

### Course: Banking [2206]

Fall Semester 2024 October 10, 2024

Mid-term test

### Part I [6/20]

In this first part of the mid-term test, you need to select a <u>single</u> answer (identified as a, b, c or d) in each of the 6 questions presented below. You will not be penalized for a wrong answer.

**1.** The Banking Union has been designed to ensure financial stability and strengthen integration in the banking system within the Euro Area.

a) The three main pillars of the Banking Union are the Single Supervisory Mechanism (SSM), the Single Resolution Mechanism (SRM), and the European Stability Mechanism (ESM).

b) The Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM) jointly supervise banks and jointly decide on the closure of banks that cannot meet liquidity requirements, while relying on the European Deposit Insurance Scheme (EDIS) to absorb all losses.

c) The Single Supervisory Mechanism (SSM) ensures a consistent prudential supervision of all Eurozone banks, while the Single Resolution Mechanism (SRM) ensures an orderly resolution of failing banks with minimal costs for taxpayers and to the real economy.

d) The ECB directly supervises significant banks within the Banking Union, while national authorities may be involved in the supervision of less significant banks if and only if requested by the ECB.

**2.** What effect does the lending process of commercial banks have on the overall money supply in the economy?

# a) When banks lend money, they increase the overall money supply in circulation.

b) Lending by commercial banks has no effect on the money supply, as all loans are offset by an equal reduction in existing deposits.

c) Only government actions and central banks influence the money supply, and bank lending does not contribute to money creation.

d) The lending process simply redistributes existing money within the economy without affecting money creation.

**3.** Consider the following information for a specific bank:

Common Equity Tier I (CET1)	Total Capital	Risk-Weighted Assets
100 m€	200 m€	2000m€

From a prudential perspective, what can you conclude?

- a) The current CET1 is sufficient for compliance with the respective CET1 prudential Pilar 1 requirement.
- b) The current Total Capital is not sufficient for compliance with the respective Total Capital prudential Pilar 1 requirement.
- c) This bank is compliant with the *Pilar 1 plus the buffer requirements*, as the Capital Conservation Buffer (CCoB) is 2.5% and made of CET1.
- d) We cannot assess any prudential requirement as we do not have information on the value of assets, just on the risk-weighted assets.

**4.** Consider a situation where a sustained rise in housing prices raises systemic risk concerns for the macroprudential authorities. Can we expect macroprudential authorities to intervene? (Yes ou No?) If *Yes*, what measures are likely to be taken to ensure financial stability?

Please identify the right answers to the two questions presented above, selecting a single answer (a, b, c or d).

a) Yes. An increase in Pillar 1 capital requirements for all the banks, mandating them to hold higher levels of capital against all exposures as it will enhance their resilience in the face of potential economic downturns.

# b) Yes. The implementation of a Sectoral Systemic Risk Buffers (sSyRB) specifically targeting exposures to the housing sector, aimed at mitigating risks related to concentrated lending in real estate.

c) Yes. An adjustment of the Capital Conservation Buffer (CCoB) to ensure that banks maintain an adequate level of capital that protects them during times of economic stress while allowing for capital distributions during normal times.

d) No as Pillar 1 and Pillar 2 requirements already consider systemic risks that may emerge from the housing market.

**5.** The risk that a borrower may not be able to refinance their debt at maturity or may face higher costs when doing so is known as:

a) Reinvestment risk.

### b) Refinancing risk.

- c) Interest rate risk.
- d) Market risk.

6. Consider a client that asks for a loan of 40 000 euros, one year maturity. According to the credit analysis of the bank, the client has a 2% probability of default, in which case the bank may lose 80% of the loan amount. The bank faces 40 euros annually of operating costs to deal with this loan. The Treasury department of the bank quotes liquidity at bid/ask of 1% - 2%. The law forces the bank to have 8% of equity over assets (consider a risk weight of 100%) and capital costs 7%. What is the minimum rate that the bank will charge to this client?

- a. 3.6%.
- b. 4,1%.
- c. 1,6%.
- d. None of the above.

## Group II [14/20]

In this second part of the exam, <u>you must answer four questions out of the five</u> <u>below</u>. You are free to choose the four you want to answer to. Each question is worth 3.5 out of the 14 points assigned to this group. If you reply to more than four questions, only the first two answered will be considered for grading purposes. Please answer the questions chosen in a <u>maximum of 110 words per question</u>.

**1.** How does the **Banking Union** mitigate moral hazard concerns while ensuring financial stability, particularly in the context of bank supervision, resolution, and the Single Rulebook?

The Banking Union mitigates moral hazard and ensures financial stability through its integrated framework of bank supervision, resolution, and a harmonized regulatory environment.

Bank Supervision: by centralizing supervision, the Single Supervisory Mechanism (SSM) minimizes the risk of regulatory forbearance by national authorities, reducing moral hazard by ensuring consistent oversight and preventing risky behavior.

Bank Resolution: The Single Resolution Mechanism (SRM) manages failing banks, ensuring losses are absorbed by shareholders and creditors, with minimal cost to taxpayers, which limits the moral hazard associated with public bailouts. It follows clear, predefined rules, safeguarding financial stability.

