Cap Rates & Real Estate Cycles:

A historical perspective with a look to the future

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Introduction

Capitalization or "cap" rates play a central role in real estate investment, financing and valuation decisions. Average market-wide cap rates are widely quoted and followed as a gauge of current real estate investment market conditions. Cap rates received increasing attention in both industry and academic circles over the past decade, as real estate established itself as a mainstream asset class that became more integrated with broader capital markets, on both the debt and equity sides. The resulting surge of capital into the real estate sector over the last decade helped drive property values to historical highs and cap rates to new lows. The phrase "cap rate compression" was born as cap rates fell from the 8-10% range in the early 2000's to 5-7% by 2006 (Exhibits 1 and 2). During this period, and especially the later part of it, the appropriate level of cap rates was widely discussed and debated amongst the "new paradigm-real estate risk has been permanently re-priced" and "pricing bubble" camps. Today, as the real estate sector works its way through a deep financial crisis-induced recession, cap rates are increasing and investors are struggling to get a handle on just how high they will go and where they will settle once a new equilibrium is reached. Moreover, in today's environment, characterized by limited transaction activity, market derived information about cap rates is not widely available.

EXHIBIT 1: INSTITUTIONAL PROPERTY CAP RATES
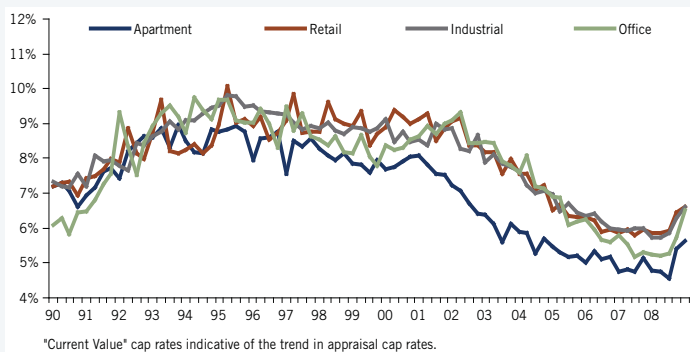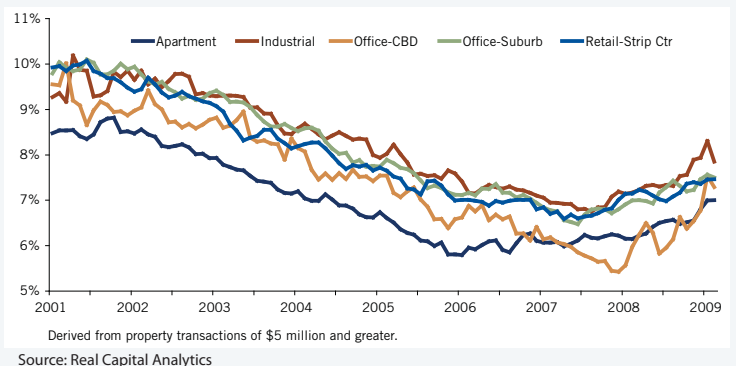(Quarterly, 1990:1 - 2009:1)

"Current Value" cap rates indicative of the trend in appraisal cap rates.

Source: NCREIF

EXHIBIT 2: AVERAGE TRANSACTION CAP RATES – ALL INVESTOR TYPES
(Monthly, Jan. 2001 - Feb. 2009)

Derived from property transactions of $5 million and greater.

Source: Real Capital Analytics

While cap rates are widely quoted and referenced, there remains considerable confusion about and misinformation related to exactly how they are determined and what they mean. This paper aims to fill this knowledge gap and provide readers with a sound understanding of both the conceptual underpinnings and the fundamental determinants of cap rates. The paper also examines cap rate dynamics during previous recessionary periods with the intent of gaining a better understanding of cap rate behavior during the current economic downturn and what we might expect looking forward as the current economic cycle plays out.

WHAT IS A CAP RATE?

At a fundamental level, overall capitalization, or "cap", rates are a way of quoting observed property prices in relation to expected first year asset-level income. A cap rate is essentially the expected first year income yield on an income property investment. It is defined as the ratio of property net operating income (*NOI*) to current market value (*V*), or

$$cap\ rate = \frac{NOI_1}{V} \tag{1}$$

In the realm of commercial real estate, the capitalization rate is a tool widely used to estimate the value of a particular property. It is the foundation of the "direct capitalization" method of real estate valuation. In this context, income-property can be valued by applying a cap rate to an estimate of first year net operating (*NOI*). That is, the above expression for the cap rate can be arranged to yield,

$$V = \frac{NOI_1}{cap\ rate} \tag{2}$$

For example, if the appropriate cap rate for an office building producing an annual *NOI* of $1 million is 10%, then the estimated value of the property is $10 million. A lower (higher) cap rate would imply a higher (lower) property value; there is an inverse relationship between cap rates and value assuming a static income stream. This valuation approach assumes, of course, we know the cap rate.

WHERE DO CAP RATES COME FROM?

Cap rates are generally derived from observed property transactions.[1] Most institutional investors estimate property values with a discounted cash flow (DCF) methodology, using a multi-year pro forma and taking the present value (*PV*) of expected future cash flows (*CFs*), including expected net sale or reversion proceeds (*REV*) at the end of an assumed "T" year holding period, discounted at the appropriate risk-adjusted required total return k.[2] That is, property value (V) is determined as

$$V = \frac{CF_1}{(1+k)} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + ... + \frac{CF_T + REV_T}{(1+k)^T} \tag{3}$$

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1.   In theory cap rates can also be constructed as the weighted average of typical investor's required first year equity returns and the cost of debt, assuming a typical or average loan to value ratio. This approach is known as the band-of-investment method of building up a cap rate.
2.   k is also termed the discount rate or the opportunity cost of capital (OCC) or the unlevered IRR.

and the "going-in cap rate" or first year income return on assets, is defined as CF_1/V. Note that we have switched from net operating income (NOI) to the more general cash flow (CF) that may include an annual reserve for future capital improvements, leasing costs and tenant improvement expenditures. The cap rate provides a summary measure of price paid per dollar of expected first year property income and implicitly includes the impact of leasing and tenant improvement expenditures. In an active market, cap rates extracted from recently completed transactions can provide investors and appraisers a useful guide for determining the appropriateness of the cap rate to be used in valuing a subject property.

