Free Questions for 8010

Shared by Bush on 06-06-2022

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Question 1

Question Type: MultipleChoice

Which of the following is not a tool available to financial institutions for managing credit risk:

Options:

A- Collateral
B- Cumulative accuracy plot
C- Third party guarantees
D- Credit derivatives

Answer:

B

Explanation:

Collateral, limits to avoid credit exposure concentrations, termination rights based upon credit ratings, third party guarantees and credit derivatives are all tools or instruments that financial institutions use to manage their credit risk. A cumulative accuracy plot measures the accuracy of ratings, and is not a tool for managing credit risk. Therefore Choice 'b' represents the correct answer.

Question 2

Question Type: MultipleChoice

For a corporate bond, which of the following statements is true:

1. The credit spread is equal to the default rate times the recovery rate

2. The spread widens when the ratings of the corporate experience an upgrade

3. Both recovery rates and probabilities of default are related to the business cycle and move in opposite directions to each other

4. Corporate bond spreads are affected by both the risk of default and the liquidity of the particular issue

Options:

A- 1,2 and 4
B- 3 and 4
C- 3 only
D- 4 only

Answer:

B

Explanation:

The credit spread is equal to the default rate times the loss given default, or stated another way, default rate times (1 - recovery rate). It is not equal to the default rate times the recovery rate. Therefore statement I is not correct.

When ratings are upgraded by rating agencies, the spread contracts and not widen. Therefore statement II is not correct.

Both recovery rates and probabilities of default are related to the business cycle, and they move in opposite directions. Economic recessions witness an increase in the default rate and a decrease in the recovery rate, and economic expansions result in a decrease in the default rate and an increase in the recovery rates when default does happen. Therefore statement III is correct.

Bond spreads incorporate both the risk of default, but also considerations of liquidity in the case of corporate bonds. Hence statement IV is correct.

Question 3

Question Type: MultipleChoice

Under the internal ratings based approach for risk weighted assets, for which of the following parameters must each institution make internal estimates (as opposed to relying upon values determined by a national supervisor):

Options:

A- Probability of default
B- Effective maturity
C- Loss given default

D- Exposure at default

Answer:

A

Explanation:

Regardless of the approach being followed by a bank (ie, whether foundation IRB or advanced IRB), it must make its own estimates for the probability of default. Banks following the foundation IRB approach may use values set by the supervisor for the other three parameters, though those following the advanced IRB approach may use their own estimates for all four inputs. (This is also the difference between advanced IRB and the foundation IRB approaches.) Therefore Choice 'a' is the correct answer.

Also note the four difference elements that go as inputs to the internal ratings based approach in the choices provided.

Question 4

Question Type: MultipleChoice

What ensures that firms are not able to selectively default on some obligations without being considered in default on the others?

Options:

A- Cross-default clauses in debt covenants
B- Chapter 11 regulations
C- Exchange listing requirements
D- The bankruptcy code

Answer:

A

Explanation:

It is the cross-default clauses in debt agreements that generally provide that a default on one obligation is considered a credit event applying to all debts of the obligor, and therefore we are

able to deal with credit risk at the borrower level, and not at the level of the individual security. It also helps avoid situations where borrowers can selectively default on some obligations while continuing to service others. Therefore Choice 'a' is the correct answer. The other choices are incorrect.

Question 5

Question Type: MultipleChoice

Which of the following are considered properties of a 'coherent' risk measure:

1. Monotonicity

2. Homogeneity

3. Translation Invariance

4. Sub-additivity

Options:

A- 2 and 3
B- 2 and 4
C- 1 and 3
D- All of the above

Answer:

B

Explanation:

All of the properties described are the properties of a 'coherent' risk measure.

Monotonicity means that if a portfolio's future value is expected to be greater than that of another portfolio, its risk should be lower than that of the other portfolio. For example, if the expected return of an asset (or portfolio) is greater than that of another, the first asset must have a lower risk than the other. Another example: between two options if the first has a strike price lower than the second, then the first option will always have a lower risk if all other parameters are the same. VaR satisfies this property.

Homogeneity is easiest explained by an example: if you double the size of a portfolio, the risk doubles. The linear scaling property of a risk measure is called homogeneity. VaR satisfies this

property.

Translation invariance means adding riskless assets to a portfolio reduces total risk. So if cash (which has zero standard deviation and zero correlation with other assets) is added to a portfolio, the risk goes down. A risk measure should satisfy this property, and VaR does.

Sub-additivity means that the total risk for a portfolio should be less than the sum of its parts. This is a property that VaR satisfies most of the time, but not always. As an example, VaR may not be sub-additive for portfolios that have assets with discontinuous payoffs close to the VaR cutoff quantile.

