How Should Commercial Real Estate Be Priced?

Commercial real estate pricing

needs disciplined and systematic

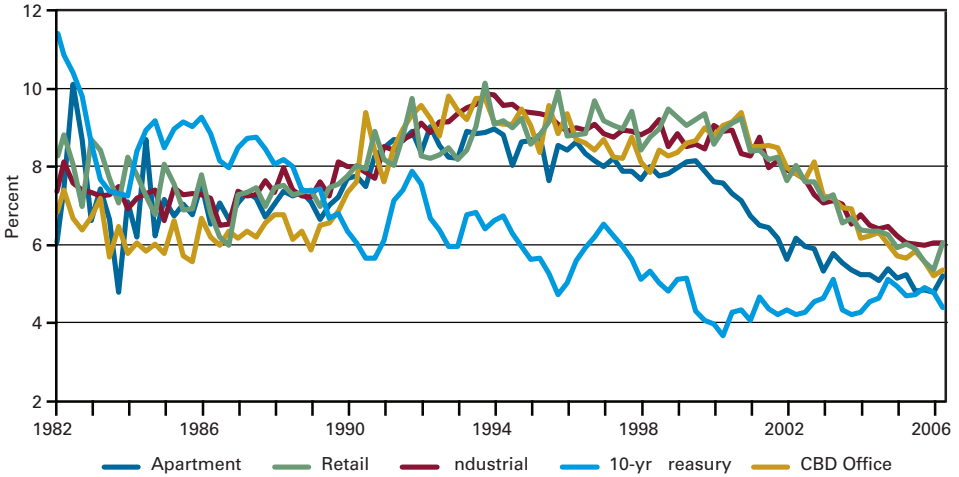*analysis of the data.*

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COMMERCIAL REAL ESTATE pricing is like the weather: everyone talks about it, but few understand it. Most observers base "appropriate" real estate pricing on historical norms. The cap rate—an indicator of value relative to stabilized net operating income (NOI) before capital expenditures, tenant improvement, and leasing commissions—is the most commonly used metric of real estate pricing. But cap rates have been largely unresponsive to alternative rates of return available to investors, with the exception of BBB bonds, throughout

Table I: Cap rate correlations

	10-Year Treasury	Cap Rate Correlation With:* BBB Corp Bond Yield (10-15 yr)	S&P Dividend Yield
Multifamily	0.187	0.771	0.068
Industrial	-0.221	0.748	-0.307
CBD Office	-0.449	0.694	-0.458
Retail	-0.181	0.649	-02.58

* Based on 25 years of data for the 10-yr T & S&P Div Yld; and 14 years for BBB.

Figure 1: NCREIF cap rates vs. 10-year Treasury

most of the past twenty-five years (Table I). Such a relationship defies investment theory, as real estate pricing should change as property risks and the returns of alternative investments change.

Figure 1 displays NCREIF cap rates by property type compared to the ten-year Treasury yield. Because the National Council of Real Estate Investment Fiduciaries (NCREIF) cap rate data is seriously flawed due to appraisal lags, it is presented in Figure 2 with an eighteen-month lag. This data provides an overview of the pricing of institutional quality real estate. Figure 2 reflects these cap rates net of the ten-year Treasury yield. Since cap rate spreads are highly correlated across property types (Table II), we can speak of "cap rates" without reference to property type with little loss of insight. Cap rate spreads were negative in the early to mid-1980s, when purchasing real estate was
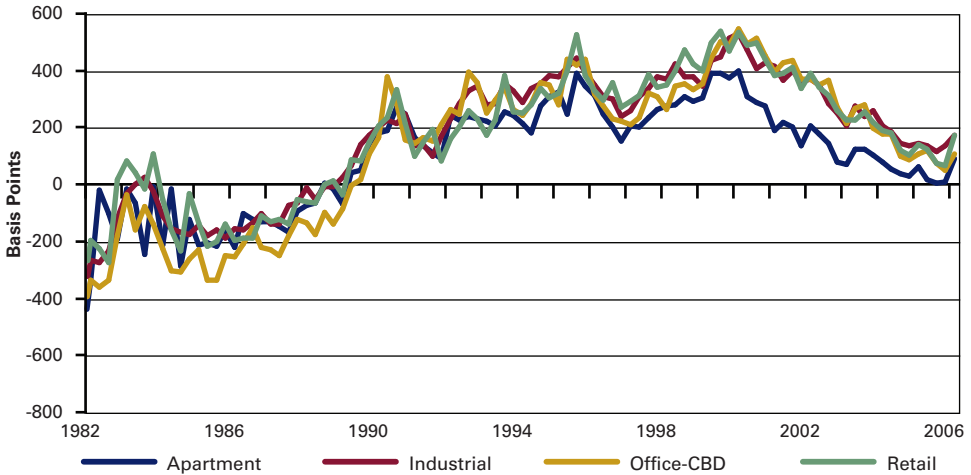
Figure 2: Cap rate spreads over 10-year Treasury