Single Rulebook: This harmonized set of regulations applies across the EU, preventing regulatory arbitrage and ensuring banks operate under the same standards. This uniformity promotes resilience and reduces risk-taking behavior, further mitigating moral hazard.

Together, these mechanisms foster financial stability by addressing systemic risks in a coordinated way.

**2.** Briefly describe the different prudential **capital requirements (micro and macro)** referring to the supervisory actions in case of non-compliance.

- Minimum capital requirements (<u>Pillar 1 requirements</u>): Common Equity Tier 1 (4,5%) + Common Equity (6%) + Total Capital (8%) – differences on the instruments eligible for the numerator; the denominator is always RWA.

- Additional capital requirement (<u>Pillar 2 requirement</u>): assessed bank-by-bank -> withdrawal of authorization or liquidation/recovery

- <u>Buffer requirements</u>: (i) Capital Conservation Buffer (CCoB) (obj: conserve a bank's capital); ii) Countercyclical Capital Buffer (CCyB) (obj: counter procyclicality in the

financial system); iii) G-SIIs and O-SIIs must fulfil supplementary requirements; iv) Systemic Risk Buffer (SyRB) (obj: address systemic risks not covered by other cap. requirements).

-> conservation capital plans and restrictions to distributions

- <u>Pillar 2 guidance</u> In addition, supervisors expect banks to reserve certain amounts of capital for times of stress.

-> Supervisor attention

**3. Identify four risks faced by banks** (excluding credit risk, which may be addressed in a separate question). Describe each of these risks including their main features.

**Interest Rate Risk:** current or prospective risk to a bank's capital and earnings resulting from adverse movements in interest rates. This risk primarily affects a bank's banking book, which includes assets and liabilities not intended for trading but held for long-term purposes.

**Liquidity Risk:** risk that a bank may not be able to meet its short-term financial obligations as they fall due, without incurring unacceptable losses. Essentially, liquidity risk arises when a bank is unable to convert assets into cash quickly enough or at a reasonable price to meet its liabilities. In the Basel III framework, liquidity risk management is emphasized through the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR).

**Market Risk:** the risk of losses in a bank's trading book due to adverse movements in market prices. These risks can arise from fluctuations in variables such as interest rates, exchange rates, equity prices, and commodity prices.

**Operational Risk:** risk of loss resulting from inadequate or failed internal processes, people, and systems, or from external events

**4. Credit risk** is a fundamental element of banking management. Discuss its key features, including the (four) primary drivers and how this risk is expected to materialize throughout the economic cycle and among different agents, and its impact on capital requirements.

Credit risk refers to the risk that a borrower will default on their financial obligations to the bank. There are four key drivers that impact credit risk for a given exposure:

Probability of Default (PD): The likelihood that a borrower will fail to meet their debt obligations.

Loss Given Default (LGD): The percentage of the total exposure that the bank expects to lose if the borrower defaults.

Exposure at Default (EAD): An estimate of the outstanding amount of the loan at the time of default.

Maturity: The remaining term of the loan, influencing risk as longer maturities tend to increase uncertainty and exposure to adverse events.

Credit risk materializes during economic downturns or periods of financial stress, as defaults are more likely to occur, particularly among vulnerable households and firms, due to declining economic conditions, which may strain borrowers' ability to repay loans.

Risk materialization may not directly impact capital if fully covered by provisions, which act as a buffer against expected losses. Provisions affect capital through the P&L when they are established. However, if provisions exceed the expected loss, they create an additional strain on capital, thereby reducing the bank's management buffer. Furthermore, even without immediate risk materialization, an increase in credit risk (as commonly seen in economic downturns) results in a deterioration of credit quality. This, in turn, increases risk-weighted assets (RWA), leading to higher capital requirements, as the bank must hold more capital to cover potential losses.

**5.** Discuss whether the **duration gap** and the **repricing gap models** can be seen as complementary in assessing a bank's interest rate risk exposure. How might they complement each other? Your answer should include a brief description of both models.

Yes, the duration gap and repricing gap models can be seen as complementary tools for assessing a bank's interest rate risk exposure, as each focuses on different aspects of risk.

The repricing gap model primarily examines the impact of interest rate fluctuations on a bank's interest income and net interest margin, which directly influences the profit and loss (P&L) statement. It categorizes assets and liabilities based on their sensitivity to interest rate changes within specific time frames, allowing banks to identify periods where the gaps between interest-sensitive assets and liabilities may expose them to increased risk.

Conversely, the duration gap model assesses the effect of interest rate changes on the market value of the bank's equity, focusing on the balance sheet. By employing the concept of duration, this model measures the sensitivity of the bank's assets and liabilities to interest rate changes over time, highlighting how fluctuations can impact the overall capital value. Together, these models provide a comprehensive view of interest rate risk. While the repricing gap model focuses on immediate income implications, the duration gap model offers insights into long-term capital stability. Utilizing both models allows banks to develop a more robust risk management strategy that addresses both earnings volatility and potential changes in the capital base.