

The Valuation of Distressed Hotels

Even the most distressed hotels have some value—here're three valuation techniques for determining that value

by Stephen Rushmore

TODAY'S HOTEL MARKET is in a state of chaos. The overbuilding of the 1980s coupled with the recession of the 1990s has sent hotel occupancies in many parts of the country plummeting. Hotels, overleveraged with debt, are being squeezed into foreclosure or bankruptcy. Lenders are taking back properties in record numbers and trying to establish strategies for their disposition. The key question for most lenders who become the proud owner of a

distressed hotel is, "When can I get rid of it and how much will I receive for it?"

Valuing a hotel with a negative cash flow is one of the most difficult types of appraisal assignments. Since the value of an income-producing property is generally considered the present worth of future benefits, the discounting of negative income does not produce positive results.¹ Nevertheless, most hotels, no

matter how distressed, do have some value to hotel investors.

This article will investigate the approaches used as well as the issues involved in valuing distressed hotels. The various valua-

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¹ For a description of seven hotel-valuation techniques for performing properties, see: Stephen Rushmore, "Seven Current Hotel-Valuation Techniques," *The Cornell Hotel and Restaurant Administration Quarterly*, 33, No. 4 (August 1992), pp. 49-56.

EXHIBIT 1

Financial statements, 1988–1991: American Inn

Calendar Year	1988		1989		1990		1991	
Number of Rooms:	250		250		250		250	
Occupancy:	70.0%		65.0%		55.0%		48.0%	
Average Rate:	\$80.00		\$81.00		\$77.00		\$70.00	
	\$	% Gross	\$	% Gross	\$	% Gross	\$	% Gross
Revenues ¹								
Total	9,029	100%	8,700	100%	7,542	100%	6,619	100%
Departmental Expenses ²								
Total	4,265	47.2	4,338	49.9	4,305	57.1	4,326	65.4
Departmental Income	4,764	52.8	4,362	50.1	3,237	42.9	2,293	34.6
Operating Expenses ³								
Total	2,438	27.0	2,479	28.4	2,461	32.5	2,473	37.4
House Profit	2,326	25.8	1,883	21.7	776	10.4	(180)	-2.8
Fixed Expenses ⁴								
Total	621	6.9	625	7.2	604	8.0	592	8.9
Total Net Income	1,705	18.9	1,258	14.5	172	2.4	(772)	-11.7

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.

tion techniques will be illustrated with a case study of two hypothetical hotels.

A Case Study

Say that you are a hotel consultant who has been retained by the Northeast Federal Savings Bank to assist in developing strategies for dealing with problem hotel loans. In addition, once the bank acquires a hotel through foreclosure, you are responsible for evaluating asset-disposition alternatives.

A month ago, Northeast Federal became the owner of two hotels that were pledged as collateral for a portfolio of ten real-estate mortgages encumbering a variety of property types. The overall loan went into default and the owner was able to convince the bank to release his personal guarantee in exchange for deeding the properties to Northeast Federal in lieu of foreclosure. As a result, the bank was able to

acquire the hotels quickly without going through a lengthy bankruptcy proceeding.

Last month you visited both hotels and performed the following analysis for each of them:

- Physical property inspection to determine the condition of each hotel and the need for renovations and upgrading;
- Evaluation of the management companies and the competence of on-site management;
- Review of the local hotel market including historic and future demand trends and the competitive environment;
- Analysis of franchise affiliation and property positioning; and
- Review of historic financial operating statements.

Based on your analyses, you developed a set of recommendations to assist the bank in enhancing the value of these hotels to effect an orderly but rapid disposition. The following is a summary of findings for each hotel.

American Inn, Andover, MA.

The 250-room American Inn was constructed in 1984. The property has been well maintained and there are no signs of deferred maintenance or major mechanical problems. The facilities include a 150-seat restaurant, a 130-seat lounge, 8,000 square feet of meeting space, and an indoor swimming pool. The property has excellent access and visibility from a major interstate highway.

