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Seven Current Hotel-Valuation Techniques

An examination of seven techniques that can be used in the acquisition and appraisal of hotels

by Stephen Rushmore

HOTEL INVESTORS and appraisers use a variety of techniques to value hotels. Depending on the purpose of the appraisal, the motivations of the buyers and sellers, and the quality of data available, some techniques tend to produce more reliable results than others. This article discusses seven hotel-valuation techniques, each illustrated with a case study.* The data have been adjusted so that each technique will produce approxi-

mately the same value. This facilitates the comparison of the techniques, enabling the reader to see the components that affect value.

The first part of the article describes the property from a physical and financial point of view. The seven hotel-valuation techniques will then be described and illustrated with the case-study

example. The last part of the article summarizes the strengths and weaknesses of each technique.

Property Information

A 250-room midscale property was constructed in 1982 in a growing office-park area approximately ten miles north of a major city. The property has been well maintained

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*I will address the challenges of valuing hotels that have negative cash flows in the October 1992 issue of *The Quarterly*.

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EXHIBIT 1
Statement of income and expenses

	HISTORIC 1989			YEAR 1, 1990			YEAR 2, 1991			YEAR 3, 1992		
	\$	% OF GROSS	\$ PER ROOM	\$	% OF GROSS	\$ PER ROOM	\$	% OF GROSS	\$ PER ROOM	\$	% OF GROSS	\$ PER ROOM
Number of rooms	250			250			250			250		
Occupancy	68%			70%			72%			74%		
Average rate	\$95.00			\$99.75			\$104.75			\$109.97		
Days open	365			365			365			365		
Rooms occupied	62,050			63,875			65,700			67,525		
Total Revenues ¹	10,675	100	42,700	11,481	100	45,924	12,341	100	49,364	13,258	100	53,032
Departmental Expenses ²	5,142	48.2	20,568	5,449	47.5	21,796	5,773	46.8	23,092	6,115	46.1	24,460
Departmental Income (revenues less departmental expenses)	5,533	51.8	22,132	6,032	52.5	24,128	6,568	53.2	26,272	7,143	53.9	28,572
Undistributed Operating Expense ³	2,938	27.5	11,752	3,112	27.1	12,448	3,295	26.7	13,180	3,517	26.6	14,068
Income before Fixed Charges	2,595	24.3	10,380	2,920	25.4	11,680	3,273	26.5	13,092	3,626	27.3	14,504
Total Fixed Charges ⁴	771	7.3	3,084	808	7.0	3,232	850	6.9	3,400	898	6.8	3,592
Net Income	1,824	17.0	7,296	2,112	18.4	8,448	2,423	19.6	9,692	2,728	20.5	10,912

¹Rooms, food and beverage, telephone, and "other."

²Rooms, food and beverage, telephone, and "other."

³Administration and general expenses, management fee, marketing, property operations and maintenance, and energy.

⁴Property tax, insurance, and reserve for replacement.*

and there are no signs of deferred maintenance or major mechanical problems. Several new hotels opened nearby during the mid-1980s that depressed occupancies somewhat, but office leasing continues to be strong and this property is expected to recapture its lost business over the next several years. The hotel's facilities include a 200-seat restaurant, small lobby bar, 150-seat lounge, 10,000 square feet of meeting space, and an indoor swimming pool.

Financial projections. Based on an analysis of the historic financial performance of this property, along with an evaluation of future market conditions, a projection of income and expense

was made for the three-year period 1990-1992. This projection anticipated that the property would achieve a stabilized occupancy of 74 percent in 1992. Exhibit 1 provides an abbreviated statement of income and expenses that illustrates this financial projection. The first column of numbers are the property's actual operating results for 1989. The next three columns are projections. Included in the operating expenses is a management fee and a reserve for replacement. The net income represents the cash flow before debt service.

Based on these projections, which show a gradual improvement in occupancy for each of the

three years, it was estimated that the net income for one stabilized year would be \$2.65 million. This estimate represents a stabilized level of income that would remain constant and extend over the economic life of the property.

