“Capital Structure”

= How investment (asset ownership) is financed . . .

= Use of debt vs equity (how much of each) as sources of financial capital.

Traditionally this question has focused on publicly-traded corporations, but…

• Much real estate investment is made more directly, not through publicly-traded companies.

• Much real estate investment is financed at the project level (individual assets are financed directly).

• Real estate assets trade directly, and are relatively simple, transparent cash generators.
15.1 Debt When There is an Equity Capital Constraint

In theory, publicly-traded corporations never face an equity capital constraint (if the stock market is efficient). Whenever they face a positive-NPV investment opportunity, they can simply issue new stock to obtain equity financing.

This is not the case for private companies or individuals.

Nor for tax-exempt institutions such as pension funds.

In real estate investment, debt finance can be useful simply as a NECESSARY source of capital if you face an equity constraint, and:

1. You face a positive (or at least non-negative) NPV opportunity (at least from IV perspective), or

2. You seek more diversification across properties than your equity alone can allow, given the size of properties and the amount of your equity.
A particular point for small-scale individual entrepreneurs:

Use debt financing to leverage your “human capital” (as well as your financial capital):

- Your skill and talent and knowledge enable you to successfully manage income property.

- This enables you to earn “wages” or “profits” effectively as a “property manager” or “asset manager”.

- The more properties you own, the more you can guarantee yourself a job managing, hence, the more earnings you can make on your managerial human capital.

- Use of debt allows you to own more properties, to extend your human capital earnings.

(How else could you possibly cash in on such human capital without taking on the financial investment role as well?...)
How would the leveraging of human capital show up in the quantitative DCF and NPV mechanics we described in previous chapters? . . .

- Define multiple “profit centers” for the firm, some of which derive from operations as distinct from passive investment.
- “Operating expenses” that are pure cash outflows from the investment perspective, may contain an element of profit from the operational perspective.

Thus, a deal contains more than one source of value:

- NPV from the pure investment perspective (return on financial capital).
- NPV from operational profit centers (return on human capital).
- Together the two (or more) NPVs above equal the total NPV of the deal from the firm’s (or individual’s) particular IV (“investment value”) perspective (see Ch.12).

15.1.3: Beware: constraints on equity capital availability may not be as great or as binding as you first might think. There are lots of ways to “joint venture” in real estate deals.
3. Leverage as a "disciplinary tool" to "incentivize" good mgt:
- Real estate physical assets are "easy to manage, not much risk or excitement or growth potential in bricks & mortar" (e.g., compared to high-tech industries, world trade, etc).
- With not much downside and not much upside, managers may tend to get "lazy", letting value-enhancing possibilities pass them by unnoticed.
- With sufficient leverage, real estate becomes a high-risk, high-growth investment, making it sufficiently "exciting" to attract good mgrs, giving mgrs sufficient incentive to max value.
- This argument not based on a capital constraint or capital mkt failure for small investors, and so this argument for debt financing applies not only to small individual investors but to large insts & REITs.
15.2.2

Debt and Liquidity

1. Leverage reduces the equity investor's "liquidity":
   - "Liquidity" = Ability to quickly obtain "full value" as cash.
   - Underlying (physical) R.E. assets are illiquid.
   - By not borrowing to the hilt, you can obtain cash by mortgaging the prop. (i.e., if you don't borrow now, you can borrow later), thereby reducing the illiquidity problem of real estate investment.
   - Liq. valuable because it gives the investor flexibility, provides options: Pounce on pos.-NPV opportunities; Avoid being forced into neg.-NPV deals.
   - Liq. Allows you to use the R.E. cycle to your advantage instead of being a victim of it. (More important in R.E. than stocks due to lack of info.effic. in R.E. mkts.)
2. The "Cost of Financial Distress" (COFD):
   - (See Brealey-Myers Ch.18.)
   - Bankruptcy or foreclosure has large "deadweight costs".
   - Also “agency costs”: High L / V ratio ➔ Conflict of interest betw equity owner vs debtholder. Can cause prop.owner to act suboptimally (e.g.: avoid CI, pad expenses, high-stakes “repositioning” of rent roll, exercise mortgagor’s “put”): "moral hazard".
   - Mere probability of these costs (deadweight, agency) reduces value of prop. if L / V too high (even though L / V still < 1).
   - Thus, optimal L / V always < 1. However,…
   - The "easy management", low risk nature of R.E., & transparency (relatively easy for outsider to detect poor mgt, in part via ability to observe prop.val. in asset mkt) ➔ COFD does not “kick in” for R.E. until higher L / V ratio than for other types of investments (e.g., typical stock)
Exhibit 15-1: Cost of Financial Distress