Question 6

Question Type: MultipleChoice

Which of the following formulae describes Marginal VaR for a portfolio p, where V_i is the value of the i-th asset in the portfolio? (All other notation and symbols have their usual meaning.)

A)

$$\frac{\delta VaR_p}{\delta V_i}$$

B)

$$\frac{VaR_i}{V_i}\rho_{ip}$$

C)

$$\frac{VaR_p}{V_p}\beta_{ip}$$

D) All of the above

Options:

A- Option A
B- Option B
C- Option C
D- Option D

Answer:

D

Explanation:

Marginal VaR of a component of a portfolio is the change in the portfolio VaR from a $1 change in the value of the component. It helps a risk analyst who may be trying to identify the best way to influence VaR by changing the components of the portfolio. Marginal VaR is also important for calculating component VaR (for VaR disaggregation), as component VaR is equal to the marginal VaR multiplied by the value of the component in the portfolio.

Marginal VaR is by definition the derivative of the portfolio value with respect to the component i. This is reflected in Choice 'a' above. Using the definitions and relationships between correlation, covariance, beta and volatility of the portfolio and/or the component, we can show that the other two choices are also equivalent to Choice 'a'.

Therefore all the choices present are correct.

Question 7

Question Type: MultipleChoice

Which of the following are valid approaches for extreme value analysis given a dataset:

1. The Block Maxima approach

2. Least squares approach

3. Maximum likelihood approach

4. Peak-over-thresholds approach

Options:

A- 2 and 3
B- 1, 3 and 4
C- 1 and 4
D- All of the above

Answer:

C

Explanation:

For EVT, we use the block maxima or the peaks-over-threshold methods. These provide us the data points that can be fitted to a GEV distribution.

Least squares and maximum likelihood are methods that are used for curve fitting, and they have a variety of applications across risk management.

Question 8

Question Type: MultipleChoice

The sensitivity (delta) of a portfolio to a single point move in the value of the S&P500 is $100. If the current level of the S&P500 is 2000, and has a one day volatility of 1%, what is the value-at-risk for this portfolio at the 99% confidence and a horizon of 10 days? What is this method of calculating VaR called?

Options:

A- $14,736, parametric VaR
B- $4,660, Monte Carlo simulation VaR
C- $14,736, historical simulation VaR
D- $4,660, parametric VaR

Answer:

A

Explanation:

If the current level of the S&P 500 is 2000, and a single day volatility is 1%, and the delta (ie change in portfolio value from a one point change) is $100, then the 1 day volatility for the portfolio in dollars is 2000 * 1% * $100 = $2,000.

At the 99% confidence level, the value of the inverse cumulative density function for the normal distribution is 2.33 (=NORMSINV(99%), in Excel). Therefore the 1 day VaR will be 2.33 * $2000 = $4,660. Extending it to 10 days using the square root of time rule, we get the 10 day VaR as equal to SQRT(10)*4660 = $14,736.

Since this method of calculating VaR relies upon a delta approximation of a risk factor (in this

case the S&P500), it is the parametric approach to calculating VaR (the other methods being historical simulation, and Monte Carlo simulation).

The 2015 Handbook provides an excellent example of parametric (and other) VaR calculations in Chapter 3 of Volume III of Book 3. The spreadsheet used for the illustration can be downloaded from http://www.prmia.org/prm-exam/handbook-resources.

Question 9

Question Type: MultipleChoice

A derivative contract has a negative current replacement value. Which of the following statements is true about its loan equivalent value for credit risk calculations over a 2-year horizon?

Options:

A- Since the derivatives contract has a negative current replacement value, exposure will be zero.
B- The credit exposure will be a given quintile of the expected distribution of the value of the derivatives contract in the future.
C- The notional value of the derivatives contract should be used for loan equivalence calculations.
D- The current exposure can be used for loan equivalence calculations as that is an unbiased proxy for the future value.

Answer:

B

Explanation:

The current exposure is negative, so there is no immediate credit exposure. However, since the price of the derivative is volatile, we can reasonably expect the value to be greater than zero sometime in the future. This is a stochastic variable which will have a distribution, and not just a unique value, in the future that will represent the credit exposure. Since there is no unique value, a conservative approach is to pick a quintile of the distribution, and use that as the future value of the derivative contract, with the assurance that the probability of the credit exposure exceeding that quintile is known and has been consciously selected. This number can then be converted to a loan equivalent amount for credit risk purposes. Therefore Choice 'b' is the correct answer. Choice 'a', Choice 'd' and Choice 'c' are incorrect for these reasons.