

Department of Finance and Statistics

REAL ESTATE INVESTMENT October 28, 2006

Final Exam

Time Allotment 3 hrs

Instructions:

1. Read the exam carefully
2. You may use a financial calculator. However, make sure you show the steps for your solution to a question. If you simply provide an answer there will be no partial credit given
3. You have a total of 3 hours to complete this exam
4. A passing grade requires at least 50% of the total points
5. The exam is worth a total of 100 points

Part A: Project Feasibility Analysis. Please use the information given below to answer questions 1 to 6

An investor is considering developing a high rise multi-tenant office building in Downtown Helsinki and she has retained your company, Kiitos Investment Consultancy Services, for investment and financing advice. The proposed project is estimated to cost \$15 million. You have been assigned to work on this project and you have collected the following additional information from the market for similar office properties.

• Estimated cost of project	\$15,000,000
• Estimated gross leasable area for the building	200,000 sq. ft
• Requested loan amount for the project	\$11,200,000
• Mortgage contract interest rate	7.5%
• Mortgage amortization period (monthly amortization)	25 years
• Term to maturity of loan	10 years
• Minimum Debt coverage ratio required by lender	1.25
• Operating expense ratio	30%
• Real estate tax ratio	8%
• Vacancy and bad debt ratio	5%
• Replacement reserve	6%
• Equity dividend rate	10%
• Building efficiency ratio	96%
• Lot (Land) Area	300,000 sq. ft

Question #1: From the information given above calculate the following (7 points)

- (a) Floor Area Ratio (FAR)
- (b) Net Leasable Area (NLA)
- (c) The annual debt service (mortgage payment)
- (d) Loan to value (cost) ratio

Question #2: Estimate the minimum potential gross income necessary to make the proposed project feasible (10 points)

Question #3: Estimate the first year's net operating income (NOI) and before tax cash flow (BTCF) from the proposed project (8 points)

Question #4: Estimate the break even ratio (default ratio) and debt coverage ratio (DCR) for the proposed project. (8 points)

Question # 5: Assuming the minimum debt coverage ratio of 1.25 required by the lender, estimate the maximum loan amount that should be granted by the lender. (5 points)

Question # 6: Assuming the lender charges a 4% loan fees (points) which is deducted upfront from the loan amount requested, calculate the effective cost of borrowing on the loan. **HINT:** Note that the loan is a balloon loan. (8 points)

Part B: Investment Analysis. Use the information given below to answer questions 7 to 13.

A real estate investor is considering purchasing a retail property which is leased out to multiple tenants (not a single tenant) with the following characteristics

- Asking (selling) price is \$15,000,000
- Value of land is estimated to be \$4,000,000
- Useful life for depreciation purposes is 39 years
- Acquisition cost is \$225,000
- Gross Leasable Area 50,000 square feet
- Rent per square foot \$40/sq ft/ year, for the first year
- Rent is expected to increase at 4% per year
- { Property taxes is \$0.90/sq ft for the first year
- { Maintenance expenses \$1.50/sq.ft for the first year
- { Insurance premium \$0.30/sq.ft per year for the first year
- All Operating expenses are expected to increase at 3% per year
- Vacancy ratio 5%
- Building efficiency ratio = 96%
- Going-in cap rate is 8% ?
- Terminal capitalization rate is 7% ?
- Holding period is 4 years
- Investor's discount rate 14%
- Selling expenses at the end of holding period is 4%

The investor expects to finance the investment with a mortgage at a loan-to-value ratio of 75%, interest rate at 7.75% with monthly compounding and amortization period of 25 years. The term of the loan is 10 years and a loan fee of 3% of loan amount is charged by the lender which is deducted upfront. There is also a prepayment penalty of 2% when the loan is paid off at the end of holding period.

Question #7: Forecast the net operating income (NOI) and Before Tax Cash Flow (BTCF) for years 1 through 4. (13 points)

Question #8: Forecast the taxable income for year 1 only (7 points)

Question # 9: Estimate the selling price at the end of holding using the income capitalization method. (7 points)

Question #10: Estimate the before tax net reversion (BTNR) to equity investor at the end of holding period. (8 points)

Question #11: Estimate the before tax internal rate of return (IRR) and before tax net present value (NPV) to the equity investor at the end of holding period. **Note:** by now you should most if not all the necessary cash flows to undertake these estimations (13 points)

Question #12: Estimate the total investment value (total present value) of the project at the end of holding period. (6 points)