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Zisler Capital Views

What investors need to know about ...

Temple of Confusion: The Mystery of Cap Rates

The Etruscan¹ priests passed the entrails of animals back and forth in a secret ceremony, impenetrable and mysterious to the unwashed minions. People looked to the priests for answers to the imponderables. This early, pre-scientific, attempt to augur the future misled believers, created more mischief than good, and empowered an already entrenched priesthood.

"More incense and less sense", you might say. But wait! The modern age may be more subject to sorcery and received wisdom than you might think. Cap rates have assumed an aura of mystery. There is no lack of opinions, despite widespread misunderstanding, regarding the drivers and direction of cap rates.

Let's clear the smoke, open the windows, drive the priests from the temple steps, and throw the spotlight on cap rates.

Priests augur² the future.



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This issue of **Zisler Capital Views** explores the use and misuse of capitalization rates, or cap rates. A cap rate is the ratio of net operating income, NOI, to price. We call our perspective, [The New View of Cap Rates](#).

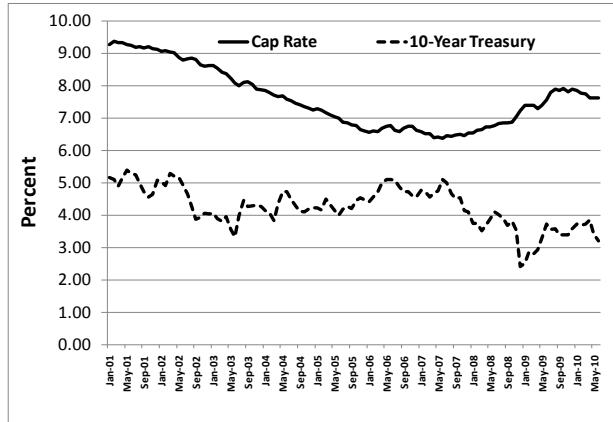
What are the stylized facts and received wisdom? Even though cap rates themselves are not very volatile, the spread of cap rates over the 10-year Treasuries, or excess cap rates, can vary substantially.³ Excess cap rates shrunk from 2006 through 2007, the years of robust property rental growth.

¹The Etruscans were the dominant civilization on the Italian peninsula from the 8th through the 5th century BC. Etruscan priests made sacrifices to the gods and practiced haruspicy, or the [art of divining the will of the gods](#) by observing the livers of sacrificed animals, the patterns of lightning, and the flight of birds. Times have changed; animal sacrifice has lost its appeal.

²The augur was a high priest (broker) whose main role was to interpret the will of the gods (clients) and avoid *ira deorum*, the anger of the gods (the clients).

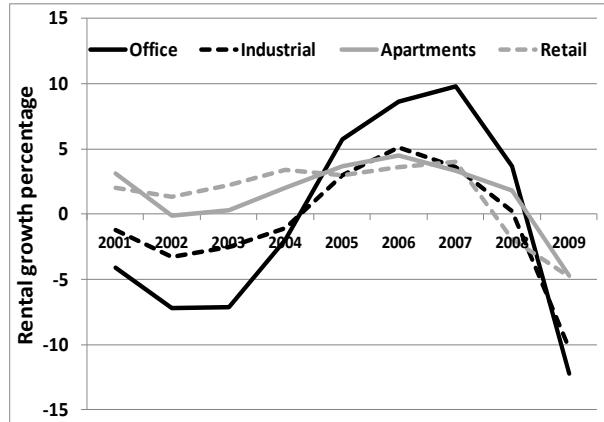
³Excess cap rates have varied from 127 to 493 basis points over the last decade.

