



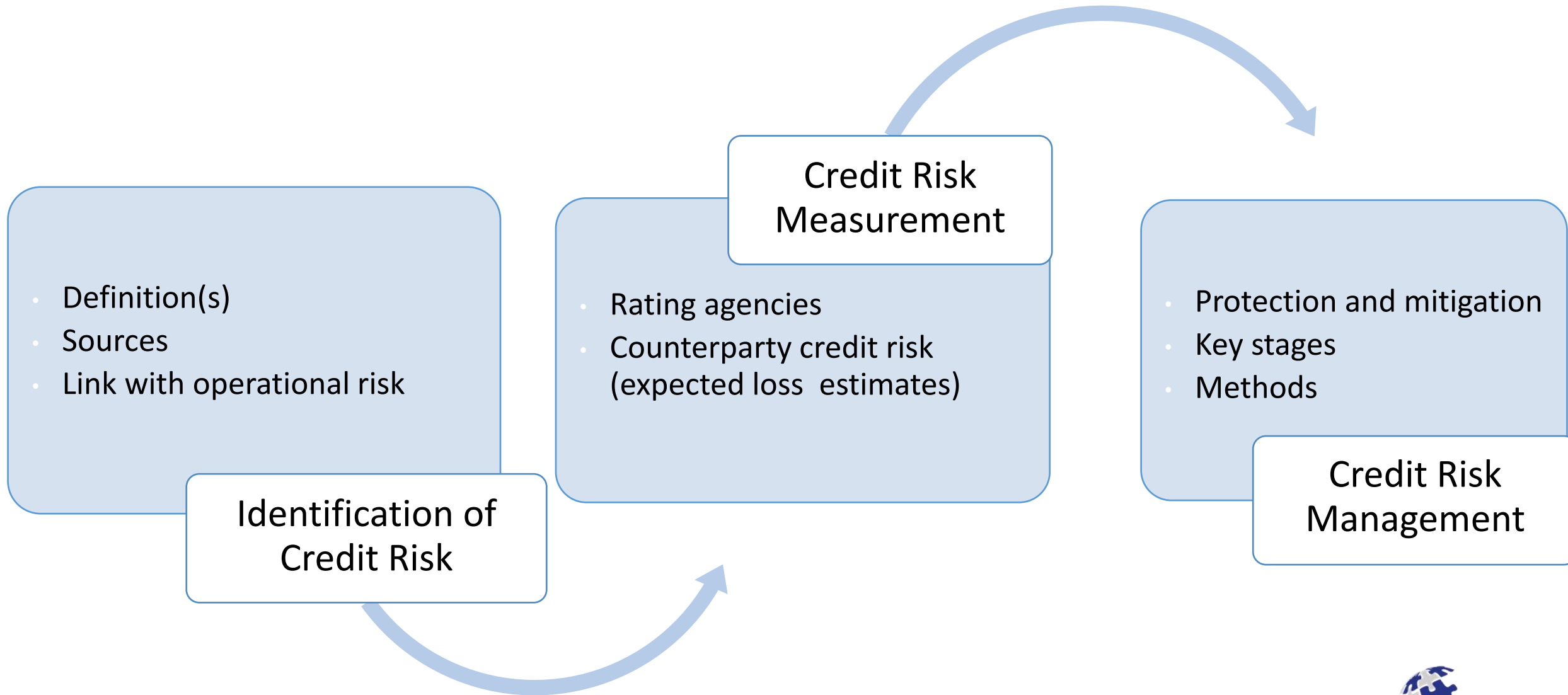
Chapter 4

Credit Risk

Questions - 15



Chapter Summary



Credit risk

Credit risk is the risk of loss caused by the **failure of a counterparty** or issuer to meet its **obligations**.



Identification of Credit Risk

Key Components of Credit Risk

Obligor

- The party that has the **financial obligation**

Counterparty risk

- The risk that a counterparty **fails to fulfil** its contractual obligations

Issuer risk

- This is the risk that the **issuer of the bond** could default on its obligations to pay coupons or **repay the principal** on the bond.

Concentration risk

- Risk due to an **uneven distribution of exposures** to individual issuers or counterparties or within industry sectors and geographical regions.