Table II: Correlations of spreads by property type

| | Correlation of Cap Rate Spreads Over Treasury | | |
	Multifamily	Industrial	CBD Office
Industrial	0.937		
CBD Office	0.924		
Retail	0.922	0.969	0.964

more about investing in tax losses than real estate cash streams. When tax laws dramatically changed in 1986, cap rate spreads rose, though they generally remained negative due to the availability of excess leverage through 1990 and projections of strong cash flow growth, in spite of weak fundamentals.

Throughout the first two-thirds of the 1990s, spreads substantially widened as capital abandoned real estate. Spreads further widened in the latter part of the 1990s, as investors scorned cash flow during the tech bubble and treasury rates drifted downward. As the tech bubble burst, cap rates spreads steadily compressed, recently falling to approximately zero. And if NOI cap rate spreads are roughly zero, cash flow cap rate spreads (after reserves for tenant improvements, leasing commissions, and capital expenditures) are well below zero.

This compression of cap rates and cap rate spreads over the past five years has generated enormous wealth for real estate owners. In fact, the combination of cheap debt and cap rate compression covered a multitude of property underwriting errors made during the past five years, as neither cap rate compression nor narrow-

ing debt spreads were part of original pro forma models. This cap rate spread compression offset weak cash flows in a post-recessionary economy from 2002 to 2005, while continued compression, combined with improved cash flows, pushed property values skyward in 2006 through mid-2007.

Cap rate compression reduced the importance of the ability to add value. After all, if all you had to do to make money was to leverage to the hilt while cap rates fell, why take on the extra work and risk of attempting to add value? Stated differently: Why print money if it is laying everywhere on the streets?

In Tables III and IV, we demonstrate the power of cap rate compression via very simple pro forma cash flow analyses that assume Year 1 NOI of $100; a going-in cap rate of 9 percent; an LTV of 70 percent; and an interest rate of 7 percent. Within each figure, we display two scenarios, which vary based on NOI growth assumptions. Scenario I assumes that NOI grows by 3 percent per year, while Scenario II assumes a value-add NOI growth of 20 percent between years two and three.

The only other difference between Tables III and IV is in residual cap rates, which are assumed to be 6 percent and 9 percent, respectively. Based on these assumptions, we calculate the equity IRRs. It is clear that cap rate compression is a significant factor in driving returns. That is, cap rate compression from 9 percent to 6 percent increased IRR on leveraged stabilized properties by 250 percent, to a staggering 57 percent. Who needs to take on value add risk at this return for stabilized assets?

In the early 1980s, money was made in real estate by mastering the creation and syndication of tax gimmicks. In the late 1980s, one made money by mastering bank and S&L connections to over-leverage. In the early 1990s, one made money in real estate by having access to equity—the more the better. During the late 1990s, one made money from real estate by realizing large spreads between cap rates and debt costs. And, over the past five years, the way to make money in real estate was to own real estate on a highly leveraged basis as cap rates plunged.

The classic asset pricing model is the capital asset pricing model (CAPM). CAPM is a simple, yet elegant, model that relates asset pricing to the risk-free rate (F), the ability of an asset to reduce portfolio variance (B), and the expected rate of return on the market bundle of investable assets (M). CAPM is far from perfect, but provides a crude benchmark for asset pricing, around which discrepancies and novelties arise. Specifically, CAPM states that an asset's price is set such that the expected return for an asset (R) is

$$R = F + \beta(M - F).$$

Table III: Pro forma cash flow, 10 percent residual cap rate

	Scenario I with 9% Residual Cap Rate			
NOI Growth Rate	3%			
Going-in Cap Rate	9%			
Implied Purchase Price (Direct Cap Yr 1 NOI)	$1,111			
Loan-to-Value	70%			
Equity Financing	$333			
Debt Financing	$778			
Interest Rate	7%			
Residual Cap Rate	9%			
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**
NOI		$100	$103	$106	$109
Ann Int (Interest Only)		($54)	($54)	($54)	
Debt Repayment				($778)	
Residual Value (Cap next year's NOI)				$1,214	
Net Cash Flow	($333)	$46	$49	$488	
Scenario I Equity IRR	**23%**				