Its location in the middle of the high-tech research corridor north of Boston was a benefit during the mid 1980s, when hotel demand escalated rapidly. However, this dynamic market also attracted a number of new hotels that quickly doubled the area's room supply and diluted everyone's occupancy. In 1988, the bottom fell out of the market when the New England computer industry went into a severe recession and local companies curtailed much of their business activities. In just three

EXHIBIT 2

Six-year projection: American Inn

Calendar Year	1992		1993		1994		1995		1996		1997	
Number of Rooms	250		250		250		250		250		250	
Occupancy	51.0%		54.0%		57.0%		60.0%		63.0%		66.0%	
Average Rate	\$73.50		\$77.91		\$83.36		\$89.20		\$95.44		\$102.12	
	\$	% Gross	\$	% Gross	\$	% Gross	\$	% Gross	\$	% Gross	\$	% Gross
Revenues ¹												
Total	7,237	100%	7,934	100%	8,726	100%	9,586	100%	10,520	100%	11,531	100%
Dept. Expenses ²												
Total	4,566	63.1	4,819	60.7	5,084	58.3	5,363	55.9	5,655	53.8	5,963	51.7
Dept. Income	2,671	36.9	3,115	39.3	3,642	41.7	4,223	44.1	4,865	46.2	5,568	48.3
Operating Expenses ³												
Total	2,606	36.0	2,746	34.6	2,894	33.1	3,052	31.9	3,218	30.5	3,392	29.4
House Profit	65	0.9	369	4.7	748	8.6	1,171	12.2	1,647	15.7	2,176	18.9
Fixed Expenses ⁴												
Total	626	8.6	664	8.3	705	8.1	749	7.8	795	7.6	844	7.3
Total Net Income	(561)	-7.7	(295)	-3.6	43	0.5	422	4.4	852	8.1	1,332	11.6

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.

years, the American Inn's occupancy fell dramatically from its 1988 peak. Average room rate also suffered a significant decline. The following table shows the inn's historic trends in occupancy and average room rate.

American Inn, Andover, MA

YEAR	OCCUPANCY	AVERAGE ROOM RATE
1988	70%	\$80
1989	65	81
1990	55	77
1991	48	70

The abbreviated financial statement in Exhibit 1 shows the operating results for the four years 1988-1991.

The review of on-site management, franchise affiliation, and actual financial statements showed a well-operated property that was positioned correctly for its facilities, location, and market. Although the American Inn can definitely be classified as distressed, the decline in financial operating results appears to be totally market driven

and out of the control of management and ownership.

Based on that review of the American Inn and the local hotel market, a projection of income and expenses can be developed (see Exhibit 2). That projection shows a gradual economic recovery over the next six years, indicating the hotel will reach a stabilized occupancy of 66 percent in 1997.

Great Eastern Hotel, Buffalo, NY. The 250-room Great Eastern Hotel is situated in a suburb of Buffalo, New York, near the airport and the University of Buffalo. The property opened in 1981 during one of the low points in that city's economy. The new hotel's occupancy grew slowly, reaching its peak of 77 percent in 1986. Several new hotels recently were developed nearby, bringing occupancies down somewhat, but the renewed strength of the local economy cushioned the Buffalo hotel market from the devastating occupancy plunges evident in other areas of

the country. The following table shows the Great Eastern's historic trends in occupancy and average room rate.

Great Eastern Hotel, Buffalo, NY

YEAR	OCCUPANCY	AVERAGE ROOM RATE
1988	70%	\$80
1989	68	82
1990	67	85
1991	69	87

The financial statement that is summarized in Exhibit 3 shows the operating results for the four years 1988-1991.

While the Great Eastern has historically achieved better financial operating results, its current performance cannot be classified as distressed. In fact, the market analysis indicates a recovery is now in progress.

The Great Eastern is a convention-oriented hotel with a 175-seat restaurant, a 150-seat lounge, 9,000 square feet of meeting space, an indoor pool, and a small health club.

EXHIBIT 3

Financial statements, 1988–1991: Great Eastern Hotel

Calendar Year	1988		1989		1990		1991	
Number of Rooms:	250		250		250		250	
Occupancy:	70.0%		68.0%		67.0%		69.0%	
Average Rate:	\$80.00		\$82.40		\$84.87		\$87.42	
	\$	% Gross	\$	% Gross	\$	% Gross	\$	% Gross
Revenues ¹								
<i>Total</i>	9,029	100%	9,117	100%	9,315	100%	9,873	100%
Departmental Expenses ²								
<i>Total</i>	4,265	47.2	4,397	48.2	4,553	48.9	4,778	48.4
Departmental Income	4,764	52.8	4,720	51.8	4,762	51.1	5,095	51.6
Operating Expenses ³								
<i>Total</i>	2,438	27.0	2,514	27.5	2,600	27.9	2,726	27.5
House Profit	2,326	25.8	2,206	24.3	2,162	23.2	2,369	24.1
Fixed Expenses ⁴								
<i>Total</i>	621	6.9	638	7.0	657	7.1	689	6.9
<i>Total Net Income</i>	1,705	18.9	1,568	17.3	1,505	16.1	1,680	17.2

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.

