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Eight Rules

for Competing in Hotel Real Estate Markets

By John B. Corgel, Ph.D.

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EIGHT RULES FOR COMPETING
IN HOTEL REAL ESTATE MARKETS

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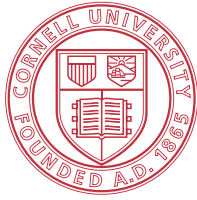Glenn Withiam, Director of Publications

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DATA REGARDING HOTEL MARKETS' BEHAVIOR now exist through more than one complete market cycle, as well as through the wide variety of environmental conditions of the past 15 years. Those conditions include two general economic recessions, two wars, an unprecedented set of catastrophic events, and many local situations that affected travel and hotel-market activity. The knowledge gained from studying hotel markets, however, lies scattered in bits and pieces across the landscape of the professional and academic literature. This report consolidates the lessons of hotel markets in the past two decades. Specifically, the report covers developments in our understanding of hotel space markets, equilibrium in hotel markets, cyclical patterns, leads and lags, overbuilding, hotel capitalization rates, the behavior of transacting parties, and debt-financing alternatives. Here are eight "rules of the road" for negotiating the obstacles to profits and returns that hotel markets present.

The "rules" are as follows: **(1)** The "tale of two cities" rule explains that changes in rate and occupancy do not automatically translate into changes in property values. Thus, property operators are not exclusively responsible for changes in valuation. **(2)** One has to keep the benchmarks handy (including such measurements as market equilibrium). **(3)** The cyclical nature of hotel occupancy and rates is well recognized and can aid in predicting performance. **(4)** Various time lags affect hotel market cycles. The effects of economic changes on rooms demand

About the Author

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can show up in a matter of weeks, for example, but it appears that development plans lag changes in demand by as little as one year for limited-demand properties and as much as two years or more for full-service properties. (**5**) Except for the government-induced overbuilding of the 1980s, the hotel industry's development pattern has largely been self-correcting. When demand weakened in 2001, for instance, the supply overhang was not excessive. (**6**) Hotel capitalization rates can be subject to large swings (as much as 8 to 12 percent), but cap rates are on balance countercyclical. They are more subject to interest-rate movements than other forms of real estate, and they eventually revert to historic averages. (**7**) Notwithstanding

any of the other rules, and regardless of what financial markets might show, buyers and sellers can mess things up by behaving in idiosyncratic fashion and will tend to overprice or underprice assets according to their own perceptions. (**8**) Although hotel investors seem to prefer to lock in fixed-rate financing, floating interest rates seem better matched to the hotel industry's operating-revenue characteristics.

Given the accumulated information about hotel-market cycles, it seems likely that the industry will not repeat its overbuilding mistake in this or future cycles. In the near future, however, we will be able to observe the nature of a cyclical peak in many markets.

Eight Rules

for Competing in

HOTEL REAL ESTATE MARKETS

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A SIZEABLE LITERATURE that focuses on questions about how hotel markets operate has emerged during the past decade. The findings from these studies offer help and guidance to managers and investors in avoiding mistakes in hotel operations, acquisition, and development.

The knowledge gained from studying hotel-market performance, however, exists as bits and pieces scattered across the landscape of the professional and academic publications. This report represents an attempt to consolidate this knowledge in a single location by offering my interpretation of the implications of the many studies (rather than produce a traditional literature review). In addition to discussing what

has been learned about hotel-market behavior, I also speculate on the lessons of the next ten years. In this report I propose eight "rules of the road" for negotiating the obstacles to profits and returns presented by hotel markets.

The industry's efforts to meet hotel market-research challenges have been aided by several industry firms. Smith Travel Research (STR), for example, began assembling comprehensive

hotel industry statistics for the entire U.S. in 1987. Because of the cooperation that many hotel companies give STR, managers with various interests in hotel markets have access to demand, supply, average daily rate (ADR), and occupancy data covering virtually every local hotel market in the nation. Perhaps more important, these data, together with hotel transaction databases and detailed construction information about current and planned activity developed by such firms as HVS International, Lodging Econometrics, PKF Hospitality Research, and STR/Dodge, reveal hotel markets' behavior. These data record the industry's performance through more than one complete market cycle, as well as through the following environmental conditions of the past 15 years:

(1) Two economic recessions,

(2) Two wars,

(3) An unprecedented set of catastrophic events, and

(4) Many localized occurrences that affected travel and hotel-market activity.

Improvements in the market data over the past two decades are equally impressive for other property types, such as office and retail. These improvements contribute to the general understanding of real-estate market behavior. Hence, the views presented in this paper come from my reading and thinking about both hotel markets and markets for other property types.[1] Specifically, this report covers developments in our understanding of hotel space markets, equilibrium in hotel markets, cyclical patterns, leads and lags, overbuilding, hotel capitalization rates, the behavior of transacting parties, and debt-financing alternatives. I conclude by offering views concerning what may be learned about hotel markets in the near future as this market moves to a new peak.

[1] This article represents a compilation of ideas and analysis presented in my previously published articles and working papers (as well as the work of others). Citations for all sources appear in the footnotes. Some paragraphs that appear in this report are drawn from my earlier works.

Rule #1: RevPARs and Property Values Are a "Tale of Two Cities"

Modern approaches to property-market analysis proceed with the recognition that the market for nonsecuritized real estate involves two distinct, albeit interrelated markets—the market in which real estate is used for production of periodic income (i.e., the space market) and the market for capital assets (i.e., the asset or capital market). This distinction occurs because property owners typically are not the users of the space—a condition that is particularly evident in hotel markets. Nevertheless, the space and asset markets have two permanent bonds.[2] First, rent levels and room rates determined in the space markets substantially affect asset-market demand. Second, supply additions from con-

> *We now have hotel market data that cover a full cycle—including recession, war, and catastrophe.*

struction in the asset markets not only drive down the prices of the assets, but also reduce rents and room rates as availabilities are added to the space market.

During the past two decades property investors witnessed space- and asset-market fluctuations triggered by actions that occurred in both markets. The demand-based recessions of the early 1980s produced sizeable rent and property-price swings. The real estate implosion of the early 1990s resulted from a combination of excessive supply growth originating in the asset market followed by an economic recession that was accelerated by war—all of which stressed the space market. The economic conditions experienced in 2001 and 2002 resemble those of the early 1980s, with the added dimension of catastrophic events and war.

[2] D. DiPasquale and W. Wheaton, "The Cost of Capital, Tax Reform, and the Future of Rental Housing," *Journal of Urban Economics*, Vol. 31, No. 3 (1992), pp. 337-359.

The academic and professional literature provides limited guidance for answering empirical questions about how events in one of these markets affect performance in the other, such as the extent to which revenue swings (e.g., those experienced in the hotel sector during the second half of 2001) translate into property-value adjustments. O'Neill and Lloyd-Jones estimated a 5- to 10-percent loss in value following the 20-percent fall in hotel revenues during the recession and catastrophic events of 2001 and 2002 (including 9/11, SARS, and war).[3] This result conforms to the findings of Corcoran, who concludes that property-value losses during an economic downturn should not mirror revenue losses, because the discounted value of

> *Hotel operators cannot assume that all of the RevPAR and NOI gains which they help create will translate directly into property value increases.*

net rent lost during a short recession is small relative to the discounted value of net rent during the economic life of the property.

A downturn also may elevate capitalization rates. Economists at PKF Hospitality Research and Torto Wheaton Research (TWR) performed a series of experiments using a proprietary hotel-capitalization model to judge the capital market's response to the events of 2001 and 2002.[5] With respect to the magnitude of

response of capitalization rates in the hotel-asset market to changes in the space market, a 1-percent change in occupancy resulted in approximately a five-basis-point change in hotel capitalization rates. The same analysis found that a 1-percent change in ADR produced only about a one-basis-point change in hotel capitalization rates. These studies suggest that the effects of the substantial revenue declines in 2001 and 2002 equate to an increase of more than 100 basis points in capitalization rates. An increase in capitalization rates of this magnitude translates into approximately a 10-percent decline in values. Thus, the immediate reduction in value through both the numerator and denominator from the combination of recession and catastrophic events was approximately 10 to 15 percent. Evidence presented later in this paper supports the conclusion that this reduction was temporary, as hotel values began to recover late in 2002.