Exhibit 1. Cap rates and the 10-year Treasury



Source: Real Capital Analytics

Exhibit 2. Rental growth



Source: CB Econometrics

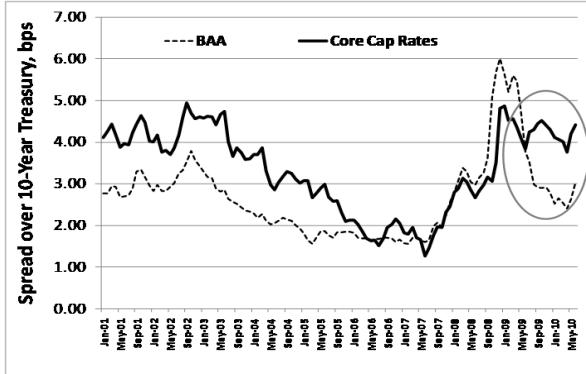
If cap rates were forward, and not backward, looking—they would accurately reflect expectations of rental growth—we would expect excess cap rates to widen at the peak of the market and narrow at the bottom. This is not the case. Cap rates are at best coincident, not leading, indicators.⁴ See Exhibits 1 and 2. Cap rates reflect more than just national capital market trends. If this were not the case, excess cap rates would not vary substantially by metropolitan area (“MSAs”) or within MSA’s. Cap rates do, in fact, vary substantially across and within MSAs. Some investors incorrectly believe that the cap rate is the cost of capital. It is not. Cap rates do not move in lock step with Baa corporate bonds. Exhibit 3 shows that the cap rate and Baa spreads follow a roughly similar trend, although significant departures can occur, as was the case during 2009-2010. Corporate bond spreads are not a reliable predictor of average national cap rates, as shown in Exhibit 4.

Cap rates adjust relatively slowly to economic shocks, even though underlying cap rate determinants may be more volatile. For example, cap rate spreads have remained wide since June 2009 even though Baa spreads have compressed and cap rate levels have slowly declined. The risk premium for bonds and property increased dramatically following the third quarter of 2007.⁵ In fact, Baa spreads exceeded cap rate spreads from December 2007 through May 2009. This is atypical. From 2001 through June 2010, cap rates exceeded Baa spreads 76% of the time.

⁴Ray Torto and Bill Wheaton make this point in **The Institutional Real Estate Letter**, January 2007, thus concluding that pricing is not efficient.

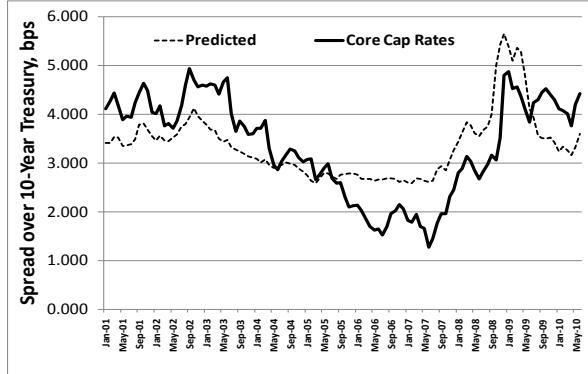
⁵We define the risk premium as the difference between current yields, in the case of corporate bonds, and cap rates, in the case of property, and 10-year Treasury bonds.

Exhibit 3. Cap rate spreads have remained high even though Baa corporate spreads have shrunk.



Source: Real Capital Analytics; Federal Reserve

Exhibit 4. Baa corporate spreads are not a perfect predictor of cap rate spreads.

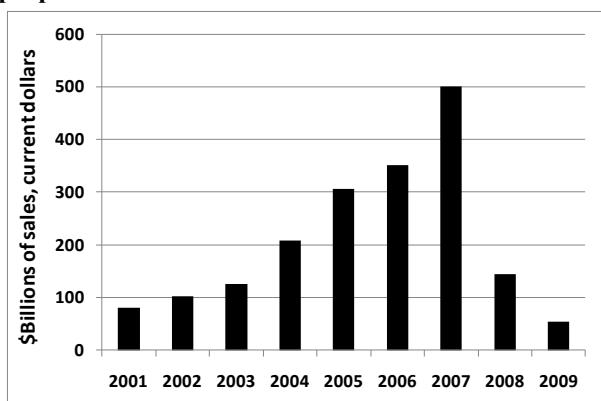


Source: Zisler Capital Associates, LLC

Baa-rated corporate bond spreads only explain about 45% of the variation in overall property cap rate spreads. Exhibit 3 shows that bond spreads, by themselves, overpredicted cap rate spreads at the peak of the market; bond spreads under-predicted cap rates over the last two years, as shown in Exhibit 4.

