

11.431/15.426J

Real Estate Finance & Investments I:
Fundamentals & Micro-Level Analysis
Fall 2006

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

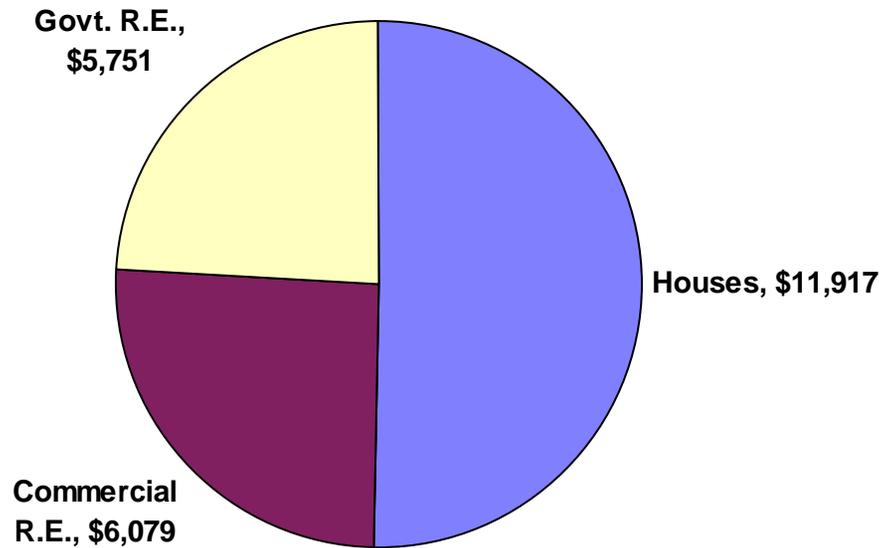
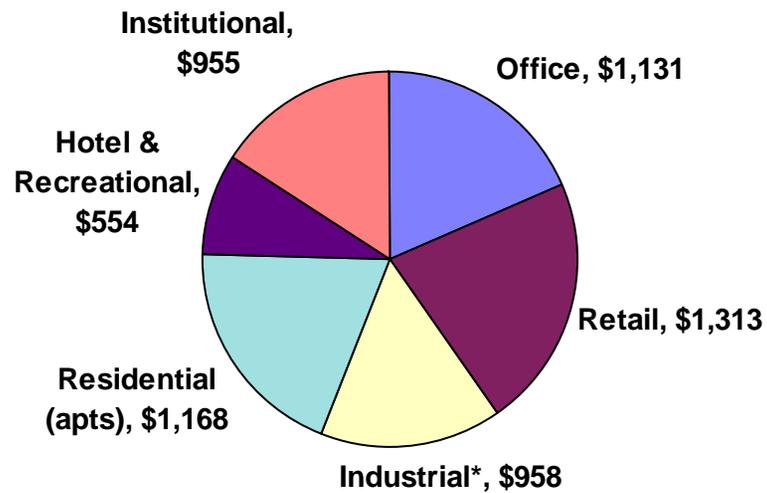


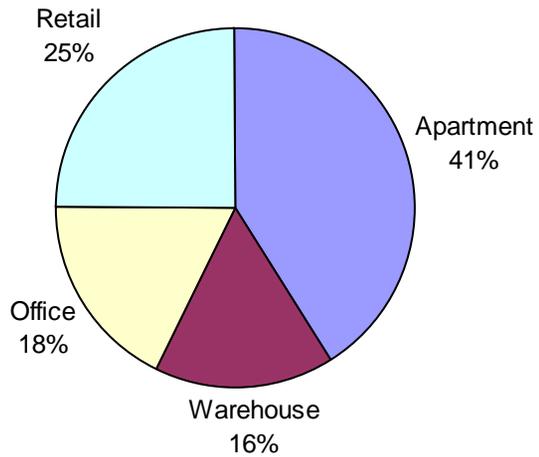
Figure 1b:
Net Asset Value of U.S. Commercial Real Estate Structures (\$ billions,
2003, source BEA)
Total = \$ 6,079 Billion



