

*Illustration 26.2: Valuing the Equity Stake in a building*

The analysis above can be done for just the equity stake in 711 Third Avenue. To do so, we will first estimate the dollar debt that will be borrowed to buy this building. Assuming that the building has a value of \$101.48 million (from the previous illustration) and using a debt ratio of 60%, we estimate debt to be \$60.89 million.

$$\text{Debt} = \text{Value of building} * \text{Debt ratio} = 101.48 * 0.6 = \$60.89 \text{ million}$$

Since this is a balloon payment loan, the interest payments on the debt will remain the same each year, based upon the 6.5% interest rate.

$$\text{Annual Interest expenses} = \text{Dollar debt} * \text{interest rate} = \$60.89 * 0.065 = \$3.96 \text{ million}$$

The appropriate discount rate to use while valuing the equity stake in the building is the cost of equity, estimated to be 10.20% in this analysis.

*Estimating Cash Flows to Equity*

The estimated cash flows to equity are estimated each year by netting out interest expenses from income and adjusting the taxes accordingly. Table 26.6 summarizes cash flows to equity each year for the next 5 years.

In year 5, we also estimate the terminal value of equity by subtracting the debt due from the terminal value of the building estimated in the previous illustration.

$$= \text{Terminal value of Building} - \text{Debt}$$

$$\text{Terminal value of equity} = 116.81 \text{ million} - 60.89 \text{ million}$$

$$= 55.92 \text{ million}$$

*Estimating the value of equity*

The present value of the cash flows to equity for the next 5 years and the terminal value are computed in Table 26.7 below.

*Table 26.7: Value of Equity stake in 711 Third Avenue*

	1	2	3	4	5
Cash flow to equity	\$1,164,048	\$1,307,388	\$1,455,741	\$1,609,271	\$1,768,148
Terminal value					\$55,922,390
Present value @ 10.20%	\$1,056,305	\$1,076,567	\$1,087,775	\$1,091,196	\$35,519,318

The value of the equity stake in the building is \$39.83 million. Adding this value to the value of the debt raised of \$60.89 million gives us an estimate for the value of the building.

Estimated value of building = \$ 60.89 million + \$39.83 million = \$100.72 million

Why is there a difference between this estimate of the property value and the one we arrived at in the previous illustration? The reason is simple. The debt ratio of 60% that we assumed and kept constant when estimating cost of capital will require us to borrow an additional amount each year for the next 5 years, since the building's value will appreciate by about 3% a year. The tax benefits from this additional debt were implicitly built into the valuation of the building in the last illustration but were ignored while valuing equity in this one. If we consider those tax benefits, we will arrive at the same value.

### **Real Estate Valuation in Practice: A Comparison**

The building on 711 Seventh Avenue was valued for sale by an appraiser, using discounted cash flow valuation. While many of the base assumptions in our valuation were borrowed from that appraisal, the estimate of value in the appraisal was \$70 million, about a third below our estimate. The main differences between our valuation and the appraiser's valuation are as follows.

- The appraisal was done entirely in terms of pre-tax cash flows. Depreciation was therefore not considered and the tax benefits from it were ignored.
- The discount rate used was 11.5%, based upon a proprietary survey of real estate investors done by the appraiser. While nothing was mentioned in the appraisal, this discount rate presumably was in pre-tax terms (to ensure consistency with how the cash flows were estimated) and stated as a return on the overall investment (and not just the equity investment).
- The terminal value was estimated based upon a capitalization rate of 9.0%, which was also based upon the survey. (The operating income in year 5 was divided by 9.0% to arrive at terminal value)

We believe that using pre-tax cash flows and pre-tax discount rates will miss the segment of value that comes from depreciation and interest expenses being tax deductible and understate the value of the building. Assuming that the discount rate is defined correctly

as a pre-tax cost of capital, the use of surveys to estimate both this number and the terminal multiple makes us uncomfortable, especially given the fact that the buyer of this building is a corporation with diversified investors.