Assumptions. During the three-year projection period, revenues and expenses were increased using an inflation rate of 5 percent. This rate of growth is expected to continue into the future. Money to purchase this hotel will come from a first mortgage representing 75 percent of the purchase price; the balance will be raised from the equity partners. The current costs of various financing sources are as follows:

MORTGAGE	
Interest	10.25%
Amortization	30 years
Mortgage constant	0.10753
Loan-to-value ratio	75%
EQUITY CAPITAL	
Cash-on-cash (equity dividend)	11.5%
Equity yield (10-year)	21.0%
OTHER VALUATION RATES	
Terminal capitalization rate	11.5%
Total property yield (discount rate)	14.0%
Selling expenses (broker and legal)	3.0% of sales price
Amount of mortgage paid in 10 years	0.087141

Market sales of comparable hotels. Using the Hospitality Market Data Exchange, three sale transactions were located involving similar properties. Exhibit 2 summarizes the information derived from these sales.

The following is an estimate of what it would cost to replace the property new in 1990.

Land	\$2,500,000
Furniture and equipment	3,750,000
Improvements (building)	26,500,000
Total	\$32,750,000

Technique 1: Band of Investment— One Stabilized Year

The band of investment using one stabilized year takes the cost of capital used in a hotel investment (debt and equity) and calculates a weighted average of these costs based on the percentage relationship of each capital source to the whole. The weighted average cost of capital is the capitalization rate that is used to capitalize the stabilized net income into a value estimate.

Mortgage	(0.75) (0.10753 ¹) = 0.08065
Equity	(0.25) (0.11500 ²) = 0.02875
Overall rate	0.10940

$$\$2,650,000^3 / 0.1094 = \$24,225,000$$

¹Mortgage constant
²Cash-on-cash (equity dividend)
³Stabilized net income

EXHIBIT 2 Sample sales transactions

	SALE No. 1	SALE No. 2	SALE No. 3
Property size	200 rooms	225 rooms	275 rooms
1989 occupancy	74 percent	65 percent	70 percent
1989 average rate	\$92.00	\$81.00	\$80.00
1989 net income	\$1.98 million	\$1.654 million	\$2.104 million
Sales price (1989)	\$22 million	\$22.050 million	\$24.750 million
Comments	Market leader in stable market	Market is recovering from overbuilding	Market is becoming overbuilt

EXHIBIT 3 Structure of financing: Technique 1

Debt	(0.75) (\$24,225,000) = (\$18,169,000) (.10753) = \$1,954,000 ¹	
Equity	(0.25) (\$22,225,000) = (6,056,000) (.11500) = 696,000 ²	
Total	\$24,225,000	\$2,650,000

¹Debt service
²Equity dividend

EXHIBIT 4 Sum of values: Technique 2

Year 3:	\$2,728,000/0.10940 = (\$24,936,000)(.812501) = \$20,261,000
Year 2:	(\$2,423,000)(0.812501) = \$1,969,000
Year 1:	(\$2,112,000)(0.901388) = \$1,904,000
Total	\$24,134,000

This valuation technique can be proven by showing how the hotel would be purchased using these financing assumptions. Exhibit 3 outlines the structure of the purchase if the hotel was purchased for \$24.225 million with use of a mortgage representing 75 percent of the purchase price.

Based on the stabilized net income of \$2.65 million, there would be exactly enough income to cover the debt-service payments and the equity dividend. Since the stabilized net income of \$2.65 million can be difficult to estimate for hotels experiencing rapid increases or decreases in occupancy or net income, the use of this technique is generally limited to properties with stable financial results.

Technique 2: Band of Investment— Three-Year Buildup

Since the stabilized net income of \$2.65 million used in technique 1 is

a subjective estimate of the property's operating results over its economic life, valuation-technique 2 will use the three-year projection of income and expense. This procedure works well when a hotel is expected to benefit from improved financial operating performance.

The technique takes the third year's net income and capitalizes it at the capitalization rate previously derived by the band of investment (0.10940). This third-year value is then discounted back to the present value using the rate derived by the band of investment as the discount rate. The projected net income for year one and year two are also discounted to the present value using this discount rate. The sums of these present values are added together to produce the estimate of value. This process is illustrated in Exhibit 4.

The value derived from the band of investment using the three-year

buildup can be proven in the same manner as the first valuation technique.

Technique 3: Hotel-Valuation Formula—Ten-Year Discounted Cash Flow

The hotel-valuation formula derived by Suzanne Mellen of Hospitality Valuation Services values hotels using a ten-year projection of income and expense discounted through a mortgage-equity procedure that allocates the anticipated net income and reversion to the mortgage and equity components based on market rates of returns and loan-to-value ratios. The total of the mortgage component and the equity component equals the value of the property. Four steps are involved in the formula:

(1) The terms of typical hotel financing are set forth including interest rate, amortization term, and loan-to-value ratio.