Effect of Expected Costs of Financial Distress (COFD) on the Value of the Firm and on Property Value

Image by MIT OCW.
2. Inflation:

- "The more you borrow, the more money you make just from inflation!"
- *Do borrowers know more about inflation than lenders? . . .*
- Inflation is only the borrower’s friend *ex post.*
- *Ex ante* (which is when it matters for leverage decision) the inflation argument is a fallacy. No positive NPV to borrower in loan transaction due to inflation.

*However, fixed-rate debt leverage makes equity position more of an "inflation hedge".*
Exhibit 15-2: Example of effect of inflation on ex-post levered equity appreciation returns with 1-year loan...

<table>
<thead>
<tr>
<th>Scenario:</th>
<th>Ex Post-</th>
<th>Ex Ante</th>
<th>Ex Post+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation:</td>
<td>0%</td>
<td>2%</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Values***

<table>
<thead>
<tr>
<th>Property:</th>
<th>Yr.0</th>
<th>Yr.1</th>
<th>Yr.0</th>
<th>Yr.1</th>
<th>Yr.0</th>
<th>Yr.1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$100</td>
<td>$99</td>
<td>$100</td>
<td>$101</td>
<td>$100</td>
<td>$103</td>
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<tr>
<td>Debt Balance Payable:</td>
<td>$60</td>
<td>$60</td>
<td>$60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$60</td>
<td>$60</td>
<td>$60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levered Equity:</td>
<td>$40</td>
<td>$39</td>
<td>$40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$41</td>
<td>$43</td>
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</table>

**Appreciation %***

<table>
<thead>
<tr>
<th>Property:</th>
<th>Yr.0</th>
<th>Yr.1</th>
<th>Yr.0</th>
<th>Yr.1</th>
<th>Yr.0</th>
<th>Yr.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Returns:</td>
<td>-1.0%</td>
<td>1.0%</td>
<td>3.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-2.5%</td>
<td>2.5%</td>
<td>7.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal Deviation from ex ante:</td>
<td>-2.0%</td>
<td>0.0%</td>
<td>2.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-5.0%</td>
<td>0.0%</td>
<td>5.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Returns:</td>
<td>-1.0%</td>
<td>-1.0%</td>
<td>-1.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-2.5%</td>
<td>0.5%</td>
<td>3.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Deviation from ex ante:</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-2.9%</td>
<td>0.0%</td>
<td>2.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Real depreciation rate = 1%/yr.*
15.3

Project Level Capital Structure in Real Estate

Much real estate finance occurs at the micro-level of individual investments in properties, projects, or “deals.”

Hence, much “capital structure” in real estate occurs at this micro-level.

Why?...

• Much real estate investment is still done directly by individuals or small entrepreneurial firms.

• Also real estate assets are relatively simple, tangible and “transparent”: Makes them ideal candidates for secured debt and other types of project-level financing

• (External investors need to feel confident that they know what is going on in the investment even if they don’t have direct management control or highly specialized expertise.)

• Also, the law governing real property rights facilitates this type of finance.
General points:

Just because finance is at the project (asset) level does not alter the basic principles and considerations we have already discussed.

**Classical** micro-level real estate finance consists of **equity** and **debt** (mortgag):

- Chs 13 & 14, & Sects 15.1 & 15.2 apply.

In recent years, capital markets have become more sophisticated.

More types of investment vehicles tailored to a more diverse range of investors. Result is growth in more complex capital structures at the micro-level.

Consider some of the **new, additional** types of financing and capital structures being used for real estate investments in the U.S. today . . .
Mezzanine Debt

So-called “mez debt” is an investment vehicle structured as a loan, typically including a “lien” on the underlying property, but subordinated to other specified senior investment vehicles.

Mez debt investors typically don’t receive return of or on their investment until after senior debt holders are fully compensated for what is owed them.

Mez debt capital is typically “drawn” or placed into the investment before the senior debt capital.

