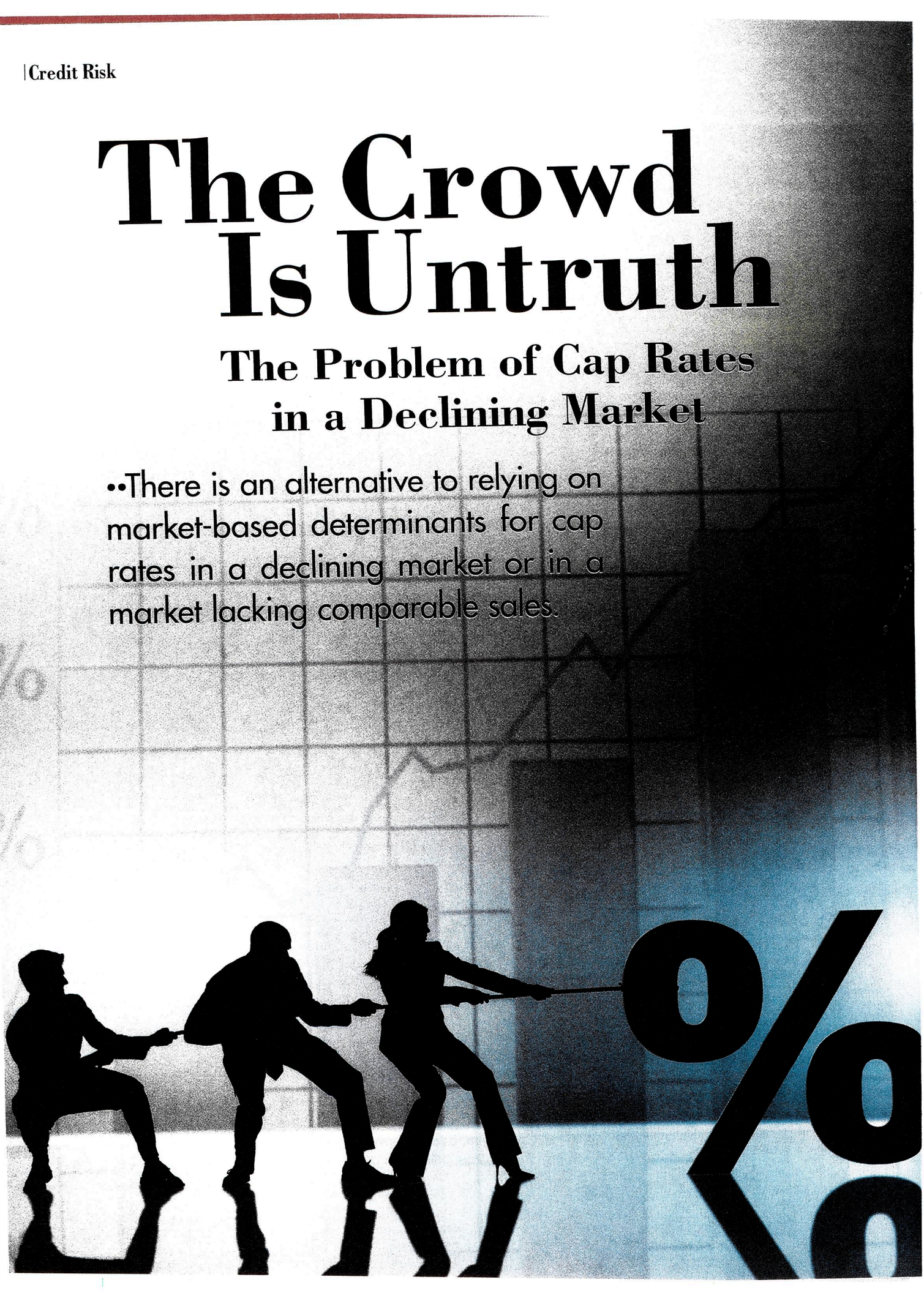
The Crowd Is Untruth

The Problem of Cap Rates in a Declining Market

••There is an alternative to relying on market-based determinants for cap rates in a declining market or in a market lacking comparable sales.



