Real Estate Project Valuation and Underwriting – A Primer

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Real estate lawyers must develop a comfort level with core principles of real estate investment. And as the real estate market struggles to recover from the current recession, clients involved in real estate transactions will be focusing more than ever on investment fundamentals. What follows here is an overview of some of the most important concepts that real estate clients use to value and analyze real estate projects. Much of what is presented here draws on a comprehensive text on the topic published by the Urban Land Institute that should be of interest to readers looking for a more comprehensive treatment.¹

I. Overview

A. The highly competitive market economy

The real estate market emerges at the intersection of the local space market and the capital markets.² In other words, the investment value of a real estate asset results from the dynamic relationship between (1) the demand for and supply of space where a real estate project is located and (2) the demand for and supply of capital (the sources of financing).

A highly simplified example involving apartment projects will illustrate. Assume that the retail economy of a particular region is growing rapidly, thereby increasing the demand by retail clerks for rental apartments. This may push rents for existing apartments higher and higher. Seeing the attractive returns that apartment projects are achieving, investors may begin to pump greater amounts of capital into the construction of new apartment projects in the form of equity (say by acquiring stock, partnership interests, or membership interests in real estate development companies seeking to build apartment complexes) and in the form of debt (by making real estate loans readily available to the developers). As a result, real estate developers may be encouraged to build more apartment

1. See Mike E. Miles, et al., Real Estate Development: Principles and Process (4th ed., 2007). I am grateful to David Lewis, of the University of Arkansas Law Library’s technology group, for help in creating Table 1 for this article, which is a sample pro forma statement for the fictional Jim Guy Office Complex project used throughout this article to illustrate many of the concepts and financial tools discussed here.
projects, especially if interest rates are relatively low, which makes debt financing more attractive. If the retail economy stays strong, apartment rents may continue to rise, encouraging even more investment in apartment projects. But if the local economy falters and employers in the region begin to lay off large numbers of workers, the demand for housing may drop, resulting in higher vacancy rates at apartment complexes and an increasing number apartment loan defaults. Rental rates for apartments may stagnate. As equity investors see returns on apartment projects in that region decline or disappear and lenders begin to experience loan losses on foreclosed projects, they will look for better investment opportunities in other markets (which may or may not involve real estate and may involve the economies of almost any region in the world where there are more promising investment options). The lack of equity investors and lenders will drive down prices in the region’s apartment market (even, perhaps, to the point where prices again become attractive to investors).

While, as this example indicates, the local economy has an extremely important impact on the space market, the highly competitive and efficient global capital markets also play an important role. Indeed, the global nature of finance has made the U.S. real estate market far less local today than it was when investment in real estate projects came primarily from developers and banks within the community. Over the years, the financial markets have developed methods that facilitate the flow of capital from all over the world into real estate projects. The recent recession, which has been especially devastating for the real estate industry, has shaken our faith in the ability of global financial markets to serve the industry efficiently. But you should expect that international financial institutions will eventually make the adjustments required to re-establish their dominant influence over the flow of funds into real estate investments.

Much more could be said about the characteristics of the space markets and capital markets. For example, important distinctions apply to different segments of the space markets in such categories as single-family and multi-family residential, retail, office, hotel, resort, and industrial. And the relevant characteristics of the capital markets differ depending on whether the source of capital involved is private equity, public equity, private debt, or public debt. But for our limited purposes, we can ignore those factors.

B. Introducing a few investor metrics – capitalization rates, net operating income, and cap rate valuation

We can express the relationship between the space and capital markets in one simple mathematical formula by using the capitalization rate (“cap rate”) valuation method, which relates a property’s income stream (determined most directly by the local space market) to the demand for competitive returns (established by the capital markets). A cap rate is “[t]he rate, expressed as a percentage, at which a future flow of income is converted into a present value figure.” Cap rate valuation relates a selected cap rate to the net operating income (“NOI”) from a real estate project.

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2. See generally id. at 149-55.
3. See generally id. at 161-66.
4. Id. at 153-56.
5. Id. at 156-66.
6. Id. at 626.
In simple terms, NOI is the gross revenue that a project generates for a given period (typically for a calendar year) minus the project’s operating expenses for the same period. The significance of NOI as a financial indicator is fairly obvious: the amount by which revenue from operations exceeds the expenses associated with operation is an important indication of a project’s investment attractiveness. All other things being equal, a project that will not generate positive net operating income is a poor investment by most standards.\(^7\)

Cap rate valuation is a rule-of-thumb method frequently used by investors to relate a project’s NOI to the expectations of investors for a return on income-producing real estate. There is no right cap rate to use, but there are logical ways in which to arrive at a cap rate for valuing a particular real estate project. One method is to look at recent sales and revenue data for other, comparable projects and to note, for each comparable project, what percentage rate multiplied times the sales price realized for that particular project would produce the same NOI that the project generated for the year of the sale. By considering this information for several comparable projects, an investor can select a percentage to use as the cap rate that is consistent with the rates for the comparable projects or that is within some range of rates that the investor deems reasonable based on the information gathered from the other projects and any distinctions that the investor may think appropriate under the circumstances based on the different characteristics of the comparable projects. The cap rate valuation formula is

\[
\text{Value} = \frac{\text{Net Operating Income}}{\text{Capitalization Rate}}
\]

Those of us who find the mathematical formula too abstract and the technical definition unenlightening, may find it useful to keep in mind the simple notion that a cap rate represents the annual percentage rate which, when multiplied times a proposed value for the project, yields the project’s (actual or projected) annual net operating income. In that sense, a cap rate, much like a corporate stock price/earnings ratio, is simply one metric that investors can use to relate the revenue generated by an asset to an asset value.

Because the cap rate valuation formula calls for the project’s NOI to be divided by a percentage rate to arrive at the value, there is an inverse relationship between value and cap rate: a higher project value means a lower cap rate for that project. To illustrate, consider an apartment project that is expected to generate $100,000 in annual NOI. If an investor uses a 10% cap rate to value the project, the value will be $1,000,000 ($100,000 divided by 0.10). Put another way, the $1,000,000 purchase price reflects a 10% cap rate because the $100,000 projected annual NOI is 10% of the $1,000,000 purchase price. An 8% cap rate applied to the same project would establish a selling price of $1,250,000 ($100,000 divided by 0.08). To repeat an important point: There is no objectively right or wrong cap rate to use for a particular project. Whether to use a 10% cap rate, 8%, or some other rate, is up to the individual investor or financial analyst to decide based on available market data.

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7. What other considerations could possibly improve the investment picture for a project with negative cash flow? A complete financial assessment of a project also must take into account appreciation or depreciation in the project’s market value and tax shelter results. For example, given sufficient appreciation in value or tax shelter over time, or both, a project with modest or even negative cash flow might still be a relatively good investment. See generally id. at 203.
Note that under the cap rate valuation method, real estate values rise and fall as demand and supply in the local space market change revenue streams of income producing properties at the same time that “capital market participants chase risk-adjusted return across investment alternatives worldwide.”

The notorious (and largely unavoidable) real estate value cycle results to a great extent from this dynamic relationship.

II. Real Estate Finance Logic for Lenders, Investors, and Developers

To begin to get a handle on the financial analysis of a real estate project, we will examine a hypothetical project. Table 1 is a pro forma statement (commonly referred to simply as a pro forma) for the fictional Jim Guy Office Complex. A pro forma is a financial projection of the anticipated performance of a real estate project. The revenue and expense figures in the pro forma result from some objective data about the project (for example how much rentable space there is) and key assumptions (such as how much rent per square foot the owner will be able to charge to tenants and what percentage of the project will be occupied by paying tenants at various times). Table 2 provides the project information and critical assumptions incorporated into the pro forma.

First, we will focus on a static analysis derived from the pro forma. The term “static” in this context refers to the fact that at this first stage of the financial analysis we will use a fixed projection of the project’s NOI for a single year (for now, we will use Year 1 in the pro forma). Later, in section IV, we will turn to a more dynamic financial analysis that takes into account how the Jim Guy Office Complex is anticipated to perform over a five-year period. Some of the following information uses the financial performance of the Jim Guy Office Complex for Year 1 as shown in Table 1 to illustrate the concepts involved.

