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Real Estate Capitalization Rate Interpretations through the Cycle

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Both the numerator and denominator of real estate capitalization rates may experience different degrees of movement as markets evolve from one phase of the cycle to another. Capitalization rate interpretations become especially difficult surrounding these turning points. The issue takes two forms. First, periods of market transformation create confusion about what cap rate to apply. Opportunities may occur at turning points to introduce substantially different numerator estimates, which results in multiple capitalization rates for the same property and thus compromises the decision rules of modern investment theory. Second, simultaneous changes in its components (i.e., riskfree rate, risk premium and expected growth rate of income) cause capitalization rates to change, sometimes in unpredictable ways. Tracking the directional pattern of capitalization rates requires an understanding of how and why the components change. This article addresses both forms of the issue.

Keywords
capitalization rates, real estate cycle, capitalization rate analysis, forecasting returns, capitalization rate trends

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Abstract

Both the numerator and denominator of real estate capitalization rates may experience different degrees of movement as markets evolve from one phase of the cycle to another. Capitalization rate interpretations become especially difficult surrounding these turning points. The issue takes two forms. First, periods of market transformation create confusion about *what* cap rate to apply. Opportunities may occur at turning points to introduce substantially different numerator estimates, which results in multiple capitalization rates for the same property and thus compromises the decision rules of modern investment theory. Second, simultaneous changes in its components (*i.e.*, risk-free rate, risk premium and expected growth rate of income) cause capitalization rates to change, sometimes in unpredictable ways. Tracking the directional pattern of capitalization rates requires an understanding of how and why the components change. This article addresses both forms of the issue.

Introduction

For many in the real estate business, the ratio of property-level operating income and asset market pricing -- the capitalization rate (AKA 'cap rate') -- provides a necessary foundation for rational investment and financing decisions. During periods such as the recent past when both the numerator and denominator of the ratio experienced different degrees of movement, interpretations become especially difficult for all who pay attention to real estate cap rates.

This interpretational issue takes two forms. First, phase changes in the market cycle create confusion about what cap rate to apply. Opportunities occur during these times to introduce substantially different numerator estimates resulting in multiple cap rates for the same property, and thus compromising the decision rules of modern investment theory.[1] Second, simultaneous changes in its components cause cap rates to change, sometimes in unpredictable ways. This problem is exacerbated during unstable times, such as the recent past and now, that are characterized by recession, catastrophic events, and war. Tracking the directional pattern of cap rates requires an understanding of how

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[1] This situation is analogous to the issue of multiple IRRs that come from alternative assumptions about the reinvestment rate.

and why the components of cap rate change.

This article addresses both the interpretation of cap rates in practice and the interpretation of cap rate trends for forecasting purposes.

Real Estate Cap Rate Defined

The real estate cap rate (R) converts the net operating income (NOI) from a property to an estimate of the property's value by simple division. If the income is assumed to grow at a constant rate, then R equals the discount rate (r) minus the assumed growth rate (g).[2] Stated symbolically,

$$R = r\text{-}g. \qquad (1)$$

This means that relatively slow (fast) income growth rates result in higher (lower) capitalization rates, and consequently lower (higher) real estate values.

The discount rate equals a risk-free rate, such as the return on Treasury notes, plus a premium return for risk, which represents the expected volatility of the income stream(s). In equation form,

$$r = r_f + r_{p.} \qquad (2)$$

Equation (3) presents the capitalization rate in 'full view.'

$$R = (r_f + r_p) - g. \qquad (3)$$

Interpretation Issues in Practice

The often maligned, but closely followed, cap rate transforms from a simple and easy to understand ratio into a complicated puzzle during periods of market instability and cyclical transition. When NOIs exhibit instability, incentives develop for the parties on opposite sides of real estate contracts to select the NOI that tells *their* best story. To illustrate this point, consider the following example:

> Assume three comparable real estate transactions occurred during the past year at $1 million, $2 million, and $3 million, respectively. Exhibit 1 shows the trailing 12-month NOI, the forward 12-month

[2] Real estate capitalization rates also contain a component for return of capital to account for the economic depreciation of long-lived, non-land assets. This component is relatively small, given the long life of buildings, and thus often ignored.

NOI, and the stabilized NOI for the three properties. These alternative NOI measures differ somewhat because the markets in which these properties traded are experiencing a mild recession. The average cap rates of the comparables equal 9%, 10%, or 10.7% depending on the NOI assumption selected. A buyer using these comparables to support pricing for a subject argues that the trailing 12-month NOIs *best* reflect the economics of the property markets, and thus a 10.7% cap rate is justified. A seller argues that the forward 12-month NOI indicates the new economics of the property markets, and thus a 9% rate is appropriate. Which average cap rate provides an objective metric for valuation purposes?

