

RE 618 / Fin 618 – Real Estate Investment Analysis

Excel Spreadsheet Assignment #1 Before-tax Cash Flow Investment Analysis

Dr. Stanley D. Longhofer

Develop an Excel spreadsheet to conduct a before-tax cash flow analysis of a real estate investment assuming a five-year holding period. Your spreadsheet should allow you to alter the following inputs:

- Purchase assumptions (purchase price, acquisition costs, etc.);
- Two rent classes (premium space and ordinary space) with the number of square feet in each class and the rent charged for each type of space;
- Initial operating expense ratio;
- Market vacancy rate;
- Rent growth rate and operating expense growth rate;
- Financing assumptions (max LTV ratio, min DCR, interest rate, amortization length, etc.);
- Sale assumptions (market cap rate at sale, expenses as a percent of sale price); and
- Your assumed discount rates (unlevered and levered).

Build your spreadsheet to calculate the following:

- The pro forma operating statement for each year of the holding period, beginning with potential gross income and ending with before-tax cash flow;
- The going-in capitalization rate, mortgage constant, cash-on-cash return, gross income multiplier, net income multiplier, and breakeven ratio;
- The up-front cash flows required to acquire the property (both levered and unlevered);
- The cash flows from the sale of the property (both levered and unlevered);
- The total unlevered and levered cash flows in each year of the holding period (years 0 through 5); and
- The NPV and IRR of the investment, both on a levered and unlevered basis (four total figures).

I suggest you build the spreadsheet using the HW 7 assumptions with the following additions:

- Operating expenses will grow by 3 percent per year during the expected holding period;
- Acquisition (due diligence) costs total \$250,000;
- Costs of the sale equal 4 percent of the sale price.

If your spreadsheet can solve this problem, it will meet all of the requirements for this assignment. (Although HW7 asks you to use each of our four reversion value assumptions, your spreadsheet only needs to calculate reversion value using a terminal cap rate).

Your spreadsheet should be professional in appearance. This means it should both display and print in a manner that you would turn over to a client or your boss. To this end, you should keep the following in mind:

1. You must use absolute and relative cell referencing properly. The true power of spreadsheets lies in writing your formula correctly so that you can just copy them down rather than rewriting them for each cell. In addition to looking at the formulas themselves, I will adjust the inputs to your spreadsheet and see if it calculates everything properly.
2. Make sure you use number formats that are consistent and easy to read. In fact, formatting on your entire spreadsheet should be attractive and professional.
3. Set your print margins so that the spreadsheet prints nicely on a standard $8\frac{1}{2} \times 11$ sheet of paper. A nice heading would be good as well.
4. MAKE SURE YOUR NAME APPEARS ON YOUR SPREADSHEET.

I should not have to remind you that your work should be your own. Although I encourage you to work with others and help one another with how to use Excel functions and lay out your spreadsheets, the final product should be yours and yours alone. ***If I see spreadsheets that are exact duplicates of one another, all of these students will receive a zero on the assignment.***

There are a handful of built-in formulas you may want to use in your spreadsheet. I have listed a few of them here. Note that you can get help for these functions in Microsoft Excel.

- PV – Calculates the present value of an ordinary annuity (mortgage). Note that you must enter the periodic rate in this formula, which is the annual interest rate divided by 12 in our case.
- PMT – Calculates the payment on an ordinary annuity. Once again, enter the periodic interest rate.
- FV – Future value after a series of periodic payments. This function also uses the periodic interest rate.
- NPV – Calculates the *present value* of a set of future cash flows; to get the NET present value you must subtract off any date zero cash flows.
- IRR – Calculates the internal rate of return on a set of cash flows. Unlike the NPV function, you include the “date zero” cash flows in the range of values in this function.

Please turn in your spreadsheet using the Digital Dropbox in Blackboard. The file you submit should be named *your_lastname.your_firstname.ss1.xls* (for example, my spreadsheet would be named Longhofer.Stan.ss1.xls). Make sure that you *Send* the file; if you just add it to the Dropbox it won't get to me.