A. Net Operating Income (NOI) measures the property’s productivity from its revenue-generating operations.

Simply stated, to calculate NOI on a pro forma basis:

\[
\text{Net Operating Income} = \frac{\text{Effective Gross Revenue} - \text{Operating Expenses}}{\text{Effective Gross Revenue}}
\]

Table 1 breaks down the NOI calculation into several additional steps that are implicit in the above short-hand formula. In Table 1, the first step is to calculate three components that make up potential gross revenue: base rental revenue, which is the product of the applicable rental rates per square foot multiplied by the rentable area for the entire complex; turnover vacancy, an adjustment to account for vacancies when specific leases expire; and base rent abatements, reflecting any reductions in gross revenue attributable to rent concessions. These three items determine scheduled base rental revenue. Then, to take into account operating revenue other than base rent, Table 1 shows several categories of expense reimbursement revenue, which derives from additional rent tenants pay un-

8. Id. at 150.
9. See id. at 152-55
10. See generally id. at 177-80.
der their leases to reimburse the landlord for common area maintenance expenses (CAM) and utilities charges, insurance premiums, real estate taxes, and a management fee (for a third-party property manager). Taken together, these reimbursement amounts equal the total reimbursement revenue and, when added to the scheduled base rental revenue, determine total potential gross revenue. The next line in Table 1 is for a general vacancy adjustment, which reflects an assumption, made without reference to the terms of any specific leases, that some portion of the complex will, in the normal course of business, temporarily not be leased. Effective gross revenue reflects the aggregate of all of these factors. In a similar way, Table 1 breaks down operating expenses into distinct categories. While Table 1, therefore, provides more specific detail on operating revenue and expenses, the calculation of NOI in Table 1 is essentially as summarized in the simplified formula set out above.

It is important to recognize that as a representation of project productivity, an NOI calculation can be based on either the historical performance of a project, in which case the calculation is the project’s actual NOI for a period that has ended, or it can be a projection of anticipated future performance, as in the case of Table 1, which is a pro forma statement. As Table 1 demonstrates, a pro forma NOI calculation may include line items for some factors, such as Table 1’s general vacancy adjustment, that would not be relevant to a statement of actual NOI.

NOI is largely the product of the local space market in the sense that project revenue is primarily determined by demand and supply for space of a particular type (here modest office space) in a given location (for example, a given urban or suburban area). Note that NOI does not account for financing, capital expenditures, re-leasing expenses, or depreciation (or any other income tax results). These items may be thought of as special factors that may vary significantly from time to time for any given project or that may have less to do with operational considerations than with other characteristics of the project itself, the project’s owner, the project’s capital structure or, in the case of depreciation, federal income tax code policy.

In a typical project, such as the Jim Guy Office Complex, projected rents account for the major component of Potential Gross Revenue. Other components of Potential Gross Revenue may include expense reimbursements, percentage (overage) rents, and miscellaneous income from such incidental operations as parking or other tenant services. The Jim Guy Office Complex pro forma shows expense reimbursements from tenants, but no other sources of operating income.

Effective Gross Revenue adjusts for vacancies, concessions, collection losses, and other “negative income items.” A property pro forma must account for these adjustments realistically.

Operating Expenses relate to periodic costs to maintain income from the property, including real estate taxes (normally the largest operating expense for a property), physical maintenance (for a multiple-tenant project, this generally includes common area maintenance or CAM), utilities, insurance, management fees (typically 2-5% of Effective Gross Revenue), and appropriate reserves. As already noted, debt service, depreciation, and capital expenditures are not operating expenses.

11. Id. at 179-80.
12. Id. at 186.
As is the case in Table 1, a pro forma will commonly provide for anticipated future capital expenditures by showing a capital reserve, which is also referred to as a replacement allowance. “Most property owners place replacement allowance for capital expenditures in below-line (that is, below the NOI line) accounts. Most lenders like to see a replacement allowance for capital expenditures included in NOI.” This conflict may affect how a lawyer drafts the NOI definition in a loan agreement or a contract. For example, a loan commitment might provide that a long-term loan to refinance the Jim Guy project once it has been completed and is in operation will be funded when stabilized NOI reaches a certain level. As counsel to the prospective lender, you might define NOI for this purpose so that the replacement allowance currently shown as “Capital Reserve” in Table 1 “below the line” is instead taken into account “above the line.”

B. A closer look at cap rate valuation based on NOI

At this point, we will only look at a cap rate valuation, which is, as already indicated, “static” in the sense that it bases value on cash flow from the property at a single point in time (say annual NOI from the Jim Guy Office Complex for Year 1). As already explained, the capitalization approach arrives at a value by relating annual NOI to an appropriate capitalization rate (a rate of return that an investor would expect, often derived from sales data on similar properties).

For simplicity, you might think of a cap rate valuation as answering this question in the case of Table 1: Based on recent sales data for comparable properties, what amount should I be willing to invest (input) in exchange for the Jim Guy Office Complex’s annual NOI (output) of $224,660 in Year 1? The cap rate method may determine value for an established property by using the property’s historic NOI or, as in our case, it may determine value of a project (or a proposed project) on a pro forma basis if future NOI can be reliably estimated.

If the Jim Guy Office Complex has been in operation for some time under circumstances that suggest that it has achieved a fairly stable NOI, which can be projected as indicated by Table 1, then we can use the information from Table 1 to calculate a rational value for the project. Table 2 shows that the office complex has been in operation for several years and that 91% of the space in the project is currently occupied by tenants whose leases run for various terms. While the pro forma incorporates some critical assumptions about when and on what terms the vacant space in the complex will be leased, we will accept these assumptions. For this example, we will use a 7.5% cap rate, which is more or less in the middle of the range of historical cap rates used in the U.S., but a real investor or lender would select a cap rate based on some research into cap rates reflected by sales data for comparable projects or by reference to some rule of thumb or investment objective that the investor finds acceptable.

Formula used to determine value of a property based on a cap rate:

\[ V = \frac{NOI}{R} \]

\[ V = \frac{224,660}{0.075} \]

\[ V = 2,995,467 \]

In other words, an investor who accepts a cap rate of 7.5% as being appropriate for this project under current market conditions and who believes that Table 1 reliably projects

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13. Id. at 180.
14. Id. at 180-86.
NOI for the Jim Guy Office Complex for Year 1, could justify paying $2,995,467 for the project. Similarly, a hypothetical lender could use that value to help decide how much it might be willing to lend to the project’s owner in exchange for a first priority mortgage on the project.

Here is a side note that gets us momentarily back to a concept discussed earlier. Market cycles inevitably bring about changes both in NOI and in rate of return expectations for income producing property, and these changes can, in turn, produce wide swings in valuation from time to time. For example, the market cycle that peaked in 2007 was characterized by relatively flat rental rates and progressively decreasing cap rates, which reflected strong investor interest in real estate projects, probably based on anticipated appreciation in real estate prices. In part as a result of these expectations, which proved to be far too optimistic, property values appreciated significantly during that period even without corresponding increases in NOI. In other words, property values increased simply because buyers used relatively lower cap rates to calculate purchase prices.

C. The loan underwriting process

We can analyze the Jim Guy Office Complex further by considering additional metrics that might be important from the perspective of a hypothetical lender. Real estate lenders often use two primary ratios to judge a project’s financial viability:

- **Loan-to-Value Ratio** (focuses on the collateral value of the project that assures an exit option in the face of a loan default);
- **Debt Service Coverage Ratio** (focuses on the property’s revenue in relation to the required periodic loan payments to judge whether the property can comfortably keep the loan in good standing).

For the Jim Guy Office Project, assuming that a lender accepts the proposed cap rate value of $2,995,467, how much would a lender be willing to lend in exchange for a first mortgage? If the decision is based in the first instance on a fairly common (historically) Loan-to-Value Ratio of 70%, the maximum loan amount would be calculated as follows: $2,995,467 X .7 = $2,096,827 maximum loan amount. To take this example to the next step, if we assume that the lender’s customer is an investor who is negotiating to purchase the office complex, the investor would need to have or raise approximately $900,000 from other resources in order to qualify for a mortgage loan to help finance the purchase ($2,995,467 - $2,096,827 = $898,640).

Next, we can consider how the lender might use a Debt Service Coverage Ratio as an additional metric to analyze the proposed financing. Payments on mortgage loans are typically calculated to cover accrued interest on the amount loaned (the principal amount) plus some additional amount that will gradually reduce the loan balance over time. For example, fixed monthly mortgage payments may be calculated so that each month, as the outstanding loan principal is reduced, a slightly larger portion of each fixed monthly

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15. A 70% loan-to-value ratio may be at the high end of normal under the current, recessionary real estate market conditions.
payment amount reduces the loan balance even further. In this way, a loan can be amortized through level monthly payments over a period of several years. A residential mortgage will frequently be amortized over a loan term of 15, 20, or 30 years. A commercial loan will usually have a shorter term, such as 5, 7, or 10 years, but the monthly payments may still be calculated on a 15-year or longer amortization schedule, which means that when the loan reaches the end of its term, a significant loan balance remains, which must either be paid in full in a final lump sum (balloon payment) or refinanced with a new mortgage loan. The shorter term typically used for a commercial loan reflects the usual preference of a commercial lender to avoid a long-term commitment of the relatively large loan amount required for a commercial project; the use of an amortization period that is longer than the actual maturity of the loan accommodates the borrower’s normal desire to keep the monthly or other periodic loan payments relatively low until the maturity date, at which time the borrower will presumably refinance the project.

