Real Estate Financial Returns Analysis
Founded in 1984, the Institute is the backbone of real estate activity at SMU, supporting research and the real estate academic programs at both the BBA and MBA levels. The Folsom Institute brings the best of the real estate industry directly to the academic program at SMU Cox to train the next generation of industry leaders.
HR&A is a real estate and economic development consulting firm working at the intersection of the public and private sector. Our work transforms communities and revitalizes urban environments in the United States and abroad.
Questions to be Addressed

Why do people invest in real estate?
Why Invest in Real Estate?

Cash Flow

Appreciation

Diversification

Tax Benefits
Why Invest in Real Estate?

Value Creation
Fundamental Factors of Value

Utility
• Ability for a property to satisfy a want, need or desire
• The rights provided or restricted against affect value

Scarcity
• The present or anticipated supply of property relative to the demand for it

Anticipation
• Value is created by the anticipation of benefits to be derived in the future, not historical prices or the cost of its creation
Fundamental Factors of Value

MARKET VALUE

Transaction Prices

Investor Value

Investor Value

Investor Value

Investor Value

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Investor Value

Investor Value
Types of Risk

What do we mean when we talk about evaluating, analyzing or quantifying risk?

Market Risk
- Macro-economic risk
- Property & Tenant risk

Financial Risk
- Increases with the amount of debt
- Cost and structure of debt & equity

Key is to understand what type of risk is driving the project’s investment returns
What About Real Estate Markets?

Every property is unique
- Unique location
- Many & varied attributes

These heterogeneous assets trade in
- relatively illiquid,
- privately negotiated,
- highly localized and
- informationally inefficient markets

Implications?
- Difficult to define market value based on comparable transactions
Risk and Real Estate

What Determines Differences in Asset Risk?

- General market conditions
- Location, quality of asset
- Cash flow duration, consistency
- Operating profit margins
- Liquidity
- Timing
So Where Do You Start?
Overview of Investment Analysis

**Key** to measuring returns is that they must be measured from **multiple angles across multiple time horizons**

- Current, single-year return measurements
- Multi-period total return measurements

**Conclusions** ➔ *no single return measurement is perfect*

- The use of multiple return measurements minimizes investment errors
What is a Lease?

Leases: the “engines” that “drive” values & returns

When you purchase a property you are really acquiring a portfolio of leases

Think of real estate valuation in the same vein as valuing a portfolio of risky investments
Perpetuities & Annuities

Perpetuity

- A stream of level cash payments that never ends

\[
\begin{array}{ccccccc}
0 & r \% & 1 & 2 & 3 & \ldots & \text{Years} \\
\text{PV} & C & C & C & & & \\
\end{array}
\]

Annuity

- An equally spaced level stream of cash flows for a limited period of time

\[
\begin{array}{ccccccc}
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\]
Perpetuities & Annuities

Perpetuity $\rightarrow$ akin to the VALUE of a property

- A stream of level cash payments that never ends

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\end{array}
\]

Annuity $\rightarrow$ akin to a LEASE of a property

- An equally spaced level stream of cash flows for a limited period of time

\[
\begin{array}{ccccccc}
0 & r\% & 1 & \ldots & T & \text{Years} \\
\text{PV} & C & C & C \\
\end{array}
\]
Basic Structure of an Operating Statement

Potential Gross Income
- Vacancies, Credit Loss
+ Expense Reimbursements

= Effective Gross Income
- Operating Expenses

= Net Operating Income
- Capital Expenditures
- Debt Service

= Cash Flow after debt service*

*before taxes

Property Level Returns/Market Value

Equity Cash Flow Returns/Investor Value
Basic idea: current value of a property is a function of the income stream it is expected to produce (future cash flows).
Income Capitalization

\[ y_t = \frac{NOI_{t+1}}{V_t} \]

- \( V_t \) = Value (or Price) at time period \( t \)
- \( NOI_{t+1} \) = Net Operating Income at time period \( t+1 \)
- \( y_t \) = Capitalization “Cap” rate at time period \( t \)

Cap Rate represents what an investor will accept today as a yield on current NOI - The “going-in” rate of return
Income Capitalization

$\frac{\text{NOI}}{8\% \text{ Cap Rate}} = \text{indicated market value of } \$25,000,000$

$V_t = \text{Value (or Price) at time period } t$
$\text{NOI}_{t+1} = \text{Net Operating Income at time period } t+1$
$Y_t = \text{Capitalization “Cap” rate at time period } t$

Cap Rate represents what an investor will accept today as a yield on current NOI - The “going-in” rate of return
Cap Rates and P/E Multiples

Used as a way of quoting observed property prices relative to expected 1st year property-level incomes

- A cap rate is the inverse of a P/E multiple
- When we look at P/E multiples in the stock market, we are looking at them on a relative basis

Cap rates do not determine value; cap rates merely reflect market perceived changes in CF projections and/or changes in required returns

