Barriers to Growth in the US Real Estate Derivatives Market

By

Jani Venter
Bachelor of Architecture, 2000
Bachelor of Building Arts, 1998
University of Port Elizabeth

Submitted to the Department of Urban Studies and Planning in Partial Fulfillment of the Requirements for the Degree of Master of Science in Real Estate Development

at the

Massachusetts Institute of Technology

September, 2007

Signature of author_____
Jani Venter
Department of Urban Studies and Planning
July 27, 2007

Certified by_____
Gloria Schuck
Lecturer, Department of Urban Studies and Planning
Thesis Supervisor

Accepted by_____
David Geltner
Chairman, Interdepartmental Degree Program in Real Estate Development

Barriers to Growth in the US Real Estate Derivatives Market

By

Jani Venter
Bachelor of Architecture, 2000
Bachelor of Building Arts, 1998
University of Port Elizabeth

Submitted to the Department of Urban Studies and Planning in Partial Fulfillment of the Requirements for the Degree of Master of Science in Real Estate Development

Abstract

Commercial real estate is an important asset class but it does not yet have a well-developed derivatives market in the United States. A derivative is a contract that derives its value from an underlying index or asset. Examples of the most well-known derivatives that have been widely used and traded for years are stock options, commodity futures and interest rate swaps. The advent of direct real estate equity derivative products has created the opportunity for similar applications in both the US and international commercial real estate markets.

The United States is currently experiencing a convergence between real estate and finance and it appears that the real estate derivatives market might be ready to take off. The use of derivatives could improve the functioning of the real estate industry by allowing investors to gain or reduce exposure to the commercial real estate asset class without directly buying or selling properties. The increased liquidity and reduced up front capital requirements provide added flexibility in executing real estate investment strategies (i.e. speculating) and managing risk (i.e. hedging). This has resulted in significant interest in the development of commercial property derivatives by key players in all sectors. A number of barriers (e.g., indices, pricing, education, fund mandates, tax and accounting treatment) still exist that hinder the successful implementation and growth of real estate derivatives in the US commercial real estate market. It is crucial for the market to overcome these barriers in order to revolutionize the institutional world and allow investors to gain exposure to the real estate asset class and to hedge private real estate risk.

This thesis analyzes these barriers to the development of a synthetic market that is on the brink of expanding. The US real estate sector is an eight trillion dollar market composed of real estate assets which has been managed until recently without pointed focus on the property specific risk. The size of this market presents a vast opportunity for risk hedging, asset allocation and portfolio rebalancing in a more efficient manner through the use of derivatives.

Thesis Supervisor: Gloria Schuck
Title: Lecturer, Department of Urban Studies and Planning

Table of Contents

Acknowledgements

I would like to gratefully acknowledge my thesis advisor, Gloria Schuck, for without her guidance, kind support and supervision this thesis would not have been possible. I also want to thank David Geltner, who encouraged me to follow my passion and provided industry contacts and assistance on my topic.

In addition, I want to extend my sincerest gratitude to all the industry participants who willingly shared their knowledge, opinions and time with me throughout the entire thesis writing process.

Finally, I am forever indebted to my family, for their unwavering belief, encouragement and support throughout this year.

Chapter One: Introduction and Overview

The Question

A major question in this paper is whether the barriers to growth in the US commercial real estate market can be overcome, first, by determining what the specific barriers are and, second, by analyzing and applying the solutions to similar barriers in the United Kingdom (UK) commercial real estate derivatives market. The development of the UK real estate derivatives market is years ahead of the US market -- and thus could present viable solutions for overcoming the barriers to growth in a commercial real estate derivatives market -- this thesis investigates that inquiry.

Commercial real estate is an important asset class, but it does not yet have a well developed derivatives market in the United States (US). The use of derivatives could improve the functioning of the real estate industry by allowing investors to gain or reduce exposure to the commercial real estate asset class without directly buying or selling properties. The increased liquidity and reduced up front capital requirements provide added flexibility in executing real estate investment strategies and managing risk.

A derivative is a contract that derives it value from an underlying index or asset. Real Estate derivative products are essentially based on property periodic return indices, and offer futures contracts to allow for synthetic investment and hedging of real estate market exposure. These indices derive their value from the valuation of the underlying physical asset and are "contracts of difference." No cash is exchanged upfront at the time of the trade and a "notional" amount is traded.

Payments (based on the notional amount in the contract) are transferred between the two sides of the trade, depending on the relative performance of the index versus the payment (fixed rate or LIBOR + spread). This payment occurs throughout the term of the contract and in each quarter. The long side's gain or loss is short side's loss or gain.

Derivatives could improve the functioning of the real estate industry as a whole, resulting in significant interest in the development of US commercial real estate derivatives by key players across all sectors. Examples of the most well-known derivatives that are widely used and traded for years are stock options, commodity futures and interest rate swaps. The advent of direct real estate equity derivative products has created the opportunity for similar applications in both the US and international commercial real estate markets.

A number of barriers (e.g. indices, pricing, education, fund mandate, tax and accounting treatment) still exists that hinder the successful implementation and growth of real estate derivatives in the US commercial real estate sector. The market leaders, however, have the ability to educate and guide the investor, liquidity provider, and end user in order to facilitate the successful development of this market by addressing the following issues: first, inform the market of the specific barriers to development that could be overcome by regulatory action; second, identify the key players that could take a leading role in creating liquidity; and third, educate the end users on the specific problems that derivatives could address and how they could be utilized and implemented in investment and management decisions.

Over the last three years, the interest in the development of a US commercial real estate derivatives market has increased, with a number of factors contributing to this growing awareness.

The emergence of a housing derivatives market (albeit slow) in the US, and the development of the commercial property derivatives in the UK, have created interest in the development of the US commercial derivatives market. The National Council of Real Estate Investment Fiduciaries (NCREIF) has also provided licenses to seven leading investment banks (March of 2007) to use NCREIF Property Index (NPI)[1] for financial derivative transactions on US commercial real estate[2]. These agreements are aimed at enhancing liquidity and transparency in the property derivatives market and will expand an NPI licensing initiative introduced by NCREIF in 2005.

All market factors indicate that the derivatives market for the US commercial real estate sector shows potential for real growth, but there is a long way to go in educating the market and overcoming the barriers to development.

The Purpose

This thesis analyzes the barriers to growth of a synthetic market that is on the brink of expansion. It provides a comparative analysis of the current state of the US real estate derivatives market and the historical development of the United Kingdom (UK) real estate derivatives market. As stated, a number of market fundamentals and growth drivers have allowed the UK real estate derivatives market to develop faster than the US market. The UK market presents tangible solutions that could provide education and guidance for overcoming the barriers to development in the US market.

[1] NPI is a real estate investment performance index that tracks institutionally owned private commercial real estate in the US, and the Investment Property Databank Index (IPD) is its counterpart in the UK.
[2] According to traders that were interviewed for this thesis from both Credit Suisse (July 2nd) and ABM AMRO (July 10th), between eight and twelve trades had taken place from March to July 2007 with an approximate notional value of between $100 and $200 million.

Chapter one offers an introduction to real estate derivatives and discusses the potential for utilizing derivatives in the US commercial real estate sector.

Chapter two provides an overview of the research methodology and market players in the UK and US, with specific focus on the questions asked and scope of the interviews.

Chapter three provides industry feedback on the various definitions of a derivative due to the fact that the UK and US markets present different products as synthetic investment tools for commercial real estate. The second section of the chapter focuses on the advantages and disadvantages of utilizing derivatives in investment decisions.

Chapter four provides an historical overview of the real estate derivatives markets in both the UK and US. The chapter concludes with a comparison between the micro and macro fundamentals currently affecting the development in the UK and US real estate derivative markets.

Chapter five compares synthetic investment through the use of derivates with other investment vehicles. The second section of this chapter focuses on the slow growth of the US commercial real estate derivatives market and concludes with the specific risks involved in synthetic investing through the use of derivatives.

Chapter six focuses on the market players in both the UK and US commercial real estate derivative markets, their relative positioning, motivations for utilizing derivatives, and identifies the parties waiting on the sidelines.

Chapter seven provides at an in-depth analysis of the barriers to growth in a US commercial real estate derivatives market.

It focuses on indices, pricing, education, fund mandates and tax and accounting principles. The pricing section includes a quantitative analysis of swap pricing on an appraisal-based index by combining NPI forecasting and the pricing theory.

Chapter eight discusses industry concerns with the current state of the US commercial real estate derivatives market, drawing a comparison between the UK and US development with specific focus on education, indices, market movement, pricing and liquidity and regulatory issues.

Chapter nine provides industry opinions on the potential for growth in the US real estate derivatives market.

Chapter ten provides a conclusive overview of the barriers to growth in the US market, recommendations for industry actions to address these barriers, and reasons why derivatives are crucial to the successful development of the US commercial real estate sector.

Chapter Two: Methodology

The research information for this thesis was obtained through structured interviews with key players in the real estate derivatives industries in both the US and UK. A total of 20 interviews were completed, ten in the UK and ten in the US.

The interviewees can be grouped as follows: two tax lawyers, an index provider, seven investor/investment advisors, five broker/traders, three investment banks, and one property company.

The key areas for information gathering were as follows:

- Historical background on the market development
- The use of real estate derivatives by:
    - Investors and Investor Advisors
    - Fund Managers
    - Brokers/Traders
    - Merchant Banks
    - Property Companies

The company positions interviews included Vice President and Portfolio Manager, Head of Property Derivative Development through to Vice President of Real Estate Derivatives. Sixteen of the interviews were conducted via phone and six were personal interviews. The interviews ranged from fifteen minutes to one hour, resulting in a total of fourteen hours of discussion.

The companies interviewed in the US are as follows:

- Analytical Synthesis
- CBRE/GFI US
- Credit Suisse
- Cushman & Wakefield
- Morrison & Foerster LLP
- Prominent Bank
- Prudential Real estate Investors
- PREA
- Rreef
- Traditional Financial Services US

The companies interviewed in the UK are as follows:

- ABN AMRO
- British Land
- CBRE/GFI UK
- Deloitte & Touche
- Goldman Sachs
- ICAP
- Investment Property Databank
- Protego
- Prudential plc
- Traditional Financial Services UK

All interviewees were asked the same six main questions, except for the tax lawyers, with whom the conversation focused mainly on tax concerns regarding swap written on the NPI. The subsections to the questions varied depending on their type of institution and investment principles, in order to provide a framework for a comparative analysis across industry players in both the UK and US markets. The questions covered the following topics:

1. Industry definition of a derivative
2. Interviewee's background and introduction to real estate derivatives
3. An historical overview of the market development in UK and US commercial real estate derivatives market
4. Derivatives compared to other investment vehicles
5. Market players in the UK and US real estate derivative markets
6. The correlation between the commercial real estate market development in the UK and US
7. Barriers to growth in a commercial real estate derivatives market, UK and US respectively
8. Industry concerns about the current market development
9. Future of the real estate derivatives market in the US

This thesis is based on a comparative analysis of the responses and opinions from both the UK and US interviewees in order to define the barriers to growth, and to identify solutions that would encourage the development of the US commercial real estate derivatives market. It also provides a qualitative analysis of the current status of the US real estate derivatives market and identifies issues with pricing as relates to contracts written on the NPI index.

The results of the discussions revealed many interesting findings about industry players' needs and concerns about real estate derivatives as well as their opinions on the growth potential of a global real estate derivatives market. Exhibit II-1 displays a list of the industry interviewees and interview information.

Exhibit II-1. List of industry interviewees in the UK and US markets

	Perspective	Company	Position of Interviewee	Country	Interview	Time
1	**Investor/Advisor**	Prudential Real Estate Investors	Vice president and Portfolio Manager	US	Phone	40 min
2	**Investor/Advisor**	Cushman & Wakefield	Senior Managing Director, Investment Banking	US	Phone	45 min
3	**Investor/Advisor**	Rreef	Real Estate Hedge Fund Manager		Phone	40 min
4	**Investor/Advisor**	Analytical Synthesis	Principle	US	Phone	50 min
5	**Pension Fund Advisory**	PREA	Director of Research	US		30 min
6	**Broker**	CBRE/GFI	Vice President of Real Estate Derivatives	US	Phone	60 min
7	**Broker**	Traditional Financial Services	Director	US	Phone	45 min
8	**Bank/Intermediary**	Prominent bank	Individual	US	Phone	15 min
9	**Merchant Bank**	Credit Suisse	Trader	US	Phone	30 min
10	**Tax Specialist**	Morrison & Foerster LLP	Tax Lawyer	US	Phone	50 min
11	**Research**	Investment Property Databank (IPD)	Director, Head of Systems and Information Systems	UK	In Person	60 min
12	**Investor/Advisor**	Protego	Chairman of Property Deriavtives	UK	In Person	60 min
13	**Investor/Advisor**	PRUPIM	Head of Research	UK	In Person	45 min
14	**Investment and Development Company**	British Land	Chief Executive	UK	Phone	30 min
15	**Investor/Trader**	CBRE/GFI	Head of Property Derivative Development	UK	In Person	60 min
16	**Bank/Investor/Trader**	ABN AMRO	Assistant Director, Property Derivatives	UK	Phone	40 min
17	**Broker**	Traditional Financial Services	Director	UK	In Person	30 min
18	**Broker**	ICAP	Broker	UK	Phone	30 min
19	**Tax Specialist**	Deloitte & Touche	Tax Partner	UK	Phone	45 min
20	**Merchant Bank**	Goldman Sachs	Managing Director Property Derivtives	UK	In Person	40 min

Finally, this chapter provides an overview of the interviewees, questions asked, and methodology employed to obtain industry opinions and feedback. It serves as an introduction to Chapter three, which introduces the interviewees' opinions on the research question.

Chapter Three: Real Estate Derivatives

This chapter presents the feedback from the structured interviews. The first goal was to determine if all industry participants, in both the UK and US, have the same definition of a real estate derivative. The feedback showed that there is definitely some confusion in the market place on what a real estate derivative actually is. The first part of this chapter will discuss industry definitions of a derivative. It then examines specific real estate products in the UK and US, and the respective indices on which they trade in more detail. The second part of the chapter will focus on the advantages and disadvantages of utilizing derivatives in investment and management decisions.

Definition of a Derivative

Industry definitions

The broad based definition of a derivative by the industry participants is as follows: [3]

A derivative is a contract that derives its value from some kind of underlying asset, generally in a levered[4] manner. Typically it is thought of as a notional trade with no cash outlay upfront. However, a number of "derivative" products in the market require a principal payment, which makes them more of a structural note.

[3] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007
[4] Levered in this use refers to large contract notional values that are secured by a fraction of the notional value and generally terminated without transacting in a notional volume

This is where the confusion arises between a broad based definition and a narrow based definition of a derivative. A pure derivative does not include any form of payment upfront; it is purely based on a notional amount (swaps are pure derivatives). A structured note requires a principal payment that makes it look more like a bond[5]; it is considered to be a security that provides a property return. It is important to note that securities are not generally considered derivatives. They are not levered and are traded on an exchange, where as swaps are traded over the counter (OTC).

However, a trader at the US Credit Suisse stated that any product structured on an index (NPI), whether a structured note or a swap, is a derivative as it derives its value from the value of the underlying index. Thus, to reduce confusion, a broad based definition of a derivative in this thesis is as follows. A "derivative" is any synthetic product that has its ultimate price or payout determined by an underlying index performance or number; this includes swaps based on a national value as well as structured products that involve a principle payment.

There are currently two main real estate performance indices on which real estate derivatives are written: the NCREIF Property Index (NPI) in the US and the Investment Property Databank (IPD) index in the UK.

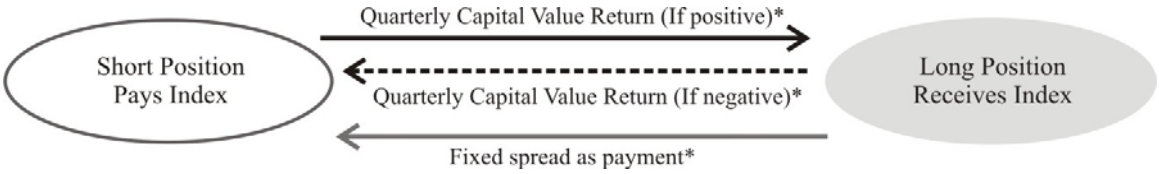
[5] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007

The three derivative products being offered on the NPI include (Lim & Yang, 2006):

- *Price return swaps on the capital value return component of the NPI*

  A capital value return swap is a transaction where the investor on the long side receives the quarterly capital value return component of the NPI (price appreciation) from the investor on the short side and in return pays a predetermined fixed spread to the short side.