You can use a financial calculator or a spreadsheet program to determine the annual debt service for a loan that is scheduled to amortize fully in equal installments over the loan term. For example, if the hypothetical $2,096,827 loan for the Jim Guy Office Complex has a five-year term and bears an annual interest rate of 6%, with level payments calculated so that they would be sufficient to amortize the full loan amount over a twenty-year period (thus, a large balloon payment would be due at the end of the five-year loan term), the monthly mortgage payments will be $15,022.32, which equals $180,267.84 annually. With this information, we can run through an additional calculation that a lender might use as part of its financial analysis.

Debt Service Coverage Ratio:

\[
\text{DSCR} = \frac{\text{Net Operating Income}}{\text{Annual Debt Service}} = \frac{\$224,660}{\$180,268} = 1.246
\]

The minimum debt service coverage ratio required by a lender will vary depending on prevailing market circumstances and the characteristics of the particular project and lender. But for many traditional lenders operating under relatively stable market conditions, a ratio greater than 1.2 may be considered comfortable.\(^{16}\) Thus, in this case, based on the projections provided by Table 1, the hypothetical lender may be satisfied with both the debt service coverage ratio and the loan to value ratio indicated for the Jim Guy Office Complex project. But notice that in Table 1, the “capital reserve” is below the line. As noted earlier, some lenders might insist on recalculating NOI with the reserve above the line. While making that adjustment using the capital reserve amount shown on Table 1 would not have a great impact on the analysis, if the lender also questions the sufficiency of the proposed capital reserve amount, a distinctly less favorable debt service coverage ratio could result. Furthermore, if the lender is concerned about the risk that the actual NOI at some point during the five-year loan term may decline significantly, the lender’s counsel may include a provision in the loan documents that gives the lender the right to call the loan immediately due if, at the end of any year during the scheduled loan term, the debt service coverage ratio falls below a certain level.

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16. See Miles, et al., supra note 1, at 184.
D. Returns to equity investors and the effects of leverage

1. General concepts

Notice that Table 1 is titled “5-Year Pro Form Cash Flow Analysis.” To this point, we have looked primarily at projected NOI to analyze the Jim Guy Office Complex. But for many purposes, equity investors also consider cash flow. A cash flow calculation carries on the financial analysis to account for certain additional expenses that the NOI calculation ignores. Thus, below the line for projected NOI for each year, Table 1 next makes adjustments for leasing and capital costs, which consist of the projected expenditures each year for tenant improvements, leasing commissions, and a reserve fund for capital expenditures that may become necessary over time. The reserve is generally an amount set aside from NOI to be available for such costs as capital repairs, which do not require regularly scheduled annual expenditures, but which will require significant expenditures over some longer period (consider a roof replacement, for example). By establishing an annual reserve, the project owner anticipates the need at a future time for funds to pay these expenses when they become necessary. The pro forma deducts leasing and capital costs to arrive at the cash flow calculation. Cash flow is important to equity investors because positive cash flow typically influences the investors’ opportunity during a given period for cash distributions.

The cash flow calculation made in Table 1 on a pro forma basis is:

Property Cash Flow

Net Operating Income
- Tenant Improvements
- Leasing Commissions
- Capital Reserve
Cash Flow

Note, however, that the bottom line of Table 1 is designated as “Cash Flow before Debt Service & Income Tax” (also called “Cash Flow from Operations”). This recognizes that the calculation is one useful measure of cash flow, but not the only one that may be of interest for financial analysis. While the cash flow figures shown across the bottom line on Table 1 provide important data about the financial results from operations of the project, additional deductions for debt service (typically, the scheduled mortgage loan payments) and adjustments for the effects of income taxes would need to be made to take into consideration how these additional factors, which do not result from operations, would affect cash flow.

While income tax considerations are completely beyond the scope of this overview, a further word about the effect of debt financing is in order at this point. In its current form, Table 1 provides financial information about the project that would be relevant to a financial analysis whether or not the project includes any debt. And Table 2 alerts us to the fact that the pro forma has been prepared based on the assumption that there is no debt. But if there is to be debt (for example, if a prospective purchaser is analyzing the feasibility of the project based on the 70% loan-to-value financing discussed above), then a more complete analysis would include a further deduction for debt service payments for each year. As previously noted, debt service would typically include accrued interest paid on the loan plus some additional amount built into the amortization schedule so that a portion of the periodic loan payments can be applied to reduce the principal balance of the loan. Of course, the debt service amount is not determined by the operation or productivity of the project, but by factors extraneous to the project that would vary based on how much the project owner borrows and the terms of the
loan (such as the interest rate, the maturity date, and the amortization period).

By taking into account additional data to reflect any debt financing (typically in the form of mortgage lending), the equity investor can further the cash flow analysis. Because Table 1 does not include this additional data (because Table 2 assumes that no debt financing is being used), the present discussion will not make specific calculations to reflect the effect of debt but will simply set out the relevant formulae for determining the impact debt would have.

\[ \text{Cash Flow from Operations} \]
\[ \text{- Financing Costs} \]
\[ \text{Cash Flow after Financing} \]

Cash Flow from Operations and Cash Flow after Financing can then be used to make these additional calculations useful to a financial analysis from the perspective of equity investors:

\[ \text{Return on Assets (ROA)} \]
\[ \text{ROA} = \frac{\text{Cash Flow from Operations}}{\text{Purchase Price}} \]

\[ \text{Return on Equity (often called “cash on cash”)} \]
\[ \text{ROE} = \frac{\text{Cash Flow after Financing}}{\text{Equity Investment}} \]

For otherwise comparable investment opportunities, projects with relatively higher ROA and ROE generally indicate more favorable results for the equity investor. As the next section briefly explains, however, ROA and ROE provide distinct metrics for projects that use debt financing.

2. Leverage – the benefits and risks of using debt financing

ROA and ROE can be used as metrics to analyze the leverage that results from debt financing. If the cost of debt (the mortgage constant that determines the debt service payment amount) is less than the overall ROA, positive leverage pushes up ROE. In effect, the borrower is realizing a return on 100% of the project investment even though a substantial part of the present cash investment is provided on a cost-effective basis by the lender rather than the borrower. If the cost of debt is greater than ROA, however, debt financing produces negative leverage. Leverage can have a proportionately greater effect (positive or negative) when the investment terminates with the sale of the project, at which time the owner repays the loan and takes into account any appreciation or depreciation realized through the sale price. An analysis of the leverage effects of debt financing is beyond the scope of these materials.

3. Breakeven occupancy

A breakeven occupancy calculation (or, from a lender’s perspective, a default rate calculation) determines the occupancy level, expressed as a percentage, at which the property cash inflows will meet all cash outflows:

\[ \text{Breakeven Occupancy} = \frac{\text{Total Oper. Exp.} + \text{Cap. Exp.} + \text{Debt Service}}{\text{Potential Gross Revenue}} \]

Using the loan terms described earlier, and the operating expenses, leasing and capital costs, and potential gross revenue for Year

17. See generally Miles, et al., supra note 1, at 187.
18. See generally id. at 199.
1 from Table 1, the breakeven occupancy for
the complex is:

\[
\frac{63,430 + 26,458 + 180,268}{288,090} = \frac{270,156}{288,090} = 93.8\%
\]

Thus, in order for the Jim Guy Office
Complex to break even after covering operat-
ing and capital expenses and debt service, the
project must not experience more than about
6% vacancy. In light of this information, a
lender who might typically, as a rough rule
of thumb, be pleased with a 70% loan-to-value
ratio for an office project, might be concerned
about this proposed loan because the project
will not break even on this basis if anything
goes wrong with the leasing program (which
assumes 5% vacancy). Indeed, for Year 1,
due to a current vacancy, the project will not
break even unless the vacant space is leased
and begins generating sufficient revenue dur-
ing the year.

III. Review of Jim Guy Office Complex
Pro Forma Over the Five-Year Period

The 5 Year Pro Forma Cash Flow Analysis
– as the name implies – is a projected cash
flow statement for the project for that peri-
dod (2010 through 2014). The pro forma uses
known data about the project, together with
reasonable assumptions about the future,
to analyze the investment over an extended
period. Table 2 provides basic information
about the fictional office complex, and it in-
cludes important assumptions that have been
used to build the pro forma cash flow analysis
over a five-year period. These assumptions
concern critical factors that, when applied to
the specific details of the office complex, will
forecast the project’s income and expenses
over the five-year period commencing with
the current year.