(2) An equity-yield rate of return is established. A number of typical hotel buyers currently base their equity investments on a ten-year equity-yield-rate projection that takes into account the benefits of ownership such as periodic cash-flow distributions; residual sale or refinancing distributions that return any property appreciation; and mortgage amortization, income-tax benefits, and nonfinancial considerations such as status and prestige.

(3) The value of the equity component is calculated by first deducting the yearly debt service from the forecasted income before debt service, leaving the net income to equity for each forecasted year. The net income as of the eleventh year is capitalized into a reversionary value. After deducting the mortgage balance as of the end of the tenth year along with normal legal and selling costs, the equity residual is discounted to the date of

value at the equity-yield rate. The net income to equity for each of the ten projection years also undergoes a similar discounting process. The sum of these discounted values equates to the value of the equity component. Adding the equity component to the initial mortgage balance yields the overall property value. (Because the amount of the mortgage as well as the debt service is unknown, but the loan-to-value ratio was determined in step 1, the preceding calculation can be solved either by an iterative process on a computer or through an algebraic equation that computes the total property value.)

(4) The proof of value is performed by allocating the total property value between the mortgage and equity components and verifying that the rates of returns set forth in step 1 and step 2 can be precisely met from the forecasted net income.

The process set forth in step 3 consists of two algebraic equations that express the mathematic relationships between the known and unknown variables. The following symbols will be used:

- NI = Net income available for debt service
- V = Value
- M = Loan-to-value ratio
- f = Annual debt-service constant
- n = Number of years in projection period
- d_e = Annual equity dividend
- d_r = Residual equity value
- b = Brokerage and legal cost percentage
- P = Fraction of loan paid off in projection period⁴
- f_p = Annual constant that would be required to amortize the entire loan within the projection period
- R_r = Overall "terminal capitalization" rate applied to net income to calculated total property reversion (sales price at end of projection period)
- $1/S^n$ = Present worth of \$1 (discount factor) at the equity-yield rate.

⁴ $P = (f \cdot i) / (f_p \cdot i)$, where i = the interest rate of the mortgage.

Using these symbols, the following formulas can be derived to express some of the components comprising this mortgage-equity-valuation process.

Debt service. A property's debt service is calculated by first determining the amount of the mortgage, which is the total value (V) multiplied by the loan-to-value ratio (M); then multiply the amount of the mortgage by the annual debt-service constant (f) as follows:

$$(f)(M)(V) = \text{debt service}$$

Net income to equity (equity dividend). The net income to equity (d_e) is the property's net income before debt service (NI) less the debt service, as follows:

$$NI - [(f)(M)(V)] = d_e$$

Reversionary value. The value of the hotel at the end of the tenth year is calculated by dividing the eleventh year's net income before debt service (NI^{11}) by the terminal capitalization rate (R_r).⁵ The following formula represents the property's tenth year's reversionary value:

$$(NI^{11}/R_r) = \text{reversionary value}$$

Broker and legal costs. When a hotel sells, there are costs associated with the transaction. Normally, a broker is paid a commission and attorneys collect legal fees. For hotel transactions, broker and legal costs typically range from 1 percent to 4 percent of the sales price. Since these expenses reduce the proceeds to the seller, they are usually deducted from the reversionary value in the mortgage-equity-valuation process. Broker and legal costs (b) expressed as a percentage of the reversionary value can be calculated:

$$[b(NI^{11}/R_r)] = \text{broker and legal costs}$$

⁵The superscript number attached to NI denotes year of net income.

Ending mortgage balance.