  Exhibit III-1. Capital value return swap

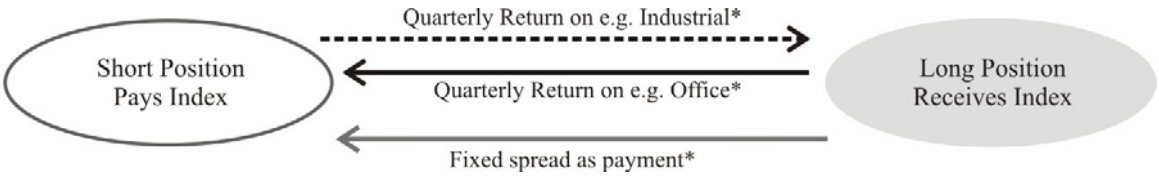


* As percentage of notional amount

- *Property type swaps for the total return (capital value + income) on the NPI property type sub-indices.*

  Property type total return swap is a transaction where the investor on the long side receives the quarterly total return of one NPI property type sub index from the investor on the short side; and in return, the investor pays the quarterly total return of another NPI property type sub index plus a predetermined fixed spread to the short side.

Exhibit III-2. Property type total return swap

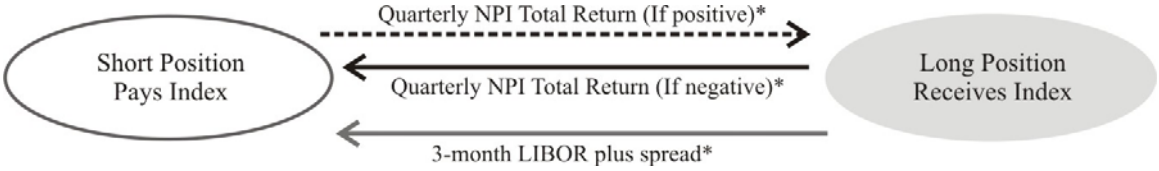


* As percentage of notional amount

- *Total return swap on the NPI total return (capital value + income)*

Total return swap is a transaction where the investor on the long side receives the quarterly NPI total return from the investor on the short side; and in return the investor pays the 3 month LIBOR plus a predetermined fixed spread to the short side.

Exhibit III-3. NPI total return swap



* As percentage of notional amount

The UK commercial real estate derivatives are mainly in the forms of swaps, and a few options have also traded. The majority of swaps in the UK have traded on the total return component of the IPD, with a small amount of sub sector trades within in the UK and extending to France and Germany[6].

[6] Trader at ABN AMRO, interview conducted by phone on July 10th 2007

The UK IPD index tracks all traditional real estate derivatives as mentioned above, as well as other structured products such as Property Investment Certificates (PICs) and Property Link Notes (PLNs). [7]

Before discussing the advantage and disadvantages of investing with derivatives, the next section will provide a brief overview of the structured note products, PICs and PLNs, offered in the UK, and derivative markets in general.

Other synthetic products

The UK currently offers two products that are considered to be structured notes: Property Investment Certificates (PICs) and Property Link Notes (PLNs). These products are traded as swaps between a floating rate note coupon (LIBOR based coupon) and the IPD total return. LIBOR essentially cancels out and the total return can be split in to rental and capital. The capital income is shifted to the end of the swap and the rental payment will remain as regular payment against LIBOR.[8]

Derivative markets

The characteristics and development of derivative markets for the various asset classes can vary significantly in nature and development.

[7] Index provider, interview conducted in person on June 7th 2007
[8] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007

A broker in the UK describes the difference between the real estate derivative and other equity derivative markets as follows:

"A derivative is traditionally traded in a manner where banks run a hedge book and thus use an underlying asset to generate derivative products that they sell. If a bank wants to option book [9]equities, part of their hedge would be to own futures in equities, as the hedge for futures is the underlying equity market. The problem with property is an investor cannot access the whole property market underlying the index. This is one way the real estate derivatives market does not behave like other derivative markets and acts more like a commodity market. Derivative contracts almost always involve contracts based on a notional amount that is not the same as a security that involves physically investing money upfront. The absence of that principal exposure is a notable feature and results in a highly levered product; this makes derivatives much easier to trade as vast sums of capital are not being moved around "(Head of Property Derivative Development at CBRE/GFI, June 7, 2007).

The next section discusses the advantages and disadvantages of investing in real estate derivatives.

Advantages and Disadvantages of Real Estate Derivatives

Real estate derivatives offer many benefits that could reduce the negative aspects of investing in direct property. Direct property investment is characterized by long lead-time, the inability to hedge risk and high transaction cost. (Lim & Yang, 2006)

[9] "Option book" means sell options for contract fee income against an existing portfolio and hedge losers in the futures.

The use of derivatives would allow investors to overcome the long lead time involved with due diligence and also offer immediate access to a real estate exposure by taking a long position on an index. Derivatives allow investors to take speculative positions in a market or merely hedge current market risk. The US transaction expenses typically amount to 3-5% of the property value, and in the UK it could be as high as 7.5% due to stamp tax[10]. Derivatives would allow investors immediate access to real estate exposure and significantly reduce the transaction cost involved with the purchase of direct property.

These main benefits of utilizing derivatives as investment tools are discussed in more detail below.

Reduced cost, speed and ease of transaction

Speed and ease of transaction are major advantages of utilizing derivatives. Investors can gain immediate exposure and access to private real estate[11] without the additional transaction costs and transfer tax of buying and selling physical property. So, in essence, derivatives can save costs and implement investment strategies immediately, which allows for hedging when required. It takes months to invest in real property and the risk exists that the market could change from the moment the decision is made until execution of the investment. No other derivatives market provides such a big cost savings between investing in the derivative and real market. This in itself is one of the reasons why property derivatives should be successful.[12]

[10] Chairman of Property Derivatives at Protego, interview conducted in person on June 12th 2007
[11] Private real estate is defined as commercial properties traded in the private market as opposed to those traded on the stock exchanges in the forms of REITs.
[12] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007

For example, if an investor wanted to gain $100 million worth of office exposure it could take months to build up the exposure in the physical property market[13]. If he takes a long position on the index and invests $100 million today, the start date of that swap is actually in the past and he is getting invested retrospectively compared to in seven to nine months[14] time with physical property. This could be very important in a strong bull market where the lag between future or retrospective investment is significant.

Hedging real estate market risk

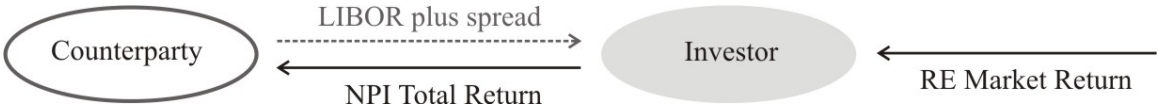
The main use of derivatives is either to avoid risk (hedgers) or to take on risk (speculators). These investment vehicles allow investors to take a short position on an index, which is really the first way to hedge commercial real estate exposure. Before commercial real estate derivatives there was no way of taking that risk off the table without selling the asset, and this involved transaction costs as well as the time required to close the transaction. Derivatives allows for a much more efficient way of hedging real estate risk.[15]

For example, assume an investor has significant exposure in commercial real estate and expects the market to slow down. He realizes that selling the properties is not a viable option due to the time involved and the fact that it is a prized asset. The investor decides to hedge his market risk by taking a short position on the NPI total return index. He finds that the current price[16] is higher than his expected return over the swap contract horizon.

[13] Ibid
[14] Approximate average time frame for purchase of commercial property
[15] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007
[16] Price means the fixed spread (LIBOR + fixed spread) exchanged for the NPI total return.

Thus the investor takes a short position on the index, pays out the NPI total return and receives LIBOR plus a fixed spread while reducing his exposure by paying the NPI return to the counterparty. (Lim & Yang, 2006)

Exhibit III-4. Hedging the real estate market risk by taking a short position on the NPI index



Re-allocation between asset classes

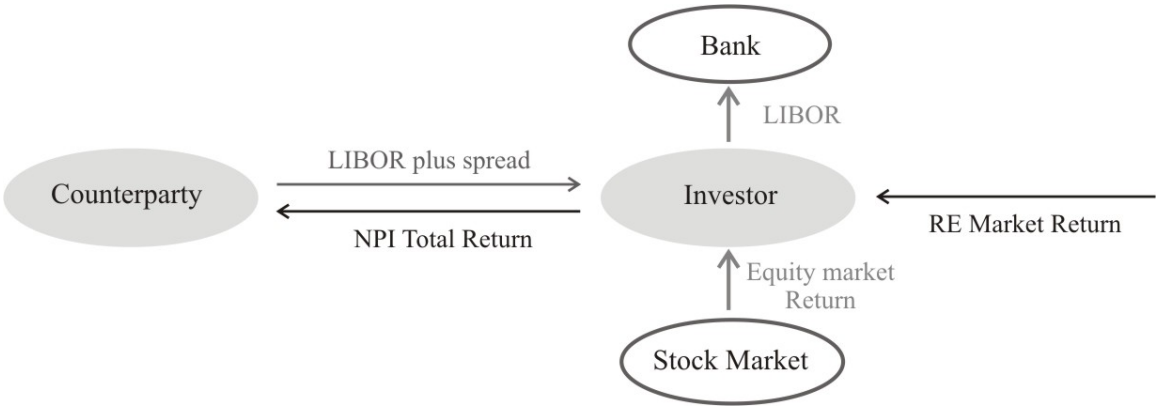
Derivatives allow for quick re-allocation between asset classes within mixed asset portfolios. For example, assume an investor has a mixed portfolio composed of equity, fixed income and real estate; and he wants to increase his exposure to real estate after a valuation decrease in the property sector has resulted in an imbalance within the target allocations within his portfolio. He decides to take a long position on the NPI in order to receive the total return, and pay LIBOR plus a fixed spread to the counter party. At the same time the investor could reduce equity exposure in order to rebalance the other sectors of the portfolio.

A long position on the index provides a quick and easy method for the developer to get exposure to a $266 billion[17] basket of commercial diversified real estate. It is impossible to purchase property with those diversification benefits in the actual market.

[17] Value of the underlying property sector in the NCREIF portfolio.

This type of swap allows investors who do not have the expertise or the capital to gain access to the industry.(Lim & Yang, 2006)

Exhibit III-5. Re-allocation between asset classes by taking a long position on the NPI index

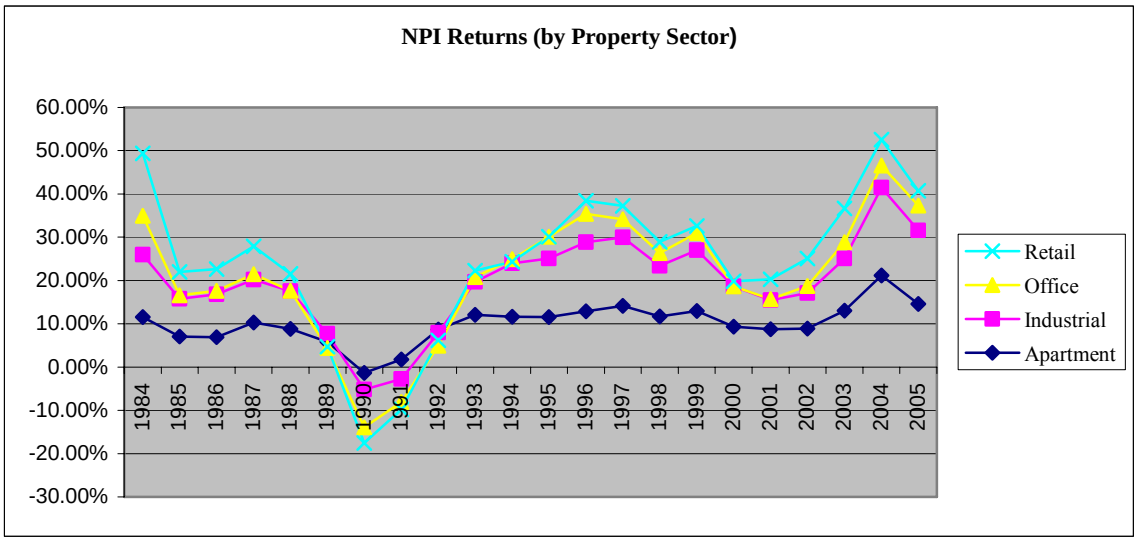


Portfolio rebalancing within sectors

Real estate cycles between the different property sectors are not 100% correlated (see Exhibit III-6 on the next page) and derivatives allow investors to rebalance portfolios by taking long and short positions on the various sectors. These positions depend on the anticipated movement of the different markets.

This will allow investors to gain and reduce exposure to geographical and property type sub sectors through the use of NPI sub sector swaps.

Exhibit III-6. NPI returns across property sectors



For example, assume that an investor primarily focuses on office and industrial. His sector balance is 60% in office and 40% in industrial, and he currently manages a $100 million worth portfolio. The investor finds the opportunity to acquire a new portfolio with a target allocation of 50% office and 50% industrial with a total value of $50 million. The investor is hesitant to make the purchase due to the fact that the portfolio is so heavily weighed in industrial. In order to solve this problem he takes a simultaneous long in office and short in industrial swap for $5M each. The fixed legs essentially cancel out, leaving the effective real estate exposure the investor requires as follows:

Office: $60M + $25M + $5M = $90M.

Industrial: $40M + $25M – $5M = $60M.

Total net investment = $150M (the swaps require no cash up front), so the new exposure is:

90/150 = 60% office

60/150 = 40% industrial

Through the use of NPI property type swap he maintains his target exposure while acquiring the new portfolio.

Exhibit III-7. Re-balancing portfolio sectors through property type swaps on the NPI index (Lim & Yang, 2006)

Trading Alpha

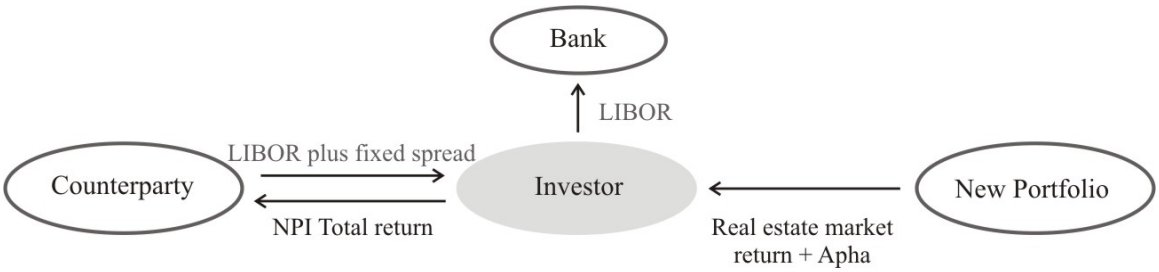
Investor returns can be split into two segments: alpha[18] and beta. Beta[19] represents the market return as projected by the NCREIF index or the IPD index; and alpha represents the amount with which the investor can beat the market return through successful management of an underlying property.(Geltner & Miller, 2007)

For example, assume a property developer has a history of consistently beating the market and gaining positive alpha.

[18] Alpha = Above market return @ or below market volatility
[19] Beta = Market portfolio return @ market portfolio volatility

However, he expects a market downturn in his specific property sector but does not want to sell the asset due to his ability to gain alpha on this specific property. Thus, the investor decides to hedge his market risk (beta) and take a short position on the NPI index. The investor pays the counterparty the NPI return (beta) and receives LIBOR plus a fixed spread. He still earns alpha through effective management and reduces his market risk by taking the short position on the NPI index.

Exhibit III-8. Trading alpha using the NPI total return swap (Lim & Yang, 2006)



The current chapter provided an overview of the definition of a derivative, the synthetic products offered in both the US and UK, the respective indices on which they trade, and concluded with the advantages and disadvantages of utilizing derivatives in investment and management decisions. The next chapter will discuss the development of the respective commercial real estate derivatives markets in both the UK and US.

Chapter Four: History and Development

Real estate derivatives are fairly new to the US real estate market but have existed in the UK since the early 90's. The UK market has experienced significant growth during the past three years, and the US market is considered to be on the brink of development. This chapter will provide an historical overview of both the UK and US markets. It will also discuss the current state of both markets as well as potential similarities, differences, and growth drivers that have impacted the barriers' growth in the US real estate derivatives market.

UK real estate derivatives market

Current state of the market

This is not the first time in history that the real estate derivatives market in the UK has experienced a period of growth. The first PIC was launched in 1994, and a number of factors have shaped market conditions since then, creating an ideal environment for the development of a real estate derivatives market in the UK.[20]

The current market cycle in the UK is at a very interesting point in time; it has historically low yield compression and transactions are still at a good level.[21] The market has only experienced a slow down in the number of transactions during the past three to four months, marking the first time in four years. These strong market fundamentals have been driven by liquidity, and not by market expectation and yield.