Because the pro forma’s usefulness can be
no greater than its assumptions are appropri-
ate, anyone using the pro forma must exam-
ine the assumptions carefully and relate those
assumptions to the cash flow projections that
the pro forma computes. The discussion below
considers several aspects of the assumptions
made in Table 2. The fundamental objectives
here are simply (1) to explore the bases of cer-
tain assumptions and (2) to understand how
deviations from the assumptions could affect
the project’s cash flow (and thus affect the fi-
nancial analysis).

Some special cautions are in order with
respect to the review that follows. The Jim
Guy Office Complex is purely a fictional proj-
et conceived solely for the purpose of this
overview. The hypothetical facts are not en-
tirely realistic, the assumptions in Table 2
are artificial, and the calculations in Table 1
do not take into account every factor that an
actual pro forma might. Additionally, several
entries in Table 1, as well as some of the as-
sumptions in Table 2, have been deliberately
simplified or manipulated to make it easier to
highlight some of the uncertainties and risks
inherent in any pro forma analysis. An actual
pro forma prepared by an expert analyst, even
one whose purpose is to present the project
in a favorable light for marketing purposes,
would make more comprehensive calculations
and apply certain assumptions more rigor-
ously than Table 1 does. Moreover, many pro
forma statements that you encounter in prac-
tice will be the products of software programs
that allow for a far more sophisticated and
intricate application of significant assump-
tions. Such programs also allow for more
detailed or comprehensive assumptions than

19. See id. at 212, 217. One of the most common software programs for these operations is ARGUS. Id. at 214.
those included in Table 2, and they should offer the prospect of an even more refined financial analysis. Even so, more sophisticated tools and comprehensive methodologies do not necessarily guarantee a more valid financial analysis because, as illustrated by the comments in subsections A and B below, the assumptions themselves remain mere predictions of what the future may bring.

A. Reviewing the Assumptions to Projections

**Occupancy.** Note the assumption of full occupancy by May 1, 2010. Given that one of the five existing office suites in the complex is currently vacant, how realistic is this assumption of full occupancy just four months after the date of the pro forma? How significant is this assumption? Consult the Rent Roll portion of Table 2 for this purpose. For example, if a downturn in the local space market makes it difficult to lease Suite 201B at the projected annual rental rate of $11.00 per sq. ft., how might that circumstance change the cash flow in 2010 and 2011? What other deviations from the projected lease of Suite 201B might significantly alter the financial analysis? Consider, for example, how the assumption of 100% occupancy beginning on May 1 affects the entries for Expense Reimbursement Revenue. Presumably, these figures recognize that Suite 201B is not contributing to reimbursements for the first four months of the year, but that it should be contributing its pro rata share from that point and throughout the remainder of the five-year period.

**Inflation and growth rates.** The assumption here calls for 3% general inflation annually, which translates into corresponding 3% per annum increases in the project’s operating expenses and capital expenses for Years 2-5. Which parts of the Pro Forma are affected by these assumptions? How reasonable is it to project a consistent general rate of inflation over a five-year period? (Note that a separate assumption about the growth of rental rates is included in the assumptions concerning new leases, which are discussed below.) A careful review shows that the entries for Expense Reimbursement Revenue, after stabilizing at the time of the assumed 100% occupancy on May 1 of Year 1, increase at a flat 3% rate for the rest of the period. This is an artificial simplification. Even if the expense reimbursement provisions of all of the leases consistently pass through expense increases, a rigorous analysis would need to take into account the risk that one or more of the leases scheduled to expire during the five-year period might not renew, in which case the vacant space would not be contributing any expense reimbursement until a new tenant is in place and paying rent plus expense reimbursements.

**Vacancy rate.** Note the relationship between the **Occupancy** assumption above and the clarification in Table 2 that the Turnover Vacancy for Year 1 already reflects the 9% vacancy for the first four months of Year 1 attributable to the current vacancy in Suite 201B. Excluding Year 1 from the vacancy rate assumption seems legitimate because the occupancy statistics for 2010 are assumed to be known. The more significant, long-range aspect of this component is the assumption of a 5% vacancy rate on an ongoing basis. Is there sufficient historical or market data to support that assumption? As an illustration of the significance of this assumption, consider how cash flow for any year would be affected by a significant deviation from the 5% vacancy assumption. As suggested by the discussions of occupancy and inflation and growth rates, the adjustments for vacancies should also take into ac-
count lost expense reimbursement as well as lost rent (because the leases are assumed to be triple net). It is not clear from even a close review whether or how that has been done. A potential investor or lender would want to investigate this question.

**New Lease Assumptions.** The remaining assumptions govern the projected impact of the assumed new lease for the currently vacant suite beginning in May of Year 1, and they also recognize that three of the current leases for other space will expire during the five-year period that the pro forma statement covers. Several aspects of these assumptions merit special attention, especially because some assumptions can be applied in alternative ways, and it is not possible to understand how these assumptions have been applied in the pro forma without undertaking an in-depth review of the projections for each year (an operation beyond the scope of this overview). Of course, it is the client’s responsibility, not that of the real estate lawyer, to perform such a detailed review, but a real estate lawyer who is able to understand at a general level what is involved in such a review will be much better prepared to serve the client than a real estate lawyer who simply ignores the details of the pro forma or (what is far worse) who assumes that the projections are unassailable.

Here are a few observations concerning the new lease assumptions, most of which may not be apparent from a casual review of the pro forma:

- The basic financial assumptions are based on an annual rental rate of $11.00/sq. ft. for new five-year leases, but the projections apply the 2% rental growth assumption as if every new lease will have a built-in 2% annual increase in the rent. As the rent roll portion of Table 1 suggests, however, the actual leases negotiated with specific tenants may well have fixed rent for several years or rental adjustments at less regular intervals than annually.
- How does the assumed 80% “Renewal Factor” affect the projections? As a general matter, this assumption means that the pro forma anticipates that 80% of the tenants whose leases expire during the five-year period will renew their leases at expiration. But note the special clarification in this assumption: given that the pro forma is based on 5 tenants at the end of Year 1, one of which will be a new tenant for Suite 201B, the projections for Years 2-5 anticipate renewal by all 3 tenants whose leases are scheduled to expire during the remaining period of the pro forma. Is this a reasonable manner in which to apply the renewal assumption? A financial analyst might consider this application of the renewal assumption to be simplistic. An alternative approach would be to adjust the projections for space affected by lease expirations as if 80% of the space will be renewed by the existing tenant and 20% leased to a new tenant. Risk-adjusted lease analysis performed by commonly used software programs can make such weighted calculations easy even if the project includes many leases with terms ending at many different dates. Although that method might be a more logical way to honor the renewal assumption, how much more realistic would it be for this particular project, which only includes five existing suites, none of which may be susceptible to being subdivided in accordance with the 80%-20% assumption?
- The assumption of renewal by all three tenants whose leases are scheduled to expire at the end of Years 1...
(one tenant) and 4 (two tenants) also has other significant ramifications. In particular, note that the assumptions for the costs of tenant improvements (the amount the landlord will pay to modify, upgrade, or restore a suite) and leasing commissions vary depending on whether the space is leased to a new tenant at expiration of the current lease or leased again to the existing tenant by a renewal lease. The new lease for Year 1 is not a renewal, which means that these costs are figured at the higher rates in that year. But as a result of the assumption that the other three tenants will renew their leases upon expiration, the leasing costs projected for Years 2 and 5 use the lower costs assumed for renewals. If one or more of the existing tenants do not renew, the financial results could be substantially and adversely affected.

On a related point, a close analysis of the rent abatement entries for Years 1, 2, and 5 shows that the analysis applies the one month rental abatement assumption to the renewal leases but not to the new lease commencing during Year 1 (presumably based on the assumption that the new lease will be in full force as of May 1 of Year 1).

- The six-month downtime assumption reflects the judgment that any space that becomes vacant due to lease expiration will require that long to re-lease. While the pro forma assumes that Suite 201B, which is vacant as of the beginning of Year 1, will be leased by May 1, that assumption might be consistent with the six-month downtime assumption if further investigation shows that the previous lease for Suite 201B expired at the end of October of the previous year. But because the 80% renewal factor is applied as described above, the projections for Years 2 and 5, when the other scheduled lease expirations will occur, do not reflect any downtime for those suites.

