section=products&page=aboutCREX	<ul style="list-style-type: none"> ■ Quarterly price indices and capital returns at the national and regional level as well as property type on a national basis, back to 1994. ■ Transaction-based: Price index is derived as the three-month moving average of average sales price per square foot. Average sales price per square foot figure is derived using a proprietary algorithm applied to property-level transaction price per square foot data observations.
RCA-Based	Real Capital Analytics (RCA), a national real estate data vendor specializing in tracking commercial real estate transaction activity and prices, has partnered with the MIT Center for Real Estate (MIT/CRE) and the firm Real Estate Analytics LLC (REAL) to produce a series of property price indices. http://web.mit.edu/cre/research/creal/rca.html	<ul style="list-style-type: none"> ■ Monthly price indices and capital returns at the national level back to 2000, quarterly indices for core property types, and annual indices for select MSAs. ■ Transaction-based: Constructed using a statistical/econometric methodology applied to repeat sales of individual properties (same-property realized price changes) in the RCA database. Similar to methodology used to construct the Case-Shiller/S&P housing prices indices that are traded on the CME. ■ RCA database includes most property sales of more than \$2.5 million.
REXX	REXX Index venture includes Cushman & Wakefield and Newmark, Knight, Frank as minority owners and data contributors. www.rexxindex.com	<ul style="list-style-type: none"> ■ Quarterly returns (total, rent, and capital) at the national level as well as for 15 major metro areas back to 1994. Office only at the current time. ■ Proprietary model based on current micro (space market) variables, including rents, vacancy rates, and leasing activity as well as key macro variables, such as interest rates and inflation. ■ Focus on metro-level rent indices to allow investors to hedge or leverage on performance in specific local markets.