

BUA216

INTRODUCTION TO FINANCIAL MANAGEMENT



Course video is available on our app

Series 1: Foundations of Financial Performance and Risk Management

1.1 Financial Performance Ratios

- 1.1.1 Definition and importance of financial ratios
- 1.1.2 Categories of financial ratios: liquidity, profitability, leverage, efficiency
- 1.1.3 Practical applications in evaluating firm performance

1.2 Risk and Return Fundamentals

- 1.2.1 Concept of risk in financial management
- 1.2.2 Types of risk: systematic and unsystematic
- 1.2.3 Relationship between risk and expected return

1.3 Measuring and Analysing Risk

- 1.3.1 Variance and standard deviation as measures of risk
- 1.3.2 Beta coefficient and market risk
- 1.3.3 Risk-adjusted performance measures

1.4 Return Measurement and Performance Evaluation

- 1.4.1 Calculation of returns: holding period return, annualised return
- 1.4.2 Portfolio return measurement
- 1.4.3 Evaluating performance using benchmarks

1.5 Integrating Risk and Return in Decision Making

- 1.5.1 Trade-off between risk and return
- 1.5.2 Application in investment choices
- 1.5.3 Case examples of risk-return decisions

Introduction

In financial management, every decision made by individuals or organisations is shaped by the delicate balance between performance and risk. Imagine a company that reports high profits but is burdened with excessive debt, or an investor who earns impressive returns but faces unpredictable market swings. These scenarios highlight why understanding financial performance ratios, risk, and return is fundamental. This Series sets the stage for your journey into financial management by equipping you with the tools to evaluate performance and make informed decisions in the face of uncertainty.



The aim of this Series is to provide you with a solid grounding in the principles of financial performance and risk management, enabling you to analyse financial ratios, measure risk, calculate returns, and integrate these concepts into practical decision making.

We shall commence this Series by examining financial performance ratios and their role in assessing the health of a business. Next, we will explore the fundamentals of risk and return, followed by methods of measuring and analysing risk using statistical and market-based tools. Subsequently, we will turn our attention to return measurement and performance evaluation, considering how returns are calculated and compared against benchmarks. Finally, we will wrap up by integrating risk and return in decision making, where you will see how these concepts come together to guide investment and management choices.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **2.1** define financial performance ratios and explain their role in assessing organisational health,
- **2.2** analyse different categories of financial ratios including liquidity, profitability, leverage, and efficiency,
- **2.3** explain the concept of risk in financial management and distinguish between systematic and unsystematic risk,
- **2.4** demonstrate how to measure risk using variance, standard deviation, and beta coefficient,
- **2.5** calculate returns such as holding period return and annualised return, and evaluate performance against benchmarks,
- **2.6** apply the trade-off between risk and return to practical investment and management decisions.

1.1 Financial Performance Ratios

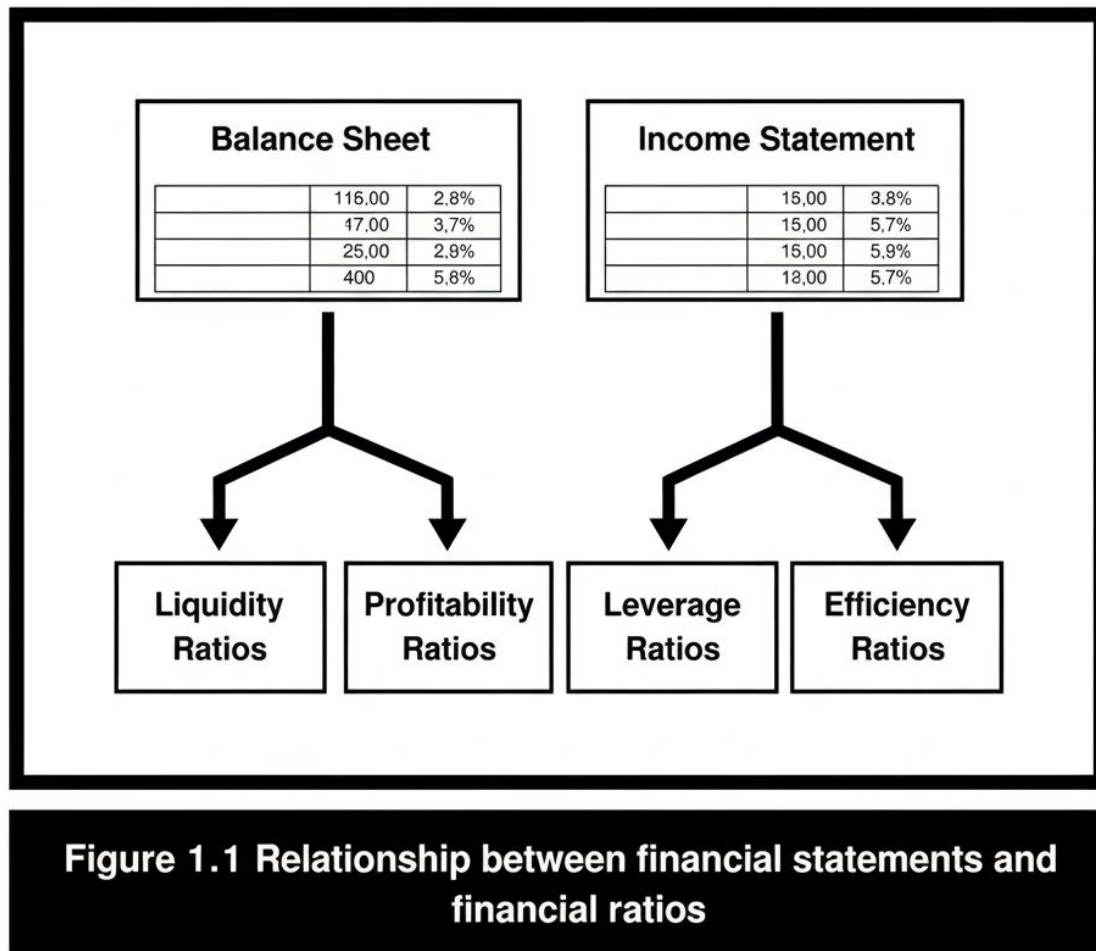
1.1.1 Definition and importance of financial ratios

Financial ratios are numerical comparisons derived from a company's financial statements, such as the balance sheet and income statement. They provide insights into the efficiency, profitability, liquidity, and stability of a business. Ratios are important because they allow managers, investors, and creditors to evaluate performance quickly and make informed decisions.

For example, a company with high profitability ratios may appear successful, but if its liquidity ratios are weak, it may struggle to meet short-term obligations. Ratios therefore act as signals that highlight strengths and weaknesses in financial management.



Fill in the blank: Financial ratios are derived from a company's _____ statements.



1.1.2 Categories of financial ratios: liquidity, profitability, leverage, efficiency

Liquidity ratios measure a firm's ability to meet short-term obligations. Examples include the current ratio and quick ratio. **Profitability ratios** assess how effectively a company generates profit relative to sales, assets, or equity. Examples include net profit margin and return on equity. **Leverage ratios** (also called solvency ratios) evaluate the extent to which a company relies on debt financing. Examples include debt-to-equity ratio and interest coverage ratio. **Efficiency ratios** (also called activity ratios) measure how well a company uses its assets to generate revenue. Examples include inventory turnover and receivables turnover.

Fill in the blank: The debt-to-equity ratio is an example of a _____ ratio.



Table 1.1 Examples of financial ratio categories

Ratio Category	Ratio Example	Formula	Purpose
	Current Ratio	Current Assets / Current Liabilities	Short-term solvency
Profitability Ratios	Net Profit Margin	(Net Income / Revenue) x 100	Overall profitability
	Debt-to-Equity Ratio		
Debt-to-Equity Ratio	Total Debt /	Total Debt / Equity	Reliance on debt financing
Asset Turnover Ratio	Revenue / Total Assets	Revenue / Total Assets	Asset utilization

1.1.3 Practical applications in evaluating firm performance

Ratios are most useful when compared across time (trend analysis), against competitors (cross-sectional analysis), or against industry standards (benchmarking). For instance, a company's profitability ratio may look strong in isolation, but when compared to industry averages, it may reveal underperformance.

Managers use ratios to identify areas needing improvement, while investors rely on them to assess risk and return potential. Creditors also examine ratios to determine whether a company can repay loans.

Fill in the blank: Comparing ratios across several years is known as _____ analysis.



Box 1.1 Applications of financial ratios in decision making		
Managers	Investors	Creditors
• Performance evaluation, identifying strengths & weaknesses, strategic planning, • operational efficiency	• Assessing company health, evaluating profitability & risk, making buy/sell/hold decisions • comparing companies	• Creditworthiness assessment, evaluating repayment capacity • setting loan terms • monitoring financial health

Box 1.1 Applications of financial ratios in decision making

Pilot questions 1.1

1. Which financial statements are most commonly used to derive financial ratios?
2. The quick ratio is an example of which category of financial ratios?
3. What type of analysis involves comparing a company's ratios across several years?
4. Which ratio measures how effectively a company uses its assets to generate revenue?
5. Why are financial ratios considered important tools for managers, investors, and creditors?



1.2 Risk And Return Fundamentals

1.2.1 Concept of risk in financial management

Risk refers to the possibility that actual outcomes will differ from expected outcomes in financial decisions. In financial management, risk is associated with uncertainty in returns, market conditions, and the ability of a firm or investor to achieve desired objectives. Risk is central because it influences investment choices, lending decisions, and corporate strategies.

For example, investing in government bonds carries relatively low risk, while investing in start-up companies carries high risk due to uncertainty in future performance.

Fill in the blank: In financial management, risk is the possibility that actual outcomes will differ from _____ outcomes.



Figure 1.2 Risk and uncertainty in financial management

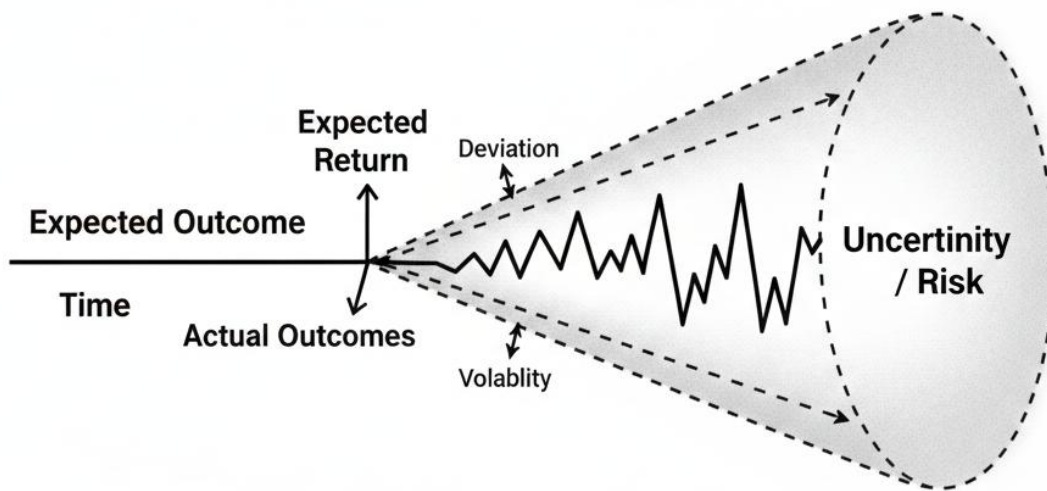


Figure 1.2 Risk and uncertainty in financial management

1.2.2 Types of risk: systematic and unsystematic

Systematic risk is risk that affects the entire market or economy, such as inflation, interest rate changes, or political instability. It cannot be eliminated through diversification. **Unsystematic risk** is risk specific to a company or industry, such as management decisions, strikes, or product recalls. It can be reduced through diversification across different firms and sectors.

Fill in the blank: Risk that can be reduced through diversification is called _____ risk.



Table 1.2 Types of risk in financial management

Type of Risk	Characteristics & Examples	Diversification Effect
Systematic Risk (Market Risk)	Affects the entire market - Non-diversifiable - Economic recessions - Interest rate changes - Wars/Pandemics	Cannot be reduced through portfolio diversification
Unsystematic Risk (company/industry Specific Risk)	- Product recalls - Diversifiable - Labor strikes - Management changes	Can be reduced by holding a diversified portfolio

Table 1.2 Types of risk in financial management

1.2.3 Relationship between risk and expected return

The **risk-return trade-off** is the principle that higher risk is associated with the potential for higher returns, while lower risk generally yields lower returns. Investors must decide how much risk they are willing to accept in pursuit of returns.

For instance, equities typically offer higher expected returns but carry greater volatility, whereas treasury bills provide lower returns with minimal risk.

Fill in the blank: The principle that higher risk is associated with higher potential returns is called the _____ trade-off.



Box 1.2 Examples of risk-return trade-offs in practice		
Bonds	Stocks	Derivatives
– Lower Risk – Lower Potential Return – Stable Income (interest) – Gov't/Corp Bonds	– Higher Risk (volatility) – Higher – Capital Gains & Dividends – Common/Preferred Stocks	– Very High Risk – Visky Potential Return – Complex, Speculative – Options, Futures

Box 1.2 Examples of risk-return trade-offs in practice

Pilot questions 1.2

1. What is the definition of risk in financial management?
2. Which type of risk cannot be eliminated through diversification?
3. Give one example of systematic risk and one example of unsystematic risk.
4. What principle explains the relationship between risk and expected return?
5. Why do equities generally offer higher expected returns compared to treasury bills?

1.3 Measuring And Analysing Risk



1.3.1 Variance and standard deviation as measures of risk

Variance is a statistical measure that shows how far a set of numbers is spread out from their mean. In finance, variance indicates the degree of fluctuation in returns. **Standard deviation** is the square root of variance and provides a more intuitive measure of risk because it is expressed in the same units as the returns. A higher standard deviation means greater uncertainty in returns.

For example, if two investments have the same average return but one has a higher standard deviation, it is considered riskier.

Fill in the blank: The square root of variance is called _____.

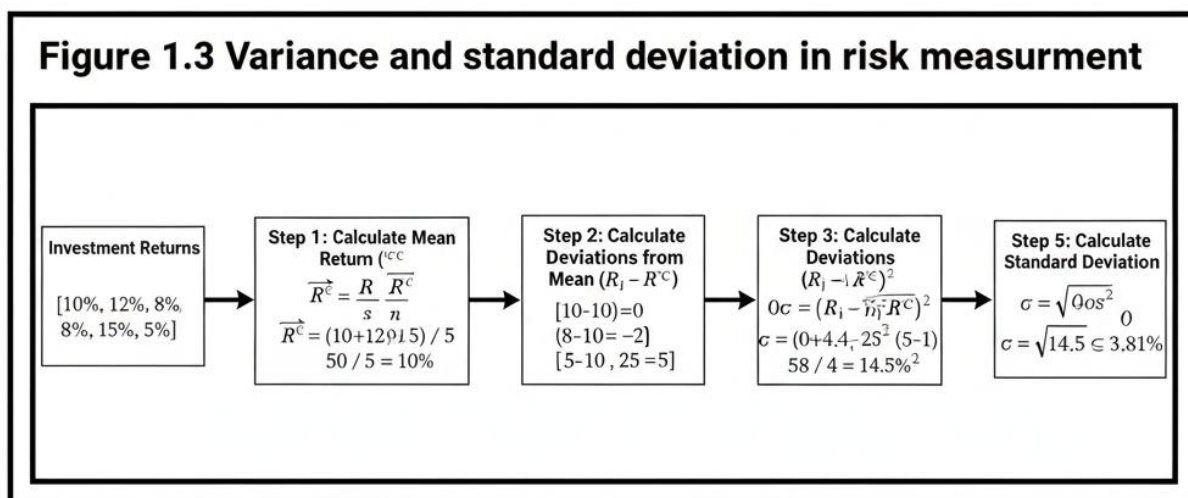


Figure 1.3 Variance and staviation in risk measurment

1.3.2 Beta coefficient and market risk



Beta coefficient measures the sensitivity of an investment's returns to movements in the overall market. A beta of 1 indicates that the investment moves in line with the market. A beta greater than 1 suggests higher volatility compared to the market, while a beta less than 1 indicates lower volatility.

Beta is crucial in assessing **systematic risk**, which cannot be eliminated through diversification. Investors use beta to decide whether an asset fits their risk tolerance.

Fill in the blank: An investment with a beta greater than 1 is _____ volatile than the market.

Table 1.3 Value	Interpretation (Volatility relative to market)
Beta < 1	Less volatile than the market (e.g., utility stocks)
Beta = 1	Matches the market's volatility (e.g., a broad market fund (e.g., technology growth stocks))

Table 1.3 Interpretation of beta values

1.3.3 Risk-adjusted performance measures



Risk-adjusted performance measures evaluate returns relative to the risk taken. Common measures include the **Sharpe ratio**, which compares excess return to standard deviation, and the **Treynor ratio**, which compares excess return to beta. These measures help investors identify whether higher returns are justified by the level of risk.

For instance, two portfolios may have similar returns, but the one with a higher Sharpe ratio is considered more efficient because it achieved those returns with less risk.

Fill in the blank: The Sharpe ratio compares excess return to _____.

Box 1.3 Risk-adjusted performance measures	
Sharpe Ratio Formula: $\frac{(\text{Portfolio Return} - \text{Risk-Free Rate})}{\text{Portfolio Standard Deviation}}$ Application: - Measures excess return per unit of total risk - Used for diversified portfolios	Treynor Ratio Formula: $\frac{(\text{Portfolio Return} - \text{Risk-Free Rate})}{\text{Portfolio Beta}}$ Application: - Measures excess return per unit of systematic risk - Used for non-diversified portfolios or components of a portfolio
Box 1.3 Risk-adjusted performance measures	

Pilot questions 1.3

1. What does variance measure in financial risk analysis?
2. Which measure of risk is expressed in the same units as returns?



3. What does a beta coefficient of 1 indicate about an investment?
4. Which ratio compares excess return to standard deviation?
5. Why are risk-adjusted performance measures important for investors?

1.4 Return Measurement And Performance Evaluation

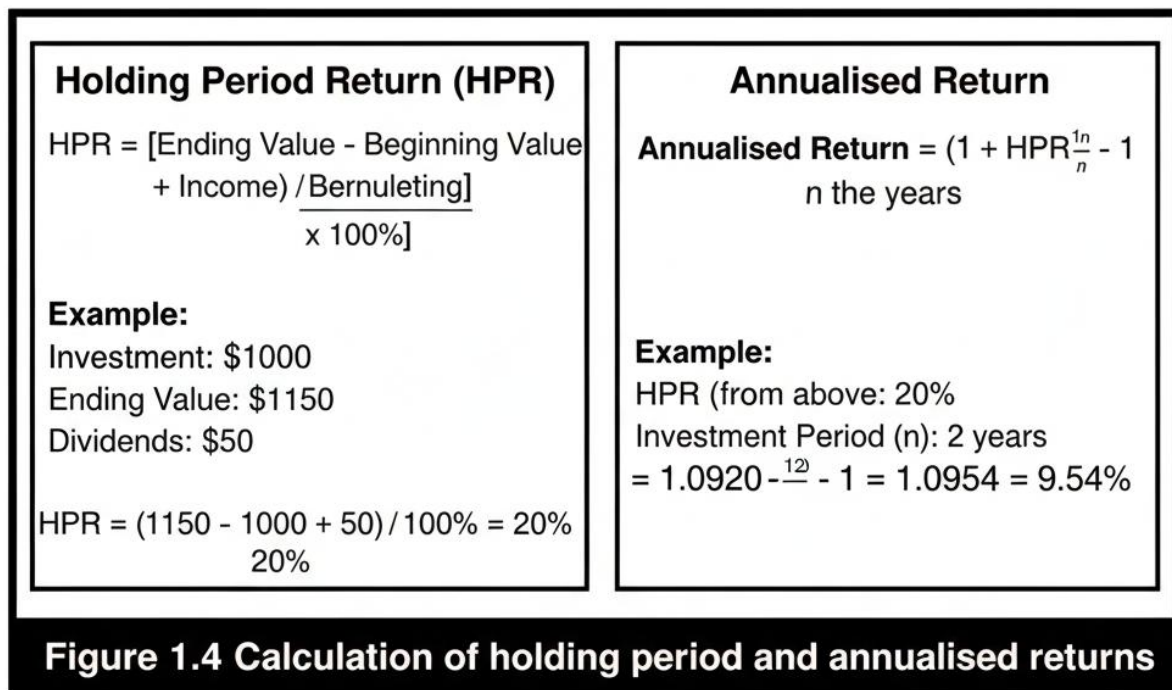
1.4.1 Calculation of returns: holding period return, annualised return

Return is the gain or loss made on an investment over a period of time. The **holding period return (HPR)** measures the total return received from holding an asset over a specific period, expressed as a percentage of the initial investment. The **annualised return** converts returns over shorter or longer periods into a yearly rate, allowing comparisons across investments with different time horizons.