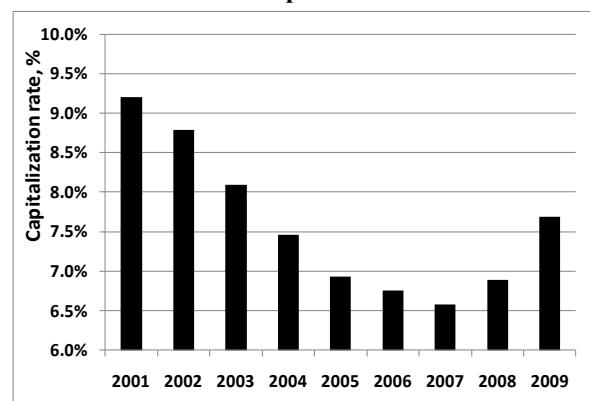
During 2007, transactions volume was high and peaking. (See Exhibit 6.) Low cap rates signaled expectations of rapid growth and low risk. After 2007, liquidity drained from the system, transactions volume cratered, and average national cap rate levels have risen even though spreads have remained relatively level. (Of course, in some cities for certain property types, cap rates have fallen to 2007 levels, even though underwritten rents are lower.)

Exhibit 5. Transactions volume, all commercial properties



Source: Real Capital Analytics

Exhibit 6. Average cap rates bottomed in 2007 and increased over 100 basis points thereafter.



Source: Real Capital Analytics



Four observations help introduce this paper:

- Cap rates reflect underlying—at times offsetting or amplifying—factors that include the risk free rate, a risk premium, capital expenditures (including leasing fees), rental income growth, and certain fixed factors that differentiate local markets.
- Real estate markets are segmented and therefore local factors are important.
- Cap rates adjust sluggishly to market disequilibrium.
- Cap rates are backward looking. This observation is consistent with the notion that real estate markets are inefficient.⁶

What is the cap rate?

The cap rate, by itself, is at best meaningless and at worse confusing and misleading; it generates more smoke than light. The reason is that there are many factors that determine the cap rate.⁷ The capitalization rate is the ratio of NOI, divided by the total purchase price (or market value, if appraisal based). It is also the difference, or spread, between the expected cost of capital, r , and the expected rate of growth of NOI, g .

The Gordon formula, discussed in footnote 8 on the following page, is the valuation workhorse in real estate (and the stock market). The cap rate is not the cost of capital, r , unless the growth rate, g , is zero.

The academic literature confirms that cash flow, not NOI, determines value, not just for property, but for stocks and other investments as well. NOI excludes leasing commissions and capital expenditures. Thus, the cash flow yield is not the same as the NOI yield. These represent two different capitalization rates. In real estate practice, “cap rate” refers to the NOI yield. Even though these yields can differ, their respective growth rates are similar.

⁶We caution the over-eager investor not to conclude that, just because the real estate market may be inefficient, investors (or their investment managers) can consistently beat the market. We are amused by promoters who claim that investors should increase their allocation to real estate because real estate markets are inefficient. Requisite capital and illiquidity constraints may foreclose arbitrage opportunities to all but the best capitalized investors.

⁷The analogy is the difficulty of distinguishing between a movement along the demand curve and a shift in the demand curve with only knowledge that prices have fallen.

The Gordon formula is as simple as it is limiting; it assumes constant discount and growth rates *ad infinitum*, from the present to infinity. The cap rate, which is a linear function of both rates, increases one point if just r increases by one point or g decreases by one point. There is a family of discount and growth rate assumptions that are consistent with any given cap rate. Hence, one cannot infer changes in g or r from movements in the cap rate alone.⁸

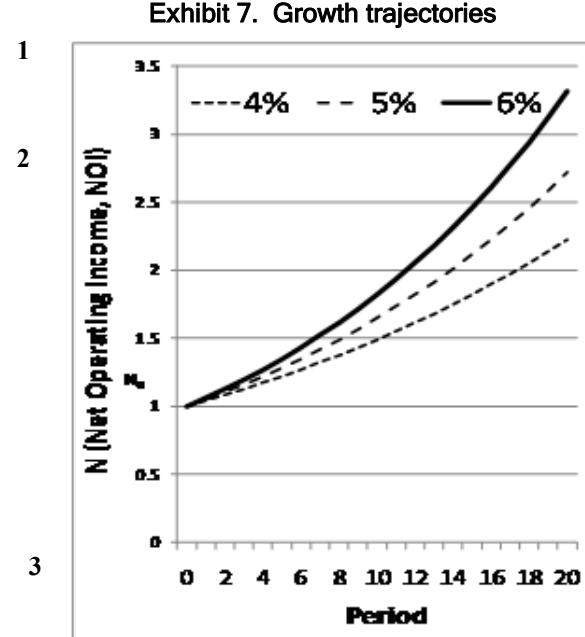
What are the components of the cap rate? The components consist of the risk free rate, r_f , the risk premium, capital expenditures (and leasing commissions) or CAPEX (as a percent of annual rental income sufficient to maintain the productivity of the asset), and expected growth in rents, g . (CAPEX can be treated above or below the NOI line depending on the nature of the CAPEX.) Note that the cap rate spread, so often the focus of analysts, is not the risk premium.