Counterparty and Issuer Risk Exposures

Difference

Counterparty risk

A broker could fail to **deliver a bond** issued by a good quality company that is currently paying its coupons and redeeming its bonds.

Issuer risk

The broker could deliver the bond as required, but the issuing company declares **bankruptcy and stops paying its interest on bonds.**



The extension of **commitments** and guarantees

Interbank **transactions**

Financial instruments such as futures, options, swaps and bonds

The **settlement** of these and other transactions



Settlement Risk

- When the firm **fails to make its payment**, the investment company faces **settlement credit risk**.
- **Pre-settlement risk** is the risk that an institution defaults before the settlement of the transaction.

Systemic Risk

- Systemic risk is a possible breakdown of the entire **financial system** rather than the failure of an individual firm.
- Systemic risk exists because of the close **interlinkages** between the different parts of the financial system.



Internal Processes

Prescribed management **policies and procedures.**

Adequacy of controls over all **back-office procedures**

Contractual requirements

Legal covenants

Collateral management.

Systems

The accuracy and timeliness of credit risk information provided to **Management Information Systems.**

People

Adequate **segregation of duties.**



What is Systemic Risk ?

- A. The firm fails to make its payment
- B. Possible breakdown of the entire financial system
- C. A counterparty fails to fulfil its contractual obligations
- D. Risk due to an uneven distribution of exposures

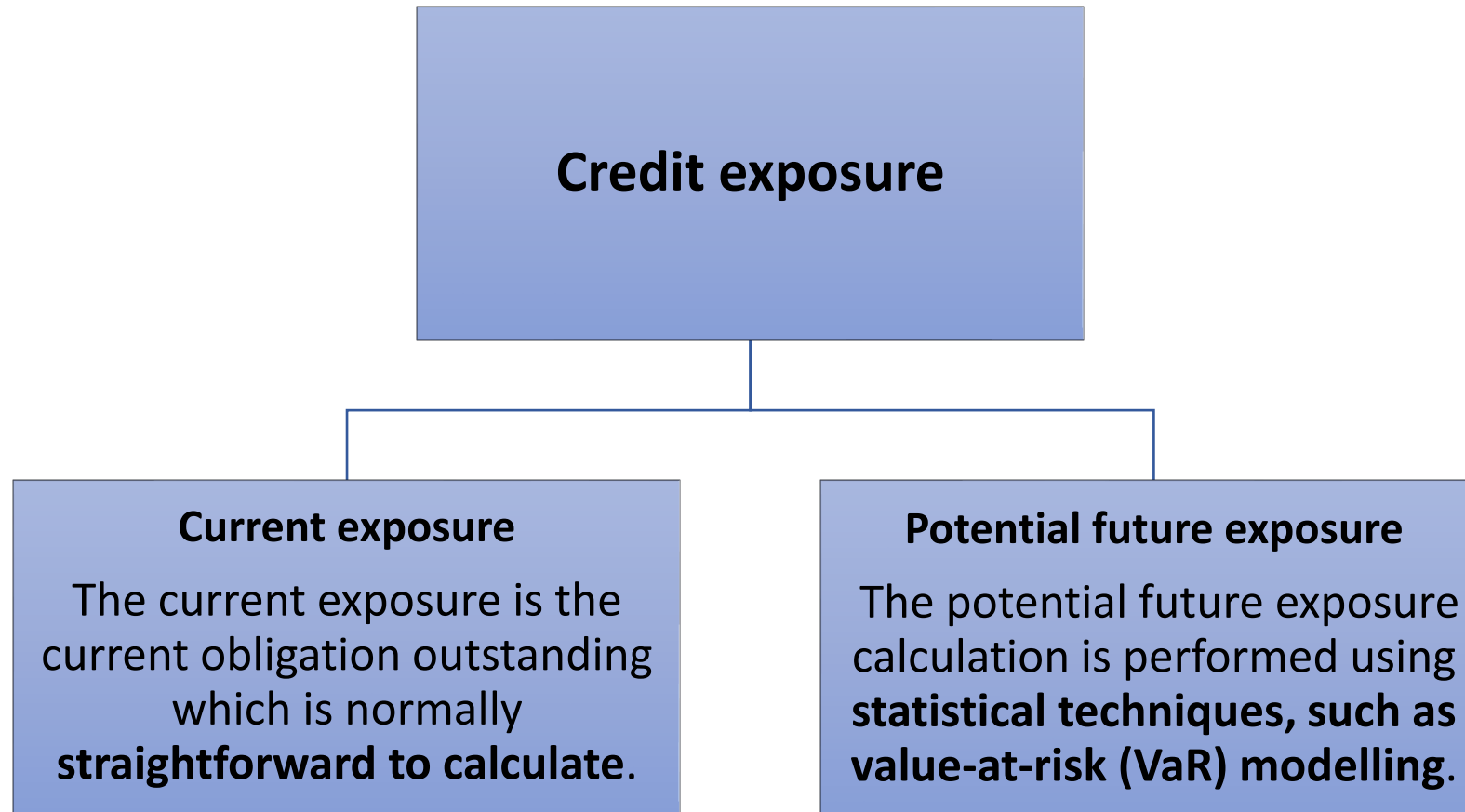
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Credit Risk Measurement Techniques