For example, if an investor earns 10 per cent over six months, the annualised return would be higher than 10 per cent because it reflects the compounding effect over a full year.

Fill in the blank: The return measured over the entire duration of an investment is called the _____ return.





1.4.2 Portfolio return measurement

Portfolio return is the weighted average of returns from individual assets in a portfolio. Each asset's contribution depends on its proportion in the portfolio. This measure helps investors evaluate overall performance rather than focusing on single investments.

For instance, if a portfolio consists of 60 per cent equities and 40 per cent bonds, the portfolio return is calculated by weighting each asset's return according to its share.

Fill in the blank: Portfolio return is calculated as the _____ average of individual asset returns.



Figure 1.4 Calculation of holding period and annualised returns

Holding Period Return (HPR)

$$\text{HPR} = \frac{[\text{Ending Value} - \text{Beginning Value} + \text{Income}]}{\text{Beginning Value}}$$
 100%

Example:

Investment: \$1000

Ending Value: \$1150

Dividends: 50

$$\text{HPR} = \frac{(1150 - 1000 + 50)}{1000}$$

$$\text{HPR} = \frac{(1150 - 1000 + 50)}{1000} = 20\%$$

Annualised Return

$$(1 + \text{HPR})^{\frac{1}{n}} - 1$$

Example:

HPR (from above: 20%)

Investment Period (n): 2 years

$$= (1 + 0.20)^{\frac{1}{2}} - 1 = \frac{1.0954}{9.54\%} - 1$$

Figure 1.4 Calculation of holding period and annualised returns

1.4.3 Evaluating performance using benchmarks

Benchmarks are reference points used to assess investment performance. Common benchmarks include stock market indices such as the FTSE 100 or S&P 500. Comparing portfolio returns against benchmarks helps investors determine whether their strategies are effective.

If a portfolio earns 8 per cent while the benchmark earns 10 per cent, the portfolio is underperforming. Conversely, outperforming the benchmark indicates superior management or asset selection.

Fill in the blank: A stock market index such as the FTSE 100 is an example of a _____.



Box 1.4 Role of benchmarks in performance evaluation

What are Benchmarks?

- Reference portfolios (e.g., indices)
- Represent a specific market or asset class
- Examples: FTE 100 (UK equities), S&P 500 (US equities), Bloomberg Global Aggregate Bond Index

Role in Performance Evaluation

- Measure relative performance
- Assess manager skill
- Identify areas for improvement
- Ensure alignment with investment goals

Box 1.4 Role of benchmarks in performance

Pilot questions 1.4

1. What does the holding period return measure?
2. Why is annualised return useful for comparing investments?
3. How is portfolio return calculated?
4. Give one example of a benchmark used in investment performance evaluation.
5. What does it mean if a portfolio earns less than its benchmark?



1.5 Integrating Risk And Return In Decision Making

1.5.1 Trade-off between risk and return

The **risk-return trade-off** is the guiding principle in financial decision making. It states that investors must balance the desire for higher returns with the willingness to accept higher risk. This trade-off is central to portfolio construction, capital budgeting, and everyday investment choices.

For example, a conservative investor may prefer low-risk government securities, while an aggressive investor may choose high-risk equities in pursuit of higher returns.

Fill in the blank: The guiding principle that links higher risk with higher potential returns is called the _____ trade-off.



Figure 1.5 Risk-return trade-off curve

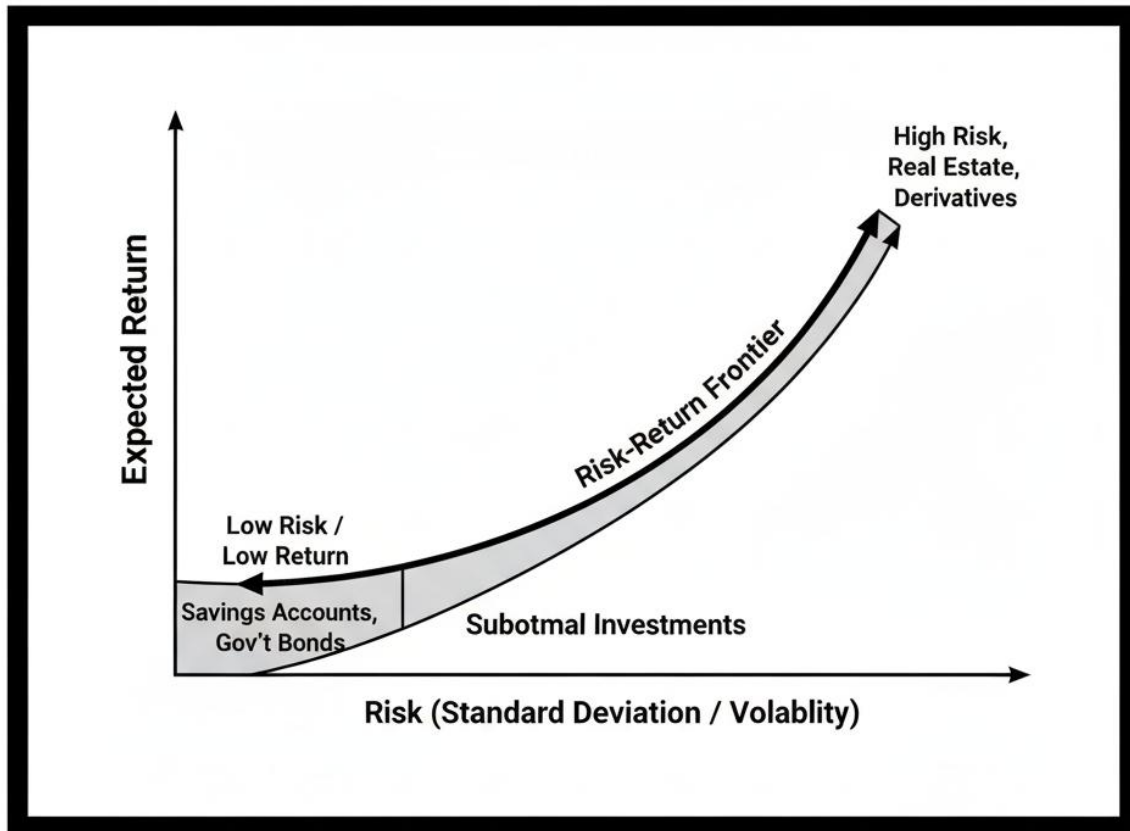


Figure 1.5 Risk-return trade-off curve

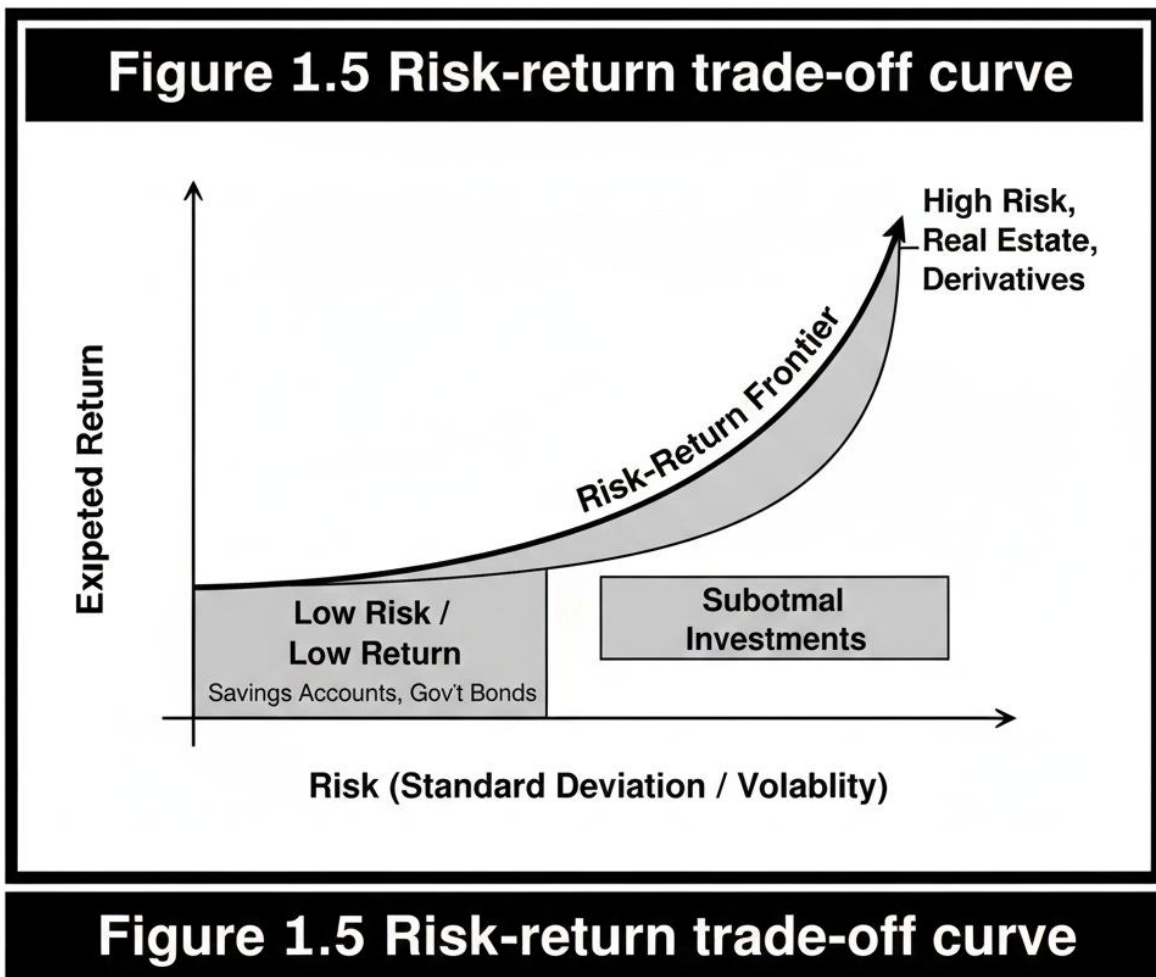
1.5.2 Application in investment choices

Investment decisions require careful evaluation of both risk and return. Managers and investors use tools such as diversification, asset allocation, and benchmarking to align choices with their objectives and tolerance levels.

For instance, pension funds often prioritise stability and low risk, while hedge funds may pursue aggressive strategies with higher risk exposure.

Fill in the blank: Pension funds typically prioritise _____ and low risk in their investment choices.





1.5.3 Case examples of risk-return decisions

Case studies illustrate how organisations balance risk and return. For example, a company may choose to finance expansion through debt, which increases risk but may also enhance returns if the project succeeds. Similarly, an investor may diversify across equities and bonds to balance volatility with stability.

Fill in the blank: Diversifying across equities and bonds helps balance _____ with stability.



Table 1.5 Case examples of risk-return decisions

Decision Maker	Decision Example	Risk-Return Consideration
Company A (Tech Startup)	Invest in new RDD for AI product	- High potential return if successful. - High risk of failure, significant capital expenditure
Corporate Decisions		
Company B (Utility Firm)	Upgrade aging infrastructure	- Stable, moderate returns. - Low risk, regulatory-mandated.
Investor Decisions		
Individual Investor C (Young, Growth-Oriented)		- High potential for capital appreciation.
	Allocate 80% to growth stocks	- High volatility, potential for losses.
Retiree Investor D (Income-Focused)	Invest in dividend stream. Low risk, paying bonds	- Low, steady income stream. - Low risk, preservation

Table 1.5 Case examples of risk-return decisions

Pilot questions 1.5

1. What principle explains the relationship between risk and return in financial decision making?
2. Why might pension funds prefer low-risk investments?
3. Give one example of a conservative investment choice and one example of an aggressive choice.
4. How does diversification help balance risk and return?
5. What is the potential benefit of financing expansion through debt?



Series Summary

This Series has provided you with a strong foundation in financial performance and risk management, showing why these concepts are central to effective decision making in finance. We began by examining financial performance ratios and their categories, then moved on to the fundamentals of risk and return, distinguishing between systematic and unsystematic risk. Following that, we explored how risk can be measured using variance, standard deviation, and beta coefficient, and introduced risk-adjusted performance measures such as the Sharpe and Treynor ratios. We continued by learning how to calculate returns, measure portfolio performance, and evaluate outcomes against benchmarks. Finally, we integrated risk and return in decision making, considering practical applications and case examples.

By completing this Series, you should now be able to define and analyse financial ratios, explain different types of risk, demonstrate how to measure risk statistically and through market indicators, calculate and evaluate returns, and apply the risk-return trade-off in practical investment decisions. These abilities directly align with the Series Learning Outcomes, ensuring you are well prepared to progress into more advanced areas of financial management.

Glossary of Terms

- **Annualised return:** A return expressed as a yearly rate, allowing comparisons across investments with different time horizons.
- **Benchmark:** A reference point, such as a stock market index, used to evaluate investment performance.
- **Beta coefficient:** A measure of how sensitive an investment's returns are to movements in the overall market.
- **Efficiency ratios:** Ratios that show how effectively a company uses its assets to generate revenue.
- **Financial ratios:** Numerical comparisons derived from financial statements that help assess performance.
- **Holding period return (HPR):** The total return received from holding an asset over a specific period.
- **Leverage ratios:** Ratios that assess the extent of debt financing in a company.
- **Liquidity ratios:** Ratios that measure a firm's ability to meet short-term obligations.
- **Portfolio return:** The weighted average of returns from assets in a portfolio.
- **Profitability ratios:** Ratios that evaluate a company's ability to generate profit relative to sales, assets, or equity.



- **Risk:** The possibility that actual outcomes will differ from expected outcomes in financial decisions.
- **Risk-adjusted performance measures:** Tools such as the Sharpe and Treynor ratios that compare returns relative to risk taken.
- **Risk-return trade-off:** The principle that higher risk is associated with higher potential returns.
- **Sharpe ratio:** A measure comparing excess return to standard deviation, used to evaluate efficiency of returns.
- **Standard deviation:** The square root of variance, used as a measure of risk in the same units as returns.
- **Systematic risk:** Market-wide risk that cannot be eliminated through diversification.
- **Treynor ratio:** A measure comparing excess return to beta, used to evaluate performance relative to market risk.
- **Unsystematic risk:** Firm-specific risk that can be reduced through diversification.
- **Variance:** A statistical measure showing how far returns are spread out from their mean.

Concept Check Questions [Series 1]

Objective Questions

1. Which financial ratio measures a firm's ability to meet short-term obligations? (Linked to SLO 2.1)
2. The Sharpe ratio compares excess return to which measure of risk? (Linked to SLO 2.4)
3. A beta coefficient greater than 1 indicates that an investment is _____ volatile than the market. (Linked to SLO 2.4)
4. What principle explains the relationship between risk and expected return? (Linked to SLO 2.6)

Short-Answer Questions

5. Define unsystematic risk and explain how it can be reduced. (Linked to SLO 2.3)
6. Calculate the holding period return for an investment of £1,000 that grows to £1,200 in one year. (Linked to SLO 2.5)
7. Explain why benchmarks such as the FTSE 100 are important in evaluating portfolio performance. (Linked to SLO 2.5)

Long-Answer Questions



8. Analyse the differences between liquidity, profitability, leverage, and efficiency ratios, providing one example of each. (Linked to SLO 2.2)

- **Basic response:** Learners should describe each category and provide a simple example.
- **Value-added response:** Outstanding learners may compare how these ratios interact, discuss limitations, and illustrate with industry-specific examples.

9. Demonstrate how variance and standard deviation are used to measure risk, and explain why standard deviation is often preferred. (Linked to SLO 2.4)

- **Basic response:** Learners should show the calculation process and state that standard deviation is expressed in the same units as returns.
- **Value-added response:** Outstanding learners may discuss practical applications in portfolio management and explain how these measures influence investor behaviour.

10. Evaluate the risk-return trade-off in practical investment decisions, using examples of conservative and aggressive strategies. (Linked to SLO 2.6)

- **Basic response:** Learners should explain the principle and give examples such as bonds versus equities.
- **Value-added response:** Outstanding learners may extend the discussion to include diversification, pension fund strategies, and hedge fund approaches.

Answers to Concept Check Questions [Series 1]

1. Liquidity ratio, such as the current ratio.
2. Standard deviation.
3. More volatile.
4. Risk-return trade-off.
5. Unsystematic risk is firm-specific risk, reduced through diversification across companies and industries.
6. $\text{£}200 \div \text{£}1,000 = 20$ per cent.
7. Benchmarks provide a reference point to judge whether portfolio returns are above or below market averages.
8. Liquidity ratios measure short-term obligations (e.g., current ratio), profitability ratios assess profit generation (e.g., net profit margin), leverage ratios evaluate debt reliance (e.g., debt-to-equity), efficiency ratios measure asset use (e.g., inventory turnover).
Value-added: Discuss how ratios complement each other and highlight industry differences.



9. Variance measures dispersion of returns, standard deviation is its square root and easier to interpret. Value-added: Explain how investors use these measures to compare portfolios and manage volatility.
10. Risk-return trade-off means higher risk offers higher potential returns. Basic examples: bonds (conservative) vs equities (aggressive). Value-added: Discuss diversification, pension fund stability, and hedge fund risk-taking strategies.

Answers to Pilot Questions [Series 1]

Pilot questions 1.1

- Balance sheet and income statement.
- Liquidity ratios.
- Trend analysis.
- Efficiency ratio.
- They highlight strengths and weaknesses for managers, investors, and creditors.

Pilot questions 1.2

- Risk is the possibility that actual outcomes differ from expected outcomes.
- Systematic risk.
- Inflation (systematic), product recall (unsystematic).
- Risk-return trade-off.
- Equities carry higher volatility and therefore higher expected returns.

Pilot questions 1.3

- Variance measures dispersion of returns.
- Standard deviation.
- It moves in line with the market.
- Sharpe ratio.
- They show whether returns are justified by risk taken.

Pilot questions 1.4

- Total return over the investment period.
- It standardises returns across different time horizons.



- Weighted average of asset returns.
- FTSE 100.
- It indicates underperformance.

Pilot questions 1.5

- Risk-return trade-off.
- Stability.
- Government bonds (conservative), equities (aggressive).
- It reduces unsystematic risk.
- Higher returns if the project succeeds.