A physical inspection of the Great Eastern revealed the need for a soft-goods upgrade in the guest rooms. The cost of replacing the carpet, spreads, and drapes should be paid for from the reserve for replacement. All of the other furniture throughout the hotel was replaced three years ago and is in good condition.

The management of the Great Eastern appears to be competent and the property has consistently outperformed the market. Operating ratios appear to be in line with industry standards. The Great Eastern's franchise seems appropriate and the reservation system contributes a strong 30 percent of the hotel's occupancy. The property has an excellent location in a growing area of Buffalo, and access to and visibility of the hotel are very good.

Based on your review of the local market and the dominant historical position of the Great Eastern, you prepared a three-year projection of income and expense show-

ing a continued recovery with the occupancy stabilizing in three years, in 1994, at 74 percent (see Exhibit 4).

Your Current Assignment

After performing the property and market analyses, the bank's executives decide to sell both hotels. You are asked to estimate the value of each property to determine the most probable selling price.

Since the future of the Great Eastern Hotel appears fairly stable, the bank is willing to take back financing in the event a buyer is unable to secure a new mortgage. The future financial success of the American Inn is more in doubt because it assumes an immediate financial turnaround coupled with a long-term market recovery. Because of this risk, the bank would prefer an all-cash sale, but will consider taking back financing for an extremely strong purchaser such as a major hotel chain.

You are asked to value the two hotels under the following financing scenarios:

- (1) Value the Great Eastern Hotel subject to the bank's financing package;
- (2) Value the American Inn subject to the bank's financing package; and
- (3) Value the American Inn assuming an all-cash sale.

In addition to the income approach you decide to also consider the cost approach and the sales-comparison approach. The following financing and valuation data are derived from the bank and market sources:

Mortgage Financing Supplied by the Bank (data apply to both properties)

- 10-percent interest
- 30-year amortization
- .10531 mortgage constant
- 75-percent loan-to-value ratio
- .09062 of mortgage paid in ten years
- Personal guarantees for the American Inn

EXHIBIT 4

Three-year projection: Great Eastern Hotel

Calendar Year	1992		1993		1994	
Number of Rooms:	250		250		250	
Occupancy:	71.0%		73.0%		74.0%	
Average Rate:	\$91.79		\$96.38		\$101.20	
	\$	% Gross	\$	% Gross	\$	
Revenues ¹						
<i>Total</i>	10,573	100%	11,313	100%	11,968	
Departmental Expenses ²						
<i>Total</i>	5,014	47.4	5,260	46.5	5,495	
Departmental Income	5,559	52.6	6,053	53.5	6,473	
Operating Expenses ³						
<i>Total</i>	2,860	27.0	3,000	26.5	3,135	
House Profit	2,699	25.6	3,053	27.0	3,338	
Fixed Expenses ⁴						
<i>Total</i>	726	6.9	765	6.8	802	
<i>Total Net Income</i>	1,973	18.7	2,288	20.2	2,536	

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.

Equity Yield Rates

- Great Eastern Hotel, 20 percent
- American Inn, 25 percent

Equity Dividend Rate (cash-on-cash)

- Great Eastern Hotel, 10.5 percent

Terminal Capitalization Rate

- Great Eastern Hotel, 11 percent
- American Inn, 11.5 percent

Broker and Legal Costs (for both the Great Eastern Hotel and the American Inn)

- 3 percent of reversionary value

Inflation Rate (for net-income projection after stabilized year, for both the Great Eastern Hotel and the American Inn)

- 5 percent

Market Sales of Comparable Hotels

- Using the Hospitality Market Data Exchange, you locate four recent transactions involving similar hotels. Exhibit 5 summarizes the information derived from these sales.

Development Costs

- The following is an estimate of

what it would cost to replace the Great Eastern Hotel and the American Inn new in 1992.

Land	\$ 2,570,000
Furniture & Equipment	4,375,000
Improvements (Building)	18,750,000
<i>Total</i>	\$25,695,000

Valuating the Great Eastern Hotel: Bank's Financing Package

You were asked to value the two hotels under the three financing scenarios mentioned earlier: value both hotels subject to the bank's financing package and value the American Inn assuming an all-cash sale.

Valuation procedures. In valuing the Great Eastern Hotel subject to the bank's financing, you decided to employ the income approach using the following three techniques:

- (1) Band of Investment with three-year net income build-up and an equity dividend;
- (2) Mortgage Equity with a 10-year income projection and an

equity yield. This technique is often referred to as the Simultaneous Valuation Formula; and

- (3) Overall rate derived from sales of comparable hotels applied to actual 1991 net income.