In summary, hotel operators cannot automatically assume that all of the RevPAR and NOI gains which they help create translate directly into property value increases (nor do losses automatically mean value declines). By the same token, owners cannot blame or credit operators for property-value movements. Important economic factors are common to both markets, but we now know that some forces affecting hotel property values have little relationship to short-run NOI.

Rule #2: Have Benchmarking Tools Handy

The implications one draws regarding unanticipated changes to space- and asset-market stability come from comparative analyses of the prevailing conditions prior to and following such changes. These analyses therefore depend on the availability of reliable market benchmarks, particularly long-run equilibrium conditions. While several parties have attempted to quantify equilibrium conditions in real estate markets during the past two decades, additional work is needed to develop practical equilibrium benchmarks. The asset market operates in equilibrium

[3] J.W. O'Neill and A. R. Lloyd-Jones, "Hotel Values in the Aftermath of September 11, 2001," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 42, No. 6 (December 2001), pp. 10-21; and J.W. O'Neill and A. R. Lloyd-Jones, "Hotel Values and Strategic Implications," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 43, No. 6 (December 2002), pp. 53-64.

[4] P.J. Corcoran, "Firming Property Prices and Weak Cash Flows," *Journal of Portfolio Management*, Special Issue 2003, pp. 35-44.

[5] For a similar analysis, see: P. Sivitanides, J. Southard, R.G. Torto, and W.C. Wheaton, "The Determinants of Appraisal-Based Capitalization Rates," *Real Estate Finance*, Vol. 18 (2001), pp. 27-37.

when existing asset values equal replacement costs. As Hendershott shows, however, values in the asset market will equal replacement costs only when space-market equilibrium conditions are satisfied.[6]

Space markets rarely achieve full occupancy. Therefore, they operate somewhat like labor markets in that the long-run equilibrium (natural) vacancy rate behaves similarly to the natural rate of unemployment. This assumption, supported by several decades of observation, suggests that the adjustment of rents and ADRs to equilibrium levels can be explained by the difference between the natural vacancy rate, V_N, and the actual vacancy rate, V_A, and the rate of property-expense inflation. Rosen and Smith were first to estimate V_N beginning with the following functional form:[7]

$$\Delta R = f (\Delta EXP, V_N - V_A), \qquad (1)$$

where ΔR is the percentage change in rents or ADRs and ΔEXP is the property-expense-inflation rate. The equation says that the change in rents, ΔR, is explained by inflation and the extent of disequilibrium in the space market.[8]

A number of studies use data from non-residential property markets to confirm the validity of the procedure presented in Equation 1. These studies also show that natural vacancy rates differ across geographic areas and property markets and that those differences are related to expected changes in the local demand for space. For hotel markets, deRoos shows how the natural-occupancy-rate concept can be applied to quantify excess demand and, consequently, identify supply–demand gaps that signal future hotel-property development.[9] He found that all but one of the largest 24 MSAs in 1998 had a long-run need for additional supply.

Equilibrium Rent and ADR

Critiques of the natural-vacancy-rate approach focus on its estimation in isolation from long-run equilibrium rent. Direct estimation of equilibrium rent is difficult, however, requiring the simultaneous estimation of several equations. In the absence of direct estimates, Henderschott's conceptualization of equilibrium rent in a particular period provides a useful microeconomic foundation:[10]

$$g^* (1 - V_N) = rr + d + exp, \qquad (2)$$

where g^* is the equilibrium real gross rent per dollar of the real replacement cost of occupied space, rr represents financing costs expressed as a real rate of return, d is the rate of economic depreciation, and exp is the ratio of operating expense to asset replacement cost. The concept of equilibrium ADR operates in the same way as that of equilibrium rent. Beyond the approaches used by analysts to back into the ADR that justifies construction, though, no research has appeared that formally estimates an equilibrium equation.[11]

Tobin's q and the Asset Market

The ratio of property value to replacement costs represents the key equilibrium concept in the asset market. This measure, known as Tobin's q, and its interpretations originate from Tobin's theory of fixed-capital investment.[12] Tobin pro-

[6] P.H. Henderschott, "Valuing Properties when Comparable Sales Do Not Exist and the Market Is in Disequilibrium," *Journal of Property Research*, Vol. 13 (1996), pp. 57-66.

[7] K. Rosen and L. Smith, "The Price Adjustment Process for Rental Housing and the Natural Vacancy Rate," *American Economic Review*, Vol. 73, No. 1 (1983), pp. 779-786.

[8] The following regression equation then may be written: $\Delta R = b_0 + b_1 \Delta EXP + b_2 (V_N - V_A) + e$. If by assumption the unobservable natural vacancy rate does not vary greatly over time, then V_N and its coefficient b_2 are constant, and therefore become embedded in the intercept term, b_0. Because in theory expense changes and the degree of disequilibrium in the space market (i.e., $V_N - V_A$) are the only variables contributing to rental adjustment, the intercept term should not contain information about omitted variables. The intercept term contains only $b_2 V_N$. The final estimating form of the regression equation now becomes: $R = b_0 + b_1 \Delta EXP + b_2 V_A + e$. Given that $b_0 = b2 V_N$, then $V_N = b_0 / b_2$.

[9] J.A. deRoos, "Natural Occupancy Rates and Development Gaps," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 40, No. 2 (April 1999), pp. 14-22.

[10] Henderschott, *op.cit.*

[11] Practitioners back into estimates of the ADR that justify construction using algorithm called the Hubbart formula.

[12] J. Tobin, "A General Equilibrium Approach to Monetary Theory," *Journal of Money Credit and Banking*, Vol. 1 (November 1969), pp. 15–27.

posed that firms will freely alter their stock of investments until q reaches unity. Extending this concept to the case of real-estate markets, when q > 1 in the asset market, property development occurs until q reaches 1.

The relationship between hotel property values and replacement costs received widespread attention in the popular press during the 1990s as the q-ratio dipped below 0.5 and then recovered to 1.0 and above. Analysts con-

> ### *Cyclical patterns in the hotel market emanate from business-cycle patterns, albeit with lags.*

tinue to watch the behavior of the hotel q-ratio in an effort to judge the level of future supply growth and acquisition opportunities. In a 1997 analysis, I presented adaptations of the q-ratio to real estate and proposed cautionary notes to users about problems of interpretation and measurement of q-ratio components.[13] These are:

(1) Proper specification of the real estate market q-ratio requires careful estimation of a market value or a price index in the numerator.

(2) In the denominator, replacement cost should be indexed and economic-depreciation adjustments introduced when the q-ratio is used to analyze market conditions for existing property transactions.

Equilibrium in Securitized Real Estate Markets

The equilibrium principle analogous to the q-ratio in the securitized real estate market is the relationship between share price (SP) and net asset value (NAV), defined as follows:

NAV = (Market Value of All Properties + Other Assets – Total Liabilities) / Number of Shares Outstanding.   (3)

Thus, the percentage premium or discount (PD) to NAV is:

$$PD = (SP - NAV) / NAV. \qquad (4)$$

The general equilibrium conditions in the space and asset markets are conceptually and graphically linked in work by Fisher, Hudson-Wilson, and Wurtzebach.[14] Exhibit 1 extends their presentation of equilibrium conditions in the space and asset markets (i.e., first two sets of graphs, on the left) to include the real estate securities market for the purpose of establishing the general equilibrium conditions that tie the three real estate markets together.

The third set of graphs, on the right, presents short-run and long-run equilibrium conditions in the real estate securities market. This market reaches long-run equilibrium when the market capitalization of a firm, scaled by the number of units owned, P, equals the equity value of the firm's assets (i.e., NAV times the number of shares outstanding), scaled by the number of units owned by the firm (N). The NAV literature continues to grow each year and most REIT analysts, including those who follow the 16 lodging REITs, rely on NAV premiums and discount information to evaluate arbitrage opportunities.

Rule #3: The Cycle Guides Your Forecasts

The existence of hotel market cycles is a well-recognized phenomenon.[15] Smooth and regular fluctuations around an equilibrium level occur for two reasons. First, a strong correlation exists between hotel demand and mea-

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[13] See: J.B. Corgel, "Real Estate q," Real Estate Research Institute Working Paper, 1997.