[20] Chairman of Property Derivatives at Protego, interview conducted in person on June 12th 2007
[21] Individual at Investment Bank, interview conducted in person on June 8th 2007

Investors have been buying real estate due to a need to diversify globally and get liquidity out into the market. One UK trader[22] anticipates that the current market movement, driven mainly by liquidity, will continue for the next few years, possibly resulting in further yield compression.

This condition in the market is unknown territory for investors and has triggered hedging needs for many property owners in the UK.[23] Investors are realizing that these market drivers are not sustainable and their upside will be limited, due to the fact that yields are currently trading below LIBOR. Thus, all of these factors have resulted in a two-way market in the property sector. Real estate derivatives are finally enabling UK investors to hedge their property risk as well as gain quicker, cheaper exposure to a diversified pool of real estate.

The largest users of property derivatives in the current market are institutional owners (life funds and pensions funds) selling property exposure and using derivatives for risk control. There is definitely a weight of selling, and the other side of the market is not yet visible enough to ensure efficient pricing. One trader commented that one could compare the development of the real estate derivatives market to that of credit default swaps, which took between five to ten years to develop into an efficient liquid market.[24]

[22] Broker at Traditional Financial Services UK, interview conducted in person on June 8th 2007
[23] Individual at Investment Bank, interview conducted in person on June 8th 2007
[24] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007

Market development and regulatory issues

Since the early 90's two companies were specifically looking at utilizing real estate derivatives. Barclays Bank plc wanted to hedge real estate exposure due to bad loans created by a real estate market crash in the 90s; and PRIPUM (Prudential) wanted to use derivatives for asset allocation within their portfolios.[25] PRUPIM was still managing multi asset portfolios at that point in time, whereas they are currently focused in real estate.

The use of derivatives presented a number of regulatory problems, and Barclays and Prudential joined forces to help take on the financial services authority. Barclays and Prudential created the Property Derivatives User Association (1990 /2000) in order to overcome these issues and encourage market growth.[26] The purpose of this organization was to identify action programs that would help the market develop to the point where real estate derivatives could be used in investment and management decisions.

The UK regulators were uncomfortable with the concept of derivatives for the following three reasons:[27]

- They were concerned with market liquidity and the ability to close out contracts.
- The regulators were uncomfortable with the IPD index as a basis for contracts. This concern was based on the fact that the index was not an average of observer pricing and was an incremental index representing appraisal based changes over a period of time.
- Investments through derivatives were classified as inadmissible for insurance companies as didn't qualify as assets for solvency ratios.

[25] Chairman of Property Derivatives at Protego, interview conducted in person on June 12th 2007
[26] Ibid
[27] Head of Research at PRUPIM, interview conducted in person on June 13th 2007

- This created a major obstacle for institutional use, and even though derivatives were legal to use, they did not present ideal investment vehicles.

Barclays and Prudential presented the following solutions to the regulatory concerns:[28]

- The Property Derivatives Association focused its efforts on educating property companies and life funds (life firms made up 40% of the market at that time). The aim was to get property companies and life funds comfortable with the concept of trading, and as such create potential opportunity for liquidity growth in the market place. This would provide a sense of comfort to the FSA in that there was sufficient liquidity in the market to support derivative use.
- The Association worked on devising derivatives in such a way as to demonstrate that these products were readily closable.
- Barclays and Prudential aimed at demonstrating to regulators that there was a wide range interest from insurance companies to use derivatives. They approached the Association of British Insurers, and supplied all heads of the real estate and insurance companies with a letter asking them if they would be comfortable, and willing, to use derivatives in investment and management decisions. By 2002, the association had approval documentation from asset managers of over £40 billion in property.

By this time, it was clear that both the Treasury and the Inland Revenue were interested in the use of derivatives. These institutions had, at the time, taken issue with the slowness in which authorities were introducing the concept of REITS, and derivatives presented a tool to give back to the industry.

[28] Head of Research at PRUPIM, interview conducted in person on June 13th 2007

The UK regulators finally approved derivatives on the grounds that if the institutions were comfortable with these products, they would be allowed to trade and count as admissible against liabilities.

The catalyst for the UK market development was the regulatory changes, specifically, allowing real estate derivatives to be an admissible instrument to the large institutional pension funds, as these funds are the largest owners of UK commercial property. The UK Tax Authority also allowed loss through use of derivatives to be offset against capital gains tax.

At the end of 2004, the market was still in a stage of educating the investors, property companies, property owners and classes like hedge funds.[29] In February of 2005, British Land and Prudential traded the first large transaction (£40 million) on the new regulations, and the contract was written as a three-year total return swap.

Market size and liquidity

The last round of momentum in the UK market has taken two years and, according to one investment manager, the availability of a secondary market can be used as an indication of liquidity[30]. Banks can only provide a degree of liquidity as the actual traders of the product and market reasons for trading are crucial to providing for both sides of a market. As market education continues, more end users will understand the product and see the attractions that will further increase liquidity. Total notional trading in the UK was £6.5 billion in the first quarter of 2007 with £2.9 billon executed during that quarter alone.

[29] Head of Research at PRUPIM, interview conducted in person on June 13th 2007
[30] Pension fund investment advisor at PREA, interview conducted by phone on May 29th 2007

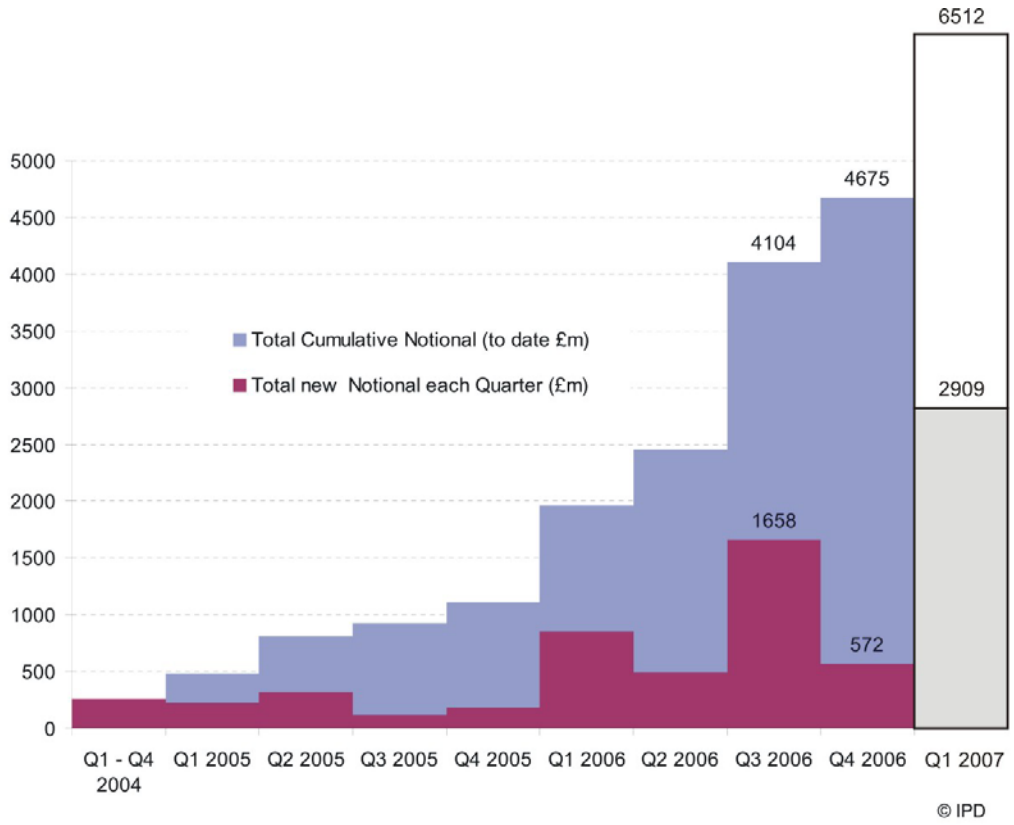
Exhibit IV-1. UK IPD/IPF total notional trade information

IPD/IPF Trade Volume Report	
Total Notional Trades Executed in Q1 2007	2,944
Cumulative Notional Value (£m) to March 07	6,547
Cumulative Number of Trades to March 07	407

*Source:IPD website

The total notional value traded up to July 2007 is close to 10% in value of the physical transactions in UK. One UK trader stated that he would not be surprised if, in three to five years, the derivative market is equal in size to that of the underlying physical market.[31]

Exhibit IV-2. Growth in UK IPD notional value since 2004 *Source: IPD website



[31] Individual at Investment Bank, interview conducted in person on June 8th 2007

US real estate derivatives market

Current state of the market

The US commercial real estate derivatives market is in the nascent stages of growth and education. In March 2007, NCREIF licensed seven investment banks to trade derivative products. The market had experienced somewhere between 15 and 20 trades, average size of $15 – 20 million, with an estimated total notional value of between $100 and $200 million.[32] The trades have been total return on both sides, property types on both sides, as well as capital value on both sides. Banks are definitely warehousing risk in order to create liquidity, acting as market makers, and encouraging a short trade for every long trade to ensure market balance.

Market development & motivations for using derivatives

The development of the US market has been lagging that of the UK. Credit Suisse (CS) originally obtained an exclusive license from NCREIF in 2005, even before the second round of activity started in the UK. The US had active markets in commercial real estate derivatives of fixed income products as well as CMBS derivatives, and CS wanted to create a similar market based on commercial equity derivatives. The initial products were total return and capital value return, but the market was not ready and CS executed two or three trades before the license expired.[33]

CS wanted to be a market maker, use its balance sheet to facilitate transactions and then syndicate them out.

[32] Trader at ABN AMRO, interview conducted by phone on July 10th 2007
[33] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007

The problem was that the information was not transparent and the parties in the transaction were not willing to disclose size or terms of the contracts. [34] Investors were all long due to the overflow of capital in the market, and the one sided nature of the market resulted in expensive pricing for the other (short) side of the market. Another problem was the lack of volatility in the NCREIF, which limited the amount of speculators. All these factors contributed to very high spreads. Finally, the activity in Europe from 2004 onwards created momentum and US end users and market makers, again viewed a need for the use of derivatives in investment and management decisions.

Correlation between the US & UK markets

Historically, derivative markets in other asset classes have developed slowly and then accelerated as they built momentum. The real estate derivatives market in the UK is following a similar track, but it is anticipated that the US market will take longer to develop during the initial growth phase. A number of reasons, primarily focusing on the difference and similarities in the market fundamentals, were cited by interviewees for these inherent differences in market development. The following section will focus on the factors that have impacted the markets and contributed to the current barriers to growth in the US commercial real estate derivatives market.

UK versus US market fundamentals

There are mixed opinions on the differences and similarities between the macro and micro market fundamentals in the two markets.

[34] Vice President and Portfolio manager at Prudential Real estate Investors, interview conducted by phone on Jun 19th 2007

The general consensus is that the US market is not going to develop as fast as the UK due to the fragmented nature of the market and concerns with the variety and quality of the US indices[35]. The different indices and their respective applications and problems will be discussed in detail in Chapter Seven (Barriers to Growth in the US real estate derivatives market). There were three opinions on the state of the market and are presented below.

A UK market participant was of the opinion that the *market fundamentals are not very different* in the two countries, but the circumstantial positioning of real estate is[36], and the Terrapin conference in New York (April 2007) confirmed this. The macro fundamentals are the same in that they are both big, relatively liquid, transparent markets that investors are interested in. However, looking at the micro characteristics and the status of each country's real estate derivative market, it appears that they are fundamentally different markets[37]. The UK market is definitely ahead of the US market and there are a number of reasons for this: first, IPD has played an important role in market development; second, the competitive nature between the banks in the UK was one of the main factors encouraging market participation; third, UK property funds themselves took the lead in organizing the market and this spurred development. The US market does not yet have consensus on an index or a number of big market players to take the lead and encourage market development.

According to one index provider, the industry might look back (2030) at the real estate investment market and see that there were no radical differences between the infrastructures available for investors in the US and UK in 2007.

[35] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007
[36] Index provider, interview conducted in person on June 7th 2007
[37] Ibid

On the other hand, the industry could be looking back in fascination at the little experiment in real estate derivatives in the UK market that failed by 2010. The market could even prove that a more heterogeneous fund based mix of direct and investment vehicles were going to be the only solutions for long term real estate investments in both markets.

The second opinion was that the *two markets are very different,* e.g. the accounting and regulatory changes in the UK played a very important role in getting the market started[38]. The US might not have the same underlying market fundamentals to necessitate similar changes. Transaction cost of physical real estate is higher in the UK due to stamp tax[39], which is one of the reasons why derivatives provide a viable investment option[40]. Also, there are much fewer commercial real estate derivative options outside of the commercial real estate equity derivatives space in the UK than in the US.[41] One UK broker stated that he has never seen the sidelines of a derivative market so populated and anticipates that the 2nd half of this 2007 or 2008 will turn the UK derivatives market in to a flood of trading. [42]

The third opinion was that the *markets are going to grow differently and converge at some point*[43]. The UK started off with a single market and London is a profound enough real estate market to support this development. However, the US is starting with data on 50 cities, making it challenging for investors to make granular investment decisions at this point in time. For example, if an investor makes a Dallas industrial trade, he will never trade out of it, and that is why investors are starting with total return swaps.

[38] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007
[39] Approximately 7.5% of the value of the property
[40] Chief Executive at British Land, interview conducted by phone on June 5th 2007
[41] Trader at ABN AMRO, interview conducted by phone on July 10th 2007
[42] Broker at Traditional Financial Services UK, interview conducted in person on June 8th 2007
[43] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007

The education process in the US might take longer due to the size and scope of the market, but the potential is enormous if the industry players can overcome these barriers to development of the commercial real estate derivatives[44].

Exhibit IV-3, on the next page, provides a comparison between the historical development of the US and UK commercial real estate derivative markets.

[44] Broker at Traditional Financial Services UK, interview conducted in person on June 8th 2007

Exhibit IV-3. Comparison between UK and US market development

	Real Estate Derivative Market Comparison	
	US	**UK**
1990	S.M. Giliberto paper discussing NCREIF swaps	
1991		London FOX (UK) attempt, failed
1994		Property Index Forwards (PIFs) established
Dec-94		by Barclays Capital in the UK, based on IPD Index
1998		Real Estate Index Markets (REIMs), failed
1994 - 1999		Property Index Certificates (PICs) established by Barclays Capital in the UK, based on IPD Index
2000		Barclays & PRUPIM create Property Derivatives User Association (PDUA)
2000-2003		PDUA address regulatory issues and obtain approval from UK regulators for trading on IPD index
2004		Licenses taken by various international banks to use IPD UK Indices for derivatives
Dec-04		British Land and Prudential trade first major contract for 40 billion GBP
2005	NCREIF grants CSFB license to use NPI for derivatives	First UK OTC derivative trades took place (EuroHypo / DB) Banks acting as middlemen, not active parties
Dec-05	US trades completed, undisclosed values / parties	UK derivative trades close to GBP£1Bn, 7 banks with licenses
2006	Credit Suisse licence expires	UK trades over GBP£1Bn, 10+ banks with licenses First sector swaps in the UK (ABN AMRO)
2007	NCREIF provides licences to 7 banks to trade derivtives on the NPI index. First US derivative conference in NY	UK market reaches over £7bn
Current market conditions	Current market low yield compression, but still good transaction levels.	Current market low yield compression, but still good transaction levels.
	Investments return and yield driven	Invesments are still liquidity driven, except further yield compression expected.
	Total Notional value trade 3Q 2007 approximately $200 million	Total Notional value trade Q1 2007 6.5 billion GBP
	Banks are warehousing risk to create liquidty	Banks are actively warehousing risk to create liquidty
		Market conditions are triggering hedging needs for property investors

*Selected information from Mallinson speech at MIT CRE, 9 May 2007 (Mallinson, 2007)

The slow growth of the US real estate derivatives market

One of the main reasons that it has taken the US real estate derivatives markets so much longer to develop is the fundamental nature of the US commercial real estate sector[45]. The following section addresses these market conditions in the commercial sector that has affected development.

Market conditions

First, there are a number of market fundamentals in the US that have resulted in the slow growth of the US commercial real estate derivatives market compared to that of the UK. The UK has a singular market to educate, while the US commercial sector is fragmented and much larger in size and scope than that of the UK[46].

Second, according to a US investment manager[47], there has been no generally accepted mechanism for measuring the fluctuation in both income and value of real estate returns, and this has held back market development. The only index that has come close to this measurement has been the NCREIF index, but even this index has its flaws. There is also a lesser degree of sophistication in the capital markets by a many of the real estate professionals players in the current market.

[45] Vice President and Portfolio manager at Prudential Real estate Investors, interview conducted by phone on Jun 19th 2007
[46] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007
[47] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007

Finally, the real estate sector in the US has not used real estate derivatives before and many of the companies are simply not set up in-house for executing transactions[48]. It requires a tremendous commitment of time and money to educate and set up a company for derivatives use; and unless it is privately owned, investors and money sources do not generally understand derivatives investment[49]. This barrier to implementation, together with lack of market education, is one of the main reasons companies have been slow to adopt the use of derivatives in the US.