• *Band of Investment—three-year build-up.* The band of investment using a three-year build-up uses the projected net income of the hotel up to its stabilized year (assumed in this case to be three years). The capitalization and discount rates are developed by taking the cost of capital used in a hotel investment (debt and equity) and calculating a weighted average of those costs based on the percentage relationship of each capital source to the whole. The technique is then applied by taking the third year's net income and capitalizing it at the capitalization rate developed by the band of investment. This third-year value is then discounted back to the present value using the same rate derived

EXHIBIT 5

Sample sales transactions

	SALE No. 1	SALE No. 2	SALE No. 3	SALE No. 4
Property size	260 rooms	240 rooms	275 rooms	235 rooms
1991 occupancy	45 percent	70 percent	50 percent	66 percent
1991 average rate	\$64.00	\$85.00	\$72.00	\$83.00
1991 net income*	(\$520,000)	\$2,440,000	(\$577,000)	\$2,000,000
Sales price (1991)	\$2,210,000	\$27,700,000	\$5,500,000	\$20,000,000

Comments:

Sale No. 1—Distressed hotel sold by the FDIC for all cash

Sale No. 2—Upscale hotel situated in a major California gateway city. Property has historically operated in the low 80-percent occupancy levels and should regain this position when the market improves. The existing mortgage was assumed by purchaser

Sale No. 3—Distressed property foreclosed by bank and sold with \$4,400,000 financing included at 9.5% interest

Sale No. 4—Property sold with bank financing at 11-percent interest. Local hotel market is good, but is expected to deteriorate somewhat over the next several years as the economy declines further.

*Before management fees and reserve

by the band of investment as the discount rate. The projected net income for years one and two are also discounted to the present value using this discount rate. The sums of these present values are added together, producing the estimate of value.

This process is illustrated as follows:

Band of Investment

Mortgage (.75)(.10531 ¹) =	.07898
Equity (.25)(.10500 ²) =	.02625
Overall Rate ³	.10523

¹Mortgage Constant

²Equity Dividend (cash-on-cash)

³Capitalization and Discount Rate

Discounted Cash Flow

YEAR #3:	
\$2,536,000 ÷ .10523 =	
(\$24,100,000)(.81864 ¹) =	\$19,729,000
YEAR #2:	
(\$2,288,000)(.81864 ¹) =	1,873,000
YEAR #1:	
(\$1,973,000)(.90479 ¹) =	1,785,000
	\$23,387,000

¹Present Value at 10.52%

Proof

Debt Service:

$$(.75)(\$23,387,000) =$$

$$(\$17,540,000)(.10531) = \$1,847,000$$

¹Amount of the Mortgage

Net Income to Equity:

YEAR #1:	\$1,973,000 - \$1,847,000 = \$126,000
YEAR #2:	\$2,288,000 - \$1,847,000 = 441,000
YEAR #3:	\$2,536,000 - \$1,847,000 = 689,000

Value of Equity Position:

YEAR #3:	\$689,000 ÷ .105 =	
	(\$6,562,000)(.81898 ¹) =	\$5,374,000
YEAR #2:	(\$441,000)(.81898 ¹) =	361,000
YEAR #1:	(\$126,000)(.90498 ¹) =	114,000
Value of Equity Position		\$5,849,000

¹Present Value at 10.5%

		PERCENT OF TOTAL
Value of Equity Position	\$5,849,000	25
Amount of the Mortgage	17,540,000	75
Total Value	\$23,389,000	100%

The proof shows that at a 75-percent loan-to-value ratio both debt and equity capital are receiving their required rates of return.

The equity return used in the band of investment is the equity dividend, which is a short-term, cash-on-cash return equating to the cash flow after debt service divided by the total equity invested. The equity dividend implicitly considers the long-term impact of

inflation, value appreciation over time, and mortgage amortization. The equity yield, which will be used in the next technique, is used for long-term projections (10 years) and represents the equity internal rate of return. The equity yield specifically considers the annual cash flow to equity (equity dividends) plus the annual effect of inflation, appreciation of the property's value, and mortgage amortization.

• *Mortgage Equity with 10-year Income Projection and an Equity Yield.* This technique, also known as the "simultaneous valuation formula," or SVF, was developed by Suzanne Mellen, MAI, of Hospitality Valuation Services.² The SVF values hotels using a 10-year projection of income and expenses 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.