U.S. Institutional Commercial Real Estate

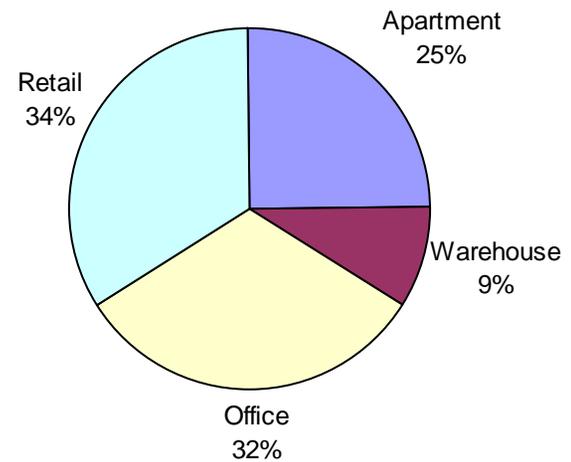
Physical Stock: 44B SF

U.S. Commercial R.E. Physical Space (SF)



Capital Value: \$3.3 Trillion

U.S. Commercial R.E. Capital Value (\$)



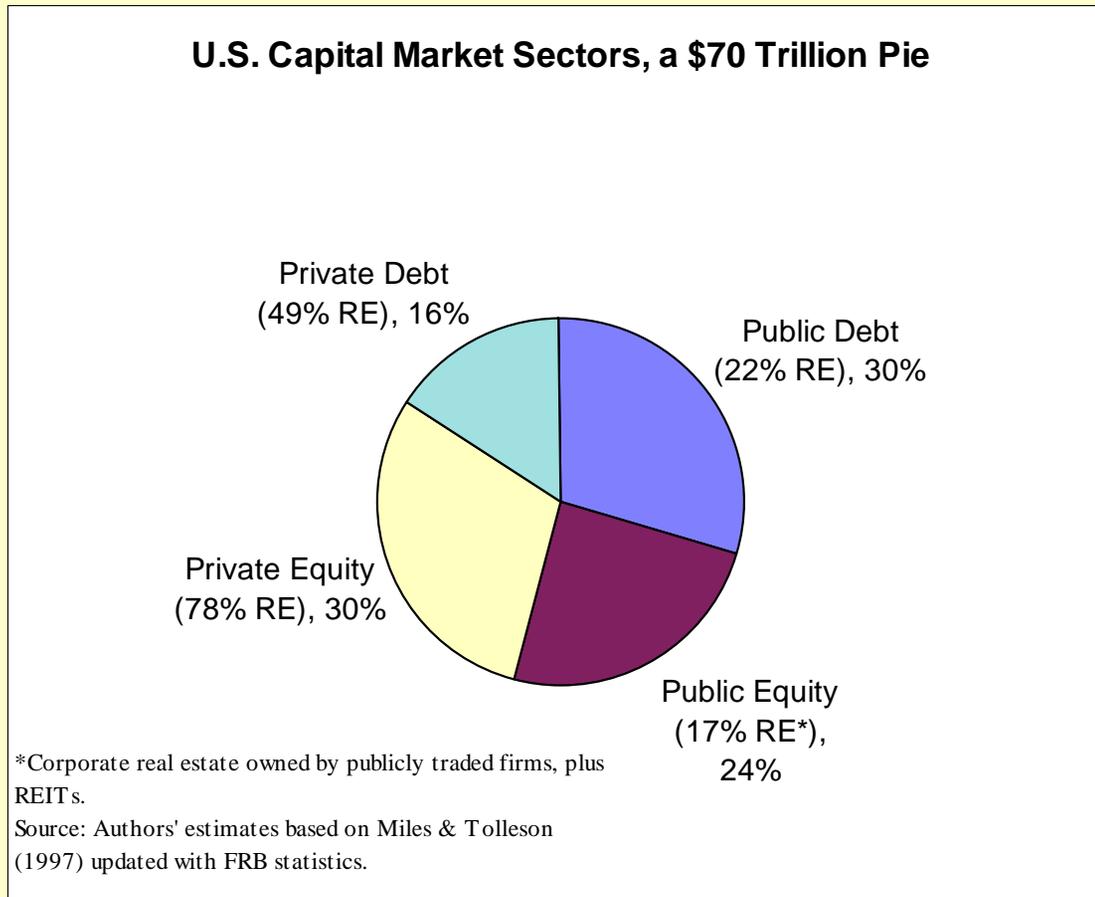
Source: PPR, 2003

Exhibit 1-5: Major Types of Capital Asset Markets and Investment Products

	<u>Public Markets:</u>	<u>Private Markets:</u>
<u>Equity Assets:</u>	Stocks REITs Mutual funds	Real Property Private firms Oil & Gas Partnerships
<u>Debt Assets:</u>	Bonds MBS Money instruments	Bank loans Whole Mortgages Venture Debt