$$r = r_f + \text{RiskPremium} + C$$

$$\text{Cap rate spread} = CAP - r_f = \text{RiskPremium} + Capex - g$$

⁸The Gordon formula assumes infinite expected growth of NOI, which we call "N". Current rental income, N_0 , grows at a rate of g . (See Exhibit 7.) This is not as limiting as it may seem since in Equation 2 we discount yearly NOI continually at the expected cost of capital, r , which given substantially less weight to future NOI. Actual growth rates, even in the intermediate term, are not exponential much less uniformly so. Given the strong assumptions underlying this formula, the cap rate formula follows.

$$\begin{aligned}
 N &= N_0 \cdot e^{gt} \\
 P &= \int_0^{\infty} N \cdot e^{-rt} dt \\
 &= -\frac{N_0}{r-g} e^{-(r-g)t} \Big|_0^{\infty} \\
 &= \frac{N_0}{r-g} \\
 \text{Cap Rate} &= \frac{N_0}{P} = r - g
 \end{aligned}$$





An example, Exhibit 8, demonstrates this point and suggests that under plausible assumptions, the risk premium may have returned to, or at least approached, pre-crash levels in a few markets. Let's assume for the purpose of this exercise that markets are in equilibrium. The cap rate spread, according to Real Capital Analytics, fell from 190 to 450 basis points over the last two years. If we accept CB Econometrics' five year rental growth forecasts and assume that real estate markets are forward looking, which we question, then the risk premium increased from 460 basis points to 550 basis points during this period. Of course, if the estimated growth rate is higher or capital expenditures are lower, then the risk premium is higher. For example, with regard to Alternative 2 below, if the cap rate for a premium office building is about 5.5% and expected rental growth is 4%, then the risk premium is 500 basis points.

Exhibit 8. Exercise in cap rate mathematics

	June 2007	Alternative 1 August 2010.A	Alternative 2 August 2010.B
Cap rate	6.7%	7.0%	5.5%
Less the risk free rate	4.8%	2.5%	2.5%
Plus the rental growth rate*	4.7%	3.0%	4.0%
Less capital expenditures	2.0%	2.0%	2.0%
Equals the risk premium	4.6%	5.5%	5.0%

*Average CB Econometrics office rental growth rate forecast 2010-2014

What value should we use for growth? Population growth may not be a good proxy for rental income growth, or vice versa. Investors who confuse the two may indeed over-pay for rental growth. For example, some cities have low barriers to entry or few supply constraints—high elasticity of supply of new construction in relation to changes in price. In cities, such as Phoenix, as prices approach replacement cost, developers will face few impediments. New product will arrest increases in rent and values. Even though population growth proceeds, rental growth may slow as supply attains and eventually overshoots demand. Lumpy or episodic additions to the inventory of space may, in fact, not only depress rental income growth rates but simultaneously increase the variance (or riskiness) in the growth rate of rental income itself. Hence, some higher growth cities with low barriers to entry may be higher risk markets. The variance of expected rental income may indeed exceed the variance of overall population or even employment growth.



If the volatility of expected rental growth increases, the risk premium may rise as well. However, the increase in the risk premium may be insufficient to offset the effects of the increase in expected growth. Thus, cap rates may fall even though risk-adjusted returns have fallen. Investors who neglect this warning may fall prey to risk illusion. Maybe some markets, like Washington, D.C. or Phoenix (in the case of apartments) are bubbles embedded in a crash.