	Scenario II with 9% Residual Cap Rate			
Going-in Cap Rate	9%			
Implied Purchase Price (Direct Cap Yr 1 NOI)	$1,111			
Loan-to-Value	70%			
Equity Financing	$333			
Debt Financing	$778			
Interest Rate	7%			
Residual Cap Rate	9%			
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**
NOI		$100	$100	$120	$120
Ann Int (Interest Only)		($54)	($54)	($54)	
Debt Repayment				($778)	
Residual Value (Cap next year's NOI)				$1,333	
Net Cash Flow	($333)	$46	$46	$621	
Scenario II Equity IRR	**32%**				

Table IV: Pro forma cash flow, 6 percent residual cap rate

	Scenario I with 6% Residual Cap Rate				
NOI Growth Rate	3%				
Going-in Cap Rate	9%				
Implied Purchase Price (Direct Cap Yr 1 NOI)	$1,111				
Loan-to-Value	70%				
Equity Financing	$333				
Debt Financing	$778				
Interest Rate	7%				
Residual Cap Rate	6%				
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**
NOI		$100	$103	$106	$109
Ann Int (Interest Only)		($54)	($54)	($54)	
Debt Repayment				($778)	
Residual Value (Cap next year's NOI)				$1,821	
Net Cash Flow	($333)	$46	$49	$1,095	
Scenario I Equity IRR	**57%**				

	Scenario II with 6% Residual Cap Rate				
Going-in Cap Rate	9%				
Implied Purchase Price (Direct Cap Yr 1 NOI)	$1,111				
Loan-to-Value	70%				
Equity Financing	$333				
Debt Financing	$778				
Interest Rate	7%				
Residual Cap Rate	6%				
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**
NOI		$100	$100	$120	$120
Ann Int (Interest Only)		($54)	($54)	($54)	
Debt Repayment				($778)	
Residual Value (Cap next year's NOI)				$2,000	
Net Cash Flow	($333)	$46	$46	$1,288	
Scenario II Equity IRR	**65%**				

If beta equals one, it means that the asset's return moves in coincidence with the market return, providing no ability to reduce portfolio expected return volatility. As a result, the expected return for such an asset should gravitate toward the return on the market portfolio.

If beta is greater than one, the asset's return increases more than the market return, and falls more than the market return. Such an asset accentuates the return volatility of a portfolio, as it rises or falls more than the market. In order to accept this increased portfolio volatility, the expected return must exceed the expected return for the market portfolio. Similarly, if beta is less than one, the expected return for the asset should be less than the market rate of return, as the asset is able to reduce portfolio risk. In fact, an asset that is uncorrelated with the market ($\beta = 0$) should price such that it need only generate the risk-free rate of return.

Applying CAPM to real estate provides dramatic insights about the history of real estate pricing, as it says that real estate returns should reflect real estate's beta, the expected market return, and the risk-free rate. Since real estate generates its return through a combination of current cash flow and expected appreciation, we need to measure both at various points in time in order to evaluate actual real estate pricing versus expected pricing indicated by CAPM.

As the proxy of real estate's current cash flow return, we use the dividend yield on REITs, and proxy the expected perpetuity real estate appreciation rate by the three-year moving average of the core inflation rate (excluding food and energy). This highly simplified model suggests that at any moment in time the expected return for holding real estate equals the current REIT dividend rate (which is near 100 percent of cash flow post-reserves) plus the three-year moving average rate of inflation (that is, the long-term cash flow growth equals inflation). At each point in history, we compare the actual dividend yield (grossed up for six months of growth) to the dividend yield implied by CAPM, assuming a beta of 0.5. This tells us how much real estate prices would have had to have risen (or fallen) for this implied real estate return to be equal to the return indicated by CAPM. For example, at year-end 2006, the actual dividend yield (grossed up for six months of growth) was 3.74 percent, while CAPM implied real estate deserved a 4.16 percent dividend yield. This was an indication that the price of real estate was 10 percent too high, as the current return expectation fell short of expectations implied by CAPM.