- Is it reasonable to assume that every future lease will necessarily be on a triple net basis, as the current leases are? This assumption means that, in addition to providing for the assumed rental rate per square foot, each lease will require each new tenant to pay a pro rata share of the actual operating expenses of the building, including real estate taxes, insurance, and common area maintenance. The answer to this question depends largely on competitive forces in the local space market at the time new or renewal leases are being negotiated. For example, especially in a tenant’s market (excess supply of available space), the parties might negotiate a fixed gross rent per square foot that is calculated to include the estimated pro rata share of expenses for that tenant’s space. Even if the lease provides for future adjustments to account for actual increases in expenses after a base year, the estimating process places some of the risk of expenses on the landlord.

- Are the assumptions about the landlord’s costs of tenant improvements realistic? A careful review of the tenant improvement projections shows that they are adjusted for inflation at 3% per year, which is consistent with the general inflation assumption noted above. But the actual cost of tenant improvements that the landlord will bear depends on how competitive the space market is and what inflation rate the construction industry experiences. Both of those factors are subject to fluctuation.
B. Reviewing the Cash Flow Analysis

We begin with a few basic observations about the format and logic of the five-year analysis. From top to bottom, approximately the first two-thirds of the spreadsheet provides the data necessary to calculate NOI. This demonstrates that an NOI projection must take into account several categories of revenue and expenses, and several adjustments. One can more easily appreciate the risk inherent in a pro forma cash flow analysis by considering how an inaccuracy in any one of these line item entries can affect the computation of NOI, which is, in turn, critical to a meaningful financial analysis of the project. Also note that faulty assumptions necessarily produce misleading projections.

As previously noted, below the NOI line appear the projections for certain expenses that do not arise out of day-to-day operations but that still reduce cash flow. The pro forma shows these other expenses as “Leasing & Capital Costs,” and they include tenant improvement expenses, leasing commissions, and a reserve. Recall the assumption upon which the reserve item is based ($0.10/sq. ft), and note that the reserve is adjusted each year based on the general inflation assumption.

For some entries in the spreadsheet the basis for the amounts shown is fairly obvious, at least once one reviews other data included in Table 2. But even in these instances some further explanation is often required, and the spreadsheet entry may not exactly correspond to what seems to be the most apparent calculation. Minor differences may result from somewhat obscure distinctions or decisions (as well as from the less significant effects of rounding). For example, the Potential Gross Revenue shown for Year 1 can be determined from the total rent payable under the current leases, as summarized in the Rent Roll section, but the calculation should include an increase in the rent that takes effect late in Year 1 for First Reserve Bank. A casual reviewer of the pro forma could easily overlook this detail. Moreover, because the Base Rental Revenue line item corresponds to the potential gross rent that the project could generate if fully occupied, the entry for Year 1 includes potential revenue for Suite 201B for the entire year, even though that unit is currently vacant. Potential gross rent for Suite 201B has been calculated at the $11.00/sq. ft. pro forma rental rate that the Rent Roll section shows for this space. Note, also, that the entry in this section for Turnover Vacancy makes an adjustment to account for the assumed continuation of the current vacancy through the end of April of Year 1.

Because our interest is in understanding the analysis at a general level, we need not concern ourselves with identifying all of the accounting details and computational steps that come into play with each line item entry for each year. But what is especially important for our purposes is to recognize that every entry results from detailed calculations and that the reliability of most of those calculations depends on one or more assumptions, as well as on the appropriate use of the known data about the project. If the review that follows serves no other purpose, it should at least encourage an attitude that may prove especially useful to those of us for whom financial analysis is not second nature: a lawyer handling a real estate transaction should not be embarrassed to ask questions about a pro forma spreadsheet, because the answers are not necessarily self-evident, and the explanations may help the lawyer understand the project and the transaction more fully.

It is important at this point to reiterate that the methodology used to create the hypothetical pro forma deals with one especially
significant risk in a less sophisticated manner than a more demanding analysis would. As previously explained, to simplify the calculations for those years in which leases expire, the pro forma does not use the 80% renewal factor to make adjustments for the projected revenue from the units involved (the Ready Architects space in Year 2, and the First Reserve Bank and the Best Engineering spaces in Year 5). Rather, it calculates the rent, as well as the commissions and tenant improvements, as if all three of those tenants will renew their leases. As a matter of convenience for the purpose of this discussion, the artificial justification offered for this approach appears as a clarification in the assumptions that explains that the 80% renewal factor assumption has been taken into account in Year 1, due to the vacancy of Suite 201B (representing 20% of the existing units by number, but not by rentable area). While the projections for all years after Year 1 apply the 5% general vacancy assumption, they do not include any Turnover Vacancy adjustment. But if any one of the expiring leases is not in fact renewed and a new tenant must be found, that circumstance will adversely affect the Turnover Vacancy category. Although, in the interest of simplification, Table 1 has been prepared by a method that glosses over these refinements, software programs commonly used to provide risk-adjusted projections for multiple tenant projects are available that could make mathematically justified entries for Base Rental Revenue, Turnover Vacancy, and Base Rent Abatement on a weighted basis that incorporates the 80% renewal factor.

To gain a preliminary appreciation for the calculations involved and how they are affected both by information actually known about the project and by assumptions, consider the adjustments and assumptions that affect Year 5, a year for which the assumptions and projections are especially sensitive because the current leases of both First Reserve Bank and Best Engineering are scheduled to expire at the end of Year 4. A close review of the Year 5 pro forma entries confirms that the Scheduled Base Rental Revenue for Year 5 is calculated using the following rent components: (1) the contract rent under the ongoing New Development lease, which is the only lease that remains in effect throughout the five-year period that the pro forma covers, and under which the rent adjusts to $11.50/sq. ft. at the beginning of Year 5; (2) rent payable by First Reserve Bank under the lease that the pro forma assumes will be renewed at a rate established by the rental growth assumption ($11.00/sq. ft. adjusted for 2% annual growth = $11.91/sq. ft.; (3) rent payable by Ready Architects also determined under the same assumptions; (4) rent payable by Best Engineering, based on these same assumptions; and (5) ongoing rent for Suite 201B, which is assumed to have been leased for a five-year term that began May 1 of Year 1 at a rental rate that started at $11.00/sq. ft. and that would also grow at the rate of 2% per year.

In other words, using the assumptions, the pro forma calculates the rent for all of the space in the complex for Year 5, other than the New Development unit, at the same rate of $11.00/sq. ft., adjusted by the assumed 2% annual growth. Among other things, consider what this means for an investor who accepts the assumptions and the way in which they have been applied and who uses the cap rate valuation method to establish the anticipated value of the complex at the end of the five-year period. That investor will be determining value based on an aggregate NOI calculation that results from assuming that five leases will then be in effect and that four of those leases will provide for rent at a rate that is significantly higher than the contract rent for Year 5 under the only lease that is scheduled to continue throughout the five-year period.
Before concluding that this approach is hopelessly flawed, however, we must also recognize that the pro forma adjusts for the considerable risks associated with the assumed lease renewals in two ways. First, the Year 5 Scheduled Base Rental Revenue has been reduced to reflect the assumption that the First Reserve Bank and the Best Engineering renewal leases beginning that year will require rental abatements for the first month of the renewal terms. (The pro forma, however, does not assume any abatement of expense reimbursements). Second, Effective Gross Revenue for Year 5 also includes a deduction based on an assumed 5% vacancy. The question for an investor reviewing the pro forma is whether these modifications adjust sufficiently for the risks involved. A prudent investor might decide to take a more comprehensive or particularized approach to arrive at a risk-adjusted Effective Gross Revenue projection. For example, the investor might choose to recalculate projected revenue by using software that applies a renewal factor (which might be the 80% factor of the current pro forma or some other factor the investor thinks more appropriate) to compute Effective Gross Revenue based on weighted amounts for the components of Scheduled Base Rental Revenue and Total Reimbursement Revenue. Alternatively, an investor might use the Effective Gross Revenue for Year 5 just as it is shown in the pro forma, but for valuation purposes the investor might increase the cap rate to adjust for the greater investment risk resulting from the uncertainty attributable to the relative lack of rigor in the assumptions and methodology that the pro forma uses.  

To reconstruct the precise computations and adjustments used throughout the pro forma analysis for the entire five-year period would require extensive study and detailed computational steps far beyond what is useful for the relatively cursory analysis that this overview offers. From a real estate lawyer's perspective, what is most important is simply to reiterate that nearly every entry in the pro forma analysis involves a detailed computation that uses both the known physical and contractual data for the project and one or more of the assumptions. As a result, while the pro forma offers logical and defensible projections of future financial performance, those projections carry a risk of inaccuracy that is inherent in the pro forma process. Thus, our limited review confirms that the intelligent use of pro forma analysis is, in many ways, at least as much a matter of judgment as it is mathematics.

