RE618/ Fin618 - Real Estate Investment Analysis

Notes on Estimating Discount Rates

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In principle, the discount rate used to evaluate a real estate investment should reflect the risk-adjusted cost of capital of the investor. While this is a straightforward theoretical concept, it is often difficult to come up with a concrete measure of this cost.

If you recall from finance, for stock and bond investments we can use public market information to estimate the rate of return investors are earning in the market. For capital budgeting decisions, it was argued that the firm should use its weighted average cost of capital as a discount rate.

Real estate investments have some commonalities with both publicly traded securities and less liquid capital budgeting projects. As such, we will use an amalgam of the techniques used in corporate finance to get a ballpark estimate of the required discount rate.

Always beware, however, of the myth of precision. Because we are only getting a rough estimate of the correct discount rate, don't let yourself be fooled into thinking "Well, my NPV is positive $13.53, thus I should accept the project." If a small change in the discount rate you use makes a big different in your investment decision, be careful.

Risk Premium Method

Recall that the overall discount rate for the property, r_p, can be broken down as

$$r_p = r_{rf} + r_{rp},$$

where r_{rf} is the risk free rate (as estimated by the one-year Treasury security) and r_{rp} is the risk premium investors will demand for holding the risky real estate asset.

Historical statistics on annual returns suggest that fully-leased, free-and-clear (no debt), institutional investment properties have commanded a 3.50 percent risk premium over one-year T-Bills. Thus, one way to estimate the discount rate for the property is to look at current one-year T-Bill rates and add 3.50 percent.

One caveat is that the risk premium is not necessarily stable over time. For example, recently the one-year T-Bill was trading at about 1.50 percent. If the risk premium for real estate was still at 3.50 percent, this suggests a required return of about 5.00 percent for investment grade real estate. On the other hand, if the risk premium had increased due to the current economic environment, it would not be unreasonable to expect a 6.00 or 7.00 percent required return on real estate.

Cap Rate Method

An alternative method of estimating discount rates is to use market cap rates. If we assume that a property's net operating income (NOI) will increase at a constant rate for the indefinite future, then the return on the property will be

$$r_p = \text{cap rate} + \text{annual NOI growth}.$$

One reasonable assumption for NOI growth is the expected inflation rate less capital expenditures necessary to keep the property in its current condition. Survey evidence suggests that capital expenditures typically run between one and two percent of building value per year over the long run for most property types.

As an example, if a property type is currently selling at an 8.00 percent cap rate, expected inflation is 3.00 percent, and if capital expenditures run at about 1.50 percent per year, the estimated discount rate for this type of property would be

$$r_p = 8.00 + (3.00 - 1.50) = 9.50 \text{ percent.}$$

Accounting for Non-institutional Quality Properties

The above techniques allow us to estimate overall discount rates for high quality properties that might be held by institutional investors. Smaller properties, class B and C properties, and development properties will typically require higher discount rates. Expected returns from properties like these are generally 100 to 200 basis points (bps) higher. (Recall that a basis point is $1/100^{th}$ of a percent.)

Accounting for the Effect of Leverage

The above techniques allow us to estimate a discount rate for the property as a whole. This discount rate can then be applied to forecasted NOI to calculate the net present value (NPV) of a property investment.

Real estate investors, however, usually use large amounts of debt to finance their investments. High debt loads implies increased financial risk, which in turn requires a higher discount rate.

To estimate a before-tax equity discount rate, r_e, we appeal to the concept of the weighted average cost of capital (WACC). Recall that the overall property discount rate is simply the weighted average of the component costs of finance:[1]

$$r_p = \text{LTV } r_d + (1 - \text{LTV}) r_e,$$

where r_d is the cost of debt (the interest rate) and LTV is the loan-to-value ratio on the property. It r_e that we want to estimate.

Rearranging this formula gives us an estimate of the before-tax required rate of return for an equity investor:

$$r_e = (r_p - \text{LTV } r_d) / (1 - \text{LTV}).$$

Thus, we can use the techniques above to estimate the required return on the overall property, r_p, and then take the mortgage interest rate, r_d, and the LTV ratio to estimate r_e.

[1] Note that this would be strictly true only if the LTV ratio were to stay constant over the investment holding period. Because we are simply trying to get a ballpark estimate of r_e, we will ignore this complication.