CHAPTER 28
CREDIT ANALYSIS MODELS

1. (A) Reduced form model.

Explanation

Structural models are not suitable when the company has complex balance sheets or when there are significant off-balance sheet liabilities. Reduced form models would be appropriate in such a situation.

(Module 28.4, LOS 28.d)

Related Material

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2. (B) short position in a put option on the assets of the company.

Explanation

Risky debt ownership is economically equivalent to a long position in risk-free bond and a short position in a put option on the assets of the company.

(Module 28.4, LOS 28.d)

Related Material

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3. (C) Default intensity.

Explanation

Default intensity is the probability of default over the next time period and can be estimated using regression models.

(Module 28.4, LOS 28.d)

Related Material

SchweserNotes - Book 4

4. (A) summary statistics for analyzing credit risk.

Explanation

A highly granular pool would have hundreds of clearly defined loans, allowing for use of summary statistics as opposed to investigating each borrower. A more-discrete pool of few loans would warrant examination of each obligation separately. Distribution waterfall analysis is part of evaluation of the ABS structure (and not collateral pool).

(Module 28.7, LOS 28.h)

Related Material

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5. (C) Existence of off-balance sheet liabilities.

Explanation

Term structure of credit spread is influenced by credit quality, financial conditions, market demand and supply, and equity market volatility.

(Module 28.6, LOS 28.g)

Related Material

SchweserNotes - Book 4

6. (A) widen.

Explanation

Credit spreads change based on market's expectations. Impending recessions would lead to upward revision in probability of default and lower recovery rate. Combined, these revisions would lead to widening of credit spreads.

(Module 28.6, LOS 28.f)

Related Material

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7. (C) credit valuation adjustment of the bond.

Explanation

Under structural model the put option value = value of risk-free bond – value of the risky bond = CVA.

(Module 28.4, LOS 28.d)

Related Material

SchweserNotes - Book 4

8. (C) ordinal rankings.

Explanation

Credit scores and credit ratings are both ordinal rankings.

(Module 28.3, LOS 28.b)

Related Material

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9. (B) $1,394.

Explanation

Expected loss = Probability of default x expected loss per $ x par value
= 0.0205 x (1 – 0.32) x $100,000
= $1,394

(Module 28.1, LOS 28.a)

Related Material

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10. (C) the sum of present values of expected losses.

Explanation

Credit valuation adjustment (CVA) is the sum of present values of expected losses. CVA is positively related to the probability of default and negatively related to probability of survival and recovery rate.

(Module 28.1, LOS 28.a)

Related Material

SchweserNotes - Book 4

11. (A) number of 'hard' inquiries.

Explanation

FICO scores are higher for those with: (a) longer credit histories (age of oldest account), (b) absence of delinquencies, (c) lower utilization (outstanding balance divided by available line), (d) fewer credit inquires, and (e) a variety of types of credit used.

(Module 28.3, LOS 28.b)

Related Material

SchweserNotes - Book 4

12. (B) Individual C is twice as likely to default as individual A.

Explanation

Credit scores are ordinal rankings. Individual C is more likely to default than individual A, but it cannot be concluded that A is twice as likely.

(Module 28.3, LOS 28.b)

Related Material

SchweserNotes - Book 4

13. (B) 94.70%

Explanation

Probability of survival = $(1 - 0.018)^3 = 0.9470$.

(Module 28.1, LOS 28.a)

Related Material

SchweserNotes - Book 4

14. (C) credit spreads.

Explanation

Higher rated bonds have lower spreads. Price and return depends on other factors (e.g., coupon rate, maturity, risk-free rate).

(Module 28.3, LOS 28.b)

Related Material

SchweserNotes - Book 4

15. (A) long position in a call option on the assets of the company.

Explanation

Equity investors have economic position equivalent to a long position in a call option on the assets of the company with a strike price equal to the face value of debt.

(Module 28.4, LOS 28.d)

Related Material

SchweserNotes - Book 4

16. (B) recourse rights.

Explanation

Covered bonds are backed by the collateral pool as well as by the issuer; investors in covered bonds have recourse rights.

(Module 28.7, LOS 28.h)

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17. (C) 0.88%

Explanation

Change in spread (given) = –15 bps

$\Delta\%P$ = – (modified duration of the bond) x (Δ spread) = – 5.88 x – 0.0015

= –0.00882 or 0.88%.

Since spread narrows, price will increase (i.e., a positive price change).

(Module 28.3, LOS 28.c)

Related Material

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18. (A) Unlike for corporate debt, structural and reduced form models are not appropriate.

Explanation

Reduced form and structural models can be used as long as they take into account the complex structure of the ABS. Secured debt is usually financed via a bankruptcy-remote SPE. This isolation of securitized assets allows for higher credit rating and lower cost to the issuer.

(Module 28.7, LOS 28.h)

Related Material

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19. (C) expectations of a recession.

Explanation

Upward sloping credit curve indicates widening of spread as debt maturity increases. This would be consistent with expectations of higher probability of default (or lower recovery rate) in the longer-term, which would be consistent with expectations of a recession.