While the current chapter focused on the similarities and differences between the US and UK market fundamentals and the slow growth of the US market, the next chapter will provide a comparison between synthetic (derivatives) and other investment vehicles.

[48] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007
[49] Index provider, interview conducted in person on June 7th 2007

Chapter Five: Derivatives Compared to other Investment Vehicles

The first part of this chapter provides industry comparisons of derivatives with other investment vehicles; i.e., synthetic (derivatives) to direct and indirect investment. The second part of the chapter discusses industry opinions on the specific risks involved in investing with derivatives.

Synthetic, direct and indirect investment

Derivatives can be used to replicate physical transactions[50], but they will never overtake direct portfolio investment. If investors use derivatives wisely, they might make up 10% of a portfolio and would be used for hedging, re-allocation between asset classes, portfolio rebalancing, and internal diversification. The biggest difference between derivatives and other investment vehicles is that they have a defined life (contract). It is almost as if the investor is renting a property for a fixed period of time and, as such, there exists much less specific risk.[51]

However, synthetic investment will never be a direct substitute for investing in the physical property because an investor cannot add value through derivatives[52].

[50] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007

[51] Specific risk refers to the inherent risk in each specific piece of property due to the heterogeneous nature of real estate.

[52] A derivative is a financial asset whereas real estate is a real asset.

Investing in physical property will allow investors to create value through refurbishment or management (creating alpha), while a derivative is fundamentally a tool among many products for executing investment decisions in a quicker cheaper manner.[53]

In addition to synthetic investment through derivatives, there are two ways of taking a specific position in real estate[54]:

- Direct
- Indirect Investment

An investor can buy private real estate directly or invest indirectly through a fund. A fund could be both listed (REIT) or can be unlisted and the returns will differ due to the nature of the market on which they are traded[55]. Listed funds are traded on a stock exchange, which exposes the price to the forces of the efficient market[56], while unlisted funds are not traded and the returns more closely track the returns of the underlying property.

The major difference between investing in direct property vs. a fund is the difference between the type of returns, alpha[57] and/or beta[58]. The next section compares synthetic (derivatives) investment to direct and indirect investment vehicles.

[53] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007
[54] Individual at Investment Bank, interview conducted in person on June 8th 2007
[55] Index provider, interview conducted in person on June 7th 2007
[56] While it is not uncommon for REITs to have options, studies show very low correlation between private real estate and public real estate (REITs), which behaves more like small-cap stocks.
[57] A positive alpha is the extra return awarded to the investor over and above market return (Beta). In REITS alpha is created through specialized skills such as management. Alpha = Above market return @ or below market volatility
[58] Beta = Market portfolio return @ market portfolio volatility

Direct investment

When comparing derivatives to physical properties, it is clear there are more specific risks in investing in physical real estate. This is due to the fact that the property market is heterogeneous and each property is different, while in the derivatives market the investor is dealing with an index[59]. The index has a broad range of properties in a fully diversified portfolio, so in essence the investor is diversifying away the specific risks of the assets.

Diversification is good for an investor wanting to gain broad market exposure through a long position. But, an investor wanting to hedge specific sector market risk, e.g., Manhattan office, would have to look at sector trades which contain smaller portfolios to match the sector or geographical location on which they are focusing. This difference between the physical property and the index is the "basis risk,"[60] which is discussed in detail later in this chapter (The risks associated with investing with real estate derivtives).

Indirect investment

Investors need to determine if they are alpha or beta players in order to define their specific need in the application and implementation of derivatives[61]. If the investor chooses to invest in a fund, the return expectation will be higher than pure market returns (beta) due to the additional value created through management skills. But investing in companies such as REITS is more of an investment in the equity markets than in the underlying property market[62].

[59] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007
[60] Basis risk is the extent to which valuations for derivatives securities do not accurately reflect valuations for the underlying physical securities on which they are based.
[61] Broker at ICAP, interview conducted by phone on June 19th 2007
[62] Individual at Investment Bank, interview conducted in person on June 8th 2007

However, it is important to note that if an investor buys in to an unlisted fund that has bad property, his returns will be lower than the market average, and this will also hold true if an investor buys in to a bad REIT[63].

It is difficult to compare synthetic investment with investing in REITS, because the pricing volatility of REIT shares means that they are not highly correlated with the value of the underlying property[64].With derivatives, it is the underlying property that creates the value[65]; pricing is less volatile and has a higher correlation with the underlying market than public securities. The main reason is that there is a fixed date that the returns correlate back to the index[66], directly impacting the pricing of derivatives. In a REIT, this containment or link to an index does not exist; e.g., it could trade at 10% premium today and a 30% discount in three years.

Investors who invest in REITS do so because they want to invest in the company; they are essentially buying the management skill[67]. For example, assume an investor wants to make an investment in commercial real estate. Before the availability of derivatives, the investment returns were predominantly determined by the investor's ability to create alpha by selecting the type of investment, asset class, location, local partner and property manager. British Land, one of the UK companies interviewed, is a REIT and as such strongly focused on delivering alpha.[68]

[63] Index provider, interview conducted in person on June 7th 2007
[64] Individual at Investment Bank, interview conducted in person on June 8th 2007
[65] Index provider, interview conducted in person on June 7th 2007
[66] Index provider, interview conducted in person on June 7th 2007
[67] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007
[68] Ibid

Synthetic investment

Derivatives offer the advantage that, by investing synthetically in an index, the investor will never over or under perform the market return (ignoring transaction fees and costs)[69]. The investor will be guaranteed index returns (beta); the risk is that he/she might pay too much, but essentially the returns are based on the underlying index. It is important to note that taking a long position (purely cash) in derivatives actually delivers systematic underperformance due to the cost of trading[70]. For example, for a total return index to provide a 10% return, the investor would be receiving 9.8% due to the trading cost. At the same time, buying into direct property will cost the investor approximately 5 % first year and couple of percentage points more upon sale; thus the investor has a penalty for buying direct[71]. On the other hand, investing in funds requires management fees and costs. Amortizing the cost of investing in direct real estate over the holding period clearly indicates that utilizing derivatives is a much cheaper method of gaining property exposure.

Derivatives allow investors to take a long position on an index and buy beta without all the additional costs of investing in physical real estate[72]. For this reason, the US market is becoming a very attractive investment vehicle for non-US players. For example, a Brazilian investor wants to gain exposure to the US commercial real estate market. The decision no longer has to involve the alpha analysis and the investor can simply take a long position on the NPI total return and earn beta.

[69] Index provider, interview conducted in person on June 7th 2007
[70] Ibid
[71] Head of Research at PRUPIM, interview conducted in person on June 13th 2007
[72] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007

Thus, to summarize, direct investment delivers the returns of the underlying property, indirect investment delivers mediated specific property returns (e.g., If a fund consists of a 100 properties, the return will match the portfolio return and not the whole market return), and synthetic investment delivers index returns. [73]

Risks associated with investing with real estate derivatives

There are definitely risks in the use of derivatives, which depend on the specific purpose for which they are used[74]. The following section discusses the risks (i.e., basis risk, counterparty risk, leverage and company set up) of using derivatives as investment and management tools.

Parties as risk?

The inherent risks of using derivatives are of concern to two parties, the end users and the speculators[75]. The speculators have two types of risk: Risk arbitrage and risk neutral strategies. Risk neutral is when the investor just buys and sells derivatives and creates a riskless position with a spread. Risk arbitrage is when the investor is essentially making "bets" and speculates on market movement. The biggest risk is when investors are speculating and do not understand the nature of derivatives or the underlying market. When investing in direct real estate, the degree of management that the investor puts into the asset will have an impact on the returns. A derivative is a purely passive investment, and as a player in the market the investor has no control over the direction of the index[76].

[73] Index provider, interview conducted in person on June 7th 2007
[74] Broker at ICAP, interview conducted by phone on June 19th 2007
[75] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007
[76] Ibid

Basis risk

As mentioned earlier, an important concern of investing with derivatives is basis risk. This risk lies in the possibility that the basket in NCREIF, on which an index is based, does not match the investor's portfolio in terms of geography and property type[77]. The investor has to be comfortable that he/she is accounting for the basis risk in the pricing of a swap. According to one trader in the UK, not understanding the indices is a major risk to any developer wanting to utilize derivatives.[78]

Looking down from 10,000 feet, the commercial market functions like a commodity market[79]. The timing is different between the various commodity markets as some are hotter than others, apparent in the speed of price change and the flow of money in and out of the specific markets. Next, looking at the commercial sector from 10 feet away, it is clearly not a commodity market. Every house and street is different and becomes a unique property within a heterogeneous asset class. The problem presents itself when real estate professionals want to hedge specific property risk with an index. This is not possible as the index and the property might do two completely different things; and the basis risk is simply too big.

Counterparty risk

Investing with derivatives has inherently less investment risk than investing in real property[80].

[77] Vice President and Portfolio manager at Prudential Real estate Investors, interview conducted by phone on Jun 19th 2007
[78] Trader at ABN AMRO, interview conducted by phone on July 10th 2007
[79] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007
[80] Chairman of Property Derivatives at Protego, interview conducted in person on June 12th 2007

There are a number of advantages of the swaps being cashless transactions, but the investor has true counterparty risk, which is not present in investing in direct property. If a fund is taking a speculative position on the movement of the market, they could always be wrong and would have to pay the counterparty in a swap contract. If the fund is paying the index and receiving a rate of interest, they will have to pay the capital appreciation at the end of the contract (On PICs in the UK).

This is, however, typical of swap contracts and investors need to ensure that they are covered for that liability[81]. If an investor covered his position by owning the physical property and judged the market movement correctly, the physical property would also increase in value and this gain would be offset against the losses of the hedge. Very few people in the market today enter into a swap contract without covering their liability.[82]

Leverage and company set up

A UK trader[83] stated that investors had to be careful of the leveraged nature of a notional based trade, as the risk extends to both the short and long side of the trade. Investors need to be aware of the potential risks, making structuring of trades essential. Even if the investor has covered his position in bonds, bonds can still contain 90% leverage that increases the risk of the investment. Speculation and financial engineering can allow the investor to take on more risk than they are comfortable with or have the skill to manage[84]. The amount of debt used in a derivatives investment directly influences the risk return spectrum and increases the risk of the investment exponentially.

[81] Ibid
[82] Chairman of Property Derivatives at Protego, interview conducted in person on June 12th 2007
[83] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007
[84] Ibid

As stated earlier, though, very few investors enter a swap contract without being covered. For example, to trade 100 million pounds of property through derivatives is very easy and potentially highly levered. One trader emphasized the importance of separating front and back office within a company in order to prevent the in house concept of a "yoyo" trader. For example, to buy a $100 million worth of property you need a number of people to sign contracts, e.g. lawyers, managers, principles etc., but derivatives are quick and easy. The potential risk is that anyone in a company can pick up the phone and trade. He emphasized the importance that traders should also never also control the in-house risk management, as these two functions inherently need to be separated. This is something that the financial world has already figured this out, but the property sector still has to implement it. A large percentage of the risk is on the internal management of the product within companies themselves.

This chapter provided a comparison of derivatives with other investment vehicles, market development, and concluded with a discussion of the specific risks involved in investing with derivatives. The next chapter will focus on the market participants in the US and UK commercial real estate derivative markets.

Chapter Six: The Market Players

The use of real estate derivatives is and remains a hot topic in both the US and UK property markets[85]. Derivatives are already used by a broad spectrum of players in the UK market, and the US has just experienced its first number[86] trades after NCREIF issued licenses to seven banks for trading on the NPI. This chapter will address the current and future market players in both the UK and US commercial real estate derivatives market.

UK real estate derivative market

Market participants

The players in the UK are large institutions (life and pension), fund managers, hedge funds, property companies and banks[87]. Their active involvement in the UK derivative market varies according to their acceptance of market liquidity, investment education and general understanding of the derivatives.

First, key players currently in the market are the *institutions* and *major pension funds*. These companies are looking at derivatives for asset allocation (first), hedging (second) and increasing their exposure[88]. The institutions on the long side are doing beta transactions[89], diversifying exposure and entering in to contracts to gain beta at the cheapest possible price.

[85] Chief Executive at British Land, interview conducted by phone on June 5th 2007
[86] According to a US trader between 8 and 12 at the time of the interview and total notional value of between $100 and $200 million
[87] Trader at ABN AMRO, interview conducted by phone on July 10th 2007
[88] Head of Research at PRUPIM, interview conducted in person on June 13th 2007
[89] Individual at Investment Bank, interview conducted in person on June 8th 2007

These institutions are also using derivatives to gain quick access to new markets, while unwinding the contract over a period of time. It is traditionally difficult for small pension funds to get property exposure, and derivatives allow them to gain immediate exposure to a large pool of diversified real estate by taking a long position on the index.

Second, *property companies* are slowly starting to utilize derivatives in investment decisions and their natural position is to hedge, due to the fact that they are already long in real estate[90]. A number of the biggest property owners have been acting on behalf of a beta players, hedging out beta, and focusing on gaining alpha. These are generally not alpha developers but companies that act as investors for pension funds and other beta players.

It is important to note that a number of the property companies in the UK are actually at a disadvantage because they have just become REITS[91]. This requires the company to have property exposure and it would not be feasible to use derivatives to reduce this exposure as it clearly represents a conflict of interest[92]. However, many of these companies have been executing small strategic transactions, due to the fact that it is the best way to gain exposure and learn how the market is developing[93]. Developers generally only need capital hedges and do not need to be very aggressive on pricing. For example, for a residential developer it is about buying the correct piece of land or project. He/she doesn't inherently care if the market is going up or down and merely wants to hedge the down side risk and is willing take a lower upside to actually do the hedge. [94]

[90] Individual at Investment Bank, interview conducted in person on June 8th 2007
[91] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007
[92] Ibid
[93] Individual at Investment Bank, interview conducted in person on June 8th 2007
[94] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007

Third, *hedge funds* take shorter term long and short positions in the market due to their speculative nature, but only come in to their own in a more liquid market.[95]

Investment banks are taking both long and short position to warehouse risk; and from a trading perspective these banks want to buy low and sell high. When banks take a position with a client, they hope to sell in the interbank market for 10 – 15 bps profit[96]; and working with clients is very important to provide liquidity and encourage development in the market. Banks have welcomed competition through other banks trading on the IPD index as this creates divergent positions in the market and also encourages liquidity growth[97]. The existence of a secondary market makes banks confident that they can hold and manage the risk on their own books or unpack it. The process is much more complicated than a few years ago, and all adds to the growing liquidity in the market. One UK investment bank stated they had executed well over £2 billion of the trades performed in the market up until this point. [98]

In the beginning of the UK derivatives market development, all players were long in real estate; first, due to investors' inability to hedge risk; second, the inherent nature of being long when owning property; and third, the strong bull market. Now yield compression and the rising interest rates have resulted in a more balanced market with increased volatility that stimulates the derivatives market[99]; i.e., the players are wondering about negative capital value growth and yield compression. Many of the property companies and funds who enjoyed years of managing and developing assets suddenly realize that they have to manage and hedge risk on £100 million worth of real estate in their funds.

[95] Index provider, interview conducted in person on June 7th 2007
[96] Trader at ABN AMRO, interview conducted by phone on July 10th 2007
[97] Ibid
[98] £ 6.5 Billion total notional value on the IPD index, 1st quarter 2007.
[99] Individual at Investment Bank, interview conducted in person on June 8th 2007

Motivations for using derivatives

Almost all the trades that have taken place on the UK IPD index have been total returns swaps on the all property index. A few sector trades have taken place, especially on the office sector in France (Approximately £750,000 million since December 2006)[100]. As stated earlier, the majority of the banks in the UK are in total return swaps[101]. These institutions can potentially sell off the underlying sectors if they know the respective weights and pricing for each component; and if an imbalance exists, they could take advantage of arbitrage opportunities.

Prudential facilitated the original trade between British Land and Euro Hypo[102]. Many investment managers consider it very important to trade through an intermediary in order to reduce counterparty risk and allow for more efficient pricing. British Land[103] had a number of reasons for executing the trade and their reasons were as follows:

- First, the company wanted to make money out of the trade and liked the pricing at the time;
- Second, British Land considered itself a strong advocate of the real estate derivatives market. They were of the opinion that if they found a deal that was financially viable, it would help create liquidity and make them one of the leaders in a developing derivatives market;

[100] Trader at ABN AMRO, interview conducted by phone on July 10th 2007
[101] Ibid
[102] Head of Research at PRUPIM, interview conducted in person on June 13th 2007
[103] Chief Executive at British Land, interview conducted by phone on June 5th 2007

- Third, the company wanted to deal with the reality of tax and accounting treatment of a derivative in an institution. The trade was a total return swap and split the return in to the income and the capital components; this allowed for different accounting treatment on the capital and the income elements. The income return was paid out as a coupon in a PNL and the capital element went on to their balance sheet as property. Thus the derivative was treated in exactly the same way as a piece of property.

