

ANSWERS TO STUDY QUESTIONS

Chapter 20

- 20.1. This is a broad question aimed at making sure the student understands the material in section 20.1 relating to Exhibit 20-1. A quick answer would note that CMBS are bonds based on commercial mortgages. Many CMBS trade in the bond market branch of the capital markets, where the ultimate investors (source of capital) are investors in fixed income securities. Conduits originate and issue commercial mortgages that are designed and intended specifically to be placed into CMBS pools. Investment banks aggregate the mortgage pools and issue the CMBS. Rating agencies provide formal opinions about the credit risk of the various bonds carved out of each CMBS deal. The special servicer of a CMBS deal manages loans that have gotten into trouble within the pool. Thus, CMBS are a vehicle to provide capital from a broad pool of fixed income investors in the bond market to a broad segment of real estate investors in the property market; then in return, some portion of the profits earned in the property market is routed to investors in the bond market. CMBS thus link two major traditional segments of the capital asset markets.
- 20.3. This question is meant to focus the student on the first part of section 20.3, though it also relates to some of the history described in sections 20.1.1, 20.1.2, and 20.4. Traditionally, the primary means by which nonspecialized bond investors derived confidence in the magnitude of default risk in bonds, including CMBS, has been the receipt of a credit rating for the securities from one of the established bond rating agencies on Wall Street. This enables passive investors with no local real estate expertise to feel confident about the magnitude of default risk in the securities they are buying. Without such confidence, these investors will not place their capital into CMBS or will demand such a high yield as to make securitization unprofitable or uncompetitive. The only market for commercial mortgages would then be investors who have the specialized knowledge and expertise to evaluate the relevant credit risk on their own.
- 20.5. This question relates to material in sections 20.2.1 and 20.2.2 and 20.3.2. The interest-only (IO) security is made possible by the “extra” interest created by the fact that the senior securities can be issued at par value at yields lower than the average coupon yield in the mortgage pool, because the senior securities are lower risk than the average mortgage in the pool due to the extra credit protection the senior securities have, as provided by the subordinated securities (which will take the first credit losses in the pool). The claims to this extra interest can then be sold as IO securities. The sale proceeds from these IO securities have traditionally often been a major part of the profit earned by the investment bank from issuing the CMBS deal. Other things being equal, the less subordination is required by the rating agencies, the more IO securities can be created and the more profit for the issuing bank. (It should be noted that not all of the profitability of a classical CMBS issue comes from the sale of the IO securities, and other structures of CMBS may be possible in which IO securities are not a primary source of profitability or of immediate monetization of the value added by the deal.)
- 20.7. The “sf” suffix stands for “structured finance.” It means that the securities being rated are a structured finance product, such as CMBS, which generally means that the bonds are not backed by a single entity as with traditional corporate bonds, and that the bonds are structured into various classes with differential and sequential seniority, based on differentiation of the cash flow from the underlying collateral pool, such as the classical “waterfall” in which lower-rated securities absorb all credit losses until

they are wiped out before the next more senior security is exposed to credit losses. Such securities are more complex and, in some respects, more difficult to analyze in terms of their credit risk, compared with traditional single-entity corporate bonds. During the 2008–2009 financial crisis, CMBS and other structured finance bonds suffered very severe credit rating down-grades and losses in many cases beyond what investors had expected based on the traditional rating labels. The suffix has been a response to that experience, and reflects the fact that structured finance bonds often trade at yields considerably different (typically above) those of otherwise same-rated traditional corporate bonds.

- 20.9. As described in section 20.4, “moral hazard” exists when one party has control over an action or decision that affects the risk or well-being of another party. “Adverse selection” occurs when a relevant sample or selection tends to have unfavorable characteristics compared to the average characteristics in a population. In the CMBS industry, moral hazard can exist if loan issuers determine the amount of risk in the loans they issue by the underwriting standards they employ, but then this risk is immediately passed on to other parties if the originating loan issuers sell the loans into a CMBS loan pool, such that the loan issuers are no longer subject to the risk they have created. Adverse selection can occur if, for example, CMBS are viewed by the bond market as being more risky, thereby requiring higher yields, which in turn requires that borrowers of CMBS conduit loans pay higher interest rates. The result could be that the best (lowest risk) borrowers and loans will go to competing non-CMBS types of lenders, namely, whole-loan portfolio lenders such as life insurance companies, leaving the CMBS industry able to place loans only to the more risky types of borrowers who must accept (and indeed deservedly should pay) higher interest rates.
- 20.11. The A tranche was issued with \$700 million in par value. The B tranche was issued with \$50 million in par value ([30% – 25%]1 billion).
- Neither tranche loses any par value.
 - The B tranche loses \$20 billion par value ([27% – 25%] 1 billion), or 40% of its original par value.
 - The B tranche loses all of its value, while the A tranche loses \$30 million, or 4.3% of its original par value.
- 20.13. a. Since each loan in the pool is identical in size and has a 75% LTV, given the \$100m aggregate loan balance, the aggregate value of the property collateral is $100m/0.75 = \$133$.
- ⇒ the AAA class has an implied LTV of $80/133 = 60\%$
- Aggregate NOI = $(0.085)(133m) = \$11.305m$
- Annual DS required to be paid to AAA class bondholders = $(0.065)(80m) = \$5.2m$
- ⇒ implied DCR = $11.305/5.2 = 2.17$
- b. \$100m par value pool, 10 \$10m loans, 6.5% IO bullet loans

	Rating	Par	Coupon	ytm
Tranche 1	AAA	80	6.5%	4%
Tranche 2	B	<u>20</u>	6.5%	22.00%
		100		

← Answer to (b) found by trial and error or using solver in Excel

- Step 1: Value the AAA class bonds (shown below).
- Step 2: determine the ytm on B bonds such that the value equals \$100m – value of A bonds (i.e., such that the discount on B bonds equals the premium on A bonds in this simple world).

		Contractual Annual Cash Flows (Ex Ante)				
		1	2	3	4	5
This class sells at a PREMIUM to par or book value	→ AAA class:	5.2	5.2	5.2	5.2	85.2
		Value @ 4% ytm			\$88.90	
This class sells at a DISCOUNT to par or book value	→ B class:	1.3	1.3	1.3	1.3	21.3
		Value @ ytm guess			\$11.12	
		Value of securities as CMBS =			\$100.03 approx = \$100	