Introductory Lecture Slides

(Selections from Chs.1, 2, 7 of text.)
Overview:

1. **Magnitude** of Real Estate Investment
2. **Performance** of R.E. Investment
3. The “Real Estate System” (role of capital mkts)
4. The space market
5. The asset market & investment industry
6. **Example** real world R.E. development investment
Figure 1a:
Net Asset Value of U.S. Structures ($ billions, 2003, source BEA)
Total = $23,747

- Houses, $11,917
- Commercial R.E., $6,079
- Govt. R.E., $5,751
Figure 1b: Net Asset Value of U.S. Commercial Real Estate Structures ($ billions, 2003, source BEA)

Total = $6,079 Billion

- Office, $1,131
- Retail, $1,313
- Industrial*, $958
- Residential (apts), $1,168
- Hotel & Recreational, $554
- Institutional, $955
U.S. Institutional Commercial Real Estate

Physical Stock: 44B SF

- Apartment: 41%
- Office: 18%
- Retail: 25%
- Warehouse: 16%

Capital Value: $3.3 Trillion

- Apartment: 25%
- Retail: 34%
- Office: 32%
- Warehouse: 9%

Source: PPR, 2003
Exhibit 1-5: Major Types of Capital Asset Markets and Investment Products

<table>
<thead>
<tr>
<th>Asset Mkt</th>
<th>Public Markets:</th>
<th>Private Markets:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity Assets:</td>
<td>Stocks</td>
<td>Real Property</td>
</tr>
<tr>
<td></td>
<td>REITs</td>
<td>Private firms</td>
</tr>
<tr>
<td></td>
<td>Mutual funds</td>
<td>Oil &amp; Gas</td>
</tr>
<tr>
<td>Debt Assets:</td>
<td>Bonds</td>
<td>Partnerships</td>
</tr>
<tr>
<td></td>
<td>MBS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Money</td>
<td></td>
</tr>
<tr>
<td></td>
<td>instruments</td>
<td>Bank loans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Whole Mortgages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Venture Debt</td>
</tr>
</tbody>
</table>
1.2.4 The Magnitude of Real Estate in the overall Capital Market…

Exhibit 1-7 US Capital Market Sectors, a $70 Trillion Pie…

* Corporate real estate owned by publicly-traded firms, plus REITs.
Source: Authors’ estimates based on Miles & Tolleson (1997) updated with FRB statistics.

* Corporate real estate owned by publicly-traded firms, plus REITs.
Source: Authors’ estimates based on Miles & Tolleson (1997).
Exhibit 1-8: US Investable Capital Market with Real Estate Components Broken Out

U.S. Investable Capital Market with Real Estate Components Broken Out. (Source: Based on Miles & Tolleson 1997)

- Stocks: 26%
- Bonds: 24%
- Private Commercial Mortgages: 6%
- RMBS: 1%
- Private Residential Mortgages: 2%
- REIT Equity: 9%
- Agricultural/Timberlands: 0%
- Commercial Real Estate Equity: 7%
Performance

Investment Total Return Performance (per annum avg) as of June 30, 2006

<table>
<thead>
<tr>
<th></th>
<th>1yr.</th>
<th>3yr.</th>
<th>5yr.</th>
<th>10yr.</th>
<th>20yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate</td>
<td>18.68%</td>
<td>15.79%</td>
<td>12.01%</td>
<td>12.42%</td>
<td>8.17%</td>
</tr>
<tr>
<td>(NCREIF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stocks (SP500)</td>
<td>8.63%</td>
<td>11.21%</td>
<td>2.50%</td>
<td>8.35%</td>
<td>11.02%</td>
</tr>
<tr>
<td>Bonds (Lehman G/C)</td>
<td>-1.52%</td>
<td>1.60%</td>
<td>5.13%</td>
<td>6.25%</td>
<td>7.32%</td>
</tr>
<tr>
<td>T-Bills</td>
<td>3.95%</td>
<td>2.31%</td>
<td>2.16%</td>
<td>3.68%</td>
<td>4.68%</td>
</tr>
<tr>
<td>CPI</td>
<td>4.01%</td>
<td>3.27%</td>
<td>2.59%</td>
<td>2.59%</td>
<td>3.12%</td>
</tr>
</tbody>
</table>
Exhibit 2-2: The “Real Estate System”: Interaction of the Space Market, Asset Market, & Development Industry

SPACE MARKET

SUPPLY (Landlords) → RENTS & OCCUPANCY → DEMAND (Tenants)

LOCAL & NATIONAL ECONOMY

FORECAST FUTURE

DEVELOPMENT INDUSTRY

IF YES → ADDS NEW → SUPPLY (Landlords)

IS DEVELOPMENT PROFITABLE?