² *Editors' note:* This approach to hotel valuation was among the seven valuation techniques described by Rushmore in the last issue of *The Quarterly*. It is repeated here for the benefit of those who may have missed the earlier article. For an explanation of the other six approaches, see: Stephen Rushmore, "Seven Current Hotel-Valuation Techniques," *The Cornell Hotel and Restaurant Administration Quarterly*, 33, No. 4 (August 1992), pp. 49-56.

The total of the mortgage component and the equity component equals the value of the property. The steps involved in the simultaneous valuation formula are outlined as follows:

- (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 return 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 period³
- 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.

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

³P = $(f-i)/(f_{i+1})$, where i = the interest rate of the mortgage.

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).⁴ 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:

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

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

⁴The superscript number attached to NI denotes year of net income.

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:

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

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:

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

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:

$$\begin{aligned} & [(d_e^1)(1/S^1)] + [(d_e^2)(1/S^2)] + \dots \\ & + [(d_e^{10})(1/S^{10})] + [(d_r)(1/S^{10})] = (1 - M)V \end{aligned}$$

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:

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

Since the only unknown in this equation is the property's value, it can be readily solved.

To use the simultaneous valuation formula it is necessary to extend the three-year projection of income and expense for the Great Eastern Hotel out to the eleventh year. 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 expense at 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 Great Eastern's stabilized third year's net income produces the following 11-year projection.

PROJECTION YEAR	NET INCOME BEFORE DEBT SERVICE
1992	1,973,000
1993	2,288,000
1994	2,536,000
1995	2,663,000
1996	2,796,000
1997	2,936,000
1998	3,083,000
1999	3,237,000
2000	3,398,000
2001	3,568,000
2002	3,747,000

The known variables are as follows:

Annual net income (NI)	See preceding table
Loan-to-value ratio (M)	75%
Mortgage interest rate	10%
Amortization	30 years
Debt-service constant	.10531
Equity yield (r _e)	20%
Broker and legal (b)	3%
Amount of mortgage paid in 10 years (f _p)	0.09062
Terminal capitalization rate (R _t)	11.5%

The present worth of \$1 factor at 20-percent equity-yield rate:

YEAR	1/S
1	.833333
2	.694444
3	.578704
4	.482253
5	.401878
6	.334898
7	.279082
8	.232568
9	.193807
10	.161506

Using these known variables, the following intermediary calculation must be made before using the simultaneous valuation formula (annual debt service is calculated by multiplying f times M times V):

$$(.10531)(.75)(V) = .07898V$$

Inserting the known variables into the simultaneous valuation formula produces the following:

$$\begin{aligned} & [(1,973,000 - .07898V)(.833333)] + \\ & [(2,288,000 - .07898V)(.694444)] + \\ & [(2,536,000 - .07898V)(.578704)] + \\ & [(2,663,000 - .07898V)(.482253)] + \\ & [(2,796,000 - .07898V)(.401878)] + \\ & [(2,936,000 - .07898V)(.334898)] + \\ & [(3,083,000 - .07898V)(.279082)] + \end{aligned}$$

EXHIBIT 6

Net income to equity

PROJECTION YEAR	NET INCOME BEFORE DEBT SERVICE	DEBT SERVICE	CASH FLOW TO EQUITY
1992	\$1,973,000	- \$1,860,000	= \$113,000
1993	2,288,000	- 1,860,000	= 428,000
1994	2,536,000	- 1,860,000	= 676,000
1995	2,663,000	- 1,860,000	= 803,000
1996	2,796,000	- 1,860,000	= 936,000
1997	2,936,000	- 1,860,000	= 1,076,000
1998	3,083,000	- 1,860,000	= 1,223,000
1999	3,237,000	- 1,860,000	= 1,377,000
2000	3,398,000	- 1,860,000	= 1,538,000
2001	3,568,000	- 1,860,000	= 1,708,000

$$\begin{aligned}
 & [(3,237,000 - .07898V)(.232568)] + \\
 & [(3,398,000 - .07898V)(.193807)] + \\
 & [(3,568,000 - .07898V)(.161506)] + \\
 & \{[(3,747,000/.11) - [.03(3,747,000/ \\
 & .11)] - [(1-.09062)(.75)(V)] \\
 & .161506\} = (1 - 0.75)V
 \end{aligned}$$