The balance of the mortgage at the end of the tenth year must be deducted from the total reversionary value (debt and equity) to determine the equity residual. The financial formula used to determine the fraction of a loan paid off (expressed as a percentage of the original loan balance) at any point in time (P) takes the annual debt-service constant of the loan over the entire amortization period (f) less the mortgage interest rate (i) and divides it by the annual constant that would be required to amortize the entire loan within the ten-year projection period (f_p) less the mortgage interest rate. The following formula represents the fraction of a loan paid off (P):

$$(f-i)/(f_p-i) = P$$

If the fraction of a loan paid off is P, then the percentage of the loan remaining expressed as a percentage is 1 - P. The ending mortgage balance is the fraction of the loan paid off multiplied by the amount of the initial loan, and is represented as:

$$(1 - P)(M)(V) = \text{ending mortgage balance}$$

Equity residual value. The value of the equity upon the sale at the end of the projection period (d_r) is the reversionary value less the broker and legal costs less the ending mortgage balance. The following formula represents the equity residual value:

$$(NI^{10}/R_r) - [b(NI^{11}/R_r)] - [(1 - P)(M)(V)] = d_r$$

Annual cash flow to equity.

The annual cash flow to equity consists of the equity dividend for each of the ten projection years plus the equity residual at the end of the tenth year as follows:

$$\begin{aligned} NI^1 - [(f)(M)(V)] &= d^1 \\ NI^2 - [(f)(M)(V)] &= d^2 \dots \\ NI^{10} - [(f)(M)(V)] &= d^{10} \\ (NI^{11}/R_r) - [b(NI^{11}/R_r)] - [(1 - P)(M)(V)] &= d_r \end{aligned}$$

Value of the equity. If the initial amount of the mortgage is calculated by multiplying the loan-to-value ratio by the value of the property, the equity value would be one minus the loan-to-value ratio times the property value, represented as:

$$(1 - M)V = \text{value of the equity}$$

Discounting the cash flow to equity to the present value.

The cash flow to equity for each of the projection years is discounted to the present value at the equity-yield rate (1/Sⁿ). The sum of all these cash flows is the value of the equity. The following formula represents the calculation of equity as the sum of the discounted cash flows:

$$[(d^1)(1/S^1)] + [(d^2)(1/S^2)] + \dots + [(d^{10})(1/S^{10})] + [(d_r)(1/S^{10})] = (1 - M)V$$

Combine equations (annual cash flow to equity and discounting the cash flow to equity to the present value). The last step is to make the following overall equation that shows that the annual cash flow to equity plus the yearly discounting to the present value equals the value of the equity:

$$\begin{aligned} & \{ (NI^1 - [(f)(M)(V)]) / S^1 \} + \\ & \{ (NI^2 - [(f)(M)(V)]) / S^2 \} + \dots \\ & \{ (NI^{10} - [(f)(M)(V)]) / S^{10} \} + \\ & \{ (NI^{11}/R_r) - [b(NI^{11}/R_r)] - \\ & [(1 - P)(M)(V)] \} / S^{10} = (1 - M)V \end{aligned}$$

Since the only unknown in this equation is the property's value, it can be readily solved. The following case study demonstrates the use of this valuation formula.

To use the hotel-valuation formula it is necessary to extend out to the eleventh year the three-year projection of income and expense for the property in this example. In most instances, the net income before debt service is projected beyond the stabilized year (year three) at an assumed rate of inflation. By increasing a property's revenue and expenses at

The hotel-valuation formula most accurately mirrors the actions of typical hotel buyers who purchase properties based on a leveraged discounted cash-flow approach.

EXHIBIT 5 Net income to equity

PROJECTION YEAR	NET INCOME BEFORE DEBT SERVICE	DEBT SERVICE	CASH FLOW TO EQUITY
1	2,112,000	- \$1,943,000	= \$169,000
2	2,423,000	- \$1,943,000	= 480,000
3	2,728,000	- \$1,943,000	= 785,000
4	2,865,000	- \$1,943,000	= 922,000
5	3,008,000	- \$1,943,000	= 1,065,000
6	3,158,000	- \$1,943,000	= 1,215,000
7	3,316,000	- \$1,943,000	= 1,373,000
8	3,482,000	- \$1,943,000	= 1,539,000
9	3,656,000	- \$1,943,000	= 1,713,000
10	3,839,000	- \$1,943,000	= 1,896,000

EXHIBIT 6 Discounting to the present value

YEAR	CASH FLOW TO EQUITY	PRESENT VALUE OF \$1 AT 21%	DISCOUNTED CASH FLOW
1	(\$169,000)	(.826446)	= \$140,000
2	(480,000)	(.683013)	= 328,000
3	(785,000)	(.564473)	= 443,000
4	(922,000)	(.466507)	= 430,000
5	(1,065,000)	(.385543)	= 411,000
6	(1,215,000)	(.318630)	= 387,000
7	(1,373,000)	(.263331)	= 362,000
8	(1,539,000)	(.217629)	= 335,000
9	(1,713,000)	(.179858)	= 308,000
10	(19,398,000*)	(.148643)	= <u>2,880,000</u>