The blue line in Figure 3 plots the extent of real estate overpricing exercise based on the weighted average dividend yield of all publicly traded equity REITs

Figure 3: Real estate (under) pricing through March 28, 2008

		Long Term Annual Dividend Growth			
		2.0%	**2.5%**	**3.0%**	**3.5%**
BETA	0.3	-66.8%	-100.7%	-152.0%	-238.3%
	0.4	-43.7%	-68.2%	-102.7%	-155.0%
	0.5	-26.2%	-44.7%	-69.5%	-104.7%
	0.6	-12.5%	-27.0%	-45.7%	-70.9%

from 1993 through the first quarter of 2008. Since beta equals 0.5 (in line with historic norms) in this analysis, real estate returns are correlated with market returns, but only half as volatile. As a result, real estate return expectations should be less than the return expectations for the market portfolio. In a simple example, if the risk-free rate is 5 percent, beta is 0.5, and the expected market rate of return is 9 percent, the expected return for real estate lies midway between the risk-free rate and the market rate, at 7 percent. For real estate to generate a 7 percent return expectation in a world of 2.5 percent inflation (hence expected appreciation), real estate cash flow cap rates need to be 4.5 percent. If real estate requires a 25 percent reserve for capital expenditures, leasing commissions, and tenant improvements, it must price at a 6 percent cap rate on stabilized NOI in order to generate a 4.5 percent cash flow return. That is, the implied required cash flow cap rate must be grossed up by the extent of capital reserves to obtain the expected NOI cap rate.

Reviewing the blue line in Figure 3 reveals that in the early 1990s, when capital abandoned real estate during the real estate depression, real estate was massively under-priced. This is consistent with the fact that most knowledgeable real estate players desired to buy real estate during this period, but lacked an essential ingredient: equity. As capital returned to real estate in the form of real estate private equity funds, REITs, and securitized debt, the extent of real estate under-pricing fell. Thus, by early 1998, it was "only" about 20 percent under-priced. But as the tech bubble drove real estate cap rates upward even as treasury yields fell, real estate under-pricing on the order of 60 percent to 80 percent resulted. This under-pricing of real estate was consistent with the under-pricing of most cash flow businesses during the tech bubble, when strong cash flow was shunned in favor of "clicks." Recall that this was a time when Warren Buffett supposedly had lost his touch because he refused to invest in dot-coms, preferring out-of-favor cash flow investments. As the tech bubble burst in 2001,

and cap rate spreads compressed, the under-pricing slowly but steadily evaporated. By mid-2006, pricing had come roughly in line with CAPM expectations for a beta of 0.5.

Subsequent to the euphoria associated with the EOP and Archstone going-private transactions, real estate pricing swung to 15 percent to 20 percent over-priced based upon CAPM. As interest rates rose, loan-to-value (LTV) ratios tightened, and CMBS spreads widened from April 2007 through August, REIT pricing reacted, with prices falling in line with those predicted by CAPM. In fact, as of mid-October, CAPM analysis indicates that REIT pricing was about right. However, as the depth of the credit crisis unfolded, real estate became increasingly out of favor. As of the end of March 2008, CAPM indicates that REITs are 36 percent under-valued.

An alternative approach to pricing real estate is what we call the "it tastes like chicken" (ITLC) approach. Though less elegant than CAPM, this approach states that real estate should price comparable to comparable risk claims. For example, quality apartments should generate the same general return as other high-quality consumer receivables, as apartment ownership is a high-quality consumer receivable, and renters will generally pay rent before they pay their credit card and car debt. Since credit cards and car loans are widely sold on the capital markets, by comparing real estate returns to these consumer receivables, ITLC provides a crude approximation of expected apartment pricing.

Similarly, office properties in world class CBDs are dominated by a diverse set of corporate tenants (including banks, insurance companies, corporations, law firms, etc.). ITLC implies that these properties should generate a return roughly commensurate with the long-term debt claims on these tenants. This is because stabilized office properties in these markets are perpetuity lease claims on this tenant base, and tenants will honor these lease claims about the same as their debt claims. The debt claims on corporate tenants, which are widely sold in the capital markets, provide an approximation of the return one deserves for such office properties.

