



Subject: Basel

Chapter: Unit 1

Category: Practice Questions

Chapters covered:

Unit 1 Chapter 2: Basel regulation overview

Unit 2 Chapter 1: Basel I

Multiple choice questions

1. The BCBS comprises of how many members and from how many jurisdictions?

- a. 28 members from 45 jurisdictions
- b. 45 members from 28 jurisdictions
- c. 30 members from 42 jurisdictions
- d. 42 members from 30 jurisdictions

Ans: b

2. What does BCBS stand for?

- a. Basel Committee on Banking Supervision
- b. Banking Committee on Basel Supervision
- c. Bank for Cooperative Banking Standards
- d. Board of Compliance for Banking Security

Ans: a

3. What was the original aim of the Basel Committee on Banking Supervision (BCBS)?

- a. To standardize accounting practices globally
- b. To create uniform banking regulations across all countries
- c. To regulate interest rates in the banking sector
- d. To promote financial stability by enhancing supervisory expertise and the quality of banking supervision worldwide

Ans: d

4. What was the primary focus of the 1975 paper issued by the BCBS, known as the “Concordat”?

- a. Establishing capital adequacy standards for all banks
- b. Standardizing loan classification across nations
- c. Supervisory principles for foreign branches and cross-border banking activities
- d. Developing global guidelines for liquidity ratios

Ans: c

5. Which of the following is not an accord published by BCBS?

- a. Basel I
- b. Basel 1.5
- c. Basel II
- d. Basel II.5

Ans: b

6. What was the primary focus of Basel I when it was introduced in 1988?

- a. Liquidity management
- b. Capital adequacy and credit risk
- c. Market risk management
- d. Operational risk framework

Ans: b

7. Under Basel I, what is the minimum capital adequacy ratio (CAR) required for banks?

- a. 6%
- b. 12%
- c. 10%
- d. 8%

Ans: d

8. Which of the following is NOT a risk category considered under Basel I?

- a. Credit Risk
- b. Market Risk
- c. Liquidity Risk
- d. Off-Balance-Sheet Items

Ans: c

9. What is the purpose of the risk-weighted asset (RWA) approach in Basel I?

- a. To align capital requirements with the size of a bank's assets
- b. To measure the profitability of a bank
- c. To ensure banks hold capital proportional to the riskiness of their assets
- d. To create a standard for asset liquidity

Ans: c

10. Which of these is an example of a 100% risk-weighted asset under Basel I?

- a. Residential mortgage loans
- b. Cash reserves
- c. Government bonds
- d. Corporate loans

Ans: d

11. Which institutions were primarily targeted by the Basel I framework?

- a. Insurance companies
- b. Central banks
- c. Internationally active banks
- d. Non-banking financial companies (NBFCs)

Ans: c

12. What risk weight was assigned to sovereign exposures in OECD countries under Basel I?

- a. 0%
- b. 20%
- c. 50%
- d. 100%

Ans: a

13. Which year marked the formal implementation of Basel I across member countries?

- a. 1985
- b. 1988
- c. 1992
- d. 1996

Ans: c

Descriptive questions

1. Write a short note on Basel accords.

The BCBS has developed a series of highly influential policy recommendations known as the Basel Accords. These are not binding and must be adopted by national policymakers in order to be enforced, but they have generally formed the basis of banks' capital requirements in countries represented by the committee and beyond. The Basel Accords refers to a set of banking supervision regulations set by the Basel Committee on Banking Supervision (BCBS).

2. Provide details on the History of BCBS.

The Basel Committee on Banking Supervision (BCBS) is the primary global standard setter for the prudential regulation of banks and provides a forum for regular cooperation on banking supervisory matters. Its 45 members comprise central banks and bank supervisors from 28 jurisdictions.

The Basel Committee - initially named the Committee on Banking Regulations and Supervisory Practices - was established by the central bank Governors of the Group of Ten countries at the end of 1974 in the aftermath of serious disturbances in international currency and banking markets (notably the failure of Bankhaus Herstatt in West Germany).

The Committee, headquartered at the Bank for International Settlements in Basel, was established to enhance financial stability by improving the quality of banking supervision worldwide, and to serve as a forum for regular cooperation between its member countries on banking supervisory matters.

