Chapter 11:

Real Estate Cash Flow Pro Formas & Opportunity Cost of Capital (OCC)

"PROFORMA"

= a multi-year cash flow forecast

(Typically 10 years.)

Show to: Lenders, Investors

But the proforma can be more useful than just "window dressing", if done properly.

It is the basic vehicle to implement the DCF valuation and analysis procedure discussed in the previous chapter.

The CF proforma presents the numerators in the RHS of the DCF valuation equation.

2 types of CFs:

- Operating

- Reversion (Sale of Property, Sometimes *partial sales*)

2 ways of defining "bottom line". . .

1) Property level (PBTCF, *most common in practice*):

- Net CF produced by property, before subtracting debt svc pmts (DS) and inc. taxes.

- CFs to Govt, Debt investors (mortgagees), equity owners.

- CFs due purely to underlying productive physical asset, not based on financing or income tax effects.

- Relatively easy to observe empirically.

- Focus of Chapter 11.

2) Equity ownership after-tax level (EATCF):

- Net CF avail. to equity owner after DS & taxes.

- Determines value of equity only (not value to lenders).

- Sensitive to financing and income tax effects.

- Usually difficult to observe empirically (differs across investors).

- Will be addressed in Chapter 14.

Typical proforma line items...

Exhibit 11-1:

At Property, Before-tax Level:

Operating (all years):

Potential Gross Income = (Rent*SF)	=	PGI
- Vacancy Allowance = -(vac.rate)*(PGI)	=	- v
+ Other Income = (eg, parking, laundry)	=	+OI
- Operating Expenses	=	- OE
_____	_____
Net Operating Income	=	NOI
- Capital Improvement Expenditures	=	- CI
_____	_____
Property Before-tax Cash Flow	= PBTCF

Reversion (last year & yrs of partial sales only):

Property Value at time of sale	=	V
- Selling Expenses = -(eg, broker)	=	- SE
_____	_____
Property Before-tax Cash Flow	= PBTCF

Questions…

How forecast vacancy (v)?

• Vac = (vac months)/(vac months + rented months) in typical cycle.
• Look at typical vac rate in rental mkt; adjust for non-stabilized bldgs (e.g., gross vacancy in mkt typically > typical stabilized vac).
• History of vac. in subject bldg.
• Project for each space/lease: Probability of renewal & Expected vacant period if not renewed.

How forecast resale value ("reversion", V at end)?

• Divide Yr.11 NOI by "going-out" (terminal) cap rate.

What should be the typical relationship between the going-in cap rate and the going-out cap rate?. . .

• Usually going-out $\geq$ going-in (older bldgs have less growth & more risk), esp. if little capital imprvmt expdtrs have been projected.

Exhibit 11-2: As New Competitors Enter the Market, Spread Between Building and Submarket Vacancy Increases for Older Buildings

(Source: Torto-Wheaton Research; *"TWR Overview &Outlook"*, Winter 2004.)
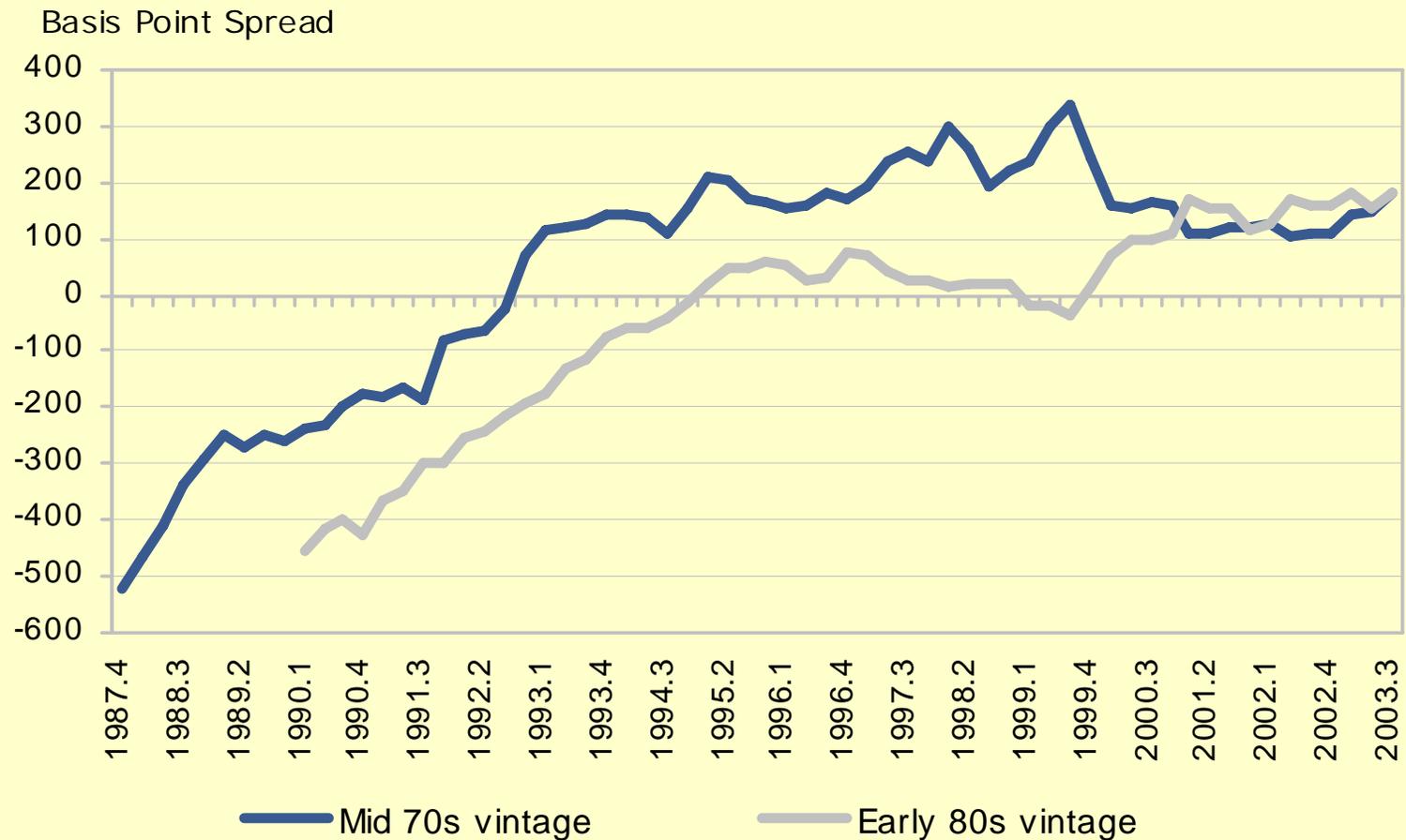
Operating Expenses include:

Fixed:

- Property Taxes
- Property Insurance
- Security
- Management

Variable:

- Maintenance & Repairs
- Utilities (not paid by tenants)

Operating Expenses

NOTE:

OE do NOT include:

- *Income taxes,*
- *Depreciation expense.*

Must include <u>mgt expense</u> even if self-managed.

Why? . . .

Opportunity cost, "apples-to-apples" comparison with alternative investments that you don't have to manage yourself.

Capital Expenditures include:

Leasing costs:

- Tenant build-outs or improvement expenditures ("TIs")
- Leasing commissions to brokers

Property Improvements:

- Major repairs
- Replacement of major equipment
- Major remodeling of building, ground & fixtures
- Expansion of rentable area

Two truths often not reflected proformas used in practice in the real world . . .

• Realistic long-term rental growth projections in most commercial properties in most areas of the U.S. should average slightly _less than_ realistic expectations about general (CPI) inflation.

• Realistic long-term capital expenditure projections for most types of commercial property should average at least 10% to 20% of the NOI, or an annual average of about 1% to 2% of the property value.

Simple numerical example (in book, Sect.11.1.8: *Exh.11-3*)

Exhibit 11-2: The Noname Building: Cash Flow Projection											
Year:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Item:											
Market Rent/SF:	$10.00	$10.10	$10.20	$10.30	$10.41	$10.51	$10.62	$10.72	$10.83	$10.94	$11.05
Potential Revenue:											
Gross Rent Space 1 (10000SF)	$105,000	$105,000	$105,000	$103,030	$103,030	$103,030	$103,030	$103,030	$108,286	$108,286	$108,286
Gross Rent Space 2 (10000SF)	$100,000	$100,000	$100,000	$100,000	$100,000	$105,101	$105,101	$105,101	$105,101	$105,101	$110,462
Gross Rent Space 3 (10000SF)	$100,000	$101,000	$101,000	$101,000	$101,000	$101,000	$106,152	$106,152	$106,152	$106,152	$106,152
Total PGI	$305,000	$306,000	$306,000	$304,030	$304,030	$309,131	$314,283	$314,283	$319,539	$319,539	$324,900
Vacancy allowance:											
Space 1	$0	$0	$0	$51,515	$0	$0	$0	$0	$54,143	$0	$0
Space 2	$0	$0	$0	$0	$0	$52,551	$0	$0	$0	$0	$55,231
Space 3	$100,000	$0	$0	$0	$0	$0	$53,076	$0	$0	$0	$0
Total vacancy allowance	$100,000	$0	$0	$51,515	$0	$52,551	$53,076	$0	$54,143	$0	$55,231
Total EGI	$205,000	$306,000	$306,000	$252,515	$304,030	$256,581	$261,207	$314,283	$265,396	$319,539	$269,669
Other Income	$30,000	$30,300	$30,603	$30,909	$31,218	$31,530	$31,846	$32,164	$32,486	$32,811	$33,139
Expense Reimbursements											
Space 1	$0	$1,833	$2,003	$0	$1,651	$964	$1,118	$2,870	$0	$1,823	$329
Space 2	$0	$2,944	$3,114	$1,814	$3,465	$0	$153	$1,905	$469	$2,292	$0
Space 3	$0	$0	$170	$0	$260	$0	$0	$1,752	$316	$2,139	$645
Total Revenue	$235,000	$341,078	$341,891	$285,238	$340,624	$289,075	$294,324	$352,974	$298,667	$358,602	$303,781
Reimbursable Operating Expenses											
Property Taxes	$35,000	$35,000	$35,000	$35,000	$35,000	$36,750	$36,750	$36,750	$36,750	$36,750	$36,750
Insurance	$5,000	$5,000	$5,000	$5,000	$5,000	$5,250	$5,250	$5,250	$5,250	$5,250	$5,250
Utilities	$16,667	$25,500	$26,010	$22,109	$27,061	$23,002	$23,462	$28,717	$24,410	$29,877	$25,396
Total Reimbursable Expenses	$56,667	$65,500	$66,010	$62,109	$67,061	$65,002	$65,462	$70,717	$66,410	$71,877	$67,396
Management Expense	$6,150	$9,180	$9,180	$7,575	$9,121	$7,697	$7,836	$9,428	$7,962	$9,586	$8,090
Total Operating Expenses	$62,817	$74,680	$75,190	$69,684	$76,182	$72,699	$73,298	$80,146	$74,371	$81,463	$75,486
NOI	$172,183	$266,398	$266,701	$215,554	$264,442	$216,376	$221,026	$272,828	$224,295	$277,139	$228,295
Capital Expenditures											
TI		$50,000		$50,000		$55,000	$55,000		$55,000		$55,000
Leasing Commissions		$15,150		$15,455		$15,765	$15,923		$16,243		$16,569
Common physical improvements					$100,000						
Net Cash Flow (operations)	$172,183	$201,248	$266,701	$150,100	$164,442	$145,611	$150,103	$272,828	$153,053	$277,139	
Net Cash Flow (reversion)										$2,282,951	
IRR @ $2,000,000 price: 10.51%											

Real world example...