[14] J.D. Fisher, S. Hudson-Wilson, and C.H. Wurtzebach, "Equilibrium in Commercial Real Estate Markets—Linking Space and Capital Market," *Journal of Portfolio Management*, Vol. 19 (Summer 1993), pp. 101–107

[15] For a recent literature review of the real-estate-cycle literature, see: G.R. Mueller, "What Will the Next Real Estate Cycle Look Like?," *Journal of Real Estate Portfolio Management*, Vol. 8, No. 2 (2002), pp. 115-125; the seminal work on hotel market cycles is: W. Wheaton and L. Rossoff, "The Cyclic Behavior of the U.S. Lodging Industry," *Real Estate Economics*, Vol. 26, No. 1 (1998), pp. 67-82.

EXHIBIT 1

THREE REAL ESTATE MARKETS IN EQUILIBRIUM
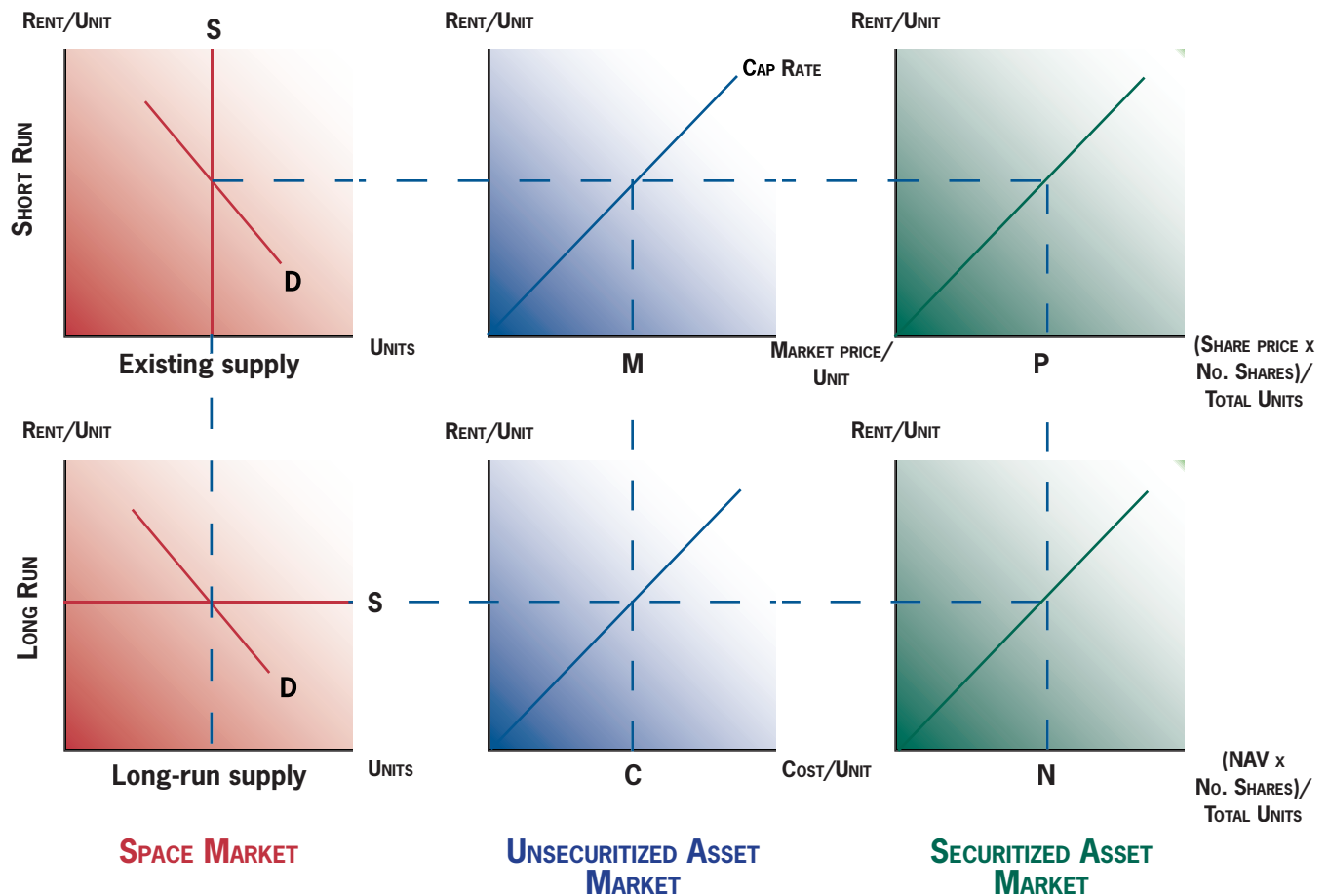
Note: This exhibit shows the economic relationships among the following three real estate markets: the space market (rental), the unsecuritized asset market (property), and the securitized asset market (REITs or property shares). The graphs allow static comparisons to trace the way a shock experienced in one market affects prices in the other two, including changes in long-run supply. Developed by the author for: "Three Markets in Equilibrium," *Real Estate Finance*, Vol. 15 (Spring 1998), pp. 23-31.

sures of national and local economic activity (e.g., real personal income and employment). Consequently, with respect to demand-side influences, cyclical patterns in hotel market-performance measures emanate from business-cycle patterns. Moreover, supply changes logically follow shifts in demand, albeit with long delivery lags. If the business cycle is smooth and construction predictably responds, then the hotel market cycle will follow a correspondingly smooth path over time.[16]

[16] Torto and Wheaton question the existence of a hotel market cycle during which supply responds predictably to demand changes originating in the business cycle. They argue that the pattern of hotel construction observed during recent decades suggests that this cycle is instead endogenous (i.e., supply has a "mind of its own"). See: R.G. Torto and W.C. Wheaton, *Real Estate Cycles and Outlook 2002* (Boston: Torto Wheaton Research, 2002).
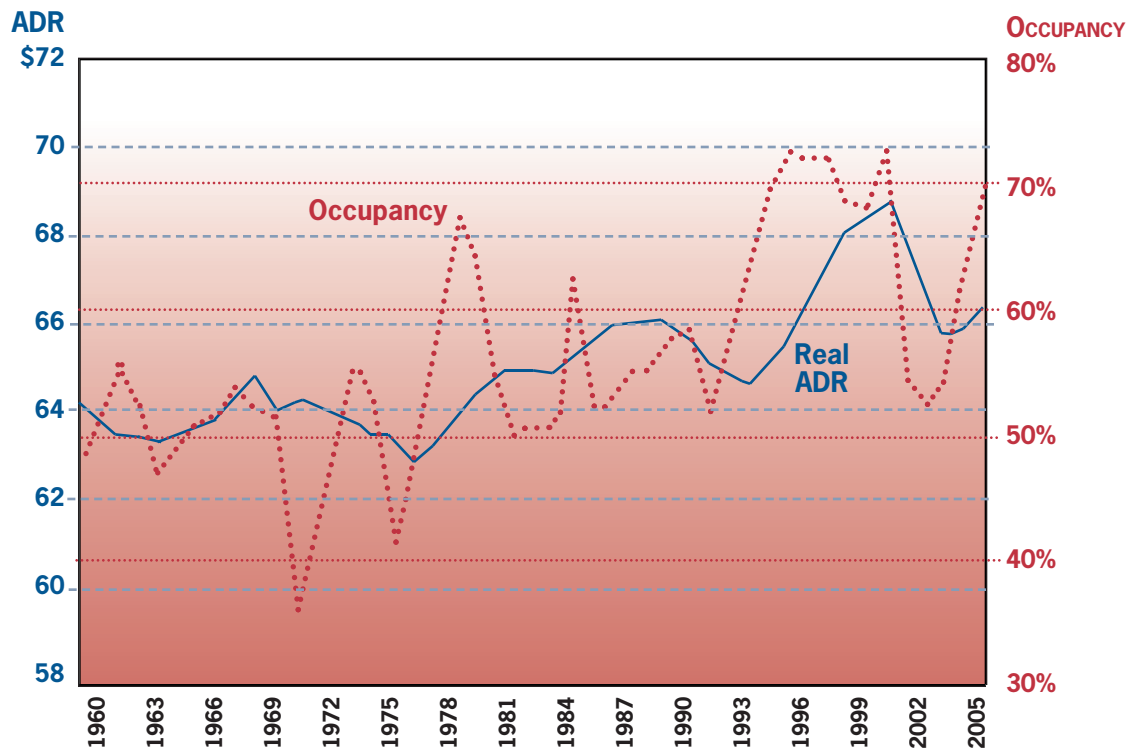
Note: Source is PKF Consulting. Annual ADRs are adjusted for inflation. Figures for 2005 are estimates. The cycles shown are influenced by macroeconomic activity and changes in real estate market conditions.