- Therefore, cap rate derived values reflect market value – not investor value
## Relative Valuation

<table>
<thead>
<tr>
<th>Symbol</th>
<th>KHC</th>
<th>MDLZ</th>
<th>K</th>
<th>ADM</th>
<th>GIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Value</td>
<td>$111M</td>
<td>$69M</td>
<td>$25M</td>
<td>$24M</td>
<td>$32M</td>
</tr>
</tbody>
</table>

### Price Information

- **Current Last Sale (CLS):**
  - KHC: $91.25
  - MDLZ: $45.37
  - K: $73.08
  - ADM: $42.43
  - GIS: $57.24

- **Net Change / % from close:**
  - KHC: ▲0.42 / 0.46%
  - MDLZ: ▼0.25 / 0.55%
  - K: ▲0.42 / 0.58%
  - ADM: ▲0.41 / 0.98%
  - GIS: ▲0.15 / 0.26%

- **Target Price (TP) / CLS' % of TP:**
  - KHC: N/A
  - MDLZ: N/A
  - K: $54 / 135%
  - ADM: $37 / 115%
  - GIS: $40.5 / 141%

- **52 Week High / % Change:**
  - KHC: $97.77 / -7%
  - MDLZ: $47.23 / -4%
  - K: $87.16 / -16%
  - ADM: $47.88 / -11%
  - GIS: $72.95 / -22%

- **52 Week Low / % Change:**
  - KHC: $79.69 / 15%
  - MDLZ: $40.50 / 12%
  - K: $68.67 / 6%
  - ADM: $39.01 / 9%
  - GIS: $55.57 / 3%

### Trade Information

- **Beta:**
  - KHC: 0.3
  - MDLZ: 0.69
  - K: 0.48
  - ADM: 0.64
  - GIS: 0.47

- **Volume:**
  - KHC: 2,703,931
  - MDLZ: 12,863,304
  - K: 2,499,362
  - ADM: 3,461,198
  - GIS: 3,883,983

- **Avg Daily Volume:**
  - KHC: 2,303,628
  - MDLZ: 7,108,309
  - K: 2,285,879
  - ADM: 3,041,829
  - GIS: 3,481,782

- **Short Interest:**
  - KHC: 11,813,067
  - MDLZ: 15,218,762
  - K: N/A
  - ADM: N/A
  - GIS: N/A

- **% of shares outstanding:**
  - KHC: 971%
  - MDLZ: 997%
  - K: 0%
  - ADM: 0%
  - GIS: 0%

- **Days to cover:**
  - KHC: 5.400210
  - MDLZ: 2.238045
  - K: N/A
  - ADM: N/A
  - GIS: N/A

### Earnings

- **EPS:**
  - KHC: $2.82
  - MDLZ: $1.11
  - K: $2.20
  - ADM: $2.38
  - GIS: $2.70

- **P/E:**
  - KHC: 32.36
  - MDLZ: 40.87
  - K: 33.22
  - ADM: 17.83
  - GIS: 21.2
Where Do Cap Rates Come From?

Generally derived from observed property transactions

- Data providers, brokers, market participants, etc.

Source: Real Capital Analytics
Cap Rates and Risk

\[ y_t = \frac{NOI_{t+1}}{V_t} \]

Market Risk + Financial Risk
Cap Rates and Risk

Property Markets

Supply \quad \longleftrightarrow \quad Demand \quad = \quad Rental Rates

\text{Investor Returns} \quad = \quad \frac{NOI_{t+1}}{V_t}

Capital Markets

Supply \quad \longleftrightarrow \quad Demand
Risk and Real Estate

What Determines Differences in Asset Risk?

• General market conditions
• Location, quality of asset
• Cash flow duration, consistency
• Operating profit margins
• Liquidity
• Timing
What Causes Cap Rates to Change?

Inverse relationship between cap rates and property value

- Perceived Investment Risk
  - High Risk
  - Low Risk

Cap Rate
What Causes Cap Rates to Change?

Inverse relationship between cap rates and property value

- **Perceived Investment Risk**
  - High Risk
  - Low Risk

- **Expected Income Stream Growth**
  - Low Growth
  - High Growth
What Causes Cap Rates to Change?

Inverse relationship between cap rates and property value

- **Perceived Investment Risk**: High Risk → Low Cap Rate, Low Risk → High Cap Rate
- **Expected Income Stream Growth**: Low Growth → High Cap Rate, High Growth → Low Cap Rate
- **Expected Returns on other Asset Classes**: High Returns → Low Cap Rate, Low Returns → High Cap Rate
Cap Rates and Relative Returns

Decomposition of US Cap Rates

Debt spread is bps spread between 10yr UST and RCA’s published 7/10yr fixed mortgage rate for commercial properties.

Equity spread is bps spread between RCA’s published commercial cap rate and RCA’s published 7/10yr fixed mortgage rate.