Credit Exposure

Credit exposure is the amount that can potentially be lost if a debtor defaults on its obligations



Credit Risk Premium

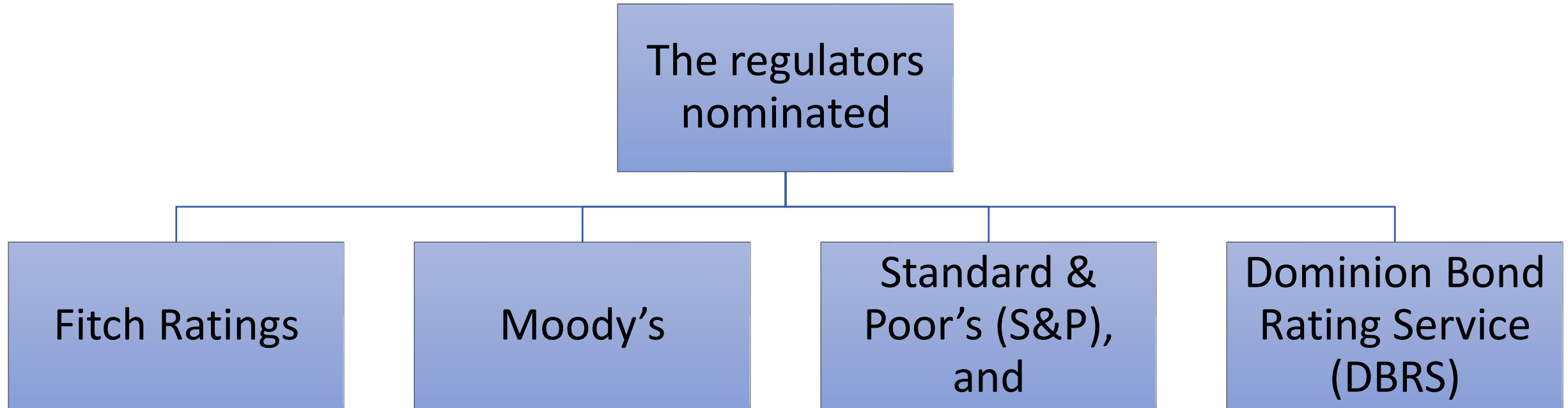
The difference between the **interest rate** a firm pays when it borrows and the interest rate on a default-free security, such as a **government bond**.

Credit Ratings

The **cost of borrowing** will be **less** for a **higher rated** firm as a reflection of its **lower likelihood to default**.



Role and Influence of Credit Rating Agencies



Merits

- Credit ratings are a useful method for lenders to assess the **creditworthiness of a borrower**.
- Sovereign credit ratings take into account the overall **economic conditions of a country**.

Limitations

- Companies have not been **downgraded fast enough**.
- Rating agencies have been criticised for having too familiar a relationship with company management, possibly opening themselves to undue influence or the vulnerability of being misled.



Credit risks associated with loan defaults

- Expected loss (EL) = $PD \times EAD \times LGD$
- PD = Probability of Default (%)
- EAD = Exposure at Default (Amount)
- LGD = Loss Given Default (%)



What is Credit Exposure?