The discount rate is a function of the riskless rate and risk perceptions, which reflect, among other considerations, local, non-diversifiable property market volatility.⁹ The best measure of non-diversifiable or systematic risk is beta¹⁰, which is a measure of the direct relationship between the risk of an asset relative to the market and the return that can be expected from that asset.¹¹ This “beta” risk is always less than total risk. Investors should be aware that in principle the discount rate increases with beta, not with total volatility (some of which is diversifiable), unless, of course, markets are inefficient or investors are fooled. High growth cities may exhibit either high or low betas. Thus, two properties with the same leasing structure in cities with the same growth rate may have different current income yields or cap rates. We suspect that cities with a low institutional ownership presence and low transactions volume (low liquidity) may have significant unexploited diversifiable risk or, in other words, excessively high cap rates.

Liquidity reflects the investor’s ability to realize the cash value of the asset by exposing the asset to the market over a “reasonable” amount of time. In low transactions volume markets, such as the current environment, price discovery is impaired and, accordingly, the bid-ask spread is wide. Sellers and buyers are cautious and asymmetric or hidden information rules the day. High volatility in a sparse market enhances the value of the buyers’ or the sellers’ option to wait. Thus, in markets with low liquidity, we observe higher cap and discount rates because sellers value liquidity. That is why many institutional investors avoid so-called secondary cities such as Albuquerque and Buffalo.

⁹According to the capital asset pricing model (“CAPM”), the market only rewards investors for assuming non-diversifiable risks. Therefore, the investor is only rewarded for assuming metropolitan property volatility that the investor cannot shed through diversification. Those investors who have the means to efficiently diversify with real estate and between real estate and other asset classes, both domestic and international, should have a lower discount rate, r .

¹⁰The estimate beta for office buildings is very low. (See John McDonald and Sofia Dermisi. “Office Building Capitalization Rates: The Case of Downtown Chicago” *Journal of Real Estate Finance and Economics* (2009) 39: 472-485.

¹¹We could calculate property market betas, but alas, we demure in recognition of limited space and respect for already strained reader tolerance.



When the institutional grade¹² inventory is sparse and transactions volume is low, there is greater informational uncertainty. Deferral acts like a call option, the value of which increases with risk and time to maturity. Therefore, investors discount the likelihood of a timely and efficient exit or deposition.¹³

Demystifying cap rates: The New View of Cap Rates¹⁴

This section represents what we call “The New View of Cap Rates”. It reflects the experience of practitioners, like ourselves, and academic studies we respect.

- **Variation across cities.** Cap rates can vary significantly across metropolitan areas.
- **Diversity.** Heterogeneous or economically more diverse markets tend to be thinner markets. Their trading volumes are low and information costs are high. Buyer-seller matching is more expensive. Higher risks increase cap rates.
- **Rental versus population growth.** Cap rates, holding other factors constant, are lower if rental growth (and by implication income growth) rate expectations are higher. Small, albeit less diverse, cities tend to grow faster, which implies lower cap rates. However, since the interaction of supply and demand affects rental growth, it is not clear that robust population growth necessarily justifies expectations of strong rental growth, e.g., Phoenix.

¹²Of course, institutional grade is whatever institutions do—admittedly a circular argument. Location is not exempt. Twenty years ago, institutions eschewed apartments, because they were not institutional grade. Today, institutions embrace apartments, and rightly so.

¹³We would argue that many of these institutional investors, by avoiding (red-lining?) secondary and tertiary cities are not serving their investors well. A large, well diversified portfolio can afford to include more secondary and tertiary cities, especially if these cities exhibit lower betas. Hence, the institutional investor should be able to outbid the “locals”, who may lack efficient ways to diversify their more parochial real estate portfolios and therefore shed otherwise diversifiable risk. Why do institutional investment managers leave value on the table? We suspect that the reason is more insidious than economic. A real estate money manager often manages but a portion of the overall real estate portfolio and the real estate portfolio itself represents but an even small share of the investors total portfolio. However, the manager is rewarded for her ability to produce high total returns, which an illiquid market may impair when it is time to exit the market. The manager minimizes her downside risk—the risk of losing the account—rather than maximizing the clients overall risk-adjusted return. Beta goes out the window.

¹⁴Recommended “New View” references include (1) Sivitanidou and Sivitanides. “Office Capitalization Rates: Why Do They Vary Across Metropolitan Markets” **Real Estate Issues** (1996) 21: 34-39; (2) Sivitanidou and Sivitanides. “Office Capitalization Rates: Real Estate and Capital Market Influences” **Journal of Real Estate Finance and Economics** (May 1999) 18:3, 297-322; and (3) Chichernea, Miller, Fisher, Sklarz, and White. “A Cross-Sectional Analysis of Cap rates by MSA” **The Journal of Real Estate Research**. (July-Sept 2008) 30:3: 249-292.