Keeping in mind our modest goals, we need consider only a few additional details of the pro forma analysis. In particular, note these aspects of the calculations in Table 1, which are presented here more to illustrate the complexity and inherent risk of the process than to explain or challenge specific calculations:

- Potential Gross Revenue begins by applying the actual or projected rental rates to all of the rental units of the project, without regard to the vacancy assumption. The spreadsheet uses the actual scheduled rents due under the current leases throughout the current terms of those leases, and it applies the assumptions to calculate the potential rent for units for which the current leases are scheduled to terminate (or are assumed to renew) during the period covered by the statement. The resulting potential base rental

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20. See id. at 211. Presumably, this logic would lead the investor to use a higher cap rate than the investor might generally think appropriate for otherwise comparable projects. As a result, the investor would arrive at a lower anticipated value for the project based on the pro forma NOI for Year 5.
revenue for each year is then reduced to reflect projected vacancies and rent abatements. The result is the Scheduled Base Rental Revenue.

- Expense Reimbursement Revenue reflects that all units are leased on a triple net basis. In other words, each line item in this section is presumably based on a pro rata pass through to the tenants of the expenses shown a few lines below under “Operating Expenses.” As a practical matter, competitive forces in the local office market could compel the landlord to negotiate a lease with a new tenant, or even a renewal lease with an existing tenant, on a basis that factors estimated expenses over the lease term into gross rent. If that occurs, then Scheduled Base Rental Revenue may increase (because it would include the additional factor to cover estimated operating expenses), but the Expense Reimbursement Revenue would decline (for the same reason). The impact on NOI would turn on the extent to which the operating expense factor built into the base rent is sufficient to cover the actual expenses of operating the project for the initial or base year. Note further that the entries in the pro forma for Expense Reimbursement Revenue for each year are slightly less than the projected Operating Expenses. Except for Year 1, when we know that Unit 201B will not be producing reimbursement revenue for the first four months, we cannot determine how this gap occurs in reimbursement revenue. Because the shortfalls in Expense Reimbursement Revenue are so small for Years 2-5, they may result from the fact that some minor item of operating expense is simply not being passed through to the tenants or from the effects of estimating or rounding or other calculation adjustments in the percentages used to determine the pro rata shares of one or more of the tenants.

- Total Potential Gross Revenue does not reflect the 5% general vacancy assumption, which is taken into account separately to arrive at Effective Gross Revenue. As has already been indicated, the relationship between the calculated general vacancy deduction for any year and the turnover vacancy deduction from potential gross revenue depends on how one applies certain assumptions, such the 80% renewal factor.

- Net Operating Income is especially important for valuation purposes, because (among other reasons) this is the amount investors often use for a rule-of-thumb, cap rate valuation. Notice that if we use a stable cap rate from one year to another, the cap rate valuation of the project varies depending on the year we choose. For example, if we use a 7.5% cap rate and base value on projected NOI for Year 5 (when the rental growth rate assumption has its biggest impact) the projected value is $3,077,973. But if we use the projected NOI for Year 2, the projected value

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21. The rate suggested is arbitrary, but at least it is within historical rates and is the same as used in the earlier cap rate valuation example.

22. $230,848/.075 = $3,077,973.
is $2,934,467.23 (Recall that Year 2 precedes the most significant rental increases and is a year that includes an adjustment for Base Rent Abatement attributable to the assumed renewal of the Ready Architects lease, and it also reflects the impact of applying the general vacancy assumption for the first time.) This observation illustrates the primary limitation of cap rate valuation that has already been mentioned—it is a static method that uses only a snapshot of NOI at the time the valuation is determined.

- Leasing and Capital Costs vary significantly from one year to another because tenant improvement expenses and leasing commissions are only included for those years in which new or renewal leases are anticipated. NOI therefore (which is not affected by these irregular expenses) is a more stable revenue figure. But the cash flow analysis is incomplete without these adjustments. The third component in this part of the statement is a consistent capital cost reserve, based on a rule-of-thumb formula of $0.10/sq. ft., adjusted each year to reflect the assumption of 3% inflation. A prospective investor in the project (a purchaser or a lender) would want to confirm that the reserve formula is appropriate in light of the condition of the property and is consistent with sound practices for similar projects. The investor would also need to judge the validity of the general inflation assumption as it relates to capital expenditures. These considerations suggest some reasons that a financial analyst for a lender might give for reducing NOI by a capital reserve amount acceptable to the lender.24

- Cash Flow Before Debt Service & Income Tax is the bottom line of this cash flow analysis. Debt service would likely be an extremely important further deduction for most investors, but the impact of debt service would be dependent on a number of factors that differ significantly for each investor and for time-sensitive, capital market conditions. The effect of income taxes on the financial analysis would depend not only on considerations unique to the investor's circumstances but also on the impact of cost recovery (depreciation) under the tax code. The present, limited analysis does not address these important aspects of the financial results.

IV. Discounted Cash Flow: The Equity Perspective in More Detail

Recall that the cap rate valuation method and most of the other metrics used earlier in this overview refer to NOI for the current period. While this is one useful methodology for undertaking the financial analysis of an income producing project, investors also need more comprehensive tools that take into account cash flow over multiple periods. This section uses the Jim Guy Office Complex data to provide a brief introduction to discounted cash flow analysis. Among other things, a discounted cash flow analysis offers a valuation

23. $220,085/.075 = $2,934,467.
24. See MILES, ET AL., supra note 1, at 180.
method that can make use of the entire five-year period of the projections provided by the pro forma.

A. General Concepts

An income producing real estate project such as the Jim Guy Office Complex represents a stream of future cash flows. How much should an investor be willing to pay today to own the right to receive a stream of future cash flows over the duration of the investment?

A cash flow stream over time cannot justify a current investment equal to the total of the cash flows because investors require a rate of return on the current investment, and they also demand premiums to compensate them for the risk of inflation over time and the risk of default on future payments (in the case of the Jim Guy Office Complex, this second risk includes not only the risk that a tenant may default in paying rent, but also the risk of nonrenewal of expiring leases). By incorporating a discount factor to account for these risks, discounted cash flow analysis values expected cash flows from a property as if they were all to be received today. In other words, to establish a value for a future cash flow, the investor must apply an expected rate of return (the discount rate) to convert to present value the future values projected to be received over the time period being analyzed.

The marketplace for investments determines the appropriate rate of return that an investor should expect on a proposed investment. That expected rate of return is the discount rate the investor should use for the discounted cash flow analysis that calculates the present value of the projected cash flow stream.

As suggested above by the factors required to justify a current investment in a projected cash flow stream, a rate of return should include three distinct components: an inflation premium; a real rate of return; and a risk premium. The first two components apply to all investments because (1) there is always a risk of inflation over time and (2) everyone who makes a financial investment demands some return above inflation.

The lowest rate of return an investor should be willing to accept is the rate of return on U.S. Treasury obligations, with respect to which the market applies an inflation premium and a real rate of return, but no risk premium because the market accepts that there is no risk of default by the U.S. Treasury. Any other investment presumably carries a default risk and must, therefore, include an appropriate risk premium to reflect the degree of risk relative to other investments. Determining a discount rate requires an analysis of the risks of the investment. Data from recent sales of comparable properties are extremely useful for this purpose, but ultimately, the process “is as much an art as it is a science.”

As already discussed in connection with the review of the pro forma, several distinct considerations relevant to the performance of the Jim Guy Office Complex over the five-year period contribute to the degree of risk that a cautious investor would incorporate into an appropriate discount factor for valuing the NOI that the pro forma calculates over the years it covers. Just how much to add to the

25. Id. at 203.
26. Id. at 205-07.
27. Id. at 206.
discount rate over an inflation premium and a real rate of return is a matter for the judgment of the specific investor.

The next two sections describe—in a highly abbreviated fashion—how discounted cash flow analysis makes the necessary calculations. For a real estate lawyer, it is far more important to understand the broad concepts involved than to master how to make the mathematical computations.