(Module 28.6, LOS 28.g)

Related Material

SchweserNotes - Book 4

20. (A) small businesses.

Explanation

Credit scores are used for individuals and small businesses. Credit ratings are used for corporate, quasi-government, and sovereign bonds as well as for secured debt (ABS).

(Module 28.3, LOS 28.b)

Related Material

SchweserNotes - Book 4

21. (B) 0.46%

Explanation

First calculate the VND: N = 5, PMT = 4, FV = 100, I/Y = 3. PV = 104.58 = VND. Value of risky bond = VND – CVA = 104.58 – 2.12 = 102.46

YTM on risky bond: N = 5, PV = –102.46, PMT = 4, FV = 100, I/Y = 3.46%

Credit spread = YTM (risky) – YTM (risk-free) = 3.46% – 3% = 0.46%.

(Module 28.5, LOS 28.e)

Related Material

SchweserNotes - Book 4

22. (A) Operational and counterparty risk.

Explanation

After origination, investors in secured debt face the operational and counterparty risk of the servicer.

(Module 28.7, LOS 28.h)

Related Material

SchweserNotes - Book 4

23. (A) Assumption 3.

Explanation

The assumptions of reduced form models include:

- The risk-free interest rate is stochastic.
- The state of the economy is stochastic and depends on macroeconomic variables.
- The probability of default (default intensity) and the recovery rate depend on the state of le the economy and are not constant.

(Module 28.1, LOS 28.a)

Related Material

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24. (A) $0.59

Explanation

Year	Exposure	LGD	PD	Expected Loss	DF	PV of Expected Loss
0	99.75	29.93	2.00%	0.60	0.9804	0.59

DF = PV of $1 using risk-free rate = 1 /1.02 = 0.9804.
Exposure = 101.75/1.02 = 99.75. LGD = Exposure x (1 – recovery rate)
= 99.75 x 0.30. Expected loss = LGD x PD = 29.93 x 0.02.
(Module 28.1, LOS 28.a)

Related Material

SchweserNotes - Book 4

25. (A) -20.60%

Explanation

First calculate the VND: N = 3, PMT = 3, FV = 100, I/Y = 1.50, PV = 104.37 = VND.
Price of the corporate bond = VND – CVA = 104.37 – 2.09 = 102.28
Cash flow in year 0 = -102.28, cash flow in year 1 = $3 (coupon, no default).
If the bond defaults in year 2, recovery = Exposure – LGD = 103.49 – 41.40
= 62.09 = cash flow in year 2.
Enter the cash flows and calculate IRR = –20.60%.
(Module 28.2, LOS 28.a)

Related Material

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26. (A) $1,146.98.

Explanation

The expected exposure is the present value (@ risk-free rate of 1.22%) of the remaining cash flows on the bond. After one year, the remaining cash flow on the bond is the currently due coupon payment of $80 (issuer would not default after paying the coupon) plus the last coupon plus principal of $1080.

expected exposure = 80 + $1,080 / 1.0122 = $1,146.98.

(Module 28.5, LOS 28.e)

Related Material

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27. (B) $9,433.50.

Explanation

The credit valuation adjustment is $66.50, which represents the difference between the price of a risky bond and the equivalent risk-free bond. The one-year risk-free bond price is $9,500 (for a $10,000 par value).

bond value = 9,500 – 66.50 = $9,433.50.

(Module 28.4, LOS 28.d)

Related Material

SchweserNotes - Book 4

28. (A) the same risk premium.

Explanation

The isolated structure of securitized assets allows for higher leverage and lower cost to the issuer. Investors also benefit from greater diversification, more stable cash flows and a higher risk premium relative to similar rated general obligation bonds (due to higher complexity associated with collateralized debt).

(Module 28.7, LOS 28.h)

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29. (B) accurate.

Explanation

Scowen's statement is correct. Under structural models:

value of risky debt = value of risk-free debt – value of put option on company assets

(Module 28.4, LOS 28.d)

Related Material

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30. (C) Structural models do not account for the impact of interest rate risk of the value of a company's assets.

Explanation

Owning equity is economically equivalent to owning a European call option on the assets of the company. Owning debt is economically equivalent to owning a risk free bond and simultaneously selling a put option on the assets of the company. The structural model assumes that risk-free rate is not stochastic (i.e., it assumes that risk-free rate is constant).

(Module 28.4, LOS 28.d)

Related Material

SchweserNotes - Book 4

31. (B) both the CVA and the credit spread will be lower.

Explanation

CVA and credit spreads are positively related to probability of default.

(Module 28.6, LOS 28.f)

Related Material

SchweserNotes - Book 4

32. (A) A corporate issuer's zero coupon bond and a default free zero coupon bond.

Explanation

If a zero coupon bond is not available an implied zero coupon bond price for the issuer can be derived from the coupon paying bond price.

(Module 28.6, LOS 28.g)

Related Material

SchweserNotes - Book 4