1.2.4 The Magnitude of Real Estate in the overall Capital Market...

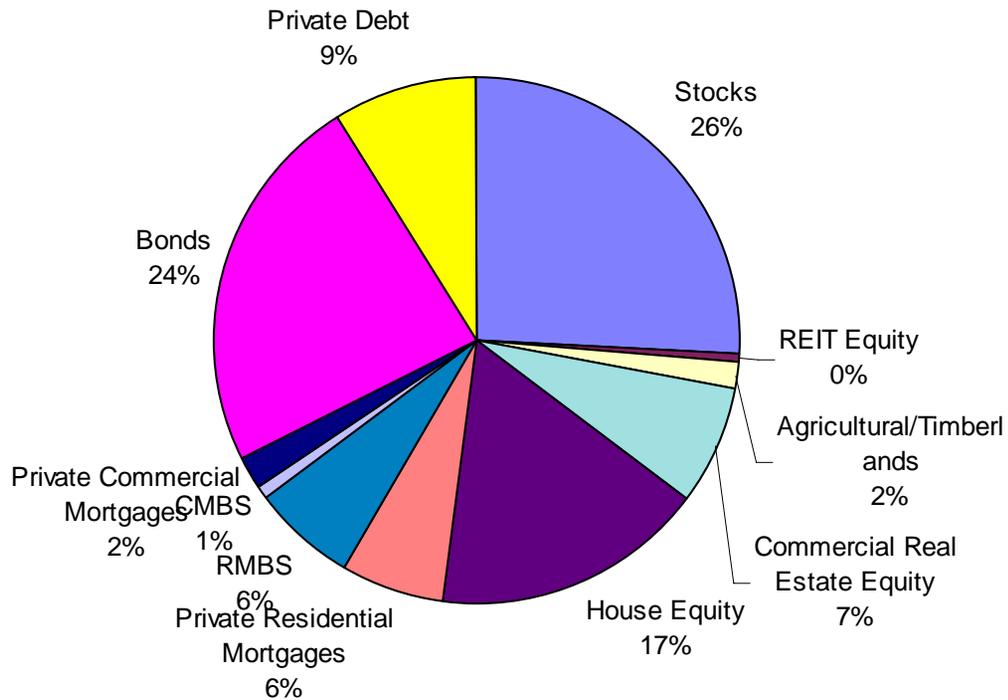
Exhibit 1-7 US Capital Market Sectors, a \$70 Trillion Pie...



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

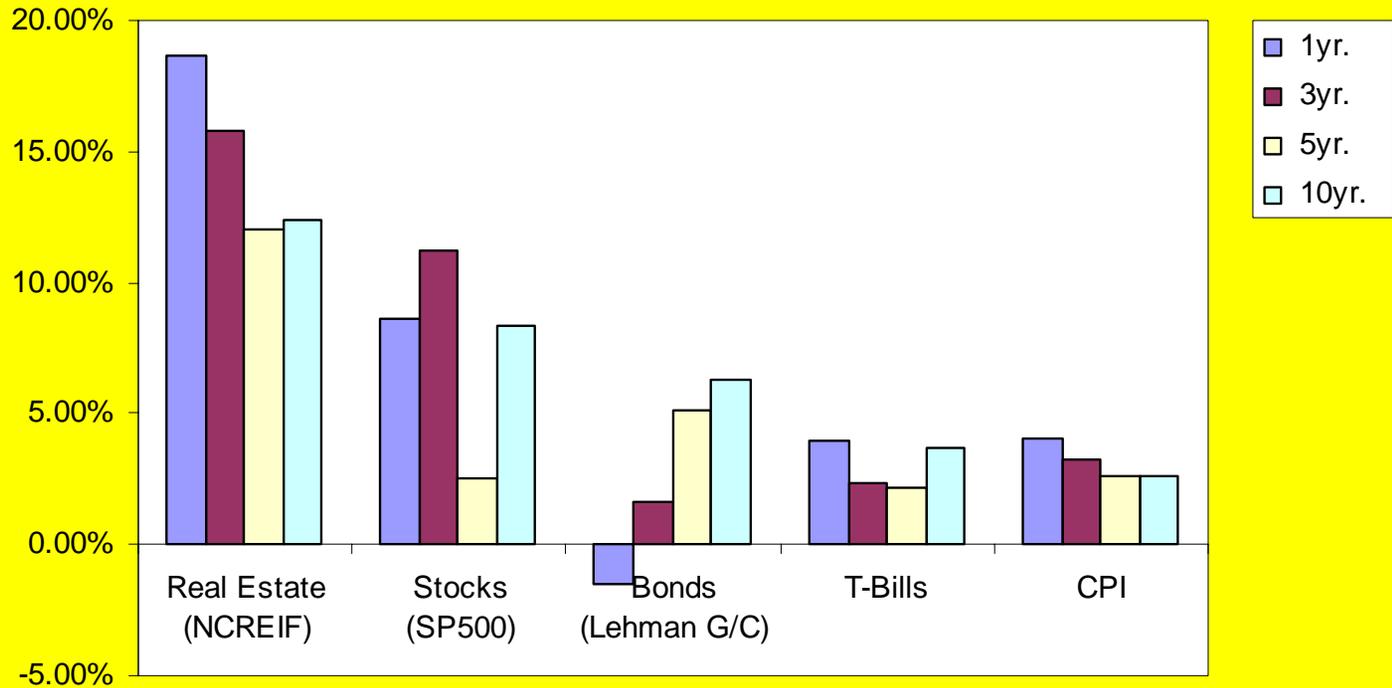
Exhibit 1-8: US Investable Capital Market with Real Estate Components Broken Out