CAP RATE DATA AND THE CYCLICAL BEHAVIOR OF CAP RATES

The cap rate series in Exhibits 1 and 2 come from two widely referenced sources. Exhibit 1 shows average cap rates derived from *appraisals* of core institutional properties included in the benchmark property return index ("NPI") produced quarterly by the National Council of Real Estate Investment Fiduciaries ("NCREIF"), dating back to 1990. The NPI consists of quarterly performance data for unlevered investment-grade properties owned by or on behalf of tax-exempt institutions such as pension funds, endowments and foundations. Income producing assets from the major property types are included in the index: apartments, industrial, office, and retail properties; hotels are excluded. Exhibit 2 displays monthly series of average *transaction* cap rates reported by Real Capital Analytics ("RCA") dating back to 2001. RCA data is derived from a broader sample of properties compared to NCREIF as the data attempts to cover all transactions of $5 million or more, of which institutional transactions are one component.

RCA cap rate data does not exist prior to 2001. The NCREIF Property Index began in 1978 and therefore allows us to examine the behavior of cap rates, albeit only on the larger core properties owned by institutional investors, over the past three decades. In what follows we study aggregate or average NCREIF cap rates, as opposed to the property type level, since this allows us to go further back in time. In addition, we examine what NCREIF terms "current value" cap rates, reflecting cap rates for recently appraised properties, and also "transaction" cap rates derived from the sales of properties included in the NCREIF index. Ideally, we would want to focus on cap rates derived from transactions to provide the most up to date information about pricing. However, the NCREIF transaction cap rate series does not begin until 1983 and in the early years is quite erratic as the figures are derived from a relatively small number of transactions. In addition there is considerable divergence in current value and transaction cap rates through much of the 1980s and into the early 1990s.

Exhibit 3 displays the NCREIF cap rate time series, with appraisal cap rates dating back to 1979 and transaction cap rates dating back to the early 1990s. It clearly highlights the cyclical nature of real estate investment markets. Cap rates vary over time as macroeconomic conditions and real estate space and capital markets fluctuate. Property income and expectations of future growth vary with economic and local supply / demand fundamentals. The rate of capitalization of

property income into property value depends also on capital market conditions as reflected in the opportunity cost of capital and risk perception associated with the real estate asset class. For much of the 1980's, cap rates declined and real estate prices trended upward as the move by pension funds, Japanese investors and other institutions into real estate coincided with aggressive lending and a subsequent period of significant overbuilding. This precipitated a sharp run up in commercial property values. Inflation fears and institutional investor demand bolstered the commercial real estate market at a time when changes in tax laws enhanced already generous depreciation allowances and tax shelters for wealthy individuals. Also during the 1980's, the deregulation of the savings and loan ("S&L") industry allowed these institutions to originate and/or invest in commercial mortgages for the first time, thus opening up another new and inexperienced source of capital for commercial property, adding fuel to the real estate boom. By the late 1980's, tax reform had eliminated most of the special tax incentives. The overbuilding and extent of the financial crisis in the S&L industry were realized; and subsequently the commercial property market suffered a major downturn characterized by significant declines in real estate prices resulting in much higher cap rates. Over the 2003–07 period, dramatic increases in debt and equity availability, improving property fundamentals, and increased investor demand produced material declines in cap rates and increases in prices. Most recently (2007-2009) unprecedented contractions of the credit markets, lower investor demand and softening property fundamentals have resulted in an ascent of cap rates that is expected to continue as the economy navigates through one of the most severe recessions on record. While our focus in this paper will be on average sector wide pricing, Exhibits 1 and 2 show cap rates do vary across property types due to variations in property income growth prospects and risk premiums.

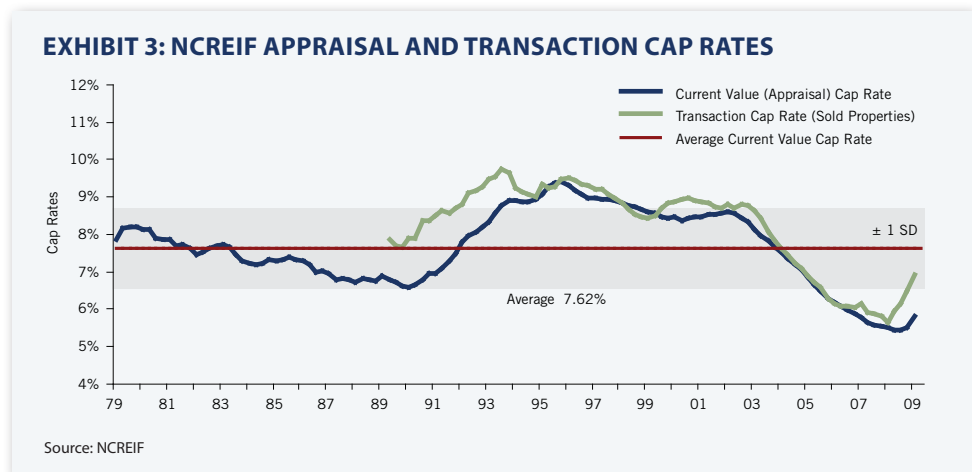**EXHIBIT 3: NCREIF APPRAISAL AND TRANSACTION CAP RATES**

Source: NCREIF

Exhibit 3 reveals that while institutional property cap rates do vary over time, they do so in a somewhat predictable manner, never getting too far from their long-run average of 7.6 % (the red line in Exhibit 3). Moreover, with the exception of the period of the mid-nineties and the most recent property price upswing, current value cap rates remain within a band of 6.75% to 8.75% (the shaded area

in Exhibit).[3] The period since 2005 stands out as a somewhat unique one for cap rates, with both current value and transaction cap rates "falling" well out of the historical range.

LOOKING INSIDE CAP RATES

The basic property valuation formula in equation (3), reveals, in addition to first year expected property income, a cap rate is a function of the discount rate, k, and expected change in future cash flows. All else being equal, the higher the property income growth expectations, the lower the cap rate. Investors are willing to pay more per dollar of current income (CF_1) the larger the expected cash flows in subsequent years. Under certain simplifying assumptions we can derive an exact relationship between the discount rate, the expected rate of growth of property cash flows and the cap rate.[4] More generally, we can show the following approximate relationship holds and is very useful in terms of understanding the determinants of cap rates and the dynamics of changes in cap rates:

$$cap\ rate \approx k - g \tag{4}$$

We can go further and break the required total return, k, into two components, namely the risk-free rate, k_{RF}, (or yield to maturity on default-free government bonds, generally proxied by the yield on 10 year Treasuries) plus a real estate risk premium, RP, so that

$$cap\ rate \approx (k_{RF} + RP) - g \qquad \text{Cap Rate } \textit{Level} \text{ Determinants} \tag{5}$$

This decomposition nicely illustrates the three key determinants of cap rates:

- Yield on government bonds (k_{RF})
- Real estate risk premium (RP)
- Property income growth expectations (g)

Variation in cap rates over time is driven by changes in the opportunity cost of capital as reflected in the yield to maturity on default risk-free (government) bonds and the risk premium added to the bond yield, as well as fluctuations in the expected long-term growth of property cash flows. In thinking about the components of variation in cap rates over time, it is important to note that k_{RF} comes from the capital markets, RP comes from both the capital markets and the real estate space markets, while g comes from the real estate space or user market. We would expect movements in bond yields and revisions in property

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3. See "The Long Cycle in Real Estate." By Ron Kaiser in the Journal of Real Estate Research, vol. 14, no. 3 (1997) for evidence that cap rates have generally remained within this range dating back to the early 1950s.