Series 2: Time Value Of Money And Valuation Techniques

Series Outline

2.1 Concept Of Time Value Of Money

- 2.1.1 Definition and importance of time value of money
- 2.1.2 Present value and future value concepts
- 2.1.3 Applications in financial decision making

2.2 Techniques Of Discounting And Compounding

- 2.2.1 Simple and compound interest
- 2.2.2 Discounting cash flows
- 2.2.3 Continuous compounding

2.3 Net Present Value And Investment Appraisal

- 2.3.1 Definition and calculation of net present value (NPV)
- 2.3.2 NPV in capital budgeting decisions
- 2.3.3 Limitations of NPV

2.4 Risk Premium And Valuation Of Financial Assets

- 2.4.1 Concept of risk premium
- 2.4.2 Valuation of bonds and stocks using TVM principles



- 2.4.3 Relationship between risk premium and asset pricing

2.5 Practical Applications Of Valuation Techniques

- 2.5.1 Case examples in corporate finance
- 2.5.2 Applications in personal investment decisions
- 2.5.3 Use of financial calculators and spreadsheets

Introduction

Financial decisions often involve comparing values across different points in time. For example, receiving £100 today is not the same as receiving £100 five years from now, because money has the potential to earn interest or lose value due to inflation. This principle, known as the **time value of money (TVM)**, is central to financial management and underpins how assets are valued, how investments are appraised, and how risk premiums are determined.

The aim of this Series is to equip you with the knowledge and skills to apply time value of money concepts, use discounting and compounding techniques, calculate net present value, and evaluate financial assets and investment decisions effectively.

We shall commence this Series by exploring the concept of time value of money and its importance in financial decision making. Next, we will examine techniques of discounting and compounding, including simple and compound interest. Subsequently, we will focus on net present value and its role in investment appraisal. Following that, we will analyse the risk premium and valuation of financial assets such as bonds and stocks. Finally, we will conclude with practical applications of valuation techniques, including case examples and the use of financial calculators and spreadsheets.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **2.1** define the concept of time value of money and explain its relevance in financial decision making,
- **2.2** demonstrate how to calculate present value and future value using discounting and compounding techniques,
- **2.3** apply simple and compound interest methods to evaluate cash flows,
- **2.4** calculate net present value and evaluate its role in investment appraisal,
- **2.5** explain the concept of risk premium and apply time value of money principles to the valuation of bonds and stocks,



- **2.6** analyse practical applications of valuation techniques in corporate finance and personal investment decisions.

2.1 Concept Of Time Value Of Money

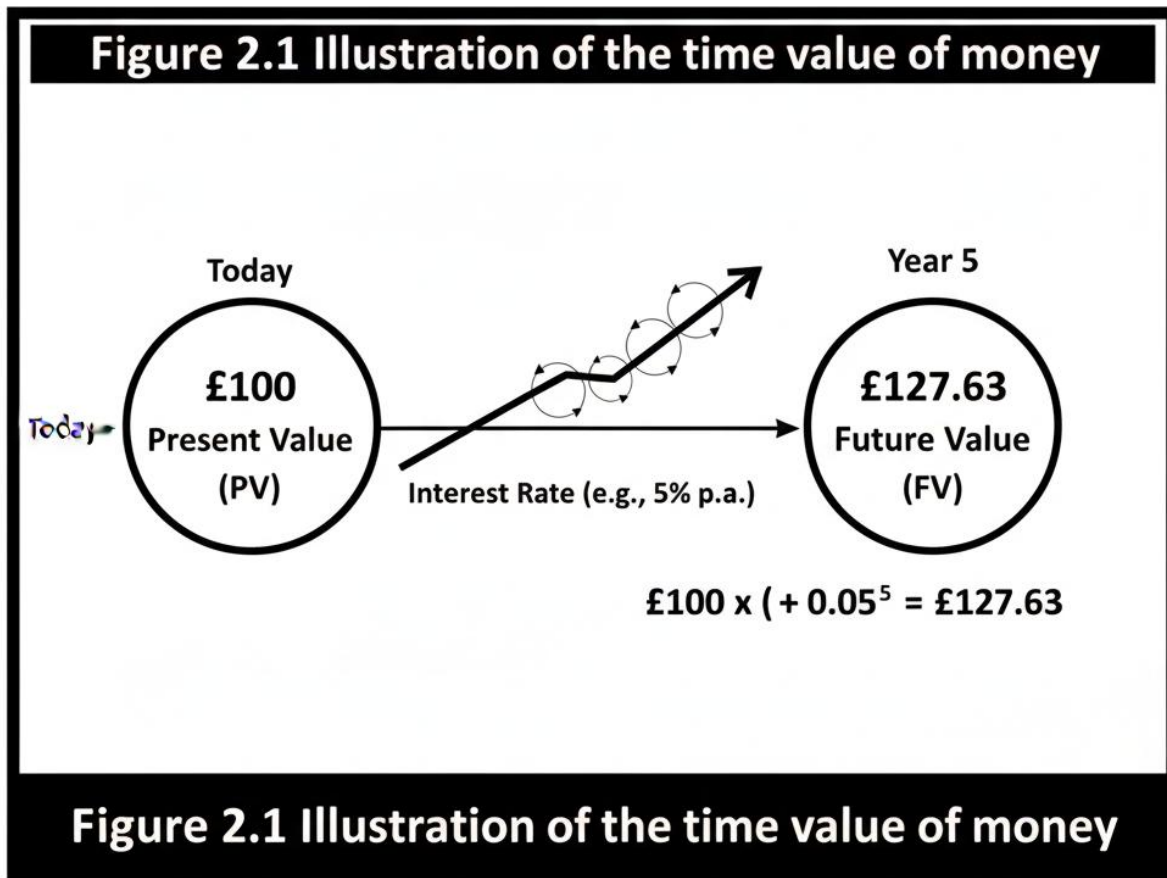
2.1.1 Definition and importance of time value of money

Time value of money (TVM) is the principle that a sum of money has greater value today than it will in the future because of its potential earning capacity. This concept recognises that money can earn interest or returns when invested, and therefore, receiving money sooner is preferable to receiving the same amount later.

For example, £100 received today can be invested to grow into a larger amount in the future, whereas £100 received five years from now has lost the opportunity to earn returns.

Fill in the blank: The principle that money today is worth more than the same amount in the future is called _____.





2.1.2 Present value and future value concepts

Present value (PV) is the current worth of a future sum of money or stream of cash flows, discounted at a specific rate. **Future value (FV)** is the value of a current sum of money at a future date, calculated using compounding.

PV and FV are two sides of the same coin: PV brings future cash flows back to today, while FV projects today's money into the future.

Fill in the blank: The current worth of a future sum of money is called _____.



	Present Value (PV)	Future Value (FV) a specific point the future
Definition	Current worth of future sums of money $PV = FV (1 + r)^n$	Value of an asset at a specific the future $FV = PV \times (1 + r)^n$
Formula	r = interest rate n = number of periods	r = interest rate n = number of periods
Example	How much to invest today to get \$1000 in 5 years? ($r=5\%$)	What is \$1000 today worth in 5 years? ($r=5\%$)
Application	$PV = 1000 (1.05)^5 = \$783.53$	$FV 1000 \times (1.05)^5 = \1276.28
	Investment appraisal, loan valuation	Retirement planning, compound interest
Table 2.1 Comparison of present value and future value		

2.1.3 Applications in financial decision making

TVM is applied in many areas of financial management, including investment appraisal, loan repayment schedules, retirement planning, and valuation of financial assets. Managers and investors rely on TVM to make rational decisions about whether to invest, borrow, or save.

For instance, when evaluating a project, managers discount expected future cash inflows to determine whether they exceed the initial investment. Similarly, individuals use TVM to plan how much they need to save today to reach a desired retirement fund in the future.

Fill in the blank: When managers discount expected future cash inflows to compare with initial investment, they are applying _____.



Box 2.1 Applications of time value of money in practice

Corporate Finance

- Investment appraisal (NPV/IRR)
- Capital budgeting
- Valuation of stocks & bonds

Personal Investment

- Retirement planning
- Loan calculations (mortgages)
- Savings goals

Box 2.1 Applications of time value of money in practice

Pilot questions 2.1

1. What does the time value of money principle state?
2. Define present value and future value.
3. Which concept calculates the current worth of a future sum of money?
4. Give two practical applications of time value of money in financial decision making.
5. Why is £100 today worth more than £100 received five years from now?

2.2 Techniques Of Discounting And Compounding



2.2.1 Simple and compound interest

Simple interest is calculated only on the original principal amount, without considering accumulated interest. **Compound interest** is calculated on both the principal and any previously earned interest, allowing money to grow faster over time.

For example, £1,000 invested at 10 per cent simple interest for three years yields £300, while the same investment at compound interest yields more because interest is earned on interest.

Fill in the blank: Interest calculated only on the original principal is called _____ interest.

Table 2.2 Comparison of simple and compound interest				
Feature				
	Simple Interest	Simple Interest	Compound Cnterest	Worked Example
Definition	Interest only on the principal amount	Interest on the principal interest	Interest on principal & accumulated interest	Initial Investment: £100 Interest 5% Interest Rate: 5% p.a. Period: 2 Years
Formula	$I = P \times r \times t$ (I=Interest, P=Principal r=Rate, t.Time)		$A = P (1 + r^t)$ (A=Future Value)	n/a
Calculation (Year 2)	$\$100 \times 0.05 \times 1 = £5$		$\$100 \times 0.05 = £5$	n/a
Calculated Interest	$\$100 \times 0.05 \times £1$	$\$100 \times 0.05 = £5$	$(£100 + £5) \times 0.05 = £5.25$	na
Total Interest	$\$5 + 5 = £10$	$\$5 + 5 = £10$	$\$5 + 5.25 = £10.25$	na
Future Value	$\$100 + £10 = £110$	$\$100 + £10 = £110$	$\$100 + 10.25 = £110.25$	

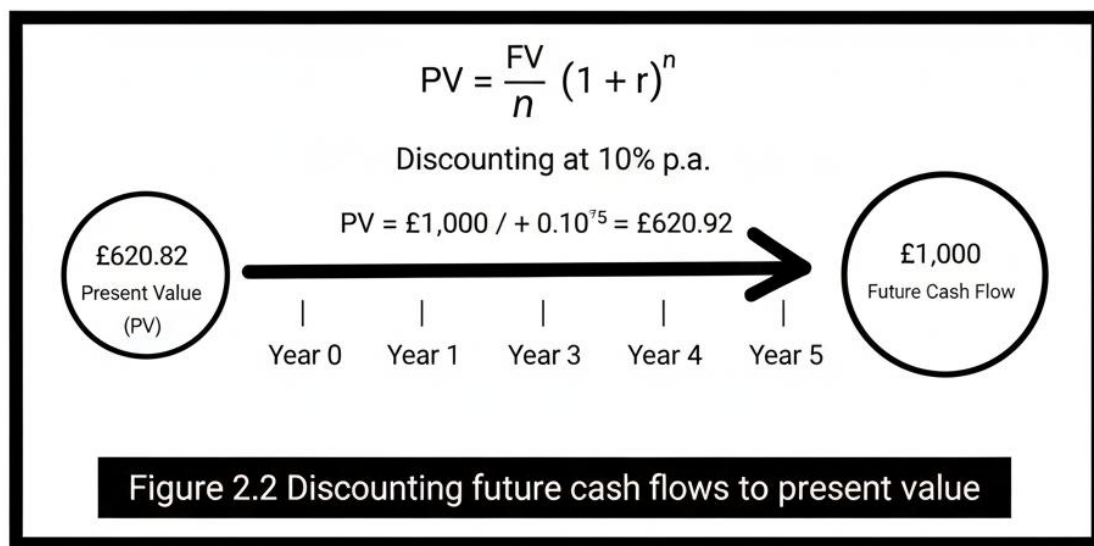
2.2.2 Discounting cash flows



Discounting is the process of determining the present value of future cash flows by applying a discount rate. It reflects the principle that money received in the future is worth less than money received today.

For instance, £1,000 expected in five years is worth less today because of inflation and opportunity cost. The discounting process helps managers and investors decide whether future cash inflows justify current investments.

Fill in the blank: The process of finding the present value of future cash flows is called _____.



2.2.3 Continuous compounding



Continuous compounding assumes that interest is added to the principal an infinite number of times per year. It uses the exponential function e^{rt} , where r is the rate and t is time. Continuous compounding results in slightly higher returns compared to discrete compounding.

For example, £1,000 invested at 10 per cent for one year grows to £1,105.17 under continuous compounding, compared to £1,100 under annual compounding.

Fill in the blank: Continuous compounding uses the exponential function _____ to calculate growth.

Box 2.2 Continuous compounding formula and example

Formula:

$$FV = PV * e^{rt}$$

Where:

FV = Future Value

PV = Present Value

e = Napier's constant (approx. 2.71828)

r = Annual Interest Rate

t

t = Time in years

Worked Example:

Calculate the future value of £1,000 invested for 5 years at an annual interest rate of 10% compounded continuously.

$$PV = £1,000 * e^{(0.10 * 5)}$$

$$r = 0.10$$

$$t = 5$$

$$FV = £1,000 * e^{(0.5)}$$

$$FV = £1,000 * 1,648.72$$

Box 2.2 Continuous compounding formula and example

Pilot questions 2.2

1. What is the difference between simple and compound interest?



2. Which process calculates the present value of future cash flows?
3. What formula is used in continuous compounding?
4. Why does compound interest yield more than simple interest over time?
5. Give one practical example of discounting in financial decision making.

2.3 Net Present Value And Investment Appraisal

2.3.1 Definition and calculation of net present value (NPV)

Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. It is a key tool in capital budgeting because it helps determine whether an investment will add value to a firm.

A positive NPV indicates that the project is expected to generate more value than it costs, while a negative NPV suggests the opposite.

Fill in the blank: NPV is the difference between present value of inflows and present value of _____.



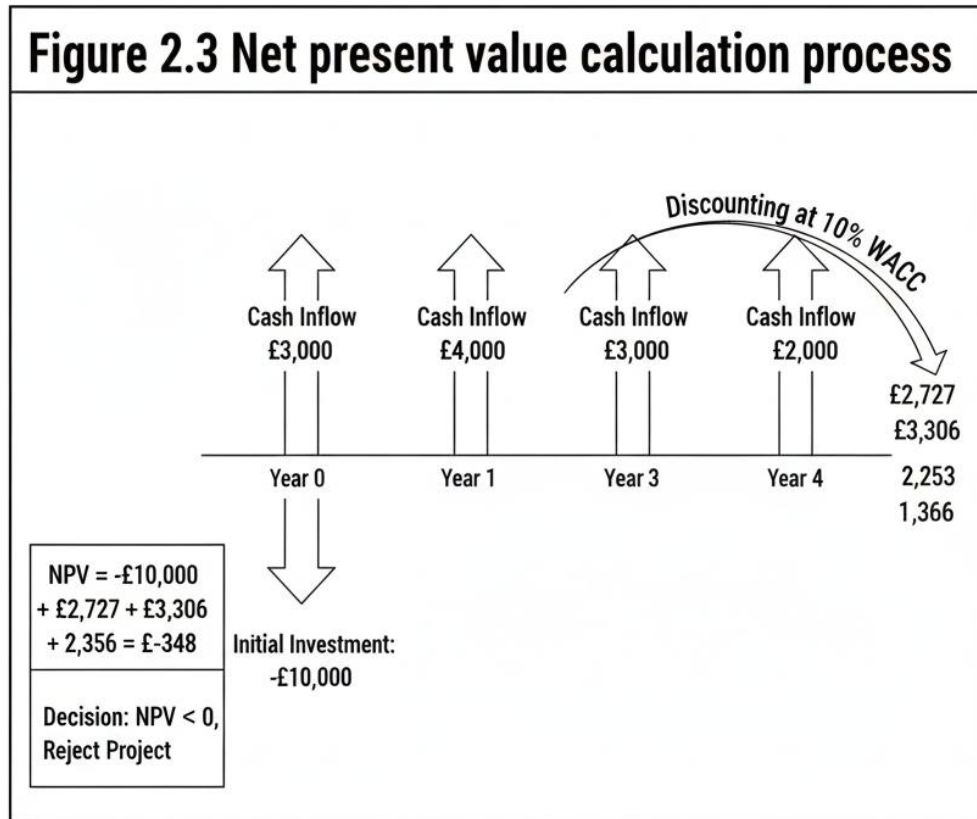


Figure 2.3 Net present value calculation process

2.3.2 NPV in capital budgeting decisions

Capital budgeting involves evaluating long-term investments such as new projects, equipment, or expansion. NPV is widely used because it considers both the timing and magnitude of cash flows.

For example, if a company invests £10,000 in a project expected to generate £12,000 in discounted inflows, the NPV is £2,000, indicating the project should be accepted.

Fill in the blank: Capital budgeting decisions often rely on _____ because it accounts for timing and magnitude of cash flows.



Table 2.3 Example of NPV in capital budeging			
Year		Cash Flow £	Present Value (10% WACC) (£)
0	(Initial Investment)		-10,000
1	-3,000	3,000	2,727.27
2	4,000	3,305.79	2,305.79
3	3,000	2,253.94	2,253.94
4	2,000	2,000	1,366.03
Total Present Value of Inflows		9,653.03	-346.97
Net Present Value (NPV)		Decision: NPV < 0, Reject Project	

Table 2.3 Example of NPV in capital budeging			
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2.3.3 Limitations of NPV

Although NPV is a powerful tool, it has limitations. It relies on accurate estimation of future cash flows and discount rates, which may be uncertain. It also assumes that cash inflows can be reinvested at the discount rate, which may not always be realistic.

Managers should therefore use NPV alongside other appraisal techniques such as internal rate of return (IRR) or payback period to make balanced decisions.

Fill in the blank: One limitation of NPV is that it assumes cash inflows can be reinvested at the _____ rate.



Box 2.3 Limitations of net present value

Key Limitations

- Relies on accurate estimates (cash flows, discount rate)
- Sensitive to
- Reinvestment assumption (at WACC)
- Ignores project scale/size differences
- Difficulty comparing mutually exclusive projects

Implications

- Potential for inaccurate decisions
- Decisions may not maximize value
- Assumes unrealistic reinvestment
- Bias against smaller projects
- Requires additional analysis

Box 2.3 Limitations of net present value

Pilot questions 2.3

1. What does net present value measure?
2. What does a positive NPV indicate about a project?
3. Why is NPV widely used in capital budgeting?
4. Give one limitation of NPV.
5. Which other appraisal techniques can complement NPV?

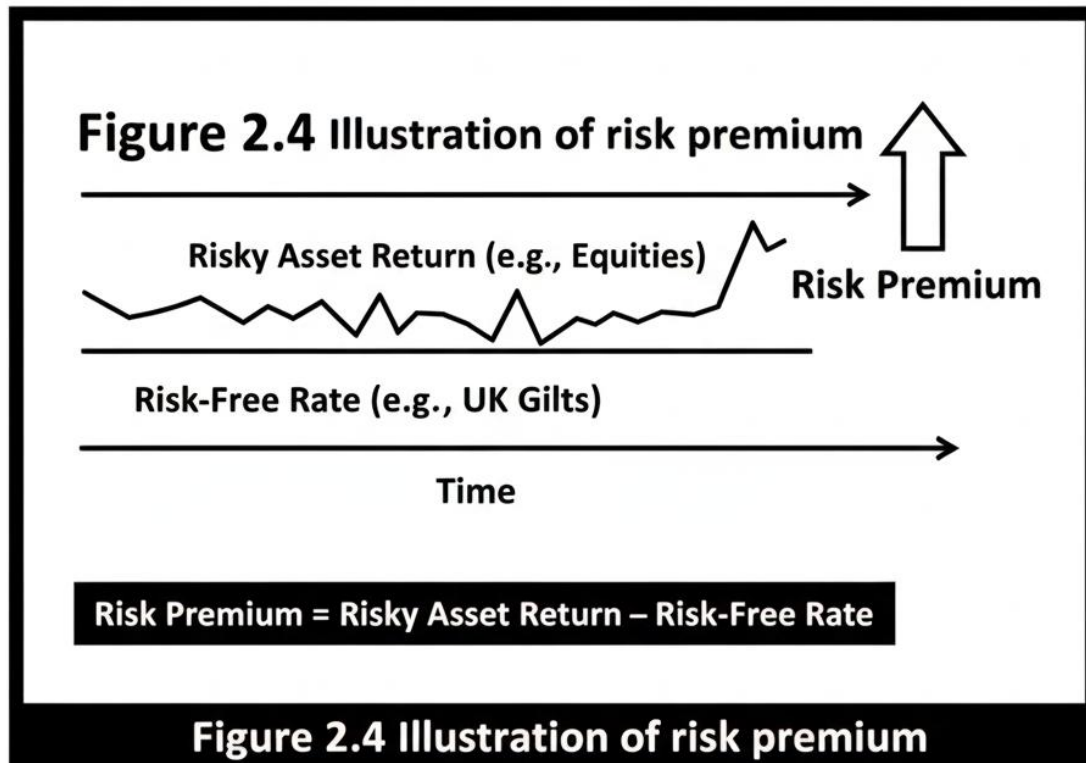
2.4 Risk Premium And Valuation Of Financial Assets



2.4.1 Concept of risk premium

Risk premium is the additional return investors demand for taking on higher risk compared to a risk-free investment. It reflects compensation for uncertainty and volatility. For example, if government bonds yield 3 per cent and equities yield 8 per cent, the equity risk premium is 5 per cent.