The R.R. Donnelly Bldg, Chicago

$280 million (1999),

945000 SF,

50-story

Office Tower

Location:

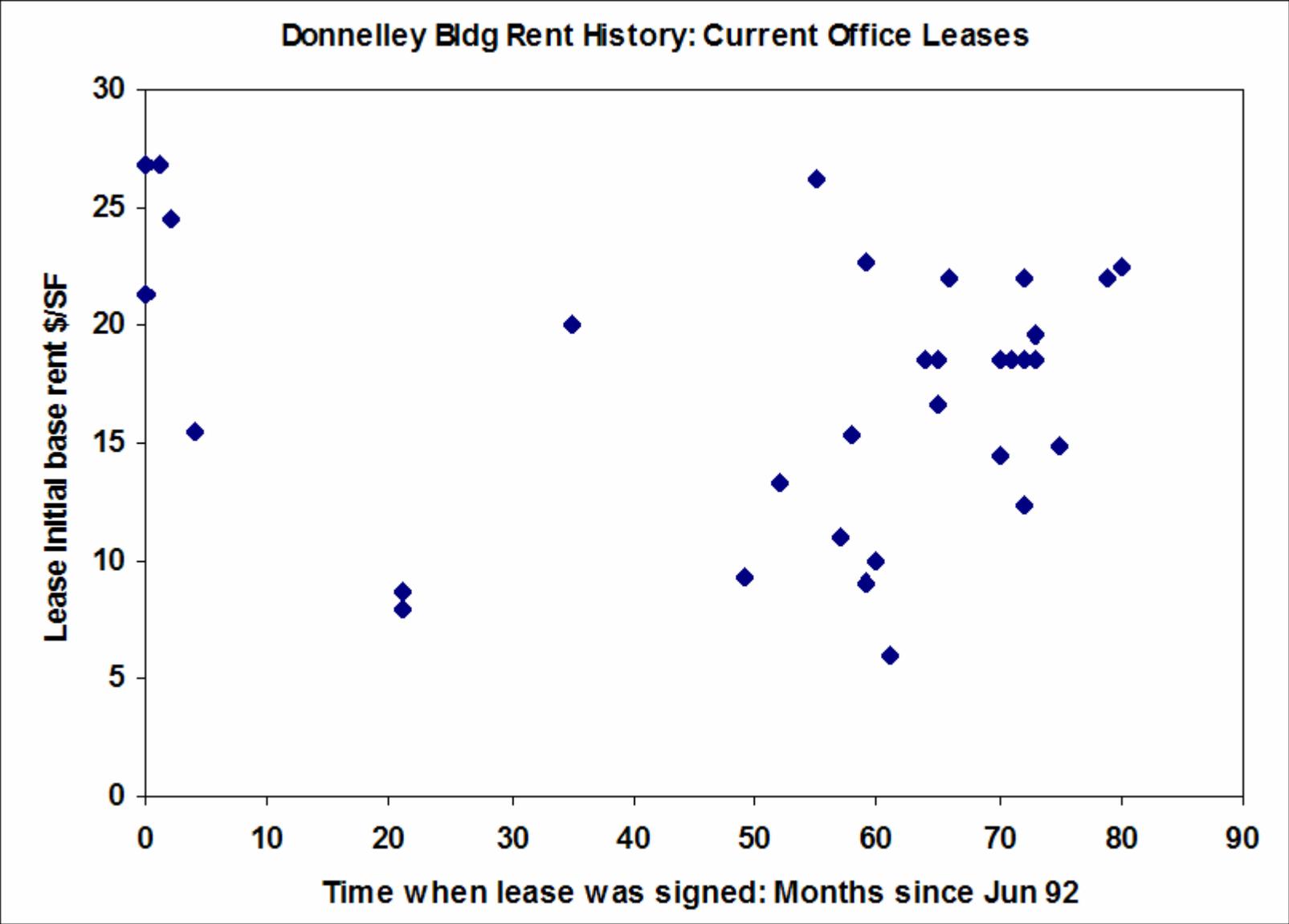**In "The Loop" (CBD) at W.Wacker Dr & N.Clark St,**
On the Chicago River...

Donnelley Bldg Pro Forma...