Abnormally wide swings in hotel-market performance that werer observed during recent decades occurred because of shocks to the economy and to hotel markets. These events affected the supply of hotel rooms, the demand for hotel room-nights, or both. Government tax policy in the early 1980s, for instance, artificially inflated the hotel supply. With occupancy already below normal levels in the late 1980s, the recession and Gulf War in the early 1990s stymied the market's recovery. Similarly, the combined effects of the demand-based general economic recession that began in 2001, the terrorist attacks in September 2001 (which squelched the demand for air travel), and the Iraqi war produced steep declines in hotel occupancy and ADR during 2001 and 2002.

Exhibit 2 shows the cyclical patterns of occupancy and real ADR for U.S. hotels during the past few decades. The following observations come from an examination of these trends:

(1) Occupancy has a definite cyclical pattern. This pattern appeared to smooth out during the 1980s and then became more volatile since the mid-1990s despite lower information costs.[17]

(2) The pattern of real ADR also appears cyclical, albeit with an upward trend.

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[17] Smith Travel Research began its regular reporting of hotel data in 1988. The availability of these data enabled hotel managers to begin making better decisions about room pricing in response to changing demand.

EXHIBIT 3

HOTEL MARKET CYCLES
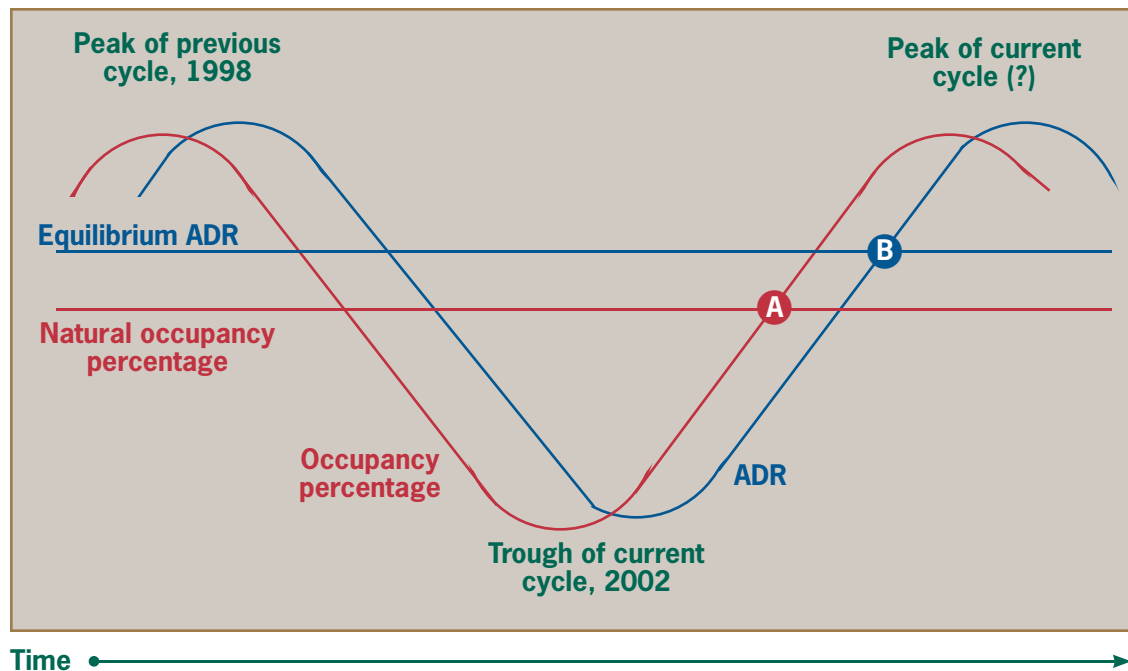
Note: The pattern presented in this exhibit closely resembles the pattern of historical data in Exhibit 2. Point A on the graph indicates when market occupancy equals natural occupancy. At this point, hotel managers become more aggressive in raising room rates. Point B indicates when market ADR equals equilibrium ADR and construction becomes feasible. Developed by the author for: "Three Markets in Equilibrium," *Real Estate Finance*, Vol. 15 (Spring 1998), pp. 23-31.

(3) During certain periods (e.g., 1972–1974 and 1985–1987), occupancy and real ADR moved in opposite directions. These atypical and anomalous movements are likely the result of the federal government's monetary or tax policies during those times.[18]

(4) Since the early 1990s and at certain periods prior to 1990, occupancy leads ADR in both upward and downward directions.

[18] For a discussion of real estate cycle effects from policies in the early 1970s, see: J.L. King and T.E. McCue, "Office Building Investment and the Macroeconomy: Empirical Evidence 1973-85," *AREUEA Journal*, Vol. 15, No. 3 (1987), pp. 234-255. The disruptive effects of federal policies from the early 1980s on real estate markets are documented in: P.H. Hendershott and E. Kane, "Causes and Consequences of the 1980s' Commercial Construction Boom," *Journal of Applied Corporate Finance*, Vol. 5 (1992), pp. 61-70.

(5) The post-2002 recovery occurred more quickly than many analysts expected.

Market Performance through the Cycle

The economics of hotel markets suggest that occupancy represents the current relationship between demand and supply. Occupancy reaches levels above normal (that is, above natural occupancy) when demand exceeds supply (or sinks below normal when demand is less than supply). During periods of abnormally high occupancy, ADR increases, causing occupancy to fall (and during abnormally low occupancy, ADR decreases, leading to rising occupancy). The economics of hotel markets also suggest that ADR represents the current relationship

EXHIBIT 4

SUMMARY OF HOTEL MARKET PROCESSES

Market Condition	Demand Response	Occupancy	ADR	Supply
Upward movement toward peak	Normal rate of increase	Immediately increases with demand	Increases lag occupancy, accelerate as occupancy approaches natural level	Construction begins as ADR approaches feasibility level
Downward movement from peak	Normal decline	Decrease occurs immediately	Decrease occurs with a definite lag	Construction slowly halts
Severe demand-based recession	Rapid decline	Immediate and rapid decline	Decrease with short lag	Construction stops abruptly
War or catastrophic event	Rapid decline	Immediate and rapid decline	May be frozen until duration is determined	Construction delayed until duration is determined

Developed by the author for: "How to Determine the Future Direction of Hotel Capitalization Rates," *Real Estate Issues*, Vol. 28 (Winter 2003), pp. 44–48.

between demand and supply. Accordingly, ADR reaches levels above normal (that is, equilibrium ADR) when demand exceeds supply. (The reverse is true when supply exceeds demand; ADR falls below equilibrium.) Once ADR reaches and then exceeds the equilibrium level, development becomes feasible. In time, ADR and occupancy begin to stabilize as hotel construction satisfies the excess demand that drove occupancy above the natural level and ADR above the equilibrium level. As more rooms are added to the stock, occupancy and ADR fall.

Exhibit 3 (on the previous page) presents a graphical representation of the hotel-market cycle. The graph incorporates the following key assumptions. First, hotel markets generally operate in the fashion that I just explained. Second, an inherent delay (i.e., delivery lag) exists between the time when a shift in demand is realized and the time development planning and construction can be completed to meet that demand. Because of this lag and the fact that developers do not act simultaneously, supply growth continues after the change in demand is satisfied. Finally, the hotel-market cycle involves an observable, yet empirically unspecified, lag between occupancy changes and the resulting ADR adjustment. As markets move from the peak of the cycle to the trough,

as occurred between 1998 and 2002, softness in demand forces hotel managers to reduce room rates in an effort to maintain occupancy.[19] The reduced rates are intended to retard the decline in occupancy during periods when demand drops. The opposite of this process occurs as markets move from the cycle's trough to its peak. An increase in the demand for hotel rooms causes immediate improvements in occupancy. The upward trend in occupancy moderates as hotel managers raise room rates, which begins to occur as occupancy approaches the natural level of the market.

Exhibit 4 provides a summary of how markets "should" behave through an ordinary cycle and in response to external events.

Rule #4: Things Don't Happen All at Once

Because market relationships seldom involve instantaneous adjustments, leads and lags among the variables that determine performance become important considerations for understanding how markets behave. Timing shapes hotel markets in several ways. These are identified in the following five questions and answers:

(1) How long does it take for hotel room demand to respond to changes in key economic variables, such as personal income, GDP, and employment?