Fill in the blank: The extra return investors require for taking on higher risk is called _____.



2.4.2 Valuation of bonds and stocks using TVM principles

Valuation of financial assets relies on time value of money.



- **Bond valuation** involves discounting future coupon payments and the face value to present value.
- **Stock valuation** often uses dividend discount models (DDM), where expected dividends are discounted to present value.

These methods help investors decide whether assets are fairly priced relative to their risk and expected return.

Fill in the blank: Bond valuation involves discounting future coupon payments and the _____ value to present value.

Table 2.4 Bond stock valuation methods

Feature	Bond Valuation	Stock Valuation
Description	Present value of future coupon payments + + face value.	Present of future future expected dividends.
Key Principle	Time value of money applied applied to fixed income.	Time value of futrey applied to equity claims.
Primary Model	Discounted Cash Flow (DCF)	Dividend Discount Model DDM
Formula /	$\text{Price} = \frac{C}{r} + \frac{F}{(1+r)^n}$	$\text{Price} = \frac{D_1}{r-g}$
Example	(C=Coupon, F=Face Value, r=Discount Rate)	(C ₁ =Next Dividend, r Equity, g=Growth Rate)

Table 2.4 Bond and stock valuation methods

2.4.3 Relationship between risk premium and asset pricing



Asset pricing models, such as the Capital Asset Pricing Model (CAPM), link risk premium to expected returns. CAPM states that the expected return on an asset equals the risk-free rate plus the asset's beta multiplied by the market risk premium.

This relationship ensures that riskier assets must offer higher expected returns to attract investors.

Fill in the blank: According to CAPM, expected return equals risk-free rate plus beta times the _____.

Box 2.4 Risk premium and asset pricing relationship

CAPM Formula	Interpretation
$E(R_i) = R_f + \beta_i + (E(R_m) - R_f)$ Where: Expected return of asset i R_f = Risk-free rate β_i = Beta of asset i $E(R_m)$ Expected market return $(E(R_m) - R_f)$ = Market risk premium	- Investors demand extra return (risk premium) for taking on systematic risk - Higher beta (more systematic risk) leads a higher expected return. - The market risk premium is the compensation for holding a average market portfolio.

Box 2.4 Risk premium and asset pricing relationship

Pilot questions 2.4

1. What is risk premium?
2. How is bond valuation carried out using TVM principles?



3. Which model is commonly used for stock valuation?
4. What does CAPM link risk premium to?
5. Why must riskier assets offer higher expected returns?

2.5 Practical Applications Of Valuation Techniques

2.5.1 Case examples in corporate finance

Valuation techniques are widely applied in corporate finance. For instance, when a company considers acquiring another firm, managers use discounted cash flow (DCF) analysis to estimate the target's value. Similarly, NPV is used to evaluate expansion projects, ensuring that expected inflows exceed the cost of investment.

Fill in the blank: Managers often use _____ analysis to estimate the value of a target company in acquisitions.



Figure 2.5 Corporate finance application of valuation techniques

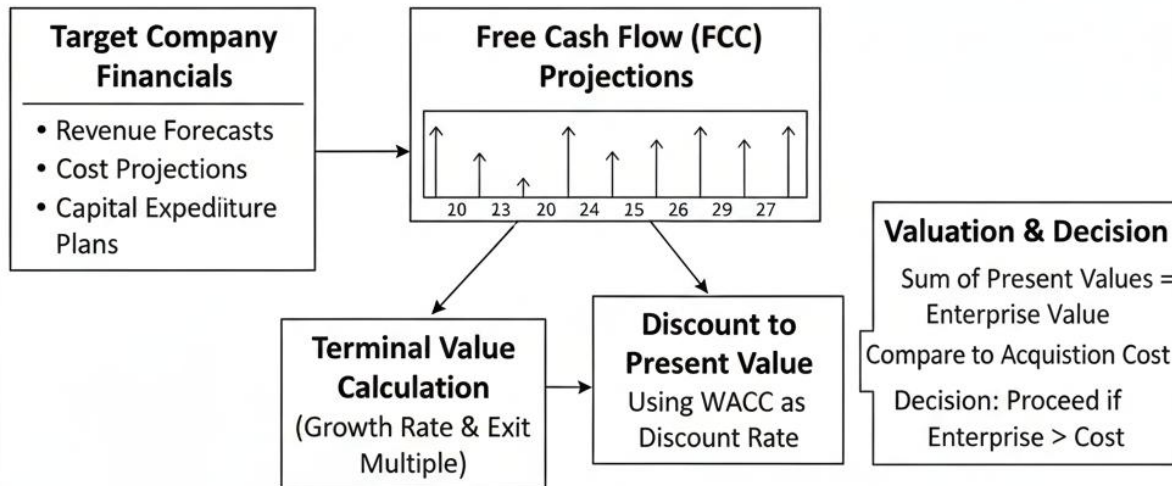


Figure 2.5 Corporate finance application of valuation techniques

2.5.2 Applications in personal investment decisions

Individuals also apply valuation techniques in everyday financial decisions. For example, when deciding whether to take a loan, buy bonds, or invest in stocks, they use TVM principles to compare present and future values. Retirement planning also relies on compounding to estimate how much savings will grow over time.

Fill in the blank: Retirement planning relies on _____ to estimate how savings will grow over time.



Table 2.5 Examples of personal applications

Application Area	Time Value of Money (TVM) Principle	Example Scenario	How TVM is Applied
Loan Calculations			Calculate monthly payments, payments, total interest paid
Present Value, Future Value of Annuity	Mortgage, Car	Mortgage, Car Loan	Determine fair price based, future payments & face value
Bond Valuation	Present of Cash Cash Flows	Buying a Corporate Bond	Determine fair price of future payments & face value
Stock Valuation	Dividend Discount Model	Investing in Dividend Stocks	Estimate stock's intrinsic value based in future dividends
Future Value of Annuity, Present of Annuity	Future Value of Annuity, of Annuity	Saving for Retirement	Project future nest egg, calculate required savings contributions

Table 2.5 Examples of investment applications

2.5.3 Use of financial calculators and spreadsheets

Modern financial management relies heavily on tools such as financial calculators and spreadsheets. These tools simplify complex calculations of PV, FV, NPV, and IRR, making them accessible to both professionals and learners. Spreadsheet functions such as PV(), FV(), and NPV() allow quick and accurate analysis.

Fill in the blank: Spreadsheet functions such as _____ and NPV() simplify valuation calculations.



Box 2.5 Spreadsheet functions for valuation techniques

Function	Description & Example
PV(rate, nper, pmt, [fv]), [type)	Calculates Present Value return
FV(rate, nper, pmt, [pv], [type)	Calculates Present Value. Example: Example: =PV(0.10, 5, -200, 1000)
Calculates Future Value	Example: =FV(0.05, 10, -50, -1000)
NPV(rate, value1, 10, 50), ...)	Calculates NPV, -10000, 3000, 4000)
NPV(rate, value1, inturn	Example: {-5000, 1500, 2500)
IRR(values, [guess)	

Box 2.5 Spreadsheet functions for valuation techniques

Pilot questions 2.5

- Which valuation technique is commonly used in corporate acquisitions?
- How do individuals apply TVM in retirement planning?
- Give two examples of personal investment decisions where valuation techniques are useful.
- Name two spreadsheet functions used in valuation calculations.
- Why are financial calculators and spreadsheets important in modern financial management?



Series Summary

This Series has guided you through the essential principles and applications of the time value of money, a cornerstone of financial management. We began by defining the concept and exploring present and future value, before moving into discounting and compounding techniques, including simple, compound, and continuous interest. We then examined net present value as a tool for investment appraisal, highlighting its strengths and limitations. Following this, we analysed the role of risk premium in asset valuation, applying TVM principles to bonds and stocks, and linking these ideas to asset pricing models such as CAPM. Finally, we concluded with practical applications, showing how valuation techniques are used in corporate finance, personal investment decisions, and with modern tools like spreadsheets.

By completing this Series, you should now be able to define and apply TVM concepts, demonstrate discounting and compounding techniques, calculate and evaluate NPV, explain risk premium and asset valuation, and analyse practical applications of valuation methods. These abilities directly align with the Series Learning Outcomes, ensuring you are well prepared to use valuation techniques in both professional and personal financial contexts.

Glossary of Terms

- **Capital Asset Pricing Model (CAPM):** A model that links expected return to risk premium using the risk-free rate and beta.
- **Compound interest:** Interest calculated on both the principal and previously earned interest.
- **Continuous compounding:** A method where interest is added an infinite number of times per year, using the exponential function.
- **Discounting:** The process of calculating the present value of future cash flows using a discount rate.
- **Future value (FV):** The value of a current sum of money at a future date, calculated using compounding.
- **Net present value (NPV):** The difference between the present value of cash inflows and outflows, used in investment appraisal.
- **Present value (PV):** The current worth of a future sum of money or stream of cash flows.
- **Risk premium:** The additional return investors demand for taking on higher risk compared to a risk-free investment.
- **Simple interest:** Interest calculated only on the original principal amount.



- **Time value of money (TVM):** The principle that money today is worth more than the same amount in the future.

Concept Check Questions

Objective Questions

1. The principle that money today is worth more than the same amount in the future is called _____. (Linked to SLO 2.1)
2. Interest calculated only on the original principal is known as _____ interest. (Linked to SLO 2.3)
3. Net present value is the difference between present value of inflows and present value of _____. (Linked to SLO 2.4)
4. According to CAPM, expected return equals risk-free rate plus beta times the _____. (Linked to SLO 2.5)

Short-Answer Questions

5. Define present value and future value. (Linked to SLO 2.2)
6. Explain the difference between simple and compound interest. (Linked to SLO 2.3)
7. Why is NPV widely used in capital budgeting decisions? (Linked to SLO 2.4)
8. What is risk premium, and why is it important in asset valuation? (Linked to SLO 2.5)

Long-Answer Questions

9. Demonstrate how discounting and compounding techniques are applied in financial decision making, with examples. (Linked to SLO 2.2, 2.3)
 - **Basic response:** Learners should show how PV and FV are calculated and give simple examples.
 - **Value-added response:** Outstanding learners may discuss continuous compounding, practical applications in loans and retirement planning, and limitations of assumptions.
10. Evaluate the role of net present value in investment appraisal, highlighting both its strengths and limitations. (Linked to SLO 2.4)
 - **Basic response:** Learners should explain how NPV measures value creation and why positive NPV projects are accepted.



- **Value-added response:** Outstanding learners may compare NPV with IRR and payback period, discuss reinvestment assumptions, and illustrate with corporate case studies.
11. Analyse how risk premium influences the valuation of bonds and stocks, linking your answer to asset pricing models. (Linked to SLO 2.5)
- **Basic response:** Learners should explain risk premium and how it affects expected returns.
 - **Value-added response:** Outstanding learners may apply CAPM, discuss beta's role, and provide examples of equity vs bond valuation.

Answers to Concept Check Questions [Series 2]

1. Time value of money.
2. Simple interest.
3. Outflows.
4. Market risk premium.
5. Present value is the current worth of a future sum discounted at a rate. Future value is the projected value of today's money compounded over time.
6. Simple interest is calculated only on principal, while compound interest is calculated on principal plus accumulated interest.
7. NPV accounts for both timing and magnitude of cash flows, making it a reliable measure of value creation.
8. Risk premium is the extra return required for taking on higher risk; it ensures assets are priced fairly relative to risk.
9. **Basic:** Discounting brings future cash flows to present value, compounding projects current sums into the future. **Value-added:** Continuous compounding uses exponential growth; applications include loan repayment schedules and retirement savings.
10. **Basic:** NPV shows whether inflows exceed outflows; positive NPV projects add value. **Value-added:** NPV is more reliable than payback period, but assumptions about discount rates and reinvestment can limit accuracy.
11. **Basic:** Risk premium increases expected returns for riskier assets. **Value-added:** CAPM links expected return to beta and market risk premium; equities typically have higher risk premiums than bonds.

Answers to Pilot Questions [Series 2]

Pilot questions 2.1



- Money today is worth more than the same amount in the future.
- Present value and future value.
- Present value.
- Investment appraisal, loan repayment, retirement planning, asset valuation.
- Because it can earn interest or returns.

Pilot questions 2.2

- Simple interest is on principal only; compound interest is on principal plus accumulated interest.
- Discounting.
- e^{rt} .
- Because interest is earned on interest.
- Evaluating project cash inflows against investment cost.

Pilot questions 2.3

- Difference between present value of inflows and outflows.
- Positive NPV means the project adds value.
- Because it accounts for timing and magnitude of cash flows.
- It relies on estimates and reinvestment assumptions.
- IRR and payback period.

Pilot questions 2.4

- Extra return for taking on higher risk.
- By discounting coupons and face value.
- Dividend discount model.
- Expected returns.
- To compensate investors for higher risk.

Pilot questions 2.5

- Discounted cash flow analysis.
- Compounding.
- Loans, bonds, stocks, retirement planning.



- $PV()$ and $FV()$.
- They simplify complex calculations and improve accuracy.

Series 3: Asset Pricing Models And Market Efficiency

3.1 Introduction To Asset Pricing Models

- 3.1.1 Purpose and importance of asset pricing
- 3.1.2 Key assumptions underlying asset pricing models
- 3.1.3 Overview of traditional and modern approaches

3.2 Capital Asset Pricing Model (CAPM)

- 3.2.1 Definition and formula of CAPM
- 3.2.2 Role of beta and market risk premium
- 3.2.3 Applications and limitations of CAPM

3.3 Arbitrage Pricing Theory (APT)

- 3.3.1 Concept and assumptions of APT
- 3.3.2 Multi-factor approach to asset pricing
- 3.3.3 Comparison of APT and CAPM

3.4 Market Efficiency And The Efficient Market Hypothesis (EMH)

- 3.4.1 Definition and importance of market efficiency
- 3.4.2 Forms of EMH: weak, semi-strong, strong
- 3.4.3 Evidence and criticisms of EMH

3.5 Behavioural Finance And Market Anomalies

- 3.5.1 Introduction to behavioural finance
- 3.5.2 Common market anomalies (e.g., January effect, momentum)
- 3.5.3 Implications for investors and managers

Introduction

Financial markets are built on the principle that assets must be priced fairly relative to their risk and expected return. Understanding how assets are valued and whether markets operate efficiently is central to financial management, investment decisions, and corporate strategy. This



Series introduces you to the major asset pricing models and explores the concept of market efficiency, providing both theoretical foundations and practical insights.

The aim of this Series is to equip you with the ability to explain and apply models such as the Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT), evaluate the Efficient Market Hypothesis (EMH), and analyse behavioural finance perspectives and market anomalies. We begin with an overview of asset pricing models, then examine CAPM and APT in detail. Next, we turn to market efficiency and the forms of EMH, before concluding with behavioural finance and anomalies that challenge traditional theories.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **3.1** explain the purpose of asset pricing models and identify the assumptions that underpin them,
- **3.2** apply the Capital Asset Pricing Model (CAPM) to estimate expected returns based on risk,
- **3.3** analyse the Arbitrage Pricing Theory (APT) and compare it with CAPM,
- **3.4** define market efficiency and evaluate the forms of the Efficient Market Hypothesis (EMH),
- **3.5** assess evidence and criticisms of EMH in relation to real market behaviour,
- **3.6** describe behavioural finance perspectives and examine common market anomalies with their implications for investors.

3.1 Introduction To Asset Pricing Models

3.1.1 Purpose and importance of asset pricing

Asset pricing models provide frameworks for determining the fair value of financial assets. They help investors and managers understand the relationship between risk and expected return, guiding decisions about whether to buy, hold, or sell assets.

For example, pricing models are used to evaluate shares, bonds, and derivatives, ensuring that investments are aligned with risk tolerance and market conditions.

Fill in the blank: Asset pricing models help determine the _____ value of financial assets.



Figure 3.1 Purpose of asset pricing models

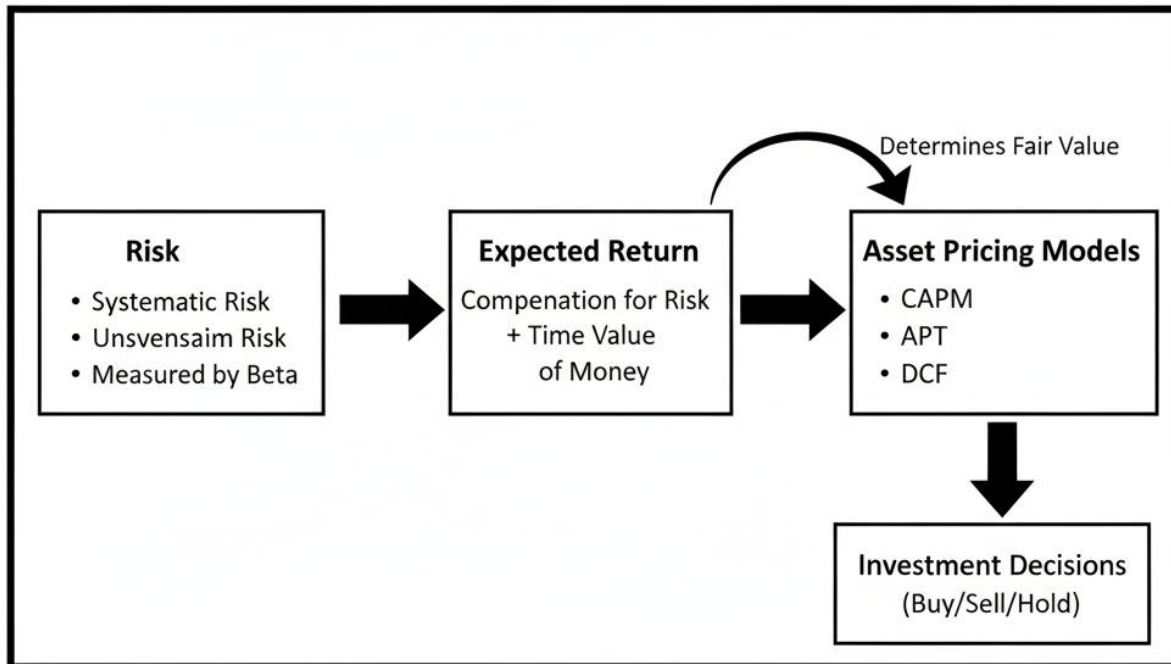


Figure 3.1 Purpose of asset pricing models

3.1.2 Key assumptions underlying asset pricing models

Most asset pricing models rely on assumptions such as rational investors, efficient markets, and risk-return trade-offs. These assumptions simplify complex realities but provide useful starting points for analysis.

For instance, CAPM assumes that investors diversify portfolios to eliminate unsystematic risk, and that markets provide all available information.