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



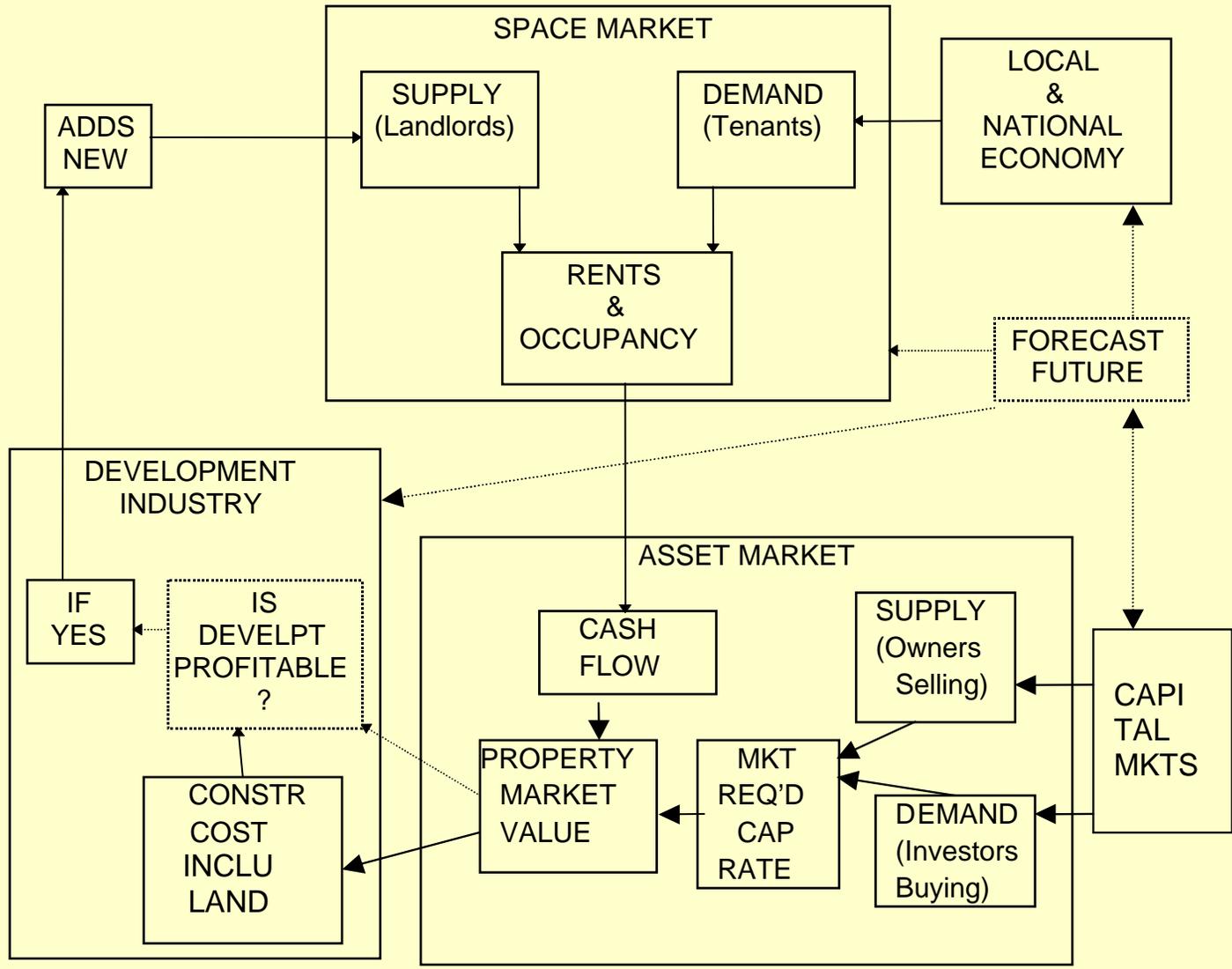
Performance

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



Total Investment Return a	Real Estate (NCREIF)	Stocks (SP500)	Bonds (Lehman G/C)	T-Bills	CPI
1yr.	18.68%	8.63%	-1.52%	3.95%	4.01%
3yr.	15.79%	11.21%	1.60%	2.31%	3.27%
5yr.	12.01%	2.50%	5.13%	2.16%	2.59%
10yr.	12.42%	8.35%	6.25%	3.68%	2.59%
20yr.	8.17%	11.02%	7.32%	4.68%	3.12%

Exhibit 2-2: The “Real Estate System”: Interaction of the Space Market, Asset Market, & Development Industry



—————> = Causal flows.

- - - - -> = Information gathering & use.

