

Discounted Cash Flow Valuation Guide for Commercial Real Estate

DISCOUNTED CASH FLOW VALUATION GUIDE

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Discounted cash flow analysis for real estate is widely used, yet often misunderstood. In this guide we're going to discuss discounted cash flow analysis for real estate and clear up some common misconceptions.

Discounted Cash Flow Real Estate Model

First, let's dive into the basic real estate cash flow model in order to understand how a discounted cash flow analysis is constructed. Four basic questions must be answered in order to understand any real estate investment:

1. How many dollars go into the investment?
2. When do the dollars go into the investment?
3. How many dollars come out of the investment?
4. When do the dollars come out of the investment?

In real estate finance, the answers to these four basic questions are boiled down to a simple diagram:

| EOY | \$ |
|-----|--|
| 0 | (Initial Investment) |
| 1 | Cash Flow Before Tax |
| 2 | Cash Flow Before Tax |
| 3 | Cash Flow Before Tax |
| 4 | Cash Flow Before Tax |
| 5 | Cash Flow Before Tax + Sales Proceeds Before Tax |

Holding Period

The holding period is shown in years on the left hand side of the diagram. It is usually assumed that the timing of the cash flows occur at the End of the Year (EOY). In commercial real estate, the holding period is typically between 5-15 years for the purposes of a financial analysis.

Initial Investment

The initial investment is normally shown in time period zero (0) and includes all acquisition costs required to purchase the asset, less any mortgage proceeds. In other words, this is your total out of pocket cash outlay required to acquire a property.

Annual Cash Flows

The annual cash flows before tax for a real estate investment property are typically broken out line by line on a real estate proforma. The cash flow before tax is the net result of gross income minus expenses and debt service. If cash flow

is negative it means dollars are going into the investment, and if cash flow is positive it means dollars are coming out of the investment.

Sale Proceeds

Sale proceeds represent the net cash flow received from the disposition of an investment property. This cash flow item shows up in the last period of the holding period of the real estate cash flow model.

The Real Estate Proforma

Before we jump into the mechanics of discounted cash flow analysis, let's take a quick look at the structure of a real estate proforma. The real estate proforma is simply a cash flow projection that breaks out the above real estate cash flow model in detail for a particular property.

On the following page is a numerical example of a real estate proforma. This shows a five-year cash flow projection similar to what would be used on a regular basis by investors, developers, brokers, lenders, and appraisers.

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| End of Year | 1 | 2 | 3 | 4 | 5 |
|--------------------------------------|------------------|------------------|------------------|------------------|--------------------|
| | 6/30/2014 | 6/30/2015 | 6/30/2016 | 6/30/2017 | 6/30/2018 |
| Publix | \$240,000 | \$240,000 | \$240,000 | \$240,000 | \$240,000 |
| Starbucks | \$62,500 | \$63,125 | \$63,756 | \$64,394 | \$65,038 |
| Ross | \$273,750 | \$273,750 | \$273,750 | \$273,750 | \$273,750 |
| Haircuttery | \$42,000 | \$42,630 | \$43,269 | \$43,918 | \$44,577 |
| Crossfit | \$54,000 | \$54,000 | \$54,000 | \$54,000 | \$54,000 |
| POTENTIAL RENTAL INCOME | \$672,250 | \$673,505 | \$674,776 | \$676,062 | \$677,365 |
| Starbucks Reimbursements | \$12,017 | \$12,065 | \$12,113 | \$12,162 | \$12,211 |
| TOTAL POTENTIAL RENTAL INCOME | \$684,267 | \$685,570 | \$686,889 | \$688,224 | \$689,576 |
| General Vacancy | (\$68,427) | (\$68,557) | (\$68,689) | (\$68,822) | (\$68,958) |
| EFFECTIVE RENTAL INCOME | \$615,841 | \$617,013 | \$618,200 | \$619,402 | \$620,618 |
| Property Taxes | (\$75,000) | (\$75,000) | (\$75,000) | (\$75,000) | (\$75,000) |
| Insurance | (\$25,000) | (\$25,000) | (\$25,000) | (\$25,000) | (\$25,000) |
| Maintenance | (\$75,000) | (\$75,750) | (\$76,508) | (\$77,273) | (\$78,045) |
| Property Management | (\$26,890) | (\$26,940) | (\$26,991) | (\$27,042) | (\$27,095) |
| Total Expenses | (\$201,890) | (\$202,690) | (\$203,499) | (\$204,315) | (\$205,140) |
| NET OPERATING INCOME | \$413,951 | \$414,323 | \$414,701 | \$415,086 | \$415,478 |
| BB&T | (\$290,871) | (\$290,871) | (\$290,871) | (\$290,871) | (\$3,567,822) |
| Reversion | \$0 | \$0 | \$0 | \$0 | \$8,460,000 |
| CASH FLOW BEFORE TAX | \$123,080 | \$123,452 | \$123,831 | \$124,216 | \$5,307,656 |