Fill in the blank: CAPM assumes that investors diversify portfolios to eliminate _____ risk.



Table 3.1 Key assumptions of asset pricing models

Assumption	Explanation / Implication
Investor Rationality	Investors make logical decisions based on maximizing utility.
Market Efficiency	Asset prices fully reflect all available information
Homogeneous Expectations	All investors have the same beliefs about expected returns, risk, and factors.
No Taxes or Transaction Costs	Idealized market with no frictions.
Perfect Capital Markets	Unlimited borrowing/lending at the risk-free rate; infinite divisibility of assets.
Diversification	Investors hold well-diversified portfolios to eliminate unsystematic risk.

Table 3.1 Key assumptions of asset pricing models

3.1.3 Overview of traditional and modern approaches

Traditional models, such as CAPM, focus on single-factor explanations of asset returns, while modern approaches, such as APT and multifactor models, incorporate multiple sources of risk. Behavioural finance adds further insights by considering psychological factors and market anomalies.

Fill in the blank: Traditional models like CAPM are _____-factor models, while APT is a multi-factor model.



Traditional vs Approaches

Traditional Approach	Modern Approach
Capital Asset Pricing Model (CAPM) • Single-factor model • Uses Beta to measure systematic risk • Assumes efficient markets, rational investors • Simpler to implement • Example: Calculate cost of equity	Arbitrage Pricing Theory (APT) & Behavioral Finance • Multi-factor model • Multiple sources of systematic (e. g. inflation, GDP) • Relaxed assumptions, considers irrationality (Behavioral) • More complex, potentially more accurate • Example: Explaining anomalies

Box 3.1 Traditional vs Modern Asset Pricing Approaches

Pilot questions 3.1

1. What is the main purpose of asset pricing models?
2. Name one key assumption underlying CAPM.
3. How do traditional models differ from modern approaches to asset pricing?
4. What type of risk does diversification aim to eliminate?
5. Give one example of how asset pricing models are applied in practice.



3.2 Capital Asset Pricing Model (CAPM)

3.2.1 Definition and formula of CAPM

The **Capital Asset Pricing Model (CAPM)** is a widely used tool for estimating the expected return on an investment. It states that the expected return equals the risk-free rate plus the asset's beta multiplied by the market risk premium.

Formula:

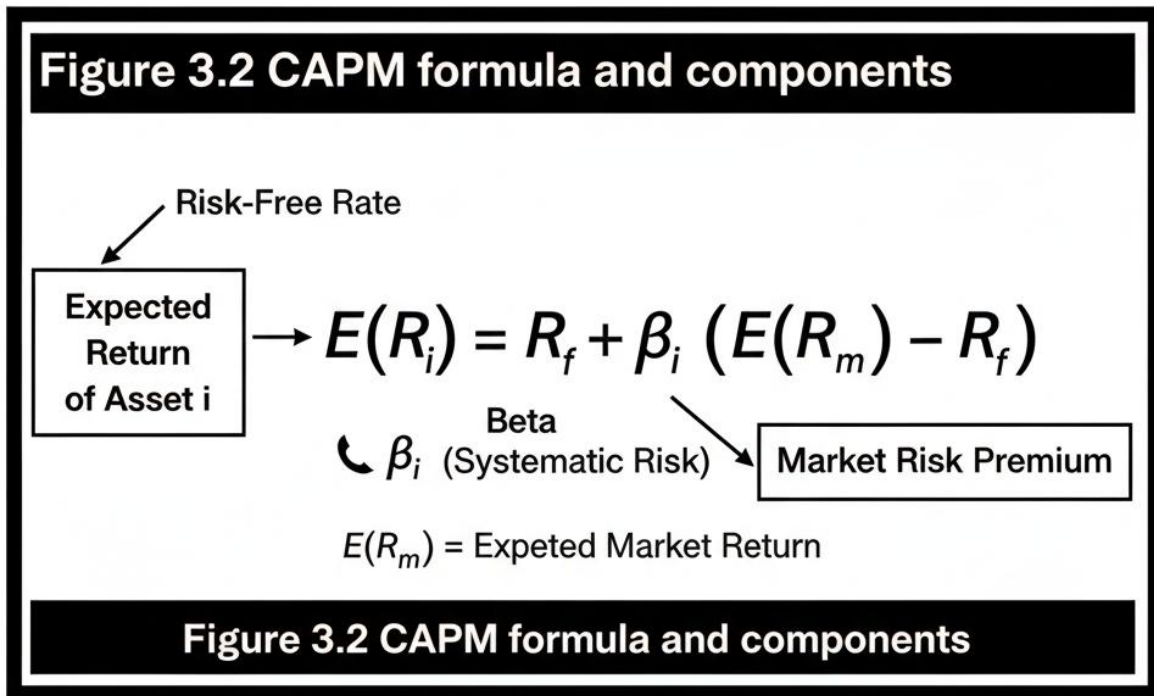
$$E(R_i) = R_f + \beta_i(E(R_m) - R_f)$$

Where:

- $E(R_i)$ = expected return on the asset
- R_f = risk-free rate
- β_i = sensitivity of the asset to market movements
- $E(R_m) - R_f$ = market risk premium

Fill in the blank: The CAPM formula links expected return to the risk-free rate, beta, and _____.





3.2.2 Role of beta and market risk premium

Beta measures how sensitive an asset is to overall market movements. A beta greater than 1 means the asset is more volatile than the market, while a beta less than 1 means it is less volatile. The **market risk premium** represents the extra return investors expect for taking on market risk compared to a risk-free investment.

Together, beta and the market risk premium determine the risk-adjusted return of an asset.

Fill in the blank: A beta greater than 1 indicates that the asset is _____ volatile than the market.



Table 3.2 Beta and Market Risk Premium		
Beta Value (β)	Interptation	Implications for Asset Voltaility
$\beta < 1$	Less volatile than the overall market. Defensive stock.	Asset price flucttates less than the market; lower risk.
$\beta = 1$	Matches the voltabiity of the overall market. Average risk.	Asset price moves in line the market changes.
$\beta > 1$	More volatile than the overral. Aggressive/Gne-Growth stock.	Asset price flucttates more than the market; higher
Table 3.2 Role of Beta and Market Risk Premium		

3.2.3 Applications and limitations of CAPM

CAPM is used to estimate the cost of equity, evaluate investment opportunities, and guide portfolio management. It provides a simple framework for linking risk and return.

However, CAPM has limitations. It assumes investors hold diversified portfolios, markets are efficient, and risk is fully captured by beta. In reality, other factors such as size, value, and momentum may influence returns.

Fill in the blank: CAPM assumes that markets are _____ and investors hold diversified portfolios.



Box 3.2 Applications and limitations of CAPM

Applications

- Cost of Equity Estimation
- Investment Appraisal (WACC)
- Portfolio Management
- Performance Evaluation

Limitations

- Based on unrealistic assumptions
- Beta estimation issues
- Historical data reliance
- Single-factor model
- Market portfolio unobservability

Box 3.2 Applications and limitations of CAPM

Pilot questions 3.2

1. What does the CAPM formula estimate?
2. Which three components are included in the CAPM formula?
3. What does a beta greater than 1 indicate?
4. What is the market risk premium?
5. Give one limitation of CAPM.

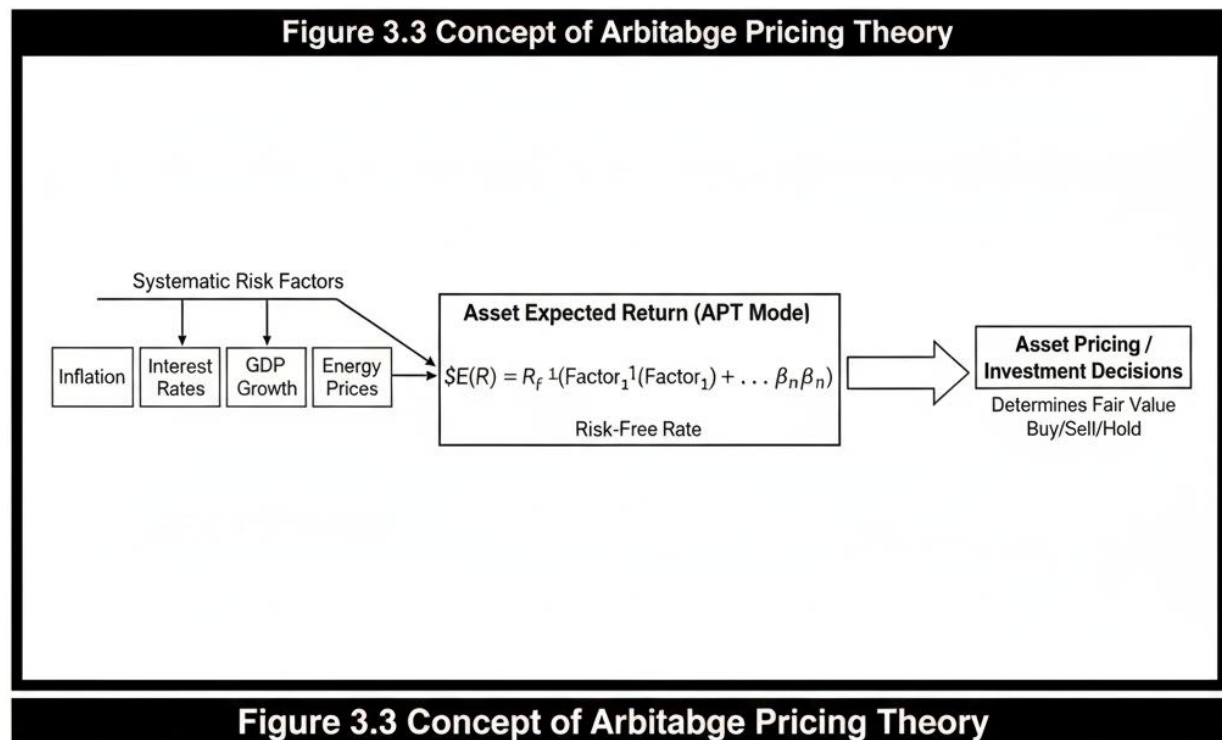
3.3 Arbitrage Pricing Theory (APT)



3.3.1 Concept and assumptions of APT

The **Arbitrage Pricing Theory (APT)** is a multi-factor model that explains asset returns based on several macroeconomic variables or risk factors, rather than a single market factor as in CAPM. It assumes that asset prices should not allow arbitrage opportunities—meaning investors cannot earn risk-free profits by exploiting price differences.

Fill in the blank: APT is a _____-factor model that explains asset returns using multiple risk factors.



3.3.2 Multi-factor approach to asset pricing



APT uses a linear model where asset returns are influenced by several factors, each with its own sensitivity (factor loading). For example, a stock's return may depend on inflation, interest rates, and industrial production.

This approach allows for more flexibility than CAPM, as it recognises that multiple sources of risk affect returns.

Fill in the blank: In APT, each risk factor has a sensitivity coefficient called a _____ loading.

Table 3.3 Example of Multi-Factor Asset Pricing

Asset	Factor Loadings			Asset Expected Return (APT Model)
	Inflation β_1	Interest β_2	Rates β_3	
Stock A	0.8	1.2	0.5	$E(R_A) = 4\% + 0.8(2\%) + 1.2(15\% + 0.5\%(3\%)) = 9.7\%$
Stock B	1.1	-0.3	0.9	$E(R_B) = 4\% + 1.1(2\%) - 0.3(5\%) = 9.45\%$

Risk-Free Rate (R_f) = 4% Inflation Factor = 2% Return Rate = GDP Growth Factor
 GDP Growth = 1.5% Return = 3%

Table 3.3 Example of Multi-Factor Asset Pricing

3.3.3 Comparison of APT and CAPM



While CAPM is a single-factor model based on market risk, APT is a multi-factor model that incorporates several economic variables. CAPM is simpler and widely used, but APT provides more flexibility and realism.

However, APT requires identifying relevant factors, which can be complex and data-intensive.

Fill in the blank: CAPM is a single-factor model, while APT is a _____-factor model.

Box 3.3 Comparison of CAPM and APT

CAPM (Capital Asset Pricing Model)		APT (Arbitrage Pricing Theory)
Assumptions	Single factor; assumes efficient markets, rational investors, and no transaction costs.	Multiple factors: relaxed assumptions, allows for some market inefficiencies.
Risk Factors	Single factor: Beta (systematic risk relative to market).	Multiple factors: Macroeconomic variables (e. g, inflation, interest rates, GDP growth).
Formula	$E(R_i) = R_f + \beta_i(E(R_m) - R_f)$	$E(R_i) = R_f + \sum_{k=1}^n \beta_{ik} F_k$
Applications	Cost of equity estimation, performance evaluation	Explaining asset price anomalies, portfolio construction

Box 3.3 Comparison of CAPM and

Pilot questions 3.3

1. What does APT stand for?
2. How does APT differ from CAPM in terms of factors?
3. What is meant by arbitrage in the context of APT?



4. What are factor loadings in APT?
5. Give one advantage and one limitation of APT compared to CAPM.

3.4 Market Efficiency And The Efficient Market Hypothesis (EMH)

3.4.1 Definition and importance of market efficiency

Market efficiency refers to how well market prices reflect all available information. In an efficient market, asset prices adjust quickly to new information, making it difficult for investors to consistently achieve abnormal returns.

Efficient markets are important because they ensure fair pricing of securities, protect investors, and promote confidence in financial systems.

Fill in the blank: Market efficiency means that asset prices reflect all _____ information.



Figure 3.4 Market efficiency concept

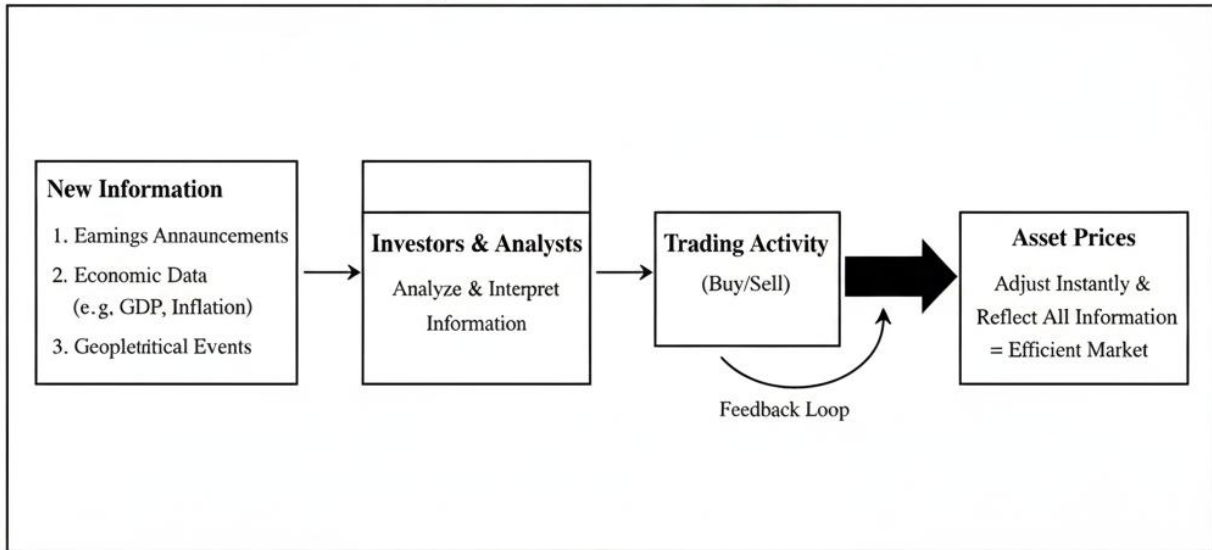


Figure 3.4 Market efficiency concept

3.4.2 Forms of EMH: weak, semi-strong, strong

The **Efficient Market Hypothesis (EMH)** has three forms:

- **Weak form:** Prices reflect all past trading information (e.g., historical prices, volumes).
- **Semi-strong form:** Prices reflect all publicly available information (e.g., financial statements, news).
- **Strong form:** Prices reflect all information, both public and private (including insider knowledge).

Fill in the blank: The EMH form that includes both public and private information is called the _____ form.



Form of EMI	Information Reflected Implications & Example	
Weak a prices & trading data	Historical prices data	Technical analysis cannot predict future prices. Example: Chart patterns don't work.
Semi-Strong Porm information	All pubcily available information	Fundamental analysis cannot earn abrtturns. Eaamplgs reports are instantly priced in.
Strong Form & private (insider) information	All public & private information	No one can consistently earn abnor returns. Even insiders can't profit.
Table 3.4 Forms of Efficient Market Hyphtholesis (EMH)		

3.4.3 Evidence and criticisms of EMH

Evidence supporting EMH includes studies showing that stock prices follow a random walk, making it difficult to predict future movements. However, critics argue that anomalies such as momentum effects, bubbles, and insider trading challenge the idea of perfect efficiency.

Fill in the blank: A common criticism of EMH is the existence of market _____ such as bubbles and momentum effects.



Box 3.4 Evidence and Criticisms of EMH

Evidence Supporting EMH

- Random walk of stock prices
- Difficulty of consistently beating the market
- Rapid price adjustments to new information
- Mutual fund underperformance against indices

Criticisms of EMP

- Market Anomalies (e.g., small-cap effect, value premium)
- Stock Market Bubbles & Crashes
- Behavioral Finance Findings (e.g., herd behavior, overconfidence)
- Insider Trading Profitability

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Pilot questions 3.4

1. What does market efficiency mean?
2. Name the three forms of EMH.
3. Which form of EMH includes insider information?
4. What evidence supports EMH?
5. Give one criticism of EMH.

3.5 Behavioural Finance And Market Anomalies

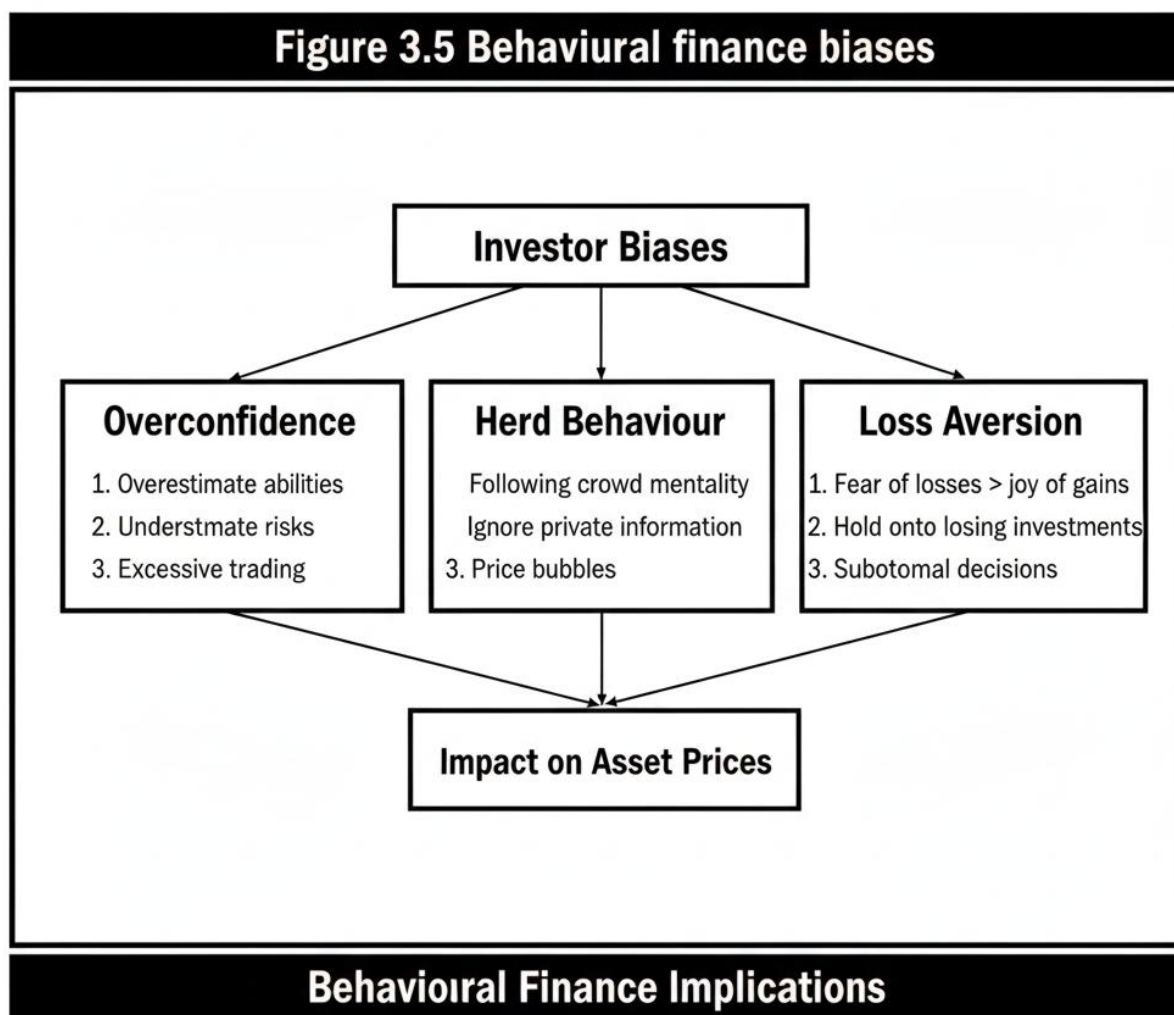


3.5.1 Introduction to behavioural finance

Behavioural finance studies how psychological factors and biases influence financial decisions and market outcomes. Unlike traditional models that assume rational investors, behavioural finance recognises that emotions, heuristics, and cognitive errors often drive investor behaviour.