Solving the equation:

$$\begin{aligned}
 & (1,644,000 - .06581V) + \\
 & (1,589,000 - .05485V) + \\
 & (1,468,000 - .04571V) + \\
 & (1,284,000 - .03809V) + \\
 & (1,124,000 - .03174V) + \\
 & (983,000 - .02645V) + \\
 & (860,000 - .02204V) + \\
 & (753,000 - .01837V) + \\
 & (659,000 - .01531V) + \\
 & (576,000 - .01276V) + \\
 & \{[(34,064,000 - 1,022,000) - \\
 & .68204V] .161506\} = 0.25V
 \end{aligned}$$

Combine like terms:

$$\begin{aligned}
 16,276,000 - .44128V &= .25V \\
 16,276,000 &= .69128V \\
 V &= 16,276,000/.69128 \\
 V &= \$23,545,000
 \end{aligned}$$

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-percent yield and the equity yields 20 percent, then \$23,545,000 is the correct value by the income-capitalization approach.

The allocation of the indicated market value:

Mortgage Component (.75)	\$17,659,000
Equity Component (.25)	5,886,000
Total	\$23,545,000

Calculation of annual debt service:

Mortgage Component	\$17,659,000
Mortgage Constant	.10531
Annual Debt Service	\$1,860,000

Calculating net income to equity is shown in Exhibit 6.

Equity residual at the end of year number ten:

Reversionary value:	
\$3,747,000/0.11	= \$34,064,000
Sales proceeds	\$34,064,000
Brokerage and legal	1,022,000
Mortgage balance	16,059,000
Residual equity value	\$16,983,000

The annual cash flow to equity plus the residual equity value is discounted to the present value at the equity yield rate of 20 percent, as shown in Exhibit 7.

The table in Exhibit 7 demonstrates that the equity investor would receive a 20-percent yield on a \$5,886,000 investment if the annual cash flow and reversion took place as projected. Since the debt service that was factored into the calculations was based on an interest rate of 10 percent, the required yield for the lender was also achieved.

• *Overall Rate Derived from Sales of Comparable Hotels.* An overall capitalization rate can be derived from the sale of a hotel by dividing the property's actual net

EXHIBIT 7

Discounting to the present value

YEAR	CASH FLOW TO EQUITY	PRESENT VALUE OF \$1 AT 20%	DISCOUNTED CASH FLOW
1992	(\$113,000)	(.833333)	= \$94,000
1993	(428,000)	(.694444)	= 297,000
1994	(676,000)	(.578704)	= 391,000
1995	(803,000)	(.482253)	= 387,000
1996	(936,000)	(.401878)	= 376,000
1997	(1,076,000)	(.334898)	= 361,000
1998	(1,223,000)	(.279802)	= 342,000
1999	(1,377,000)	(.232568)	= 320,000
2000	(1,538,000)	(.193807)	= 298,000
2001	(18,691,000*)	(.161506)	= 3,019,000
Value of equity component:			\$5,886,000

*Tenth-year net income to equity	\$1,708,000
Residual equity value	16,983,000
Total	\$18,691,000

income by the actual sales price ("net income" usually refers to total income before deductions are made for management fee(s) and reserve for replacement). Four sale transactions of similar hotels were found from the Hospitality Market Data Exchange. Sales number one and number three involved distressed hotels where the net income was negative. Those sales are unsuitable for deriving an overall rate. Sales numbers two and four showed positive net incomes and the following overall capitalization rates were derived:

$$\begin{aligned}
 \text{SALE 2—} \\
 & \$2,440,000 \div \$27,700,000 = 8.8\% \\
 \text{SALE 4—} \\
 & \$2,000,000 \div \$20,000,000 = 10\%
 \end{aligned}$$

From the description, the hotel involved in sale number two appears to offer a higher upside potential than the Great Eastern, so the overall capitalization rate should probably be adjusted upward somewhat. On the other hand, the hotel from sale number four is expected to experience a few more years of economic adversity before its net income will be heading upward. A downward adjustment to the overall capitalization rate would be warranted.

