



Subject: Basel

Chapter:

Category: Practice questions

Chapters covered:

Unit 4 Chapter 1: Basel III

Unit 2 Chapter 2: Market, credit, and operational capital

Multiple choice questions**1. What is the primary objective of Basel III?**

- a. To increase financial inclusion
- b. To strengthen the regulation, supervision, and risk management of banks
- c. To eliminate all risks in the banking system
- d. To provide financial aid to developing countries

Ans: b

2. Which of the following components is NOT part of Basel III capital requirements?

- a. Common Equity Tier 1 (CET1)
- b. Tier 2 Capital
- c. Leverage Ratio
- d. Statutory Liquidity Ratio (SLR)

Ans: d

3. What is the minimum Common Equity Tier 1 (CET1) ratio under Basel III?

- a. 3%
- b. 6%
- c. 4.5%
- d. 8%

Ans: c

4. What is the purpose of the Liquidity Coverage Ratio (LCR) in Basel III?

- a. To improve banks' resilience during periods of liquidity stress
- b. To ensure long-term financial stability of banks
- c. To measure credit risk exposure
- d. To monitor operational risk management

Ans: a

5. The Capital Conservation Buffer (CCB) in Basel III is set at:

- a. 1% of Risk-Weighted Assets
- b. 2.5% of Risk-Weighted Assets
- c. 3% of Risk-Weighted Assets
- d. 5% of Risk-Weighted Assets

Ans: b

6. Which type of risk does the Countercyclical Capital Buffer address?

- a. Credit risk
- b. Market risk
- c. Systemic risk during economic downturns
- d. Operational risk

Ans: c

7. What is the minimum leverage ratio under Basel III?

- a. 2%
- b. 3%
- c. 4%
- d. 5%

Ans: b

8. Which new risk category did Basel III introduce as part of its framework?

- a. Credit risk
- b. Market risk
- c. Operational risk
- d. Liquidity risk

Ans: d

9. Under Basel III, what is the purpose of the Net Stable Funding Ratio (NSFR)?

- a. To limit short-term wholesale funding reliance
- b. To promote long-term funding stability
- c. To calculate expected credit loss
- d. To measure profitability of banks

Ans: b

10. Which of the following instruments qualifies as Common Equity Tier 1 (CET1) capital?

- a. Subordinated debt
- b. Perpetual bonds
- c. Retained earnings
- d. Tier 2 capital instruments

Ans: c

Descriptive questions

Refer to the presentations for the below straightforward questions.

1. What was the necessity of Basel III.
2. What are the capital requirements under Basel III? Also, explain the component of tier I and II capital.
3. Write a short note on capital conservation buffer and countercyclical buffer.
4. Explain LCR and its purpose
5. Explain NSFR and its purpose
6. What are the key changes in Basel IV relative to Basel III.

7. A bank has the following assets and liabilities:

High-Quality Liquid Assets (HQLA): \$500 million

Total Net Cash Outflows over 30 days: \$350 million

Calculate the Liquidity Coverage Ratio (LCR). Does the bank meet the minimum Basel III requirement of 100% for LCR?

The LCR is 142.86% after solving, which is above the Basel III minimum requirement of 100%.

8. A bank has the following funding and asset structure:

Available Stable Funding (ASF): \$800 million

Required Stable Funding (RSF): \$700 million

Calculate the Net Stable Funding Ratio (NSFR). Does the bank meet the minimum Basel III requirement of 100% for NSFR?

The NSFR is 114.29%, which is above the Basel III minimum requirement of 100%.

9. A bank has the following information:

High-Quality Liquid Assets (HQLA):

- Level 1 HQLA: \$300 million (100% eligible)
- Level 2A HQLA: \$200 million (85% eligible)
- Level 2B HQLA: \$50 million (50% eligible)

Total Cash Outflows over 30 days:

- Retail deposits: \$400 million (run-off rate: 5%)
- Wholesale funding: \$300 million (run-off rate: 15%)
- Derivative payables: \$100 million (run-off rate: 100%)

Total Cash Inflows over 30 days: \$200 million (capped at 75% of outflows)

Calculate:

- **Total High-Quality Liquid Assets (HQLA).**
- **Total Net Cash Outflows.**
- **Liquidity Coverage Ratio (LCR).**

1. HQLA Calculation:

$$\text{Total HQLA} = (\text{Level 1 HQLA}) + (\text{Level 2A HQLA} \times 85\%) + (\text{Level 2B HQLA} \times 50\%)$$

$$\text{Total HQLA} = 300 + (200 \times 0.85) + (50 \times 0.5) = 300 + 170 + 25 = 495 \text{ million}$$

2. Cash Outflows:

$$\text{Outflows} = (\text{Retail Deposits} \times 5\%) + (\text{Wholesale Funding} \times 15\%) + (\text{Derivative Payables} \times 100\%)$$

$$\text{Outflows} = (400 \times 0.05) + (300 \times 0.15) + (100 \times 1) = 20 + 45 + 100 = 165 \text{ million}$$

Net Cash Outflows:

$$\text{Net Cash Outflows} = \text{Outflows} - \text{Inflows (capped at 75\% of outflows)}$$

$$\text{Net Cash Outflows} = 165 - (165 \times 0.75) = 165 - 123.75 = 41.25 \text{ million}$$