#### ***D. Limitations of Discounted Cash flow***

There are many reasons given for why discounted cash flow valuation is not appropriate for real estate. First, it is argued the discount rates are difficult, if not impossible, to estimate for most real estate investments. In the discussion of this topic, we have pointed out that this is not necessarily true. Second, it is argued that estimating cash flows for the time horizon is tedious and difficult to do, as is the estimation of the terminal value. We would argue that it is much easier to estimate cash flows for real estate than for some financial investments (for instance, a high growth stock). Third, it is argued that discounted cash flow valuation does not reflect market conditions - that the market is strong or weak at the time of the valuation. We would reject this argument at two levels. On one level, the cash flows should reflect the market conditions, since they will be higher (higher rents and lower vacancy rates) and grow faster in strong market conditions. On the other level, any additional value being assigned by the market beyond the cash flow levels can be considered to be 'overvaluation' and should not be built into the appraised value in the first place.

#### **Comparable/Relative Valuation**

Just as price/earnings and price/book value ratios are used to value financial assets, real estate investments can be valued using standardized value measures and comparable assets. There are several reasons for doing so.

- It provides a mechanism for valuing non-cash flow producing assets. For instance, the value of a single family residential building bought as a primary residence can be estimated by looking at similar properties in the same area.
- It takes into account market trends that might not be reflected in the cash flows yet for a number of reasons. Leases might have frozen lease payments in place, while market values have risen, and rent control laws might prevent rents from rising with market values.

- It is also argued that valuing based upon comparables is much simpler to do than discounted cash flow valuation since it does not require, at least explicitly, the estimation of discount rates and cash flows.

### ***What is a comparable asset?***

The key limitation of all comparable based approaches is in the definition of 'comparable'. In the case of stocks, differences in growth, risk and payout ratios between stocks have to be adjusted before price/earnings ratios are compared. Many analysts choose to restrict their comparisons of stocks to those within the same industry group to keep it relatively homogeneous. In the case of real estate, differences in income production, size, scale, location, age and quality of construction have to be accounted for before comparisons are made. Some of these adjustments are simple (such as differences in size) and others are subjective (such as differences in location).

### ***Use of Standardized Value Estimates***

When valuing assets based upon comparable assets, the value has to be standardized for the comparison. In stocks, this standardization is often done by dividing the price per share by the earnings per share (P/E) or the book value per share (P/BV). In the case of real estate, this adjustment is made by –

(a) *Size*: The simplest standardized measure is the price per square foot, which standardizes value using the size of the building. In office rentals, where square footage is a key factor determining rental revenues, this may be a useful adjustment. It does not, however, factor in differences on any of the other dimensions.

(b) *Income*: The value of an asset can be standardized using its income. For instance, the Gross Income Multiplier (Price of property/Gross Annual Income) is an income-standardized value measure. The advantage of this approach is that the income incorporates differences in scale, construction quality and location<sup>6</sup>. The gross income should be prior to debt payments, since differences in leverage can cause large differences in the income available to equity investors.

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<sup>6</sup> Buildings of better quality in better locations should command higher rents/leases and higher expected income than other buildings.

***Why comparables may work better for real estate than stocks***

One of the difficulties in using comparables to value stocks is that risk and growth characteristics can vary widely across stocks even in the same industry class. In the case of real estate properties in the same locale, the argument can be made that the growth and risk characteristics are very similar across these properties and that the only differences are therefore differences in the capacity to generate income.

***Illustration 26.3: Valuing a property based upon comparables***

Consider the property at 711 Third Avenue that was valued using discounted cash flow valuation. The appraisal also noted eight other properties in that part of Manhattan with roughly the same characteristics as the building being appraised that had sold recently. The following table summarizes the details of these properties and the prices that they were sold for.