Parties waiting on the sidelines

The UK has 17 licensed banks and in March 2007 there were six or seven banks actively trading[104]. In June of 2007 there were only three banks actively trading and one index provider questioned why there was a reduction in the amount of banks trading in 2007. It appeared as if many of the players are standing back and waiting for further market development. In Paris, a number of major investment banks are interested but they are still setting up their risk functions, and this could take a considerable amount of time.[105]

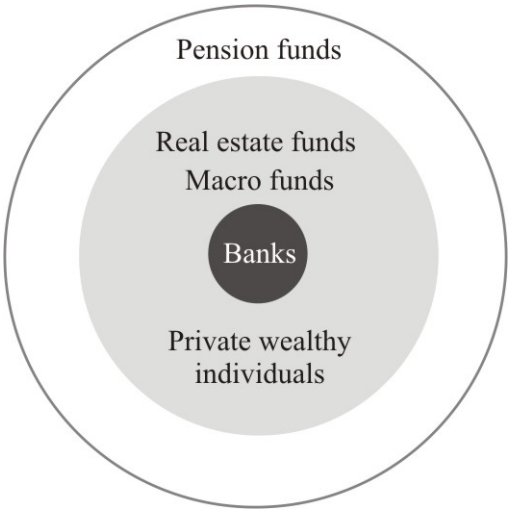
US real estate derivatives market

Market participants

According to one US broker[106] the parties involved in the US market can be explained in a concentric ring theory. This resulted out of the company's need to determine their client base:

[104] Index provider, interview conducted in person on June 7th 2007
[105] Individual at Investment Bank, interview conducted in person on June 8th 2007
[106] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007

Exhibit VI-1. Concentric ring theory showing US investor participation



Banks are right in the middle as the first point of access to the brokers. The next circle contains *macro* and *real estate funds*; these funds have little restrictions and macro funds generally look at obtaining macro beta. *Real estate funds* have been big players in the limited activity that has taken place in the US market, and are in this circle because they have market intelligence to help guide them in their derivatives use[107]. *Wealthy private individuals* with real estate backgrounds are also in this circle. The brokerage industry is still questioning the exact positing of *pension funds*, but the market is evolving daily. The broker speculates that NCREIF and the MIT transaction based index will be the main indices used in the near future.[108]

The expectation is that *pension funds* will be one of the biggest investors in the future, as the NCREIF index was originally created for pension fund benchmarking. However, due to their risk spectrum, pension funds are generally not the first parties to jump in and take risk with new products.

[107] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007
[108] Ibid

According to one pension fund advisor, these funds are specifically interested in sector and geographic trades that will allow for efficient diversification, but are scared of underperforming by taking a long position on the NPI index.[109] However, investors will never buy the index in cash due to the fact that they would be guaranteed underperformance; i.e. index minus some transaction spread and utilizing leverage will exponentially increase the returns for investors. *Insurance companies* and *hedge funds* are not expected to take positions until the pricing looks good.

Parties waiting on the sidelines

There are two types of investors currently waiting on the sidelines; the end user and the speculators/ traders; they are both waiting to see who climbs into the market first. Institutions (as end users) are sitting on the sidelines and waiting for liquidity in the market[110], pricing to come down and to see how the transactions evolve from a risk reward perspective. Most hedge funds, opportunity funds and end users are waiting on the sidelines for further market development.

The US market is not developed enough to assess if there is more short or long interest.[111] Fundamentally, it would be much easier at the next stage of the market for speculator to take long position as increased liquidity will allow larger end users to hedge their risk and form the short side of the market. Exhibit VI-2 offers a comparison between the positioning of the players in the US and UK.

[109] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007
[110] Vice President and Portfolio manager at Prudential Real estate Investors, interview conducted by phone on Jun 19th 2007
[111] Individual at Investment Bank, interview conducted in person on June 8th 2007

Exhibit VI-2. Comparing US and UK investors and their respective position in the market

UK	
Interested Parties	
Large institutions (Life & Pension) Fund managers Hedge funds Property companies Banks	
Parties Trading	**Motivations**
Institutions & major pension funds	1. Asset allocation 2. Hedging 3. Increasing exposure 4. Gaining beta
Investment Banks	Taking position to warehouse risk and create liquidity
Property companies	Risk hedging Acting on behalf of beta players, focused on gaining alpha and hedging out beta.
Property companies	Hedge Risk
Hedge funds	Short term speculative positions on both sides of the market.
Parties waiting on the sidelines	
Majority of the UK property companies Investment banks (UK) Investment banks (France)	
Types of trades	
Mostly total returns swaps on the IPD all property index. A few sector swaps, in UK (Industrial) and France (Office)	

US	
Interested Parties	
Macro funds (Pension) Real estate funds Hedge funds Wealthy private individuals Banks	
Parties Trading	**Motivations**
Real Estate Funds	1. Hedging 2. Asset allocation
Investment Banks	Taking position to warehouse risk and create liquidity
Parties waiting on the sidelines	
Pension funds Insurance companies Hedge funds	
Types of trades	
Total return both sides Property sector swaps both sides Capital value both sides	

This chapter addressed the current status of market players in both the UK and US commercial real estate derivatives market. The next chapter focuses on comparing the UK and US markets, and identifying potential similarities in the development of the respective commercial real estate derivative markets.

Chapter Seven: Barriers to Growth

The following chapter addresses the barriers to growth in the US real estate derivatives market: indices, pricing, education, fund mandates, tax and accounting treatment. The current status of each barrier is discussed as it presents itself in the US. There are a number of crucial building blocks to ensure the successful development of a real estate derivatives market. These building blocks are as follows:[112]

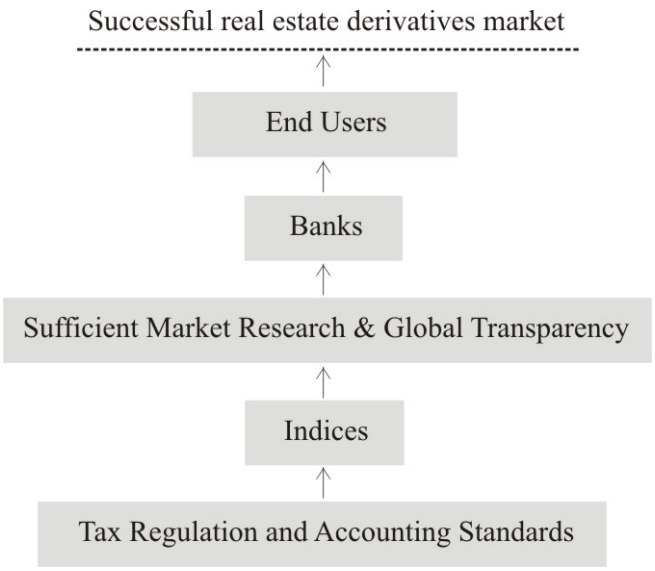
- Tax regulation and accounting standards
- Indices
- Sufficient market research and global transparency
- Banks (warehouse risk and create liquidity)
- End users (execute the trades)

Once market makers address each sector/block and its inherent barriers, they will have created functioning commercial real estate derivatives market. These building blocks overlap with a number of the barriers to growth in the US market, and this overlap will form the focus of this chapter.

Exhibit VII-1 provides a diagrammatic overview of the building blocks as describes above.

[112] Trader at ABN AMRO, interview conducted by phone on July 10th 2007

Exhibit VII-1. Building blocks of a real estate derivatives market



In the US market, liquidity and indices are the two most important barriers to address for the successful development of a derivatives market[113]. Additional issues to address in an emerging market are market culture, set up costs, pricing, education, and regulatory constraints. Liquidity on both sides of a market is crucial for end users to take positions[114]. The willingness of major banks to warehouse risk during the market development in the UK played an important role in creating this liquidity necessary for market development.

The US market requires a few big name players to climb in, warehouse risk, create liquidity, and then publicize this action to the rest of the market[115]. It will take time for end users to understand and get comfortable with the use of derivatives. Also, the US has experienced a strong real estate market over the past few years, but as soon as there is a down turn, investors will start to look at hedging their risk through the use of derivatives.

[113] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007
[114] Broker at ICAP, interview conducted by phone on June 19th 2007
[115] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007

A major disadvantage in the US is that the real estate market is highly inefficient, not transparent and fragmented; this does not make it a natural fit for derivatives. All these factors create illiquidity and high spreads that directly impact pricing. The lack of a liquid secondary market is also a problem in the US[116] in that it leaves investors locked in contracts until maturity; e.g., investors entering a three year total return swap are looking at two year lockup, due to the fact that the lack of a secondary market does not allow them to sell the contract. Some traders are looking at pricing in termination fees but this has not yet evolved in the US market.[117]

Indices

One of the biggest differences between the US and UK markets is the quality and number of indices available to trade on. This is potentially the greatest challenge for US market makers as the NCREIF NPI index is the only currently licensed US index, and equivalent to the UK IPD. Industry participants have a number of concerns with the nature of the index and the limited market coverage (NPI covers 5% of the market, while the IPD index covers 60%). According to one trader[118], this definitely creates concerns when investors are looking at refined markets. e.g. they were very close to trading NY offices on the NCREIF mid town index. The problem was that the NPI only has 16-18 properties within this sub index. In his opinion, if a building is removed or added to this sub-sector of the index, it makes a big difference to the projected returns.

Market makers have different opinions on which indices they like and want to use. This creates a sense of confusion in the US market that was not the case in the UK market. The state of the US real estate indices is fundamentally problematic in the development of the commercial real estate derivates market.

[116] Broker at ICAP, interview conducted by phone on June 19th 2007
[117] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007
[118] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007

A necessary precondition is that the index has to deliver what the investors want: reporting a return on a market that is authoritative, timely and refreshed frequently enough[119]. It is crucial that the investment community, not just real estate developers, take an active part in the market and index development. It is only through their direct involvement that they will understand the indices and contribute to shaping the market for their needs.

The US currently has two types of indices:

- Appraisal-based
- Transaction-based (repeat sales)

Due to the fact that the NCREIF NPI is the only licensed index at present, most of the interviewees focused their comments on this index, with brief reference to the other available indices. I will discuss all the available indices in the US for comparative analysis.

The available commercial indices in the US are as follows (Clayton, 2007):

1. NCREIF NPI – Appraisal based
2. RCA based – Transaction based
3. S & P/GRA – Transaction based
4. REXX – Rent based
5. HQuant Lodging Index (HLI)[120] – Provides daily data on average daily rates (ADRs) and RevPAR

[119] Index provider, interview conducted in person on June 7th 2007
[120] www.hquant.com

1. NCREIF NPI

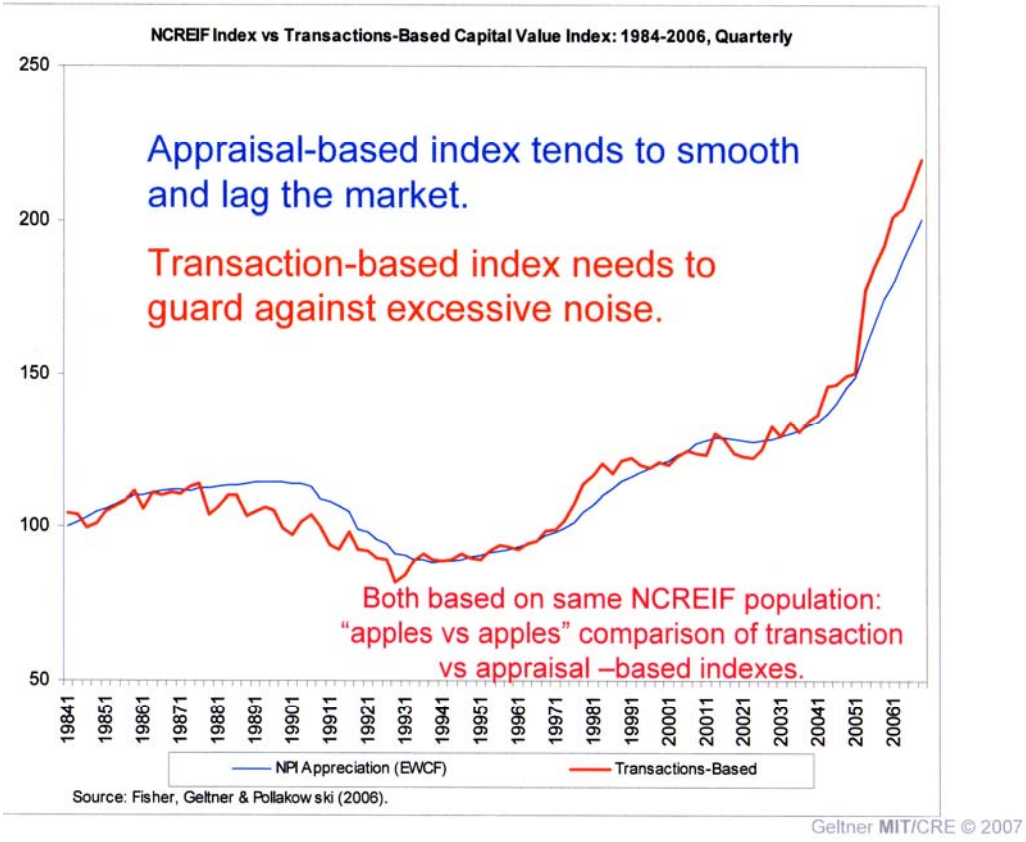
The NCREIF Property Index (NPI) is derived from the performance of institutional class properties owned by investment managers and pension funds. It provides quarterly unleveraged returns (total, income, and appreciation) at the national and regional level of property types and dates back 29 years. The index also provides MSA-level returns, is an appraisal-based index, and the capital returns are derived from changes in appraised values (Clayton, 2007).

Seven out of the ten US interviewees were of the opinion that the NCREIF would be the index to trade in the future, even though it is not the perfect index for tracking commercial property. The appraisal based nature of the index results in noise[121] and lag[122], adding basis risk and reducing the value of derivative trading. However, one US trader stated that the basis risk resulting from the nature of the NPI lag was not such a big concern[123] and efficient pricing should be able to take this risk into consideration.

Exhibit VII-2 below shows a diagrammatic comparison between the appraisal based and transaction based NPI indices.

[121] Noise: Index value level V_t randomly dispersed around theoretical population value (P_t): $V_t = P_t \pm \eta_t$
[122] Lag: Index value level V_t tends to be a blend of current and recent past population values, e.g.: $V_t = (1/2)P_t + (1/2)P_{t-L}$
[123] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007

Exhibit VII-2. NPI appraisal based index vs. the transaction-based capital value index (Geltner_3, 2007)



The industry users[124] also emphasized the relevance of the transaction based indices once the market has gained momentum and created a degree of liquidity. The indices can definitely complement each other in the long run, but they are currently providing a great amount of confusion in the education of the end user. The end users are not being educated by each index provider on its specific characteristics and implementation in investment decisions. Education is crucial in the current stage of the market and liquidity needs to be created on one index to encourage market growth. Once the market has built momentum the remaining indices can be licensed and used for derivatives trading.

[124] Pension fund investment advisor at PREA, interview conducted by phone on May 29th 2007

2. RCA Based

Real Capital Analytics (RCA) partnered with MIT Center for Real Estate (MIT/CRE) and Real Estate Analytics LLC (REAL) to produce a series of property price indices. These indices are transaction based and provide commercial monthly price indices and capital returns at the national level dating back to 2000. There are quarterly indices for core property types and annual indices for selected MSAs'. The indices are constructed using a statistical/econometric methodology applied to repeat sales of individual properties in the RCA database. The RCA database includes most property sales of more than $2.5 million. (Clayton, 2007)

The Senior Managing Director at Cushman & Wakefield was of the opinion that price based indices are crucial to the efficient use of derivatives, and appraisals are not particularly good indicators of the change in value from one period to the next[125]. The reason is that appraisal-based indices are backwards looking, extremely subjective and actual trades are more effective in determining the change in value of the underlying property. Unfortunately the same asset rarely trades twice in a short enough time periods, which creates problems in measuring the change in value. His opinion was that an appraisal can be guided; e.g. the lender making the loan has incentive to ensure that the appraisal comes in above the limitation on the loan to value.

3. S & P/GRA

Standard & Poor's (S&P) has partnered with GlobalReal Analytics (GRA) to produce the S&P/GRA Commercial Real Estate Indices (SPCREX)[21]. These indices are to begin trading on the Chicago Mercantile Exchange (CME).