- **Slow adjustment.** The restoration of cap rates to equilibrium, once perturbed, is slow. In two years, the gap narrows only by a half. The rate of adjustment varies by metropolitan area. Thus, the slow adjustment rate indicates that real estate markets are inefficient and the inefficiency varies by city.
- **Adjustment rate and risk.** Metropolitan areas respond in different ways to national shocks because the inter-industry economic mix varies by city. The variety of mixes helps explain the differential adjustment speeds. Just as the adjustment rate varies, so should risk perceptions across cities. Cap rates, in turn, should embody these differences through the risk premium and the growth rate.
- **Compact cities.** The more compact or concentrated is the city's inventory, the lower are information costs. Lower cap rates are associated with low information costs.
- **Government stability.** Cities with larger government shares of total employment should have lower cap rates. Government leases sometimes (but, today, much less often) provide the tenant with some discretion to break the lease. In practice, government tenancy exhibits great inertia: Neither the service providers nor the service beneficiaries (i.e., voters) favor peripatetic government agencies. So, their propensity to break leases is low.
- **Size.** Investors and brokers believe that size matters.¹⁵ Specifically, smaller markets are less liquid and riskier and this risk requires a higher exit cap rate. We believe that the effect of size may be ambiguous. For example, while larger markets tend to be more liquid, these markets tend to be slower growers. S&S reports that the effect of the inventory size is negative but statistically insignificant or economically equivalent to zero. Thus, the two effects appear to be offsetting. Buyers pay a price which presumably capitalizes higher expected growth and uncertainty at the time of sale. We suspect that investors overly discount their exit concerns by redlining certain cities.¹⁶
- **Absorption.** Markets with high space absorption rates have lower cap rates.
- **Vacancy and leasing risk.** The lower is the expected vacancy rate (in relation to the absorption rate), the lower is the leasing risk. Lower leasing risk implies a lower cap rate.

¹⁵This statement is unquestionably true at several levels.

¹⁶One investment manager actually told us that he would never invest in Albuquerque, no matter what the price. Under what conditions does such a statement ever make sense.



- **Market volatility.** More stable markets, in the sense of lower volatility in the growth rate of employment, are associated with lower cap rates. To the extent that owners can efficiently shed this risk at relatively low cost through diversification, we would expect this factor to have a negligible effect. That this factor is in fact significant in certain studies is consistent with market segmentation and market inefficiency.
- **Alternative asset and stock returns.** The expected return associated with other asset classes clearly affects portfolio decisions. There is an income and substitution effect. Some economists report some evidence that the substitution effect dominates; the opportunity cost of investing in real estate rises with stock market performance and capital flows away from real estate. The income effect, however, says that the wealth effect increases real estate prices and lowers cap rates. We expect that either effect can dominate depending on market conditions.
- **Inflation.** General economy-wide inflationary expectations have a positive effect on cap rates, according to the latest research. Apparently investors do not regard inflation as a proxy for future appreciation. This result, which is statistically and economically significant, is consistent with our own view that multi-tenanted real estate is a poor, or at best, an unreliable inflation hedge. (We will be writing about real estate and inflation hedging.) Why should that be the case? Leases are equivalent to corporate bonds in many, but not all, respects. Rising nominal interest rates are generally associated with increased inflationary expectations. Thus, in a climate of rising inflationary expectations with high vacancy rates, for instance, the decrease in the value of the bond-like leases swamps the offsetting effect of expected future lower vacancy rates on the option to release. That real estate with long term leases at times has performed as an inflation hedge reflects more the serendipitous association of high inflationary expectations with low vacancy rates. In practice, cap rates rise as inflationary expectations increase. Of course, not all real estate leases are long term. The shortest is the hotel lease—by the night. Slightly longer duration is the apartment lease. Holding other factors constant, we would expect hotels and apartments to be better, albeit not perfect, inflation hedges.
- **Predicting future cap rates.** Cap rates are sluggish. We believe that there is substantial autocorrelation or smoothing in the cap rate series. That means that past cap rates can help predict cap rates.



Practical implications: No Skipping Stones!