The Committee's first meeting took place in February 1975, and meetings have been held regularly three or four times a year since.

The BCBS describes its original aim as the enhancement of "financial stability by improving supervisory know-how and the quality of banking supervision worldwide." Later, the BCBS turned its attention to monitoring and ensuring the capital adequacy of banks and the banking system.

The meetings are named "Basel Accords" since the BCBS is headquartered in the offices of the Bank for International Settlements (BIS) located in Basel, Switzerland.

Since its inception, the Basel Committee has expanded its membership from the G10 to 45 institutions from 28 jurisdictions.

Member countries include Australia, Argentina, Belgium, Canada, Brazil, China, France, Hong Kong, Italy, Germany, Indonesia, India, Korea, the United States, the United Kingdom, Luxembourg, Japan, Mexico, Russia, Saudi Arabia, Switzerland, Sweden, the Netherlands, Singapore, South Africa, Turkey, and Spain.

At the outset, one important aim of the Committee's work was to close gaps in international supervisory coverage so that

no banking establishment would escape supervision; and

supervision would be adequate and consistent across member jurisdictions.

A first step in this direction was the paper issued in 1975 that came to be known as the "Concordat".

The Concordat set out principles for sharing supervisory responsibility for banks' foreign branches, subsidiaries and joint ventures between host and parent (or home) supervisory authorities.

In May 1983, the Concordat was revised and re-issued as Principles for the supervision of banks' foreign establishments.

3. What are the key functions of the Basel accords set by BCBS?

The key function of the Basel accords set by BCBS are as follows:

- To ensure that banks hold enough cash reserves to meet their financial obligations and survive in financial and economic distress.
- To strengthen corporate governance, risk management, and transparency.
- The regulations are considered to be the most comprehensive set of regulations governing the international banking system.

4. Write a brief summary of each of the accords published by BCBS?

Basel I summary

The Basel Committee was formed in response to the liquidation of a Europe-based bank in 1974. This incident prompted the G-10 nations to set up the Basel Committee on Banking Supervision (BCBS), under the direction and supervision of the Bank of International Settlements, which is in Basel, Switzerland. As a result of the liquidation of the bank, this committee instigated the Basel 1 Accord in 1988 and focused on the capital adequacy of financial institutions.

Basel II summary

The Basel II Accord was introduced following substantial losses in the international markets since 1992, which were attributed to poor risk management practices. The Basel II Accord makes it mandatory for financial institutions to use standardized measurements for credit, market risk, and operational risk. However, different levels of compliance allow financial institutions to pursue advanced risk management approaches to free up capital for investment.

Basel II.5 summary

It is a complex and tedious set of capital-based regulations that overlook critical issues such as leverage, liquidity, the separation of investment and commercial banking, and the problem of TBTF. Basel 2.5 maintains the procedure whereby regulatory capital is calculated on the basis of risk-weighted assets, where weights are determined primarily by the credit rating agencies.

Basel III summary

Basel III is an extension of the existing Basel II Framework and introduces new capital and liquidity standards to strengthen the regulation, supervision, and risk management of the whole of the banking and finance sector.

Basel IV summary

Basel IV is a regulatory capital standard for banks that are active internationally. It was developed by the Basel Committee on Banking Supervision and was finalized in December 2017. The goal of Basel IV is to improve financial stability by strengthening the regulation and supervision of banks worldwide. Basel IV BCBS finalizes reforms on Risk Weighted Assets (RWA).

5. Draw a detailed comparison across Basel I, II and III.

Key objective	
Basel 1	Basel 1 was formed with the main objective of enumerating a minimum capital requirement for banks.
Basel 2	Basel 2 was established to introduce supervisory responsibilities and to further strengthen the minimum capital requirement.
Basel 3	Focus of Basel 3 was to specify an additional buffer of equity to be maintained by banks.
Risk focus	
Basel 1	Basel 1 has the minimal risk focus out of the 3 accords.
Basel 2	Basel 2 introduced a 3-pillar approach to risk management.
Basel 3	Assessment of liquidity risk in addition to the risks set out in Basel 2 was introduced by Basel 3.
Risks considered	
Basel 1	Only credit risk is considered in Basel 1.
Basel 2	Basel 2 includes a wide range of risks including operational, strategic, and reputational risks.
Basel 3	Basel 3 includes liquidity risks in addition to the risks introduced by Basel 2.
Predictability of future risks	
Basel 1	Basel 1 is backward-looking as it only considered the assets in the current portfolio of banks.
Basel 2	Basel 2 is forward-looking compared to Basel 1 since the capital calculation is risk sensitive.
Basel 3	Basel 3 is forward looking like macroeconomic environmental factors are considered in addition to the individual bank criteria.

