

Real Estate Financial Modeling

– Certification Quiz Questions

Module 1 – Real Estate Overview and Short Case Studies/Modeling Tests

- 1. What is the PRIMARY difference between office/retail/industrial and multifamily properties?**
 - a. Lease terms tend to be much shorter for multifamily properties (~1 year), while they are longer for the others (5-10 years).
 - b. The lease terms vary significantly for office/retail/industrial properties, with different tenants receiving different concessions and rent, while they are much more similar for multifamily properties.
 - c. The financial modeling for office/retail/industrial properties is often based on individual tenants and is, therefore, more granular than analysis for multifamily properties.
 - d. Tenant Improvements (TIs) and Leasing Commissions (LCs) are significant for office/retail/industrial properties, but they tend to matter far less for multifamily properties.
 - e. All of the above.

- 2. You are reviewing a deal where a private equity firm wants to acquire a stabilized multifamily property for \$10 million with a 70% LTV (\$7 million of Debt). The Going-In Cap Rate is 6.0%, and prevailing interest rates on similar loans are about 4.0% currently. Is this deal feasible?**
 - a. No – 70% is far too much leverage for a stabilized property with limited potential for capital appreciation.
 - b. It depends on the amortization period of the Debt, the property's capital costs, and the covenants that the lenders are seeking.

- c. Yes – 70% might be too much leverage for a normal company, but since the amortization periods are often much longer in real estate, the property’s Net Operating Income of \$600K per year is sufficient to service the Debt.
- d. Yes – but only if the Debt has an Interest-Only Period and its Interest Rate is fixed. If not, then there’s too much risk of the property’s NOI not being able to cover the required Debt Service.

3. You have built an investment model for a mixed-use office/retail property in New York City. The property currently has 3 tenants. You have assumed that upon lease expiration for each tenant, there is a chance the existing tenant renews and a chance that you’ll have to find a new tenant. The concessions and capital costs differ in each case.

Some of the assumptions for this model are shown below. Based on this screenshot, what is the BIGGEST apparent problem with your model?

Rent Roll & Operating Assumptions:	Units:	Historical:	Projected:					Stabilized
		FY17	FY18	FY19	FY20	FY21	FY22	Year:
Property-Wide Operating Assumptions:								
New Lease Term (Years):	# Years	7						
Renewal Probability:	%	50.0%						
# Months of Downtime for Non-Renewal:	#	9						
Free Rent and Capital Costs:								
		New:	Renewal:					
# Months of Free Rent:	#	3	6					
Tenant Improvements (TIs) per RSF:	\$ / sq. ft. / Yr	\$ 10.00	3.00					
Leasing Commissions (LCs) % Total Lease Value:	%	3.0%	1.0%					
Office Tenant #1 - Full Service (FS) Lease:								
Rentable Square Feet Occupied:	sq. ft.	10,000 sq. ft.						
Lease Expiration Date:	Date	2019-12-31						
Baseline Rent per Square Foot:	\$ / sq. ft. / Yr	\$ 120.00	\$ 122.40	\$ 124.85	\$ 126.72	\$ 128.62	\$ 130.55	\$ 132.51
Rental Growth Rate:	%		2.0%	2.0%	1.5%	1.5%	1.5%	1.5%
(+) Base Rental Income:	\$	1,200,000	1,224,000	1,248,480	1,267,207	1,286,215	1,305,509	1,325,091
(-) Absorption & Turnover Vacancy:	\$	-	-	-	(475,203)	-	-	-
(-) Concessions & Free Rent:	\$	-	-	-	(475,203)	-	-	-
(-) Tenant Improvements (TIs):	\$	-	-	-	(65,000)	-	-	-
(-) Leasing Commissions (LCs):	\$	-	-	-	(177,409)	-	-	-

- a. The assumed New Lease Term of 7 years is far too long for office/retail tenants; a more realistic assumption would be 3-5 years.
- b. The Renewal Probability of 50% is too low; it should be more like 70-80%, especially for a property with only ~3 tenants.