“What’s happening to cap rates lately?” is likely to provoke more confusion than light. The confusion stems from reductionism, the tendency to collapse complex, multi-dimensional phenomena to a single index number. What can the busy investor conclude? The following are some practical observations and questions for investors:

- Cap rates vary across (and within) cities and the reasons for this variation are many and complex.
- The cap rate is not the cost of capital, unless the expected growth rate is zero.
- Cap rate changes, taken in isolation, may not reveal much about value or the state of the underlying markets.
- The simplicity of the cap rate formula hides more than it reveals and what it hides may be important.
- Attempts to apply average national prevailing cap rates to current NOI can produce unreliable and surprising results, especially in those cases involving multi-tenanted properties or properties subject to special features—financial, physical, or economic.
- While general capital market conditions do affect cap rates, albeit with a lag, the relationship is often complex and intertwined with local factors. Thus, the measured cap rate at time of acquisition may not be the equilibrium cap rate.
- The assumed exit cap rate will reflect the complex interplay of many factors, but our ability to forecast these factors is not good. The accuracy of our econometric forecasts degrades substantially beyond a few years.
- Institutional investors tend to focus their acquisition activity on a handful of cities—the so-called high liquidity, institutional grade growers. At some point, the relative lack of liquidity, small inventory size, and lower trading volume are fully priced in the cap rate of “institutional grade” cities. Are institutional investors overpaying to ensure an efficient exit at an uncertain time well beyond the power of our “econometric telescopes”?

¹⁷The Allegory of the Cave, or Plato’s cave, involves a group of people who have lived chained in a cave all of their lives, facing a blank wall. The people watch shadows projected on the wall by things passing in front of a fire behind them, and begin to ascribe forms to these shadows. According to Plato, these shadows do not constitute reality at all. In a similar vein, cap rates are like two dimension shadows of three dimensional objects on the wall of the cave. Therein, piercing this dimensional veil is one of the challenges, and conundrums, of market analysis.

- Do institutional investors systematically overpay for growth and underestimate volatility? We suspect they do.
- “National” investment money managers may lack the staff or the inclination to develop highly specialized knowledge of metropolitan real estate. Large capital resources notwithstanding, they may be at a competitive disadvantage in interpreting cap rates compared to regional, or even local, sharpshooters.
- Where there are knowledge inefficiencies that investors can systematically exploit, the market rewards research. The large institutional investors that enjoy discretion, such as certain public REITs, may have a lower cost of capital and a special ability to exploit inefficiencies. They should focus on the metropolitan market beta and not the total risk associated with an acquisition.
- Managers who invest across a vast swath of markets, much as a skipping stone across a placid pool of deep, dark water, run the risk of overpaying or underbidding for property; they lack relative precision. Without deep market knowledge, many “skipping stones” must rely on other strengths, such as the ability to write a big check or offer immediacy (e.g., a quick, high probability, closing).

In our enthusiasm, have we forgotten something important? Let us know.





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Zisler Capital Views is a research service of Encore Enterprises, Inc., that focuses on critical issues at the nexus of real estate capital markets, corporate finance, structured finance, and portfolio strategy. Our research is all about critical ideas for curious and thoughtful investors.

Why are we writing Zisler Capital Views? We believe that most (but not all) real estate research is either parochial, self-serving, bland, or just wrong-headed: (1) “Parochial” because much real estate research fails to look past the real estate sector and assess complex linkages affecting value and risk; (2) “self-serving” because some companies, which lack the long view, believe that uncompromising objectivity may be bad for business; (3) “bland” because some sponsors prefer “safe” or “so what” research rather than the alternative, which may be inconvenient or controversial; and (4) “wrong-headed” because much research fails to blend practice with the best that academia offers. However, the main reason we write Zisler Capital Views is, well, we just like to write and because we believe we have something important to say. We hope you agree.

Randall Zisler and Matthew Zisler have extensive experience in structured finance, research, derivatives, portfolio strategy, and real estate finance at leading global investment banks. The authors have advised some of the largest pension funds, institutions, corporations and developers, raised and managed (successfully) pension fund capital, structured complicated debt and equity transactions, and participated in REIT IPOs and CMBS issuance. Randy was a professor at Princeton University and has held senior positions at Goldman Sachs, Nomura Securities, Pension Consulting Alliance, and Jones Lang LaSalle. He has advised high net worth individuals including Marvin Davis and Merv Griffin.

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