Given that a hotel stay is effectively a luxury good, one would expect hotel expenditures to be among the first to be cut from household and business budgets during periods of economic distress and among the last expenditures to be restored during recovery. Hence, hotels are generally considered to lead in recession and lag in recovery. Conventional wisdom says that the response time to recession or recovery is two calendar quarters. Hotel demand, therefore, should be sensitive to income—with estimates of income elasticity equaling 1.2 and above.[20] However, recent elasticity estimates of less than 1.0 by Canina and Carvell using property-level data cast doubt on conventional wisdom.[21] With respect to lags, TWR conducted an analysis of STR data from 1988 through 2002 using the demand equation from a hotel-market econometric model. This analysis suggests that, although complete adjustment takes two quarters, 65 to 70 percent of the adjustment occurs in the initial quarter. This means that much of the effect from changes in the economy on rooms sold happens within a few weeks.

(2) How long does it take for space-market-to-property-market adjustments to occur?

A lag of one quarter should be expected for a change in occupancy to be reflected in capitalization rates and two quarters for changes in ADR to appear in capitalization rates. Given the one- to two-quarter lag, for example, most of the revenue effects were impounded into property values by the end of the second quarter of 2002 following the recession and catastrophic events of the third quarter of 2001.

(3) How long is the delivery lag (i.e., construction lag)?

Delivery lag has the following two components: the time it takes to decide to develop and to plan construction following the recognition of a shift in demand, and the actual construction period. Consequently, delivery

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[19] Estimates by Wheaton and Rossoff and others of the price elasticity of demand for hotel rooms place the value at approximately -.4 (see: Wheaton and Rossoff, *op.cit.*). This means that when ADR falls revenue will likely fall because the positive revenue effect of the increase in the number of rooms sold will not offset the negative revenue effect of ADR erosion. Canina and Carvell estimate a considerably smaller price elasticity using property-level data (see: L. Canina and S. Carvell, "Lodging Demand for Urban Hotels in Major Metropolitan Markets," *Journal of Hospitality and Tourism Management*, forthcoming, 2005). This small response rate raises questions about the effectiveness of discount pricing behavior by hotel management during periods of declining demand. See: C.A. Enz, "Hotel Pricing in a Wired World," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 44, No. 1 (February 2003), pp. 4-5; and C.A. Enz, L. Canina, and M. Lomanno, "Why Discounting Doesn't Work: The Dynamics of Rising Occupancy and Falling Revenue among Competitors," *CHR Reports*, Vol. 7, No. 4 (2004) Cornell University Center for Hospitality Research (chr.cornell.edu).

[20] Wheaton and Rossoff, *op.cit.*
[21] Canina and Carvell, *loc.cit.*

lags differ by type of hotel property. Both the decision- and construction-period lags for limited-service projects are far shorter than those for full-service hotels. This is the main reason why limited-service property investment commands greater risk premiums than full-service hotel investment (i.e., a difference of 65 to 130 basis points). In general, the delivery lag for limited-service developments equals one year and full-service developments two or more years. Another complicating factor is that not all developers begin and end the development processes at the same time. Thus, the market-delivery lag would exceed project-specific lag.

(4) What is the delay between a change in market occupancy and ADR changes?

The lead and lag relationship between occupancy and ADR is well grounded in theory. Graphically apparent in Exhibit 2, this relationship has not been subjected to rigorous empirical examination. This lag is likely a matter of weeks and will probably diminish as information costs decline. An analysis by PricewaterhouseCoopers indicates that occupancy reached a peak in the second quarter of 2000, while ADR peaked in the fourth quarter of 2000.[22]

(5) How long is the hotel market cycle?

The length of the cycle depends on the underlying economic factors. Hotel market-performance data examined over past five decades demonstrate that the hotel market cycle is not as symmetrical as that portrayed in Exhibit 3. Instead, the rise from trough to peak has been far more gradual than the decline from peak to trough. As with recession and recovery in the general economy, hotel-market performance erodes more rapidly than it improves. During the recent cycle, the upward movement from trough to peak occurred over a nine-year period (1991 through 2000) and the downward movement from peak to trough occurred from 2000 to 2002.[23]

[22] PricewaterhouseCoopers, "Dating the Recent Industry Cycle," *Hospitality Directions*, August 2002, pp. 47-53.
[23] *Ibid.*

Rule 5: Overbuilding Is Not a Sure Bet

With respect to supply additions, commercial real estate markets appear to fall into two categories, according to property type. For some types such as multifamily, industrial, and small retail, the pattern of completions followed the business cycle during the past few decades.[24] Aggregate demand shocks preceded increases in construction activity with a normal response pattern suggesting that real-estate cycles for these property types are not endogenous. The supply additions of office space,[25] regional retail center space,[26] and hotel rooms,[27] however, exhibited less conforming patterns relative to those of the general economy.

The extensive literature on the real-estate-market oversupply issue offers plausible, yet competing, explanations for overbuilding that Wang and Zhou organize as follows.[28]

(1) *Government policy.* As an example of this category, the most severe oversupply conditions in the U.S. commercial real-estate market occurred between 1980 and 1985. Prolonged construction in the presence of weak demand can be traced to two federal acts passed in the early 1980s that created a series of agency and moral-hazard problems among developers, appraisers, and financial institutions. Several papers present evidence of the market disruptions associated with these laws.[29]

[24] E. Mills, "Crisis and Recovery in Office Markets," *Journal of Real Estate Finance and Economics*, Vol. 10, No. 1 (1995), pp. 49-62; and W. Wheaton, "Real Estate 'Cycles': Some Fundamentals," *Real Estate Economics*, Vol. 27, No. 2 (1999), pp. 209-230.
[25] W. Wheaton, "The Cyclic Behavior of the National Office Market," *AREUEA Journal*, Vol. 15, No. 4 (1987), pp. 281-299.
[26] J.D. Benjamin, G.D. Jud, and D.T. Winkler, "The Supply Adjustment Process in Retail Space Markets," *Journal of Real Estate Research*, Vol. 15, No. 3 (1998), pp. 297-307.
[27] Wheaton and Rossoff, *op.cit.*
[28] K. Wang and Y. Zhou, "Overbuilding: A Game-Theoretic Approach," *Real Estate Economics*, Vol. 28, No. 3 (2000), pp. 493-522.
[29] For example, see: P.J. Corcoran, "Explaining the Commercial Real Estate Market," *Journal of Portfolio Management*, Vol. 13 (Spring 1987), pp. 15-21; A. Auerbach and J. Hines, "Investment Tax Incentives and Frequent Tax Reforms," *American Economic Review*, Vol. 78, No. 4 (1988), pp. 211-226; DiPasquale and Wheaton, *op.cit.*; and Henderschott and Kane, *op.cit.*

(2) *Investment-lag and forecasting-accuracy issues*. Because it usually takes years to deliver commercial property to the market, developers (and presumably other capital suppliers) have difficulty predicting asset prices and rental paths to delivery dates. Asset durability and the investment lag endemic to real estate lead to cyclical extension and oscillation at the height of the cycle. Wheaton and Hendershott are two researchers who provide evidence to support these explanations for continuation of construction during economic downturns.[30]

(3) *Exercise of development options*. Developers' decisions to exercise options either to move forward with projects or to delay actions also have been offered as explanations for inopportune concentrations of supply growth. Early and universal exercise of development options may occur as developers attempt to avoid preemption by competitors,[31] avoid missing demand growth opportunities,[32] or engage in other types of herd behavior.[33] Wang and Zhou show that early and simultaneous option exercises result from a wish to limit carrying costs.[34]

Wang and Zhou also show that the land-to-building-cost ratio is a condition that explains why overbuilding is more likely to occur with some property types than others. They conclude that office and hotel markets are the most likely to experience development booms not supported by the local economics due to the relatively high cost of holding land in inventory for these uses.

[30] See: Wheaton, *op.cit*.; and P.H. Hendershott, "Property Asset Bubbles: Evidence from the Sidney Office Market," *Journal of Real Estate Finance and Economics*, Vol. 20, No. 1 (2000), pp. 67-81.

[31] S. Grenadier, "The Strategic Exercise of Options: Development Cascades and Overbuilding in Real Estate Markets," *Journal of Finance*, Vol. 51, No. 5 (1996), pp. 1220-1338.

[32] A. Bar-Ilan and W.C. Strange, "Investment Lags," *American Economic Review*, Vol. 86, No. 3 (1996), pp. 610-622.