BY G. JASON GODDARD AND BILL MARCUM

CAP RATES ARE essential in valuing an investment property using the income approach. In the years preceding the recent financial crisis, the appraisal industry moved away from academic-style cap rate determination toward a reliance on market-based cap rates.

Since many banks depend on appraisals to provide a value conclusion for an investment property, there's a need to shed light on the trouble with relying solely on market-based determinants for cap rates in a market that lacks current comparable sales. This article will review how cap rates are determined in many appraisals today and offer advice on how the problem of fewer comparable sales and declining values might be remedied.

In 2008, Goldman Sachs predicted a 300-basis-point increase in cap rates nationwide.[1] But even though cap rates have risen considerably, they have not approached the predicted level of increase. The following analysis helps explain why this has been true and provides an example of when the "crowd is untruth," to quote the Danish philosopher Søren Kierkegaard, in a declining market.[2] Rather than applying national average increases in cap rates at the local level, we advocate a return to older and local-market-specific techniques more appropriate in the current times.

The Importance of Cap Rates

A cap rate is essentially any rate used to convert income into value. Cap rates are used in the income approach valuation for commercial investment properties. Once the net operating income (NOI) for a subject property is determined, this figure is divided by the cap rate in order to determine a property's value.

Banks spend a lot of time validating the numbers that constitute NOI, but they often spend less time on understanding how the cap rate was calculated. The cap rate is a very important component of a property's total value. For example, if a given property produces net operating income of $250,000 based on an appraiser's estimates of what is *anticipated* for the next year, and a 9% cap rate is applied to that NOI, the resulting property value is $2.77 million. If cap rates increase to 11%, the property value based on the same $250,000 NOI would drop to $2.27 million. Thus, a 200-basis-point movement upward in the cap rate erodes the property's current value by $500,000. Anticipation is a very important element in the income approach because the selling price of an investment property is based on what a reasonable investor would be willing to pay, which is based on the property's future earnings potential.

Much as realistic projections of revenues and expenses are needed to obtain a reasonable estimate of NOI, a realistic basis for cap rate construction is necessary for a reasonable opinion of property value. In the aftermath of the financial crisis, bankers should ask how far cap rates have risen since early 2008—and they should also ask what constitutes a reasonable cap rate valuation method. While appraisers are the assumed experts in valuing cap rates, understanding the strengths and weaknesses of cap rate construction is of paramount importance.

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How Far Have They Risen?

Table 1 highlights average overall cap rates for various metropolitan areas per central business district (CBD) from 2008 to 2010. The values are based on average cap rate data from leading third-party market sources over the last three years.

Table 1
Three-year View of Cap Rate Increases

CBD	2008	2009	2010	Total Rise (BP)
Atlanta	7.35%	8.48%	9.23%	188
Charlotte	6.79%	7.79%	8.53%	174
Los Angeles	6.68%	7.29%	7.73%	105
Long Island/Manhattan	6.46%	7.02%	7.42%	96
Miami/SE Florida	7.17%	8.02%	8.74%	157
Baltimore/Washington, DC	6.62%	7.22%	7.73%	111
Hartford, Ct./Philadelphia	7.69%	9.47%	9.38%	169

As shown in Table 1, cap rates in all surveyed markets rose during the past three years, but none of those markets achieved the predicted 300-basis-point increase projected at the beginning of the financial crisis. (Cap rates in some smaller markets or for special-purpose property types have achieved higher increases than the averages

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shown in the table.) What also appears certain is that the cap rates in metro markets have not increased as quickly as predicted.