1.1.1 The Space Market...

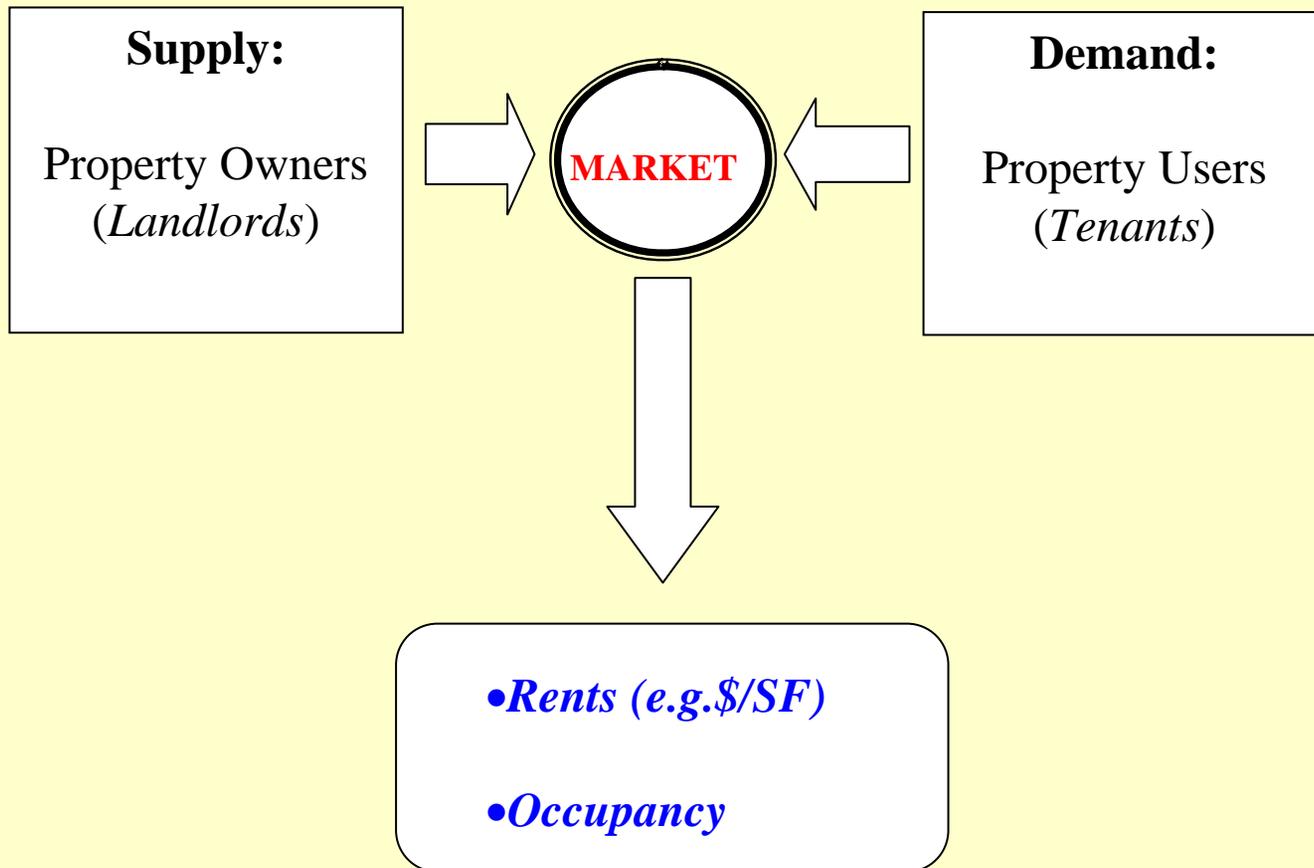