[33] P.D. Childs, S.H. Ott, and T.J. Riddiough, "Optimal Valuation of Noisy Real Assets," *Real Estate Economics*, Vol. 30, No. 3 (2002), pp. 385-414.

[34] Wang and Zhou, *op.cit*.

Depictions of Hotel Overbuilding

Exhibit 5 (on the next page) presents the following three alternative scenarios for hotel overbuilding, assuming an exogenous cycle.

Peak persistence. Panel A shows supply growth accelerating with a lag at t as the demand for space increases along with a general economic recovery. But in t + 1, supply growth continues at a sustained rate well beyond peak demand (i.e., peak persistence). Entering the latter part of t + 1, supply growth subsides and begins to realign with the business cycle. In t + 2, construction levels may reach a point at which the market becomes underbuilt before eventually becoming realigned with the business cycle.

Peak oscillation. The conditions in Panel B are identical to those in Panel A except that supply exhibits oscillating behavior at the peak (i.e., peak oscillation). Again, newly constructed space arrives during a downturn.

Self-correcting cycle. Panel C presents the supply cycle assuming self-correcting behavior in which $S_c = S_a = S_b$ at t and t + 2, but during t + 1, $S_c < S_a, S_b$. The scenario portrayed in Panel C produces overbuilding in commercial real-estate markets. Because construction activity is responsive to early demand signals, however, the extent of overbuilding is far less severe

> *It has been nearly 20 years since U.S. hotel markets exhibited abnormal supply growth to the extent that these markets might be labeled overbuilt.*

than in the other scenarios. The supply-growth pattern in Panel C depicts the behavior during the most recent cycle of certain segments of the real estate market that have been especially prone to overbuilding.

It has been nearly 20 years since U.S. hotel markets exhibited abnormal supply growth to the extent that these markets might be labeled overbuilt and their financial stability would

EXHIBIT 5

THREE CYCLICAL HOTEL-SUPPLY PATTERNS
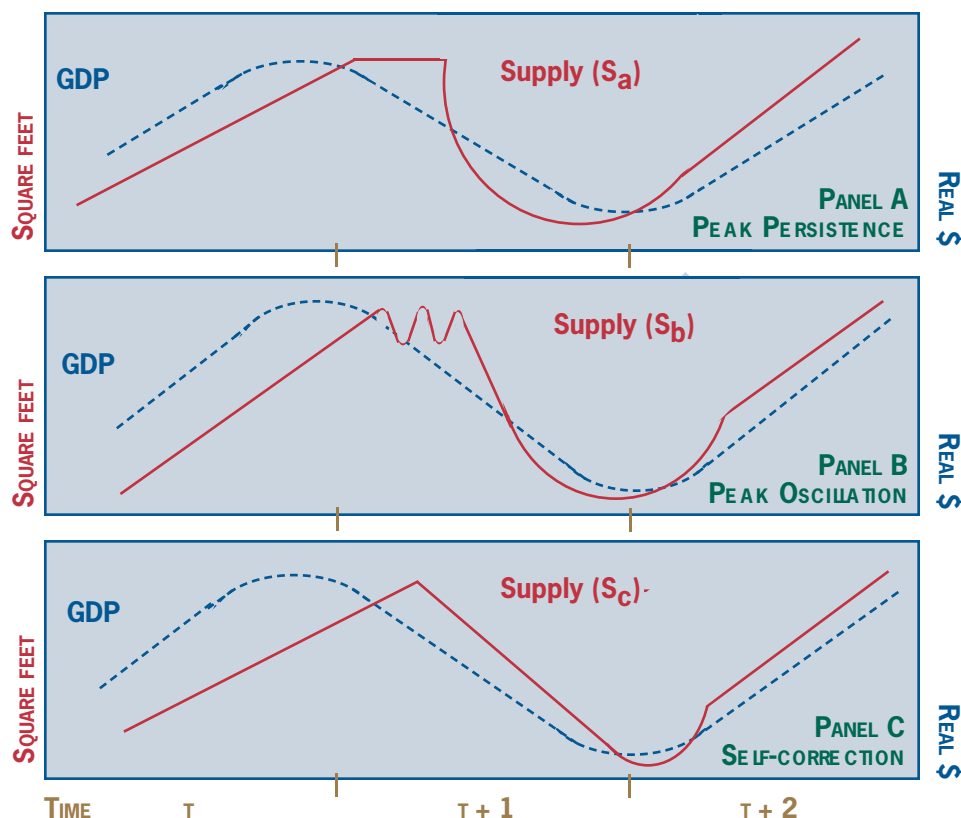
Note: By assumption each cyclical pattern is fundamentally connected to the business cycle. Panel A shows peak persistence, when supply growth continues even as demand fades. Panel B shows peak oscillation, when supply additions continue in uneven or oscillating fashion, as demand declines. Panel C shows a self-correcting cycle, when construction activity responds fairly promptly to diminishing demand.

be threatened. From the early 1990s through the early 2000s the hotel industry experienced a complete cycle. Exogenous demand conditions arose during the middle and late 1990s that could have produced a substantial hotel supply overhang by 2002, but the supply side of commercial real estate markets remained disciplined. As demand weakened in the early 2000s, endogenous supply growth resulting from the types of developer behavior should have resulted in overbuilding, according to options theorists' predictions, but that did not occur. Grenadier states: "Sometimes markets

sit idle for years and then blast off in a surge of construction."[35] We may soon learn whether the U.S. hotel markets have been in a prolonged idle state and a surge in construction is imminent, or whether historical blast offs are simply manifestations of undisciplined and antiquated behavior.

Rule #6: Look under Hotel-capitalization-rate Rocks

The ratio of property-level operating income to asset price—the capitalization or cap rate—

[35] Grenadier, p. 1677.

EXHIBIT 6

HOTEL CAPITALIZATION RATES, 1992–2005

Source: Real Estate Research Corporation.

provides an important foundation for rational hotel-investment and -financing decisions, as it does for other types of real estate. Unlike the ratios of other property types, both the numerator and denominator of the hotel ratio may experience sudden movements of unexpected magnitude, making hotel cap-rate interpretations especially difficult.

Exhibit 6 presents a twelve-year history of full-service-hotel cap rates in the U.S.[36] Hotel cap rates appear to follow a countercyclical pattern. The highest rate, slightly above 12 percent, occurred at the end of the early 1990s recession. The reported rate reached 11.7 percent during the 2001–02 recession, and has de-

clined to the low-10-percent range since 2002. Hotel cap rates moved downward and broke through the 10-percent barrier for several quarters in 1997 and 1998 when the economy was rapidly expanding.

In theory, hotel cap rates should conform to a countercyclical pattern because hotel property values logically decline as incomes fall (and rise as incomes increase). The same historical pattern of cap rates emerges for other property types. As Corcoran concluded, a countercyclical pattern of cap rates for leased properties provides evidence of undisciplined markets.[37] The recent firming of property prices at the bottom of the business cycle, in contrast, indicates disciplined markets and mean-reversion expectations for NOI as leases roll over. If real-estate markets continue to exhibit disciplined behavior, hotel cap rates will continue to be countercyclical and other property cap rates will follow pro-cyclical paths.

[36] This information comes from the Real Estate Research Corporation (*Real Estate Report, Real Estate Investment Survey*, RERC, 2005), which conducts quarterly surveys of institutional real estate investors and lenders to assemble consensus estimates of key market performance indicators. The consistency of RERC's administration and application of definitions for their surveys results in a reliable time series. In fact, the RERC data represent the only historical data of hotel cap rates available for each quarter since 1992.

[37] Corcoran, pp. 35-44.

