

Chapter 18:  
(Section 18.2 only)

**Commercial Mortgage Underwriting**

# “Underwriting”

= Process lenders go through to decide to issue a commercial mortgage, and the terms of the loan:  
*Loan Origination (“primary” market).*

- Often a negotiation type process (esp. for large loans): Commercial Mortgage business is a “custom” shop.
- Standard criteria may sometimes be “bent” (esp. for large borrowers, or when the market is “hot”), but provide the basic guidelines.

## Basic Purpose of Underwriting:

→ To make *default a rare event*.

***But no one can operate “outside the market”...***

### **Supply & Demand:**

- Most borrowers cannot (or do not want to) conform to underwriting standards so tight as to eliminate default risk (even if that would get them T-Bond interest rates).
- Lenders must conform to the market in order to “play the game”: Modify loan terms so that  $E[r]$  is sufficient to compensate for default risk.

# Two Foci of Underwriting:

## Borrower & Property

### 1) Borrower:

#### On the *downside*:

- i) Can “bleed” healthy property as “cash cow”.
- ii) Can use Ch.11 if they get in trouble (“cramdown”).
- iii) Financial health of borrower is important.
- iv) Check “parent” company.

#### On the *upside*:

- i) Potential “repeat customer”.
- ii) Consider size, track record, future potential.

# Two Foci of Underwriting: **Borrower & Property**

## **2) Property:**

*Generally more important than borrower:*

- i) Main source of CF to service loan.
- ii) Comm.Mtgs effectively “non-recourse”.
- iii) Careful lender w well-crafted loan: strong property counts more than strong borrower.

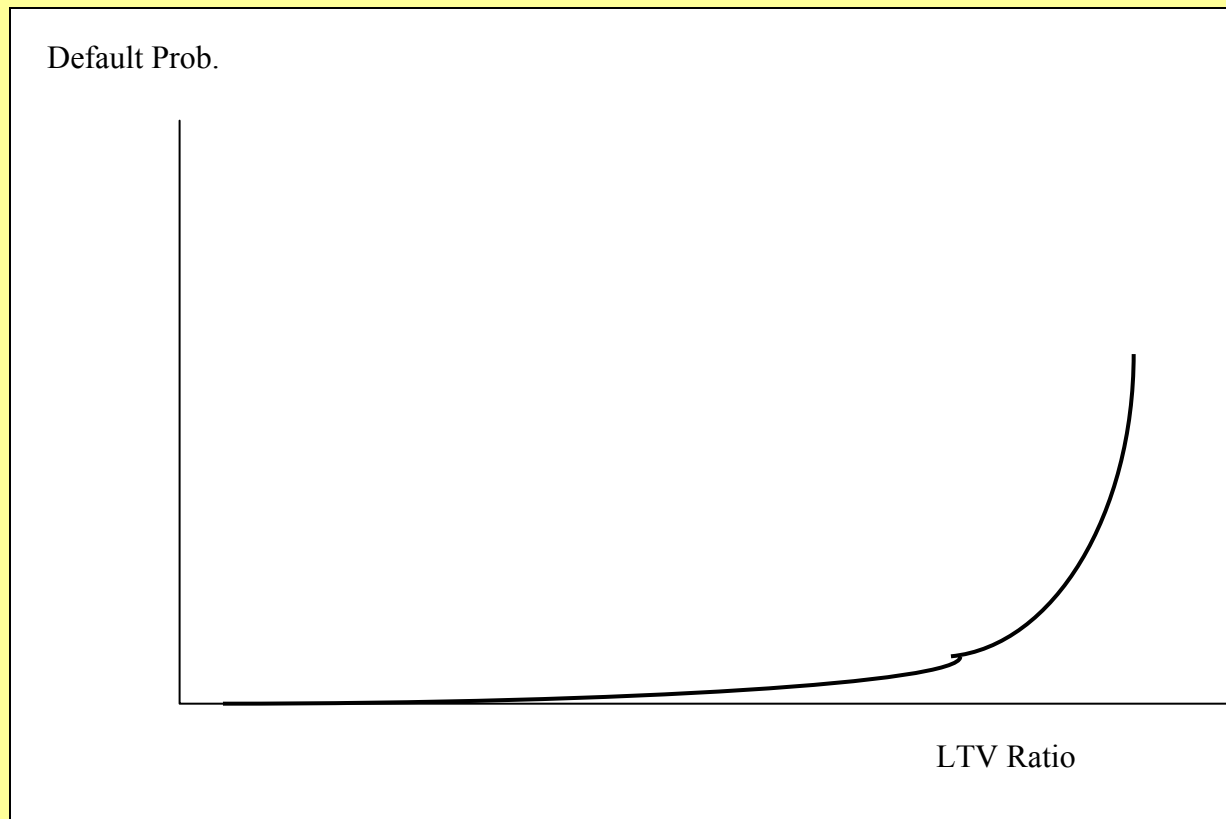
*Standard Property-level Underwriting Criteria:*

- i) Asset value criteria...
- ii) Property income criteria...