- c. The Rental Growth Rates of 2.0% and 1.5% are off because Rent typically grows at a rate slightly above inflation.
- d. The Months of Free Rent are reversed – New tenants almost always require higher concessions than Renewal tenants, which means more Rent-Free Months.
- e. The model is not flexible enough to handle the case where the Months of Downtime exceed 12 because it is based on simple annual estimates, and we assume that leases always expire on December 31.

4. Please review the following Pro-Forma for a mixed-use office/retail property that currently has 3 tenants. Based solely on this Pro-Forma, which of the following statements is (are) reasonable?

Property Pro-Forma:	Units:	Historical:		Projected:				Stabilized Year:
		FY17	FY18	FY19	FY20	FY21	FY22	
Revenue:								
(+) Base Rental Income:	\$	\$ 2,715,000	\$ 2,841,750	\$ 2,968,862	\$ 3,090,621	\$ 3,198,048	\$ 3,293,989	\$ 3,392,809
(-) Absorption & Turnover Vacancy:	\$	-	-	-	(202,476)	(131,469)	-	-
(-) Concessions & Free Rent:	\$	-	-	-	(438,697)	(284,850)	-	-
(+) Expense Reimbursements:	\$	580,000	592,290	604,848	617,681	585,333	644,196	657,891
Potential Gross Revenue:	\$	3,295,000	3,434,040	3,573,710	3,067,130	3,367,062	3,938,186	4,050,700
(-) General Vacancy:	\$	(240,000)	(249,600)	(259,584)	(269,967)	(278,066)	(286,408)	(295,001)
Effective Gross Income (EGI):	\$	3,055,000	3,184,440	3,314,126	2,797,163	3,088,996	3,651,777	3,755,700
Expenses:								
(-) Property Management Fees:	\$	(91,650)	(95,533)	(99,424)	(83,915)	(92,670)	(109,553)	(112,671)
(-) Common Area Maintenance (CAM):	\$	(125,000)	(129,375)	(133,903)	(138,590)	(143,440)	(148,461)	(153,657)
(-) Common Area Utilities:	\$	(75,000)	(77,250)	(79,568)	(81,955)	(84,413)	(86,946)	(89,554)
(-) Insurance:	\$	(50,000)	(51,250)	(52,531)	(53,845)	(55,191)	(56,570)	(57,985)
(-) Real Estate & Property Taxes:	\$	(1,000,000)	(1,020,000)	(1,040,400)	(1,061,208)	(1,082,432)	(1,104,081)	(1,126,162)
(-) CapEx, TI, and LC Reserves:	\$	(62,500)	(64,375)	(66,306)	(68,295)	(70,344)	(72,455)	(74,628)
Total Expenses:	\$	(1,404,150)	(1,437,783)	(1,472,132)	(1,487,807)	(1,528,491)	(1,578,066)	(1,614,657)
Net Operating Income (NOI):	\$	1,650,850	1,746,657	1,841,994	1,309,356	1,560,505	2,073,712	2,141,043
<i>NOI Margin:</i>	%	<i>54.0%</i>	<i>54.8%</i>	<i>55.6%</i>	<i>46.8%</i>	<i>50.5%</i>	<i>56.8%</i>	<i>57.0%</i>
(-) CapEx, TIs, and LCs:	\$	-	-	-	(266,974)	(175,934)	-	-
(+) Capital Costs Paid from Reserves:	\$	-	-	-	266,974	127,347	-	-
Adjusted Net Operating Income:	\$	1,650,850	1,746,657	1,841,994	1,309,356	1,511,918	2,073,712	2,141,043
<i>Adjusted NOI Margin:</i>	%	<i>54.0%</i>	<i>54.8%</i>	<i>55.6%</i>	<i>46.8%</i>	<i>48.9%</i>	<i>56.8%</i>	<i>57.0%</i>
(-) Cash Interest Expense on Senior Debt:	\$		(625,000)	(611,905)	(598,155)	(583,717)	(568,558)	
(-) Cash Interest Expense on Mezzanine:	\$		(175,000)	(180,250)	(185,658)	(191,227)	(196,964)	
(-) Senior Debt Principal Repayment:	\$		(261,906)	(275,001)	(288,751)	(303,189)	(318,348)	
Cash Flow to Equity Investors:	\$		684,751	774,838	236,792	433,786	989,842	