4. Under certain assumptions, the present value property valuation formula in equation (3) collapses to a nice simple formula that is often used to highlight the key determinants of cap rates. In the special case where we expect to hold the property indefinitely (i.e. T goes to infinity), and annual operating cash flows are expected to grow at a constant rate "g", equation (1) becomes

$$V = \frac{CF_1}{(1+k)} + \frac{(1+g)CF_1}{(1+k)^2} + \frac{(1+g)^2 CF_1}{(1+k)^3} + \cdots = CF_1 \left[\frac{1}{(1+k)} + \frac{(1+g)}{(1+k)^2} + \frac{(1+g)^2}{(1+k)^3} + \cdots \right] = CF_1 \left[\frac{1}{k-g} \right]$$

In this case, the relationship cap rate = k – g holds exactly.

income growth (rents and vacancy rates) would be the most volatile components of cap rate movements, with the risk premium expected to change more slowly over time, especially at the aggregate or sector wide level. It is also crucial to recognize the three cap rate ingredients are not independent of one another; cap rate fluctuations result from a complex interaction of the three variables. One cannot say, for example, cap rates move one to one with Treasury yields – it depends on what drove the change in Treasury yields and what this implies for growth expectations and the risk premium.
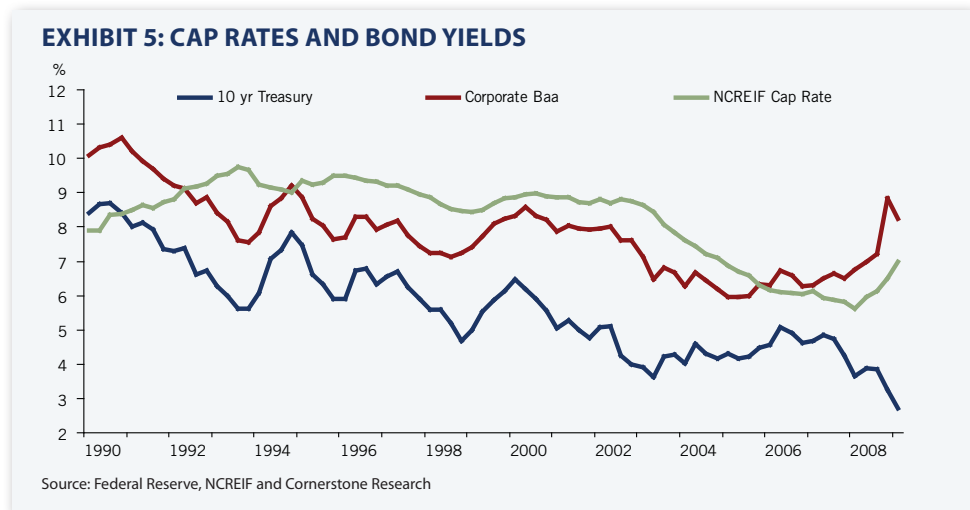
Investors often quote real estate cap rates or yields in terms of spreads above Treasuries, and sometime refer to this spread as a risk premium. Subtracting the risk-free rate from both sides of Equation (5) yields the following expression for the cap rate – Treasury spread:

$$(cap\ rate - k_{RF}) \approx (RP - g)$$

Cap Rate *Spread* Determinants (6)

Cap rate spread
to 10 yr. Tsy yield

The spread is positively related to the risk premium, but also depends crucially on property income growth expectations; it is too simplistic to call the spread between cap rates and Treasury yields a risk premium. In theory, it is possible to have a negative spread during periods of high property income growth expectations. Exhibit 4 reveals this situation did in fact persist for much of the 1980s, a period preceding the major real estate downturn in the early 1990s. Subsequent to the recovery of the early 1990's downturn, the spread between institutional cap rates and 10 year Treasury yields has remained positive. Cap rates moved and remained high in the early 1990's as Treasuries trended downwards, and then eventually began to follow Treasury yields down. The cap rate-Treasury spread remained relatively wide until 2003 when cap rates continued to compress at a rapid clip even as 10 year government bond yields bottomed out resulting in a sharp contraction of the spread, especially in 2006 and 2007 as Treasury yields began to move up.

EXHIBIT 4: NCREIF TRANSACTION CAP RATES AND 10 YEAR TREASURY YIELDS

Source: Federal Reserve, NCREIF
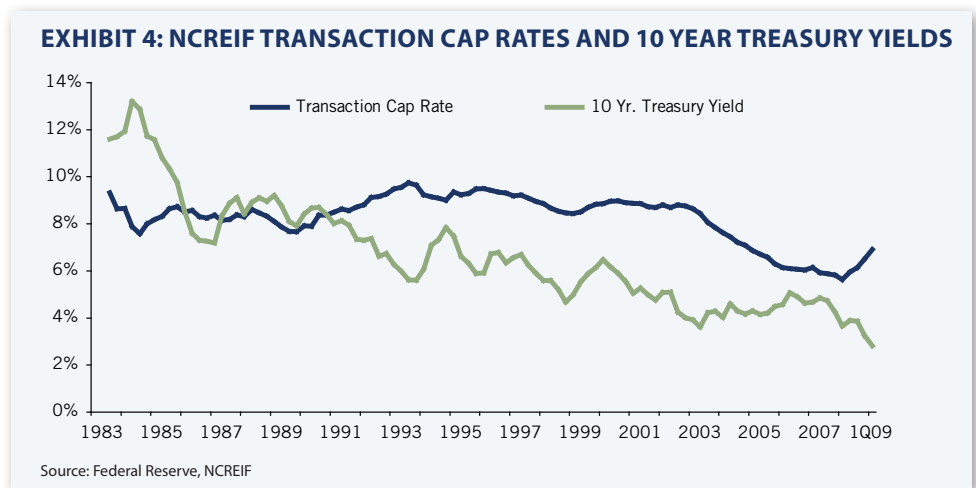
As the decline in cap rates that began in 2002 continued, there was considerable debate about whether this was due to a re-pricing of the real estate asset class which was now being acknowledged as a more mainstream accepted asset class, or a short-term capital flow phenomenon with too many investors chasing too little product and bidding prices up. Research undertaken early into the 2002-2007 real estate upswing generally concluded that rising property valuations could be explained by market fundamentals and rational pricing of real estate relative to other asset classes.[5] The re-pricing of risk and resulting reductions in risk premiums and spreads was an economy wide phenomenon affecting all risky asset classes not just real estate. Exhibit 5 shows yields on Baa-rated corporate bonds trended downwards with 10 year Treasury yields over most of the post 1990 period, and the Baa-10 yr. Treasury spread also declined significantly starting in 2003, before spiking in the credit crisis. Baa corporate bonds generally traded inside of (i.e. at lower yields than) cap rates since 1992, due in part to their higher level of liquidity.