For example, investors may overreact to news, follow herd behaviour, or exhibit loss aversion, leading to mispricing of assets.

Fill in the blank: Behavioural finance recognises that investors are not always _____ in their decision making.



3.5.2 Common market anomalies



Market anomalies are patterns or irregularities in asset prices that contradict the Efficient Market Hypothesis. Examples include:

- **January effect:** Stock prices tend to rise in January.
- **Momentum effect:** Stocks that performed well in the past continue to perform well in the short term.
- **Value effect:** Value stocks often outperform growth stocks.

These anomalies suggest that markets are not perfectly efficient and that investor behaviour plays a role in asset pricing.

Fill in the blank: The tendency for stock prices to rise in January is known as the _____ effect.



Table 3.5 Common Market Anomalies

		Description	Explanation / Implication
January Effect	Tendency for stock returns to be higher in other months.	Tendency for stock to be higher than in other months. followed by the January than other months.	Tax-loss selling in December creates downward pressure, followed by buying. Also, year-end bonuses are invested. Underreaction or delayed reaction of investors to new information, leading to trends.
Momentum Effect	Stocks that have performed (poorly) in the past continue to perform well in the future.	Stocks that have performed well (poorly) in the past continue to perform well (poorly) in the future.	Underreaction or delayed reaction of investors to new information, leading to trends.
Value Effect	Value stocks (low P/E, B ratios) outperform growth stocks (high P/E, ratios).	Value stocks (low P/E, B ratios) outperform growth stocks (high P/E, ratios).	Behavioral biases cause undervaluation of certain stocks, which eventually correct.

Table 3.5 Common Market Anomalies

3.5.3 Implications for investors and managers

Understanding behavioural finance and anomalies helps investors and managers make better decisions. Recognising biases can prevent costly mistakes, while awareness of anomalies can inform strategies. However, exploiting anomalies is not always easy, as they may disappear once widely known.

Fill in the blank: Awareness of behavioural biases can help investors avoid costly _____.



Box 3.5 Implications of Behavioural Finance and Anomalies

For Investors

- **Awareness of Biases:** Recognise overconfidence, loss aversion, herd mentality.
- **Disciplined Strategy:** Avoid impulsive decisions, stick investment plan
- **Diversification:** Mitigate unsystematic risk of-stock risk from emotional decisions
- **Long-Term Focus:** Reduce impact of market fluctuations/anomalies
- **Exploit Anomalies:** Potentially profit from short-term market inefficiencies (e.g., value investing)

For Managers

- **Capital Budgeting:** Use rational criteria, not, not just manager overconfidence
- **Stock Repurchases:** Time based on valuation, not market sentiment
- **MMA Decisions:** Avoid empire-building or winner's or winner's curse (overpaying)
- **Investor Relations:** Understand psychology; manage expectations
- **Corporate Culture:** Promote objective decision-making, reduce herding

Box 3.5 Implications of Behavioural Finance and Anomalies

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Pilot questions 3.5

1. What does behavioural finance study?
2. Name two common behavioural biases.
3. What is the January effect?
4. Why do market anomalies challenge EMH?
5. How can awareness of behavioural finance help investors?



Series Summary

This Series explored how financial assets are priced and whether markets operate efficiently. We began with an introduction to asset pricing models, highlighting their purpose and assumptions. We then examined the **Capital Asset Pricing Model (CAPM)**, focusing on its formula, the role of beta, and its applications and limitations. Next, we studied the **Arbitrage Pricing Theory (APT)**, a multi-factor model that incorporates several economic variables, and compared it with CAPM. We moved on to the **Efficient Market Hypothesis (EMH)**, discussing its weak, semi-strong, and strong forms, as well as evidence and criticisms. Finally, we concluded with **behavioural finance and market anomalies**, showing how psychological biases and irregularities challenge traditional theories of efficiency.

By completing this Series, you should now be able to explain and apply CAPM, analyse APT, evaluate EMH, and assess behavioural finance perspectives and anomalies. These abilities align directly with the Series Learning Outcomes, equipping you with both theoretical and practical insights into asset pricing and market behaviour.

Glossary of Terms

- **Arbitrage:** Risk-free profit earned by exploiting price differences in markets.
- **Arbitrage Pricing Theory (APT):** A multi-factor model explaining asset returns using several economic variables.
- **Beta:** A measure of an asset's sensitivity to market movements.
- **Capital Asset Pricing Model (CAPM):** A single-factor model linking expected return to risk-free rate, beta, and market risk premium.
- **Efficient Market Hypothesis (EMH):** Theory that asset prices reflect all available information.
- **Market anomalies:** Irregularities in asset prices that contradict EMH, such as the January effect.
- **Market efficiency:** The degree to which asset prices reflect information.
- **Market risk premium:** Extra return investors expect for taking on market risk compared to a risk-free investment.
- **Random walk theory:** Idea that stock prices move randomly, making them difficult to predict.
- **Behavioural finance:** Study of how psychological biases affect financial decisions and market outcomes.

Concept Check Questions

Objective Questions



1. Asset pricing models help determine the _____ value of financial assets. (Linked to SLO 3.1)
2. The CAPM formula links expected return to the risk-free rate, beta, and _____. (Linked to SLO 3.2)
3. APT is a _____-factor model that explains asset returns using multiple risk factors. (Linked to SLO 3.3)
4. The EMH form that includes both public and private information is called the _____ form. (Linked to SLO 3.4)
5. The tendency for stock prices to rise in January is known as the _____ effect. (Linked to SLO 3.6)

Short-Answer Questions

6. Explain the role of beta in CAPM. (Linked to SLO 3.2)
7. What is arbitrage in the context of APT? (Linked to SLO 3.3)
8. Name the three forms of EMH. (Linked to SLO 3.4)
9. Give one criticism of EMH. (Linked to SLO 3.5)
10. Identify two behavioural biases studied in behavioural finance. (Linked to SLO 3.6)

Long-Answer Questions

11. Apply the CAPM formula to estimate the expected return of an asset, explaining each component. (Linked to SLO 3.2)
 - **Basic response:** Learners should show the formula and explain risk-free rate, beta, and market risk premium.
 - **Value-added response:** Outstanding learners may provide a numerical example and discuss practical applications in cost of equity estimation.
12. Analyse the differences between CAPM and APT, highlighting their assumptions, factors, and limitations. (Linked to SLO 3.3)
 - **Basic response:** Learners should explain CAPM as single-factor and APT as multi-factor.
 - **Value-added response:** Outstanding learners may discuss practical challenges of identifying factors in APT and compare empirical evidence.
13. Evaluate the Efficient Market Hypothesis (EMH), discussing its forms, supporting evidence, and criticisms. (Linked to SLO 3.4, 3.5)
 - **Basic response:** Learners should define EMH and describe weak, semi-strong, and strong forms.



- **Value-added response:** Outstanding learners may discuss random walk theory, anomalies, and implications for investors.

14. Assess how behavioural finance and market anomalies challenge traditional asset pricing theories, with examples. (Linked to SLO 3.6)

- **Basic response:** Learners should describe biases and anomalies such as January effect.
- **Value-added response:** Outstanding learners may analyse implications for portfolio management and investor strategies.

Answers to Concept Check Questions [Series 3]

1. Fair value.
2. Market risk premium.
3. Multi-factor.
4. Strong form.
5. January effect.
6. Beta measures an asset's sensitivity to market movements; higher beta means higher volatility relative to the market.
7. Arbitrage is earning risk-free profit by exploiting price differences across markets.
8. Weak, semi-strong, and strong.
9. Existence of anomalies such as bubbles, momentum, or insider trading.
10. Overconfidence and loss aversion.
11. **Basic:** CAPM formula $E(R_i) = R_f + \beta_i(E(R_m) - R_f)$
Value-added: Example: if $R_f = 3\%$, $\beta = 1.2$, market premium = 5% , expected return = 9% .
12. **Basic:** CAPM uses one factor (market risk), APT uses multiple factors. **Value-added:** APT is flexible but requires identifying relevant factors, which is complex.
13. **Basic:** EMH states prices reflect information; weak = past data, semi-strong = public info, strong = all info. **Value-added:** Evidence includes random walk studies; criticisms include anomalies and behavioural biases.
14. **Basic:** Behavioural finance shows biases like herd behaviour; anomalies like January effect contradict EMH. **Value-added:** These insights help managers design better strategies and highlight limits of traditional models.

Answers to Pilot Questions [Series 3]

Pilot questions 3.1



- To determine fair value of assets.
- Rational investors, diversification, efficient markets.
- Traditional models are single-factor; modern models are multi-factor.
- Unsystematic risk.
- Pricing shares, bonds, or derivatives.

Pilot questions 3.2

- Expected return.
- Risk-free rate, beta, market risk premium.
- More volatile than the market.
- Extra return for taking on market risk.
- Assumes efficient markets and diversified portfolios.

Pilot questions 3.3

- Arbitrage Pricing Theory.
- APT uses multiple factors; CAPM uses one.
- Risk-free profit from price differences.
- Sensitivity coefficients.
- Advantage: flexibility; limitation: identifying factors is complex.

Pilot questions 3.4

- Prices reflect all available information.
- Weak, semi-strong, strong.
- Strong form.
- Random walk theory.
- Anomalies such as bubbles.

Pilot questions 3.5

- Psychological biases in finance.
- Overconfidence, herd behaviour.
- Stock prices rise in January.



- They show prices don't always reflect information.
- Helps avoid costly mistakes.

Series 4: Portfolio Theory And Financial Instruments

4.1 Introduction To Portfolio Theory

- 4.1.1 Purpose and importance of portfolio theory
- 4.1.2 Risk and return trade-off in portfolios
- 4.1.3 Diversification and reduction of unsystematic risk

4.2 Modern Portfolio Theory (MPT)

- 4.2.1 Definition and assumptions of MPT
- 4.2.2 Efficient frontier and optimal portfolios
- 4.2.3 Limitations of MPT in practice

4.3 Risk Measurement And Portfolio Performance

- 4.3.1 Variance, standard deviation, and covariance
- 4.3.2 Beta and correlation in portfolio risk
- 4.3.3 Performance measures (Sharpe ratio, Treynor ratio, Jensen's alpha)

4.4 Financial Instruments: Bonds, Stocks, And Derivatives

- 4.4.1 Characteristics of bonds and their role in portfolios
- 4.4.2 Stocks as equity instruments and sources of return
- 4.4.3 Derivatives (options, futures, swaps) and their use in risk management

4.5 Applications Of Portfolio Theory In Investment Management

- 4.5.1 Asset allocation strategies
- 4.5.2 Passive vs active portfolio management
- 4.5.3 Practical challenges in applying portfolio theory

Introduction

Investment management requires balancing risk and return across different assets. Portfolio theory provides the framework for constructing portfolios that maximise expected return for a given level of risk, or minimise risk for a desired return. By combining assets with different risk characteristics, investors can achieve diversification and improve performance.



This Series introduces you to the foundations of portfolio theory and its modern developments. We begin with the basic principles of risk-return trade-offs and diversification, then explore **Modern Portfolio Theory (MPT)** and the concept of the efficient frontier. Next, we examine risk measurement and portfolio performance evaluation using tools such as variance, beta, and performance ratios. We then study financial instruments—bonds, stocks, and derivatives—and their roles in portfolio construction. Finally, we conclude with practical applications of portfolio theory in investment management, including asset allocation strategies and the debate between passive and active management.

The aim of this Series is to equip you with the ability to apply portfolio theory, measure risk and performance, understand financial instruments, and evaluate practical investment strategies.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **4.1** explain the foundations of portfolio theory, including the risk-return trade-off and diversification,
- **4.2** apply Modern Portfolio Theory (MPT) to construct efficient portfolios and evaluate the efficient frontier,
- **4.3** calculate and interpret risk measures such as variance, standard deviation, covariance, beta, and correlation,
- **4.4** evaluate portfolio performance using ratios such as Sharpe, Treynor, and Jensen's alpha,
- **4.5** describe the characteristics and roles of financial instruments (bonds, stocks, derivatives) in portfolio construction,
- **4.6** assess practical applications of portfolio theory in investment management, including asset allocation and passive vs active strategies.

4.1 Introduction To Portfolio Theory

4.1.1 Purpose and importance of portfolio theory

Portfolio theory provides a framework for combining different assets to balance risk and return. Instead of evaluating investments in isolation, it considers how assets interact within a portfolio. The goal is to maximise expected return for a given level of risk, or minimise risk for a desired return.

Fill in the blank: Portfolio theory helps investors balance _____ and return when constructing portfolios.



Figure 4.1 Purpose of Portfolio Theory

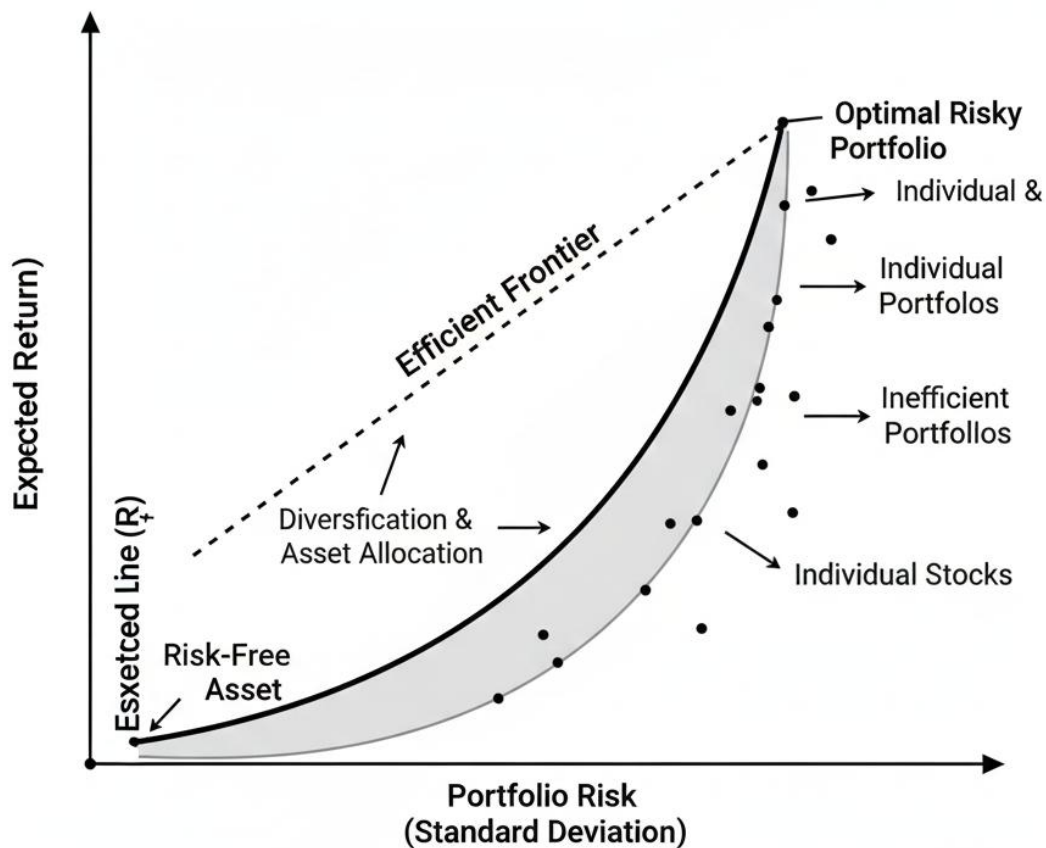


Figure 4.1 Purpose of Portfolio Theory

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4.1.2 Risk and return trade-off in portfolios

Investors face a trade-off: higher expected returns usually come with higher risk. Portfolio theory formalises this relationship, showing how combining assets can reduce overall risk without necessarily reducing expected return.

For example, combining stocks and bonds can create a portfolio with lower volatility than holding stocks alone.

Fill in the blank: Higher expected returns usually come with higher _____.



Portfolio Type	Risk (Expected Volatility)	Expected Annual Annual Return
Low-Risk Portfolio	2-4%	3-5%
Moderate-Risk Portfolio	8-12%	8-10%
Growth Portfolio	15-20%	12-15%
High-Yield/Speculative Portfolio	25%+	18%+

Table 4.1 Risk–return trade–off examples

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4.1.3 Diversification and reduction of unsystematic risk

Diversification is the practice of spreading investments across different assets to reduce exposure to unsystematic (asset-specific) risk. While systematic risk (market-wide risk) cannot be eliminated, diversification can significantly lower portfolio volatility.

Fill in the blank: Diversification reduces _____ risk but cannot eliminate systematic risk.



Box 4.1 Diversification and Risk Reduction

Benefits of Diversification

- Reduces Unsystematic Risk (Idiosyncratic)
- Lowers Portfolio Volatility for the Same Expected Return
- Smoother Returns Over Time
- Protects Against Single-Stock/Sector/Market Specific Events

Limitations of Diversification

- Does NOT Reduce Systematic Risk (Market Risk)
- Asymptotic Reduction (Diminishing Returns)
- Can Dilute Potential for High Gains
- Costs (Transaction, Research)

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Pilot questions 4.1

1. What is the main purpose of portfolio theory?
2. What trade-off do investors face when constructing portfolios?
3. Give one example of how combining assets can reduce risk.
4. What type of risk can diversification reduce?
5. Why can systematic risk not be eliminated?

4.2 Modern Portfolio Theory (MPT)



4.2.1 Definition and assumptions of MPT

Modern Portfolio Theory (MPT), developed by Harry Markowitz, provides a mathematical framework for constructing portfolios that maximise expected return for a given level of risk. It assumes investors are rational, risk-averse, and seek to optimise portfolios based on mean and variance of returns.

Fill in the blank: MPT assumes investors are _____ and risk-averse.