RR Donnelley Bldg Annual Cash Flow Projection											
Year:	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
POTENTIAL GROSS REVENUE											
Base Rental Revenue	24033811	24991054	25635350	26383811	27922939	28654131	29373663	30057496	29525448	29850252	30742749
Absorptn & Turnover Vac.	0	-122098	-45383	-284864	-538960	-64691	-280794	-98390	-3542566	-468748	-133817
Scheduled Base Rent Rev.	24033811	24868956	25589967	26098947	27383979	28589440	29092869	29959106	25982882	29381504	30608932
CPI & Other Adjustmt Rev.	1295978	1489696	1688258	1891784	2100397	2314227	2533401	2758056	465942	0	0
Expense Reimbursmt Rev.	13830780	14359735	14886942	15215378	15588172	16665170	17028629	17626489	16203409	18857047	19661109
Miscellaneous Income	270931	279059	287430	296054	304935	314082	323505	333212	343207	353504	364108
TOTAL PGR	39431500	40997446	42452597	43502163	45377483	47882919	48978404	50676863	42995440	48592055	50634149
Collection Loss	-561044	-592080	-625946	-638690	-681665	-759463	-770676	-811778	-827703	-867105	-921832
EFFECTIVE GROSS REVENUE	38870456	40405366	41826651	42863473	44695818	47123456	48207728	49865085	42167737	47724950	49712317
OPERATING EXPENSES											
Repairs & Maintenance	1723900	1775613	1829188	1883220	1938829	1998749	2057947	2120365	2171717	2248204	2316872
Contract Cleaning	1033459	1064415	1100189	1122605	1145141	1201526	1227982	1273344	1157614	1334681	1390062
Security	738946	761114	783949	807466	831690	856640	882340	908811	936075	964158	993081
Utilities	1076597	1108856	1145319	1170863	1196712	1250955	1280500	1326010	1237641	1393269	1447839
General & Administrative	741398	763639	786549	810146	834450	859483	885267	911825	939179	967355	996376
Insurance	144503	148838	153303	157902	162639	167518	172544	177720	183052	188543	194200
Real Estate Taxes	7943834	8182149	8427614	8680442	8940855	9209081	9485	9769914	10063012	10364902	10675849
Management Fee	971761	1010134	1045666	1071587	1117395	1178086	1205193	1246627	1054193	1193124	1242808
Non-Reimbursable	118890	122456	126131	129915	133812	137826	141961	146220	150607	155124	159778
TOTAL OPERATING EXPENSES	14493288	14937	15397908	15834146	16301523	16859864	17339088	17880836	17893090	18809360	19416865
NET OPERATING INCOME	24377168	25468152	26428743	27029327	28394295	30263592	30868640	31984249	24274647	28915590	30295452
LEASING & CAPITAL COSTS											
Tenant Improvements	272920	390507	138182	870713	1239057	621936	864411	233947	10949093	1439521	
Leasing Commissions	83615	121036	44684	456082	396166	289709	371606	74189	6473182	461531	
Structural Reserves	95281	98139	101084	104116	134759	220920	227548	234374	241405	248648	
RR Donnelley TI	0	0	0	100000	0	0	0	0	0	0	
TOTAL CAPITAL COSTS	451816	609682	283950	1530911	1769982	1132565	1463565	542510	17663680	2149700	
OPERATING NET CASH FLOW	23925352	24858470	26144793	25498416	26624313	29131027	29405075	31441739	6610967	26765890	
Reversion @8.75%, 1%Cost										342771400	
TOTAL NET CASH FLOW	23925352	24858470	26144793	25498416	26624313	29131027	29405075	31441739	6610967	369537290	

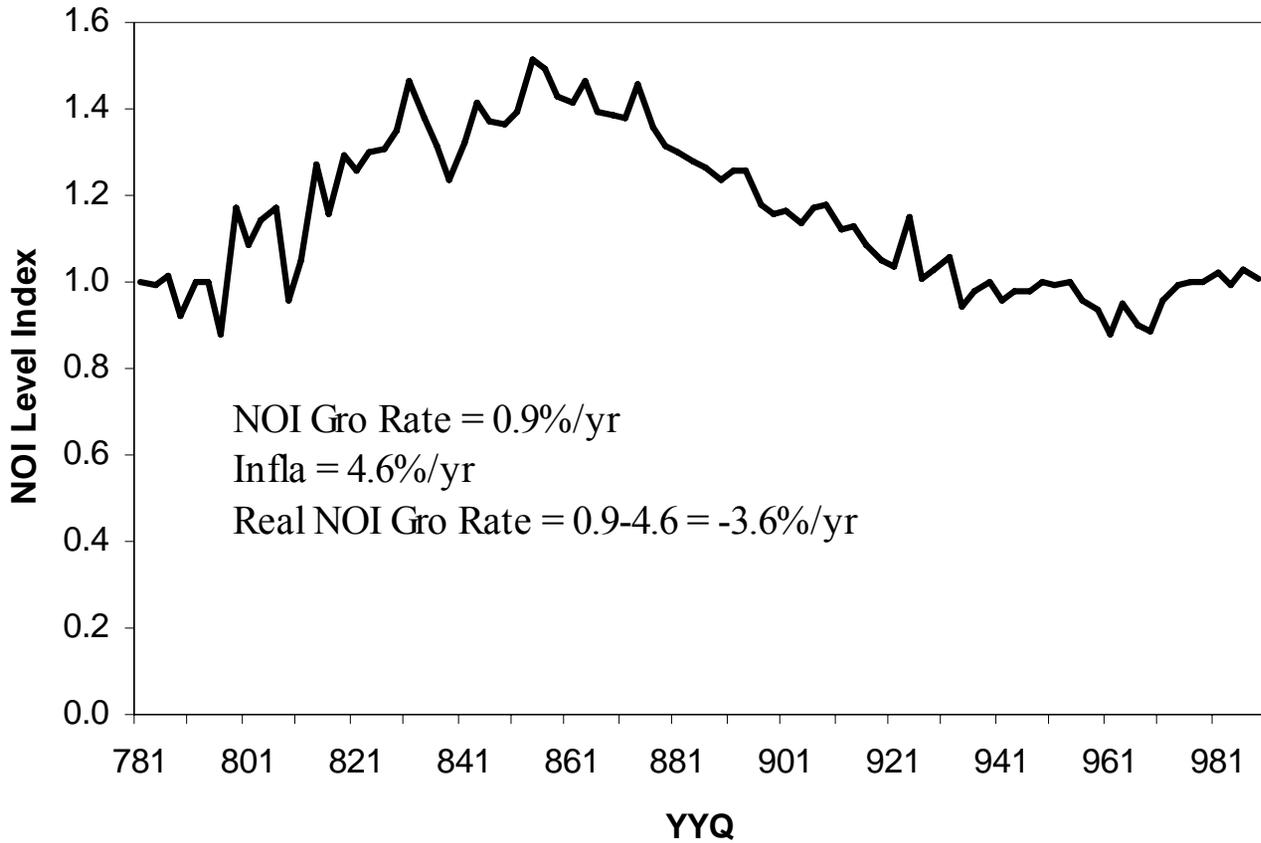This was the actual proforma used in the investment decision.

How realistic was it (at the time)? . . .