EXHIBIT 5: CAP RATES AND BOND YIELDS

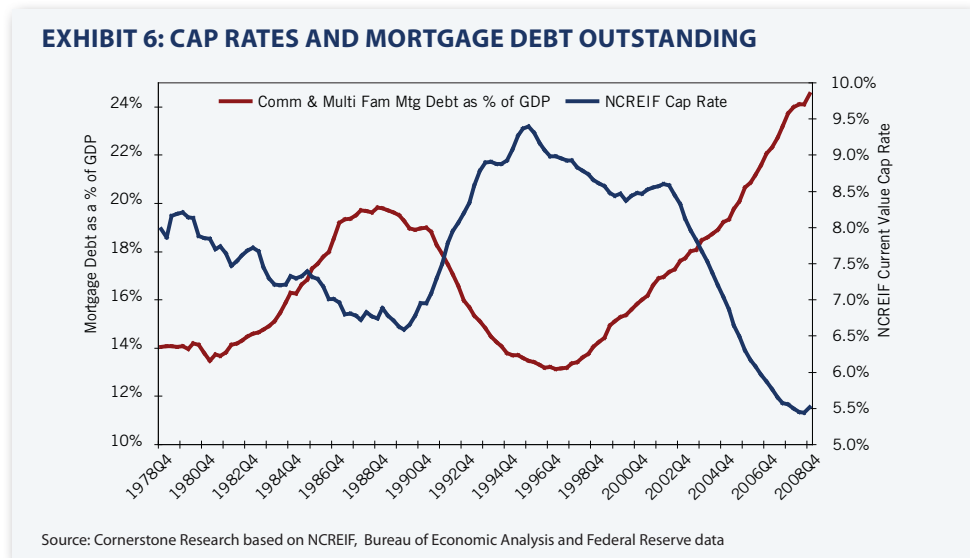Source: Federal Reserve, NCREIF and Cornerstone Research

The relationship between real estate cap rates and corporate bond yields inverted in 2005; which possibly suggests real estate pricing became too aggressive. Corporate bond yields spiked as the grip of the credit crisis took hold, while adjustment in cap rates initially lagged behind. It appears that a more normal situation is on the horizon as cap rates increase and bond yields move down, albeit slowly. Easy access to low cost debt may have helped fuel a surge in real estate equity investment activity that took property investment markets into unsustainable territory. Abundant liquidity in the debt markets indirectly fueled pricing competition in investment sales with investors underestimating risk and/or overestimating growth in property income and appreciation.[6] As part of

5. See for example, "Real Estate Pricing: Spreads and Sensibilities: Why Real Estate Pricing is Rational," J. Chen, S. Hudson-Wilson and H. Nordby, Journal of Real Estate Portfolio Management, 2004.
6. Two recent studies conclude that "investor sentiment" helped push property values too high (cap rates too low) relative to underlying intrinsic value. See "Commercial Real Estate Valuation: Fundamentals versus Investor Sentiment," by J. Clayton, D. Ling and A. Naranjo, Journal of Real Estate Finance and Economics, 2009 and "The Secular and Cyclic Determinants of Capitalization Rates: The Role of Property Fundamentals, Macroeconomic Factors, and 'Structural Changes'" by S. Chervachidze, J. Costello and W. Wheaton, forthcoming in the Journal of Portfolio Management special Real Estate issue, 2009.

the so-called global "wall of capital," aggregate commercial and multi-family mortgage debt surged over the past decade. From just over $1 trillion in 1997 as the sector finally emerged from the early 1990's downturn, to $3.4 trillion in the third quarter of 2008, taking the size of the mortgage market from just shy of 14% of GDP to nearly 25% (Exhibit 6), topping the 1980's peak that was just less than 20% of GDP.[7]

Much of the recent increase in leverage in the commercial real estate sector was attributable to unbelievable (we now know "unsustainable") growth in commercial mortgage backed security ("CMBS") issuance that in 2006 and 2007 was characterized by increasing complexity in security structure and funding sources, weaker underwriting, and/or overconfidence on the part of both lenders and bond rating agencies. The result was a proliferation of ever riskier high-leverage loans on frothy property valuations backing CMBS bonds. The fallout has helped push the commercial property sector into a painful period of de-leveraging and balance sheet repair-induced illiquidity and value decline.

EXHIBIT 6: CAP RATES AND MORTGAGE DEBT OUTSTANDING

Source: Cornerstone Research based on NCREIF, Bureau of Economic Analysis and Federal Reserve data

CAP RATE DYNAMICS IN PREVIOUS RECESSIONS

The previous sections provided a conceptual framework for understanding the determinants of cap rates and the major factors causing them to change over time. To gain an even better understanding of cap rate behavior, this section provides a more detailed historical account of cap rate trends in periods surrounding past recessions, with the aim of uncovering any systematic cap rate behaviors associated with the movement of the broader economy into and out of recessions. This analysis will be limited to recessions as defined by the National Bureau of Economic Research ("NBER") which is considered the official authority for dating U.S. recessions. Rather than defining a recession by the school book measure of two or more consecutive quarters of economic contraction as measured by

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7. Both the Clayton et al. and Chervachidze et al. studies referenced in the previous footnote relate investor sentiment to debt as a percent of GDP.

GDP, the NBER states "a recession is a significant decline in economic activity spread across the economy, lasting more than a few months normally visible in real GDP growth, real personal income, employment (non-farm payrolls), industrial production, and wholesale-retail sales."[8] For the purpose of this paper, the review is limited to the four most recent recessions. While historical recessionary information is readily available through NBER, cap rate data is not, nor is it dependable going back beyond the 1980's. The four recent recessions (two contractions during the early 1980's are combined) are listed in Exhibit 7 and overlaid as shaded areas on the NCREIF current value cap rate series in Exhibit 8.