The credit quality of the office tenants affects the expected real estate return, just as debtor quality affects the expected pricing of their debt. For example, ITLC suggests that for quality office properties located near the White House, which will always be occupied by the U.S. government and high-quality tenants who need to be near the government, real estate returns should be roughly comparable to AAA to AA debt. For midtown Manhattan office buildings, with their diverse portfolio of high-

grade corporate tenants, pricing should be roughly commensurate with high-grade corporate debt (A- to BBB+). For lesser tenant quality properties and markets, the pricing should be higher reflective of the lower credit quality of tenants (BBB to B+).

An adjustment should be made reflective of the differential liquidity of real estate versus debt claims. Although not as liquid as debt claims (i.e., bonds), as real estate investments have become more liquid via REITs, deeper markets, greater transparency, and more diversified investor holdings, real estate pricing should have improved.

Some object to ITLC, noting that unlike a portfolio of bonds, real estate ownership provides a real asset (the property) at the end of the lease. But at the end of the lease, this ownership simply means that the owner refills the property with new tenants, effectively repeating this exercise into perpetuity. If the prospective tenant pool is dominated by tenants of roughly comparable credit as that of existing tenants, the ownership of the property is effectively a perpetuity lease claim of comparable risk to the perpetuity debt claims on tenants.

If the property is of insufficient quality to merit leasing to comparable tenant quality upon lease expiration, stabilization pricing analysis is inappropriate. For example, if the market is comprised of low-qual-ity tenants, while the current tenant is a high-quality credit who is only on the lease for a few years, the pricing of the property must reflect a blended credit quality. Thus, the ITLC approach to real estate pricing is most easily applied to buildings with tenants who are representative of the market's tenant pool.

The beauty of ITLC is that it allows the use of the tenant, building, and market quality to assess the relevant credit against which expected real estate returns are evaluated. This expected total return is composed of the current cash flow and expected appreciation.

If the debt claims of the tenants dominating the typical commercial market are BBB, and BBB debt yields 7 percent, and the expected real estate cash flow appreciation rate is approximately the 2.5 percent economy-wide inflation rate, then the expected cash flow cap rate for the properties in that market is approximately 4.5 percent. That is, a 4.5 percent current cash flow plus a 2.5 percent expected appreciation return, yields a 7 percent total expected return for real estate, roughly equal to the 7 percent yield on the BBB debt. If reserves for TIs, capital expenditures, and leasing commissions are approximately 25 percent of NOI, a 6 percent NOI cap rate is appropriate for a BBB tenant pool property, as a 6 percent NOI cap rate yields a 4.5 percent cash flow cap rate.

The red line in Figure 3 applies ITLC to real estate pricing, where BBB debt is used as the relevant tenant pool. The extent of overpricing is derived in the same manner as was described for CAPM. ITLC reveals the same basic pricing history, though the extent of under-pricing during the tech bubble is somewhat less than indicated by CAPM, with substantial under-pricing lasting somewhat longer into the 2000s based upon ITLC.

The Gordon model for valuing a perpetuity cash flow yields a simple, yet powerful, solution for expected cash flow cap rates. This model states that the cap rate is the difference between the property's discount rate and perpetuity cash flow growth rate. So if the discount rate reflective of the risk of the property is approximately 8 percent, and the perpetuity growth rate of its cash streams is approximately 2.5 percent (general inflation), then the cash flow cap rate should be approximately 5.5 percent. If reserves are 25 percent of cash flows, the theoretically expected NOI cap rate is 7.3 percent.

The Gordon model, like CAPM and ITLC, highlights the fact that the cap rate should vary with returns on alternative investments, as the discount rate reflects the risk-free rate plus the risk premium associated with real estate, plus the illiquidity premium. The risk-free rate is proxied by ten-year Treasury, while the additional premium for alternative assets is reflected by risk spreads that the capital market assigns to alternative investments with similar risk characteristics. The risk-free rate rises and falls with inflation, while the risk spread required on alternative assets will vary as investor risk perceptions change. Liquidity premiums vary as capital markets evolve and deepen.

These alternative approaches underscore that real estate returns should vary as alternative investments opportunities change over time, as well as inflation, growth, risk, and liquidity change.

Armed with these general models of pricing, we demonstrate how different types of office properties should price using ITLC, based upon the risk-free rate, the nature of the tenant pool, building quality, the operated cash flow growth rates, reserve gap between NOI and cash flow, and illiquidity.

Table V summarizes our analysis for office buildings in four distinct quality markets. In each case, we focus on a property that is of typical quality for that market category, with typical reserves and typical long-term expected growth rate for each market. The markets differ in terms of the reserve gap between NOI and cash flow, due to the variable expenses associated with tenant releasing costs. We utilize proprietary data on the history of properties in a variety of markets to estimate these gaps. Markets also vary in terms of their long-term cash flow growth rates, and liquidity.