Some of this could be due to the fear surrounding predictions made at the onset of the financial crisis. As storied investment banks such as Lehman Brothers and Bear Stearns experienced cataclysmic events in late 2008, future projections of cap rate increases (and corresponding declines in property values) may, in retrospect, have been inflated. It also could be that the rise in cap rates is not yet complete. Our premise is that these explanations do not tell the entire story. Something is amiss in how cap rates are determined if the result is a slower-than-predicted rise for them in a declining market. Let's review some common methods.

Cap Rate Analysis

During the run-up in bank lending from 2001 to 2007, the appraisal industry moved closer than in prior years to a singular reliance on market averages for cap rate determination. While most appraisers today use more than one method to derive a cap rate, each of these methods is based on using the recent past as a means to project the current and future environment.

Before accepting an appraisal, bankers should determine if old comparables, or perhaps even pending sales, have been used to validate the cap rate.

The three most common methods are market extraction, lender's yield, and the use of commonly referenced market surveys such as Korpacz or REIS. Each method uses market conditions seen in the recent past to evaluate a cap rate assumption for the subject property today. Gone are methods that provided a buffer between the resulting cap rate and recent market history. In a typical appraisal of more than 100 pages, the discussion of the all-important cap rate is often limited to approximately three pages.

Market extraction. This approach, also known as *market abstraction,* attempts to validate the cap rate assumption today by finding properties comparable to the subject property that were sold in the recent past. Table 2 provides an example of this approach. This is typically one of the primary methods for obtaining cap rates for commercial investment properties. During stable or rising markets, this method appears adequate, but what about its relevance in a declining market?

As many *RMA Journal* readers will recall, the volume of commercial real estate transactions since the financial crisis has slowed considerably. As a result, some markets may not have recent sales that can be used for market extraction. Unfortunately, a lack of recent sales has not stopped appraisers from continuing to dip into the well.

Assume that you have just received on your desk an appraisal for a property being proposed as collateral for a loan. The collateral consists of a 20,000-square-foot office building built in 2008 and located in Winston-Salem, North Carolina. As you can see from Table 2, a few items come to the surface:

- All of the sales are old and occurred prior to the financial crisis.
- Only one property is located in the same city as the subject property.
- Only one property is approximately the same size as the subject property.
- All properties are older than the subject property.

This example reveals the weakness of market extraction. Nonetheless, in a market without current sales, many appraisers are still using this approach based on pre-financial-crisis sales. Before accepting an appraisal, bankers should determine if old comparables, or perhaps even pending sales, have been used to validate the cap rate. Sometimes appraisers attempt to update the market extraction numbers with pending sales, but these typically are not finalized and should not be used as the basis for cap rate construction.

Regarding the comparables used in Table 2, it is sometimes reasonable to use out-of-market comparables if the NOI being produced is from tenants with a regional or national reputation. For example, if the subject property was a 10,000-square-foot Walgreens retail store location, it very well could be reasonable to use comparables from another city, although the date of the sales in this case is still highly questionable.

Because the volume of transactions has fallen and because many investors (the novices or those unable to comply with

Table 2
The Market Extraction Method

Address	City	Sale Price	Sale Date	Size	Year Built	NOI	CR
100 North Main Street	High Point	$950,000	Apr-08	10,000	2005	$ 72,000	7.58%
200 Spring Garden Street	Greensboro	$2,000,000	Mar-08	22,000	2001	$ 150,000	7.50%
300 Reynolda Road	Winston-Salem	$4,400,000	Oct-08	50,000	1990	$ 345,000	7.84%
400 Tabor View Lane	Greenville	$1,950,000	Nov-08	15,000	2006	$ 155,000	7.95%
						Min	7.50%
						Max	7.95%
						Mean	7.72%

stricter bank lending parameters requiring more equity in deals than in the past) have fallen out of the market, the few transactions occurring today are of better quality than those seen prior to the financial crisis. These deals often represent a *flight to quality* among investors, so even the few sales that occur in your home market today may be of a better quality than transactions of the recent past.