EXHIBIT 7

DATE	DURATION (MONTHS)
Jan. 1980 – July 1980	6
July 1981 – Nov. 1982	16
July 1990 – March 1991	8
March 2001 – Nov. 2001	8
December 2007 – current	18 as of June 2009

Source: National Bureau of Economic Research

EXHIBIT 8: CURRENT VALUE CAP RATES
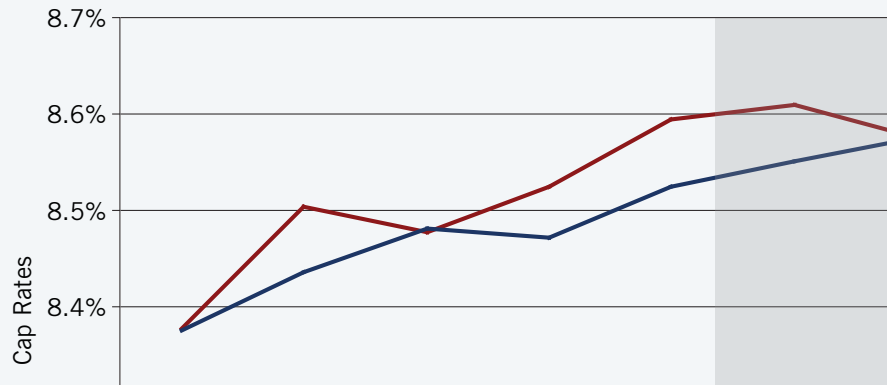
Source: NCREIF, Federal Reserve, National Bureau of Economic Research
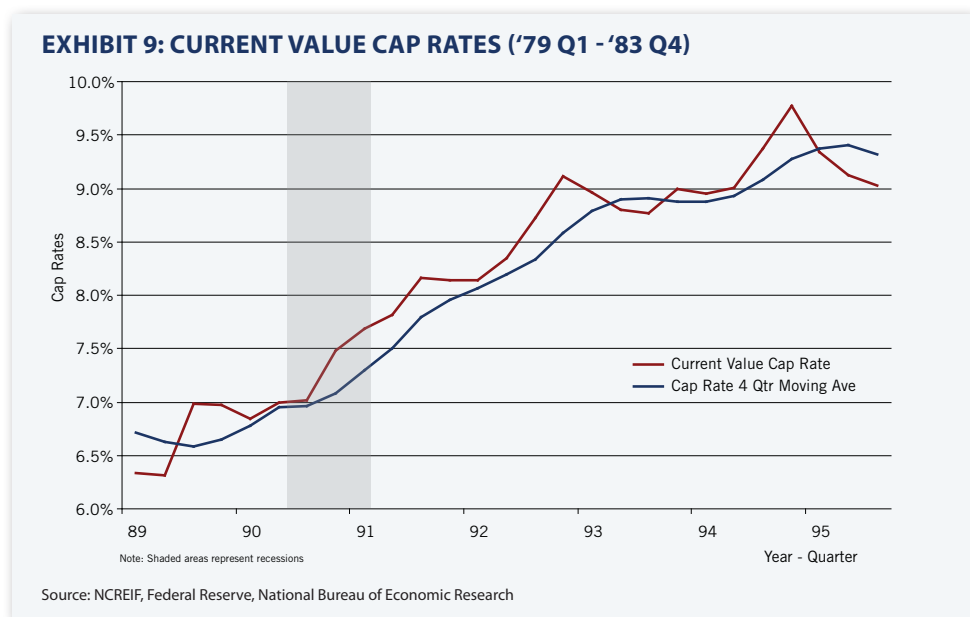
EARLY 1980'S

The 1980's were marked by a severe recession beginning in January 1980 and ending in November 1982, with a one year respite from July 1980 – July 1981. This was the most serious economic contraction since the Great Depression until the current recession. The primary cause of the recession was a tight monetary policy established by the Federal Reserve System to control high inflation. The perceived inflation-hedging characteristics of commercial real estate drew

8.   "Business Cycle Expansions and Contractions". National Bureau of Economic Research. http://www.nber.org/cycles.html.

investors to this asset class. Furthermore, there was favorable tax treatment associated with real estate ownership up through the mid 1980s. The 1981 act increased the tax savings from tax depreciation deductions by 40 percent and lowered the capital gains tax rate by 30 percent.[9] During this period, commercial real estate transactions occurred primarily in the private markets. The market lacked transparency and, for the most part, pricing was not linked to real property fundamentals. Exhibits 8 and 9 illustrate cap rates trended down during this recession but increased steadily for about a year following the official end date of the recession indicating cap rate movement tends to lag economic cycles. The erratic peaks and declines cap rates exhibited during this period were likely due to the lack of quality market data.
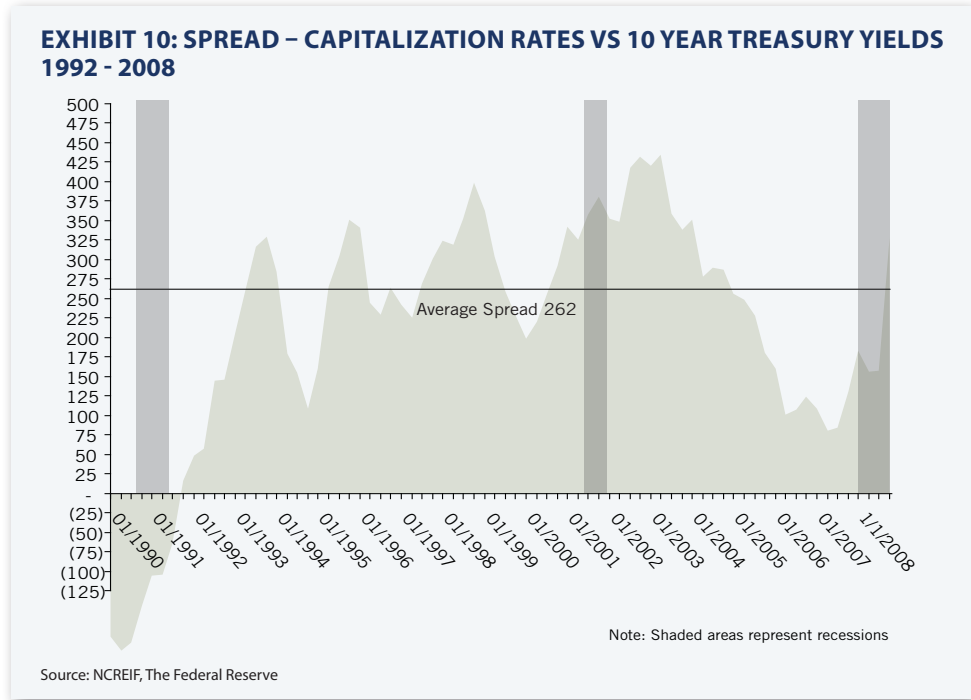
DETAIL OF EARLY 1980'S RECESSION

EXHIBIT 9: CURRENT VALUE CAP RATES ('79 Q1 - '83 Q4)

Note: Shaded areas represent recessions

Year - Quarter

Source: NCREIF, Federal Reserve, National Bureau of Economic Research

There were limited sources of market intelligence and so it could be argued this lack of information helped sustain the aggressive levels of construction/ development that took place in the mid 1980's.[10] The availability of financing sustained this development as foreign (especially Japanese) investors, pension funds, and life insurance companies poured money into commercial real estate driving cap rates downward during this period. The 1986 tax act which halved the tax savings created by the 1981 tax act and doubled the capital gains tax rate did not appear to put a damper on commercial real estate, at least not until the early 1990's. It is important to note the risk premium associated with commercial

9.   "Real estate markets since 1980: what role have tax changes played?", National Tax Journal by P.H. Hendershott, 1992.
10.   "Real Estate Pricing: Spread and Sensibilities: Why Real Estate Pricing is Rational," J. Chen, S. Hudson-Wilson, H. Nordby, Journal of Real Estate Portfolio Management, 2004.

real estate had not yet been factored in investor's yield requirements. It was not until the early 1990's that this concept was established, as reflected in Exhibit 10 which compares cap rates to 10-year Treasury yields.