- a. It seems like this is a relatively stabilized property, and that its tenants are expected to sign leases with similar rent and rental escalations when their existing leases expire.
 - b. The property owners may not be setting aside enough for the Capital Cost Reserve because the Adjusted NOI falls below the NOI in Year 4.
 - c. An Interest-Only (IO) Period for the Senior Debt would benefit the property owners in this deal, given the significant difference between Adjusted NOI and Cash Flow to Equity Investors in the first few years.
 - d. It is likely that all 3 tenants, or at least 2 out of 3 tenants, have NNN leases.
 - e. All of the above.
5. You are reviewing a simple real estate development model for an industrial complex in Calgary. The construction period takes one (1) year, during which time the interest and loan issuance fees on the Construction Loan (50% LTC) are capitalized.

Upon the end of development, the Construction Loan is refinanced with a Permanent Loan at a 55% LTV.

The Sources & Uses Schedule and Equity Returns Schedule are both shown below. Based solely on these schedules and the description in this question, which of the following is a potential PROBLEM or OVERSIGHT in this model?

Sources & Uses of Funds:
Sources of Funds:

Construction Loan:	\$ 15,028,860
Developer Equity:	1,502,886
Investor Equity:	13,525,974
Total Sources:	\$ 30,057,720

Uses of Funds:

Land Acquisition Costs:	\$ 12,600,000
Construction Costs:	16,857,720
Replacement Reserves:	600,000
Total Uses:	\$ 30,057,720

Returns to All Equity Investors:	Units:	Construction:		Operational Years:						
		FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	
Value of Excess Land:	\$	\$ 7,182,000	\$ 7,397,460	\$ 7,619,384	\$ 7,847,965	\$ 8,083,404	\$ 8,325,906	\$ 8,575,684	\$ 8,832,954	\$ 9,097,943
Annual Growth Rate in Land Value:	%		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Forward NOI:	\$		1,912,223	2,233,277	2,300,275	1,523,753	2,014,999	2,513,573	2,588,980	
Applicable Cap Rate:	%		5.80%	5.70%	5.60%	5.50%	5.60%	5.70%	5.75%	
Implied Property Value:	\$		32,969,370	39,180,300	41,076,347	27,704,600	35,982,120	44,097,773	45,025,743	
(-) Equity Draws:	\$	(15,028,860)	-	-	-	-	-	-	-	
(+) Permanent Loan Issued:	\$	15,767,960	-	-	-	-	-	-	-	
(-) Permanent Loan Financing Fees:	\$	(157,680)	-	-	-	-	-	-	-	
(-) Construction Loan Refinanced:	\$	(15,583,300)	-	-	-	-	-	-	-	
(+) Cash Flow to Equity Investors:	\$	-	(361,159)	915,539	1,236,593	1,303,591	467,667	929,239	1,516,889	
(+) Proceeds from Sale of Excess Land:	\$	-	-	-	-	8,325,906	-	-	-	
(+) Proceeds from Sale of Property:	\$	-	-	-	-	-	-	-	45,025,743	
(-) Selling Costs:	\$	-	-	-	-	-	-	-	(675,386)	
(-) Repayment of Permanent Loan:	\$	-	-	-	-	-	-	-	(13,766,414)	
(-) Prepayment Penalty on Permanent Loan:	\$	-	-	-	-	-	-	-	(137,664)	
Total Cash Flows to Equity Investors:	\$	(15,001,880)	(361,159)	915,539	1,236,593	9,629,498	467,667	929,239	31,963,169	
Internal Rate of Return (IRR):	%	20.2%								
Total Returns to Equity:	\$	44,807,525								
Invested Equity:	\$	15,028,860								
Cash-on-Cash Multiple:	x	3.0 x								
Annual Yield on Initial Investment:	%		(2.4%)	6.1%	8.2%	64.1%	3.1%	6.2%	212.7%	

- The capitalized interest and loan fees do not appear as Uses of Funds, so the development's total cost may be understated.
- In reality, not all the Equity is drawn at the end of the Construction Year – this is a development, so the draws almost certainly occur over several months.
- When Cash Flow to Equity Investors turns negative in the first year following the Construction Year, we do not assume any additional Equity Draws.
- If the Excess Land's value is growing by only 3% per year and the Equity IRR is 20%, we should not purchase so much land in the beginning.
- All of the above.