Market survey method. Given the issues with the market extraction method in today's anemic environment, appraisers often will follow up that approach by referencing national publications such as the *Korpacz Real Estate Investor Survey* or some other source. These publications provide quarterly updates for metropolitan market vacancy rates, rental rates, cap rates, and discount rates by property type. If your home market is located outside of a major metropolitan market, be aware that these surveys do not provide market-specific information.

For example, if you are reviewing a retail property located in Boone or Asheville, two thriving markets in western North Carolina, you cannot reference Korpacz or REIS because neither provides data for those specific locations. Only limited information is available for other non-metropolitan markets. Appraisers and lenders in these smaller but often well-known markets, such as Savannah, Georgia, or Greenville, North Carolina, are left to extrapolate the current cap rates based on either the national average or survey results for the closest major metro market.

A recent appraisal employing market extraction used Korpacz surveys to show that the national average for warehouse cap rates increased between 2008 and 2010. The older comparable sales were added to the average national increase in cap rates since the time between the current day and the dates of the comparables, and a "current" cap rate was extrapolated. For example, the national average for warehouse space per the Korpacz market surveys increased by 170 basis points between the second quarter of 2008 and the second quarter of 2010. If your dated comparables produced cap rates of 7%, the national average could be used to increase the cap rate in the current appraisal to 8.7%.

While using market surveys to increase cap rates in this fashion helps improve the validity of the cap rate being constructed, it still relies on prior sales data that often is simply not pertinent to the market being surveyed. National averages in terms of cap rate movements are helpful to assess high-level trends in the market, but using these national averages to update local markets where sales have not occurred seems less than desirable. The authors have typically seen appraisers use the method of adding to the market-extraction cap rates based on national averages when valuing a property in a foreclosure or workout situation.

Lender's yield method. A third method used to build cap rates in commercial real estate appraisals is the lender's yield method. This approach is based on the assumption that current lending requirements can be used to estimate overall cap rates (CR) by multiplying the debt coverage ratio (DCR) by the mortgage constant (MC) and the loan-to-value ratio (LTV). Appraisers often query lending officers about the current LTV and DCR they are using for particular types of commercial property. The mortgage constant is the ratio of the annual debt service to the initial loan amount.

For example, the mortgage constant on a loan charging 7% amortized over 20 years is 0.0930. If typical bank lending requirements were providing a DCR of 1.25 and an LTV of 75%, the lender's yield cap rate would be:

$$0.0930 \times 1.25 \times 0.75 = 8.72\%$$

As many bankers will attest, the "credit crunch" is appropriately named, because the lending parameters seen in many markets today differ substantially from pre-financial-crisis levels: Amortizations are shorter for most property types, and loan-to-value ratios are lower. This crunch has led to more equity being required in deals and, all else being equal, lower loan-to-value ratios.

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Given the credit crunch, your bank may now be lending on retail properties with DCR requirements of 1.40 and LTVs of no more than 65%, and these properties might be financed with loans charging 6% with amortizations of 15 years. What effect would this have on the lender's yield method of determining cap rates?

$$0.1013 \times 1.40 \times 0.65 = 9.22\%$$

Consequently, the cap rate under the lender's yield method has increased, but, unfortunately, many appraisers are still using a DCR of 1.25 and LTV of 75% as estimates for this approach. It seems that during the heady days of 2001–07, appraisers followed banks out on the risk curve, as shown in this approach, but the appraisal industry has been slow to adjust during the down market.

When applying lender's yield, it is important to query your appraiser if the DCR and LTV assumptions do not appear to represent current reality.

In summary, the three most popular methods of cap rate determination in commercial real estate appraisals all apply to the recent past and have not proven as reliable in a market environment of sustained reductions in property values.

Where Do We Go from Here?

It would seem that the sustained period of increasing property values (2001–07) has led to a reliance on market-based cap rates, which have been lower than should be expected going forward. These deflated cap rates have, in turn, generated inflated property values in many appraisals. As the appraisal industry moved with the times during the boom years, more academic cap rate models were abandoned. They were considered outmoded or too cumbersome in a market expected to continue appreciating into the foreseeable future.