CONSTR COST INCLU LAND

ASSET MARKET

CASH FLOW

PROPERTY MARKET VALUE

MKT REQ'D CAP RATE

SUPPLY (Owners Selling) → DEMAND (Investors Buying)

CAPITAL MKTS

= Causal flows.

= Information gathering & use.
1.1.1 The Space Market...

Supply:
Property Owners
(Landlords)

Demand:
Property Users
(Tenants)

- Rents (e.g. $/SF)
- Occupancy
Exhibit 1-3: Change in Supply & Demand & Rent over Time
1.2 The Real Estate Asset Market (Property Market)…

Supply: Investors Wanting to Sell

Demand: Investors Wanting to Buy

Property Prices: “Cap Rates”

\[ 1/(\text{Asset/Income}) \]
WHY DO PEOPLE INVEST?...

Individuals:

⇒ DIFFERENT LIFE STYLES, LIFE CYCLES, PERSONAL GOALS, LEVELS OF WEALTH
WHY DO PEOPLE INVEST?...

Institutions:
- LIFE INSURANCE COMPANIES
- PENSION FUNDS
- MUTUAL FUNDS
- BANKS
- FOUNDATIONS

⇒ DIFFERENT CONSTITUENCIES, EXPERTISE, LIABILITIES, REGULATIONS, SIZES
WHY DO PEOPLE INVEST?...

====> DIFFERENT TIME HORIZONS, RISK TOLERANCES, NEEDS FOR INCOME vs GROWTH

Therefore, . . . (opportunities for new product development in the investment industry)
TWO MAJOR INVESTMENT OBJECTIVES:

1) GROWTH (SAVINGS) - RELATIVELY LONG-TERM HORIZON (NO IMMEDIATE NEED);

2) INCOME (CURRENT CASH FLOW) -- SHORT-TERM & ON-GOING NEED FOR CASH.
MAJOR CONSTRAINTS & CONCERNS:

- RISK
- LIQUIDITY
- TIME HORIZON
- MANAGEMENT BURDEN, EXPERTISE
- AMOUNT OF FUNDS AVAILABLE FOR INVESTMENT (SIZE)
- CAPITAL CONSTRAINT

Therefore (again), . . . What?
Montague Court Development Cost Budget:

<table>
<thead>
<tr>
<th>Hard Costs</th>
<th>Total Cost</th>
<th>Cost/Sq.Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Land</td>
<td>$15,124,000</td>
<td>$ 66.33</td>
</tr>
<tr>
<td>2. Base Shell &amp; Sitework</td>
<td>9,111,000</td>
<td>39.96</td>
</tr>
<tr>
<td>3. Tenant Improvements</td>
<td>7,399,000</td>
<td>32.45</td>
</tr>
<tr>
<td><strong>Total Hard Costs:</strong></td>
<td><strong>$ 31,634,000</strong></td>
<td><strong>$ 138.75</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Soft Costs</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Architect/Engineers</td>
<td>$ 262,000</td>
<td>$ 1.15</td>
</tr>
<tr>
<td>5. Permits/Fees</td>
<td>768,000</td>
<td>3.37</td>
</tr>
<tr>
<td>6. Legal/Title/Taxes</td>
<td>171,000</td>
<td>0.75</td>
</tr>
<tr>
<td>7. Marketing</td>
<td>46,000</td>
<td>0.20</td>
</tr>
<tr>
<td>8. Leasing Commissions</td>
<td>1,790,000</td>
<td>7.85</td>
</tr>
<tr>
<td>9. Developer Fee</td>
<td>228,000</td>
<td>1.00</td>
</tr>
<tr>
<td>10. Contingency</td>
<td>556,000</td>
<td>2.00</td>
</tr>
<tr>
<td>11. Construction Interest</td>
<td>1,074,000</td>
<td>4.71</td>
</tr>
<tr>
<td><strong>Total Soft Costs:</strong></td>
<td><strong>$ 4,895,000</strong></td>
<td><strong>21.46</strong></td>
</tr>
<tr>
<td><strong>Total Project Cost:</strong></td>
<td><strong>$ 36,529,000</strong></td>
<td><strong>$ 160.21</strong></td>
</tr>
</tbody>
</table>
# Montague Court Development Project Cash Flow Projection:

## For the Years Ending 2000, 2001, 2002

### POTENTIAL GROSS REVENUE

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Rental Revenue</td>
<td>$222,735</td>
<td>$3,410,017</td>
<td>$4,349,783</td>
<td></td>
</tr>
<tr>
<td>Absorption &amp; Turnover Vacancy</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>Scheduled Base Rental Revenue</td>
<td>$222,735</td>
<td>$3,410,017</td>
<td>$4,349,763</td>
<td></td>
</tr>
<tr>
<td>Expense Reimbursement Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oper. Expenses</td>
<td>$36,196</td>
<td>$565,778</td>
<td>$725,706</td>
<td></td>
</tr>
<tr>
<td>Total Reimbursement Revenue</td>
<td>$36,196</td>
<td>$565,778</td>
<td>$725,706</td>
<td></td>
</tr>
<tr>
<td>TOTAL POTENTIAL GROSS REVENUE</td>
<td>$268,931</td>
<td>$3,975,795</td>
<td>$5,075,489</td>
<td></td>
</tr>
<tr>
<td>General Vacancy</td>
<td>-$10,357</td>
<td>-$159,032</td>
<td>-$203,020</td>
<td></td>
</tr>
<tr>
<td>Collection Loss</td>
<td>-$5,179</td>
<td>-$79,516</td>
<td>-$101,510</td>
<td></td>
</tr>
<tr>
<td>EFFECTIVE GROSS REVENUE</td>
<td>$243,395</td>
<td>$3,737,247</td>
<td>$4,770,959</td>
<td></td>
</tr>
</tbody>
</table>

### OPERATING EXPENSES

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oper Expenses</td>
<td>$243,395</td>
<td>$704,520</td>
<td>$725,656</td>
<td></td>
</tr>
<tr>
<td>TOTAL OPERATING EXPENSES</td>
<td>$243,395</td>
<td>$704,520</td>
<td>$725,656</td>
<td></td>
</tr>
<tr>
<td>NET OPERATING INCOME</td>
<td>$0</td>
<td>$3,032,727</td>
<td>$4,045,303</td>
<td></td>
</tr>
</tbody>
</table>

### LEASING & CAPITAL COSTS

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenant Improvements</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>Leasing Commissions</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>Cap Reserves</td>
<td>$0</td>
<td>$35,226</td>
<td>$36,283</td>
<td></td>
</tr>
<tr>
<td>Construction Costs (Payoff constr loan)</td>
<td>$0</td>
<td>$21,405,000</td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>TOTAL LEASING &amp; CAPITAL COSTS</td>
<td>$0</td>
<td>$0</td>
<td>$21,440,226</td>
<td>$36,283</td>
</tr>
</tbody>
</table>

### LAND

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LAND</td>
<td>$15,124,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CASH FLOW BEFORE DEBT SERVICE & INCOME TAX

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASH FLOW BEFORE DEBT SERVICE &amp; INCOME TAX</td>
<td>-$15,124,000</td>
<td>$0</td>
<td>-$18,407,499</td>
<td>$4,009,020</td>
</tr>
</tbody>
</table>
Evaluating the development project…

Cap rates for
R&D/Office properties in Milpitas, CA.
= 9.35%.

Stabilized NOI (Yr.3) = $4,045,303.

What is expected value of the finished project at end of development phase (end of Yr.2)?…
Evaluating the development project…

Cap rates for R&D/Office properties in Milpitas, CA. = 9.35%.

Stabilized NOI (Yr.3) = $4,045,303.

What is expected value of the finished project at end of development phase (end of Yr.2)?…

\[
Value = \frac{NOI}{CapRate} = \frac{$4,045,303}{0.0935} = $43,265,273
\]
Evaluating the development project…

Cap rates for R&D/Office properties in Milpitas, CA. = 9.35%.