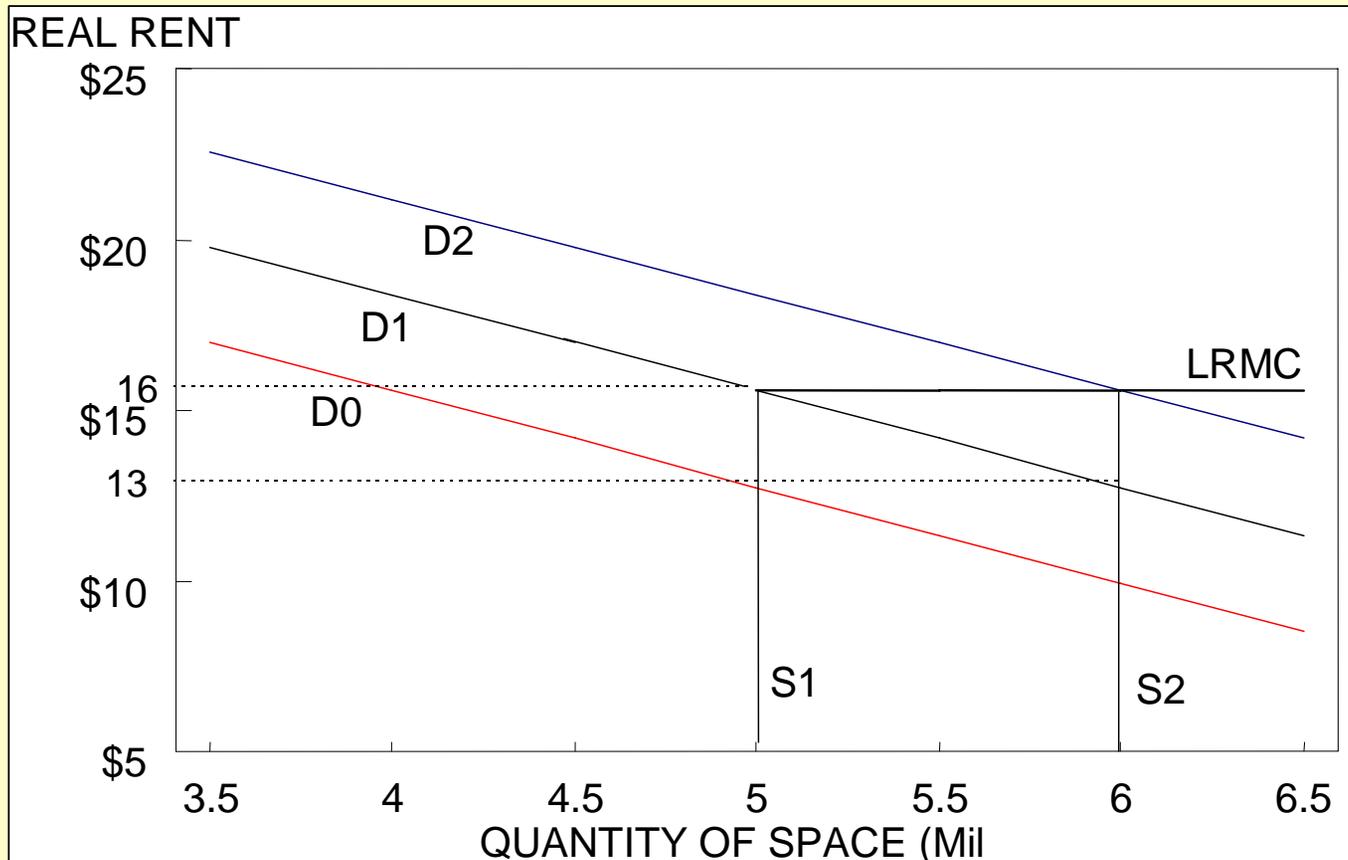