Value of equity component: \$6,024,000

* Tenth year's cash flow to equity \$1,896,000
Residual equity value 17,502,000
Total \$19,398,000

the same rate of inflation, the net income expressed as a percentage of total revenue will remain constant and the dollar amount of net income will escalate each year at the inflation rate. Applying the assumed 5-percent inflation rate to the property's stabilized year-three net income produces the following eleven-year projection.

The present worth of \$1 factor at 21-percent equity-yield rate:

YEAR	1/S
1	0.826446
2	0.683013
3	0.564473
4	0.466507
5	0.385543
6	0.318630
7	0.263331
8	0.217629
9	0.179858
10	0.148643

$$\begin{aligned}
 & [(2,112,000 - 0.080649V)(.826446)] + \\
 & [(2,423,000 - 0.080649V)(.683013)] + \\
 & [(2,728,000 - 0.080649V)(.564473)] + \\
 & [(2,865,000 - 0.080649V)(.466507)] + \\
 & [(3,008,000 - 0.080649V)(.385543)] + \\
 & [(3,158,000 - 0.080649V)(.318630)] + \\
 & [(3,316,000 - 0.080649V)(.263331)] + \\
 & [(3,482,000 - 0.080649V)(.217629)] + \\
 & [(3,656,000 - 0.080649V)(.179858)] + \\
 & [(3,839,000 - 0.080649V)(.148643)] + \\
 & \{[(4,031,000/0.115) - [0.03(4,031,000/0.115)] - [(1 - 0.087142)(0.75)(V)]] \\
 & (0.148643)\} = (1 - 0.75)(V)
 \end{aligned}$$

PROJECTION YEAR	NET INCOME BEFORE DEBT SERVICE
1990	\$2,112,000
1991	2,423,000
1992	2,728,000
1993	2,865,000
1994	3,008,000
1995	3,158,000
1996	3,316,000
1997	3,482,000
1998	3,656,000
1999	3,839,000
2000	4,031,000

The hotel-valuation formula will use the following known variables:

Annual net incomes (NI)	See preceding table
Loan-to-value ratio (M)	75%
Debt-service constant (f)	0.107532
Equity yield (r_e)	21%
Broker and legal (b)	3%
Annual constant required to amortize loan in 10 years (f_p)	0.160246
Terminal capitalization rate (R_t)	11.5%

Using these known variables, the following intermediary calculations must be made before using the hotel-valuation formula:

- The fraction of the loan paid off in projection period (P) is calculated as follows:

$$P = (0.107532 - 0.1025) / (0.160246 - 0.1025) = 0.087142$$

- The annual debt service is $[(f)(M)(V)]$, as shown:

$$(0.107532)(0.75)(V) = 0.080649$$

Inserting the known variables into the hotel-valuation formula produces the following:

Solving the equation:

$$\begin{aligned}
 & (1,745,000 - 0.066652V) + \\
 & (1,655,000 - 0.055084V) + \\
 & (1,540,000 - 0.045524V) + \\
 & (1,337,000 - 0.037623V) + \\
 & (1,160,000 - 0.031094V) + \\
 & (1,006,000 - 0.025697V) + \\
 & (873,000 - 0.021237V) + \\
 & (758,000 - 0.017552V) + \\
 & (658,000 - 0.014505V) + \\
 & (571,000 - 0.011988V) + \\
 & \{[(35,052,000 - 1,052,000) - 0.684644V](0.148643)\} = 0.25V
 \end{aligned}$$

Combine like terms:

$$\begin{aligned}
 16,357,000 - 0.428726V &= 0.25V \\
 16,357,000 &= 0.678726V \\
 V &= \$24,097,000
 \end{aligned}$$

Proof of value. The value is proven by calculating the yields to the mortgage and equity components over the projection period. If the mortgage receives its 10.25-percent yield and the equity yields 21 percent, then \$24.097 million is the correct value by the hotel-valuation formula.