6. Write a note on the developments/history of Basel I.

- With the foundations for supervision of internationally active banks laid, capital adequacy soon became the main focus of the Committee's activities. In the early 1980s, the onset of the Latin American debt crisis heightened the Committee's concerns that the capital ratios of the main international banks were deteriorating at a time of growing international risks.
- Backed by the G10 Governors, Committee members resolved to halt the erosion of capital standards in their banking systems and to work towards greater convergence in the measurement of capital adequacy. This resulted in a broad consensus on a weighted approach to the measurement of risk, both on and off banks' balance sheets.
- Following comments on a consultative paper published in December 1987, a capital measurement system commonly referred to as the Basel Capital Accord was approved by the G10 Governors and released to banks in July 1988.
- The 1988 Accord called for a minimum ratio of capital to risk-weighted assets of 8% to be implemented by the end of 1992. Ultimately, this framework was introduced not only in member countries but also in virtually all countries with active international banks.
- In September 1993, the Committee issued a statement confirming that G10 countries' banks with material international banking business were meeting the minimum requirements set out in the Accord
- The Accord was amended in November 1991 to more precisely define the general provisions or general loan loss reserves that could be included in the capital adequacy calculation.
- In April 1995, the Committee issued another amendment, to take effect at the end of that year, to recognize the effects of bilateral netting of banks' credit exposures in derivative products and to expand the matrix of add-on factors.
- In April 1996, another document was issued explaining how Committee members intended to recognize the effects of multilateral netting. The Committee also refined the framework to address risks other than credit risk, which was the focus of the 1988 Accord.
- In January 1996, following two consultative processes, the Committee issued the Amendment to the Capital Accord to incorporate market risks (or Market Risk Amendment), to take effect at the end of 1997. This was designed to incorporate within the Accord a capital requirement for the market risks arising from banks' exposures to foreign exchange, traded debt securities, equities, commodities and options. An important aspect of the Market Risk Amendment was that banks were, for the first time, allowed to use internal models (value-at-risk models) as a basis for measuring their market risk capital requirements, subject to strict quantitative and qualitative standards.

7. State the capital requirements put forth by Basel I.

Basel I put forth three capital requirements:

- The bank's total assets-to-capital ratio had to be less than 20 (i.e., capital to total assets had to be greater than $1/20$ or 5%). This capital requirement was similar to the requirements in many countries prior to 1988.
- Tier 1 capital to risk-weighted assets (RWA) must exceed 4%. On- and off-balance sheet items are used to calculate an RWA. RWA is intended to measure a bank's total credit exposure.
- The ratio of total capital (Tier 1 + Tier 2) to RWA must exceed 8%. The ratios are sometimes referred to as the Cooke ratios, after Peter Cooke from the Bank of England. Basel I stipulated that Tier 2 capital must be no more than half of total capital. Excess Tier 1 capital (i.e., greater than 4% of RWA) may be used to satisfy the total capital to RWA ratio.

8. Define the two components of capital as per Basel I.

Basel I defined the two components of capital as follows:

- Tier 1 capital (or core capital) consists of:
Equity (subtract goodwill from equity).
Noncumulative perpetual preferred stock.
- Tier 2 capital (or supplementary capital) consists of:
Cumulative perpetual preferred stock.
Certain types of 99-year debentures.
Subordinated debt with an original maturity greater than five years (where the subordination is to depositors).

Equity capital (i.e., Tier 1) absorbs losses. Supplementary capital (i.e., Tier 2) is subordinate to depositors and thus protects depositors in the event of a bank failure. At least 50% of capital must be Tier 1. Half of the Tier 1 requirement has to be met with common equity. Under Basel I, some countries required banks to have more capital than required by the Basel I accord.