Exhibit 1
Multiple Cap Rate Example

		Trailing 12		Forward 12		Stabilized	
Property	**Sale Price**	**NOI**	**R**	**NOI**	**R**	**NOI**	**R**
A	$1,000,000	$105,000	0.105	$90,000	0.090	$100,000	0.100
B	$2,000,000	$220,000	0.110	$175,000	0.088	$200,000	0.100
C	$3,000,000	$320,000	0.107	$280,000	0.093	$300,000	0.100
Average	$2,000,000	$215,000	0.107	$181,667	0.090	$200,000	0.100

The *Appraisal of Real Estate* (Appraisal Institute 2001) provides the following guidance for selecting cap rates when using a direct capitalization approach:

> "When rates derived from comparable sales are used, the overall capitalization rate is applied to the subject property in a manner consistent with its derivation. In other words, if the market-derived capitalization rates are based on the properties' net operating income expectations for the first year – i.e., date of sale through the next 12 months – the capitalization rate for the subject should be applied to its anticipated net operating income for the first year of operation (p.532)."

Unfortunately, this 'consistency of derivation' theory does not resolve the multiple cap rate issue. Perhaps a better approach is to recognize any ratio of a single period NOI (*e.g.*, trailing 12 month, forward 12 month) and sale price as a single period overall rate of return on investment. The cap rate derived from stabilized NOI emerges as the valuation metric and most closely aligns with appraisal concepts, such as *anticipation* (Appraisal Institute 2001, p.20).

Judging the Future Direction of Cap Rates

Most presentations by professional real estate market analysts contain slides showing the historical pattern of cap rates and spreads to capital market benchmarks in an effort to judge the future direction of rate movements. Further guidance about the future direction of cap rates may come from two sources. First, it is often useful to return to basic principles. The review presented in the following paragraphs begins with an identification of cap rate components, followed by a examination of how these components may behave given current macroeconomic forecasts and forecast of real estate demand and supply conditions. Second, the future direction of cap rates may be econometrically modeled using a set of variables that both demonstrate statistically significant relationships with hotel cap rates and for which objective forecasts are available. See Sivtanides, Southard, Torto, and Wheaton (2001) for an excellent discussion of this approach.

Component Analysis

Panels A and B of Exhibit 2 show alternative scenarios under which changes in R could occur from one period to the next.

Exhibit 2
Discount and Capitalization Rate Directional Alternative Market

Panel A - Discount Rates

Market Condition	r	=	rf	+	rp
1	↑		↑ or ↔		↑ or ↔
2	↓		↓ or ↔		↓ or ↔
3	?		↑		↓
4	?		↓		↑

Panel B - Market Conditions

Market Condition	R	=	r	-	g
A	↓		↓		↑
B	?		↓		↓
C	↓		↔		↑
D	↑		↔		↓
E	↓		↓		↔
F	↑		↑		↔

As presented in Panel A, r changes in accordance with the direction and magnitudes of changes in its two components, r_f and r_p. Under Market Condition 1, r increases because one or both components increase and neither decrease. Similarly, Market Condition 2 has r decreasing because one or both components decline and neither increase. Ambiguous changes in discount rates may occur under Market Conditions 3 and 4 because of the opposite directional changes of the components. During these times, knowing the prevailing direction of changes in the components of r is not enough information because the relative magnitude of the changes in r_f and r_p must be known to predict the future direction of r.

Is it likely for r_f and r_p to move in opposite directions? The answer to this question is a qualified yes. Component r_f changes with macroeconomic movements, including fiscal and monetary policy changes. Component r_p adjusts as the risk of the specific asset class adjusts. Some of this risk adjustment is undoubtedly systematic in nature, but a substantial portion occurs because of asset class re-pricing due to changes in the risk *relative* to other asset classes. Consequently, interest rates may fall while the relative risks of an asset class increase, as long as the assets' incomes are not entirely fixed over the long run (*i.e.*, a pure bond).

Real Estate Capitalization Rate Trends

From 1996 through 2002, returns on 10-year T-notes (*i.e.*, r_f) steadily declined from 6.6% to 4.7%. According to the Real Estate Research Corporation (2002) survey results, the average pre-tax yield for the nine property segments covered in the survey stood at 11.62% during the second quarter of 1996 and 11.40% at the beginning of 2003.[3] Thus, the basis point increase of r_p during this period was enough to almost neutralize the effects of the decline in interest rates on r. The net result was only a slight drop in r. This evidence suggests that real estate discount rates from 1996 until now behaved like Market Condition 4 in Exhibit 2 – Panel A.

Exhibit 2 - Panel B shows outcomes for R assuming that Market Condition 4 produced either a slight decline or no change in r. Real estate analysts would probably agree that income growth rates (*i.e.*, g) are slower today than in the mid-1990s. Thus, the only feasible conditions in Panel B are 4B and 4D. If r decreased slightly and g also decreased, as in condition 4B, then the change in R depends on the magnitude of the decline in g relative to r. If g declined and the change in r is considered inconsequential, as in 4D, then R should have increased by roughly the same number of basis points as g declined.