EXHIBIT 8
Net income to equity, American Inn

PROJECTION YEAR	NET INCOME BEFORE DEBT SERVICE	DEBT SERVICE	CASH FLOW TO EQUITY
1992	(\$561,000)	- \$345,000	= (\$906,000)
1993	(295,000)	- 345,000	= (640,000)
1994	43,000	- 345,000	= (302,000)
1995	422,000	- 345,000	= 77,000
1996	852,000	- 345,000	= 507,000
1997	1,332,000	- 345,000	= 987,000
1998	1,399,000	- 345,000	= 1,054,000
1999	1,469,000	- 345,000	= 1,124,000
2000	1,542,000	- 345,000	= 1,197,000
2001	1,619,000	- 345,000	= 1,274,000

Based on these two sales, and making the indicated adjustments, a 9.6-percent overall capitalization rate was considered appropriate. Since the overall rate was derived from a net income before management fee(s) and reserve for replacement, these expenses must first be added back to the Great

Eastern's 1991 net income:

Great Eastern's 1991 net income	\$1,680,000
Plus: Management fee	296,000
Reserve for replacement	296,000
Adjusted net income	\$2,272,000

Value: $\$2,272,000 \div .096 = \$23,667,000$

Valuating the American Inn: Bank's Financing Package

The simultaneous valuation formula (SVF) will be used in this example since the bank will be providing financing and the rates of return for both forms of capital (debt and equity) are known. The following calculations using the SVF are similar to those used in the example involving the Great Eastern Hotel.

Applying the assumed 5-percent inflation rate to the American Inn's stabilized sixth year's net income produces the following 11-year projection.

PROJECTION YEAR	NET INCOME BEFORE DEBT SERVICE
1992	(\$561,000)
1993	(295,000)
1994	43,000
1995	422,000
1996	852,000
1997	1,332,000
1998	1,399,000
1999	1,469,000
2000	1,542,000
2001	1,619,000
2002	1,700,000

The known variables are as follows:

Annual Net Income	See preceding table
Loan-to-value Ratio	75%
Mortgage Interest Rate	10 %
Amortization	30 Years
Debt Service Constant	.10531
Equity Yield	25%
Broker and Legal	3%
Amount of Mortgage Paid in Ten Years	.09062
Terminal Capitalization Rate	11.5%

Inserting the known variables into the simultaneous valuation formula produces the following:

$$\begin{aligned}
 & [(-561,000 - .07898V) (.800000)] + \\
 & [(-295,000 - .07898V) (.640000)] + \\
 & [(43,000 - .07898V) (.512000)] + \\
 & [(422,000 - .07898V) (.409600)] + \\
 & [(852,000 - .07898V) (.327680)] + \\
 & [(1,332,000 - .07898V) (.262144)] + \\
 & [(1,399,000 - .07898V) (.209715)] + \\
 & [(1,469,000 - .07898V) (.167772)] + \\
 & [(1,542,000 - .07898V) (.134218)] + \\
 & [(1,619,000 - .07898V) (.107374)] + \\
 & \{[(1,700,000 \div .115) - [.03(1,700,000 / .115)] - [(1 - .09062) (.75)(V)]\} \\
 & (.107374) = (1 - .75)V
 \end{aligned}$$

The next step is to combine like terms and solve the equation:

$$\begin{aligned}
 2,646,000 - .34424V &= .25V \\
 2,646,000 &= .60524V \\
 V &= 2,646,000 \div .60524 \\
 V &= \$4,371,000
 \end{aligned}$$

Then, determine the allocation of the indicated market value:

Mortgage Component (.75)	\$3,278,000
Equity Component (.25)	1,093,000
Total	\$4,371,000

Use the mortgage component from the previous step to calculate the annual debt service:

Mortgage Component	\$3,278,000
Mortgage Constant	.10531
Annual Debt Service	\$345,000

Finally, use the amount calculated as annual debt service to figure the property's net income to equity (see Exhibit 8).

Valuating the American Inn: All-Cash Sale

A ten-year discounted-cash-flow valuation model with an unleveraged discount rate will be used. Since the value assumes an all-cash sale (no seller financing from the bank), the cash invested by the purchaser represents equity and therefore requires the assumed 25-percent return or yield. Since there will be no debt component, this 25 percent is used as the unleveraged discount rate. The reversionary value is calculated by dividing the projected eleventh-year's net income by the American Inn's terminal capitalization rate of 11.5 percent.

The following calculations and Exhibit 9 show the development of the reversionary value and the ten-year discounted cash flow:

Reversionary Value:	
\$1,700,000 ÷ .115	= \$14,783,000
Sales Proceeds	\$14,783,000
Brokerage & Legal	443,000
Reversion	\$14,340,000

Other valuation procedures and rules of thumb. The four comparable sales mentioned earlier should be considered using the sales price on a per-room basis.