Potential Gross Income (PGI)

The top line item in the proforma consists of the cash that could be generated if the property were 100% leased. Forecasting Potential Gross Income is a function of both contractual lease terms, as well as market rents. First, for all of the contractual leases in place on the rent roll, the cash flow for each lease is

calculated for each year in the holding period. This takes into account the lease terms specific to each tenant.

Second, if there is any period of time in the holding period not covered by a contractual lease, market rent is forecasted to determine cash flow that could be generated given the then prevailing market conditions. Projecting out potential rental income will often involve accounting for renewal assumptions after a lease expires. This includes forecasting market leasing commissions, tenant improvements, abatement, reimbursements, etc.

Vacancy Allowance

Because it's not realistic to assume a property will be 100% leased forever, the vacancy allowance line item on a real estate proforma accounts for expected vacancy of the property. Vacancy can be calculated in several different ways, including taking a simple percentage of the potential rental income, or using a total dollar amount for each year in the holding period. Other, more advanced ways of accounting for vacancy include calculating downtime between leases, and taking into account prevailing market conditions.

Other Income

Other income items typically show up on the real estate proforma after vacancy allowance. Other income items usually aren't a part of contractual leases, but still provide additional revenue for the property. Examples of other income items include billboard, laundry, parking, or antenna income.

Effective Gross Income (EGI)

Subtracting the vacancy allowance from potential rental income for a property, and then adding in any other income items, results in what's known as the Effective Rental Income.

Operating Expenses

The next major category on the real estate proforma is operating expenses. Common expense line items include property taxes, property insurance, property management fees, and utilities. Often Class A tenants will have so-called net leases, where the tenant pays all or most of the operating expenses. Other times, landlords will negotiate reimbursements where the tenant is required to pay a portion of the operating expenses each year.

Net Operating Income (NOI)

The Net Operating Income is derived by subtracting all operating expenses from the Effective Gross Income for a property. The NOI is perhaps the most widely used indicator of cash flow for commercial real estate.

However, it is important to note that the NOI ignores irregular expenditures like leasing commissions, tenant improvement allowances, and some capital improvement expenditures. Accounting for these items in the Before Tax Cash Flow indicator results in more accuracy.

Other Expenditures

Other expense items associated with a property that are specific to the investor, or that don't occur on a regular basis are included here. Examples include debt service, leasing commissions, tenant improvement allowances, reserves for replacement, and some capital expenditure items.

Before Tax Cash Flow (BTCF)

Netting out any other expenditures items from the Net Operating Income results in Before Tax Cash Flow for the property. This gives a clear picture of free cash flow available to the owners of a property, before debt service and taxes.

Reversion Cash Flows

In addition to forecasting the operating cash flows using the above proforma line items, the reversion cash flow, or net sales proceeds, must also be taken into account on a real estate proforma.

The reversion value can be estimated in a number of different ways, including taking a terminal cap rate and applying it to that year's NOI, or applying a percentage of growth method to appreciate the property over the holding period. After a sales price is forecasted, any outstanding debt is netted out, as well as selling costs and taxes, to arrive at a net sales proceeds figure.

What is Discounted Cash Flow Analysis?

With the components of the real estate cash flow model out of the way, let's dive into discounted cash flow, or DCF for short. Discounted cash flow analysis is a technique used in finance and real estate to discount future cash flows back to the present.

The procedure is used for real estate valuation and consists of three steps:

1. Forecast the expected future cash flows
2. Establish the required total return
3. Discount the cash flows back to the present at the required rate of return

Forecasting the expected future cash flows involves creating a cash flow projection, otherwise known as a real estate proforma. This puts into place all of the elements discussed above and allows us to answer the 4 basic questions of the real estate cash flow model (How many dollars go into the investment? When do they go in? How many dollars come out of the investment? When do they come out?)

Establishing the required total return (also known as a discount rate) for a project will be specific to each investor. For an individual investor, this is typically their desired rate of return. In the case of a corporate investor, the required return is typically the weighted average cost of capital (WACC). Ascertaining the discount rate also includes accounting for the perceived riskiness of the project compared to alternative investment opportunities.