# Asset Value Criterion: Initial Loan-to-Value Ratio (LTV)

$$LTV = L/V$$

**Exh. 18-5: Typical relationship between initial LTV ratio and the ex ante lifetime default probability on a commercial property mortgage:**



## Relation between:

- LTV,
- Property Risk (volatility),
- Loan Default Probability.

*A simplified example...*

(Text box p. 447)

### Suppose...

- Initial Prop. Val = \$100,  $E[g] = 2\%/yr$ .
- 75% LTV (No amort  $\rightarrow$  OLB = \$75 constant).
- Average loan default occurs in year 7 of loan life.
- Individ. Prop. Ann. Volatility (Std.Dev[g]) = 15%.
- Prop. Val follows *random walk* (effic. mkt.).
- $\rightarrow T \text{ yr Volatility} = \sqrt{T} (Ann.Volatility)$

## Relation between:

*A simplified example...*

- LTV,
- Property Volatility, &
- Loan Default Probability.

*Thus, After 7 years:*

- $E[\text{Val}] = 1.02^7(100) = 115$

- $\text{Std.Dev}[\text{Val}] =$

$$\begin{aligned} & \sqrt{7} (15\%)(100) \\ & = 2.6 * 15\%(100) \\ & = \pm 40\%(100) = \pm 40. \end{aligned}$$

- 1 Std.Dev below  $E[\text{Val}] = \$115 - \$40 = \$75$ .

- If  $\text{Prob}[\text{Val}] \sim \text{Normal}$ ,  $\rightarrow$  1/6 chance  $\text{Val} < \text{OLB}$ ,  $\rightarrow$  Loan “*under water*” (large chance of default in that case).

*The point is . . .*

## **Greater Property Volatility (Risk)**

- Lower LTV corresponds to a given lifetime default probability.**
- Lower Max LTV Limit in underwriting criteria.**

**Typical **LTV** limit in commercial mortgages on good quality stabilized properties is **75%**.**

- Based on lower of appraisal or purchase price.**
- Based on lower of DCF or Direct Cap.**
- Sometimes “bent”, or fudged in appraisal, due to market pressure.**

# Property Income Criteria...

## 1) Debt Service Coverage Ratio (DCR):

$$DCR = NOI / DS$$

*Typical: DCR  $\geq$  120%*

## 2) Break-even Ratio (BER):

$$\text{BER} = (\text{DS} + \text{OE}) / \text{PGI}$$

→ Occupancy ratio required for  $\text{EBTCF} > 0$  (exclu CI)

→ Lender usually requires  $\text{BER} < (100\% - \text{Mkt Vac})$

*Typical:  $\text{BER} \leq 85\%$ , or less than mkt avg occupance minus some buffer (typically 5%).*

### 3) Equity Before-Tax Cash Flow (EBTCF):

$$\text{EBTCF} = \text{NOI} - \text{DS} - \text{CI}$$

Similar to DCR, only includes effect of CI.

Projection of **EBTCF < 0** any year of loan

→ **“Red Flag”**.

#### **4) Multi-year Pro-Forma Projection:**

**In principle, lenders project income ratios for all years of loan life.**

## **Variables and loan terms to negotiate:**

- **Loan Amount**
- **Loan Term (maturity)**
- **Contract Interest Rate**
- **Amortization rate**
- **Up-front fees and points**
- **Prepayment option and back-end penalties**
- **Recourse vs. Non-recourse debt**
- **Collateral (e.g., cross-collateralization)**
- **Lender participation in property equity**
- **Cramdown insurance**
- **Etc. . . .**

## *Underwriting Example*

### ***The Problem:***

- Buyer (borrower) & seller claim property worth \$12,222,000;
- Buyer wants to borrow 75% (\$9.167 Million, or \$91.67/SF) from you (mortgage lender), for purchase-money 1st mortgage;
- Wants non-recourse, 10-yr interest-only loan, monthly pmts;
- Willing to accept “lock-out”.
- ***Should you do the deal?***

## *Underwriting Example (cont.)*

### ***Current Capital Market Information:***

- In Bond Mkt: 10-yr US Govt Bonds yielding 6.00%.
- In Mortg Mkt: 10-yr balloon lock-out commercial mortgages require risk premium in contract total yield typically 200bp (CEY) spread over TBonds for good properties, non-recourse.
- → Loan YTM = 6% + 2% = 8% CEY,
- → *What EAY & MAY?*
- → EAY = 8.16%, → **7.87% MEY required YTM.**