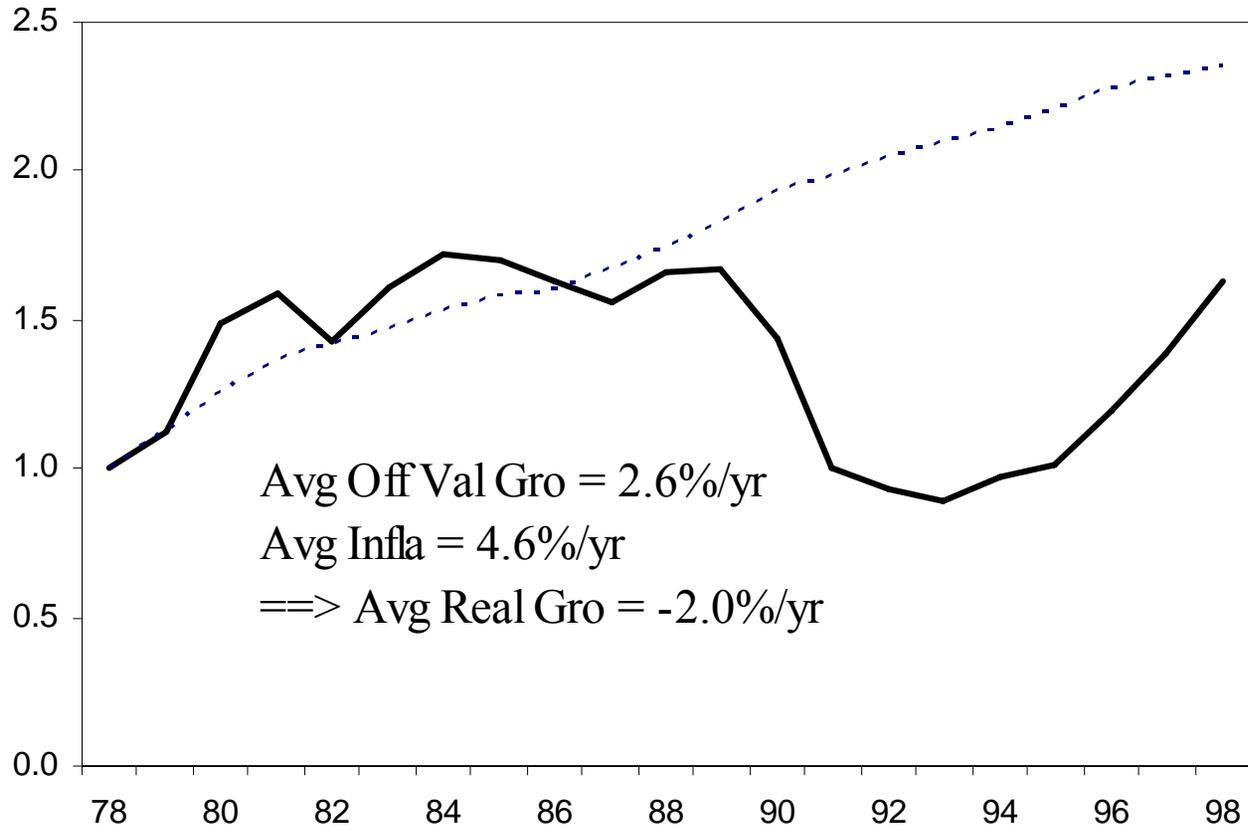Evidence of rental growth rates: Leases signed in this building . . .

Donnelley Bldg Rent History: Current Office Leases

Lease Regression of Log Rent onto Historical Time of Lease Signing

$Y = 2.84 - (0.00093)X$

Ln of Rent/SF (y-axis), values: 3.5, 3.3, 3.1, 2.9, 2.7, 2.5, 2.3, 2.1, 1.9, 1.7, 1.5

Months since 1992 (x-axis), values: 0, 10, 20, 30, 40, 50, 60, 70, 80, 90

$Rent_t = (Rent_0)e^{tg}$

$Ln(Rent_t) = Ln(Rent_0) + tg$

$(Rent_{12}/Rent_0) - 1 = e^{12g} - 1 = (2.7183)^{12*(-0.00093)} - 1 = -1.1\%$ per year = Ann. rent trend, 92-98.

Infla (92-98) = 2.4%/yr.

➔ Real rent trend = -1.1% - 2.4% = -3.5%/yr.

NCREIF Office Properties NOI Level

NOI Gro Rate = 0.9%/yr
Infla = 4.6%/yr
Real NOI Gro Rate = 0.9-4.6 = -3.6%/yr

Index of Office Property Values (NCREIF)

Avg Off Val Gro = 2.6%/yr
Avg Infla = 4.6%/yr
==> Avg Real Gro = -2.0%/yr

Office Values · · · · · · Inflation (CPI)

Year

Section 11.2:

"Opportunity Cost of Capital" (OCC) at the Property Level

or:

WHERE DO DISCOUNT RATES COME FROM?...

Broad Answer:
THE CAPITAL MARKETS

That is, competing investment opportunities.

(This is so, whether we are talking about IV or MV.)

IN DCF APPLICATIONS, KEEP IN MIND WHAT THE DISCOUNT RATE IS...

Disc. Rate   = Required Return

$\qquad\qquad$ = Oppty. Cost of Capital

$\qquad\qquad$ = *Expected <u>total</u> return*

$\qquad\qquad$ = r

$\qquad\qquad$ = r_f + RP

$\qquad\qquad$ = y + g,

among investors in the market today

for assets similar in risk to the property in question.

Take the $r = r_f + RP$ approach . . .

- For typical 10 yr horizon investment:

- r_f = Expected average short-term T-Bill yield over life of R.E. investment, well approximated by 10 yr T-Bond yld – 100 bps ("yield curve effect"). (Bond mkt's expectation of avg future short-term T-Bill yields over the next 10 years.)

- e.g., if T-Bond yld = 5%, then r_f = T-Bond yld – 150 bps = 5% - 1.5% = 3.5%.