- A. The amount that can potentially be lost if a debtor defaults on its obligations
- B. The difference between the interest rate a firm pays when it borrows and the interest rate on a default-free security.
- C. The cost of borrowing will be less for a higher rated firm as a reflection of its lower likelihood to default.
- D. A counterparty fails to fulfil its contractual obligations

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Counterparty Credit Risk and Applications in Practice

EAD and Maturity

- EAD will also depend on the maturity, or **time to completion**, of the loan arrangements
- Recovery Rate = 100% – LGD

Credit Events

- It is commonly understood to include **bankruptcy, insolvency, receivership**.
- A credit event can also be simply a **credit-rating downgrade**

Wrong Way Risk

- The risk that occurs when exposure to a counterparty is adversely correlated with the credit quality of that counterparty.

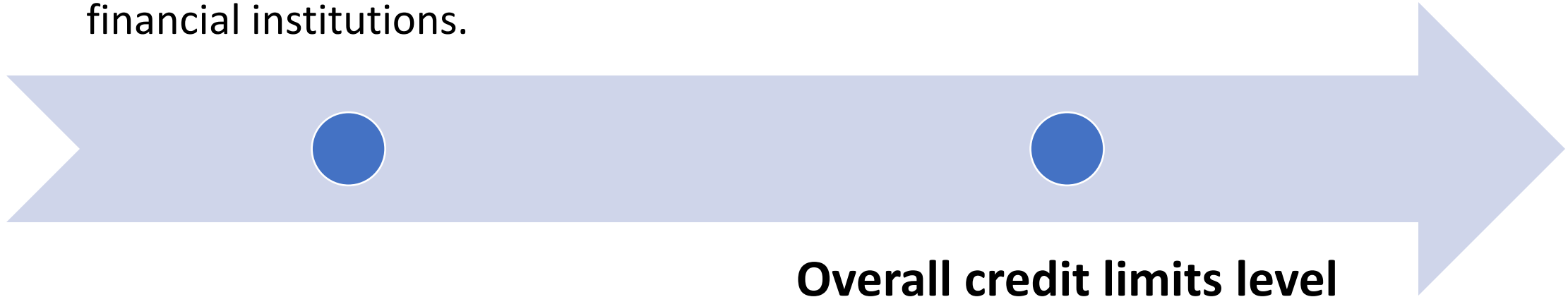
Non-Performing Assets

- Loans whose **repayments** are not being made on time



Credit limits

- Maximum limits for all aspects of **credit exposure** set by financial institutions.