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One approach used in the past is the *band of investment* technique. This is a variation on the lender's equity method, and it can be used in place of the method discussed above. In applying the band of investment, both a debt component and an equity component are used to construct the cap rate (CR). The formula is as follows:

$$CR = d \times MC + (1 - d) \times R_E$$

where d is the debt ratio or loan-to-value (LTV) ratio, MC is the mortgage constant, (1 – d) is the equity ratio, and R_E is the investor's required rate of return on the equity investment, or the equity dividend rate.

Appraisers today are using benchmarks to estimate the components of this technique. Various Internet sites provide aggregate information concerning interest rates, loan amortizations, and equity dividend rates seen in the market. These sites obtain their information from survey data, but therein lies a weakness similar to those identified in other approaches. As mentioned previously, national averages simply are not reflective of many local market conditions.

We propose amending the band-of-investment technique so that transaction-specific factors can be used to derive the appropriate cap rate. For example, assume that you are reviewing a property with an assumed LTV of 65%. The purchase price of $1,400,000 includes a $910,000 loan paying 7% amortized over 15 years. The property is expected to produce NOI of $50,000 during the first year.

One of the difficulties in applying the band-of-investment technique, or any method that explicitly employs the required return on equity, lies in estimating R_E. In the following example, allow the estimated NOI from the project to determine the rate of return expected by the investor, so that R_E = NOI/equity investment. The rationale for substituting for R_E is as follows: The bank will know the investor's projected NOI and also how much equity the investor wishes to invest when purchasing the property.

In situations where the bank-determined NOI differs significantly from the investor-determined NOI, the loan would not be approved and an appraisal would not be ordered. Thus, the appraiser's NOI, together with the borrower's equity investment, can be used to set the required return-on-equity percentage. Rather than relying on third-party sources for nationally determined return-on-equity percentages, this alteration allows the local market to help set the equity component of the calculation (Table 3).

Table 3
A Variation on the Band of Investment Technique

Debt Component	Equity Component
LTV% x (annual debt service/loan amount)	1 – LTV% x (NOI/$ equity invested)
0.65 x ($98,152/$910,000)	0.35 x ($50,000/$490,000)
0.65 x 0.1079	0.35 x 0.1020
= 0.0701	= 0.0357
Thus the total cap rate is 10.58% as per this approach.	

This variation on the band of investment eliminates the need for survey data to estimate the required return on equity, because this is now defined in terms of the specific transaction being valued. An appraiser will have a knowledgeable estimate of the projected NOI for the property and will certainly know the purchase price. All that's needed when applying the approach is the bank's lending parameters, which can be highly localized. Furthermore, the appraiser can use local market conditions to set the leverage ratios rather than having to rely on aggregate data from third-party sources.

How would this approach fare in the aftermath of the financial crisis? The answer depends on how the equity component is constructed. If the equity component is determined via the specific transaction (that is, NOI/$ invested), then a decreased LTV might lower the equity dividend rate far below the initial preferences of the investor. If this is the case, the investor may decide not to proceed with the transaction. If the investor's equity dividend rate remains 10.2%, applying an LTV of 50% and lowering the interest rate to 6.5% results in a lower cap rate because relatively less expensive equity is used to finance the project. The calculation is shown in Table 4.

Table 4
Band of Investment in a Financial Crisis

Debt Component	Equity Component
LTV% x (annual debt service/loan amount)	1 – LTV% x R_E
0.50 x ($73,172/$700,000)	0.50 x 0.1020
0.50 x 0.1045	0.50 x 0.1020
= 0.05225	= 0.05100
Thus the total cap rate is 10.4% as per this approach.	

Although the band-of-investment technique allows an appraiser to adjust for local market conditions and incorporates

the investor's expected return, it lacks flexibility because it fails to incorporate expected future outcomes such as declining income and/or property depreciation.