9. A bank has the following asset portfolio:

Corporate loans: \$50 million (risk weight: 100%)

Residential mortgages: \$30 million (risk weight: 50%)

Cash reserves: \$10 million (risk weight: 0%)

Calculate the total Risk-Weighted Assets (RWA) and the minimum capital required under Basel I (8% CAR).

- Compute the RWA for each asset category:
 Corporate loans: $\$50 \text{ million} \times 100\% = \50 million
 Residential mortgages: $\$30 \text{ million} \times 50\% = \15 million
 Cash reserves: $\$10 \text{ million} \times 0\% = \0
 Total RWA: $\$50 \text{ million} + \$15 \text{ million} + \$0 = \65 million
- Minimum capital requirement (CAR = 8%):
 $\$65 \text{ million} \times 8\% = \5.2 million

10. A bank initially has the following assets:

Corporate loans: \$80 million (risk weight: 100%)

Residential mortgages: \$50 million (risk weight: 50%)

The bank decides to increase its exposure to residential mortgages by \$20 million and reduce corporate loans by the same amount. Calculate:

- **Initial RWA and capital requirement**
- **New RWA and capital requirement after the changes.**

Step 1: Initial Calculation

RWA for corporate loans: $\$80 \text{ million} \times 100\% = \80 million

RWA for residential mortgages: $\$50 \text{ million} \times 50\% = \25 million

Total RWA: $\$80 \text{ million} + \$25 \text{ million} = \$105 \text{ million}$

Minimum capital requirement: $\$105 \text{ million} \times 8\% = \8.4 million

Step 2: After Changes

New exposure:

Corporate loans: $\$60 \text{ million} \times 100\% = \60 million

Residential mortgages: $(\$50 \text{ million} + \$20 \text{ million}) \times 50\% = \35 million

New RWA: $\$60 \text{ million} + \$35 \text{ million} = \$95 \text{ million}$

New capital requirement: $\$95 \text{ million} \times 8\% = \7.6 million

11. A bank has the following derivative positions:

An interest rate swap with a notional value of \$50 million and a current positive market value of \$2 million. The add-on factor for interest rate swaps is 0.5%.

A foreign exchange forward with a notional value of \$20 million and no current exposure (market value = \$0). The add-on factor for foreign exchange forwards is 1.5%.

Using both the Current Exposure Method and the Original Exposure Method, calculate:

- **The Credit Equivalent Amount (CEA) for each derivative position.**
- **The total CEA for the bank.**

Solution:

Step 1: Current Exposure Method

The formula for CEA using the Current Exposure Method is:

$$CEA = \text{Current MV} + (\text{Notional Value} * \text{Add - On Factor})$$

Interest Rate Swap:

Current Market Value: \$2 million

Add-On Value: \$50 million $\times$ 0.5% = \$0.25 million

Total CEA: \$2 million + \$0.25 million = \$2.25 million

Foreign Exchange Forward:

Current Market Value: \$0 (no current exposure)

Add-On Value: \$20 million $\times$ 1.5% = \$0.3 million

Total CEA: \$0 + \$0.3 million = \$0.3 million

Total CEA (Current Exposure Method):

\$2.25 million + \$0.3 million = \$2.55 million

Step 2: Original Exposure Method

The formula for CEA using the Original Exposure Method is:

$$CEA = (\text{Notional Value} * \text{Add - On Factor})$$

Interest Rate Swap:

Add-On Value: \$50 million $\times$ 0.5% = \$0.25 million

Total CEA: \$0.25 million

Foreign Exchange Forward:

Add-On Value: \$20 million $\times$ 1.5% = \$0.3 million

Total CEA: \$0.3 million

Total CEA (Original Exposure Method):

\$0.25 million + \$0.3 million = \$0.55 million

Final Answer:

Current Exposure Method Total CEA: \$2.55 million

Original Exposure Method Total CEA: \$0.55 million

12. Given the data below,

- **Determine which values may be netted against each other**
- **Calculate NRR**
- **Calculate CEA**