EXHIBIT 7

SPREADS BETWEEN HOTEL PROPERTY CAPITALIZATION RATES AND CAPITAL MARKET RATES, 1992–2005
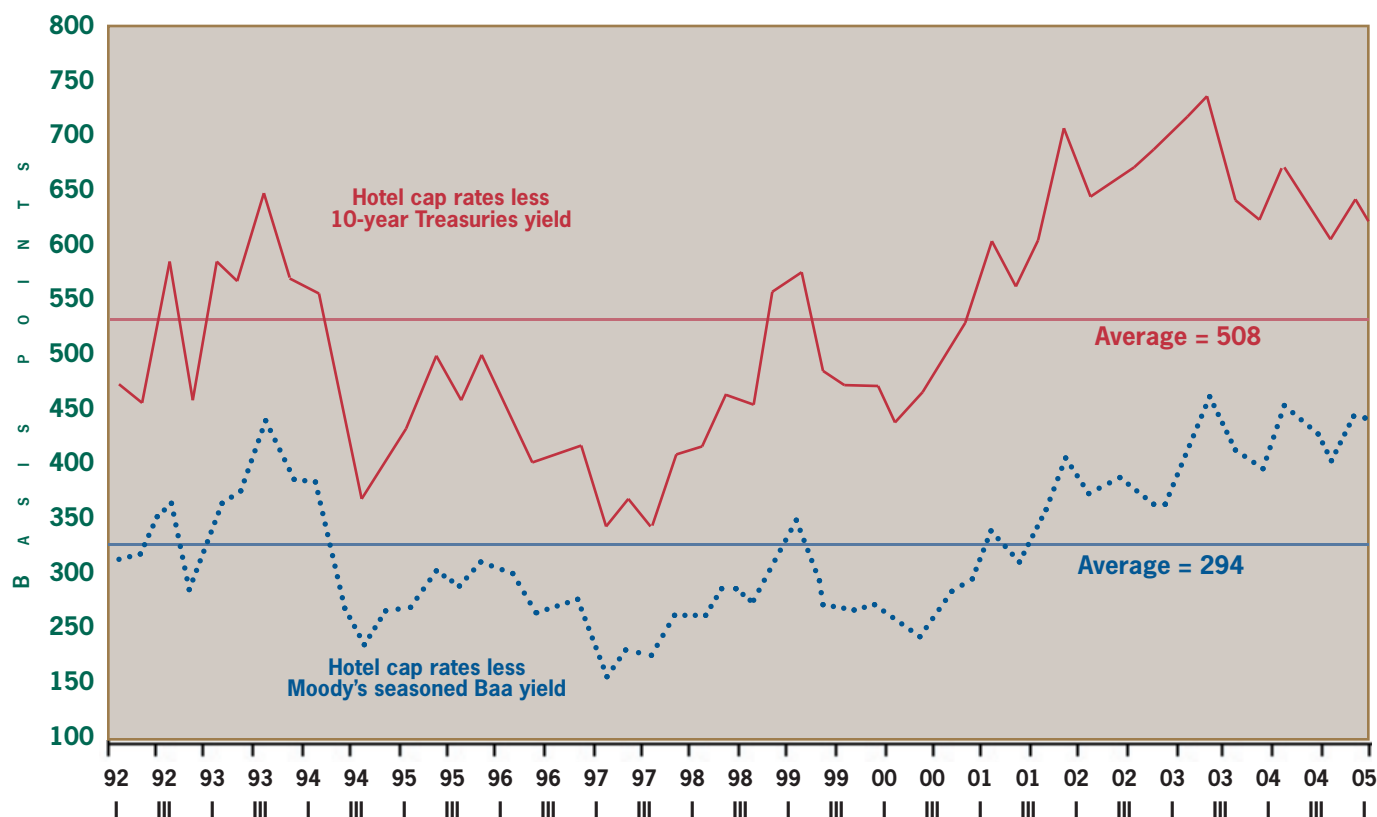
Sources: Real Estate Research Corporation (hotel capitalization rates), Federal Reserve.

Spread—Wide or Narrow?

Another perspective on hotel cap rates comes after examining historical spreads relative to other capital-market rates. Exhibit 7 shows hotel cap rates minus ten-year Treasuries and Moodys Baa corporate bond series since 1992. As with rate levels, the spreads appear to be countercyclical. This means that hotel risk premiums move, as they should, above the long-run average during recession and below the average during periods of economic expansion. Average spreads since 1992 equal 508 basis points above ten-year Treasuries and 294 basis points over Moodys Baa bonds. In the first quarter of 2005, hotel cap-rate spreads exceed the average for the historical period. The current spreads between hotel cap rates and capital-market benchmarks indicate that these rates could fall by more than a few basis points, given the assumption that spreads will realign with historical averages.

Judging the Direction of Hotel Cap Rates

If one assumes that income will grow at a constant rate, then the cap rate, R, equals the discount rate, r, minus the assumed growth rate, g. Stated symbolically,

$$R = r - g. \quad [5]$$

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

$$r = r_f + r_p. \quad [6]$$

EXHIBIT 8

DISCOUNT AND CAPITALIZATION RATE MOVEMENTS IN VARIOUS MARKET CONDITIONS

Panel A
Discount rates

Market condition	r	$=$	r_f	$+$	r_p
1	↑		↑ or ↔		↑ or ↔
2	↓		↓ or ↔		↓ or ↔
3	?		↑		↓
4	?		↓		↑

Panel B
Capitalization rate

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

Developed by the author for: "How to Determine the Future Direction of Hotel Capitalization Rates," *Real Estate Issues*, Vol. 28 (Winter 2003), pp. 44–48.

Combining Equations (5) and (6) presents the capitalization rate in expanded form.

$$R = [r_f + r_p] - g. \qquad [7]$$

Simultaneous changes in its components cause R to change, sometimes in unpredictable ways. This problem is exacerbated during unstable times, including the recent past. Tracking the directional pattern of R, and attempting to judge turning points, requires an understanding of how and why the components of R change.

Panels A and B of Exhibit 8 show various scenarios for changes in R. As presented in Panel A, the discount rate (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 one decreases. Similarly, Market Condition 2 has r decreasing because one or both components decline and neither increases. Ambiguous changes in discount rates occur under Market Conditions 3 and 4 because of the opposite di-

rectional changes of the components. During times when such conditions exist, 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 that r_f and r_p will 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

> *Regardless of business cycles or asset ratios, individuals buy and sell based on their own motivations.*

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 repricing due to changes in the risk relative to other asset classes. Consequently, interest rates may fall while the relative risks of a particular asset class increase, as long as the assets' incomes are not entirely fixed over the long run, as in the case of a pure bond.

Hotel-asset income streams are the least similar to bond incomes among property types. Thus, the pricing of hotel assets should be less interest-rate sensitive than are office, retail, and other unsecuritized real estate investments.

Rule #7: The People Can Mess Things Up

Hotel market intelligence also comes from consideration of the behavioral phenomena that surround property transactions. Because of the complexity of hotel-property investment, nonfinancial factors may influence how buyers and sellers behave beyond their responses to income estimates and the capitalization rates. Specifically, buyers' and sellers' motivations may affect property sale prices.

Each contract for sale represents the agreement on price and terms reached by a specific buyer and a specific seller. The idea that the price of a hotel may be different in the case of one buyer and seller combination compared to another pair for the same property is rooted in the belief that buyer and seller characteristics influence transactions even though the property-related factors remain the same. Theory offers three reasons that a given buyer behaves differently from other buyers and a given seller behaves differently from other sellers. First, every participant is capable of errors because no participant has all of the information necessary to always make correct decisions. Second, buyers and sellers are not equally patient. Some sellers, for example, are overly eager to sell and thus sell at low prices, while other sellers are willing to wait for their price. Finally, there are strategic reasons why market participants may be willing to transact for the same property at different prices. A hotel company, for example, may value a hotel more than an individual investor because of a competitive edge the property provides to the brand.

In a study with Jan deRoos, I empirically demonstrated that buyers and sellers behave differently in the same types of hotel-property transactions and that these behaviors have price effects.[38] Some key findings from our study are as follows:

(1) Considerable "noise trading" occurred in the hotel asset markets during the period 1985 through 1992 (the period covered in our study). Japanese buyers overpaid for hotels by 45 percent on average and the RTC undersold assets by 34 percent.

(2) Individual buyers and sellers consistently mispriced hotel assets, presumably because of their inability to absorb the high information costs of participating in these markets.

We were surprised by our findings, given the homogeneous nature of hotel assets.

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[38] J.B. Corgel and J.A. deRoos, "Buying High and Selling Low in the Lodging-Property Market," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 35, No. 6 (December 1994), pp. 33-38.