## *Underwriting Example (cont.)*

### ***Underwriting Criteria (from capital provider):***

- 1. Max Initial LTV = 75%.**
- 2. Max projected terminal LTV = 65%.**
- 3. In computing LTV, normally: (i) Apply direct capitalization with going-in cap rate  $\geq 9\%$ , terminal cap rate  $\geq 10\%$ ; (ii) Apply multi-yr DCF with Disc. Rate  $\geq 10\%$ ; (iii) Use lower of (i) & (ii) to compute Initial LTV.**
- 4. Min DCR = 120%.**
- 5. Max BER = 85%, or 5% less than mkt vac (whichever is less).**
- 6. Consider need for CI, and avoid EBTCF  $< 0$ .**

**Loan must conform to these criteria, given capital market (yield requirement) and property markets (space & asset mkts → value & income criteria).**

## *Underwriting Example (cont.)*

### ***Property & R.E. Market Information (from broker):***

- 100,000SF, fully occupied, single-tenant, off.bldg.
- 10-yr lease signed 3 yrs ago.
- \$11/SF net (suppose EOY ann. pmts).
- "Step-ups" of \$0.50 in lease yr.5 & 8 (yrs 2 & 5).
- Current mkt rents on new 10-yr leases are \$12/SF net.
- Expect mkt rents to grow @ 3%/yr. (same age).

## *Solution, General Procedure . . .*

**Step 1:** Construct 10-yr "Proforma":

- 1) Forecast Property Cash Flows
- 2) Calculate Loan Debt Service Cash Flows for Requested Loan

**Step 2:** Examine DCR, BER, EBTCF, @ Requested Loan:

Is there Compliance with Income Underwriting Criteria?...

**Step 3:** Estimate Property Value (Use Direct Capitalization &/or DCF):

Is there Compliance with Value Underwriting Criterion?...

**Step 4:** If Compliance Fails in either Step 2 or 3:

How can loan be modified to meet underwriting criteria?...

How much (and why) is lender willing to "bend" underwriting criteria to make loan?...

--> What "yield enhancements" (e.g., "origination fee") would temp lender?

--> What security enhancements (e.g., "recourse", "multi-collateral", "cramdown" insur) would assuage lender?

## ***Underwriting Example (cont.)***

**Broker's pro-forma submitted with loan request. . .**

- Assumes: 75% renewal probability***  
***3 mo. Vacancy if non-renewal***  
***No provision for CI (inclu leasing expenses).***  
***Yr.10 cap rate = 9%.***

**So, you need to deal with the usual . . .**

**You make following modified assumptions:**

- 1% Market rental growth for existing bldg (3%-2%depr).***
- Yr.8 Leasing expenses: \$2/SF if renew, \$5/SF not renew.***
- Yr.8 TI: \$10/SF if renew, \$20/SF if not renew.***
- Yr.10 cap rate = 10%.***

## *Underwriting Example (cont.)*

**Your adjusted pro-forma (based on research):**

**Assumes:** *1% Market rental growth for existing bldg (3%-2% depr).*

*Yr.8 Leasing expenses: \$2/SF if renew, \$5/SF not renew.*

*Yr.8 TI: \$10/SF if renew, \$20/SF if not renew.*

*Yr.10 cap rate = 10%.*

Year:	1	2	3	4	5	6	7	8	9	10	Year 11
Mkt Rent (net) /SF	\$12.12	\$12.24	\$12.36	\$12.49	\$12.61	\$12.74	\$12.87	\$12.99	\$13.12	\$13.26	\$13.39
Property Rent(net)	\$11.00	\$11.50	\$11.50	\$11.50	\$12.00	\$12.00	\$12.00	\$12.99	\$12.99	\$12.99	\$12.99
Vacancy Allow	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.81	\$0.00	\$0.00	\$0.00
NOI/SF	\$11.00	\$11.50	\$11.50	\$11.50	\$12.00	\$12.00	\$12.00	\$12.18	\$12.99	\$12.99	\$12.99
NOI	\$1,100,000	\$1,150,000	\$1,150,000	\$1,150,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,218,214	\$1,299,428	\$1,299,428	\$1,299,428
Lease Comm	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$275,000	\$0	\$0	
Ten.Imprv	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$1,250,000	\$0	\$0	
Reversion@10%Cap										\$12,994,280	
Less OLB										\$9,167,000	
PBTCF	\$1,100,000	\$1,150,000	\$1,150,000	\$1,150,000	\$1,200,000	\$1,200,000	\$1,200,000	-\$306,786	\$1,299,428	\$14,293,709	
Debt Svc	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$9,888,443	
EBTCF	\$378,557	\$428,557	\$428,557	\$428,557	\$478,557	\$478,557	\$478,557	(\$1,028,229)	\$577,985	\$4,405,266	
DCR	152%	159%	159%	159%	166%	166%	166%	169%	180%	180%	
BER @ Mkt	60%	59%	58%	58%	57%	57%	56%	56%	55%	54%	