***Table 26.8: Comparable Properties***

<i>Property</i>	<i>Size</i>	<i>Occupancy rate</i>	<i>Price for sale</i>	<i>Price/Square foot</i>	<i>NOI/SF</i>	<i>Price/NOI</i>
900 Third Avenue	560000	99%	\$182,000,000	\$325.00	26.98	12.05
767 Third Avenue	456007	95%	\$95,000,000	\$208.33	NA	
350 Madison Avenue	310000	97%	\$70,060,000	\$226.00	17.6	12.84
888 Seventh Avenue	838680	96%	\$154,500,000	\$184.22	NA	
622 Third Avenue	874434	97%	\$172,000,000	\$196.70	NA	
150 East 58th Street	507178	95%	\$118,000,000	\$232.66	16.52	14.08
1065 Avenue of the Americas	580000	95%	\$59,000,000	\$101.72	NA	
810 Seventh Avenue	646000	95%	\$141,000,000	\$218.27	15.17	14.39
Average		96.13%		\$211.61		13.34

The property at 711 Third Avenue has 528,357 square feet of rental space, had an occupancy rate of 95% and generated net operating income of \$6.107 million in the most recent year. Based upon the average price/square foot, the value of the property is;

$$\begin{aligned}
 &= \text{Square footage} * \text{Price per square foot} \\
 \text{Value of 711 Third Avenue} &= (528,357 \text{ sq ft}) (\$211.61/\text{sq ft}) \\
 &= 111.807
 \end{aligned}$$

If we adjust for the fact that the occupancy rate is slightly lower at 711 Third Avenue, we would estimate the following value.

Value of 711 Third Avenue

$$\begin{aligned}
 &= (\text{Square footage}) \frac{\text{Occupancy rate}_{711 \text{ third}}}{\text{Average Occupancy rate}} (\text{Price per square foot}) \\
 &= (528,357 \text{ sq ft}) \frac{95\%}{96.13\%} (\$211.61/\text{sq foot}) \\
 &= \$110.497 \text{ million}
 \end{aligned}$$

Finally, if we apply the multiple of operating income based upon the four properties for which it is available to this property:

$$\begin{aligned}
 &= (\text{Net Operating income}) (\text{Average Price/NOI}) \\
 \text{Value of 711 Third Avenue} &= (6.107) (13.34) \\
 &= \$81.470 \text{ million}
 \end{aligned}$$

Which of these values gets used will depend upon whether you view the lower operating income per square foot at 711 Third Avenue as the consequence of poor management or the building's characteristics – location and condition. If it is the former, you might be willing to pay the higher values (\$111 million). If it the latter, you would pay only \$81.4 million.

### ***A Regression Approach***

One of the approaches used to extend the reach of relative valuation for stocks is the regression approach, where price/earnings or price/book value multiples were regressed against independent variables that cause differences in these multiples - risk, growth and payout. Since the variables causing differences in real estate values in a locale are fairly obvious - vacancy rates, size and the capacity to generate income, among others, it should be relatively simple to extend this approach to analyze properties.

#### ***Illustration 26.4: Regression Approach***

You could regress the price per square foot for the eight properties in Illustration 26.3 above against occupancy rates and obtain the following:

$$\text{Price per square foot} = -2535.50 + 2857.86 \text{ Occupancy rate} \quad R^2 = 46\%$$

$$(-2.07) \quad (2.25)$$

Using this regression, we would obtain an estimated price per square foot for 711 Seventh Avenue, with its 95% occupancy rate.

$$\text{Price per square foot} = -2535.70 + 2857.86 (0.95) = \$179.46$$

$$\text{Value of 711 Third Avenue} = 528,357 * \$179.46 = \$94.820 \text{ million}$$

This regression is clearly limited in its power because there only eight observations and the occupancy rates are very similar. If we can obtain information on more properties and include variables on which there are bigger differences – a variable measuring the age of the building, for instance – we would be able to get much stronger predictions.

### **Valuing Real Estate Businesses**

We have focused on valuing real estate properties through much of this chapter. In this section, we consider extending this analysis to value a real estate business. To value such a business, you have to consider its sources of income and then look at its organization structure.

#### ***Sources of Income***

Real estate businesses vary widely in terms of how they generate income and how you approach valuation will vary as well. In particular, we could categorize real estate firms into four businesses.