EXHIBIT 9

U.S. REVPAR AND THREE-MONTH LIBOR, 1987–2004

RevPAR

LIBOR
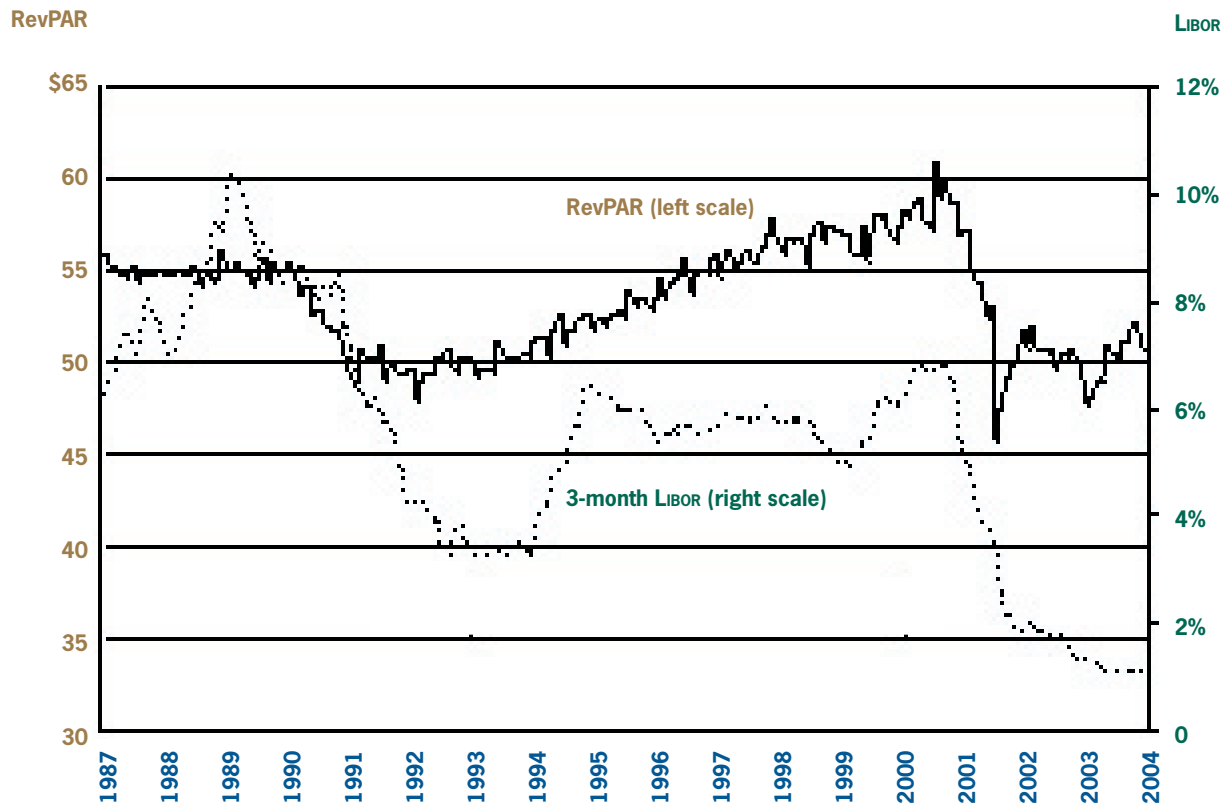
Approximately 70 percent of U.S. hotels have a brand affiliation. The consistency of brand affiliation should lower information costs and hence minimize noise trading.

Rule #8: Hotel Debt—Float Like a Butterfly, Sting Like a Bee

The conceptual premise for deciding on the type of debt financing to pursue when making hotel-financing decisions should be to minimize the likelihood of financial distress by successfully matching debt-service obligations with cash flow. In the case of hotels, investors may believe that revenue and net income have a positive (i.e., pro-cyclical) relationship with interest rates. In that case, floating-rate debt should be viable. Nevertheless, investors could be hesitant to finance hotels with floating-rate structures for the following reasons. (1) The relationship between hotel income and interest rates may be disturbed periodically by the complicating influences of consumption decisions and investment decisions in the underlying markets. (2) No empirical studies have confirmed or refuted the argument that hotel income and interest rates have a long-run stable and positive relationship. (3) Investors accept the persistent notion of locking into low fixed-rates.

With Scott Gibson, I conducted a study which found that hotel revenues and interest rates (as delineated by the LIBOR) have been highly and significantly correlated since 1987, and especially so since 1995 (see Exhibit 9).[39]

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[39] J.B. Corgel and S. Gibson, "The Use of Fixed-rate and Floating-rate Debt for Hotels," *Cornell Hotel and Restaurant Administration Quarterly*, Vol. 46, No. 4 (November 2005), pp. 413–430.

Correlations of monthly levels and quarterly changes are consistently strong across nearly all market segments and locations. We ran a simulation that compared the effects of fixed-rate loans and floating-rate loans on hotels' ability to service debt. Our simulation demonstrated that financial distress can be most effectively managed with floating-rate debt, based on the best available historical information.

Gibson and I also examined the question of whether hotel owners are wise to lock into fixed-rate debt during periods of relatively low interest rates. We argued as follows: In the absence of profitable arbitrage opportunities, the long-term rate represents an average of the current short-term rate and expected future short-term rates. When long-term rates are relatively low, participants in the financial markets expect that future short-term rates will also be relatively low. The implication is that hotel owners, on average, will not pay a lower average rate by taking out a fixed-rate loan rather than a floating-rate loan. Empirical evidence supports

The strong recovery of hotel markets since 2002 dispels the notion that lodging demand can be permanently diminished by catastrophic events and war.

this claim, showing that corporate managers do not exhibit an ability to time their debt issues to take advantage of low rates.[40] Unless the hotel owner knows more about the direction of future interest rates than others in the credit markets, then trying to lock in a fixed rate at the bottom of the market is futile. Rather than trying to time the interest-rate market, hotel owners' efforts are better spent trying to man-

age financial distress by aligning operating cash flows and debt-service obligations.

In financing a hotel, investors will consider a continuum of simple financing choices. At the extreme left on this continuum is 100-percent fixed-rate debt, and on the extreme right, 100-percent floating-rate financing. Real-estate investors may be tempted to begin their financing plans on the left of the continuum, that is, with entirely fixed-rate debt, and then move to the right by substituting floating-rate debt as relative terms and risks indicate. Given the fixed-income patterns associated with leased properties, this approach appears logical for financing apartments and office, retail, and industrial real estate. In contrast, the absence of leases suggests the opposite approach for hotel financing—that is, to start with floating-rate debt.

Going Forward: What We Soon May Learn

The steady improvement of knowledge about hotel market behavior that has occurred over recent decades suggests that, even if market activity remains as it is today over the next five years, considerable additional knowledge would accumulate. Market participants, of course, never stop reacting to information regarding world events, and because of the position in the cycle hotel markets now occupy, the opportunity to increase our knowledge base and predictive ability appears substantial. Some real estate market observers, Corcoran, for example, put forward the idea that a combination of learned behavior and lower information costs will produce more vigilant capital markets than those operating in the recent past and generally smoother cycles.[41] Indeed, I would be surprised (given the availability of detailed construction data) if the hotel markets experienced the wide swings in construction activity and property prices that occurred during the last two decades. As hotel demand continues to exceed supply in many important markets

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[40] A. Butler, G. Grullon, and J. Weston, "Can Managers Forecast Aggregate Market Returns?," *Journal of Finance*, forthcoming, 2005.

[41] Corcoran, pp. 35-44.

(e.g., New York City), we will soon learn more about how this market behaves at a peak in the cycle. In the absence of softening demand, it now appears that U.S. hotel markets will remain at the peak for a prolonged period because steadily increasing development costs are stalling supply growth.

Most of what we will learn about hotel markets during the next five years involves the timing of behavior in a particular market and the connections of that behavior across markets. For example, by 2008 we will know a lot more about the lead and lag relationships identified in this article. Analysts today are focused on how hotel market demand reacts to changing conditions in the general economy, as well as those in local or regional economies. As a closing point, the strong recovery of hotel markets since 2002 dispels the position held by some experts that lodging demand can be permanently disabled by catastrophic events and war. ★★★★★

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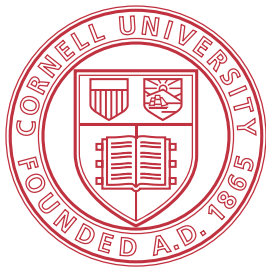
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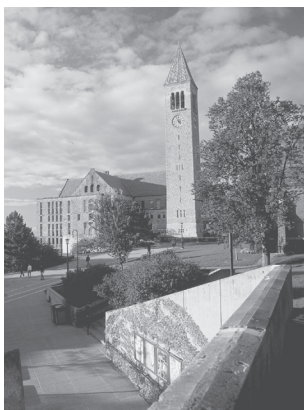## Executive and Professional Education

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