[125] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007

The GRA is a transaction-based index (quarterly) providing capital returns at the national and regional level as well as property type on a national basis. It dates back to 1994 and is based on the three-month moving average of average sales price per square foot. (Clayton, 2007)

The problem in the US is that there are several transaction-based indices that are all fairly young and it is not known if these indices have been back tested to test for extreme market volatility.[126] Trading on a transaction-based index is a very defined trade while the NCREIF is evaluating a consistent stream of properties, and the investor can really evaluate how these pools perform over time. In contrast, with the transaction-based index, the investor is subject to what is trading at the time and the pool of properties is constantly changing. He/she is betting on price movements that are a different kind of trade to writing a total return swap on the NCREIF.

Transaction based indices provide viable options[127], but the underlying methodologies of a number of the transaction based indices are questioned and brokers are still weary to trade on indices with short life spans. However, the opinion of a broker at TFS is that the indices in the US market are different enough that there will eventually be two or three indices trading once the market reaches sufficient liquidity.

4. REXX

REXX Index provides quarterly returns (total, rent, and capital) at the national level and also 15 major metro areas, dating back to 1994.

[126] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007
[127] Investment advisor at Analytical Synthesis, interview conducted by phone on April 31st 2007

The index currently only covers office and is based on micro variables such as rents, vacancy rates, and leasing activity; as well as key macro variables, such as interest rates and inflation. It provides four metro-level rent indices to allow investors to hedge or leverage on performance in specific local markets.

The REXX index combines the change in income (based on rents and vacancies) with the change in interest rates as a way of approximating the change in value[128]. It has tracked the NCREIF index very closely except with a greater amount of volatility. Volatility is important for investors to speculate and take positions in the market. The less volatility in the index, the less interest investors have (speculation side) to play short term vs. long term or all kinds of interesting trading. (Clayton, 2007)

According to Cushman & Wakefield, repeat priced based indices are challenging due to the heterogeneous nature of underlying property. Every single piece of real estate is unique and there may be entirely different reasons for the change in value; e.g. changes in the cap rate, different locations and different classes. Cushman & Wakefield has a strong interest in the REXX index for the purpose of rental hedging due to the fact that many of their clients own office buildings or are tenants in buildings with inherent leasing risk.

[128] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007

5. HQuant Lodging Index (HLI)[129]

The HLI is focused on the lodging sector only and provides daily data on average daily rates (ADRs) and RevPAR (revenue per available room) on more than 3 million hotel rooms in the US. This covers 68% of the US total hotel sector[22]. HLI differs from the other commercial property indexes in that it is limited to the one property sector and represents a revenue stream rather than a change in property values. For that reason a forward contract, rather than a total rate of return swap, may be the best way to trade the index. (Morgan Stanley, 2007)

The problem with US indices

The problem is that the global convergence between real estate and finance might never happen in the long term[130]. The US market needs a good index and a willing industry to take on board this new medium. The market makers also need to realize that big and powerful economies, which have large commercial real estate structures, do not convert to synthetic investment vehicles over night. It has taken the UK fifteen years to develop to the current point in the market, but it is not expected that the US real estate derivatives market will take so long. The banks have learned much through exploring and experimenting in the UK derivatives market that its real estate derivatives market will serve as a platform for every other market to build on.

Terrapin invited the end users to the derivatives conference in New York in 2007[131], but it was more a pre conference in the market and not a conference about the start of the market.

[129] The HLI is a hotel performance index that provides average daily rates (ADR) and RevPAR (revenue available per room) on more than 3 million hotel rooms in the US.
[130] Index provider, interview conducted in person on June 7th 2007
[131] Real Estate Derivatives World, April 24-26, 2007.

The conference panel on indices made it clear that the information industry had to get its act together before the end users and investors would climb into the market. Only then will trades start to take place, allowing for market development and increased liquidity. The UK market has been actively developing for since 2005 and they still have a long way to go to qualify as an efficient liquid real estate derivatives market.

Exhibit VII-3 provides a comparative analysis of the available indices in the US market.

Exhibit VII-3. Comparison of US indices

Indices	Type	Provider Information	Basic Index Characteristics
NCREIF	Appraisal Based:Capital returns are derived from changes in the apprasied 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 reapprased each quarter.	National Council of Real Estate Investment Fiduciaries Property index (NPI) derived from performance of institutional class properties owned by investment managers and pension funds (plan sponsors) www.ncreif.org	Quaterly unlevered returns at the national,regional and MSA level by property type back to 1978. 5,162 properties (3rd Q 2006) with estimated market value $232.5 billion. Benchmark for most institutional core real estate porfolios.
S & P/GRA	Transaction-Based:Price based 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 the property-level transaction price per square foot data observations.	Standards & Poor's (S & P) has partnered with Global Real Analytics (GRA) to produce 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 http://www.graglobal.com/index.php?section=products&page=aboutCREX	Quarterly price indices and capital returns at the national and regional level as well as property type on a notional basis, back to 1994.
RCA-Based	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.	Real Capital Analytics (RCA), a national real estate data vendor specializing in tracking commercial real estate transaction activity and prices, has partnered with 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/credl/rca.html	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. RCA database includes most property sales of more than $2.5 million.
REXX	Based on micro-variables:rents, vacancy, leasing activity; and macro variables: interest rates and inflation.	REXX Index venture includes Cusmann & Wakefield and Newmark, Kinght, Frank as owners and data contributors. www.rexxindex.com	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.
HQuant	Provides daily data on average daily rates (ADRs) and RevPAR (revenue per available room)	HQuant LLC focuses on creating and distributing quantitative products and services for the hospitality industry. They are dedicated to designing and creating models using cutting edge quantitative analysis to measure and manage risk in the hospitality industry www.Hquant.com	This covers 68% of the US total hotel sector. HLI differs from the other commercial property indexes in that it is limited to the one property sector and represents a revenue stream rather than a change in property values. For that reason a forward contract, rather than a total rate of return swap, may be the best way to trade the index.

Pricing

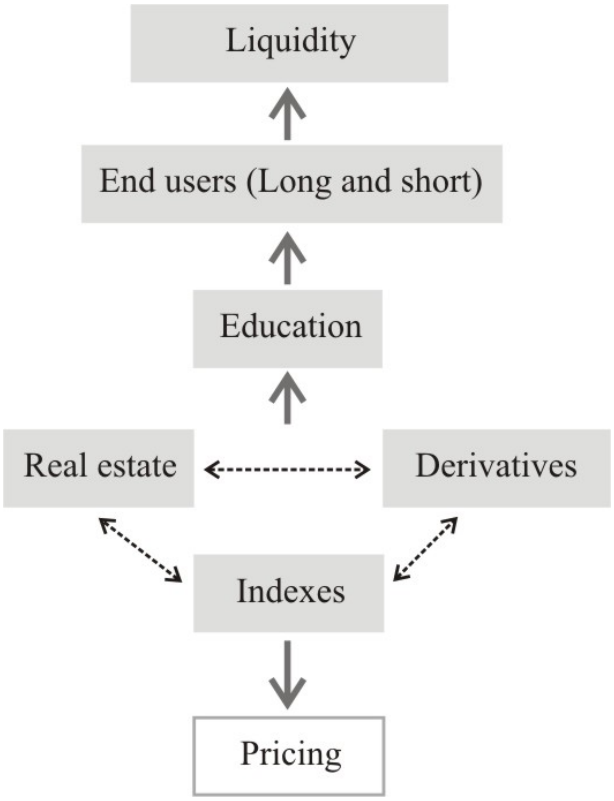
Why would pricing be an issue?

The US derivatives market is not yet a mature market and this creates problems such as illiquidity and lack of a secondary market that could result in mispricing. The US is at a nascent stage of the market and it is crucial to understand why pricing is so important. As Professor David Geltner, MIT, referred to at the Terrapin Conference in New York (April, 2007):

"The US is experiencing the chicken and the egg problem – there is no liquidity because there is no market. And no market because there is no liquidity."

Exhibit VII-4 provides a flow chart of the steps required to get a derivative market started, as presented in at the Terrapin Conference in New York. Pricing is clearly the key that allows end user to access indices and utilize derivatives to make investment and management decisions.

Exhibit VII-4. Flow Chart of Getting the Derivatives Market Started (Geltner_2, 2007)



According to a previous MIT thesis[132] on real estate derivatives, the most important issues for end users are: lack of a secondary market, lack of liquidity and lack of pricing. All three factors influence pricing directly and this is why investors are hesitant to use derivatives. The problem with merging two distinct sciences is that real estate people understand real estate and derivatives specialists understand derivatives, but they don't understand each other. It is, however, on these cusps between sciences that interesting applications and potential lies for new markets and the merging of knowledge. (Lim & Yang, 2007)

[132] Lim, J.Y. and Y. Zang. (2006). A Study on Real Estate Derivatives

The following pricing examples will be analyzed as total return swaps written on the NPI index. Three issues are important when investors are evaluating swap pricing based on the NPI index (Geltner_3, 2007):

- Forecasting of the NCREIF index
- Swap pricing with the index lag
- Combining the forecasting and the pricing theory to examine swap pricing

Forecasting on the NPI

The first important consideration when looking at swap pricing based on the NPI index is that historical evidence indicates that the NPI has considerable inertia. This makes the index fairly predicable in the short run (1-2 years). This predictability must be taken in to consideration in the pricing of swaps traded on the NPI. (Geltner, 2007)

A simple univariate time series model of the NPI can be fairly effective at forecasting the index for 1-2 years in to the future. Below is an example of a simple 2-lag autoregression model forecast:

$$E(r_{s,t}) = \hat{c} + \hat{u}_1 r_{s,t-1} + \hat{u}_2 r_{s,t-2}$$

Where: $E(r_{s,t})$ = Forecasted NPI return in calendar year t

$\hat{c}$, $\hat{u}_1$, $\hat{u}_2$ = constant and autoregression parameters to be estimated

$r_{s,t-1}$, $r_{s,t-2}$ = NPI returns lagged once and twice

See *Appendix A* for NCREIF returns used in the NPI forecasting as shown below in Exhibit VII-5.

See *Appendix B* for forecasting on NPI which provided the forecasted returns, based on 1978-2006 calendar year returns history, for year 2007 to 2008 below. (Geltner_3, 2007)

Exhibit VII-5. Results for simple AR(2) Forecast of NCREIF Property Total Return for 2007 to 2010

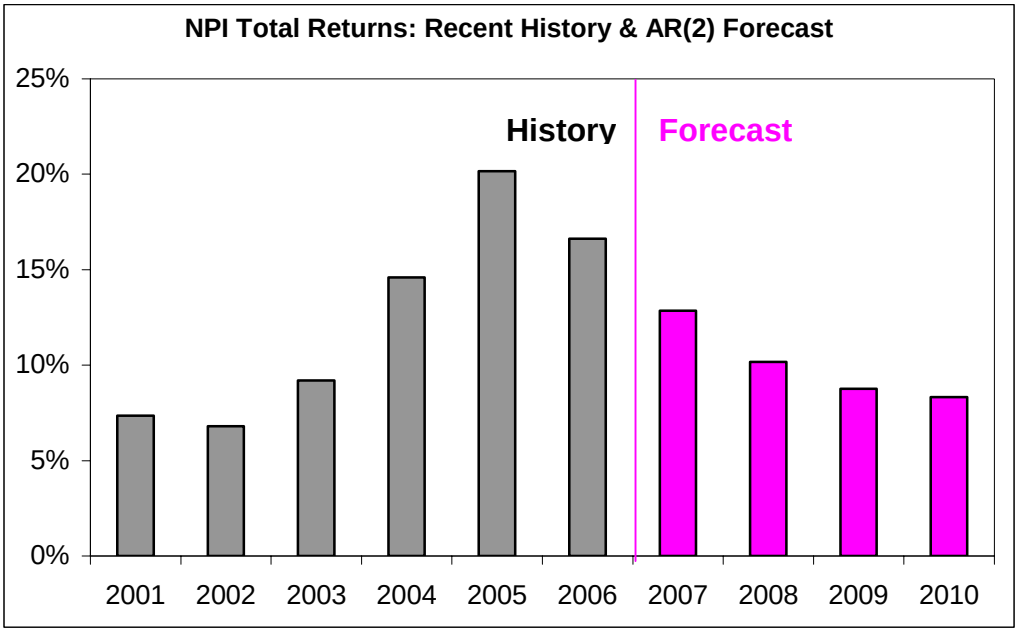
Regression R2= 68%

Recent History:	
Year:	Total Return
2004	14.59%
2005	20.16%
2006	16.63%
Forecast:	
Year:	Total Return
2007	**12.86%**
2008	**10.16%**
2009	**8.76%**
2010	**8.32%**

According to David Geltner the forecasts in the out-years (after 2008) are too high, and there is going to be more of a correction in the property market than the AR(2) model can forecast from the past history. Thus only the forecasted returns for 2007 and 2008 will be used in the pricing example.

See *Appendix C* for regression analysis producing the R2 of 68% as shown above. The forecasted results are diagrammatically presented in exhibit VII-6 below (Geltner_3, 2007).

Exhibit VII-6. All Property Total return showing forecasted results as shown in Exhibit VII-5. (Geltner_3, 2007)



The next step is to evaluate pricing and consider the effect of lag on an appraisal-based index.

Swap pricing with index lag

The long position in a total return swap is trading a contractually fixed payment and receiving the "risky" NPI total return. As the payment is essentially riskless it could be considered equal to a risk free interest rate. On the short side the investor is trading the real estate return for a riskless return.

Thus the equilibrium swap price for a swap of index for LIBOR is F = LIBOR (total return swap). This rule applies when the index represents the equilibrium price in the property market. However, this rule does not apply when considering an appraisal based index due to the lag effect.

The following example explains the effect of lag when determining the "fair" price for an appraisal based total return swap:

Assume the following

LIBOR = 5%

The real estate risk premium (RP_S) over LIBOR = 1.5%

Due to index lag, suppose the index has an "overhang" in a rising market = + 3.5%, for example.

Thus the real estate equilibrium total return is;

$LIBOR + RP_S = 5\ \% + 1.5\ \% = 6.5\ \%$

But the index expected total return ($E[r_S]$) is;

$E[r_S] = LIBOR + RP_S + lag = 5\ \% + 1.5\ \% + 3.5\ \% = 10\ \%$

Long position

Thus, the long position will pay as follows:

$F_L = LIBOR + lag = 5\ \% + 3.5\ \% = 8.5\ \%$

The investor will pay *F* as high as 8.5 % for the NPI total return. He /she will place the notional amt (saved by the fact that the swap requires no cash investment up front) into LIBOR-yielding bonds and earn the 5% on LIBOR + the expected 10% index return on the swap. Then subtract the price of *F* = 8.5%

= 5% + 10% - 8.5% = 6.5%

This represents the expected return on investment with a risk equal to that of the real estate index, which is exactly what the long position faces.

Short position

The short position will accept F as low as

$F_S \geq$ = LIBOR + lag = 5 % + 3.5 % = 8.5 %

The short position will accept *F* as low as 8.5 % and pay the NPI total return. He /she will earn pay an expected 10% index return while receiving a certain *F* = 8.5%, both on the swap, but also receive an expected 6.5% on covering real estate of the same value as the notional amount on the swap, property that is either held or purchased (with the cash saved since the swap is zero cash up front). Thus, the total position on the short side faces a certain return (since the risk in the index cancels out the risk in the properties held) of:

= 6.5% - 10% + 8.5% = 5% = LIBOR

Since the short position is exposed to no risk (or only the risk of LIBOR, because the real estate risk cancels out), the fair expected return is indeed the LIBOR, 5%.

It is also important to note that for a capital return swap the equilibrium price would be:

F = LIBOR + *L* - the RE income return

$$F = E[g_S] - RP_S$$

Where g_S is the expected capital return on the index (including the lag effect), and RP_S is the *equilibrium* ("fair") total return risk premium for investments that have risk like the index risk.

It should also be noted that the risk in the index may differ from (probably be less than) the risk of the average property tracked by the index, due to the appraisal lag effect possibly diminishing the risk in the index. Representing the equilibrium risk premium as RP_P for the property market and RP_S for the index, the equilibrium swap price for a total return swap on a lagged index for LIBOR is F = LIBOR + L, where:

L = Expected Return – Equilibrium Expected Return = $E[r_S] - E^E[r_S]$

L = Risk difference effect (Property market – index) + momentum effect in the index

$L = (RP_P - RP_S) + m$.

If the index has been strong and upward trending $m > 0$; and if the index has been downward trending $m < 0$.

For NCREIF, RP_P is probably approximately 200 to 400 bps, RP_S is probably approximately 100 to 200 bps. Thus $(RP_P - RP_S)$ is approximately 100 to 200 bps

The next section combines the NPI forecasting model and the pricing analysis for an appraisal based index in order to examine real swap prices in the market.