B. Discounting a Single Cash Flow

Discounting a single cash flow requires that the future cash flow amount be multiplied by a factor less than 1.0 (discount factor) to convert (reduce) the future cash flow to a present value equivalent. When there is only a single future cash flow, say NOI for just one year, the mathematical operation is relatively simple, although it must, in addition to using a discount factor, also take into account the length of the period until the cash flow will be received. The calculation is:

\[
\text{Present Value} = \text{Future Value} \times \text{Discount Factor}
\]

(a factor that returns a value lower than the future value)

Discount Factor = \(\frac{1}{1 + i}^n\) where \(i = \text{rate of return; } \frac{1}{1 + i}^n = \text{term (for compounding)}\)

Thus, Present Value = Future Value \(\times \frac{1}{1 + i}^n\)

For a single cash flow, say the right to receive a $1,000 payment at the end of one year, here is the calculation if the expected rate of return (discount rate) is 6.5%:

\[
\text{PV} = \$1,000 \times \frac{1}{1 + .065}^1 \quad \text{(Rate = 6.5% per annum; term = one annual period)}
\]

\[
\text{PV} = \$1,000 \times \frac{1}{1.065}^1
\]

\[
\text{PV} = \$1,000 \times 0.93897 = \$938.97
\]

The investor who expects a 6.5% return is willing to pay $938.97 today for the $1,000 cash flow due one year from today. Remember that the 6.5% discount rate in the example is intended to account for projected inflation during the investment period, compensate for the risk of the particular investment, and also provide a real rate of return.

What if the single future payment is made two years in the future? In this situation, there will still be only a single future payment, but we must apply the discount rate (expressed as an annual interest rate) twice (once for the first year of the two-year investment term, and once for the final year of the investment term) to calculate the discount factor.

\[
\text{PV} = \$1,000 \times \frac{1}{1 + .065}^2 \quad \text{(Rate = 6.5% per annum; term = two annual periods)}
\]

\[
\text{PV} = \$1,000 \times 0.88166 = \$881.66
\]

The investor who expects a 6.5% return is willing to pay $881.66 today for the $1,000 cash flow due two years from today.

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28. \textit{Id. at 207.}
C. Discounting Multiple Cash Flows

Because real estate investments are long-term investments that involve periodic cash flows, a real estate investor can arrive at a present value (current sales price) for a revenue-generating property by applying discounted cash flow analysis to a series of projected cash flows.\(^{29}\) Typically, this means valuing (1) the annual NOI over a multi-year holding period \(\text{plus}\) (2) the residual value the investor expects to receive upon sale of the property at the end of that period. Using this approach, an investor could calculate a present value for the Jim Guy Office Complex by discounting the following cash flows that the complex is projected to generate over the five-year period covered by the pro forma, consisting of: (1) the annual cash flows shown by the pro forma for each of the five years (each annual cash flow amount would be converted to a present value, and those values would be combined); and (2) the residual value of the project at the end of the five-year period, which might be determined by applying a cap rate to the projected NOI for Year 5. While the calculation for a series of annual cash flows over a five-year period is a modestly complex matter, a financial calculator or spreadsheet program can be used to automate the calculation, thereby making the process quite simple.\(^{30}\)

Thus, the present value of the Jim Guy Office Complex is equal to the combined present values of the annual cash flows shown in the bottom line for each year, plus the residual value of the project at the end of the five-year period, which might be computed based on the Year 5 NOI. Table 2 provides all the data needed to determine a present value for the investment except for the discount rate to use for converting the future values to present values and the cap rate to apply to Year 5 NOI to determine a residual value. As explained in earlier sections of this overview, discount rate and cap rate determinations require both market data and judgment.\(^{31}\)

If we adhere to the sample rates used earlier (6.5% discount rate for converting the series of cash flows to present value, and 7.5% cap rate to value the Year 5 NOI), we can use the discounted cash flow analysis to arrive at a present value for the total investment. Assuming that we are willing to use the annual cash flow amounts shown in Table 1 and that we are willing to use Year 5 NOI to compute the residual value (anticipated sales price at the end of Year 5), which we must also reduce to a present value, and further assuming that we consistently (throughout the five-year period) use the discount rate and the cap rate suggested above, we would compute the present value of the Jim Guy Office Complex investment as $3,117,785. (This amount is the total of the present values, each of which is discounted by the 6.5% discount factor, which must be compounded for the cash flows for Years 2-5, and it includes the future residual value based on the cap rate valuation of the Year 5 NOI. The

\(^{29}\) Id. at 208.

\(^{30}\) For those who want try the calculation for the Jim Guy office process, here are the steps:

\[ PV = \text{(Discount Factor}^1 \times \text{Cash Flow}^1) + \text{(Discount Factor}^2 \times \text{Cash Flow}^2) + \text{(Discount Factor}^3 \times \text{Cash Flow}^3) + \text{(Discount Factor}^4 \times \text{Cash Flow}^4) + \text{(Discount Factor}^5 \times \text{Cash Flow}^5) \text{[Cash Flow}^5 \text{would include the net sales price].}\]

\(^{31}\) The investor need not necessarily use the same discount rate and cap rate for these calculations. In fact, a particularly thorough investor might use different discount rates for each year based on perceived variations in the risk factors applied to different years.
individual values are: $186,105, discounted Year 1 cash flow; + $175,770, discounted Year 2 cash flow; + $186,252, discounted Year 3 cash flow; + $176,151, discounted Year 4 cash flow; + $146,953, discounted Year 5 cash flow (excluding residual value); + $2,246,554, discounted capitalized Year 5 NOI, representing the project's residual value). Given certain risks associated with this project, however, especially the risk that expiring leases will not be renewed, a discount rate significantly higher than 6.5% may be appropriate. A higher discount rate would return a lower present value.

D. Internal Rate of Return

Investors also need a tool to compare the total investment results of one investment opportunity over the life of the investment to alternative investments. An internal rate of return calculation is extremely useful for this purpose.

To compute the rate of return that the investment provides over its term, the internal rate of return (IRR) computation uses (1) the investment amount (such as the property’s purchase price) and (2) cash flows the investment produces over its entire term (such as annual NOI and net sale price at the end of the term). Calculating the IRR allows the investor to determine whether the investment was (or in the case of a projection, should be) a relatively good one in comparison to other possible investments.

An IRR calculation answers this question: What rate of return on my investment (cash input) results from the multiple cash flows (cash outputs) from this property over the entire term of the investment? The rate of return that the IRR calculation provides equals the discount rate we would need to apply to the property cash flows to arrive at (or financially justify) the amount invested.

Internal rate of return and present value calculations are similar tools that use consistent calculation methods, but each uses different information about the investment. “The primary difference between an IRR calculation and a PV calculation is that the present value determines the value of an income stream today given a specified discount rate. An IRR, on the other hand, calculates the rate of return on a property given a purchase price (cash outflow) and a stream of future cash inflows.”

An internal rate of return is computed by a process analogous to the present value calculations discussed in the previous section. Thus, the internal rate of return can be calculated as a percentage rate for a proposed real estate investment, such as the purchase of the Jim Guy Office Complex, that would require a single cash input (the cash purchase price that the investor expects to pay to acquire the project) and that yields multiple cash flows (the project’s annual NOI for several years, plus the price that the investor expects to obtain upon sale of the project at the end of the investment term). As previously mentioned, by calculating the internal rate of return for the proposed investment based on the pro forma cash flow analysis, the investor can make a useful comparison between the projected financial performance of the Jim Guy Office Complex and alternative investments that the investor might decide to make rather than purchasing the complex.

32. Miles, et al., supra note 1, at 210.
33. Id.
In light of the limited scope of this overview, rather than provide step-by-step calculations of the projected IRR for the Jim Guy Office Complex based on Table 1, it is sufficient merely to note how an IRR calculation contributes to the financial analysis. Let us assume, therefore, that a hypothetical investor purchases the project for $2,995,467, determined by applying a 7.5% cap rate to the Year 1 projected NOI. If the investor is considering the purchase of the property with a view toward holding it for five years and then selling it, and if the investor accepts the projections made by the pro forma and uses the same 7.5% cap rate to project the residual value of the property at the end of the investment period based on the projected NOI for Year 5 (a projected residual value of $3,077,973), the projected IRR is 7.47%. Most analysts would probably consider this to be a modest total return for a somewhat risky real estate investment, but it may be acceptable to our hypothetical investor.

But what if, when Year 5 arrives, the investor discovers that the projections were inaccurate? In that case, the actual IRR may be much different. For example, even if we assume for the sake of simplicity that all of the cash flow projections are accurate and that the Year 5 NOI is exactly as projected in Table 1, if Year 5 turns out to be the bottom of a real estate recession and credit crisis, a significant depreciation in the project’s value at the end of Year 5 could turn a modest projected IRR into an extremely poor one. After all, the true residual value of the project at the end of the investment period will be established by an actual sales price under the then prevailing market conditions rather than by a projected cap rate valuation. Thus, if we assume that the depressed market conditions at the end of Year 5 force the investor to sell the project for 25% less than the projected cap rate value (an actual sales price of $2,308,480), the IRR for the investment would only be 2.66%. And if the investor financed the purchase with such a high amount of debt that the sales price is insufficient to repay the mortgage loan, the effect of negative leverage could mean that what initially looked like at least an acceptable investment might end as a colossal loss.