*Service Income:* Some firms generate income from providing just management services or support services to the owners of real estate – for instance, selling, security or maintenance. Valuing these firms is relatively straight forward and requires assumptions about how fees will be assessed – many management service contracts, for instance, are stated as a percent of the gross income on a property – and how much the fee income will increase over time. More efficient firms or firms with better reputations (brand name) may be able to charge higher fees and be worth more.

*Real Estate Construction:* These businesses make their income from real estate construction – building residential or commercial properties. They usually agree to deliver the units at a contractually fixed price and generate profits from being able to construct them at a lower cost. Firms that are more cost-efficient will generally earn higher profits

and be worth more. Here again, though, reputation can make a difference and firms that are associated with quality construction may be able to charge premium prices.

*Real Estate Development:* These businesses usually buy vacant or underutilized land, put up new construction and sell the units to real estate investors. They generally do not hold on to the properties for purposes of generating on-going income. The values of these businesses will be determined by their capacity to gauge market demand and complete construction both quickly and at low cost.

*Real Estate Investment:* These are businesses that buy real estate property as income-generating investments. The simplest way of valuing these businesses is to value each of the properties that they own and to aggregate them. However, a premium may be attached to this value, if a business has shown the capacity to repeatedly buy undervalued properties.

Thus, the factors we should think about when valuing real estate businesses are the same factors we think about in any valuation – the capacity to generate not just cash flows but also excess returns and the uncertainty associated with these cash flows.

### ***Organizational Structure***

There are four basic organizational forms available to real estate business – real estate investment trusts (REIT), limited partnerships (MLP), business trusts and real estate corporations. They differ in two major areas.

#### ***Structure of Taxation***

Single taxation is a characteristic of REITs and MLPs, since both are taxed at the investor level, but not at the firm level. This tax benefit is given to REITs to compensate for certain investment and dividend policy restrictions to which REITs must adhere. MLPs receive single-taxation status only if they invest in certain activities, such as real estate or oil and gas. Otherwise, for tax purposes, MLPs are treated as a corporation. This tax advantage does not exist for business trusts and corporations that are taxed at both the entity level on income and at the investor level on dividends.

What are the implications for valuation? When valuing real estate investment trusts and master limited partnerships, the tax rate used to estimate cash flows and discount rates is zero. That does not mean that there are no tax benefits from depreciation



or interest expenses, since these benefits still flow through to the ultimate investors. When valuing real estate corporations, the marginal corporate tax rate should be used for estimating cash flows and discount rates.

### *Restrictions on Investment and Dividend Policy*

The tax code requires REITs to distribute 95% of their taxable income to shareholders, which effectively limits REITs' use of internal financing. Consequently, REITs must return to the capital markets on a regular basis, which in turn tends to impart discipline and monitoring. The code further requires that a minimum of 75% of a REIT's gross income come from real estate. A REIT must also be a passive investment conduit, i.e., less than 30 percent of a REIT's income must come from the operation of real estate held less than four years and income from the sale of securities held less than one year. REITs cannot engage in active real estate operations. They cannot operate a business, develop or trade properties for sale, or sell more than five properties per year. A REIT is prohibited from entering into tax-free exchanges to acquire properties. Although no dividend payout restrictions exist for MLPs, a high payout ratio is likely, since partners are taxed regardless of whether they actually receive the income or the MLP retains it. This fact has to be weighed off against the investment opportunities of an MLP. The empirical evidence suggests that MLPs pay out a high proportion of their earnings as dividends. Although MLPs are restricted in engaging in real estate activities (or oil and gas), there are no restrictions on the nature or management of these activities. Consequently, MLPs can actively and directly engage in the real estate trade or business. There are no MLP restrictions on the number of properties that can be sold in any given year. Business trusts and corporations have no restrictions on dividend payout, they can engage in any real estate or non-real estate activity except those prohibited in the declaration of trust or corporate charter, respectively.

The implications for valuation are significant. When valuing REITs and MLPs, you have to assume much of the earnings will be paid out in dividends. If you do not assume external financing, your estimates of expected growth will be low, no matter how well managed the entities are. If you do allow for external financing, you can have high expected growth but the number of shares in the firm will have to increase proportionately, thus limiting the potential price appreciation on a per-share basis. The

restrictions on investment policy will constrain how much returns on capital can be changed over time.