The Real Estate Research Corporation data for R computed in the same manner as above show that the average R decreased insignificantly during the period 1996 through 2002 from 9.3% to 9.2%. This means that the decrease in r and decrease in g since 1996 nearly cancelled each other with respect to how they influenced R across all real estate property types.

[3] Surveys of market performance, such as those conducted by Real Estate Research Corporation and Korpacz, come under criticism because of the fear that repondents provide normative rather than descriptive estimates of performance measures. It is assumed here that the direction and magnitude of any bias remains constant over time. thus allowing for reasonable time-series interpretations of these data.

The Property Price Firmness Paradox

Cap rate stability through the recent cycle phase changes, as shown in the past six years of Real Estate Research Corporation data, evidences the paradox expressed in the title of a February 2003 JP Morgan Securities report by Patrick Corcoran and Yuriko Iwai, *Firming Property Prices and Weak Cash Flows: Disconnect or Rational Pricing?* Given the coincidental declines of cash flows and property prices during the last two recessions, it is remarkable how property prices behaved during this recession in the presence of the downward trend in collected rents. Stated differently, the rental and asset markets appear disconnected, thus suggesting an irrational pricing paradox.

Rational explanations (and expectations), however, may exist for what appears to be irrational asset pricing. The argument for why current relationships should be expected is based on a theory of a pro-cyclical pattern of real estate R and a mean-reverting pattern of property NOI. At the peak of the cycle, property NOIs will be perceived as only temporarily high. If NOIs continue to grow, then R will begin increasing. At the bottom of the cycle, recession economy NOIs will be perceived as temporary and R will start its decline. Thus, expectations about NOI movement coupled with historical mean-reverting behavior serve as a check on R, and also on construction activity. JP Morgan Securities (2003) uses this theory to explain why the R for most properties remained low in a weakened economy. The theory also may answer a long-debated question concerning the historically low volatility of real estate cap rates (Gold 1996).

An alternative to the pro-cyclical R theory stems from the observed counter-cyclical pattern of $r_{p,}$ as indicated by the size of the spreads between treasuries and real estate R, and the pro-cyclical behavior of interest rates.[4] If these opposing forces exactly counter balance one another through time, then the movement in R will entirely depend on g, as suggested by the JP Morgan Securities report. The relative movements of r_f and r_p, however do not appear to be exact and synchronous. A general theory of real estate R, therefore, considers the movements of all three principal components -- r_f, r_p, and g -- to explain historical patterns and develop forecasts.

Non-Econometric Cap Rate Forecast

Econometric models have been proposed to objectively generate point estimates of future real estate cap rates.[5] Sometimes only indications of the future direction of the market are needed from forecasts of the key performance measures. In these instances, breaking down performance measures into their component parts may form the basis for conclusions about which way the market is likely to move. Several insights came from the decomposition of cap rates earlier in this article. These are:

[4] Spreads across core property cap rates have been in the range of 500 basis points – levels not seen since the last recession.
[5] See, for example, Sivitanides, Southard, Torto, and Wheaton (2001).

- The r for real estate investment equals an observable r_f plus an unobservable r_p. While r_f declined over the past few years by about 200 basis points, the r for investments decreased by only a few basis points. This indicates that r was influenced by a sizeable increase in r_p, sizeable enough to offset most of the decline in r_f.

- The R is comprised of r minus g. Core real estate R percents are almost the same in 2003 as they were at the beginning of 1996. This suggests that g remained stable because r was unchanged by the offsetting movements of its components. One possible reason for the stability of g is that g refers to the change in NOI, and not the change in rent. Property management and other expenses that influence NOI experience downward pressure during a recession. Another explanation is that expectations regarding the growth of NOI never changed because investors continued to believe that the economic and psychological issues facing the markets were temporary.

Assuming a fairly constant g going forward, the narrowing of spreads between R and capital market benchmarks can only occur in two ways. First, r_f may increase because either inflation or real rates move upward. Most macroeconomic forecasting firms envision a fairly level near-term inflation rate. The historically stable real rate, however, has experienced downward pressure during this period of recession, catastrophic events, war, and disease. The prices of Treasury benchmarks have been bid up to a point where yields reflect the current low inflation plus a historically thin real rate. Some economists speculate that once the focus returns to business as usual a 'market correction' in Treasuries will occur as investors move money out of risk-free assets into risky investments. The decline in the prices of Treasuries will raise yields, therefore contributing to a narrowing of spreads.

Second, r_p may come down as the markets enter a period of renewed stability. The rise in real estate investment risk premiums has been dramatic in recent years. This is likely due to investor perceptions about income volatility relative to safer investments during the recent period of extreme uncertainty.

In conclusion, the real estate R should experience a modest near-term decline. Largely, this decline will come as the result of r_p falling before r_f increases. Changes in the expected growth of NOI are not expected to be a major factor in the near-term determination of R. The historically low volatility of R through the various phases of the real estate cycle may be explained by the natural and counter-balancing movements of the components of R.

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