Combining the forecasting and the pricing theory to examine real swap pricing

Exhibit VII-7. NCREIF assumed "real" swap prices (Geltner_3, 2007)

		NCREIF - Real Estate Swap Prices*							
		*Source:Phil Barker (CBRE/GFI), NCREIF panel 6/14/07. Contains actual market quotes and estimates for illustration purposes only.							
		Basis Points **LIBOR Plus**			*Percentage* **Total Return**			*Percentage* **Historical Returns**	
	Terms	**Bid**	***Mid***	**Offer**	**Bid**	***Mid***	**Offer**	**Year**	**Returns**
NPI	**1**	400	*476*	550	9.5	*10.25*	11	2004	14.49
	2	280	*320*	360	8.25	*8.65*	9.05	2005	20.06
	3	225	*275*	325	7.75	*8.25*	8.75	2006	16.59

The following example is based on the assumed "real" pricing as listed in Exhibit VII-7 above (for illustrative purposes only). It will review the total return swap pricing based on the previously discussed NCREIF forecasts and equilibrium pricing principles.

In a total return swap the equilibrium price is LIBOR + the index lag effect OR the equivalent forecasted return (over the duration of the swap contract) minus the equilibrium risk premium.

$$F = \text{LIBOR} + L = \text{LIBOR} + (E[r_S] - E^E[r_S]) = E[r_S] - RP_S$$

Consider the following for a 1 year swap:

- The mid 2007 forecast on the 1 year swap would be half of the blended AR forecast for 2007 (12.86%) and half the AR forecast for 2008 (10.16%)

  $E[r_S] = (12.86 = 10.16)/2 = 11.51\%$

- Suppose the risk premium is 170 basis points

- The equilibrium mid point price is then:

$$F = 11.51\% - 1.7\% = 9.81\%$$

Assuming LIBOR = 5.5% the quoted mid point price is:

LIBOR + 4.75% = 5.5% + 4.75% = 10.25%

This indicates that the quoted price is actually overpriced according to the equilibrium price the investor is willing to pay for the 1 year NPI return.

There are a number of reasons that the available pricing could differ from the investor's estimate of the equilibrium mid point price. The investor's forecast could be different from the consensus in the swap market, their estimate of the equilibrium NPI risk premium (used 1.7%) could be wrong, and/or supply and demand in the market could have pushed the price away from the equilibrium point. This could also be due to transaction costs on the long side and hedging costs on the short side. (Geltner_3, 2007)

What could cause the equilibrium swap price to differ from LIBOR+L (in the mid-point of the bid/ask spread)?

As an example, consider that synthetic investors on the long side of the swap are saving the transactions and management costs of direct property investment, and this could enable them to be willing to pay more than the above-described theoretical equilibrium price that is based only on risk considerations. If on the short side of the swap hedgers are concerned about basis risk or retaining positive alpha or other such concerns they might on average demand a higher swap price than the lower bound F_S = LIBOR + L rate noted above.

If the long side is thusly willing to pay more than the LIBOR + *L* rate and the short side is requiring more than the LIBOR + *L* rate then the equilibrium bid/ask mid-point price will be above LIBOR + *L*.

Of course, things could go the other way. Suppose the long side of the swap is concerned about negative tax implications of synthetic real estate investment compared to direct property investment (e.g., no depreciation tax shield), and so demands a lower price for the swap than the LIBOR + *L* rate. And suppose the short side is concomitantly faced with a tax arbitrage in the swap (retaining the DTS on their covering real estate while deducting expected losses on the swap from current taxable income) that makes them willing to accept a price lower than LIBOR + *L*. Then the equilibrium mid-point swap price would be below LIBOR + *L*.

While such rational considerations in the supply/demand balance in the swap market could lead equilibrium swap prices to deviate from the LIBOR + *L* theoretical value either temporarily or permanently, it is also possible that observed deviations from the theoretical rate could simply be market "mis-pricing". This is particularly possible in a new, thin, market, where traders are few and perhaps not well educated about what they are trading. This might be the case in the US today, where the market is very young and not yet well informed.

If there is mispricing in the swap market, this opens up "arbitrage" opportunities for better informed traders, in the sense of opportunities to trade at prices that present super-normal expected returns (returns above what is warranted by the risk in the position), on either one side of the swap market or the other, where the mispricing exists. (This is not technically an "arbitrage" in that the super-normal profit cannot be immediately and risklessly locked in or realized, but it is a super-normal expected return ex ante.)

It is important to note that the mid point equilibrium price represents the mid point between the bid-ask spread. The bid spread faced by the short position below the swap price mid-point, and the ask spread faced by the long position above the price mid-point may be viewed as swap trading transaction costs by these two parties. These transaction costs could also significantly impact the price that each party is willing to pay.

Education

A real estate derivative is a well structured product that is needed in the real estate industry. Education is a barrier to growth in any derivatives market, and the market will take its time to learn and then develop the right tools and strategies for implementation. The way real estate professionals are trained in the UK and US is a major barrier. The real estate investors need to understand how they can implement derivates; the fragmented nature of the current education process does not accomplish this.[133]

The problem in the current market is that there are two groups of professionals with distinct languages, real estate and finance.[134]

The real estate sector has not spent a large amount of time trading in the financial market and visa versa. It is definitely more of a learning curve for the real estate investor to get comfortable with derivatives and the concept of trading. Education can be facilitated by a combination of banks, intermediaries, academics and NCREIF addressing the market fundamentals that could encourage growth and development[135].

[133] Pension fund investment advisor at PREA, interview conducted by phone on May 29th 2007
[134] Broker at ICAP, interview conducted by phone on June 19th 2007
[135] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007

It is important to note that intermediaries have a financial background and do not always understand real estate and the needs of the users and the profiles. They might need as much education as the end users themselves.

Protego addresses a number of steps in their education of end users:

- The property investors need to understand what derivatives were and how they operate
- The investor needs to understand how to evaluate derivatives and determine correct pricing.
- The investor needs to understand how derivative impact on our portfolio and to manage them as part of the portfolio.

Education is one of the biggest barriers to growth. US based TFS runs real estate derivatives seminars twice a month and they realized that investors simply do not understand the concept of a derivative[136]. Their goal is to re educate the US investor on the definition of a derivative and its use in investment and management decisions.

Fund Mandates

There exists a discrepancy in the US market about whether pension funds are allowed to trade derivatives or not. Fundamentally, pension fund mandates do not restrict them from trading, purely because the concept of trading a derivative was not originally addressed in the fund's mandates.

[136] Broker at Traditional Financial Services UK, interview conducted in person on June 8th 2007

However, some of the institutions are still not able to trade a synthetic investment that does not require a cash outlay upfront. It appears to be more acceptable if the derivative is structured like a bond with a principle investment payment.[137]

The concerns with fund mandates vary according to the investor; e.g. pension funds and insurance companies move slowly and changes to their fund mandates might take a considerable amount of time.[138] On the other hand, private investors like Blackstone could change their fund mandates quicker in order utilize synthetic investment vehicles. For individual users and tenants, changes to fund mandates should not be a problem.

According to a pension fund advisor at PREA, the majority of the pension funds in the US do not seem to have a restriction in their mandates on the use of derivatives in investment strategies. The issue might be in the relationship with the investment manager, specifically how the compensation works, marking to market, and the accounting treatment of real estate exposure through the use of derivatives.[139]

The handful of US pension funds that Credit Suisse spoke with did not actually have the ability to trade a derivative, but they could invest in a funded note format. The investor structured it to look like a derivative with a cash outlay at front, similar to the PICs available in the UK.[140]

Derivatives can offer great benefits to institutions in the management of their portfolios and investments. If these companies ever want to consider utilizing derivatives in the future, it would be advisable to address potential fund mandates and in house staffing issues now, in order to allow for trading the moment opportunities present themselves in the market.

---

[137] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007
[138] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007
[139] Pension fund investment advisor at PREA, interview conducted by phone on May 29th 2007
[140] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007

Tax & accounting principles

The impact of tax and accounting treatment on the use of derivatives in the US could be crucial to investor returns and the subsequent development of the real estate derivatives market. There still appears to be some confusion about the current tax and accounting treatment, but careful research and interviews with both UK and US tax specialists and traders have provided the following information. The next section will look at the specific tax implications for the current commercial derivatives products available (or soon to be available) in the US: total return swaps, capital return swaps and options. The second section will focus on the specific advantages of using derivatives and conclude with the anticipated accounting treatment of these tools.

I will first provide an overview of generally accepted US tax treatment of a swap contract.

Income and deductions under a notional principal contract (i.e., a swap), other than termination payments, are effectively spread over the life of the instrument.

The U.S. tax law splits the swap payments into three types. Periodic payments (those that are paid at least annually over the life of the swap) are included/deducted in the period in which they are made on a daily basis. Non-periodic payments (those other than periodic payments or termination payments) are included/deducted in the taxable year to which they relate. In other words, the income and deductions are spread over the swap's term. Termination payments (those made to close out part or all of the taxpayer's obligations under the swap) are included/deducted in the year made.[141]

[141] Tax Lawyer at Morrison & Foerster LLP, interview conducted by phone on July 3rd 2007

Total return swap

Contracts that are written as a total return swap on the NPI contains both an income and capital return component. Any periodic return over the life of the contract is taxed as ordinary income in the US (even though it contains both the income and capital component). In order to specifically qualify for capital gains tax in the US, there needs to be a sale of a capital asset. When payments are made on a total return swap, there is no "sale or exchange".[142] Therefore, the capital return component of the total return is still considered ordinary income, even though it would be capital gain if recognized directly. Thus, total return results in a payment that would be considered as ordinary income, and on the downside, it would be considered ordinary deduction.

If a party terminating a contract receives payment upon transferring their rights and obligations pursuant to the swap, either from the counterparty or a third party, the payment could qualify for capital gain treatment.[143] Thus, termination of the swap either through assignment to a third party or termination directly with the counterparty would result in capital gain (Internal Revenue Code section 1234A). The periodic payments and non periodic payments under a swap will still be treated as ordinary income/deductions.[144]

Capital return swap

All periodic returns from a capital return swap are taxed as capital gains; this is similar to the treatment in the UK.[39]

[142] Tax Lawyer at Morrison & Foerster LLP, interview conducted by phone on July 3rd 2007
[143] Ibid
[144] Tax Lawyer at Morrison & Foerster LLP, interview conducted by phone on July 3rd 2007

Options

Options have not yet traded on the NPI index, but the HQuant lodging index is essentially a future product that could offer options trading once it is licensed[145] (Morgan Stanley, 2007). Generally transactions in option contracts results in capital gains or losses. Long term capital gains are currently taxed to US individuals at a 15% rate. In order to qualify for long term capital gains, the individual investor has to hold the option for over a year, e.g. buy an option on the index for one year and one month. If the index goes up, the option increases in value and the investor returns are taxed as long term capital gains at 15%.

Tax benefits for the short side and accounting treatment

The use of derivatives could offer advantages for the taxable investor on the short side of a swap who owns the underlying property[146]. Assume the investor covers his investment with government bond and owns the underlying property; he will still receive the depreciation deduction on the property each quarter, which essentially makes it a more favorable investment. This could result in the long side paying a lower price and the short side accepting this price due to the depreciation tax shield.

Accounting treatments in the use of derivatives are as follows; e.g. if an investor covers the investment with a LIBOR bond it is essentially levered at a very favorable rate.

[145] It is anticipated that the HLI will be launched on Bloomberg August 2007
[146] David Geltner, MIT, Director, Center for Real Estate. George Macomber Professor and Professor of Real Estate Finance in the Department of Urban Studies & Planning

This debt would most probably be shown in a gross manner in the accounting treatment, whether this is as debt and assets, both in the statement and as a footnote. It will have to be clear to any party reviewing the statements what the investment history of the institution/ company is.[147]

There is often a time lag in new markets between the actual investment and realization of the tax and accounting impact by the investors. We are experiencing a convergence in international accounting standards and this could provide a homogenous platform for the use of derivatives internationally.[148]

The first step in a new market would be to publicize current rules and implications of investing with derivatives; even if this is a range, it is acceptable. The market will start to process this information and it will allow them to make informed decision when regulatory changes are suggested by relevant parties. When considering US tax and accounting principles, it is again important to define which type of fund and institution is referred to. For public companies reporting in GAP, accounting treatment is very important, as these institutions do not pay taxes when marking to market, but receive the tax benefit when they close out the contract[149].Users measured on cash performance are sensitive to accounting treatment, but opportunity funds based on IRR are not too concerned with the accounting treatment of using derivatives. Corporate tenants looking to hedge risk are more sensitive to mark to market rules while the hedge is outstanding.

US pension funds are tax exempt and not generally concerned with tax treatment of their derivatives use.

---

[147] US Accounting Consultant, interview conducted via phone on 16th July 2007
[148] UK Tax Lawyer at PricewaterhouseCoopers LLP, interview conducted by phone on 17th July 2007
[149] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007

One could look at the tax and accounting principles for other US derivatives markets; e.g. credit derivatives, for in the end the treatment is essentially the same thing. One important consideration is when pension funds use leverage, they have unrelated debt financed income (borrow money for income), and are thus subject to tax. These funds could deal with this issue in different ways; e.g. some pension funds will invest in an offshore hedge fund (corporation for tax purposes) and can thus avoid the leverage restriction in such a manner.[150]

International investors

The use of derivatives in international investment, as opposed to investing in the direct real estate, could offer advantages regarding withholding tax[151]. The general understanding about international swaps is that they are treated as ordinary income and ordinary loss across border without withholding tax.

For example, if an US company takes a long position on the IPD index, returns received from the index will not be subject to withholdings tax. If the investor actually owned direct property in the UK, his rental income would be subject to withholdings tax. This is similar to when a foreign investor owns property in the US and receives rental income; he is subject to 30% withholding tax. Through the use of international swaps, the investor can gain real estate exposure without withholding tax as the rental stream is disguised in the total return index.

The first step in a new market would be to publicize current rules and implication of investing with derivatives; even a range would be acceptable.

[150] Tax Lawyer at Morrison & Foerster LLP, interview conducted by phone on July 3rd 2007
[151] Ibid

The market will start to process this information and it will allow them to make informed decision when regulatory changes are suggested by relevant parties.

The current chapter addressed the barriers to growth in the US real estate derivatives market. It is crucial for the US to address these barriers to encourage market development and allow for the use of derivatives in investment and management decision. Chapter eight discusses industry questions and concerns as relevant to the current state of the US and UK commercial real estate derivative markets.

Chapter Eight: Industry Concerns and Questions

The following chapter discusses industry concerns and questions on issues that have a fundamental impact on the current state of the US and UK commercial real estate derivative markets. The issues discussed are as follows: education and end user understanding, indices and product acceptability, market movement, pricing and liquidity, and regulatory issues.

Specific industry concerns

Education and end user understanding

A US pension fund advisor stated that it is crucial for property fund managers to understand the greater potential of utilizing derivatives. He finds that fund managers still do not understand how to price these instruments and because of this simply won't use them[152]. Greater participation from end users is crucial for market development and this would require the actual acceptance and understanding of derivates by US property companies.

Despite all the conferences and education that have taken place in the markets, property companies in both the UK and US still do not understand what derivatives are and how to use them[153]. For example, an investor places $100 million in a fund with excellent research facilities and receives an annual report on investment outlook and strategy.

[152] Pension fund investment advisor at PREA, interview conducted by phone on May 29th 2007
[153] Trader at ABN AMRO, interview conducted by phone on July 10th 2007

According to the company's market report, it is anticipated that the market will experience a downturn in the next few years, but the investor is confident that the fund will utilize exceptional management skills to mitigate risk. However, three years down the line, the fund still has the same assets and the market has actually turned down. The investor can question why the fund has not considered using derivatives to hedge risk/protect themselves from the market downturn. If the company is benchmarking themselves against an index and underperforms, it is simply not good enough, even if they have excellent research, forecasting, and management skills.

Indices & product acceptability

According to one index provider, the two barriers to growth in the US are index quality and product acceptability by real estate investors. Over and above those two issues, the question still remains whether a really deep and liquid derivative market could efficiently and successfully be put together in the US. The reason for the concern is that, ultimately, real estate investment returns have been delivered over generations to end investors through the assembly of bespoke portfolios containing very unique assets. To shift that fundamental logic to something that is a highly liquid and synthetic market means that the investor has to accept that he is abstracting away from that concept of real specific property.

He also used the following example: UK market makers have talked about the obvious ways in which derivatives could be useful and powerful for property and real estate investors by looking at sector trades and segment trades. However, the UK market has simply not yet evolved in these two sectors, and there has only been a small amount of these trades as the majority of the trades have been total return on all property. How would the industry correlate this blunt use of derivatives to the anticipated growth and long term mature use by real estate investors? It literally only allows the investors to go a little "longer" or a little "shorter" on their entire portfolio.