- RP = 250 to 400 bps for "institutional" investment property (based on NCREIF historical avg, ≈ ½ Stk Mkt RP), ➔ *OCC = 3.5% + (2.5%-4%) = 6%-7.5% (or so)*;

- RP = 500 to 700 bps for "non-institutional" investment property (smaller, higher risk, less liquid), ➔ *OCC = 8% - 11%*.

Take the *r = y + g* approach . . .

- *y = "cap rate" (less CapEx)* = e.g., in 2005 in the U.S. this was about 5% - 6% for "institutional" investment property, more like 7% - 9% for "non-institutional" investment property.

- Realistic growth rate *g* = Historical rental mkt growth rate – Historical inflation + Realistic projected future inflation (Bond mkt T-Bond yld – Infla-adjusted T-Bond yld *"TIP"*) – Property real depreciation rate (≈ 1%- 2%/yr)

- Typically *g* = 0% to 2% in most markets.

- ➔ *r = y + g* = e.g., in 2005 in U.S. ≈ 6% to 7% "institutional", 8% to 10% "non-institutional".

    (Remember: This is meant to be applied to <u>property-level</u> CFs.)

11.2.3 Historical Evidence about R.E. OCC in the U.S.

Exhibit 11-4: Historical return, risk, and risk premia, 1970-2003

Asset Class	Total Return	Volatility	Risk Premium
T Bills	6.30%	2.83%	NA
G Bonds	9.74%	11.76%	3.44%
Real Estate	9.91%	9.02%	3.61%
Stocks (S&P500)	12.72%	17.48%	6.42%

Source: NCREIF, Ibbotson data as modified by authors in Exhibit 7-9 (see Sect.7.2.2 in Ch.7).

11.2.4 Survey Evidence about R.E. OCC in the U.S.

Exhibit 11-5:

Exhibit 11-4: Backward-looking vs Forward-looking Total Returns in the Property Market: NCREIF vs Korpacz.
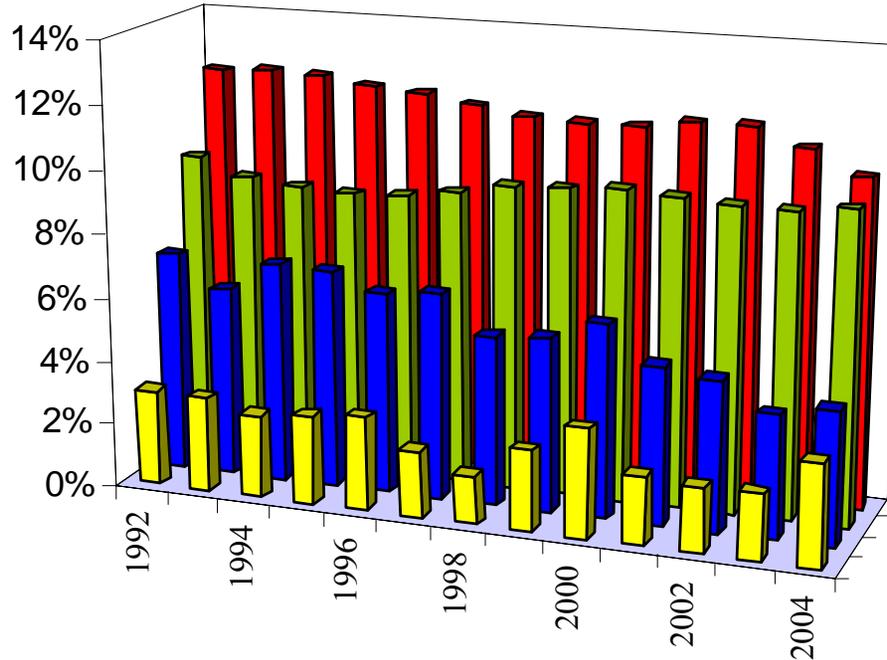
What to make of the difference between the red and the green bars?...

Perhaps a little tinting in the shades?...

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Inflation	3.01%	2.99%	2.61%	2.78%	2.96%	2.07%	1.48%	2.54%	3.41%	2.11%	2.02%	2.03%	3.16%
LT Bond	6.95%	5.98%	6.92%	6.86%	6.33%	6.48%	5.34%	5.45%	6.10%	4.96%	4.71%	3.86%	4.21%
NCREIF(Hist)*	9.67%	9.15%	8.99%	8.91%	8.98%	9.23%	9.56%	9.64%	9.76%	9.66%	9.54%	9.53%	9.71%
Korpacz IRR	12.15%	12.25%	12.18%	11.96%	11.82%	11.59%	11.35%	11.28%	11.29%	11.54%	11.56%	11.00%	10.28%

Survey avg ≈ 200 bps > Hist.avg.

