

FIL 260 – Trefzger: Real Estate Investment Homework Exercise, Spring 2024 (14 points)

Prominent real estate investor Reginald Redbird is considering the purchase of a 38-unit apartment building for \$5,625,000 in January of current year 1. (Information provided by the McLean County supervisor of assessments office indicates that the improvements are worth \$4,375,000 and the land is worth \$1,250,000.) He would pay \$1,750,000 with his own personal (or birdal) funds and get a \$3,875,000 mortgage loan to pay the remainder. BloNo Bank has committed to making such a loan at an interest rate quoted as a 7.20% APR, with required monthly payments based on a 24-year amortization schedule – although Redbird would expect to hold the property for only five years. He would expect to sell it in December of year 5 for a gross price of \$6,850,000 (while paying 6% for brokerage service and other selling expenses), and also would expect to repay the remaining loan principal balance owed at that time.

Each apartment unit currently is rented for \$1,275 per month, and Redbird expects rents to increase by 2% annually each year of his five-year planned holding period. He expects revenue lost to vacant units and uncollected rents to equal 4.8% of annual potential gross income (PGI), and expects annual operating expenses to be 36% of annual effective gross income (EGI).

A residential rental property like this one is depreciated over 27.5 years, under U.S. federal income tax law. Redbird would pay annual income tax on additional (marginal) ordinary income at a 34% rate, but the capital gain tax rate paid on Section 1250 depreciation recapture is a slightly lower 25%, and the rate paid on the remainder of any capital gains is an even lower 15%. His hurdle rate (the opportunity cost of capital, or required return on equity, he attributes to an investment of this type) is 9.5% per year.

Compute the Net Present Value (NPV) and Internal Rate of Return (IRR) this purchase would create for the investor by building an Excel[®] template with the cell formulas shown in the Template file on the web site. (Format money as currency in whole dollars, and IRR as a % with two decimal places.) Also compute the initial loan-to-value (L/V) and debt coverage (DCR) ratios, formatted as numbers with two decimal places. The assignment is a critical thinking exercise, not a typing exercise; ask yourself as you enter each cell formula: what is this doing? When your template is complete (be sure you are entering formulas, and not numbers, in all cells in which computations are done) you can enter into cells B4 – B20 the input values seen in the Practice Problem Solution file on the web site. If the template is set up correctly you should see the correct practice problem result in each cell, and then when you type into cells B4 – B20 the input numbers given in the story above you should have correct output to submit. Upload your results of the *actual (not practice)* problem to Canvas if you can; send as an e-mail attachment if you can not. (Submit the Excel[®] file, not a pdf, so the instructor can check your work by changing values in cells B4 – B20.) **Do your own individual work; spreadsheet homework assignments are not group projects.** Call (309-438-2966) or e-mail (trefzger@ilstu.edu) with questions. Due date & time are shown with the assignment on Canvas.

A few explanatory notes:

- Residential rental property is depreciated over a 27.5-year period (non-residential income property is depreciated over 39 years). But our federal income tax law applies a “half-month convention” that treats a purchase or sale as closing in the middle of the month when it occurs; thus a half month of deductible depreciation expense is lost in the first & last years.
- Regular annual cash flows for computing NPV and IRR are based on this equation: Potential gross income (PGI) – allowance for vacancies and uncollectibles = Effective gross income (EGI); EGI – operating expenses = Net operating income (NOI); NOI – Debt service = Before-tax cash flow (BTCF); BTCF – Income tax = After-tax cash flow (ATCF).
- The After-tax equity reversion (ATER) is the amount expected to remain from resale proceeds for the property owner after capital gain taxes that may be owed are paid. Capital gains consist of two components: one part relates to the “recapture” of depreciation that was claimed during the holding period to reduce annual income taxes; that “Section 1250” recapture is taxed at a maximum rate of 25%. (In this example the adjusted sales price is expected to exceed the investor’s basis, such that all depreciation claimed will have to be recaptured.) The rest of any capital gain (which would be attributable to general increases in property values over the holding period) would be taxed at a 15% rate.
- Finally, while this exercise touches on many issues, we rely on a number of simplifying assumptions. So think of it as a big picture approach to analyzing a real estate investment, not as the complete or exact process that would be followed. One example is that we compute tax on the equity investor’s ordinary income as simply the income multiplied by a rate; actual income tax computation can be far more complex. Another: our investor is not expected to do a Section 1031 exchange to defer tax on the capital gain when the property is sold. Also: we ultimately use annual approximations for dollar amounts that would occur on a monthly basis. Another: we treat expected rent increases, vacancy rates, expense percentages, *etc.* as givens, whereas figures like those in an actual investment analysis would come from detailed studies of the economy, the local market for property of the type being considered, and the property’s own history. ■