Mez debt thus provides a buffer of capital exposure helping to protect the senior debt investors.

Mez debt typically carries interest rates considerably above those of first mortgages.
Preferred Equity

Similar to mez debt (provides a contractually-stated dividend or yield payment in the form of a “guaranteed” return).

But normally subordinated to any secured debt on the property (including mez debt).

Differs from mez debt in lack of collateral, no formal lien on the underlying real estate.

Preferred equity precedes common equity in priority of claims.

Preferred equity obtains its returns usually purely in the form of a preferred dividend (no appreciation of principle or capital paid in).

Sometimes the preferred return not paid out currently accumulates with (or without) compounding.

In capital structures where there is both mez debt and preferred equity, usually the preferred equity goes in before, and comes out after, the mez debt capital, and the preferred equity return is higher than the mez debt return.
Common (or Residual) Equity

This is normally the property ownership entity that has the operational management responsibility and primary governing control of the project.

Common equity has no guaranteed or contractual return and receives only the residual cash flow after the other senior investment vehicles have been paid their preferred returns.

(However, common equity is sometimes entitled to return of its paid-in capital with zero return prior to preferred equity being paid its preferred return.)
Differentiated Equity Partners (Classes)

Differentiate investors according to what they bring into the deal and what they want to get out of it.

Entrepreneurial investor may essentially bring operational management ability and the deal itself (e.g., in a development, the land with entitlements and permits, as well as the project design).

Money partner brings most of the required equity cash but lacks the ability or desire to manage the operation of the project or property.

Define different “classes” of partners or stockholders in the ownership equity entity, e.g.:

Entrepreneurial partner has operational control.

Money partner has control over major capital decisions (financing and asset buy/sell decisions).

Entrepreneurial partner may or may not subordinate some of its equity claim to that of the money partner (though the entrepreneurial partner may also take a fee for service).
Differentiated Equity Partners (Classes), cont.:

“Splits” . . .

Common arrangement splits the equity entity’s overall cash flow among the partners on a *pro rata pari passu* basis (proportionately relative to their capital contributions)…

Until the equity entity achieves a certain “hurdle” return (specified either on a cumulative current or a look-back IRR basis, or both);

Beyond that hurdle return the cash flow split is differentiated to provide entrepreneurial partner with a proportion greater than its capital contribution (either on a current or back-end basis).

This is called a “promote,” and surpassing the return hurdle is referred to as “earning the promote.”

Provides partner charged with operational management more incentive to make the project a success. (Such success benefits all investors in the project.)

(The promote structure may also provide some degree of “reward” for putting the deal together in the first place.)
15.3.2: Numerical Example of Multi-tiered Project Capital Structure

Consider the $1,000,000 apartment property investment example of Ch.14. Only now let’s assume it is a development project:

- Time-to-build: 1 year (projected value on completion = $1,000,000).
- Up-front land cost: $200,000.
- Construction cost: $750,000 payable on completion (including interest), financed by 1st-lien construction loan.
- Hence: $950,000 total devlpt cost ($50,000 projected “entrepreneurial profit”).
- Take out construction loan on completion with $750,000 permanent mortgage (1st-lien).
- Equity ownership entity is a “joint venture” with 2 partners: “entrepreneurial” (residual) and “money” (preferred), as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Mortgage Interest Rate</td>
<td>5.50%</td>
</tr>
<tr>
<td>Preferred Equity Partner Contribution</td>
<td>90%</td>
</tr>
<tr>
<td>Preferred Return</td>
<td>6.00%</td>
</tr>
<tr>
<td>Preferred Partner Residual Share</td>
<td>50%</td>
</tr>
</tbody>
</table>

↓ Amort $2000/yr.
Recall the apartment investment example of Chapter 14 . . .