Counterparty	Type	Notional	Market value	Add-On
1	IR	100	10	0.5%
1	IR	150	20	1.0%
1	FX	200	-7	10%
2	IR	300	5	2.0%
2	FX	170	2	7.0%
3	Option	220	3	10%
3	FX	150	120	20%
3	FX	60	-10	7%

13. Write a short note on the 1995 amendment on netting

- By 1995, quantitative market risk management was popular, value at risk (VaR) was in widespread use, and the stock market had crashed in 1987. At that point, the “Market Risk Amendment” was put in place allowing for bilateral netting of exposures.
- Before netting was permitted, Basel I disincentivized hedging.
- For example, Bank A could buy protection from Bank B against falling rates and later enter a contract with the same counterparty and same notional value to sell protection. Changes in interest rates in this case would have offsetting effects, but Basel I applied an add-on to each swap.
- The International Swaps and Derivatives Association master agreement allowed positive and negative values to offset one another called netting.
- Netting is frequently employed in transactions that generate credit exposure to both sides. When each side has credit risk, we value and net the two to determine which side has the greater obligation.

- The impact of netting was not taken into consideration under the Basel I Accord in 1988. However, by 1995, the accord was modified to allow for a reduction in the CEA, given that a legal netting agreement was in place. To measure the impact of netting, the net replacement ratio (NRR) was developed. This ratio is equal to the current exposure with netting divided by the current exposure without netting.
- The NRR value is incorporated into a modified version of the credit equivalent amount by multiplying it by the product of the add-on factor (D) and the principal amount (L). This modification can then be used to reduce a bank's RWA.
- Credit equivalent amounts are calculated as:

$$CEA = \max\left(\sum_{i=1}^N V_i, 0\right) + \sum_j [0.4 \times D_j + 0.6 \times D_j \times NRR]$$

14. Write a short note on 1996 amendment on market risk and trading activities. Also, give details on standardized measurement method and internal model-based approach.

- Market risk is the risk associated with changes in the market values of trading book assets.
- The 1995 amendment requirements did not capture market risk. The goal of the 1996 Amendment to the 1988 Basel Accord was to require banks to measure market risks associated with trading activities and maintain capital to back those risks. Banks must mark-to-market (i.e., fair value accounting) bonds, marketable equity securities, commodities, foreign currencies, and most derivatives that are held by the bank for the purpose of trading (referred to as the trading book).
- Banks do not have to use fair value accounting on assets they intend to hold for investment purposes (referred to as the banking book). This includes loans and some debt securities.
- The 1996 Amendment proposed two methods for calculating market risk:
 - Standardized Measurement Method
 - Internal Model Based Approach

Then explain the standardized measurement method and internal model-based approach including the equations.

15. A bank calculates its Value-at-Risk (VaR) for market risk under the 1996 Basel I amendment. The following data is provided for the previous 60 trading days:

Previous Day's VaR (99%, 10-day): \$25 million

Average of Daily VaR (99%, 10-day) over the past 60 days: \$20 million

Company-Specific Risk Charge (for additional risks): \$3 million

- Determine the base market risk capital charge.
- Calculate the total market risk capital requirement, including the company-specific risk charge.

Step 1: Determine the Base Market Risk Capital Charge

First, we need to find the higher value between the Previous Day's VaR and three times the 60-day average VaR

$$MR = \max(VaR_{t-1}, m * VaR_{avg})$$

Previous Day's VaR = \$25 million

Three times the 60-day average VaR = \$20 million $\times$ 3 = \$60 million

So, the higher value is \$60 million.

Step 2: Add Company-Specific Risk Charge

The company-specific risk charge is an additional charge to account for risks specific to the bank (e.g., model risk, operational risk, etc.).

Total Capital Requirement = Base Capital Charge + Company-Specific Risk Charge

Total Capital Requirement = 60 million + 3 million = 63 million

16. State the limitations of Basel I.

First, all corporate loans were treated the same (i.e., a risk weight of 100%) regardless of the creditworthiness of the borrower. A firm with an AAA credit rating was treated the same as a borrower with a C rating.

Basel I also ignored the benefits of diversification (i.e., there was no model of default correlation).