Figure 4.2 Modern Portfolio Theory framework

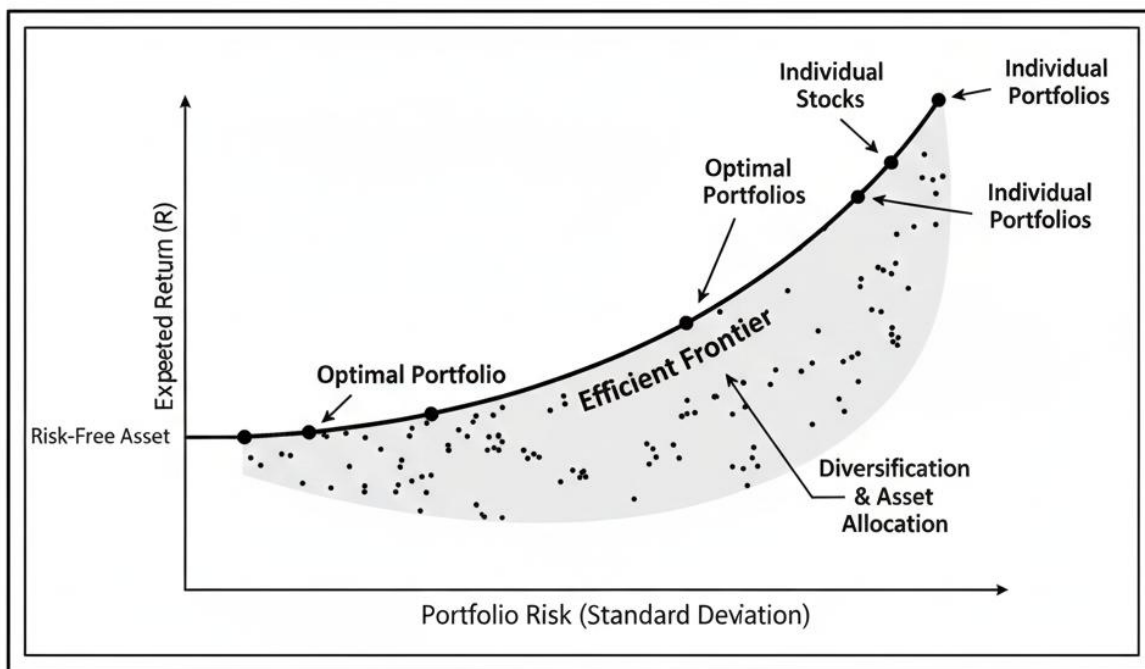


Figure 4.2 Modern Portfolio Theory framework
Open Educational Resource

4.2.2 Efficient frontier and optimal portfolios

The **efficient frontier** is a curve representing portfolios that offer the highest expected return for a given level of risk. Portfolios below the frontier are inefficient because they provide lower



returns for the same risk. The optimal portfolio lies on the frontier, chosen according to the investor's risk tolerance.

Fill in the blank: The set of portfolios that maximise return for a given risk level is called the _____ frontier.

Table 4.2 Efficient Frontier Examples			
Portfolio	Expected Risk (Standard Deviation)	Expected Return	Efficient Frontier Portfolio?
Portfolio A	5%	8%	Yes
Portfolio B	10%	12%	Yes
Portfolio C	10%	9%	No
Portfolio D	10%	15%	Yes
Portfolio E	15%	15%	13

| Table 4.2 Efficient Frontier Examples Open Educational Resource | | | |

4.2.3 Limitations of MPT in practice

While MPT is foundational, it has limitations. It assumes normal distribution of returns, stable correlations, and rational investors. In reality, markets experience anomalies, correlations change, and investors may act irrationally.



Fill in the blank: One limitation of MPT is that it assumes returns follow a _____ distribution.

Box 4.2 Limitations of Modern Portfolio Theory	
Key Assumptions	Practical Limitations
- Normal distribution of returns - Rational investors, risk-averse behavior - All investors have same information - Frictionless markets (no taxes/costs)	- Historical data reliance - Unstable correlations (change over time) - Non-normal returns (fat tails) - Focus on volatility (not all risk) - Ignores transaction costs
Box 4.2 Limitations of Modfolio Theory Open Educational Resource	

Pilot questions 4.2

1. Who developed Modern Portfolio Theory?
2. What does MPT aim to maximise for a given level of risk?
3. What is the efficient frontier?
4. Give one assumption of MPT.
5. Give one limitation of MPT in practice.



4.3 Risk Measurement And Portfolio Performance

4.3.1 Variance, standard deviation, and covariance

Risk in portfolios is often measured using statistical tools:

- **Variance:** measures the dispersion of returns around the mean.
- **Standard deviation:** square root of variance, widely used as a measure of volatility.
- **Covariance:** measures how two assets move together; positive covariance means they move in the same direction, negative means opposite.

Fill in the blank: Standard deviation is the square root of _____.



Figure 4.3 Risk measurement tools

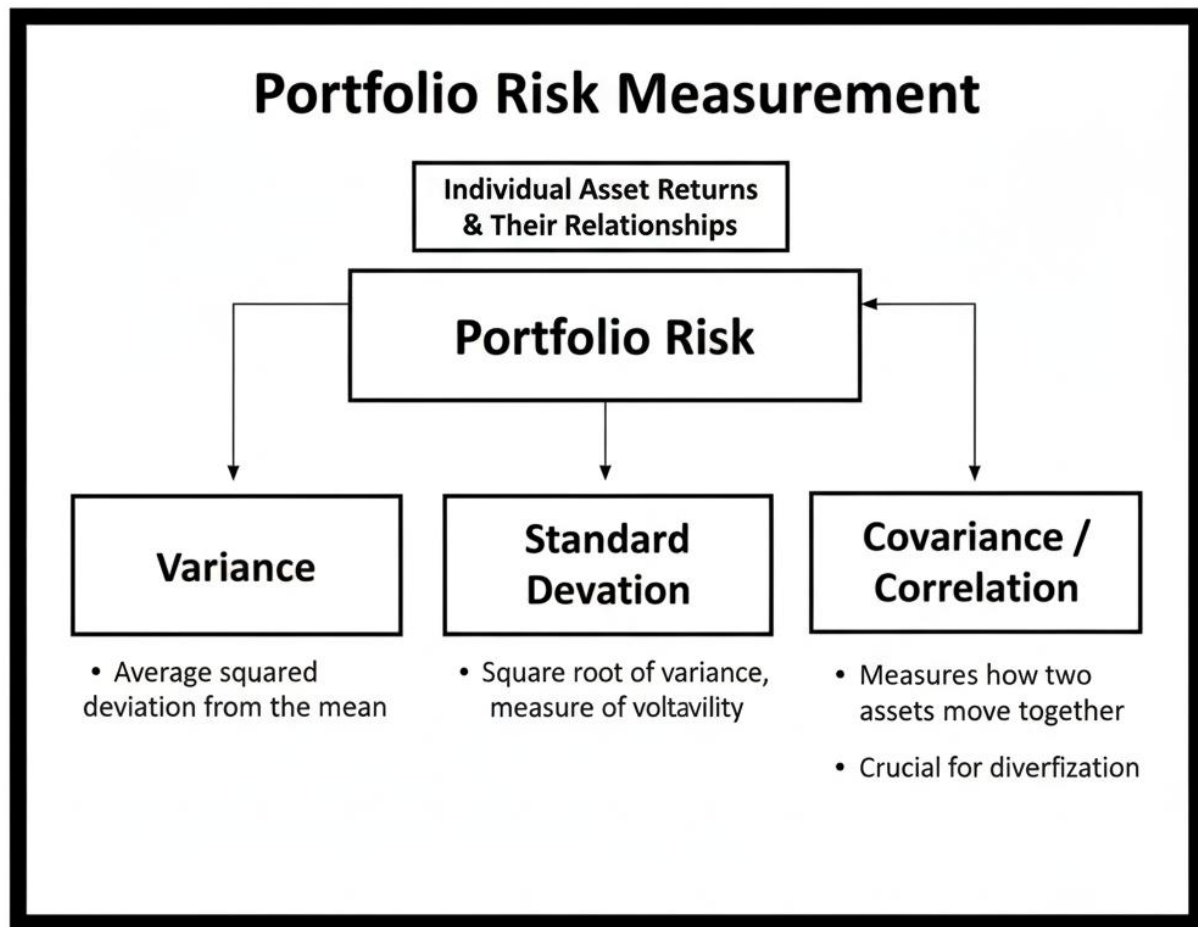


Figure 4.3 Risk measurement tools Open Educational Resource

4.3.2 Beta and correlation in portfolio risk

Beta measures an asset's sensitivity to market movements, while **correlation** shows the degree to which two assets move together. Combining assets with low or negative correlation reduces overall portfolio risk.

Fill in the blank: Combining assets with low correlation reduces overall portfolio _____.



Table 4.3 Beta and Correlation in Portfolio Risk		
Metric (β)	Range/Value	Implications for Portfolio Risk
Asset is more volatile than market	$\beta > 1$ $p = +1$ $0 = \beta < 1$ $p = 0$	Perfect positive correlation (no diversification)
Asset has same volatility as market	$0 < \beta < 1$ No linear relationship $p < 0 -1$ some diversification	No linear negative (some maximum diversification)
- Asset has less volatile - Asset moves opposite to market	No systematic risk $-1 < p < +1$	Partial correlation (most common, reduces risk)
Table 4.3 Beta and Correlation in Portfolio Risk		
Open Educational Resource		

4.3.3 Performance measures (Sharpe ratio, Treynor ratio, Jensen's alpha)

Portfolio performance is evaluated using risk-adjusted measures:

- **Sharpe ratio:** excess return per unit of total risk (standard deviation).
- **Treynor ratio:** excess return per unit of systematic risk (beta).
- **Jensen's alpha:** measures abnormal return compared to CAPM predictions.

Fill in the blank: The Sharpe ratio measures excess return per unit of _____ risk.



Box 4.3 Portfolio Performance Measures

Sharpe Ratio

- Measures risk-adjusted return
- Uses total portfolio risk (standard deviation)
- Formula: $(R_p - R_f) / \frac{\sigma_p}{\sigma_p}$

Treynor Ratio

- Measures risk-adjusted return
- Uses systematic risk (Beta)
- Formula: $(R_p - R_f) / \beta_p$

Jensen's Alpha

- Measures excess return above CAPM
- Uses systematic risk (Beta)
- Formula: $[R_p - \beta_p(R_m - R_f)]$

Box 4.3 Portfolio Performance Measures

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Pilot questions 4.3

1. What does variance measure in portfolio risk?
2. What is the square root of variance?
3. What does covariance indicate?
4. How does correlation affect portfolio risk?
5. Name three performance measures used in portfolio evaluation.

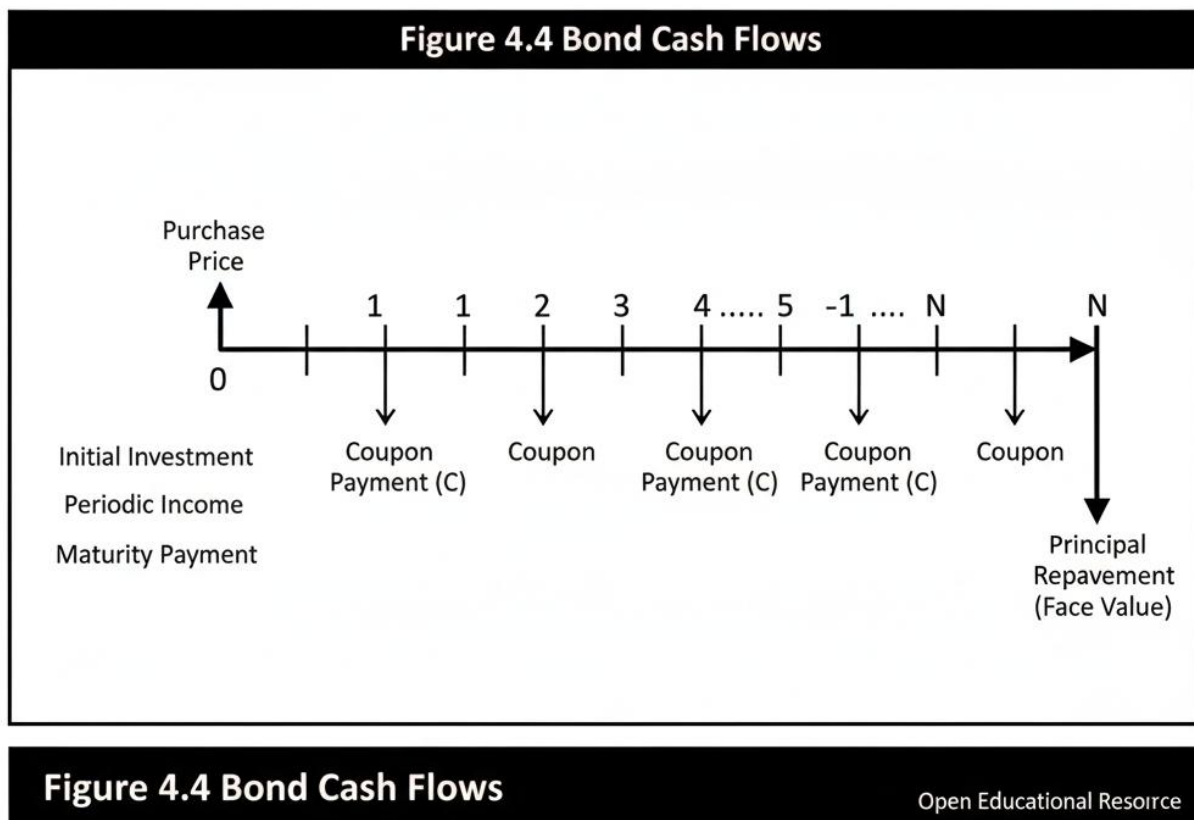
4.4 Financial Instruments: Bonds, Stocks, And Derivatives



4.4.1 Characteristics of bonds and their role in portfolios

Bonds are debt instruments issued by governments or corporations to raise capital. They pay fixed interest (coupon) and return principal at maturity. Bonds are generally less risky than stocks and provide stable income, making them useful for diversification and risk management in portfolios.

Fill in the blank: Bonds are _____ instruments that pay interest and return principal at maturity.



4.4.2 Stocks as equity instruments and sources of return



Stocks represent ownership in a company. Investors earn returns through dividends and capital gains. Stocks are riskier than bonds but offer higher potential returns. They are essential for growth in portfolios and provide voting rights in corporate governance.

Fill in the blank: Stocks represent _____ in a company and provide dividends and capital gains.

Table 4.4 Characteristics of Stocks	
Characteristic	Description
Ownership	Represents a share of ownership in a company. Common shareholders have voting rights.
Dividends	Periodic cash payments to shareholders by the company.
Capital Gains	Potential for price appreciation; buy low, sell high.
Risk Level	Generally higher risk (volatility) compared to bonds, but with higher growth potential.
Table 4.4 Characteristics of Stocks Open Educational Resource	

4.4.3 Derivatives (options, futures, swaps) and their use in risk management

Derivatives are financial instruments whose value is derived from underlying assets (stocks, bonds, commodities, currencies). Common types include:



- **Options:** contracts giving the right, but not obligation, to buy or sell an asset.
- **Futures:** agreements to buy or sell an asset at a future date at a predetermined price.
- **Swaps:** contracts to exchange cash flows, often used to manage interest rate or currency risk.

Derivatives are powerful tools for hedging risk, speculation, and arbitrage.

Fill in the blank: Options give the right, but not the _____, to buy or sell an asset.

Box 4.4 Derivatives in Portfolio Management		
Options • Gives the right, but not the obligation, to buy/sell a asset. • Uses: Hedding (price protection), Speculation.	Futures • Obligation to buy/sell asset at a set price/date. • Uses: Hedding (future price lock), Commodity exposure	Swaps - Agreement to exchange cash flows (e.g), interest rates). • Uses: Interest rate risk management, Currency exposure
Box 4.4 Derivatives in Portfolio Management		Open Educational Resorce

Pilot questions 4.4

1. What are bonds and how do they generate returns?



2. What do stocks represent?
3. Name two sources of return from stocks.
4. What is an option in derivatives?
5. Give one use of derivatives in portfolio management.

4.5 Applications Of Portfolio Theory In Investment Management

4.5.1 Asset allocation strategies

Asset allocation is the process of dividing investments among different asset classes (e.g., stocks, bonds, cash, real estate) to balance risk and return. Strategic allocation sets long-term targets, while tactical allocation adjusts portfolios based on market conditions.

Fill in the blank: Asset allocation involves dividing investments among different _____ classes.



Figure 4.5 Asset Allocation Strategies

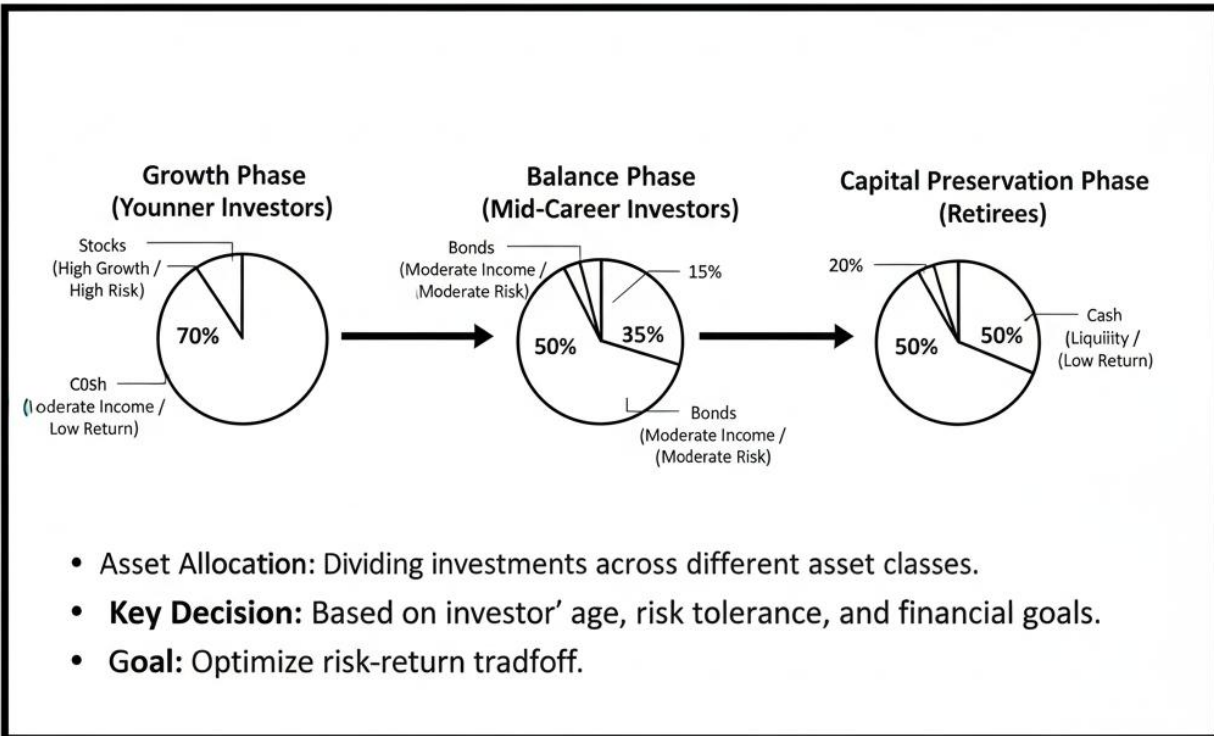


Figure 4.5 Asset Allocation Strategies

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4.5.2 Passive vs active portfolio management

- **Passive management:** replicates a market index (e.g., S&P 500) to achieve market returns at low cost.
- **Active management:** seeks to outperform the market through research, timing, and selection of securities.

Passive management is cost-effective and transparent, while active management may generate higher returns but involves higher fees and risks.

Fill in the blank: Passive portfolio management aims to replicate a _____ index.