**Exhibit 14-2: Example After-Tax Income & Cash Flow Proformas . . .**

<table>
<thead>
<tr>
<th>Property Purchase Price (Year 0):</th>
<th>$1,000,000</th>
<th>Unlevered:</th>
<th>Levered:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depreciable Cost Basis:</td>
<td>$800,000</td>
<td>Before-tax IRR:</td>
<td>6.04%</td>
</tr>
<tr>
<td>Ordinary Income Tax Rate:</td>
<td>35.00%</td>
<td>After-tax IRR:</td>
<td>4.76%</td>
</tr>
<tr>
<td>Capital Gains Tax Rate:</td>
<td>15.00%</td>
<td>Ratio AT/BT:</td>
<td>0.787</td>
</tr>
<tr>
<td>Depreciation Recapture:</td>
<td>2.50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Year 1-10 Operating, Reversion, Total

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating</th>
<th>Reversion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Item</td>
<td>Yr.10</td>
<td>Yr.10</td>
</tr>
<tr>
<td></td>
<td>NOI</td>
<td>$60,000</td>
<td>$60,000</td>
</tr>
<tr>
<td></td>
<td>- Depr. Exp.</td>
<td>$29,091</td>
<td>$29,091</td>
</tr>
<tr>
<td></td>
<td>=Net Income (BT)</td>
<td>($10,341)</td>
<td>($9,631)</td>
</tr>
<tr>
<td></td>
<td>- IncTax</td>
<td>($3,619)</td>
<td>($3,371)</td>
</tr>
<tr>
<td></td>
<td>=Net Income (AT)</td>
<td>($6,722)</td>
<td>($6,260)</td>
</tr>
<tr>
<td></td>
<td>Adjusting Accrual to Reflect Cash Flow:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Cap. Imprv. Expdtr.</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td>+ Depr. Exp.</td>
<td>$29,091</td>
<td>$29,091</td>
</tr>
<tr>
<td></td>
<td>- DebtAmort</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td></td>
<td>=EATCF</td>
<td>$20,369</td>
<td>$20,831</td>
</tr>
<tr>
<td></td>
<td>+ IncTax</td>
<td>($3,619)</td>
<td>($3,371)</td>
</tr>
<tr>
<td></td>
<td>=EBTCF</td>
<td>$16,750</td>
<td>$17,460</td>
</tr>
</tbody>
</table>

### CASH FLOW COMPONENTS FORMAT

<table>
<thead>
<tr>
<th>Operating</th>
<th>Year</th>
<th>Item</th>
<th>Yr.10</th>
<th>Yr.10</th>
<th>Yr.10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accrual Items:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOI</td>
<td>$60,000</td>
<td>$60,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cap. Imprv. Expdtr.</td>
<td>$0</td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>=PBTCF</td>
<td>$60,000</td>
<td>$60,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Debt Svc</td>
<td>$43,250</td>
<td>$43,140</td>
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</tr>
<tr>
<td>=EBTCF</td>
<td>$16,750</td>
<td>$17,460</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- taxNOI</td>
<td>$21,000</td>
<td>$21,210</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ DTS</td>
<td>$10,182</td>
<td>$10,182</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>=EATCF</td>
<td>$20,369</td>
<td>$20,831</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Permanent Mortgage Interest Rate 5.50%

### Preferred Equity Partner Contribution 90%

### Preferred Return 6.00%

### Preferred Partner Residual Share 50%
The deal structure . . .

Money partner contributes 90% of the equity cash requirement (that is, $180,000 of the $200,000 land price at Year 0).

Entrepreneurial partner contribute the rest of the cash, has operational management control.

Money partner receives annual preferred return of 6% (any unpaid current return accumulates forward with annual compounding).

Any positive net operating cash flow from the property (after the debt service has been paid) will go:

1\(^{st}\) To provide money partner with preferred 6% return, then

2\(^{nd}\) Split 50/50 between the two partners (even though the money partner contributes 90% of the equity capital).

Reversion cash flow from net resale proceeds (after debt repayment) will go first to provide the money partner with her preferred 6% return.

Any remaining cash available upon termination will go:

1\(^{st}\) To pay back the entrepreneurial partner for his capital contribution (with zero return) and next

2\(^{nd}\) Split 50/50 between the two partners.
### Calendar Years Ending:

<table>
<thead>
<tr>
<th>Year</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Acquisition</td>
<td>200,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard &amp; Soft Development Costs</td>
<td>750,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Devlp Phase Cash Requirements (200,000)</td>
<td>(750,000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devlp Phase Debt Funding (Constr Loan)</td>
<td>200,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Loan Repayment</td>
<td>(750,000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Permanent Loan Amount (Take Out)</td>
<td>750,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Operating PBTCF</td>
<td>60,000</td>
<td>60,600</td>
<td>11,206</td>
<td>61,818</td>
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<td>63,061</td>
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<td>64,971</td>
<td>65,621</td>
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<td></td>
</tr>
<tr>
<td>Reversion PBTCF</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,104,622</td>
<td></td>
</tr>
<tr>
<td>Permanent Loan Repayment</td>
<td>750,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating EBTCF</td>
<td>16,750</td>
<td>17,460</td>
<td>(31,824)</td>
<td>18,898</td>
<td>19,626</td>
<td>20,361</td>
<td>21,101</td>
<td>(28,152)</td>
<td>22,601</td>
<td>23,361</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reversion EBTCF</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>374,622</td>
<td></td>
</tr>
</tbody>
</table>

### Preferred Equity Capital Account:

#### Preferred Return Allocation:

- **Beginning Equity Investment Balance**: 0
- **Annual Preferred Investment**: 180,000
- **Preferred Return Earned**: 10,800
- **Preferred Return Paid**: 0
- **Accrued But Unpaid Preferred Return**: 10,800
- **Ending Equity Investment Balance**: 180,000

#### Reversion Preferred Allocations:

- **Allocation to Satisfy Preferred Return Requirement**: (270,080)
- **Allocation to Return Subordinated Investment Requirement**: (270,080)

### Annual CF approximations for purpose of checking fairness of splits

#### Project Level Cash Flows:

- **IRR**
  - Construction Phase: 25.00%
  - Operational Phase: 6.54%
  - Both Phases: (6.54%)

#### Debt Investor Cash Flows:

- **IRR**: 5.50%

#### Entity Level Cash Flows (EBTCF):

- **IRR**
  - Construction Phase: 25.00%
  - Operational Phase: 7.40%
  - Both Phases: 9.09%

#### Preferred Partner Level Cash Flows:

- **IRR**
  - Construction Phase (If sell on completion): 16.89%
  - Both Phases: 8.07%

#### Subordinated Partner Level Cash Flows:

- **IRR**
  - Construction Phase (If sell on completion): 98.00%
  - Both Phases: 16.14%

*Sometimes referred to as "Asset Level".*

**To the LLC joint venture partnership as a whole.*
Preferred equity capital account: First two years...

<table>
<thead>
<tr>
<th>Calendar Years Ending:</th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Cash Requirements as Proposed:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Acquisition</td>
<td>200,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard &amp; Soft Development Costs</td>
<td></td>
<td>750,000</td>
<td></td>
</tr>
<tr>
<td>Total Devlpt Phase Cash Requirements</td>
<td>(200,000)</td>
<td>(750,000)</td>
<td></td>
</tr>
<tr>
<td>Devlpt Phase Total Equity Funding</td>
<td>200,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Devlpt Phase Debt Funding (Constr Loan)</td>
<td></td>
<td>750,000</td>
<td></td>
</tr>
<tr>
<td>Construction Loan Repayment</td>
<td></td>
<td>(750,000)</td>
<td></td>
</tr>
<tr>
<td>Proposed Permanent Loan Amount (Take Out)</td>
<td></td>
<td>750,000</td>
<td></td>
</tr>
<tr>
<td>Operating PBTCF</td>
<td></td>
<td>60,000</td>
<td></td>
</tr>
<tr>
<td>Reversion PBTCF</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>PBTCF</strong></td>
<td></td>
<td><strong>60,000</strong></td>
<td></td>
</tr>
<tr>
<td>Permanent Loan Debt Service</td>
<td></td>
<td></td>
<td>(43,250)</td>
</tr>
<tr>
<td>Permanent Loan Repayment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent Loan Debt CFs</td>
<td>750,000</td>
<td></td>
<td>(43,250)</td>
</tr>
<tr>
<td>Operating EBTCF</td>
<td></td>
<td>16,750</td>
<td></td>
</tr>
<tr>
<td>Reversion EBTCF</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>EBTCF</strong></td>
<td></td>
<td><strong>16,750</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Preferred Equity Capital Account:**