Distressed Hotel: All Cash, no purchase-money financing:
 SALE #1: $\$2,210,000 \div 260$ rooms = \$8,500 per room

Distressed Hotel: Seller (the bank) provided financing:
 SALE #3: $\$5,500,000 \div 275$ rooms = \$20,000 per room

Non-Distressed Hotel: Existing mortgage was assumed by purchaser:
 SALE #2: $\$27,700,000 \div 240$ rooms = \$115,400 per room

EXHIBIT 9
*Ten-year discounted cash flow,
 American Inn*

YEAR	NET INCOME	PRESENT VALUE OF \$1 AT 25%		DISCOUNTED CASH FLOW
1992	(\$561,000)	(.80000)	=	(\$449,000)
1993	(295,000)	(.64000)	=	(189,000)
1994	(43,000)	(.51200)	=	22,000
1995	(422,000)	(.40960)	=	173,000
1996	(852,000)	(.32768)	=	279,000
1997	(1,332,000)	(.26214)	=	349,000
1998	(1,399,000)	(.20971)	=	293,000
1999	(1,469,000)	(.16777)	=	246,000
2000	(1,542,000)	(.13422)	=	207,000
2001	(15,959,000*)	(.10737)	=	1,714,000
<i>Total property value:</i>				\$2,645,000
* Tenth-year net income to equity				\$1,619,000
Residual equity value				14,340,000
Total				\$15,959,000

Non-Distressed Hotel: Seller (the bank) provided financing:

SALE #4: \$20,000,000 ÷ 235 rooms = \$85,100 per room

The income approach for the American Inn (a distressed hotel) showed a value per room of \$17,500 if the bank provided financing and \$10,600 per room if an all-cash sale was required. The comparable sales set forth above for distressed hotels seem to support the value indicated by the income approach (SVF).

The SVF approach for the Great Eastern Hotel (a non-distressed hotel) showed a value per room of \$94,200, which is also supported by the comparable sales.

The "1,000-times-the-average-room-rate" rule of thumb states that multiplying a hotel's average room rate by 1,000 produces a rough estimate of a hotel's value on a per-room basis. This rule of thumb indicates the value of the Great Eastern Hotel to be approximately \$92,000 per room and the American Inn about \$73,000 per room. Obviously, this thumb rule does not work for distressed hotels.

While the cost approach provides limited value information, another rule of thumb suggests that if you can purchase a distressed hotel at 20 percent to 30 percent of its replacement cost, you are getting a good deal. The replacement cost on a per-room basis is approximately \$103,000. Both income-approach values for the American Inn fall below this range, thereby indicating a good deal for the buyer. At the same time, this comparison should indicate to the seller that perhaps the selling price is too low.

Valuating a Healthy Hotel

Almost identical values were derived for the Great Eastern Hotel using the three-year equity dividend technique and the ten-year SVF technique. Although a

short-term projection is generally more accurate than a 10-year forecast, most sophisticated investors are accustomed to the 10-year discounted-cash-flow procedure, thereby making it the preferred technique.

The results from any technique that relies on market sales of comparable hotels (such as by using the overall rate from sales or the sales-comparison approach) should be questioned since the true motivations of hotel buyers and sellers are difficult to ascertain, making it unlikely that the accuracy of the data can be adequately verified. Market sales are useful in evaluating the value derived from the income approach, but any greater reliance on their conclusions is generally not justified.

Valuating a Distressed Hotel

For a distressed hotel to have value, the property must exhibit turnaround potential. Such turnaround may be attributed to an improved economy, a reduction in the competitive supply, or increased revenues and efficiencies from better management. Since the American Inn had good management, its recovery was projected based on an improving economy coupled with a low potential for any new competition. If a dis-

tressed hotel shows no chance for an eventual turnaround, its value may be reduced to that of its land value as if vacant.

Appraising a distressed hotel where the prospect of a turnaround is five to ten years into the future requires a long-term discounting procedure. The band of investment with a three-year build-up

and an equity dividend is not appropriate because it is too short term. Likewise, an overall rate derived from sales of comparable hotels and applied to the actual 1991 net income is also short-sighted because it does not consider a recovery and would tend to understate the indicated value.

The availability of financing is a key component in realizing the value of a distressed hotel. In today's market, there is virtually no third-party financing to provide debt capital for hotels. If the bank does not take back a purchase-money mortgage for the American Inn, the buyer would effectively be buying on an unleveraged basis with all equity. The use of an unleveraged discounting procedure employing a 25-percent discount rate shows the dramatic loss in value produced by this disposition strategy (\$2,645,000 versus \$4,371,000). The lower value is probably more of a liquidation price rather than a market-value price since financing has always been a critical ingredient to hotel acquisitions. This example illustrates why lenders are best advised to stay involved with those hotel investments that show potential for eventual turnaround rather than dumping such properties for all cash. **CQ**