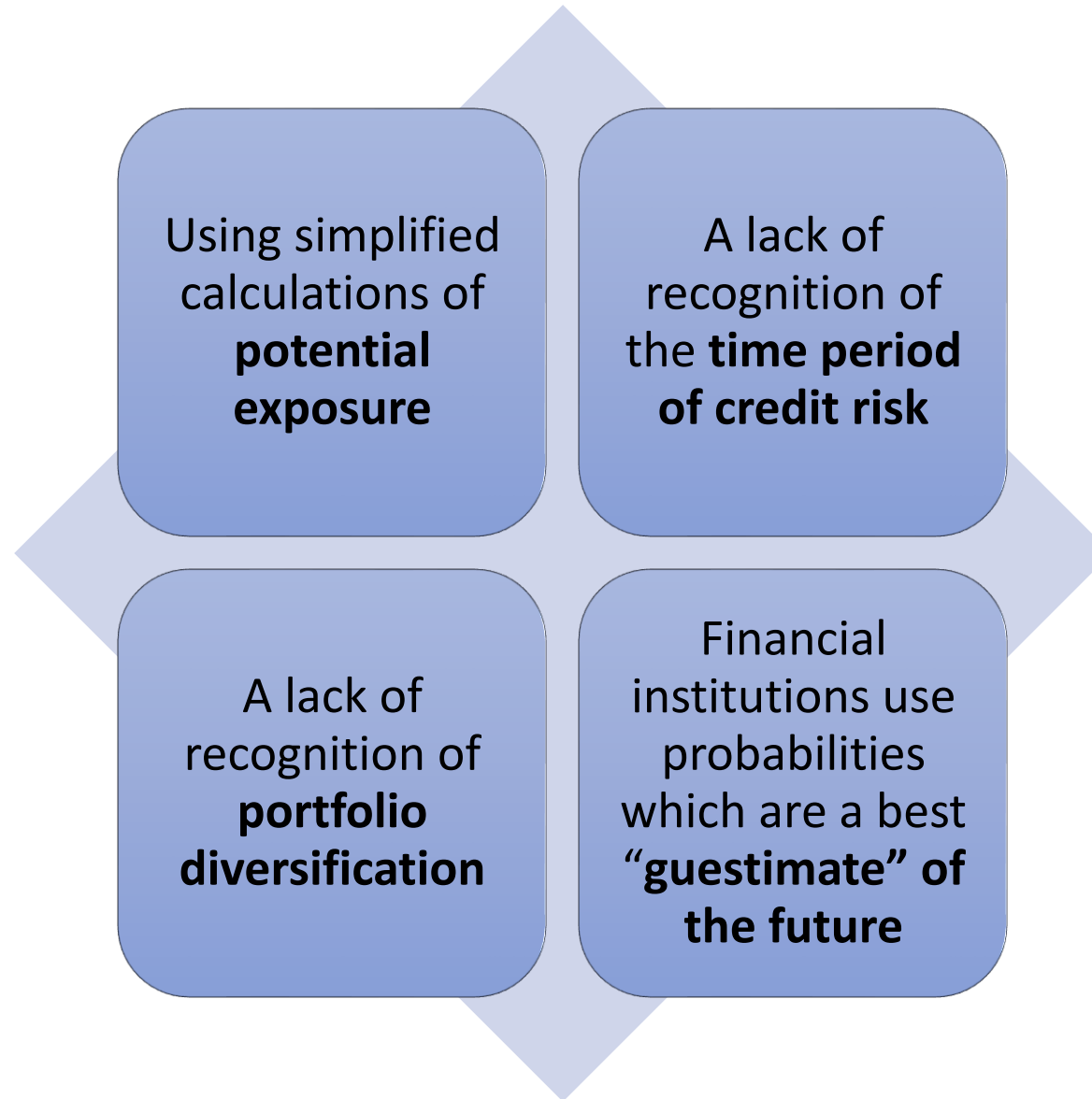


Overall credit limits level

- individual borrowers
- counterparties
- groups of connected counterparties.

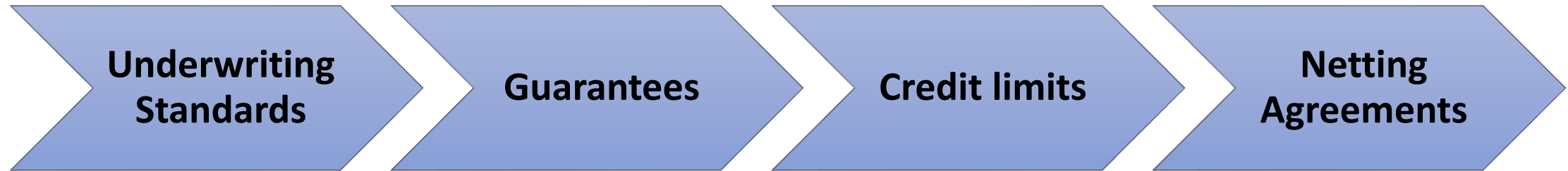


Limitations of Credit Risk Measurement



Credit Risk Management

Examples of Credit Risk Protection and Mitigation



- Underwriting standards are the standards that **financial institutions** apply to borrowers in order to **evaluate their creditworthiness**

- The **guarantor** is an individual or firm that will make the repayments if issuer cannot pay the interest or capital from its own resources.