The allocation of the indicated value:

Mortgage component	0.75	\$18,073,000
Equity component	0.25	6,024,000
Total		\$24,097,000

Calculation of annual debt service:

Mortgage component	\$18,073,000
Mortgage constant	0.107532
Annual debt service	\$1,943,000

Calculating net income to equity is shown in Exhibit 5.

Equity residual at the end of year ten:

Reversionary value:	
\$4,031,000/0.115 =	\$35,052,000
Sales proceeds	\$35,052,000
Brokerage and legal	1,052,000
Mortgage balance	16,498,000
Residual equity value	\$17,502,000

The annual cash flow to equity plus the residual equity value is discounted to the present value at the equity-yield rate of 21 percent, as shown in Exhibit 6.

The table in Exhibit 6 demonstrates that the equity investor would receive a 21-percent yield on a \$6.024 million investment if the annual cash flow and reversion take place as projected. Since the debt service that was factored into the calculations is based on an interest rate of 10.25 percent, the required yield for the lender is also achieved.

Technique 4: Ten-Year DCF with Overall Discount Rate

Some large institutional investors who purchase hotels on an unleveraged basis will discount the ten-year projection of net income

before debt service at an overall discount rate. To this discounted cash flow (DCF) is added the discounted value of the property at the end of the tenth year, which is derived by capitalizing the eleventh year's net income at the terminal capitalization rate. Using a 14-percent discount rate and an 11.5-percent terminal capitalization rate, Exhibit 7 demonstrates the ten-year DCF with an overall discount rate.

EXHIBIT 7

Ten-year DCF with an overall discount rate

YEAR	NET INCOME BEFORE DEBT SERVICE	PRESENT VALUE OF \$1 AT 14%	DISCOUNTED CASH FLOW
1	(\$2,112,000)	(.877192)	= \$1,853,000
2	(2,423,000)	(.769467)	= 1,864,000
3	(2,728,000)	(.674971)	= 1,841,000
4	(2,865,000)	(.592080)	= 1,696,000
5	(3,008,000)	(.519368)	= 1,562,000
6	(3,158,000)	(.455586)	= 1,439,000
7	(3,316,000)	(.399637)	= 1,325,000
8	(3,482,000)	(.350559)	= 1,221,000
9	(3,656,000)	(.307507)	= 1,124,000
10	(37,839,000*)	(.269743)	= 10,207,000
Total property value:			\$24,133,000
*Sale: \$4,031,000/0.115 =			\$35,052,000
Less: Broker & legal			1,052,000
Plus: Tenth-year net income			3,839,000
Total			\$37,839,000

Technique 5: Sales-Comparison Approach

The sales-comparison approach uses the sales of similar properties to derive an estimate of value. Any dissimilarities between the comparable and the subject property should be adjusted. The following shows the sales price on per-room basis for the three sales described previously:

SALE	SALES PRICE PER ROOM	COMMENTS:
1	\$110,000	Market leader—stable market
2	\$98,000	Market recovering from overbuilding
3	\$90,000	Market is overbuilt

Assuming all three properties are similar to each other and the differences in sales prices can be attributed to the conditions of each local market, then sale number two is most comparable because the subject property is also situated in a market recovering from overbuilding.

The sales comparison approach is generally used to provide a range of value. Sale number one reflects

the upper end of this range and sale three represents the lower.

SALE	SALES PRICE PER ROOM	NUMBER OF ROOMS	TOTAL VALUE
1	(\$110,000)	(250) =	\$27,500,000
3	(\$90,000)	(250) =	\$22,500,000

Using sale number two, which is the most comparable to the subject property, the indicated market value would be:

$$(\$98,000)(250) = \$24,500,000$$

Technique 6: Market-Derived Capitalization Rate

By knowing the sales price of a hotel that was recently sold and the net income before debt service for the 12 months prior to the sale, a capitalization rate can be derived from this information by dividing the net income before debt service by the sales price. The following table shows how capitalization rates can be derived from the previously described sales.

SALE	NET INCOME BEFORE DEBT SERVICE	SALES PRICE	MARKET-DERIVED CAPITALIZATION RATE
1	\$1,980,000	\$22,000,000	9.0%
2	1,654,000	22,050,000	7.5%
3	2,104,000	24,750,000	8.5%

The market-derived capitalization rates range from a low of 7.5 percent to a high of 9 percent. Since the basis for this rate is a historic level of net income, which does not always reflect the future benefits of property ownership, it is important also to view changing market conditions that could either enhance or inhibit future profits. Sale 2 produces the lowest capitalization rate because the purchaser was paying a somewhat higher price for the potential upside indicated by the recovering market. The similarities between the subject's market and the market condition displayed by sale 2 would justify using this lower market-derived capitalization rate.