EXHIBIT 10: SPREAD – CAPITALIZATION RATES VS 10 YEAR TREASURY YIELDS 1992 - 2008

Average Spread 262

Note: Shaded areas represent recessions

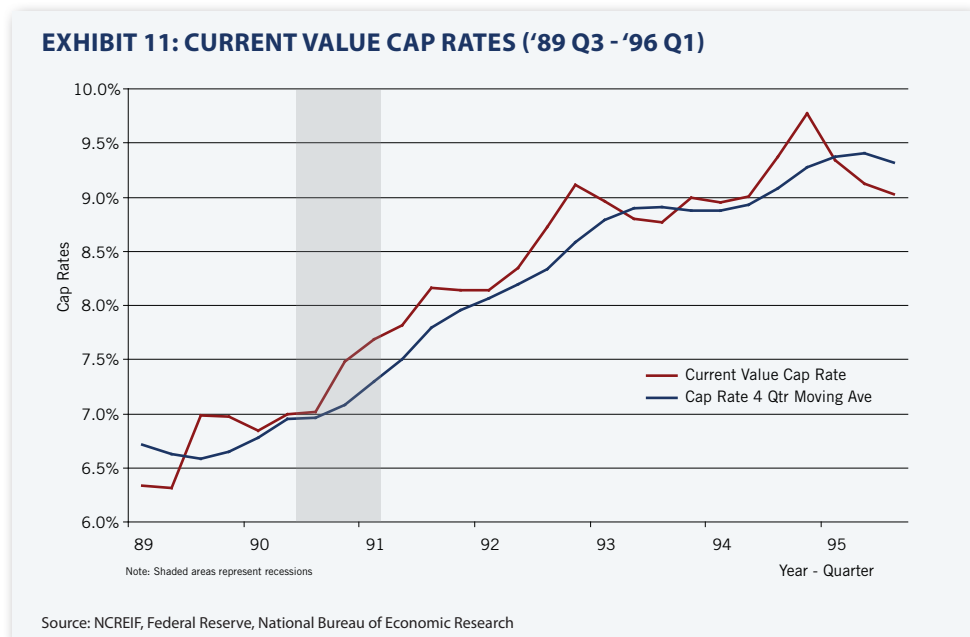Source: NCREIF, The Federal Reserve

EARLY 1990'S

The recession that began in July 1990 was caused by a variety of adverse financial stimuli on the economic environment. Black Monday, which occurred in October of 1987, resulted in a stock market collapse that shaved 22.6 percent off the Dow Jones Industrial Average. The Gulf War and the subsequent spike in oil also contributed to the decline in economic activity. This recession was characterized by high unemployment, massive government budgetary deficits and major financial sector disruption. The bottom fell out of the commercial property investment market as the level of over development in commercial real estate that occurred during the previous decade came home to roost as the recession-induced drop off in demand for space permeated through the market. Traditional sources of capital for commercial real estate, including banks and life insurance companies dried up, completely compounding the negative impact on the sector. Commercial banks reduced their appetite for construction lending and longer-term financing disappeared as insurance companies refused to refinance maturing loans and many even attempted to sell loans prior to scheduled maturities.

As shown in Exhibit 11, the early 1990s recession was relatively short-lived, but the duration of the commercial real estate downturn extended much longer. Current value cap rates continued on a steady upward path for two years following the official NBER end date of the recession (into 1993) and then continued on an upward trajectory for another two years until early 1995. The slow rate of write-down of property values was widely criticized and actually caused some loss of credibility for the real estate asset class in the eyes of investors. While appraisal cap rates came down slowly, transaction cap rates moved much higher (Exhibit 3) as property prices fell sharply as investors were forced to liquidate assets at discounted prices. Commercial property values fell 30% to 50% in the span of two years in most of the major property markets, the largest drop in property values in the United States since the Great Depression. The bottom was finally reached in 1992 and 1993, with a flood of new capital coming into real estate. The money came first from opportunistic "vulture funds". This was followed by the rapid development of public capital markets as a new source of money in the form of an unprecedented expansion of the REIT industry, as well as the development of an entirely new financing source in the form CMBS.

It was during this period the risk premium spread over the 10-year Treasury germinated. Investors had been pricing property not on current income but largely on expectations of high future income growth and price appreciation, such that cap rates generally fell below the cost of debt financing. Investors began to view core real estate as an income generator and factored in lower expectations for future growth in this sector. At this point there was perceived risk inherent in this investment class which began to be reflected in investors' yield requirements.

DETAIL OF EARLY 1990'S RECESSION

EXHIBIT 11: CURRENT VALUE CAP RATES ('89 Q3 - '96 Q1)

Note: Shaded areas represent recessions

Year - Quarter

Source: NCREIF, Federal Reserve, National Bureau of Economic Research
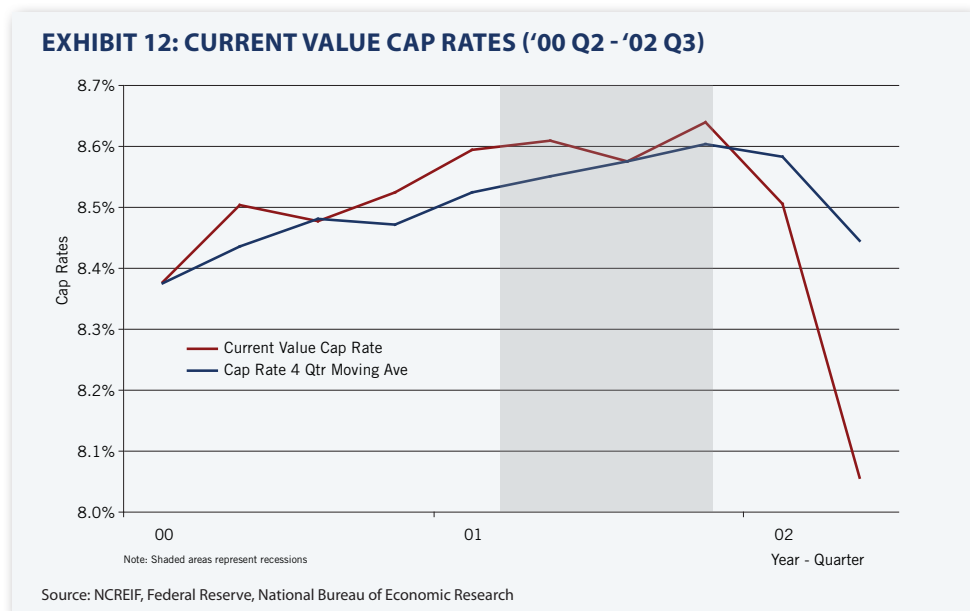
2001