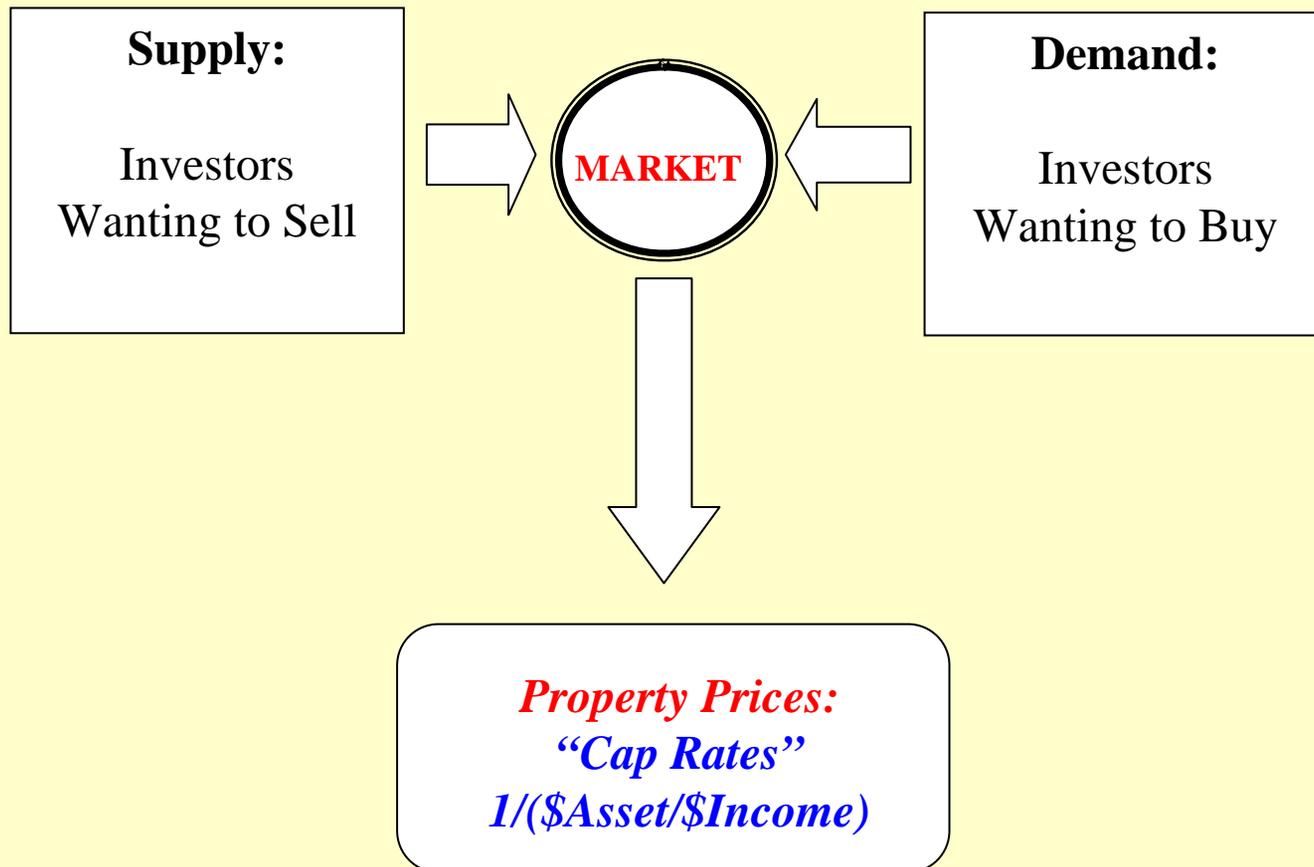