Source: Real Capital Analytics
Cap Rates and Liquidity

Relationship Between Capital Liquidity Scores and Cap Rate Is Significant

Source: Real Capital Analytics
Cap Rates: Then and Now

Capitalization Rate Spreads

- In 2007...
- Treasury – 4.4%
- Negative & Excessive Leverage
- NCREIF Cap Rate Below 10yr UST
- Aggressive Underwriting Metrics
- Total Return Composition Imbalance

- 2.19% UST Spreads (bps)
- Current vs. LT Avg.
  - RCA: 405 vs. 370
  - JPM: 341 vs. 292
  - NCREIF: 323 vs. 293

Source: HFF
Cap Rate & Net Operating Income Growth

CUMULATIVE U.S. REAL GDP GROWTH FOLLOWING RECESSIONS (POST-WAR PERIOD)

Source: Bureau of Economic Analysis, RBC Capital Markets, Clarion Partners Investment Research, Q2 2015. Past performance is not indicative of future performance. Forecasts have certain inherent limitations and are based on complex calculations and formulas that contain substantial subjectivity and should not be relied upon as being indicative of future performance. Please refer to important disclosures at the front of this presentation.
Cap Rates and Net Operating Income Growth

As you can see, these movements are non-linear. The lower a building’s original capitalization rate, the greater the movement in NOI must be in order to maintain a constant gross value.

Source: HFF
Cap Rates and Net Operating Income Sensitivity

Assume a high-rise apartment building in Uptown Dallas produces $4.5M in Net Operating Income

- At a 4% cap rate = market value of $112.5M
- At a 5% cap rate = market value of $90M (20% change)
- To maintain a $112.5M valuation, NOI would have to increase 25%
  - $112.5M x 5% = $5.625M
  - $4.5M → $5.625M = 25% increase
Assume the NOI of the same building drops $500,000 from $4.5M to $4.0M

- $4.5M at a 4% cap rate = market value of $112.5M
- $4.0M at a 4% cap rate = market value of $100M
  - 11.1% decline in value

What if cap rates simultaneously rose 50bps from 4% to 4.5%?

- $4.0M at a 4.5% cap rate = $89M
  - 21% decline in value
Cap Rates and Replacement Cost

Assume a building produces a NOI of $2.5M

The market cap rate for the building is 8%

The replacement cost of the building is $38M

What does this tell you about the market?
## Cap Rates and Replacement Cost

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Operating Income</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>Cap Rate</td>
<td>8.00%</td>
</tr>
<tr>
<td>Indicated Market Value</td>
<td>$31,250,000</td>
</tr>
<tr>
<td>Replacement Cost</td>
<td>$38,000,000</td>
</tr>
<tr>
<td>Discount to Replacement Cost</td>
<td>18%</td>
</tr>
<tr>
<td>Replacement Cost Implied NOI</td>
<td>$3,040,000 @ same cap rate</td>
</tr>
<tr>
<td>Delta Over In-Place NOI</td>
<td>22%</td>
</tr>
</tbody>
</table>
Cap Rates and Developer Return on Cost

Cap Rate = \( \frac{\text{Net Operating Income}}{\text{Market Value}} \)

Return on Cost = \( \frac{\text{Net Operating Income}}{\text{Total Project Cost}} \)

Assume Net Operating Income is $3,040,000

If Return on Cost is 8%
Total Cost $38,000,000
Developer Profit $0

If Return on Cost is 9.5%
Total Cost $32,000,000
Developer Profit $6,000,000

If Actual NOI is 10% Less; Costs are 10% Greater
Net Operating Income $2,736,000
Total Cost $35,200,000
Indicated Market Value $34,200,000 @ 8% cap rate
Developer Profit -$1,000,000
Issues with Cap Rates as Valuation Tool

Inadequate data on comparable sales

- Above- or below-market lease rental rates?
- Difference in occupancy levels?
- Difference in **quality** and **duration** of rents?
- “Market” purchase?
- Differing prices between what institutional and private investors may pay for similar properties

Are cap rates lagging or leading indicators?

*Correlation of space & capital markets*
What are the sources for real estate financing?

Lower risk/return (interest)

Higher risk/return (dividend)
Changes in Cap Rates Over Time

Follow the money...

Changing debt terms
↓
Changes in equity requirements
↓
Changes in equity return requirements
↓
Changes in market values
↓
Changes in cap rates
Important Points About Cap Rates

\[ r_t = y_t + g_t \]

Not a measure of total return

\( r_t \) = Expected total return
Discount Rate, Internal Rate of Return

\( y_t \) = Current return
Return from Income

\( g_t \) = Growth rate
Return from Appreciation
From Single Year to Multi-Period Returns

Real estate investments are NOT typically single-year investments

• Annual returns can vary greatly from year to year based on market conditions and/or investor decisions

Thus, we need to look examine the overall return of the investment — the multi-period total return
“It’s tough to make predictions, especially about the future.”

-Yogi Berra