Real Estate and Capital Markets

Real Estate Forecasting Seminar
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Trends in Real Estate Capital Markets

Session Objectives:

Participants will:

• view relations of real estate & capital
• Note changes in structure of real estate capital market
• Identify the effect of changing relationships on risk and return options
• Have option to consider strategies using our insights
• Develop an alternative way of thinking
Nature of Real Estate and Capital

Alternative Economic Tradition shows:

- Real Estate \equiv \text{Capital}

&

- Real Estate \neq \text{Capital}

A partial function of difference in:

- Risk \neq \text{Uncertainty}

& Consideration of distributive factors
Structural Nature of Real Estate

- Real Estate is alternatively categorized and perceived as:
  - A Commodity
  - A factor of production
  - A Resource
  - An Asset Class
Operational Nature of Real Estate

Operational Essence of Real Estate

- Economic Location:
  - Situs
  - Use Succession (LUST)

- Collateral
Basis of Real Estate Value: Basic Bid Rent Curve Model – defining Land Use Patterns by Trade-off Location and Accessibility

Income Allocated to Location and Accessibility

Transportation Costs

Site Rent

Agricultural and Direct return to Physical Land

0 Distance from City Core - CBD

Economic Edge of City
Shift in Bid Rent Curve – due increase fuel cost

Impact of fuel costs: Demand Increase where Price Exceeds Income

Demand Increase at high price within income range

Demand decline and shift in trade-off of rent (↓) to transport cost

Quantity Loss due to Demand decline for undesirable/unavailable land

Income Allocated to Location and Accessibility

Site Rent

Transportation Costs

Agricultural and Direct return to Physical Land

Economic Edge of City
Basis of Real Estate Value: Basic Bid Rent Curve: Patterns of Trade-off of Site Rent and Accessibility Vary with Land Use

- Office
- Retail
- Industrial
- Residential

Transportation Costs

Income Allocated to Location and Accessibility

0 D

Economic Edge of City

Agricultural and Direct return to Physical Land

Site Rent
Linking Economic Location to Capital: A Spatial Capital as Product

Real Estate as:

• Space used over time
• Situs Capital – Economic Location
• Sustainable development – natural capital
• Space and money as Capital
• Real Estate as Capital Markets within Spatial Markets
• How to pull it all together and get there
Valuation: Cost Analysis and Asset Feasibility

Risk Measure from origins of a project at a location:

- Potential
- Market Revenue

Cost

[Financing Options]  [Operating Options]

Required Revenue

RR (JIV)

[Operating Options]  [Financing Options]

Justified Investment Value

(JIV)
JIV-Cost Comparison As Measure of Risk

Alternative Risk Adjustment:

• Value:
  A. \( \frac{\text{JIV/Cost}}{\text{Cost}} = \text{Profitability Index (PI)} \):
    - \( \text{PI} > 1 \) go,
    - \( \text{PI} = 1 \), neutral,
    - \( \text{PI} < 1 \), no go
  B. Probability of Ruin (\( \delta = \text{PI} - 1 \))

• Income Elasticity:
  \( \frac{(\text{JIV/Cost} - 1)}{(\text{Mkt Rent/Required Rent} - 1)} \)

• Rate/Return/Yield – Equity Shortfall Risk (ESR) or Roy’s Criterion (a hurdle rate);
Roy’s Criterion (ESR):

\[
\frac{E(R_i) - \varphi}{\sigma R_i} = \text{ESR} \left( \pi E(R_i) \leq \varphi \right)
\]

Where:
- \(E(R_i)\) = expect return on asset (average)
- \(\sigma R_i\) = total risk to asset (market measures can be used)
- \(\varphi\) = investor’s hurdle rate (required rate of return)
- \(\pi\) = probability
- \(\text{ESR}\) = equity shortfall rate
Functional Nature of Real Estate

Functional Essence of Real Estate:

Conversion of:

Space-time $\leftrightarrow$ Money-time
The general principles of real estate finance, underwriting, investment and portfolio analysis are simplified as:

- Pain
- Pleasure
- Bail-out
Real Estate Finance

As in general finance, the nature of real estate finance has evolved and changed over time.

Key changes have been in:
• Nature of institutions and intermediaries
• Participants and sources of capital
• Real estate investment vehicles
• Relationships to inflation and interest contingencies
• Change in risk exposures
Traditional Capital Market for Real Estate

**Source**
- Savers
  - Life Policy
  - Pass Book

**Instrument**
- Savings
- Life Policy

**Capital Intermediary**
- Banks
- Thrifts
- Insurance Co.

**Positions of:**
- Limited Exposures
- Private Syndications
- Professional Intermediaries
- Lawyers
- Accountants
Evolving Capital Market for Real Estate

Investment Intermediaries

- Mortgage Brokers/Bankers
- Mortgage Conduits
- Public/Private Securities
- Public/Private Trusts
- Equity Conduits

Capital Vehicle

- Mortgages
- Blended Debt and Equity Vehicle
- Equities
Comparison of Debt and Equity Capital

Source: GSU Real Estate; Grissom
Comparison of Levels and Patterns of Equity

$ Billions

86  88  90  92  94  96  98  00  02  04  06

Total Equity
Pension Funds
Life Co.
EREITs
Foreign
Banks
S&Ls

Equity Levels and Patterns Comparison for Pension Funds, Life Companies, EREITs, Foreign, Banks, and S&Ls.
Equity Pie: 1995-6