- Refer to the earlier slide

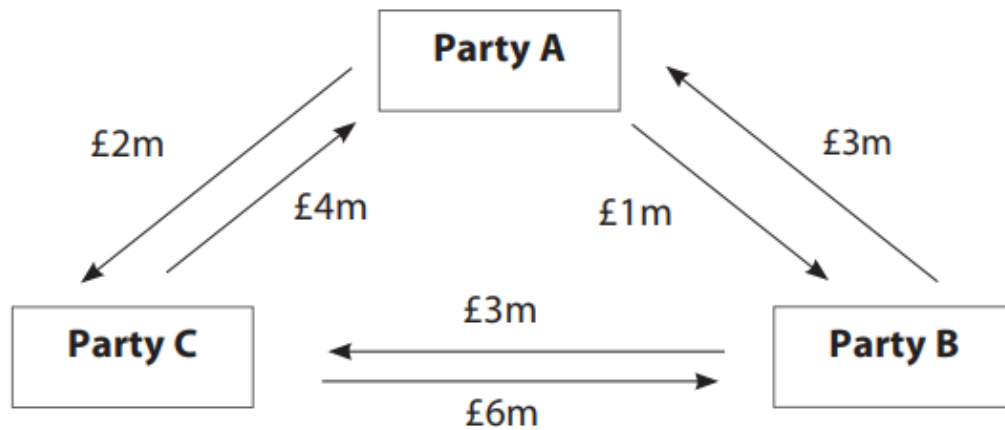
- A netting agreement allows **two parties that exchange** multiple cash flows during a given day to agree bilaterally to net those cash flows to one payment per currency



Netting Agreements

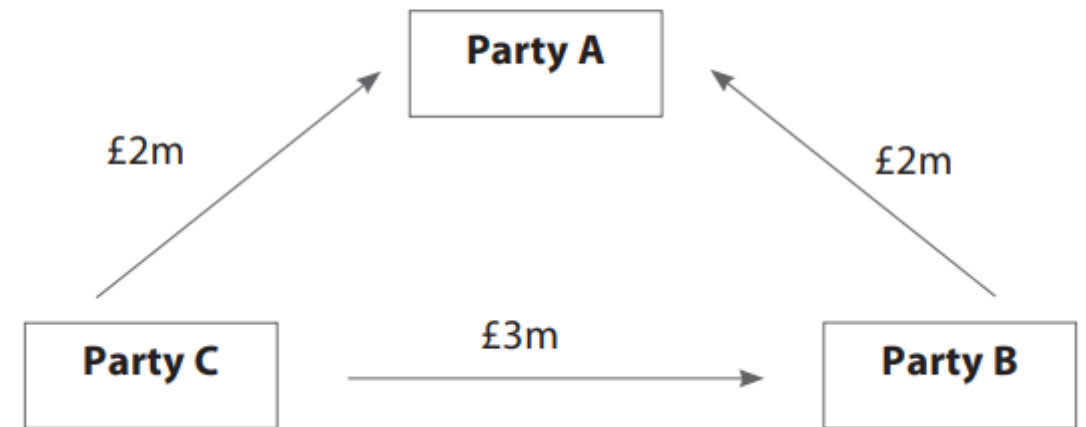
A netting agreement allows two parties that exchange multiple cash flows during a given day to **agree bilaterally to net those cash flows to one payment per currency**. This reduces each party's settlement risk, and transaction costs and communication expense.

Examples below :



What would happen if C party defaulted

What would happen if C party defaulted



Credit Risk Management

Examples of Credit Risk Protection and Mitigation



- An **asset held by a lender** on behalf of an obligor, under certain agreed conditions, as security for a loan.
- Unilateral arrangement
- bilateral arrangement

- Enables institutions to avoid unacceptable **concentrations of credit risk**

- Credit default swap (CDS)
- Collateralised debt obligation (CDO)



Credit Default Swap (CDS)