## **Conclusion**

There is much that is said in this chapter that repeats what was said in earlier chapters on stock valuation. This is because a real estate investment can (and, in our view, should) be valued with the same approaches used to value financial assets. While the structure and caveats of discounted cash flow models remain unchanged for real estate investments, there are some practical problems that have to be faced and overcome. In particular, real estate investments do not trade regularly and risk parameters (and discount rates) are difficult to estimate. A real estate investment can also be valued using comparable investments, but the difficulties in identifying 'comparable' assets and controlling for differences across them remain significant problems.

## Problems

### *Questions and Short Problems: Chapter 26*

1. An analyst who looks at real estate decides to apply the Capital Asset Pricing Model to estimate the risk (beta) for real estate. He regresses returns on a real estate index (based upon appraised values) against returns on a stock index and estimates a beta of 0.20 for real estate. Would you agree with this estimate? If you do not, what might be the sources of your disagreement?
2. An alternative way of estimating risk for real estate is to use prices on traded REITs to compute returns and to regress these returns against a stock index to arrive at a beta estimate. Would this beta be a more reliable estimate of risk? Why or why not?
3. The risk for real estate can be viewed as a derived demand. If this is the case, the risk of real estate can be estimated from the underlying business it supports. Under this view, what would be the appropriate proxy to use for risk in the following types of real estate investments?
  - a. Commercial real estate in New York.
  - b. Commercial real estate in Houston.
  - c. Commercial real estate in San Jose (Silicon Valley).
  - d. Hotel complex in Orlando.
4. Would your valuation of real estate be affected by who the potential investors in the property are? [For instance, would your analysis be any different if the primary investors were individuals, involved primarily in real estate, or if they were institutional investors?]
5. How would you factor in the absence of liquidity into your valuation?
6. You have been asked to value an office building in Orlando, Florida with the following characteristics.
  - The building was built in 1988 and has 300,000 square feet of rentable area.
  - There would be an initial construction and renovation cost of \$3.0 million.
  - It will take two years to fill the building. The expected vacancy rates in the first two years are as follows.

Year

Vacancy Rate

1	30%
2	20%
After year 2	10%

- The market rents in the building were expected to average \$15.00 per square foot in the current year based upon average rents in the surrounding buildings.
- The market rents were assumed to grow 5% a year for five years and at 3% a year forever afterwards.
- The variable operating expenses were assumed to be \$3.00 per square foot and are expected to grow at the same rate as rents. The fixed operating expense in 1994 amounted to \$300,000 and was expected to grow at 3% forever.
- The real estate taxes are expected to amount to \$300,000 in the first year and grow at 3% a year after that. It is assumed that all tenants will pay their pro rate share of increases in real estate taxes that exceed 3% a year.
- The tax rate on income was assumed to be 42%.
- The cost of borrowing was assumed to be 8.25%, pre-tax. It was also assumed that the building would be financed with 30% equity and 70% debt.
- A survey suggests that equity investors in real estate require a return of 12.5% of their investments.
  - a. Estimate the value of the building, based upon expected cash flows.
  - b. Estimate the value of just the equity stake in this building.

7. You are trying to value the same building based upon “comparable properties” sold in recent years. There have been six property sales of buildings of comparable size in the surrounding area.

Property	Sale Price	Size (Sq. Ft)	Gross Rent
A	\$ 20,000,000	400,000	\$ 5,000,000
B	\$ 18,000,000	425,000	\$ 4,750,000
C	\$ 22,000,000	450,000	\$ 5,100,000
D	\$ 25,000,000	400,000	\$ 5,500,000
E	\$ 15,000,000	350,000	\$ 4,000,000

F	\$ 12,000,000	300,000	\$ 3,000,000
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- a. Estimate the value of the building, based upon price/square foot.
- b. Estimate the value of the building, based upon price/gross rent.
- c. What are some of the assumptions you make when you value a building based upon comparable buildings.