3. LCR Calculation:

$$\text{LCR} = \frac{\text{Total HQLA}}{\text{Net Cash Outflows}} \times 100 = \frac{495}{41.25} \times 100 = 1200\%$$

10. A bank has the following information:

Available Stable Funding (ASF):

- **Tier 1 Capital: \$600 million (100% eligible)**
- **Retail deposits: \$400 million (95% eligible)**
- **Long-term debt (>1 year): \$300 million (90% eligible)**

Required Stable Funding (RSF):

- **Loans maturing in less than 1 year: \$500 million (50% required stable funding)**
- **Loans maturing in more than 1 year: \$400 million (85% required stable funding)**
- **Marketable securities: \$300 million (20% required stable funding)**

Calculate:

- **Total ASF.**
- **Total RSF.**
- **Net Stable Funding Ratio (NSFR).**

1. ASF Calculation:

$$\text{ASF} = (\text{Tier 1 Capital}) + (\text{Retail Deposits} \times 95\%) + (\text{Long-term Debt} \times 90\%)$$

$$\text{ASF} = 600 + (400 \times 0.95) + (300 \times 0.9) = 600 + 380 + 270 = 1250 \text{ million}$$

2. RSF Calculation:

$$\text{RSF} = (\text{Loans} (<1 \text{ year}) \times 50\%) + (\text{Loans} (>1 \text{ year}) \times 85\%) + (\text{Marketable Securities} \times 20\%)$$

$$\text{RSF} = (500 \times 0.5) + (400 \times 0.85) + (300 \times 0.2) = 250 + 340 + 60 = 650 \text{ million}$$

3. NSFR Calculation:

$$\text{NSFR} = \frac{\text{ASF}}{\text{RSF}} \times 100 = \frac{1250}{650} \times 100 = 192.31\%$$

11. Explain the following approaches of capital calculation for operational risk:

- Basic indicator approach
- Standardized approach
- Advanced measurement approach
- Standardized measurement approach

12. A bank reports the following gross income for the past 3 years for each business line (in \$ million):

Business Line	Year 1	Year 2	Year 3	Beta (β)
Corporate Finance	100	-50	200	18%
Trading & Sales	150	200	100	18%
Retail Banking	-30	120	150	12%
Commercial Banking	100	80	-40	15%

Calculate:

- Average gross income for each business line (excluding negative values).
- Operational risk capital requirement for each business line.
- Total operational risk capital requirement.

1. Average Gross Income (GI):

Business Line	Positive GI (Year 1)	Positive GI (Year 2)	Positive GI (Year 3)	Number of Positive Years (N)	Average GI ($\frac{\text{Sum of Positive GI}}{N}$)
Corporate Finance	100	0	200	2	$\frac{100+200}{2} = 150$
Trading & Sales	150	200	100	3	$\frac{150+200+100}{3} = 150$
Retail Banking	0	120	150	2	$\frac{120+150}{2} = 135$
Commercial Banking	100	80	0	2	$\frac{100+80}{2} = 90$

2. Capital Requirement (K_i):

$$K_i = \beta_i \times \text{Average GI}$$

Business Line	Beta (β)	Average GI	Capital Charge (K_i)
Corporate Finance	18%	150	$150 \times 0.18 = 27$
Trading & Sales	18%	150	$150 \times 0.18 = 27$
Retail Banking	12%	135	$135 \times 0.12 = 16.2$
Commercial Banking	15%	90	$90 \times 0.15 = 13.5$

3. Total Operational Risk Capital Requirement:

$$K_{\text{total}} = 27 + 27 + 16.2 + 13.5 = 83.7 \text{ million}$$

13. A bank has the following financial data:

Interest income: €500 million

Interest expenses: €200 million

Fee income: €150 million

Fee expenses: €50 million

Net profit from trading: €100 million

Net loss from other financial operations: €50 million

The bank's historical operational losses for the past 10 years are:

Years 1–5: €20 million annually

Years 6–10: €30 million annually

The BI is divided into **buckets**, and each bucket has an associated marginal coefficient to calculate the operational risk capital.

BI Bucket (in € millions)	Marginal Coefficient (α)
0 to 1,000	12%
1,000 to 30,000	15%
>30,000	18%

Calculate:

- **The Business Indicator (BI).**
- **The Business Indicator Component (BIC).**
- **The Loss Component (LC).**
- **The Total Operational Risk Capital (ORC).**

1. **Business Indicator (BI):**

$$BI = (\text{Interest Income} - \text{Interest Expenses}) + (\text{Fee Income} - \text{Fee Expenses}) + (\text{Net Trading Profit/Loss})$$

$$BI = (500 - 200) + (150 - 50) + (100 - 50) = 300 + 100 + 50 = 450 \text{ million}$$

2. **Business Indicator Component (BIC):**

The BI is in the first bucket (0–1,000 million), so the marginal coefficient is **12%**:

$$BIC = BI \times 12\% = 450 \times 0.12 = 54 \text{ million}$$

3. **Loss Component (LC):**

Average annual losses over 10 years:

$$LC = \frac{\text{Sum of Annual Losses}}{10} = \frac{(20 \times 5) + (30 \times 5)}{10} = \frac{100 + 150}{10} = 25 \text{ million}$$

4. **Total Operational Risk Capital (ORC):**

$$ORC = BIC + LC = 54 + 25 = 79 \text{ million}$$