A Step Back in Time

The mortgage equity technique is an older, equation-based approach developed by L.W. "Pete" Ellwood in the late 1950s.[3] The benefit of the mortgage equity technique (as well as a follow-up method developed by Charles B. Akerson) is that it can accommodate declining property values and/or falling income over the projected period of investment.

Furthermore, Ellwood's equation explicitly incorporates the impact of financing choices made by the investor or required by the lender. Most current appraiser education does not include in-depth discussion of the Ellwood or Akerson techniques because both are considered too cumbersome or too academic to be of practical use.

The Ellwood formula is written as:

$$CR = \frac{R_e - LTV\{R_e + AP(1/S_n) - MC\} - \Delta PV(1/S_n)}{1+\Delta_1 J}$$

where CR is the capitalization rate, R_e is the investor's required return on equity (or the equity yield rate), LTV is the loan-to-value ratio, AP is the amount of the loan that has been amortized (paid off), S_n is the balance of a sinking fund set up to pay off expenses, MC is the mortgage constant, and ΔPV is the expected change in the property's value during the holding period. The denominator, $(1+\Delta_1 J)$, adjusts for anticipated changes in the income generated by the property.

The Ellwood formula allows the cap rate to be adjusted for expected changes in future NOI as well as changes to the property's value. In fact, if the NOI and property value are expected to remain constant, the Ellwood formula produces the same result as the band of investment.

The term $R_e - LTV\{R_e + (AP \times 1/S_n) - MC\}$ represents the traditional cap rate, which is the required return on equity with adjustments for debt financing. A higher LTV means that more relatively inexpensive debt is employed, which lowers the overall rate. The next term has the same effect, as AP captures the risk-mitigating effects of an amortizing loan, while the sinking fund factor, $1/S_n$, serves as a discount factor for the investor's growing equity. However, as the interest rate on the debt increases or the amortization period shortens (say, to 15 years from 20 or 30 years), the mortgage constant (MC) grows, causing the cap rate to increase.

Let's apply the Ellwood formula to the previous example, in which the loan is newly originated so there is no pay-down. As in the previous example, the interest rate is 7% on a 15-year amortizing loan, the required LTV is 65%, and the investor's required return on equity remains at 10.2%. This generates the following cap rate:

$$50{,}000/490{,}000 - 0.65 \times \{(50{,}000/490{,}000) - 0.1079\} = 10.58\%,$$

which is exactly the cap rate produced by the band of investment.

The remaining term in the numerator of the Ellwood formula, $\Delta PV(1/S_n)$, allows the appraiser to adjust the cap rate for anticipated changes in the property's value, where ΔPV is the expected percentage price change and S_n is once again the sinking fund factor. Note that the anticipation of a decrease in the property's value increases the cap rate.

The denominator, $1+\Delta_1 J$, incorporates expected changes to the income generated by the property over the life of the project (Δ_1) as well as the potential for nonlinearity in its growth (J). For example, Δ_1 would equal 0.3 if the appraiser expects the NOI of the project to increase from $100,000 in the first year to $130,000 in the last. The J-factor is used for curvilinear accumulating income; it serves to discount accumulating NOI in accordance with a sinking fund.

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While the formula for the J-factor is hardly intuitive, it is entirely identified by the required return on the equity investment (R_e) and the number of periods of the project's life. Consequently, J-factor tables and even websites with Ellwood calculators are available, so this method can be easily ap-

Table 5

Ellwood Cap Rates Based on Various Changes to NOI and Property Value

	Panel A		Panel B	
	LTV = 65%,	Loan rate = 7%	LTV = 50%	Loan rate = 6.5%
	NOI Growth	Property Change	NOI Growth	Property Change
Expected Change	No change in property value	No change in NOI	No change in property value	No change in NOI
20%	0.0741	0.0492	0.0763	0.0517
15%	0.0759	0.0574	0.0782	0.0598
10%	0.0778	0.0655	0.0801	0.0680
5%	0.0798	0.0737	0.0822	0.0745
0	0.0819	0.0819	0.0843	0.0843
-5%	0.0841	0.0900	0.0866	0.0925
-10%	0.0864	0.0982	0.0889	0.1006
-15%	0.0888	0.1063	0.0914	0.1088
-20%	0.0914	0.1145	0.0941	0.1169

plied if the appraiser believes the property will generate a curvilinear income stream.