Exhibit 11-5: Stated going-in IRRs, Cap Rates, and Inflation

Exhibit 11-6:
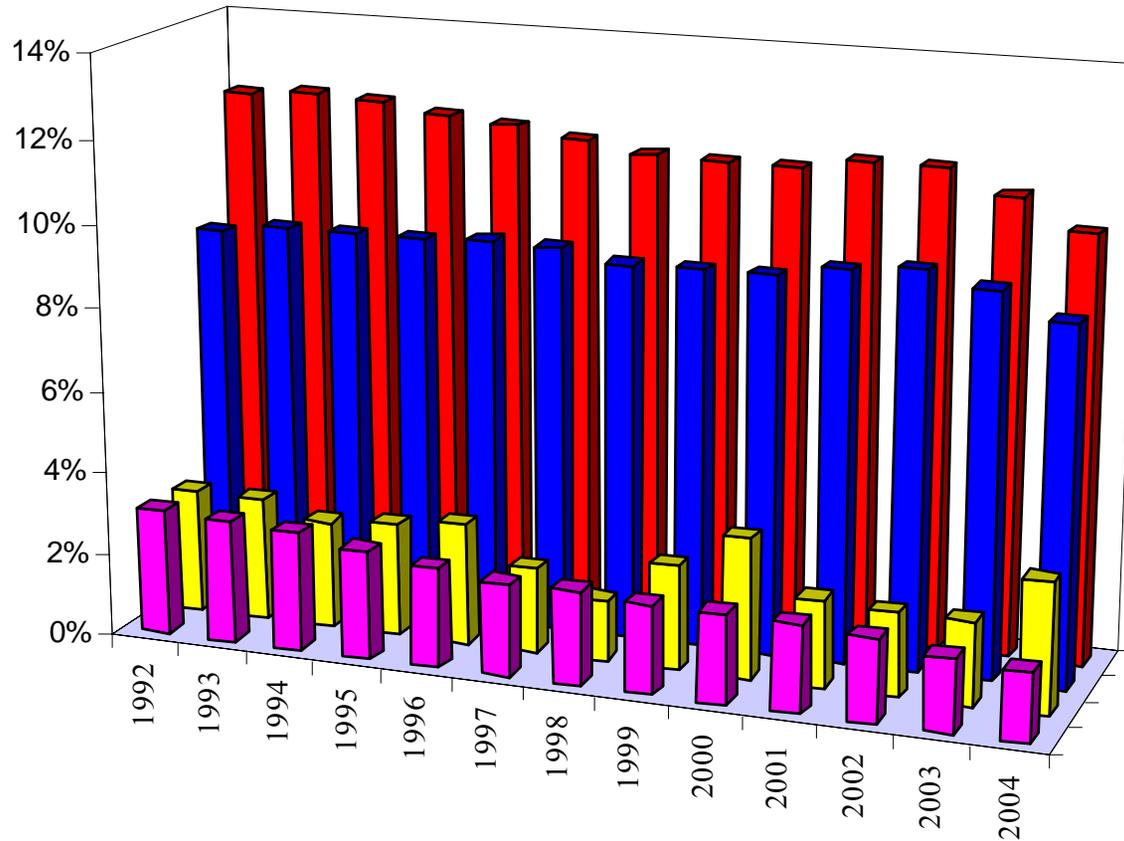
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
■ IRR - OAR	3.06%	2.97%	2.89%	2.65%	2.43%	2.24%	2.27%	2.15%	2.15%	2.12%	2.01%	1.77%	1.66%
□ Inflation	3.01%	2.99%	2.61%	2.78%	2.96%	2.07%	1.48%	2.54%	3.41%	2.11%	2.02%	2.03%	3.16%
■ Korpacz OAR	9.09%	9.28%	9.29%	9.31%	9.39%	9.35%	9.08%	9.13%	9.14%	9.42%	9.55%	9.23%	8.62%
■ Korpacz IRR	12.15	12.25	12.18	11.96	11.82	11.59	11.35	11.28	11.29	11.54	11.56	11.00	10.28

How to **"*back out*"** implied discount rates from "cap rates" (OAR) observed from transaction prices in the property market...

Cap rate $= \text{NOI} / \text{V}$

$\phantom{\text{Cap rate}} \approx \text{CF} / \text{V}$

$\phantom{\text{Cap rate}} = y.$

Therefore, from market transaction data...

1) Observe prices (V)
2) Observe NOI of sold properties.
3) Therefore, observe "cap rates" = NOI / V.
4) Compute: $r = y + g \approx$ cap rate $+ g$.

So we can get an idea what the market's expected total return (discount rate) is for different types of properties by:

1. **observing the cap rates at which they are sold,**

2. **and then making reasonable assumptions about growth expectations (g).**

But, watch out for _capital expenditures_:

$y = CF / V$

$cap\ rate = NOI / V$

$CF = NOI - CI,$
   (unless NOI is already net of a "reserve" for CI)
   $CI / V \approx 1\% - 2\%$ on avg in long run (usually).

Therefore:
   $r = y + g$
   $= (cap\ rate) + g - (CI/V),$
                unless cap rate already net of CI.

Watch out for terminology:

In Brealey-Myers "capitalization rate" is often used to refer to "r", the total cost of capital (especially in corporate finance). "r" is also sometimes called the "total yield" (especially in the appraisal profession).

Typical per annum OCC ("going-in IRR") rates (late 1990s) . . .

For high quality ("class A", "institutional quality") income property:
- **10% - 12%**, stated.
- **8% - 10%**, realistic.

Lower quality or more risky income property (e.g., hotels, class B commercial, turnarounds, "mom & pops"):
- **12% - 15%**

Raw land (speculation):
- **15% - 30%**

Typical per annum OCC ("going-in IRR") rates (cerca 2005) . . .

For high quality ("class A", "institutional quality") income property:

- **7% - 9%**, stated.
- **5% - 7%**, realistic.