6. This same development model has a Waterfall Returns Schedule where the cash flows are split 10% / 90% between the Developer and LPs up to a 10% Equity IRR (Tier 1), 20% / 80% between a 10% and 20% Equity IRR (Tier 2), and 30% / 70% above a 20% Equity IRR (Tier

3). The Developer contributes 10% of the Equity, and the LPs contribute the remaining 90%. A portion of this schedule for the Tier 2 IRR is shown below:

Tier 2 IRR - Up to 20.0%:								
Leveraged IRR to All Equity Investors:								
Beginning Balance:		(15,001,880)	(18,363,416)	(21,120,560)	(24,108,079)	(19,300,197)	(22,692,569)	(26,301,843)
Returns Accrual:	20.0%	(3,000,376)	(3,672,683)	(4,224,112)	(4,821,616)	(3,860,039)	(4,538,514)	(5,260,369)
Repayment:	100.0%	(361,159)	915,539	1,236,593	9,629,498	467,667	929,239	31,562,212
Ending Balance:		(15,001,880)	(18,363,416)	(21,120,560)	(24,108,079)	(19,300,197)	(22,692,569)	(26,301,843)
Limited Partners (LPs):								
Beginning Balance:		(13,501,692)	(16,490,958)	(19,056,719)	(21,878,788)	(18,550,947)	(21,887,003)	(25,521,012)
Returns Accrual:	20.0%	(2,700,338)	(3,298,192)	(3,811,344)	(4,375,758)	(3,710,189)	(4,377,401)	(5,104,202)
Repayment:	80.0%	(288,928)	732,431	=MIN(\$I168*\$D211,-SUM(I209:I210))			743,391	25,570,535
Ending Balance:		(13,501,692)	(16,490,958)	(19,056,719)	(21,878,788)	(18,550,947)	(21,887,003)	(25,521,012)
Developer:								
Beginning Balance:		(1,500,188)	(1,872,458)	(2,063,841)	(2,229,291)	(749,249)	(805,566)	(780,831)
Returns Accrual:	20.0%	(300,038)	(374,492)	(412,768)	(445,858)	(149,850)	(161,113)	(156,166)
Repayment:	20.0%	(72,232)	183,108	247,319	1,925,900	93,533	185,848	936,997
Ending Balance:		(1,500,188)	(1,872,458)	(2,063,841)	(2,229,291)	(749,249)	(805,566)	(780,831)
Cash Flow Available for Tier 3 Distribution:		-	-	-	-	-	-	400,957

Cell I168 here refers to the Cash Flow to Equity Investors in the selected year. Based on the formula shown in this screenshot and the description above, which of the following statements can you make about this Waterfall Schedule?

- This schedule is not correct because the Tier 2 Repayment formula does not subtract out the cash flows that were distributed in Tier 1, so it does not correctly represent the 20% / 80% split between a 10% and 20% Equity IRR.
- This schedule might be correct, but only if we subtract out the Tier 1 distributions when re-assembling the cash flows to the LPs and Developer and multiplying by their respective percentages at the end.
- This schedule might be correct, but only if we base the Tier 2 distributions on the amount remaining for Tier 2 minus the amount remaining for Tier 3 and then multiply by the respective percentages for the LPs and Developer at the end.
- It's fair to say that if the Waterfall is structured like this, then the LPs have a 10% Preferred Return and the Developer has a 10% Catch-Up Return.
- If we modeled a "Downside Case" with an Equity IRR of only 0-5%, this schedule would give an advantage to the LPs at the expense of the Developer.