**Conclusion**

As the real estate market cycle returns to a healthier phase, clients who invest in real estate will have a renewed commitment to the fundamentals of sound financial analysis. By becoming more familiar with the concepts and terminology of project valuation and underwriting, real estate lawyers can better prepare to help their clients structure and document the transactions of the recovery.
### TABLE 1 Jim Guy Office Complex
5 Year Pro Forma Cash Flow Analysis

<table>
<thead>
<tr>
<th>Year</th>
<th>For the Years Ending</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dec-10</td>
<td>Dec-11</td>
<td>Dec-12</td>
<td>Dec-13</td>
<td>Dec-14</td>
</tr>
<tr>
<td>Potential Gross Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base Rental Revenue</td>
<td>$235,146</td>
<td>$238,767</td>
<td>$240,513</td>
<td>$242,338</td>
<td>$253,253</td>
<td></td>
</tr>
<tr>
<td>Turnover Vacancy</td>
<td>(7,333)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base Rent Abatements</td>
<td>(5,550)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(8,437.00)</td>
</tr>
<tr>
<td>Scheduled Base Rental Revenue</td>
<td>227,813</td>
<td>233,217</td>
<td>240,513</td>
<td>242,338</td>
<td>244,816</td>
<td></td>
</tr>
<tr>
<td>Expense Reimbursement Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAM &amp; UTILITIES</td>
<td>16,241</td>
<td>17,440</td>
<td>17,963</td>
<td>18,502</td>
<td>19,057</td>
<td></td>
</tr>
<tr>
<td>INSURANCE</td>
<td>2,559</td>
<td>2,748</td>
<td>2,830</td>
<td>2,915</td>
<td>3,003</td>
<td></td>
</tr>
<tr>
<td>R/E TAXES</td>
<td>30,897</td>
<td>32,829</td>
<td>33,814</td>
<td>34,828</td>
<td>35,873</td>
<td></td>
</tr>
<tr>
<td>MANAGEMENT FEE</td>
<td>10,580</td>
<td>11,122</td>
<td>11,456</td>
<td>11,799</td>
<td>12,153</td>
<td></td>
</tr>
<tr>
<td>Total Reimbursement Revenue</td>
<td>60,277</td>
<td>64,139</td>
<td>66,063</td>
<td>68,045</td>
<td>70,086</td>
<td></td>
</tr>
<tr>
<td>Total Potential Gross Revenue</td>
<td>288,090</td>
<td>297,356</td>
<td>306,576</td>
<td>310,383</td>
<td>314,902</td>
<td></td>
</tr>
<tr>
<td>General Vacancy</td>
<td>(11,938.00)</td>
<td>(12,026.00)</td>
<td>(12,117.00)</td>
<td>(12,663.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective Gross Revenue</td>
<td>288,090</td>
<td>285,418</td>
<td>294,550</td>
<td>298,266</td>
<td>302,239</td>
<td></td>
</tr>
<tr>
<td>Operating Expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAM &amp; UTILITIES</td>
<td>17,278</td>
<td>17,796</td>
<td>18,330</td>
<td>18,880</td>
<td>19,447</td>
<td></td>
</tr>
<tr>
<td>INSURANCE</td>
<td>2,722</td>
<td>2,864</td>
<td>2,888</td>
<td>2,974</td>
<td>3,064</td>
<td></td>
</tr>
<tr>
<td>R/E TAXES</td>
<td>32,523</td>
<td>33,499</td>
<td>34,504</td>
<td>35,539</td>
<td>36,605</td>
<td></td>
</tr>
<tr>
<td>MANAGEMENT FEE</td>
<td>10,907</td>
<td>11,234</td>
<td>11,571</td>
<td>11,918</td>
<td>12,276</td>
<td></td>
</tr>
<tr>
<td>Total Operating Expenses</td>
<td>63,430</td>
<td>65,333</td>
<td>67,293</td>
<td>69,312</td>
<td>71,391</td>
<td></td>
</tr>
<tr>
<td>Net Operating Income</td>
<td>224,660</td>
<td>220,085</td>
<td>227,257</td>
<td>228,954</td>
<td>230,848</td>
<td></td>
</tr>
<tr>
<td>Leasing &amp; Capital Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenate Improvements</td>
<td>20,000</td>
<td>11,872</td>
<td></td>
<td></td>
<td>17,000</td>
<td></td>
</tr>
<tr>
<td>Leasing Commissions</td>
<td>4,314</td>
<td>6,642</td>
<td></td>
<td></td>
<td>10,096</td>
<td></td>
</tr>
<tr>
<td>Capital Reserve</td>
<td>2,144</td>
<td>2,208</td>
<td>2,275</td>
<td>2,343</td>
<td>2,413</td>
<td></td>
</tr>
<tr>
<td>Total Leasing &amp; Capital Costs</td>
<td>26,458</td>
<td>20,722</td>
<td>2,275</td>
<td>2,343</td>
<td>29,509</td>
<td></td>
</tr>
</tbody>
</table>
### Overview of the Jim Guy Office Complex

| Improvements                  | 2 small office buildings, each suitable to be divided to meet tenant needs  
|                              | Age: both buildings completed in 2002 |
| Rentable area                | Building A = 10,936  
|                              | Building B = 10,500  
|                              | Total = 21,436 sq. ft. |
| Current units                | Building A: Suites 100A & 200A  
|                              | Building B: 100B, 200B, & 300B  
|                              | Total units: 5 |

### Current Rent Roll

| First Reserve Bank           | Unit: Suite 100A  
|------------------------------| Sq. footage: 5,000  
|                              | Term: through end of Year 4  
|                              | Rent: $10.50 sq. ft.; adjusts to $11.00, 10/1 of Year 1  
|                              | Triple net |
| Ready Architects             | Unit: Suite 200A  
|------------------------------| Sq. footage: 5,936  
|                              | Term: through end of Year 1  
|                              | Rent: $11.00 sq. ft.  
|                              | Triple net |
| New Development LLC          | Unit: Suite 100B  
|------------------------------| Sq. footage: 5,000  
|                              | Term: end of Year 7  
|                              | Rent: $11.00 sq. ft.; adjusts to 11.50 at start of Year 5  
|                              | Triple net |
| Best Engineering             | Unit: Suite 200B  
|------------------------------| Sq. footage: 3,500  
|                              | Term: through end of Year 4  
|                              | Rent: $11.35 sq. ft.  
|                              | Triple net |
| Vacant                       | Unit: Suite 201B  
|------------------------------| Sq. footage: 2,000  
|                              | Term: 5 years (pro forma)  
|                              | Rent: pro forma @ $11.00 sq. ft.  
|                              | Triple net |
Assumptions to Projections  
(5-Year period, beginning 01/01/2010)

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current occupancy</strong></td>
<td>91% occupied as of 01/01/2010. The pro forma assumes 100% occupancy by 05/01/2010</td>
</tr>
<tr>
<td><strong>Inflation and growth</strong></td>
<td>3% (general inflation, operating expenses, capital expenses)</td>
</tr>
<tr>
<td><strong>Vacancy rate</strong></td>
<td>5%, except for Year 1 (the existing vacancy of Suite 201B is built into Turnover Vacancy for Year 1)</td>
</tr>
<tr>
<td><strong>New leases</strong></td>
<td>Rate: $11.00 sq. ft., triple net</td>
</tr>
<tr>
<td></td>
<td>Term: 5 years</td>
</tr>
<tr>
<td></td>
<td>Rental growth: 2% per year</td>
</tr>
<tr>
<td></td>
<td>Downtime: 6 months</td>
</tr>
<tr>
<td></td>
<td>Rent abatement: 1 month (applied to assumed renewals)</td>
</tr>
<tr>
<td></td>
<td>Commission: 7% of 1st year gross rent, 3% of subsequent years (new leases); 4% of 1st year gross rent, 1.5% of subsequent years (renewals)</td>
</tr>
<tr>
<td></td>
<td>Renewal factor: 80% (deemed applied to Year 1, due to actual vacancy that year in 1 out of 5 units. All other years use the assumed general vacancy rate.)</td>
</tr>
<tr>
<td><strong>Tenant improvement</strong></td>
<td>$10.00 sq. ft. allowance for new leases; $2.00 sq. ft for renewals</td>
</tr>
<tr>
<td><strong>Capital reserve</strong></td>
<td>$0.10 sq. ft.</td>
</tr>
<tr>
<td><strong>Debt</strong></td>
<td>None</td>
</tr>
</tbody>
</table>