Exhibit 1-3: Change in Supply & Demand & Rent over Time



1.2 The Real Estate Asset Market (Property Market)...



WHY DO PEOPLE INVEST?...

Individuals:

- THE 25-YR-OLD "YUPPY" ?
 - THE 25-YR-OLD "DINC" COUPLE ?
 - THE 35-YR-OLD "YOUNG FAMILY" ?
 - THE 45-YR-OLD "MID-LIFE CRISIS" ?
 - THE 65-YR-OLD "RETIREE" ?
- 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?*

Example**Montague Court Development Cost Budget:**

Hard Costs	Total Cost	Cost/Sq.Ft.
1. Land	\$15,124,000	\$ 66.33
2. Base Shell & Sitework	9,111,000	39.96
3. Tenant Improvements	7,399,000	32.45
Total Hard Costs:	\$ 31,634,000	\$ 138.75
Soft Costs		
4. Architect/Engineers	\$ 262,000	\$ 1.15
5. Permits/Fees	768,000	3.37
6. Legal/Title/Taxes	171,000	0.75
7. Marketing	46,000	0.20
8. Leasing Commissions	1,790,000	7.85
9. Developer Fee	228,000	1.00
10. Contingency	556,000	2.00
11. Construction Interest	1,074,000	4.71
Total Soft Costs:	\$ 4,895,000	21.46
Total Project Cost:	\$ 36,529,000	\$ 160.21

Montague Court Development Project Cash Flow Projection:				
	Year 0	Year 1	Year 2	Year 3
For the Years Ending		2000	2001	2002
POTENTIAL GROSS REVENUE				
Base Rental Revenue		\$222,735	\$3,410,017	\$4,349,783
Absorption & Turnover Vacancy		\$0	\$0	\$0
Scheduled Base Rental Revenue		\$222,735	\$3,410,017	\$4,349,763
Expense Reimbursement Revenue				
Oper. Expenses		\$36,196	\$565,778	\$725,706
Total Reimbursement Revenue		\$36,196	\$565,778	\$725,706
TOTAL POTENTIAL GROSS REVENUE		\$268,931	\$3,975,795	\$5,075,489
General Vacancy		-\$10,357	-\$159,032	-\$203,020
Collection Loss		-\$5,179	-\$79,516	-\$101,510
EFFECTIVE GROSS REVENUE		\$243,395	\$3,737,247	\$4,770,959
OPERATING EXPENSES				
Oper Expenses		\$243,395	\$704,520	\$725,656
TOTAL OPERATING EXPENSES		\$243,395	\$704,520	\$725,656
NET OPERATING INCOME		\$0	\$3,032,727	\$4,045,303
LEASING & CAPITAL COSTS				
Tenant Improvements		\$0	\$0	\$0
Leasing Commissions		\$0	\$0	\$0
Cap Reserves		\$0	\$35,226	\$36,283
Construction Costs (Payoff constr loan)		\$0	\$21,405,000	\$0
TOTAL LEASING & CAPITAL COSTS	\$0	\$0	\$21,440,226	\$36,283
LAND	\$15,124,000			
CASH FLOW BEFORE DEBT SERVICE & INCOME TAX	-\$15,124,000	\$0	-\$18,407,499	\$4,009,020

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)...

$$\text{Land Cost} = \frac{CF_1}{1 + IRR} + \frac{CF_2}{(1 + IRR)^2} + \dots + \frac{CF_T}{(1 + IRR)^T}$$

In the present example...

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

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

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

$$\Rightarrow IRR = 28.2\%$$

Compute return as discount rate to equate future expected cash flows to present land cost (opportunity value)...

$$\text{Land Cost} = \frac{CF_1}{1 + IRR} + \frac{CF_2}{(1 + IRR)^2} + \dots + \frac{CF_T}{(1 + IRR)^T}$$

In the present example...

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

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

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Should we do the development?...

Compute return as discount rate to equate future expected cash flows to present land cost (opportunity value)...

$$\text{Land Cost} = \frac{CF_1}{1 + IRR} + \frac{CF_2}{(1 + IRR)^2} + \dots + \frac{CF_T}{(1 + IRR)^T}$$

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!

$$\$15,124,000 = \frac{0}{1+IRR} + \frac{-\$18,407,499 + (\$9,380,960/0.14)}{(1+IRR)^2}$$

$$\$15,124,000 = \frac{0}{1+IRR} + \frac{-\$18,407,499 + \$67,006,857}{(1+IRR)^2}$$

$$\$15,124,000 = 0 + \frac{\$48,599,358}{(1+IRR)^2}$$

$$\Rightarrow IRR = 79.3\%$$

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!

$$\$15,124,000 = \frac{0}{1+IRR} + \frac{-\$18,407,499 + (\$2,157,920/0.095)}{(1+IRR)^2}$$

$$\$15,124,000 = \frac{0}{1+IRR} + \frac{-\$18,407,499 + \$22,714,947}{(1+IRR)^2}$$

$$\$15,124,000 = 0 + \frac{\$4,307,448}{(1+IRR)^2}$$

$$\Rightarrow IRR = -46.6\%$$

Result would have been an Ex Post Devlpt IRR: **-46.6%!**