Once the cash flows have been forecasted and the discount rate has been established, a discounted cash flow analysis for a real estate project can be used to determine the net present value and the internal rate of return.

Net Present Value (NPV)

The net present value (NPV) is an investment measure that tells an investor whether the investment is achieving a target yield at a given initial investment. NPV also quantifies the adjustment to the initial investment needed to achieve the target yield assuming everything else remains the same. Formally, the net present value is simply the summation of cash flows (C) for each period (n) in the holding period (N), discounted at the investor's required rate of return (r):

$$\text{NPV} = \sum_{n=0}^N \frac{C_n}{(1+r)^n}$$

Internal Rate of Return (IRR)

Internal rate of return (IRR) for an investment is the percentage rate earned on each dollar invested for each period it is invested. IRR is also another term people use for interest. Ultimately, IRR gives an investor the means to compare alternative investments based on their yield. Mathematically, the IRR can be found by setting the above NPV equation equal to zero (0) and solving for the rate of return (r).

How to use IRR and NPV

Essentially, the IRR tells you the total return on the project, given the projected cash flows. The NPV, on the other hand, tells you how much more or less your initial investment needs to be in order to achieve your desired rate of return. How can you use these measures of investment performance in the real world?

Let's say you have \$1 million to invest and you've identified five potential commercial properties where you can invest your capital. Completing a discounted cash flow analysis for each of these real estate projects will enable you to make a decision regarding which asset to acquire.

Comparing the internal rates of return for each project will tell you which asset will provide the highest return. Alternatively, given your desired rate of return, the net present value will tell you which asset provides the highest value stream of cash flows.

The Intuition Behind IRR and NPV

What does all this mean? What's the intuition behind Internal Rate of Return (IRR) and Net Present Value (NPV)? Consider the following discounted cash flow analysis for a small industrial building:

DISCOUNTED CASH FLOW

Bridgewater Industrial

Discount Rate: 12.00%

| EOY | Levered Before Tax |
|-----|--------------------|
| 0 | (\$515,000) |
| 1 | \$15,805 |
| 2 | \$16,905 |
| 3 | \$18,018 |
| 4 | \$19,144 |
| 5 | \$20,284 |
| 6 | \$21,187 |
| 7 | \$22,354 |
| 8 | \$23,534 |
| 9 | \$24,729 |
| 10 | \$1,122,505 |
| IRR | 10.71% |
| NPV | (\$50,225) |

| EOY | Unlevered Before Tax |
|-----|----------------------|
| 0 | (\$1,515,000) |
| 1 | \$95,000 |
| 2 | \$96,100 |
| 3 | \$97,213 |
| 4 | \$98,339 |
| 5 | \$99,479 |
| 6 | \$100,382 |
| 7 | \$101,548 |
| 8 | \$102,729 |
| 9 | \$103,924 |
| 10 | \$1,823,915 |
| IRR | 7.51% |
| NPV | (\$402,421) |

The IRR is simply the rate of return an investor would expect to achieve on this property, given its projected cash flows over the holding period. In this case it would be 7.51% without leverage and 10.71% with debt added to the property.

The NPV, on the other hand, depends on the discount rate, which in this case is 12.00%. What is a discount rate? The discount rate is simply the investor's desired rate of return. Normally the discount rate used is the investor's opportunity cost of capital or, in the case of an institutional investor, the weighted average cost of capital.

What the NPV tells us is how far off the mark we are from the investor's desired rate of return. In this case, the NPV is (\$50,225) in the levered example and (\$402,421) in the unlevered example. This means that in order to achieve our desired 12.00% return we'd have to reduce our initial investment in the property (acquisition price, fees, etc.) by \$50,225 or \$402,421, depending on whether or not we place debt on the property.

Notice that the IRR calculated above told us the return on our projected cash flows was 10.71% (levered) and 7.51% (unlevered). So, intuitively, we'd expect to reduce our initial cash outlay in order to improve our rate of return. The NPV simply quantifies how much we need to adjust our initial investment in order to achieve our target yield.

Ignore at Your Peril

Once you understand the basic real estate cash flow model and the mechanics of IRR and NPV, you can begin using the tools of DCF analysis effectively.

Unfortunately many analysts ignore discounted cash flow indicators and instead use simple measures of investment performance, such as cash on cash return or the gross rent multiplier. While these simpler ratios are useful when evaluating an investment, they also ignore the multi-period changes in cash flows over a holding period and can lead to dramatically different results.

The discounted cash flow analysis takes into account all cash flows in the holding period, and as such is a crucial tool in the commercial real estate practitioner's toolbox that should not be ignored.

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