

Chapter 9

XVAs

Short Concept Questions

9.1 CVA measures the cost to a derivatives market participant arising from the possibility of a default by a counterparty. DVA measures the benefit to the market participant (equals cost to the counterparty) arising from the possibility that the market participant might itself default.

9.2 MVA or margin valuation adjustment measures the cost of initial margin. FVA or funding valuation adjustment measures the cost of variation margin.

9.3 KVA is an adjustment arising from the cost of regulatory capital requirements.

9.4 A company is assumed to stop posting collateral for a period before it defaults. The length of this period is the cure period.

9.5 If the market considers that a bank has become less creditworthy so that it is more likely to default, its DVA will increase. This will lead to an increase in its income and its equity. This seems paradoxical. How can there be an automatic increase to a bank's income and its equity when it becomes less creditworthy? The answer is as follows. When a bank becomes less creditworthy, there is an increase in the expected benefit to the bank from the fact that it might default on outstanding derivatives transactions. In the third quarter of 2011, the credit spreads of Wells Fargo, JPMorgan, Citigroup, Bank of America, and Morgan Stanley increased by 63, 81, 179, 266, and 328 basis points, respectively. As a result, these banks reported DVA gains that tended to swamp other income statement items. DVA gains and losses are approved by accounting bodies, but have now been excluded from the definition of common equity in determining regulatory capital.

Practice Questions

9.6

Financial economists argue that the cost of funding margin should be related to its risk (which is fairly low). Most practitioners consider that the cost should be the bank's average funding cost.

9.7

Many practitioners calculate KVA by arguing that there is a cost if a bank does something that requires additional regulatory capital and that the incremental return on the regulatory capital should be at least the return required by shareholders. A financial economist would argue against this if the project is less risky than the average project undertaken by the bank because the project will lower the average risk of the bank and therefore lower the return required by equity holders.

9.8

FVA is concerned with variation margin. The variation margin for a portfolio is the sum of the variation margins for the transactions in the portfolio. (As indicated in footnote 13 of Chapter 9, this is only approximately true when the impact of defaults on funding is considered.) MVA is concerned with initial margin which (at least in the case of CCPs) is calculated at the portfolio level. (Note: The standard regulatory approach to setting initial margin for bilaterally cleared derivatives does not permit netting. However, the industry has come up with SIMM, Standard Initial Margin Model, which does allow netting.)

9.9

$$CVA = 0.03 \times 6 + 0.03 \times 5 + 0.03 \times 4 = 0.45$$

The DVA is zero because the value of the transaction to the counterparty is negative.

9.10

The DVA for a bank depends on a single credit spread (its own) whereas CVA depends on the credit spread of all the bank's counterparties. On any given day, some counterparty spreads can be expected to go up while others go down so that there are some offsets. DVA can therefore be expected to be more volatile.

9.11.

If it chooses debt, the equity becomes more risky and the expected return of equity holders increases. If it chooses equity, the equity becomes less risky and the expected return required by equity holders goes down.

9.12.

A netting agreement states that all transactions are considered to be a single transaction in the event of a default. Transactions with a positive value are netted against transactions with a negative value. This usually reduces exposure because a company cannot cherry pick which transactions it will default on. Credit risk is not affected by netting when all transactions will have a positive value at all times or when all transactions have a negative value at all times.

9.13.

The average funding cost should come down. The company will become less risky. Its average funding cost should be a weighted average of 5% for the old projects and 3% for the new ones. This is $0.9 \times 5\% + 0.1 \times 3\%$ or 4.8%.