The question is how this market can evolve in a way that appears to be most supportive of the end interests of the real estate investors while protecting all of the important liquidity conditions.

Finally, one US trader[154] was of the opinion that the US market will develop on its own. No act of Congress or structural change is required for contracts to start trading. His concern was also with the manner of quoting returns to clients; would it not be simpler to merely quote returns as "returns" and remove the interest rate component. Ultimately, the two numbers are inversely correlated and the spreads move in opposite directions; he questions whether it would not be a better product if brokers decoupled the interest rates. This would make marketing the products much easier as brokers could quote a 9.5% bid at 10% total return swap as a 4.75 bid at 5.25 total return swap.

Market movement

One US pension fund advisor was concerned with transaction priced indices in a market downturn. How would these indices represent the underlying market if there are no sales?
The UK IPD is its own entity in the market, and the problem with NCREIF is that it is made up of the same individuals executing the trading, buying the properties, and performing the appraisals. Does this not create a conflict of interest and a barrier for market growth?

Pricing and liquidity

UK property companies can evaluate, appraise, and judge risks and returns on property, but they do not have established methodologies for appraising derivatives prices[155].

[154] Broker at Traditional Financial Services US, interview conducted by phone on Jun 21st 2007
[155] Chairman of Property Derivatives at Protego, interview conducted in person on June 12th 2007

The industry also needs to understand how the use of derivatives affects its portfolio and how to manage the use of derivatives correctly. Managing a derivative is different from managing a property asset. Property is evaluated annually and derivatives need to be market to market more frequently, which could affect the portfolio's risk spectrum.

Hand in hand with pricing goes liquidity, or the lack thereof; this is a major concern in the global derivatives market[156]. At the moment, each individual sector is set up in its own pool of liquidity, and the US market has a long way to go before reaching a point of critical liquidity to allow for efficient international trading. The problem that presents itself is how to build liquidity in the fragmented nature of the US market. Banks might have to take a bold position and warehouse tremendous amounts of risk to provide liquid products the industry wants to utilize in investment and management decisions.

Regulatory issues

Regulatory issues are still a concern in the US. This could hold up the development of the US derivatives market. Due to the current state of the US market, companies are not clear on the extent to which they will experience tax, regulatory, or authorization issues with the use of derivatives[157]. There is no question that derivatives will be commonly used tools, but it will still take time for large scale players to integrate derivatives into their overall strategies. The anticipated development timeframe of the market is really up to the big players and their participation in market development.

[156] Head of Property Derivative Development at CBRE/GFI UK, interview conducted in person on June 7th 2007
[157] Individual at Investment Bank, interview conducted in person on June 8th 2007

One positive is that the US market has made considerable progress in 2007. The dealer community joined forces and created a standardization of terms that resulted in defined terms, set market standards, and set documentation. This has previously been a major holdback in the US market development.

The current chapter discussed the most pressing issues in both the US and UK real estate derivative markets. Industry opinions are that if these concerns could be addressed, first, the UK market could rapidly build momentum; and second, the US market development could accelerate to a point of critical liquidity and active use of derivatives in management and investment decisions. The following chapter will look at the projected growth and development in the US and UK real estate derivative markets.

Chapter Nine: Future Development of the US Market

The following chapter presents the opinions of the major market players in both the UK and US on the anticipated growth prospects for the US market. In some instances comparisons are drawn with UK market growth forecasts, but the general opinion is that the US derivative market is in for slow, stable growth that will eventually present an even greater opportunity for the long term use of derivatives in investment and management decisions. To quote an investor at a major US bank: "It is only a matter of time before the US (commercial real estate derivatives) market develops."

As stated before, the US market allows for even greater growth than the UK market[158]. However, the first challenge to very large diverse markets, such as the US, is that the physical size of the market makes education much more challenging[159]. The second problem is that such a granular market presents challenges to creating a two way focus within the market. US investors are trying to compare the current state of the market to that of the UK market, but the two markets are not at similar stages of growth. These investors need to consider the specific (i.e., size and granularity) needs that are inherent to the US market at present.

Over and above the scale and fragmented nature of the US market, it is expected to experience slow growth due to how real estate is owned in the US. Most real estate is owned by pension funds, which inherently raises concerns about basis risk and benchmarking due to the public nature of the companies[160].

[158] Trader at Credit Suisse, interview conducted by phone on July 2nd 2007
[159] Ibid
[160] Pension fund investment advisor at PREA, interview conducted by phone on May 29th 2007

Also, there are not as many private equity, hedge fund, or absolute return investors in the US who are comfortable with just a directional call, as currently active in the UK market. The focus is on the institutional investors and pension funds, and traditionally these companies are slower to climb into new markets.

One US investment advisor is of the opinion that the timing for a US derivatives market has been "right" forever[161]. The reason it is only developing now is because there is an increasing awareness of the potential of utilizing derivatives in real estate. The US has no reason not to develop, as there is already a market in London and an increasing degree of financial sophistication in real estate. Over the past fifteen years, real estate players have emerged from the back room; hence the simultaneous development of securitized equity (REITS) and the CMBS market. The following example illustrates the market potential in the US.

The US commercial real estate stock is $8 trillion. The transactions on the NCREIF transactions index (2006) amount to approximately $30 billion and the on the RCA transactions index (2006) to approximately $330 billion. If this is compared to the IPD Derivatives/Cash Ratio of £3B/ £8B (07Q1) the NCREIF projection for cash ratio is $11 billion and the RCA is $124 billion (Geltner_3, 2007). This is not $8 trillion but definitely presents potential for a robust market in the future. The time frame for getting to the end point is anyone's guess. The opinion of a UK investment advisor[162] is that derivatives will eventually become accepted as normal tools of the property investment manager.

Finally, the US still has serious problems with indices, which might cripple the market.

[161] Senior Managing director of Investment Banking at Cushman & Wakefield, interview conducted by phone on April 25th 2007
[162] Chairman of Property Derivatives at Protego, interview conducted in person on June 12th 2007

For example, the NCREIF has only three full time employees in their organization.

There are too many different indices in the market that result in end user confusion. [163]

Addressing and overcoming these barriers to growth will allow investors, speculators and end users the opportunity to actively utilize derivatives in management and investment decision.

This chapter presented the anticipated growth prospects for the US real estate derivatives market. The final chapter is the Conclusions, which summarizes the barriers to growth as identified through the interviews, and presents potential solutions to those factors inhibiting the growth of the US real estate derivatives market.

[163] Trader at ABN AMRO, interview conducted by phone on July 10th 2007

Chapter Ten: Conclusions

The US commercial real estate sector is an $8 trillion dollar industry (Geltner, 2007), and the size of this market presents a vast opportunity for risk hedging, asset allocation, and portfolio rebalancing in a more efficient manner through the use of derivatives. Real estate is one of the largest categories of physical assets for which no derivatives market has yet traded; and the development of a derivatives market seems like the next steps for an increasingly sophisticated US commercial real estate asset class. The research in this thesis confirmed that the market shows potential for real growth, but it has a long way to go in overcoming the current barriers to development in the US commercial real estate derivatives market.

First and most importantly, the thesis research identified the barriers to growth through a series of structured interviews with key players in both the UK and US markets. Twenty interviewees provided knowledge and insight for identifying and overcoming these barriers to allow for successful implementation and growth of real estate derivatives in the US commercial sector. The five main barriers that were identified are as follows: Indices, pricing, education and leadership, tax and accounting treatment and fund mandates.

Market makers and leaders have the ability to educate and guide the investor, liquidity provider, and end user in order to facilitate the successful development of US real estate derivatives market by addressing the following barriers:

- First, the US's biggest problem is the index war.

The market makers need to focus on one index that is good enough to start trading and create liquidity while, simultaneously, continuing with market education on each of the other indices, along with their advantage in specific investment goals. The index providers need to focus on the end user's needs and provide the vehicle for achieving these investment goals. The indices that consistently provide quality of information will survive and be actively utilized in the future. Ultimately, the US market is big enough to sustain two or three major indices that could complement each other in the trading of derivatives products. Regular valuation of the underlying properties remains a problem, but it is a major task to change the way a whole industry functions.

- Second, high bid ask spreads is a natural problem in a young inefficient market and will resolve as liquidity increases. However, pricing is crucial as the first building block to creating a successful commercial real estate derivatives market in the US. Active education in derivatives, indices and specific pricing methods relating to the particular characteristics of each index, will allow end users to make informed decisions when looking at utilizing derivatives.

- Third, it is crucial to identify the key players that could take a leading role in creating liquidity in the market. If the UK is any example from which to learn, the US needs market leaders to take positions and warehouse risk - liquidity breeds liquidity. One major investment bank alone is not enough to create competition in the market, encourage efficient pricing, and create liquidity.

- Fourth, educate the end users on the specific problems that derivatives could address and how they could be utilized and implemented in investment and management decisions. The current focus is property companies; pension funds, and, if there is enough volatility in the market, hedge funds. The education process will take longer in the US, but the moment when end-users realize the enormous potential and actively start using derivatives for risk hedging and investment is when the market will start building momentum.

- Fifth, inform the market on specific barriers to development that could be overcome by regulatory action. Publishing the current accounting and tax regulations relevant to all potential derivatives contracts and the respective indices on which they trade, even if it is a range, will create an awareness of possible limitations and subsequent regulatory changes that could be required to encourage user participation.

- Sixth, address fund mandates; it is simply not good enough that some pension funds may or may not use derivatives. These institutions are potentially one of the biggest users of derivatives, so they stand to gain a tremendous amount by the benefits associated with the use of derivatives. It is up to both the market makers and these institutions to take an active part in determining where each company stands with respect to mandates and what changes are required. It takes time and a serious financial commitment to facilitate change in large institutions, specifically public institutions.

In conclusion, derivates will never overtake direct investment, but it is a tool that actively reduces the negatives of investing in direct property; and offers significant advantages for investors executing investment and management decisions.

Collective education the key; overcoming the barriers to growth in the US commercial real estate derivatives market will require more than one educator, market maker, broker, and leader.

Exhibit X-1. Developing a successful US commercial real estate derivatives market

Developing a successful US commercial real estate derivatives market
Select an Index to start trading on, educate end users on all market indices and respective investment applications.
Educate end users on pricing methods
Identify key players to educate, warehouse risk and create liquidity
Educate end users on the specific benefits of utilizing derivatives in management and investment decisions.
Inform the market of current tax and accouting regulations that could impact market growth.
Address fund mandates

Exhibits

Bibliography

Clayton, Jim. (2007). *PREA Quarterly, Commercial Real Estate Derivatives: They're Here ... Well, Almost, Winter 2007*. PREA Quarterly, Winter 2007.

Esaki, H. and Kotowsky, J. (2006). *Securitized Products: US CMBS. Property Derivative Growth the Menu*. Morgan Stanley Fixed Income Research Report North America, May 3, 2006.

Geltner, David_1. (2006). *Transaction Price Indexes and Derivatives: A Revolution in The Real-Estate Investment Industry*. Article for ICSC Research Review, 2006.

Geltner, David_2. (2007). Address. *The 8 Trillion Opportunity*….Speech presented at the Terrapin

Geltner, David_3.(2007). Address. *New Tools in Equity Derivatives*. MIT Professional Development Course, summer 2007.

Real Estate Derivatives World Conference, NYC, New York, 2007.

Geltner, D. and Miller, N. G. (2007). *Commercial Real Estate Analysis & Investment, s*econd edition, South-Western/College Publishing Co., Mason, OH.

Geltner, D. and Pollakowski, H. (2007). *A Set of Indexes for Trading Commercial Real Estate Based on the Real Capital Analytics Transaction Prices Database*. MIT Center for Real Estate Commercial Real Estate Data Laboratory (CREDL), white paper, December 2006.

HQuant: Measuring and Managing Risk in the Hospitality Industry. (2007). Available from <http://www.hquant.com/hli.html> [Accessed 22 July 2007]

Investment Property Databank Index. (2007). Available from <http://www.ipdindex.co.uk/default.asp> [Accessed 22 July 2007]

Lim, J.Y. and Zang, Y. (2006). *A study on real estate derivatives*. Massachusetts Institute of Technology, Masters Thesis, 2006.

Mallinson, Simon. (2007). Address. *Global Real Estate Performance.* Speech presented at Massachusetts Institute of Technology Center for Real Estate, Cambridge, 9 May, 2006.

National Council of Real Estate Fiduciaries NPI Index. (2007). Available from < http://www.ncreif.com/> [Accessed 22 July 2007] Available at <http://contact2.terrapinn.com/FRM_DocsConf.aspx>

Appendix

Appendix A

Official NCREIF Property Index (VWNOI), as downloaded from NCREIF.ORG

Current Query Criteria:
Income return based on NOI
Returns weighted by Value

Calendar Year Returns

Year	Income Returns	Capital Returns	Total Returns
1978	8.85%	6.81%	16.11%
1979	8.95%	10.80%	20.46%
1980	8.40%	9.11%	18.07%
1981	8.06%	8.08%	16.63%
1982	7.89%	1.46%	9.44%
1983	7.89%	4.94%	13.12%
1984	7.62%	5.89%	13.83%
1985	7.53%	3.51%	11.23%
1986	7.37%	0.89%	8.30%
1987	7.27%	0.69%	8.00%
1988	7.04%	2.46%	9.63%
1989	6.65%	1.06%	7.76%
1990	6.59%	-4.10%	2.29%
1991	6.77%	-11.77%	-5.59%
1992	7.57%	-11.19%	-4.26%
1993	8.21%	-6.43%	1.39%
1994	8.74%	-2.22%	6.38%
1995	9.13%	-1.49%	7.53%
1996	8.88%	1.34%	10.30%
1997	9.08%	4.51%	13.90%
1998	8.79%	7.00%	16.24%
1999	8.39%	2.80%	11.37%
2000	8.64%	3.44%	12.30%
2001	8.71%	-1.28%	7.35%
2002	8.50%	-1.59%	6.80%
2003	7.97%	1.17%	9.20%
2004	7.45%	6.77%	14.59%
2005	6.76%	12.77%	20.16%
2006	6.22%	9.95%	16.63%

* NCREIF website

Appendix B

Performing 2-lag Autoregression Forecast on NCREIF Property Index Total Return…

CY	NPI TR	Lag 1	Lag 2	Hist/Forecast
1978	16.11%			16.11%
1979	20.46%	16.11%		20.46%
1980	18.07%	20.46%	16.11%	18.07%
1981	16.63%	18.07%	20.46%	16.63%
1982	9.44%	16.63%	18.07%	9.44%
1983	13.12%	9.44%	16.63%	13.12%
1984	13.83%	13.12%	9.44%	13.83%
1985	11.23%	13.83%	13.12%	11.23%
1986	8.30%	11.23%	13.83%	8.30%
1987	8.00%	8.30%	11.23%	8.00%
1988	9.63%	8.00%	8.30%	9.63%
1989	7.76%	9.63%	8.00%	7.76%
1990	2.29%	7.76%	9.63%	2.29%
1991	-5.59%	2.29%	7.76%	-5.59%
1992	-4.26%	-5.59%	2.29%	-4.26%
1993	1.39%	-4.26%	-5.59%	1.39%
1994	6.38%	1.39%	-4.26%	6.38%
1995	7.53%	6.38%	1.39%	7.53%
1996	10.30%	7.53%	6.38%	10.30%
1997	13.90%	10.30%	7.53%	13.90%
1998	16.24%	13.90%	10.30%	16.24%
1999	11.37%	16.24%	13.90%	11.37%
2000	12.30%	11.37%	16.24%	12.30%
2001	7.35%	12.30%	11.37%	7.35%
2002	6.80%	7.35%	12.30%	6.80%
2003	9.20%	6.80%	7.35%	9.20%
2004	14.59%	9.20%	6.80%	14.59%
2005	20.16%	14.59%	9.20%	20.16%
2006	16.63%	20.16%	14.59%	16.63%
2007		16.63%	20.16%	**12.86%**
2008			16.63%	**10.16%**
2009				**8.76%**
2010				**8.32%**

* Exercise during MIT Professional Development Course 2007, New Tools in Equity Derivatives. Geltner, David (2007).

Appendix C

Apply *Tools, Data Analysis, Regression…*

=Regresson Y Range

=Regression X Range

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.84196284
R Square	0.708901424
Adjusted R Square	0.684643209
Standard Error	0.034688282
Observations	27

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	0.070327081	0.03516354	29.22314903	3.70238E-07
Residual	24	0.028878646	0.001203277		
Total	26	0.099205727			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.028831594	0.013023877	2.213748995	0.036598616	0.001951634	0.055711554	0.001951634	0.055711554
X Variable 1	1.098965341	0.178488905	6.157051298	2.31869E-06	0.73058235	1.467348332	0.73058235	1.467348332

* Exercise during MIT Professional Development Course 2007, New Tools in Equity Derivatives.
Geltner, David (2007).