Preceded by a decade-long economic expansion, the early 2000's economic downturn was relatively short in duration. The collapse of the tech bubble, September 11 attacks, as well as the accounting scandals contributed to what turned out to be a relatively mild contraction in the U.S. economy. In contrast to the early 1990's, this recession had limited impact on the real estate sector and in particular, was not marked by a liquidity shock. In fact, capital readily flowed into the real estate market and away from the volatile stock and bond markets.[11] The 1990's brought new capital sources including public REITS and opportunity funds. Furthermore, the interest rate cuts implemented by the Federal Reserve contributed to the increased availability of capital for this sector. Both short-term and long-term interest rates remained low contributing to a robust lending environment.

As with the previous economic downturn, cap rates increased during the 2001 recession but what is notably distinct is their rapid descent following the end of this period, as evidenced in Exhibits 8 and 12. This steep decline corresponded with the growth in CMBS issuances.

The spread between cap rates and the 10 year Treasury yield trended upward faster than cap rates themselves during this brief recessionary period. This was primarily due to the offsetting drop in the yield in government bonds (k_{RF}). Furthermore, from 2001 and 2004, cap rates were in excess of the historical 262 basis point average spread over Treasury peaking at 434 basis points in 2003 as seen in Exhibit 10, illustrating a lag to economic cycles. Cap rates began to drop quickly as 10 year Treasury yields fell and money flowed into the asset class in search of solid income-based yield following recent experience with the tech boom and bust.

DETAIL OF 2001 RECESSION

EXHIBIT 12: CURRENT VALUE CAP RATES ('00 Q2 - '02 Q3)

Note: Shaded areas represent recessions

Source: NCREIF, Federal Reserve, National Bureau of Economic Research
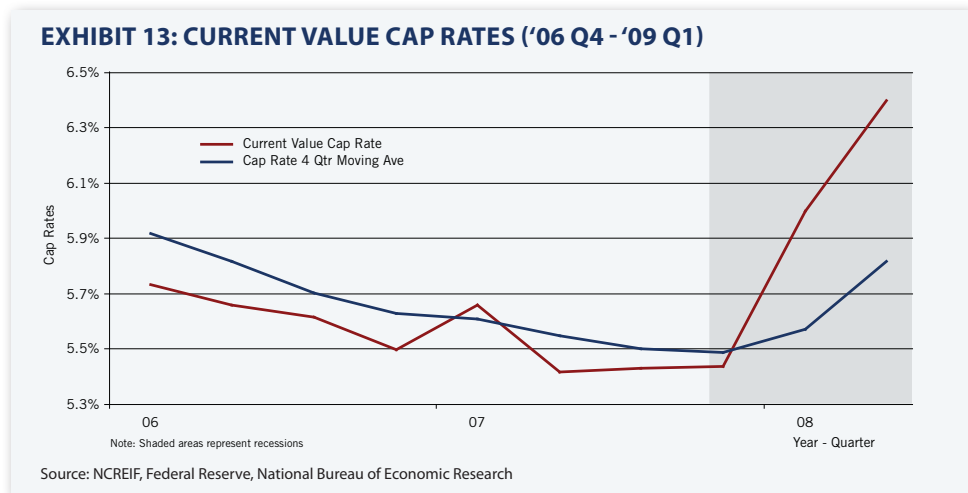
11. "Income and Cap Rate Effects on Property Appreciation," Journal of Portfolio Management, P. Connor and Y. Liang, 2005.

THE CURRENT RECESSION

The general consensus is the most recent recession was brought on by the collapse of the housing market and the resulting sub-prime mortgage crisis that led to bank failures in the US and Europe. The amount of available credit was sharply curtailed, resulting in a massive liquidity crisis. Furthermore, some argue high oil prices were the root cause for the global economic collapse. The credit crisis that started in 2007 has spread far and wide, impacting all sectors of the credit market, including commercial real estate. The unprecedented widening of debt spreads, tightening of underwriting standards, and shutdown of the CMBS market has resulted in a sharp reduction in the availability of debt capital for commercial real estate acquisitions, refinancing, and development; driving a repricing of real estate assets threatening to make a fragile situation even worse as economic and space market fundamentals deteriorate at a rapid rate.

Current value (appraisal) cap rates continued to fall, albeit at a slow rate, during the onset of the recession. After flattening out for a couple of quarters, current value cap rates are on the rise and, as in previous recessions, are expected to continue to move up as the economy emerges from the current recession towards the end of 2009 or early the following year. And, unlike in the early 1990's, when property value write-downs occurred at a slower rate, the increase in cap rates and declines in GDP have been more quickly reflected in property valuations with a rapid recognition of value declines. As real GDP declined sharply in the third quarter of 2008 and first quarter this year, NCREIF property valuations fell about 10% in each quarter, the largest quarterly appreciation returns in the three decade history of the index.

Transaction cap rates turned up much sooner than current value cap rates and have also moved up more rapidly (Exhibit 3). Cap rate spreads increased before the official NBER recession start date and have moved sharply higher during the recession (Exhibit 10). While it is tempting to infer the sharp increase in the spread indicates a much higher real estate risk premium going forward, this conclusion must be tempered with the recognition that spreads to Treasuries can be misleading during period of financial crisis. The current financial crisis has been accompanied by a flight to quality and also unprecedented federal government actions that have forced Treasury yields to unusually low levels.[12]

EXHIBIT 13: CURRENT VALUE CAP RATES ('06 Q4 - '09 Q1)

Note: Shaded areas represent recessions

Source: NCREIF, Federal Reserve, National Bureau of Economic Research

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12. In "Facts and Myths about the Financial Crisis of 2008" (Working Paper 666, October 2008), Federal Reserve Bank of Minneapolis economists Chari, Christiano and Kehoe explain why a focus on spreads as the relevant cost of debt for economic decisions is logical in normal times when Treasury yield changes largely reflect revisions in inflation expectations, but problematic in times of crisis when flight to quality motives drive Treasury yields temporarily down.