Dividing the subject property's 1989 net income before debt service by the 7.5-percent market-derived

capitalization rate produces the following estimate of value:

$$\$1,824,000 \div 0.075 = \$24,320,000$$

Technique 7: Room-Rate Multiplier

In the hotel industry, there is a rule of thumb that states that a hotel is worth one-thousand times its average room rate expressed on a per-available-room basis. In 1990, the average room rate for the subject property (250 rooms) is projected to be \$99.75. Applying the room-rate multiplier produces the following estimate of value:

$$(\$99.75)(1,000)(250) = \$24,937,000$$

Comparing Techniques

The following table illustrates the results of the various value techniques:

Band of investment— one stabilized year	\$24,225,000
Band of investment— three-year buildup	24,134,000
Hotel-valuation formula— ten-year DCF	24,097,000
10-year DCF with overall discount rate	24,133,000
Sales-comparison approach	24,500,000
Market-derived capitalization rate	24,320,000
Room-rate multiplier	24,937,000

Although each technique produced an almost identical value, some of these approaches have inherent weaknesses that could adversely affect the reliability of the results. The strengths and weaknesses of each technique are as follows:

- *Band of investment—one stabilized year:* A simple technique to describe and perform. It works well for a stabilized property that is expected to maintain a level occupancy and net income into the future. It is difficult, however, to establish an appropriate stabilized net income for hotels that have unpredictable occupancies.

- *Band of investment—three-year buildup:* Relatively simple to describe and perform. It works well for hotels experiencing a buildup of occupancy and net income. The use of the band of investment to develop both a discount and a capitalization rate is not 100-percent mathematically correct, but the results are generally reliable.

- *Hotel-valuation formula—ten-year DCF:* A complicated technique to describe and perform. The results most accurately mirror the actions of typical hotel buyers who purchase properties based on a leveraged discounted cash-flow approach. The mortgage component is fully supported by recent market transactions, so that 65–75 percent of the discount rate is accurate.

- *Ten-year DCF with overall discount rate:* Relatively simple to describe and perform. The derivation of the discount rate has little support, which greatly weakens this technique. It is difficult to adjust the discount rate for changes in the cost of capital.

- *Sales-comparison approach:* Produces a range of values that provides support for the income approaches. It is difficult to obtain comparable sales, to make necessary adjustments, and to obtain accurate information as to the true motivations of the buyers and sellers. It is not generally reliable to use this approach as the only indicator of value.

- *Market-derived capitalization rate:* This technique has the same problems as the sales-comparison approach. This procedure is seldom used by hotel buyers because there are more reliable techniques for developing a capitalization rate. This approach may apply to markets where hotels are not selling at economic pricing.

- *Room-rate multiplier:* A rule of thumb that provides a check to verify the accuracy of the other techniques. **CQ**



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- Hotel Market Analysis and ADR Forecasting Model
- Hotel Revenue and Expense Forecasting Model
- Hotel Mortgage Equity Valuation Model.

This software package also provides answers to a wide range of key hotel investment questions such as How much is my hotel worth? What can I do to maximize value? What is the likely impact of new competition? How much value will a refurbishment add? Is my market strong enough to support adding more hotel rooms? What is the impact of my brand adding another hotel to the market?

If your role includes responsibility for performing hotel valuations and associated financial analyses- you need to include this software in your business toolbox.

Hotel Market Analysis & Valuation Software v. 6.0 is written as Microsoft Excel files (which runs on both Windows and Apple OS X operating systems) and comes with a detailed users' guide and case study. Version 6.0 contains significant enhancements over Version 5.0 which is no longer distributed.

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Steve Rushmore is the Founder of HVS and the **Creator of the Hotel Valuation Methodology**. He has authored eight textbooks on hotel valuation and investing, along with over 350 articles on similar topics. In addition, Steve has taught thousands of industry professionals around the world. His online course- "**How to Value a Hotel**" is used by the leading hotel schools and consulting organizations. Contact Steve at steve@steverushmore.com or visit his website www.steverushmore.com

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