**Preferred Return Allocation:**

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning Equity Investment Balance</td>
<td>0</td>
<td>180,000</td>
<td>190,800</td>
</tr>
<tr>
<td>Annual Preferred Investment</td>
<td>180,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Preferred Return Earned</td>
<td>0</td>
<td>10,800</td>
<td>11,448</td>
</tr>
<tr>
<td>Preferred Return Paid</td>
<td>0</td>
<td>0</td>
<td>(11,448)</td>
</tr>
<tr>
<td>Accrued But Unpaid Preferred Return</td>
<td>0</td>
<td>10,800</td>
<td>0</td>
</tr>
<tr>
<td>Ending Equity Investment Balance</td>
<td>180,000</td>
<td>190,800</td>
<td>190,800</td>
</tr>
</tbody>
</table>

← Return “on”

← But not yet return “of” (current only)
Terminal year (yr.11) Cash Flows and Splits

### Operating PBTCF
- Year 11: 65,621

### Reversion PBTCF
- Year 11: 1,104,622

### PBTCF
- Year 11: 1,170,243

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Loan Debt Service</td>
<td>(42,260)</td>
</tr>
<tr>
<td>Permanent Loan Repayment</td>
<td>(730,000)</td>
</tr>
<tr>
<td>Permanent Loan Debt CFs</td>
<td>(772,260)</td>
</tr>
<tr>
<td>Operating EBTCF</td>
<td>23,361</td>
</tr>
<tr>
<td>Reversion EBTCF</td>
<td>374,622</td>
</tr>
<tr>
<td><strong>EBTCF</strong></td>
<td><strong>397,983</strong></td>
</tr>
</tbody>
</table>

### Preferred Equity Capital Account:
- Preferred Return Allocation:
  - Beginning Equity Investment Balance: 270,080
  - Annual Preferred Investment: 0
  - Preferred Return Earned: 16,205
  - Preferred Return Paid: (16,205)
  - Accrued But Unpaid Preferred Return: 0
  - Ending Equity Investment Balance: 270,080

### Reversion Preferred Allocations:
- Allocation to Satisfy Preferred Return Requirement: (270,080)
- Allocation to Return Subordinated Investment Requirement: (25,998)

### Annual CF approximations for purpose of checking fairness of splits

#### Project Level Cash Flows*: Asset level
- Construction Phase: 1,170,243
- Operational Phase: 1,170,243
- Both Phases: 1,170,243

#### Debt Investor Cash Flows:
- Year 11: 772,260

#### Entity Level Cash Flows (EBTCF)**:
- Construction Phase: 397,983
- Operational Phase: 397,983
- Both Phases: 397,983

#### Preferred Partner Level Cash Flows:
- Construction Phase (If sell on completion): 329,135
- Both Phases: 329,135

#### Subordinated Partner Level Cash Flows:
- Construction Phase (If sell on completion): 68,848
- Both Phases: 68,848

### Entity level oper.CF yr.11.
### Entity level reversion.

**Reflects cumulated unpaid current preferred returns, plus additional capital paid in to finance capital improvement expenditures.**

**Entrepreneurial investment (0 return)**

**Net sale proceeds of property**

**OLB on permanent mortgage**

**Remainder**

**Includes from yr.11 operations:**
- 16205 = 6% of 270080 + 0.5*(23361-16205)=3578.
- From reversion: 270080 + 0.5*(374622-270080-25998).

**OLB on permanent mortgage**

**Remainder**
Resulting expected returns (ex ante):

<table>
<thead>
<tr>
<th>Going-in IRR to:</th>
<th>For Development Phase (1 year)</th>
<th>For Both Phases (11 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underlying Project</td>
<td>25.00%</td>
<td>6.54%</td>
</tr>
<tr>
<td>Undifferentiated Equity Entity</td>
<td>25.00%</td>
<td>9.09%</td>
</tr>
<tr>
<td>Preferred Equity Partner</td>
<td>16.89%</td>
<td>8.07%</td>
</tr>
<tr>
<td>Residual Equity Partner</td>
<td>98.00%</td>
<td>16.14%</td>
</tr>
</tbody>
</table>

Image by MIT OCW.

Are these “fair”? . . .
One way to approach this is to conduct \textit{sensitivity analysis} . . .

e.g., Construct “Optimistic” and “Pessimistic” outcome scenarios, as follows:

- Initial rents such that Year 2 NOI is either $63,000 or $57,000 instead of the proforma (expected) assumption of $60,000. (This results in Year 1 completed building values either $1,050,000 or $950,000, instead of the $1,000,000 base case assumption.)