Because the J-factor is always positive, the impact of the denominator is entirely determined by the expected growth rate of the income (Δ_I). For example, if NOI is expected to remain constant, Δ_I equals 0 and the denominator becomes 1+0(J), and, regardless of J's value, the denominator is 1, which has no impact on the cap rate. Conversely, if Δ_I is less than 0, the denominator is less than 1 and the cap rate will be driven upward to reflect the falling value of the project's income.

Akerson also defined a "K factor" that accommodates a linear increase in the project's NOI. In this case, $1+\Delta_I J$ is replaced by K, which is a function of the appraiser's assumptions about the annual growth of the income, the required return on equity (R_e), and the number of periods the project will generate income. Once again, tables are available to determine K.

So what happens to the cap rate as explicit assumptions about the property's changing value and NOI are incorporated? Table 5 provides a comparison of Ellwood cap rates under various assumptions about growth rates for NOI and property value. The calculated cap rates are based on a property priced at $1.4 million that is partially financed with a fully amortizing 15-year loan, a required return on equity of 10.2%, and a projection period of five years. The base case NOI is $50,000.

Panel A in Table 5 presents Ellwood cap rates given a loan rate of 7% with an LTV of 65%. The column "Expected Change" provides the various changes in either the expected NOI generated by the project or the property's value during the projection period. The "NOI Growth" column shows cap rates given the various changes in NOI while holding the changes in the property's price to zero, and "Property Change" holds NOI changes to zero. Panel B is constructed in the same way, but assumes an LTV of 50% and an interest rate of 6.5% on the proportionally smaller loan.

Both Panel A and Panel B show that the cap rate is more sensitive to changes in the property's appreciation (or depreciation) than to changes in income. That is, an expected increase (decrease) of 20% in property value produces a much lower (higher) cap rate—249 basis points lower (231 basis points higher)—than an equivalent expected change in the NOI. This effect is more pronounced over shorter projection periods because the change in property value arrives much earlier: A 20% appreciation in the property's value has much more impact on the viability of a project if it occurs in five years rather than 15 years. Consequently, over longer projection periods, a steady increase in income can have as much importance as an increase in the property's reversion value.

Comparing Panels A and B shows that shifting the LTV to 50% and lowering the rate by 50 basis points does not create dramatically different cap rates. While the impact of the property's changing value remains quite high over short projection periods, the overall increase in the cap rates is relatively small. Interestingly, an LTV of 50% and a loan rate of 6% produce cap rates almost identical to those in Panel A.

Conclusion

When you receive appraisals as part of the due diligence for a loan to be secured with an investment property, the first step in assessing the quality of the cap rate assumption is to review the types of methods used and look at them in light of the current economic environment.

Today's cap rate analysis, which typically does not include a discussion of the probability of declining property values or changing future income, may be missing the mark. Cap rate valuation that includes the revised band of investments or possibly the Ellwood equation may lead to more meaningful results in a declining market or in a market without many current comparable sales. Relying on the recent past in a sustained down market provides an example of where the crowd is simply untruth. ❖

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Notes

1. See http://www.zerohedge.com/sites/default/files/images/GS%20CRE%201.jpg.

2. Kierkegaard, S., "Upbuilding Discourses in Various Spirits," *Kierkegaard's Writings, Volume 15*, Copenhagen, Spring 1847.

3. Appraisal Institute, *Appraisal of Real Estate*, 11th edition, 1996.