Stabilized NOI (Yr.3) = $4,045,303.

What is expected value of the finished project at end of development phase (end of Yr.2)?… $43,265,273

What is expected return (IRR) on the development project?…
Compute return as discount rate to equate future expected cash flows to present land cost (opportunity value)…

\[
Land \ Cost = \frac{CF_1}{1 + IRR} + \frac{CF_2}{(1 + IRR)^2} + \ldots + \frac{CF_T}{(1 + IRR)^T}
\]

In the present example…

\[
$15,124,000 = \frac{0}{1 + IRR} + \frac{-18,407,499 + \left(\frac{4,045,303}{0.0935}\right)}{(1 + IRR)^2}
\]

\[
$15,124,000 = \frac{0}{1 + IRR} + \frac{-18,407,499 + 43,265,273}{(1 + IRR)^2}
\]

\[
$15,124,000 = 0 + \frac{24,857,774}{(1 + IRR)^2}
\]

\[
\Rightarrow \ IRR = 28.2\%
\]
Compute return as discount rate to equate future expected cash flows to present land cost (opportunity value)…

\[ Land\ Cost = \frac{CF_1}{1 + IRR} + \frac{CF_2}{(1 + IRR)^2} + \ldots + \frac{CF_T}{(1 + IRR)^T} \]

In the present example…

\[ \$15,124,000 = \frac{0}{1 + IRR} + \frac{-18,407,499 + (4,045,303 / 0.0935)}{(1 + IRR)^2} \]

\[ \$15,124,000 = \frac{0}{1 + IRR} + \frac{-18,407,499 + 43,265,273}{(1 + IRR)^2} \]

\[ \$15,124,000 = 0 + \frac{24,857,774}{(1 + IRR)^2} \]

\[ \Rightarrow IRR = 28.2\% \]

*Should we do the development?…*
Compute return as discount rate to equate future expected cash flows to present land cost (opportunity value)…

\[
Land\ Cost = \frac{CF_1}{1 + IRR} + \frac{CF_2}{(1 + IRR)^2} + \ldots + \frac{CF_T}{(1 + IRR)^T}
\]

In the present example…

\[
$15,124,000 = \frac{0}{1 + IRR} + \frac{-18,407,499 + (4,045,303 / 0.0935)}{(1 + IRR)^2}
\]

\[
$15,124,000 = \frac{0}{1 + IRR} + \frac{-18,407,499 + 43,265,273}{(1 + IRR)^2}
\]

\[
$15,124,000 = 0 + \frac{24,857,774}{(1 + IRR)^2}
\]

\[\Rightarrow \ IRR = 28.2\%
\]

*Should we do the development?…*

Is 28.2% a sufficient expected return, given the risk?…
What actually happened with this investment . . .

Leased the entire project in late 2000, lease through 2010 to Cisco, at more than double the pro-forma rent!

\[
\begin{align*}
$15,124,000 &= \frac{0}{1 + IRR} + \frac{-18,407,499 + (9,380,960 / 0.14)}{(1 + IRR)^2} \\
$15,124,000 &= \frac{0}{1 + IRR} + \frac{-18,407,499 + 67,006,857}{(1 + IRR)^2} \\
$15,124,000 &= 0 + \frac{48,599,358}{(1 + IRR)^2} \\
\Rightarrow \quad IRR &= 79.3\% 
\end{align*}
\]

Actual Ex Post Devlpt IRR: 79.3%!
What could very easily have happened with this 1999 investment . . .

The tech bubble burst in 2001, driving market rents on new leases down to $0.90/SF by 2002 (vs $1.59 in pro-forma), and that’s if you could find a tenant at all!

\[
\begin{align*}
$15,124,000 &= \frac{0}{1 + IRR} + \frac{-18,407,499 + (2,157,920 / 0.095)}{(1 + IRR)^2} \\
$15,124,000 &= \frac{0}{1 + IRR} + \frac{-18,407,499 + 22,714,947}{(1 + IRR)^2} \\
$15,124,000 &= 0 + \frac{4,307,448}{(1 + IRR)^2}
\end{align*}
\]

\[\Rightarrow IRR = -46.6\%\]

Result would have been an Ex Post Devlpt IRR: \(-46.6\%\)!