They allow financial institutions to

Buy or sell a form of insurance to mitigate their credit risk

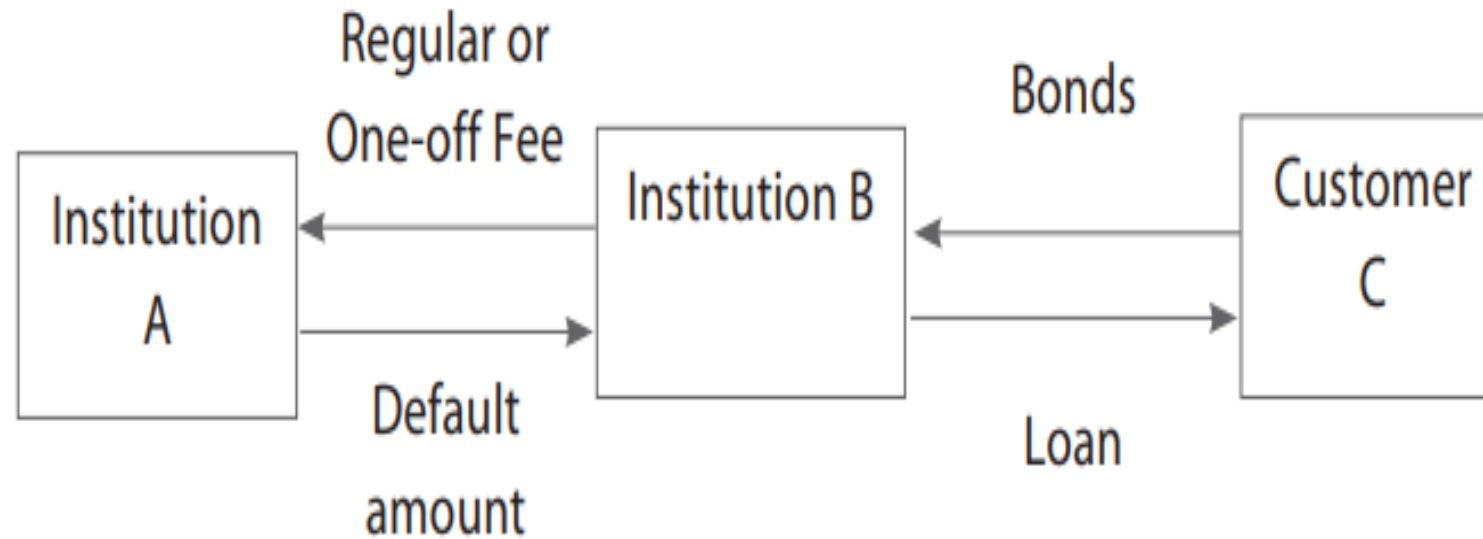
Customise their credit exposure to another party without having a direct relationship with them

Improve their portfolio diversification by reducing undesirable credit risk concentrations

Transfer credit risk without adversely affecting the customer relationship



Example of Credit default swap (CDS)



- Institution B purchases bonds from Customer C
- B enters a CDS with Institution A
- B pays A, a fixed periodic coupon
- B is now protected



Loan sale

- The lender can choose to sell the loans to another institution in order to receive an immediate **lump sum payment**.

Securitisation

- Another form of **loan sales**

Central CounterParty (CCP)

- The **clearing house** acts as the guarantor of all transactions, limiting the exposure of its clearing members by protecting them from defaults.



Which of the following does NOT limit credit exposure?

- A. Loan sale
- B. Securitisation
- C. Leverage
- D. Credit default swap (CDS)

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Making Calculations

- Investment management firms lend their stock to institutions that wish to take **short positions**
- The value of the **collateral** could be set to equal the value of the lent stock
- The haircut will depend on the volatility of the asset serving as collateral e.g. 3%
- If £100 million IBM shares are lent, and government bonds are offered as collateral, how much collateral should be lodged with the lending firm?

$$£100\text{m} + (£100\text{m} \times 3\%) = £103\text{m}$$



Credit Risk Management

The credit risk management function is responsible for ensuring that the firm's credit risk is properly managed.