- Pensions: 40.56%
- Life Co.: 23.21%
- REITs: 18.76%
- Foreign Investors: 12.29%
- Thrifts: 1.75%
- Banks: 3.42%
Equity Pie: 2005-6

- Pensions: 34.98%
- REITs: 27.98%
- Life Co.: 18.66%
- Banks: 6.02%
- Thrifts: 1.08%
- Foreign Investors: 11.27%
Securitized Debt Capital Sources

Source: GSU Real Estate; Grissom
This exhibit shows the segmented splines or trend in the key causal variables impacting real estate returns over time.
Total Return Cycles and Long-term Trend

Source: Grissom, GSU: 57 Year Trend/Cycle

Data Sources: Ibbotson Associates and NCREIF data
General Real Estate Trends: Multiple Indices

Comparison of Alternative Returns Series: Converted to Indices

Source: Grissom GSU Real Estate Center
Changes in Real Estate As Function of Capital Evolution

The changes:
• More players: Increase flow of $K$ to RE
• Varying source of $K$
• Increase instruments: Blended
• Direct Real Estate: debt and equity
• Indirect Real Estate: debt and equity
  (securities or other derivatives)

$K = \text{capital}, \ RE = \text{Real Estate}$
Traditional CAPM: Stocks, Bonds and Bills

Traditional Capital Market
Risk and Returns

<table>
<thead>
<tr>
<th>Total Returns</th>
<th>Risk (STD)</th>
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<tr>
<td>Stocks</td>
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<tr>
<td>Corporate Bonds</td>
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<td>Government Bonds</td>
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<td>TBS</td>
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<td>Equity</td>
<td>Private</td>
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<tr>
<td></td>
<td>Direct</td>
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<tr>
<td></td>
<td>Commingled Funds</td>
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<td>Participating Interests</td>
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<tr>
<td></td>
<td>Private Syndications</td>
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<td></td>
<td>Limited Partnerships</td>
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<td></td>
<td>Co-investment</td>
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<td>Development</td>
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<td>Mortgages</td>
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<td>Mortgage Pools</td>
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<td>Synthetic Leases</td>
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<td>Commingled Funds</td>
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<td>Participating Mtg</td>
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<td>Debt</td>
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Enhanced Core

Core
- Fully Leased in the (concentration investment size between $10-25 million)
  - Office
  - Retail
  - Industrial
  - Apartment

Opportunistic -- Pools of partially defaulted loans, large broken deals, etc.

New Development

Agriculture

Timber

Hotels, Healthcare, Mobile Home Parks

Modest Value Added - Traditional core properties with lease or rehab "challenges"

Equity in Private Real Estate Companies

Below - investment-grade CMBS

Equity in public real estate companies
The End!
Appendix

Extension of Real Estate, Direct and Indirect to International Asset Classes
International Real Estate Securities

The European Public Real Estate Association (EPRA):

• offers a global data base of securitized national market portfolios
• Data base allows the development of market models for both property and equity
• A characteristic line can also be developed per national portfolios
The EPRA data is a foundation for a market model per national asset/portfolio measures:

- **Market Model**
  
  \[ E(R_i) = \alpha_i + \beta_{iM}(R_M - \bar{R}_M) \pm \epsilon_i \]

- The beta parameter \( \beta_{iM} \) reflects the sensitivity of the asset to market volatility
- \( \alpha_i \) reflects the return component not associated with the market
Market Model enables a characteristic line for each asset/portfolio:

\[ E(R_i) = \beta_iM(R_M) \quad (+) \quad \alpha_i + \varepsilon_i \]

- Systematic
- Unsystematic
Diverification Impacts

Theoretical Risk Trend with Diversified Portfolios

Systematic Risk

Portfolio Rank by Number of Securities
Evans and Archer Naive Diversification Model

Real Estate Securities Risk as f(n)

Equity Securities Risk as f(n)

International Real Estate Securities

EPRA
Real Estate Portfolio
Global Equity Portfolio
Diversification: Asset Structure in Evan & Archer Model
P(n)
Risk
2 4 6 8 10 12 14 16 18 20 22
-.1 .0 .1 .2 .3 .4 .5 .6 .7
Global Equity Portfolio
Real Estate Portfolio
Equity Portfolio
Global Systematic Risk
Real Estate Systematic Risk
Risky Asset Risk Space Identity Grid

Real Estate Securities Risk: $f(\text{Asset Structure})$

Equity Risk: $f(\text{Asset Structure})$

Risk Magnitude
Table 4
Alternative Theories of Distribution

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Contemporary</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor</td>
<td>Labor: Entrepreneurship</td>
<td>CAPITAL: Real Technology</td>
</tr>
<tr>
<td>Capital:</td>
<td>Financial</td>
<td>Real</td>
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<td>Financial</td>
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<td>Land</td>
<td>Entrepreneur</td>
</tr>
<tr>
<td>Land</td>
<td></td>
<td>Labor</td>
</tr>
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<td></td>
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Comparison of Alternative Returns Series:
Converted to Indices

Source: Grissom GSU Real Estate Center