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 blds 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 mgt expense 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.
### Exhibit 11-2: The Noname Building: Cash Flow Projection

<table>
<thead>
<tr>
<th>Item:</th>
<th>Year:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>$100,000</td>
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<td>$100,000</td>
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<tr>
<td>Net Cash Flow (operations)</td>
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<td>$201,248</td>
<td>$266,701</td>
<td>$150,100</td>
<td>$164,442</td>
<td>$145,611</td>
<td>$150,103</td>
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<td>Net Cash Flow (reversion)</td>
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<td>$172,183</td>
<td>$201,248</td>
<td>$266,701</td>
<td>$150,100</td>
<td>$164,442</td>
<td>$145,611</td>
<td>$150,103</td>
<td>$272,828</td>
<td>$153,053</td>
<td>$277,139</td>
<td></td>
</tr>
<tr>
<td>IRR @ $2,000,000 price: 10.51%</td>
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</table>
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...
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 . . .
\[ \text{Rent}_t = (\text{Rent}_0)e^{tg} \]
\[ \ln(\text{Rent}_t) = \ln(\text{Rent}_0) + tg \]
\[ \frac{\text{Rent}_{12}}{\text{Rent}_0} - 1 = e^{12g} - 1 = (2.7183)^{12\times(-0.00093)} - 1 = -1.1\% \text{ per year} = \text{Ann. rent trend, 92-98}. \]
\[ \text{Infla (92-98)} = 2.4\%/\text{yr}. \]
\[ \Rightarrow \text{Real rent trend} = -1.1\% - 2.4\% = -3.5\%/\text{yr}. \]
NOI Gro Rate = 0.9%/yr
Infla = 4.6%/yr
Real NOI Gro Rate = 0.9-4.6 = -3.6%/yr
Avg Off Val Gro = 2.6%/yr
Avg Infla = 4.6%/yr
==> Avg Real Gro = -2.0%/yr
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
= Oppty. Cost of Capital
= Expected total return
= r
= r_f + RP
= y + g,

among investors in the market today

for assets similar in risk to the property in question.
Take the \( r = r_f + \mathbf{RP} \) 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\%.

- \( \mathbf{RP} = 250 \text{ to } 400\) bps for “institutional” investment property (based on NCREIF historical avg, \( \approx \frac{1}{2} \text{ Stk Mkt RP} \), \( \Rightarrow \) \( \mathbf{OCC} = 3.5\% + (2.5\%-4\%) = 6\%-7.5\% \text{ (or so)} \);

- \( \mathbf{RP} = 500 \text{ to } 700\) bps for “non-institutional” investment property (smaller, higher risk, less liquid), \( \Rightarrow \) \( \mathbf{OCC} = 8\% - 11\% \).
Take the \( r = y + g \) approach . . .

- \( y = \text{“cap rate” (less CapEx)} \) = 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.

- \( \Rightarrow r = y + g \) = e.g., in 2005 in U.S. ≈ 6% to 7% “institutional”, 8% to 10% “non-institutional”.

(\textit{Remember: This is meant to be applied to property-level 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

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Total Return</th>
<th>Volatility</th>
<th>Risk Premium</th>
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<tr>
<td>T Bills</td>
<td>6.30%</td>
<td>2.83%</td>
<td>NA</td>
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<tr>
<td>G Bonds</td>
<td>9.74%</td>
<td>11.76%</td>
<td>3.44%</td>
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<tr>
<td>Real Estate</td>
<td>9.91%</td>
<td>9.02%</td>
<td>3.61%</td>
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<tr>
<td>Stocks (S&amp;P500)</td>
<td>12.72%</td>
<td>17.48%</td>
<td>6.42%</td>
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</table>

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:

What to make of the difference between the red and the green bars?...

Perhaps a little tinting in the shades?...

Survey avg ≈ 200 bps > Hist.avg.
Exhibit 11-5: Stated going-in IRRs, Cap Rates, and Inflation

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<thead>
<tr>
<th>Year</th>
<th>IRR - OAR</th>
<th>Inflation</th>
<th>Korpacz OAR</th>
<th>Korpacz IRR</th>
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<td>3.01%</td>
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<td>1993</td>
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<td>2.99%</td>
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<td>1994</td>
<td>2.89%</td>
<td>2.61%</td>
<td>9.29%</td>
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<td>1995</td>
<td>2.65%</td>
<td>2.78%</td>
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<tr>
<td>1996</td>
<td>2.43%</td>
<td>2.96%</td>
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<tr>
<td>1999</td>
<td>2.15%</td>
<td>2.54%</td>
<td>9.13%</td>
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<td>2000</td>
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<tr>
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<td>2003</td>
<td>1.66%</td>
<td>2.03%</td>
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<td>3.16%</td>
<td>8.62%</td>
<td>10.28</td>
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How to "back out" implied discount rates from "cap rates" (OAR) observed from transaction prices in the property market...

Cap rate \( = \frac{\text{NOI}}{V} \)
\( \approx \frac{\text{CF}}{V} \)
\( = y. \)

Therefore, from market transaction data...
1) Observe prices \( (V) \)
2) Observe NOI of sold properties.
3) Therefore, observe "cap rates" \( = \frac{\text{NOI}}{V}. \)
4) Compute: \( r = y + g \approx \text{cap rate} + g. \)
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:

\[ y = \frac{CF}{V} \]

\[ \text{cap rate} = \frac{NOI}{V} \]

\[ CF = NOI - CI, \]

(unless NOI is already net of a "reserve" for CI)

\[ CI / V \approx 1\% - 2\% \text{ on avg in long run (usually)}. \]

Therefore:

\[ r = y + g \]

\[ = (\text{cap rate}) + g - (CI/V), \]

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

*Source: Korpacz Investor Survey, 1st quarter 2005*
Exh.11-6b: Investor Cap Rate Expectations for Various Property Types*

<table>
<thead>
<tr>
<th>Property Type</th>
<th>Institutional (%)</th>
<th>Non-institutional (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malls</td>
<td>7.33%</td>
<td>10.51%</td>
</tr>
<tr>
<td>Strip Ctrs</td>
<td>7.86%</td>
<td>9.50%</td>
</tr>
<tr>
<td>Indust.</td>
<td>7.88%</td>
<td>9.02%</td>
</tr>
<tr>
<td>Apts</td>
<td>6.74%</td>
<td>8.00%</td>
</tr>
<tr>
<td>CBD Office</td>
<td>8.26%</td>
<td>10.38%</td>
</tr>
<tr>
<td>Suburb. Off.</td>
<td>8.63%</td>
<td>10.18%</td>
</tr>
<tr>
<td>Hou. Off.</td>
<td>9.19%</td>
<td>11.44%</td>
</tr>
<tr>
<td>Manh Off.</td>
<td>7.45%</td>
<td>8.59%</td>
</tr>
</tbody>
</table>

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