Table V: Real estate pricing expectation model

Real Estate Pricing Expectation Model				
	Strong	**Good**	**Typical**	**Weak**
10-Year Treasury	4.70%	4.70%	4.70%	4.70%
Tenant credit premium	1.75%	2.00%	2.00%	2.25%
Liquidity premium	0.25%	0.50%	0.50%	1.00%
Expected total return (IRR)	6.70%	7.20%	7.20%	7.95%
Less expected appreciation	-3.00%	-2.75%	-2.50%	-2.50%
Expected cash flow cap rate	3.70%	4.45%	4.70%	5.45%
Cash flow as percent of NOI	81%	76%	70%	62%
Implied NOI cap rate	4.57%	5.86%	6.71%	8.79%
Capital adjustment for 10-year hold*	0.12%	0.29%	0.52%	0.88%

*This is to suggest that after 10 years, one should apply a higher residual cap rate because the next buyer will incur greater capital costs on the then-older building.

The strongest markets, which include midtown New York, Washington, D.C., and the San Francisco CBD, have approximately a 19 percent gap between NOI and cash flow. At the other extreme, poor markets have a 38 percent reserve gap. This is reflective of greater tenant improvement costs, leasing commissions and capital expenditures relative to market rents in poor markets. Adjustments are also made to reflect that cash flow will decline as a property's capital expenditures rises over time, resulting in a higher NOI cap rate upon exit. That is, a building that is new today will not trade at the cap rate of a new building ten years from now, but rather the NOI cap rate for a ten-year-old building, which is slightly higher since the ten-year-old building has less cash flow for a given NOI due to higher capital expenditure requirements.

We begin this pricing analysis with the risk-free rate, which is 4.7 percent (reflective of the ten-year Treasury rate at the time of writing). We add to this return a risk premium reflective of the pool of local tenants. Since BBB credit historically trades at roughly 200 basis points over treasury, the risk premium for most markets is 200 basis points. The third line in Table V reflects the fact that liquidity is greater in stronger/deeper markets. This premium ranges from 25 to 100 basis points across markets.

Adding these three components generates the total expected return that investors should require for stabilized properties in these markets, which range from 6.7 percent to 7.95 percent. Note that these

expected returns will change as treasury rates, tenant credit premiums, and liquidity change. The expected appreciation for most markets is 2.5 percent (the expected rate of inflation). However, supply constrained markets will have somewhat higher growth rates since supply will generally lag demand. Thus, if a 6.7 percent total return is required in a strong market, and 3 percent derives from appreciation, the expected cash flow cap rate is 3.7 percent. For weak markets, a cash flow cap rate of 5.45 percent is required to achieve the expected 7.95 percent return.

Adjusting these cash flow cap rates upward to get to the NOI cap rate implied by typical market TIs, leasing commissions and capital expenditures, generates the implied NOI cap rate. In the case of strong markets, this is approximately 4.57 percent, while in the case of weak markets it is 8.79 percent. Note that because of the greater deduction associated with reserves in weak markets relative to strong markets, the gap between NOI cap rates notably exceeds that of cash flow cap rates. That is, high NOI cap rates do not necessarily generate higher cash flow returns.

The next line indicates that as the property ages ten years, the NOI cap rate should rise, reflective of the fact that there is higher capital expenditure required for older buildings. Based on proprietary information, we estimate that this component amounts to 12 to 88 basis points, depending upon market category. Not surprisingly, this adjustment is greatest in weak markets, as relative fixed capital expenditures amount to a greater proportion of low rents. Hence, if one enters at a strong market 4.5 percent cap rate, the expectation is that they will leave at approximately a 4.67 percent cap rate a decade later. For a property in a weak market, the ten-year change is from 8.79 percent to 9.67 percent. Conducting similar analysis of earlier times is consistent with the patterns indicated by CAPM and ITLC. Specifically, we have gone from a period of massive under-pricing of the real estate to a period of modest overpricing of real estate.

A disciplined and consistent approach to pricing real estate exists, which prices on the basis of market alternatives, property and tenant profiles, liquidity, and cash flow growth expectations. This analysis provides a beginning step to a more systematic and disciplined analysis of real estate pricing than has historically been the case.