**Note income underwriting criteria for \$9,167,000, 7.87% loan.**

**DCR & BER look good.**

*How were these computed?...*

## *Underwriting Example (cont.)*

Year:	1	2	3	4	5	6	7	8	9	10	Year 11
Mkt Rent (net) /SF	\$12.12	\$12.24	\$12.36	\$12.49	\$12.61	\$12.74	\$12.87	\$12.99	\$13.12	\$13.26	\$13.39
Property Rent(net)	\$11.00	\$11.50	\$11.50	\$11.50	\$12.00	\$12.00	\$12.00	\$12.99	\$12.99	\$12.99	\$12.99
Vacancy Allow	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.81	\$0.00	\$0.00	\$0.00
NOI/SF	\$11.00	\$11.50	\$11.50	\$11.50	\$12.00	\$12.00	\$12.00	\$12.18	\$12.99	\$12.99	\$12.99
NOI	\$1,100,000	\$1,150,000	\$1,150,000	\$1,150,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,218,214	\$1,299,428	\$1,299,428	\$1,299,428
Lease Comm	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$275,000	\$0	\$0	\$0
Ten.Imprv	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$1,250,000	\$0	\$0	\$0
Reversion@10%Cap										\$12,994,280	
Less OLB										\$9,167,000	
PBTCF	\$1,100,000	\$1,150,000	\$1,150,000	\$1,150,000	\$1,200,000	\$1,200,000	\$1,200,000	-\$306,786	\$1,299,428	\$14,293,709	
Debt Svc	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$721,443	-\$9,888,443	
EBTCF	\$378,557	\$428,557	\$428,557	\$428,557	\$478,557	\$478,557	\$478,557	(\$1,028,229)	\$577,985	\$4,405,266	
DCR	152%	159%	159%	159%	166%	166%	166%	169%	180%	180%	
BER @ Mkt	60%	59%	58%	58%	57%	57%	56%	56%	55%	54%	

$$\text{DCR (Yr.1)} = \text{NOI} / \text{DS} = \$1,100,000 / \$721,443 = 1.52$$

$$\text{BER (Yr.1)} = (\text{OE} + \text{DS}) / \text{PGI} = (\$0 + \$7.214) / \$12.12 = 0.59$$

*(Note use of current mkt rent in BER: Consistent with intent of that ratio.)*

*DS from: \$9,167,000 X 7.87% = \$721,443, in Interest-Only Loan.*

***Although standard income ratios look good, this loan does have some problems.***

***One problem is in the income criteria. Can you spot it in the proforma?...***



**Negative EBTFCF in Yr. 8**

**Another problem is in the initial LTV:**

- **Based on direct capitalization, loan passes OK:**
  - $\$1,100,000 / 9\% = \$12.22 \text{ M}$ ,  $\rightarrow \text{LTV} = 9.167 / 12.22 = 75\%$ .
- **But the DCF @ 10% gives PV(PBTCF) = \$11,557,000.**
  - $\rightarrow 9.167 / 11.557 = 79\%$ .

**A similar problem is in the Terminal LTV:**

- $\$9,167,000 / \$12,994,280 = 67\%$ , which is  $>$  the 65% limit.

## *Underwriting Example (cont.)*

**Problems in the loan proposal:**

**Income:** Projected EBTCF (Yr.8) =  $-\$1,028,229 < 0$ .

**Value:** Initial LTV Ratio = 79% > 75% (in DCF @ 10%, OK in dir.cap)

Terminal LTV Ratio = 71% > 65% (@ 10% cap rate).

**But EBTCF < 0 is:**

**Due mostly to cap impr (financing possible?).**

**Far in future (when inflation will have improved default risk).**

**After much previous positive cash flow.**

**Not untypical in single-tenant bldg.**

**And Value criteria are missed only slightly.**

**So loan is “close” to passing criteria.**

*How good a future potential “customer” is this borrower?*

*How much pressure is there in the loan market?*

*Try to negotiate a similar loan? . . .*

## *Underwriting Example (cont.)*

**Consider a \$8,700,000 loan with 40-yr Amort. 10-yr balloon  
(instead of \$9,167,000, Interest-Only):**

	<b>\$9,167,000 Int-Only</b>	<b>\$8,700,000 40-yr Amort</b>
<b>PMT</b>	<b>\$721,443</b>	<b>\$715,740</b>
<b>Initial OLB</b>	<b>\$9,167,000</b>	<b>\$8,700,000</b>
<b>Initial LTV Ratio</b>	<b>79%</b>	<b>75%</b>
<b>Terminal OLB</b>	<b>\$9,167,000</b>	<b>\$8,230,047</b>
<b>Terminal LTV Ratio</b>	<b>71%</b>	<b>63%</b>