DETAIL OF CURRENT RECESSION

WHERE ARE CAP RATES GOING?

Cap rates are rising and will face continued upward pressure as private real estate valuation declines continue to catch up to those witnessed in other asset classes. Higher risk premiums and recognition that the severity of the current recession are just starting to affect leasing fundamentals, and hence property income growth prospects, will combine to push property values lower and cap rates higher, despite the fact Treasury yields are low. In addition, the distress that was expected to provide a supply of compelling property investment opportunities has not yet materialized, but does appear to be on the horizon. Value declines, deteriorating leasing fundamentals, the need to de-lever and other stresses should force more owners to sell to the market, presenting opportunities as sellers revise expectations, narrowing the currently wide bid-offer spread. While both the numerator (NOI) and denominator (Value) of the cap rate equation are falling, the decline in property values is expected to dominate, pushing cap rates higher. The increase in cap rates from lower prices should however be tempered by falling property income which will tend to push cap rates down as the current cycle reaches bottom.

How high might cap rates rise? NCREIF current value cap rates appear to be heading back up to at least the 7.6% historical average, and will likely pass right through that level over the next few quarters before settling back down to a new equilibrium level as the commercial real estate sector works through a difficult period. Property price declines are well underway but are not over yet, with the NCREIF property index down approximately 20% over the past three quarters. Many observers are expecting cumulative price declines in the 30% to 40% range, but how this ultimately impacts cap rates depends also on how much property NOI declines.[13] To provide a sense of the magnitude of the potential change in cap rates in this downturn, we examine peak to trough changes in cap rates under various assumptions about price and NOI declines in Exhibit 14. Two scenarios are presented based on assumed cap rates at the peak of the latest cycle and under various assumptions about cumulative price and NOI decline from peak to trough.[14] Assuming cumulative property price declines fall into the 30-40% range, and that property income drops about 10% on average during this downturn, cap rates will end up in the 7.5-9% range. It would take greater price declines and reduced severity of the economic downturn on NOI growth to generate significantly higher cap rates of 10% and above.
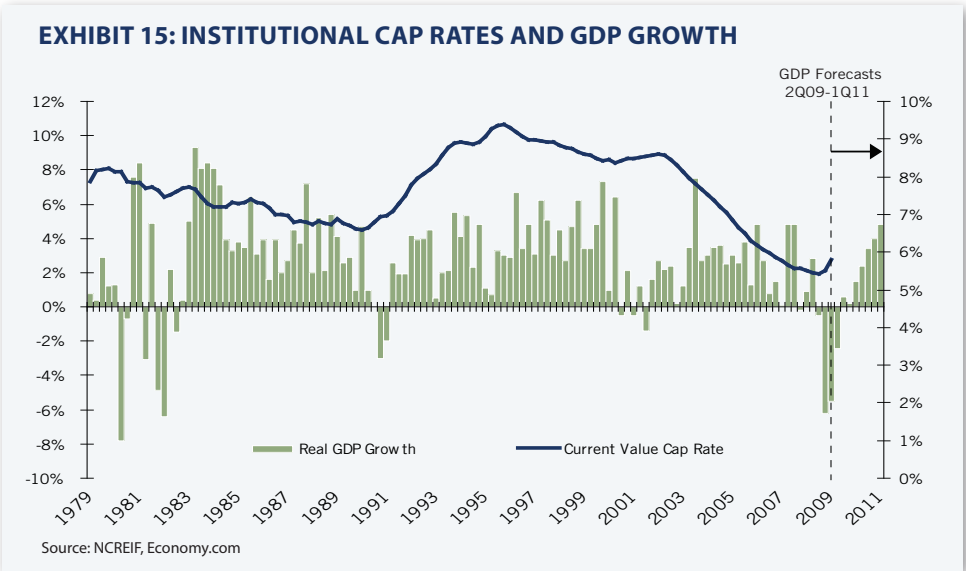
13. The young NCREIF derivative market that allows investors to buy (go long) or sell (go short) real estate exposure via total return swaps written on the NPI offers insight into sentiment regarding property price declines. The current swap price quote curve (assuming a 5% income return each year) implies dealers expect a cumulative drop in the NPI capital component of about 30% over the December 2008 to December 2010 period.
14. The purpose of this exercise is to provide readers with a general sense of the potential change in cap rates and not forecast market wide cap rates. We present two different cap rate starting points so that readers can see how changes might play out on different property types. For example, NCREIF apartment and office cap rates bottomed out near 5% while industrial and retail cap rates were closer to 6%.

EXHIBIT 14. CAP RATE CHANGES UNDER VARYING SCENARIOS ABOUT PROPERTY INCOME AND VALUE CHANGES FROM PEAK PRICING.

Cap rate at beginning valuation			5%
Value Decline	NOI Growth		
	0	-5%	-10%
	Cap rate at end of adjustment		
20%	6.25%	5.94%	5.63%
25%	6.67%	6.33%	6.00%
30%	7.14%	6.79%	6.43%
35%	7.69%	7.31%	6.92%
40%	8.33%	7.92%	7.50%
45%	9.09%	8.64%	8.18%

Cap rate at beginning valuation			6%
Value Decline	NOI Growth		
	0	-5%	-10%
	Cap rate at end of adjustment		
20%	7.50%	7.13%	6.75%
25%	8.00%	7.60%	7.20%
30%	8.57%	8.14%	7.71%
35%	9.23%	8.77%	8.31%
40%	10.00%	9.50%	9.00%
45%	10.91%	10.36%	9.82%

The above tables are presented for illustrative purposes only

To help further our analysis of cap rates in the current economic downturn and facilitate an assessment of where they might be heading, Exhibit 15 shows the historical relationship between quarterly real annualized GDP growth and NCREIF current value cap rates through the first quarter of 2009, as well as forecasts of GDP growth into early 2011. The main conclusions from our analysis of cap rate behavior during past recessions were that real estate sector lags the general economy and cap rates continue to rise for a period of time after GDP growth turns positive. Given the continued negative outlook for 2009, real estate values are expected to continue to fall, and cap rates rise, in the third and fourth quarters and possibly longer. Cap rates should peak sometime next year after positive GDP growth resumes. It is anticipated the lag between the recovery in the broader economy and commercial property prices will be much shorter coming out of this downturn than it was in the early 1990s, and property values will begin to strengthen soon after GDP recovers. Cap rates will likely remain at their new higher levels for at least a year as leasing markets are not expected to bottom out until some time in 2011.

EXHIBIT 15: INSTITUTIONAL CAP RATES AND GDP GROWTH

Source: NCREIF, Economy.com