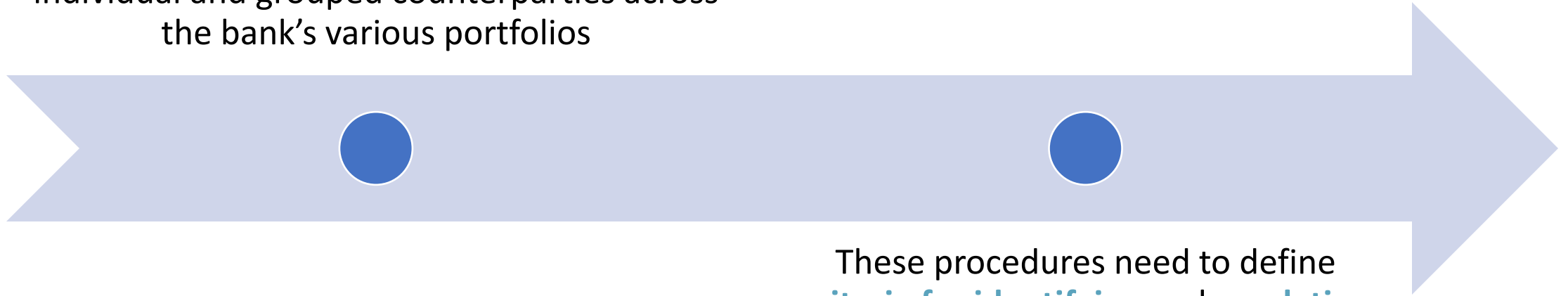
Credit risk in a company-wide context

- Owning the **credit policy** and ensuring that it is adhered to
- Setting **credit limits**
- Assessing **potential credit risk events**
- Ensuring **decisions on granting credit** are made independently of the trading areas
- Measuring and monitoring daily **credit exposure**.
- Assessment of **capital adequacy**
- Performing **credit analysis** by counterparty, country, sector and instrument or financial product



Reporting and Escalation Tools

Firms need to develop and implement **comprehensive procedures** and **information systems** to monitor the condition of individual and grouped counterparties across the bank's various portfolios



These procedures need to define **criteria for identifying** and **escalating potential counterparty** credit issues to senior management, to enable them to resolve issues, to minimise loss to the firm.



Basel Key Stages

The measurement of credit risk should take account of:

1. The specific nature of the **credit and its contractual** and financial conditions
2. The exposure profile until maturity in relation to **potential market movements**
3. The existence of **collateral or guarantees**
4. The potential for default based on the internal risk rating. The **analysis of credit risk data** should be undertaken at an appropriate frequency with the results reviewed against relevant limits.



Credit Scoring Systems

- **Credit scoring systems** include using questionnaires and standard credit request application forms which are subsequently scored.

Factor Inputs

- Financial inputs will include an assessment of each firm's earnings, cash flow, **asset values, liquidity, leverage**, financial size and debt capacity
- Non-financial inputs will include a view of each firm's: **Management quality, Governance structure, Industry characteristics, Country risk, Credit rating.**
- Extraordinary inputs might include **Court actions & Other one-off factors**



Stress Testing

- Stress testing involves **identifying possible events or future changes** in economic conditions that could have unfavourable effects on a bank's credit exposures

Areas for stress testing which the BIS recommends

- Economic or industry downturns
- Interest rate and other market movements
- Market-risk events
- Liquidity conditions

Segmentation

- Segmentation should be based on
 - credit scores
 - The time that the transaction has been on the bank's books.



External Ratings

- External rating agencies can be useful, it is of limited value to the needs of a sophisticated **credit risk management function**.

Credit Limits

- Limits need to be set for all counterparties whether single or part of a group.

Internal Credit Rating

- A well-structured **internal risk rating system** is a good means of differentiating the degree of credit risk in the different credit exposures of a bank.
- This allows more accurate determination of the overall characteristics of the credit portfolio, concentrations, problem credits and the adequacy of **loan loss reserves**.



Managing and Measuring Credit Risk

Impairment

- Information about significant financial difficulties of the borrower
- An actual breach of contract
- A high probability of bankruptcy
- The granting by the lender to the borrower
- financial difficulties

Provisioning

- The firm needs to set aside an allowance for loan impairment loss in its accounts.

Key Statistics and Key Performance Indicators (KPIs)

- Number of debtors past due date
- Clients breaching covenants
- Credit downgrades.



Challenges

A bank has to make sure it knows the relationships between the various counterparties to ensure that they are not part of a wider corporate group, despite having different names.

The loan exposure to these counterparties may only be half the picture – the bank could hold equities in the firms, have lent stock to them, be managing assets on their behalf and so on.



Which of the below areas are recommended by BIS for stress testing?

- A. Economic or industry downturns
- B. Market-risk events
- C. Liquidity conditions
- D. All the above

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Controlling Trading Book Risk

Value at Risk (VaR)

More in chapter 5

One year time
horizon

95% Confidence
level

£5m

There is a 5% probability of losing £5m or more in a 1 year horizon