Lower quality or more risky income property (e.g., hotels, class B commercial, turnarounds, "mom & pops"):
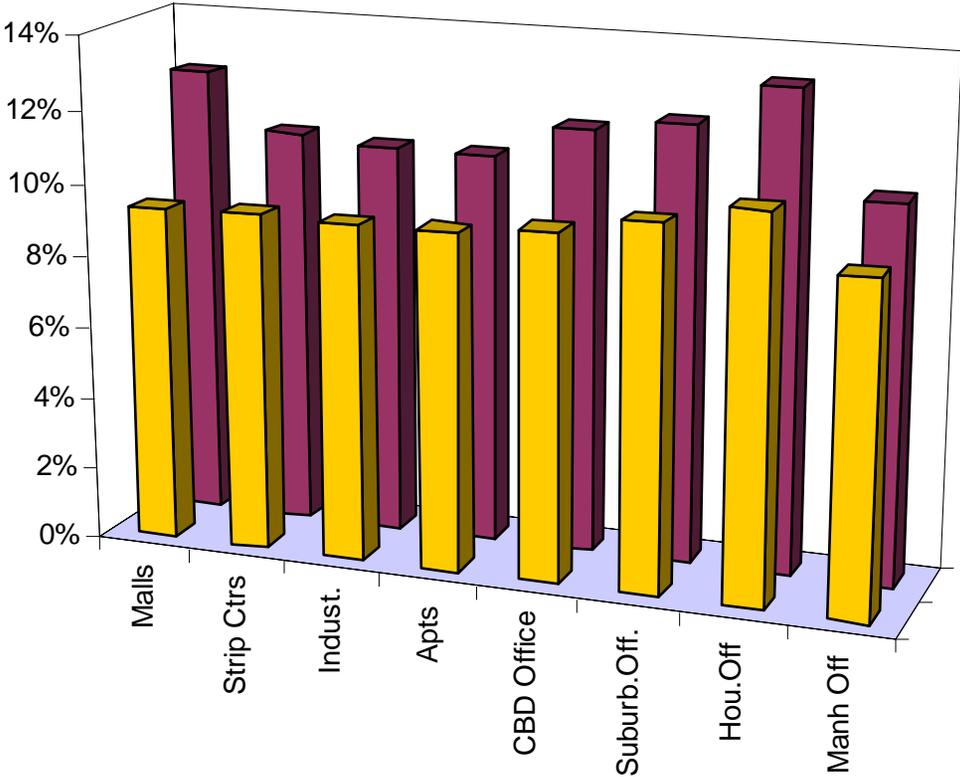
- **8% - 10%**

Raw land (speculation):

- **12% - 25%**

11.2.6 Variation in Return Expectations Across Property Types

**Exh.11-6a: Investor Total Return Expectations (IRR) for Various Property Types***

Exhibit 11-7a:

***Source: Korpacz Investor Survey, 1st quarter 2005**

	Malls	Strip Ctrs	Indust.	Apts	CBD Office	Suburb. Off.	Hou.Off	Manh Off
■ Institutional	9.27%	9.35%	9.28%	9.31%	9.56%	10.03%	10.58%	9.11%
■ Non-institutional	12.53%	11.00%	10.81%	10.80%	11.68%	12.05%	13.19%	10.38%

Exh.11-6b: Investor Cap Rate Expectations for Various Property Types*
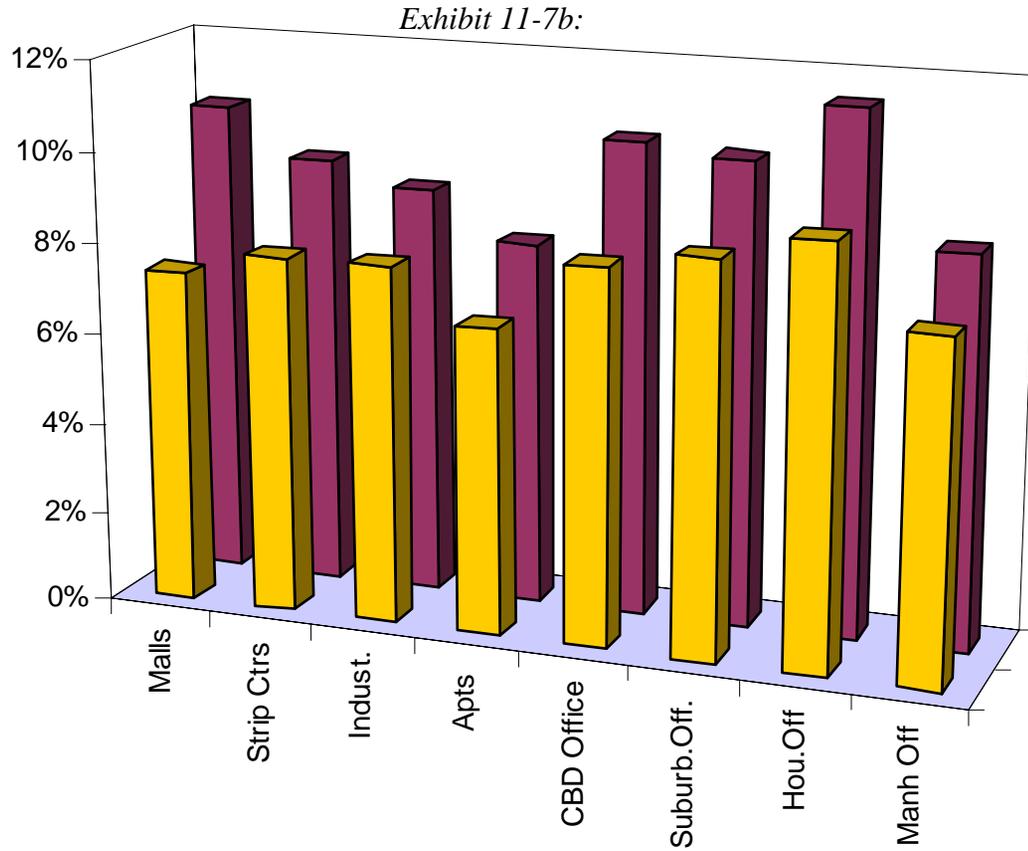
Exhibit 11-7b:

*Source: Korpacz Investor Survey, 1st quarter 2005

	Malls	Strip Ctrs	Indust.	Apts	CBD Office	Suburb. Off.	Hou.Off	Manh Off
◻ Institutional	7.33%	7.86%	7.88%	6.74%	8.26%	8.63%	9.19%	7.45%
◼ Non-institutional	10.51%	9.50%	9.02%	8.00%	10.38%	10.18%	11.44%	8.59%

Note that the difference in OCC tends to be much greater between "institutional" vs "non-institutional" quality real estate, than between most usage types of property (office, retail, industrial, residential) *within* either of those two categories.

Why do you suppose this is? . . .