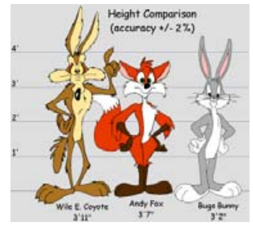
Risk Analysis

Fin 5433
Chapter 13

Comparing Investment Returns

- Does the income producing property provide a competitive return?
  - What alternative real estate investments are available?
    - Returns on Alternatives?
    - Risk Differences
    - Tax differences
    - Liquidity Differences

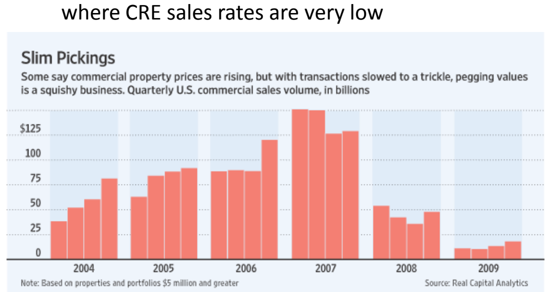


Types of Risk

- Business Risk
  - Economic Conditions
  - Tenant Mix – how stable, diversified?
  - Lease Provisions
- Financial Risk
  - Use of Debt
  - Cost and structure of debt
  - Operating Risk?

Types of Risk

- Liquidity Risk
  - Challenges in selling property – there are periods where CRE sales rates are very low



Types of Risk

- Inflation Risk
  - Unexpected inflation
  - Does income increase enough to offset inflation?
- Management Risk
  - Ability to respond to conditions
  - Risk of managing real property (SARS, natural disasters, emergencies)

Types of Risk

- Interest Rate Risk
  - The impact on variable rate **debt**
  - The impact of higher rates on **property value**
- Legislative Risk
  - Regulatory changes
- Environmental Risk
- Due Diligence – See Exhibit 13-2
  - The investigation that an investor should undertake when considering the acquisition of a property.

Sensitivity Analysis

- Base Case
  - Frame of reference for analysis
- Change a single assumption
  - What is effect on NPV or IRR?
- Scenario Analysis
  - Identify most likely, pessimistic, and optimistic scenarios
- Stochastic simulation of input parameters to create a distribution of NPV or IRR

Partitioning the IRR

- How is the total IRR distributed between operating cash flow and property sale cash flow? (see Exhibit 13-5)
  - Compute the IRR
  - Discount cash flows from operations using the IRR
  - Discount cash flow from property sale using the IRR
  - Compute the percentages
  - The shorter your proforma, the more important your sales assumption

Partitioning the IRR

- Example 13-1
  - Equity Invested = $600,000
  - $BTOCF_1$ = $40,000
  - $BTOCF_2$ = $42,000
  - $BTOCF_3$ = $45,000 + $800,000 from sale
  - IRR = 16.48%

  - Where BTOCF = Before tax operating cash flow

Partitioning the IRR

- Present Value of BTOCF = $93,773
  - Use the IRR of 16.48% as the discount rate
- Present Value of BTCF(sale) = $506,229
  - Discounting $800,000 at 16.48% for 3 years
- Percent from Operations ≈ 15.63%
  - $93,773/$600,000
- Percent from Sale ≈ 84.37%
  - $506,229/$600,000

Partitioning the IRR

- This is useful for comparing alternative similar investments
- For example, an alternative property may have the same IRR, but if the percent of return from operations is 20% and property 80%, there might be significant risk differences.
- The riskier portion of the return is that based on property price appreciation.
- Need to plan to sell in the same year for this comparison to have some value

Variation in Risk & Return

- Use economic scenarios:
  - Compute cash flows from operations and property sale for each scenario.
  - Compute the IRR in each scenario.
  - Multiply the IRR by the probability of the scenario to compute an expected return
  - Can compute a standard deviation or empirical distribution with enough data
  - May want to determine if its market or non market risk that drives this for a diversified investor

Variation in Risk & Return

- Coefficient of Variation

$$\text{CV} = \frac{\sigma}{E(IRR)}$$

  - Risk per unit of (expected) return
  - Standardized measure of stand-alone risk
- Portfolio considerations
  - Reduce risk by combining assets into a portfolio
  - Diversification

Lease Rollover Risk

- Uncertainty of renewal by existing tenants
  - No Renewal
  - Possible lengthy vacancy
  - New tenant may require money for tenant improvements
  - Pay commissions to a leasing agent

Lease Rollover Risk

- Renewal Probability
- Market Leasing Assumptions
- Market Rent Assumptions
- Turnover Vacancy
- Leasing Commissions
- Tenant Improvements

Options

- Real estate may contain embedded options
- These options add value to the static NPV
- Helps explain why some real estate value is much higher than the PV of the cash flow it is producing
- Example – why are surface parking lots in major urban areas so valuable

Easy example

- You are considering the purchase of an oil field. The current value of crude is $50. The extraction costs are $55. Would someone pay a positive sum for this oil field? Why

Real Options

- Defined
  - Purchase land, but wait to develop
- The Option
  - Construct or not construct in the future
- Additional Uses and Strategy
  - Excess land purchased for possible future development
  - Multiple phases to a development
  - Building renovation

Work Through Handout Example

- Further comments
  - One always has the option to wait and see how the future unfolds
  - Options could be a flexible design that could serve more than one use (retail or office – depending on finish out, assuming zoning allows), or for conversion at some point of time.
  - Hotel rooms may be placed concrete that does not lend itself to alternate uses in the future.
  - Flexible space usage is a form of an option though it may cost more to construct