- Annual NOI growth rate beyond Year 2 either up to 2% or down to 0% instead of the base-case assumption of 1%.

- Year-11 terminal yield (going-out resale cap rate) either down to 4.5% or up to 7.5% from the base case assumption of 6.0%.

Then see if \textit{ex ante} (going-in expected) return risk premia are proportional to risk as defined by the spread in the IRR outcomes...
### Risk & Return Analysis: Partner Breakout...

#### Sensitivity Analysis: Ex Post Return Outcome Range & Risk/Return Analysis:

<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred Equity Partner Contribution</td>
<td>90%</td>
</tr>
<tr>
<td>Preferred Return</td>
<td>6.00%</td>
</tr>
<tr>
<td>Preferred Partner Residual Share</td>
<td>50%</td>
</tr>
<tr>
<td>Riskfree Rate</td>
<td>3.00%</td>
</tr>
</tbody>
</table>

Annual CF approximations for purpose of checking fairness of splits

<table>
<thead>
<tr>
<th>IRRs:</th>
<th>Expected</th>
<th>Optimistic</th>
<th>Pessimistic</th>
<th>Range:</th>
<th>E[RP]:</th>
<th>RP/Range:</th>
<th>Downside Range</th>
<th>RP/DnsdRange</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Level Cash Flows</strong>*:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Phase</td>
<td>25.00%</td>
<td>50.00%</td>
<td>0.00%</td>
<td>50.00%</td>
<td>22.00%</td>
<td>0.44</td>
<td>25.00%</td>
<td>0.88</td>
</tr>
<tr>
<td>Both Phases</td>
<td>6.54%</td>
<td>10.59%</td>
<td>3.14%</td>
<td>7.45%</td>
<td>3.54%</td>
<td>0.47</td>
<td>3.40%</td>
<td>1.04</td>
</tr>
<tr>
<td><strong>Entity Level Cash Flows (EBTCF)</strong>:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Phase</td>
<td>25.00%</td>
<td>50.00%</td>
<td>0.00%</td>
<td>50.00%</td>
<td>22.00%</td>
<td>0.44</td>
<td>25.00%</td>
<td>0.88</td>
</tr>
<tr>
<td>Both Phases</td>
<td>9.09%</td>
<td>18.81%</td>
<td>-10.58%</td>
<td>29.40%</td>
<td>6.09%</td>
<td>0.21</td>
<td>19.67%</td>
<td>0.31</td>
</tr>
<tr>
<td><strong>Preferred Partner Level Cash Flows:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Phase (If sell on completion)</td>
<td>16.89%</td>
<td>30.78%</td>
<td>6.00%</td>
<td>24.78%</td>
<td>13.89%</td>
<td>0.56</td>
<td>10.89%</td>
<td>1.28</td>
</tr>
<tr>
<td>Both Phases</td>
<td>8.07%</td>
<td>14.77%</td>
<td>-9.05%</td>
<td>23.82%</td>
<td>5.07%</td>
<td>0.21</td>
<td>17.11%</td>
<td>0.30</td>
</tr>
<tr>
<td><strong>Subordinated Partner Level Cash Flows:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Phase (If sell on completion)</td>
<td>98.00%</td>
<td>223.00%</td>
<td>-54.00%</td>
<td>277.00%</td>
<td>95.00%</td>
<td>0.34</td>
<td>152.00%</td>
<td>0.62</td>
</tr>
<tr>
<td>Both Phases</td>
<td>16.14%</td>
<td>35.96%</td>
<td>-100.00%</td>
<td>135.96%</td>
<td>13.14%</td>
<td>0.10</td>
<td>116.14%</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Subordinated (entrepreneurial) partner in this deal is getting *less* expected return risk-premium *per unit of risk* than the Senior (money) partner…
This suggests perhaps a modification of the deal structure is in order…

Framework for Evaluating Fairness of Capital Structure Terms

Going-in IRR

98.00%

16.89%

$r_f$

Preferred Partner: 25%

Residual Partner: 277%

Relative Risk (Proxied by IRR Outcome Range)

Diagonal line represents equilibrium or normative return expectations.

Residual Partner is below line.

Chart not drawn to scale.

Image by MIT OCW.

(e.g., this deal structure did not include a pro rata pari passu component.)