		Passive Management	Active Management
Strategy	Tracks a market index (e. g., S&P 500)		Attempts to outperform market through stock selection/timing
Cost	Low fees, low turnover	Low fees, low turnover	
Risk	Market risk only (matches index)	High fees, high turnover (research, trading)	Market risk + manager risk (underperformance)
Table 4.5 Passive vs Active Management			

Table 4.5 Passive vs Active Portfolio Management Open Educational Resource

4.5.3 Practical challenges in applying portfolio theory

Applying portfolio theory in practice faces challenges such as:

- Changing correlations among assets
- Transaction costs and taxes
- Behavioural biases of investors
- Limited availability of data for accurate risk estimation

Fill in the blank: Transaction costs and _____ are practical challenges in applying portfolio theory.



Box 4.5 Challenges in Applying Portfolio Theory

Practical Challenges	Behaviorial Factors
• Transaction Costs (trading fees) • Taxes (capital gains/income) • Liquidity Constraints • Liquidity Constraints • Data Limitations (estimation errors) • Changing Market Conditions	• Emotional Biases • Lack of Discipline • Over-Diversification • Ignoring Unsystematic Risk

Box 4.5 Challenges in Applying Portfolio Theory Open Educational Resource

Pilot questions 4.5

1. What is asset allocation?
2. Distinguish between strategic and tactical asset allocation.
3. What is the main goal of passive portfolio management?
4. Give one advantage of active portfolio management.
5. Name two practical challenges in applying portfolio theory.

Series Summary



This Series examined how investors construct and manage portfolios to balance risk and return. We began with the foundations of portfolio theory, focusing on diversification and the risk-return trade-off. We then studied **Modern Portfolio Theory (MPT)**, including the efficient frontier and its limitations. Next, we explored risk measurement tools such as variance, standard deviation, covariance, beta, and correlation, and evaluated portfolio performance using the Sharpe ratio, Treynor ratio, and Jensen's alpha. We also analysed financial instruments—bonds, stocks, and derivatives—and their roles in portfolio construction. Finally, we concluded with practical applications of portfolio theory in investment management, including asset allocation strategies, passive vs active management, and real-world challenges.

By completing this Series, you should now be able to apply portfolio theory, measure risk and performance, understand financial instruments, and evaluate practical investment strategies.

Glossary of Terms [Series 4]

- **Asset allocation:** Dividing investments among asset classes to balance risk and return.
- **Beta:** Measure of an asset's sensitivity to market movements.
- **Bond:** Debt instrument paying interest and returning principal at maturity.
- **Correlation:** Statistical measure of how two assets move together.
- **Derivative:** Financial instrument whose value is derived from an underlying asset.
- **Diversification:** Spreading investments to reduce unsystematic risk.
- **Efficient frontier:** Curve showing optimal portfolios that maximise return for a given risk.
- **Jensen's alpha:** Measure of abnormal return compared to CAPM predictions.
- **Modern Portfolio Theory (MPT):** Framework for constructing efficient portfolios based on mean and variance.
- **Sharpe ratio:** Excess return per unit of total risk.
- **Treynor ratio:** Excess return per unit of systematic risk.
- **Unsystematic risk:** Asset-specific risk that can be reduced through diversification.

Concept Check Questions [Series 4]

Objective Questions

1. Portfolio theory helps investors balance _____ and return. (SLO 4.1)
2. MPT assumes investors are _____ and risk-averse. (SLO 4.2)



3. The set of portfolios that maximise return for a given risk level is called the _____. (SLO 4.2)
4. Standard deviation is the square root of _____. (SLO 4.3)
5. The Sharpe ratio measures excess return per unit of _____ risk. (SLO 4.4)
6. Bonds are _____ instruments that pay interest and return principal at maturity. (SLO 4.5)
7. Stocks represent _____ in a company. (SLO 4.5)
8. Options give the right, but not the _____, to buy or sell an asset. (SLO 4.5)
9. Passive portfolio management aims to replicate a _____ index. (SLO 4.6)
10. Transaction costs and _____ are practical challenges in applying portfolio theory. (SLO 4.6)

Short-Answer Questions

11. What is diversification and what type of risk does it reduce?
12. Explain the efficient frontier in portfolio theory.
13. What does covariance indicate in portfolio risk measurement?
14. Name three performance measures used in portfolio evaluation.
15. Distinguish between passive and active portfolio management.

Long-Answer Questions

16. Apply MPT to explain how investors construct efficient portfolios.
17. Analyse the role of beta and correlation in portfolio risk management.
18. Evaluate the use of bonds, stocks, and derivatives in portfolio construction.
19. Assess the advantages and disadvantages of passive vs active portfolio management.
20. Discuss practical challenges in applying portfolio theory in real investment management.

Answers to Concept Check Questions [Series 4]

1. Risk.
2. Rational.
3. Efficient frontier.
4. Variance.
5. Total.



6. Debt.
7. Ownership.
8. Obligation.
9. Market.
10. Taxes.
11. Diversification spreads investments across assets to reduce unsystematic risk.
12. The efficient frontier represents portfolios that maximise return for a given risk level.
13. Covariance indicates whether two assets move together (positive) or in opposite directions (negative).
14. Sharpe ratio, Treynor ratio, Jensen's alpha.
15. Passive replicates an index at low cost; active seeks to outperform through selection and timing.
16. MPT constructs portfolios by combining assets to achieve optimal risk-return combinations along the efficient frontier.
17. Beta measures sensitivity to market risk; correlation shows how assets move together, affecting diversification.
18. Bonds provide stability, stocks provide growth, derivatives manage risk.
19. Passive is cost-effective and transparent; active may outperform but involves higher costs and risks.
20. Challenges include changing correlations, transaction costs, taxes, behavioural biases, and data limitations.

Answers to Pilot Questions [Series 4]

Pilot questions 4.1

- To balance risk and return.
- Risk vs return.
- Combining stocks and bonds reduces volatility.
- Unsystematic risk.
- Because it affects all assets.

Pilot questions 4.2



- Harry Markowitz.
- Expected return.
- Efficient frontier.
- Rational investors, risk-averse.
- Assumes normal distribution of returns.

Pilot questions 4.3

- Dispersion of returns.
- Standard deviation.
- How two assets move together.
- Low correlation reduces risk.
- Sharpe ratio, Treynor ratio, Jensen's alpha.

Pilot questions 4.4

- Debt instruments paying interest and principal.
- Ownership in a company.
- Dividends and capital gains.
- Right but not obligation to buy/sell.
- Hedging risk.

Pilot questions 4.5

- Dividing investments among asset classes.
- Strategic = long-term targets; tactical = short-term adjustments.
- Replicate a market index.
- Potential for higher returns.
- Transaction costs and taxes.



Series 5: Money Management Industry And Capital Operations

5.1 Overview Of The Money Management Industry

- 5.1.1 Definition and scope of money management
- 5.1.2 Key players: asset managers, mutual funds, hedge funds, pension funds
- 5.1.3 Role of regulation and governance in the industry

5.2 Capital Raising And Financing Operations

- 5.2.1 Equity financing: issuing shares
- 5.2.2 Debt financing: bonds and loans
- 5.2.3 Hybrid instruments (convertibles, preferred shares)

5.3 Capital Allocation And Investment Strategies

- 5.3.1 Principles of capital allocation
- 5.3.2 Strategic vs tactical investment decisions
- 5.3.3 Case examples of allocation in practice

5.4 Capital Markets And Institutions

- 5.4.1 Primary vs secondary markets
- 5.4.2 Role of stock exchanges and investment banks
- 5.4.3 Globalisation of capital markets

5.5 Capital Operations And Corporate Finance Decisions

- 5.5.1 Dividend policy and payout decisions
- 5.5.2 Share repurchases and restructuring
- 5.5.3 Mergers, acquisitions, and capital restructuring

Introduction

Series 5: Money Management Industry and Capital Operations

The money management industry plays a central role in modern financial systems, connecting investors with opportunities and ensuring efficient allocation of capital. It encompasses institutions such as mutual funds, hedge funds, pension funds, and asset managers, all of which provide services that help individuals and organisations grow and protect wealth. Alongside this industry, capital operations—such as raising funds, allocating resources, and making corporate finance decisions—are critical for business sustainability and growth.



This Series introduces you to the structure and functions of the money management industry and explores how capital is raised, allocated, and managed. We begin with an overview of the industry and its key players, then examine capital raising through equity, debt, and hybrid instruments. Next, we study capital allocation strategies and investment decisions, followed by an analysis of capital markets and institutions. Finally, we conclude with corporate capital operations, including dividend policy, share repurchases, and mergers and acquisitions.

The aim of this Series is to equip you with the ability to understand the money management industry, evaluate capital raising and allocation strategies, analyse the role of capital markets, and assess corporate capital operations.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **5.1** describe the structure and functions of the money management industry, including key players and regulatory roles,
- **5.2** explain methods of capital raising through equity, debt, and hybrid instruments,
- **5.3** analyse principles of capital allocation and evaluate strategic versus tactical investment decisions,
- **5.4** distinguish between primary and secondary capital markets and assess the role of institutions such as stock exchanges and investment banks,
- **5.5** evaluate corporate capital operations including dividend policy, share repurchases, and mergers and acquisitions.

5.1 Overview Of The Money Management Industry

5.1.1 Definition and scope of money management

Money management refers to the professional management of investment portfolios and financial assets on behalf of individuals, institutions, and governments. It includes services such as asset allocation, risk management, and performance monitoring.

Fill in the blank: Money management involves the professional management of _____ portfolios and financial assets.



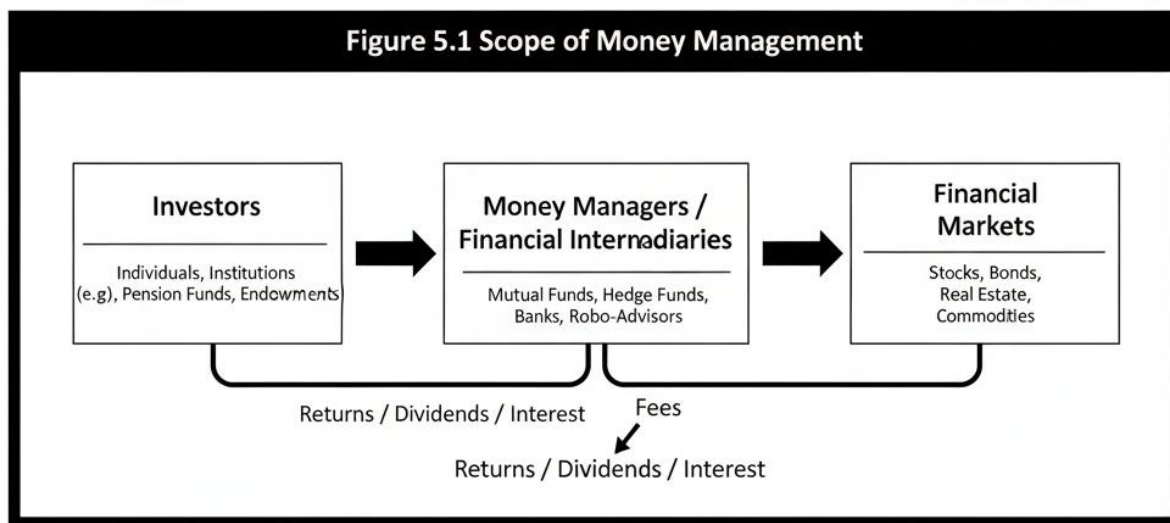


Figure 5.1 Scope of Management

Open Educational Resource

5.1.2 Key players: asset managers, mutual funds, hedge funds, pension funds

The industry consists of several key players:

- **Asset managers:** Firms that manage investments for clients.
- **Mutual funds:** Pooled funds from many investors, invested in diversified portfolios.
- **Hedge funds:** Private funds using advanced strategies to achieve high returns.
- **Pension funds:** Institutional investors managing retirement savings.

Fill in the blank: Mutual funds pool money from many _____ to invest in diversified portfolios.



Table 5.1 Key players in the money management industry		
Player	Description	Role
Asset Mangers	Firms that manage investments on behalf of clients	Invest funds, construct portfolios
Mutual Funds	Managed portfolios of stocks/ bonds sold of public investors	Provide diversified, accessible investment options
Hedge Funds	Alternative investments for ac accredited investors	Seek high returns using complex strategies
Pension Funds Instuntional managing retirement savings	Seek high returns using complex strategies	Long-term asset growth for benefaiacies
Table 5.1 Key players in the money management industry		Open Educational Resource

5.1.3 Role of regulation and governance in the industry

Regulation ensures transparency, protects investors, and maintains stability in financial markets. Governance structures within firms promote accountability and ethical practices. Regulatory bodies (e.g., SEC, central banks) oversee compliance with laws and standards.

Fill in the blank: Regulation in the money management industry helps protect _____ and maintain market stability.



BOX 5.1

REGULATION AND GOVERNANCE IN MONEY MANAGEMENT

- Safeguards investors by ensuring fair, transparent and ethical practices.
- Promotes financial stability and market integrity through rules on capital adequacy, risk management, and conduct.
- Defines accountability and decision-making processes, preventing conflicts of interest and fraudulent activities.

Source: Open Educational Resources (OER)

Pilot questions 5.1

1. What is money management?
2. Name two services provided by money managers.
3. Who are the key players in the money management industry?
4. What do mutual funds do with pooled money?
5. Why is regulation important in the money management industry?



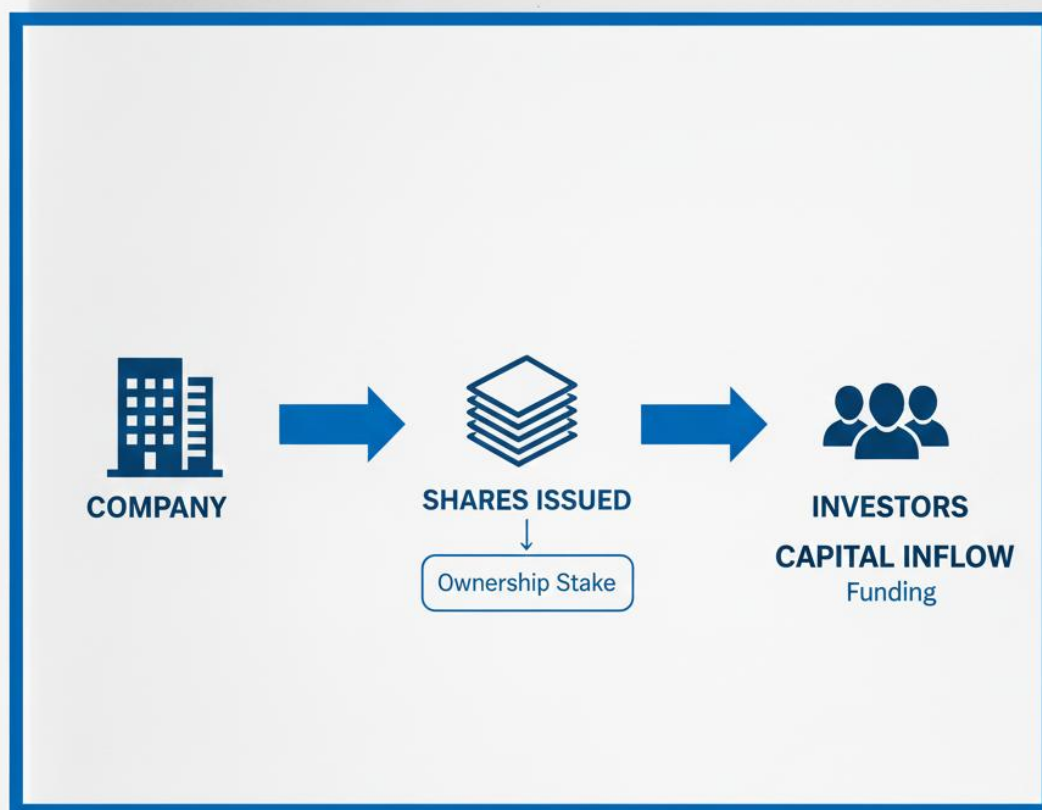
5.2 Capital Raising And Financing Operations

5.2.1 Equity financing: issuing shares

Equity financing involves raising capital by issuing shares of ownership in a company. Investors become shareholders and may receive dividends and voting rights. Equity financing does not require repayment but dilutes ownership.

Fill in the blank: Equity financing raises capital by issuing _____ of ownership in a company.

Figure 5.2
Equity Financing Process



Source: Open Educational Resources (OER)

5.2.2 Debt financing: bonds and loans



Debt financing involves borrowing funds through bonds or loans. Companies must repay principal plus interest. Debt financing does not dilute ownership but increases financial obligations.

Fill in the blank: Debt financing requires repayment of principal plus _____.

Table 5.2 Debt Financing Instruments

FEATURE	BONDS	LOANS
Repayment	Principal repaid at maturity date (bullet payment)	Regular principal and interest payments over loan term (amortized)
Interest	Fixed or floating rate; coupon payments to bondholders	Typically floating rate; interest payments to lender
Ownership Dilution	None; no change of ownership stake	None; no change of ownership stake

Source: Open Educational Resources (OER)

5.2.3 Hybrid instruments (convertibles, preferred shares)

Hybrid instruments combine features of equity and debt. Examples include:

- **Convertible bonds:** debt that can be converted into equity.
- **Preferred shares:** equity with fixed dividends and priority over common shares.



These instruments provide flexibility for both issuers and investors.

Fill in the blank: Convertible bonds can be converted into _____ shares.

Box 5.2 Hybrid Financing Instruments

Convertible Bonds

- Combine features on debt (interest payments) and equity (conversion into shares).
- Gives holders the option to convert into a specified number of common shares under certain conditions.

Preferred Shares

- Have priority over common shares for dividends and asset distribution in liquidation.
- Generally do not carry voting rights; make fixed dividend payments.

Source: Open Educational Resources (OER)

Pilot questions 5.2

1. What is equity financing?
2. What do investors receive when they buy shares?
3. What is debt financing?
4. Name two hybrid financing instruments.
5. How does debt financing differ from equity financing in terms of ownership?



5.3 Capital Allocation And Investment Strategies

5.3.1 Principles of capital allocation

Capital allocation refers to how firms and investors distribute financial resources among different projects, assets, or business units. The goal is to maximise value by directing funds to opportunities with the highest risk-adjusted returns.

Fill in the blank: Capital allocation involves distributing financial resources to maximise _____ for investors or firms.

Figure 5.3
Principles of Capital Allocation



Source: Open Educational Resources (OER)

5.3.2 Strategic vs tactical investment decisions



- **Strategic allocation:** Long-term decisions based on overall objectives, risk tolerance, and expected market conditions.
- **Tactical allocation:** Short-term adjustments to exploit market opportunities or manage risks.

Fill in the blank: Strategic allocation focuses on long-term objectives, while tactical allocation involves _____ adjustments.

Table 5.3 Strategic vs. Tactical Allocation

FEATURE	STRATEGIC ALLOCATION	TACTICAL ALLOCATION
Time Horizon 10+ years	Long-term (e.g., 5-10+ years)	Short-term (e.g., weeks to months)
Objectives	Achieve long-term financial goals; maintain target risk/return profile	Capitalize on short-term market inefficiencies or trends
Flexibility	Relatively rigid; periodic rebalancing	Flexible; active adjustments based on market views

Source: Open Educational Resources (OER)

5.3.3 Case examples of allocation in practice

Examples of capital allocation include:



- A company investing in new technology to improve efficiency.
- An investor shifting funds from equities to bonds during market downturns.
- A pension fund diversifying across domestic and international assets.

Fill in the blank: An investor shifting funds from equities to bonds during downturns is an example of _____ allocation.

Box 5.3

Case Examples of Capital Allocation

Companies

- **Apple: Allocates** significant capital to RDD for new products (e.g., Vision Pro) and share buybacks.
- **Tesla:** Invests heavily to expanding manufacturing capacity (Gigafactories) and battery technology.

Investors

- **University Endowments:** Diversify across public equities, private markets and real estate for long-term growth
- **Venture Capital Funds:** Allocate capital a portfolio of a high-growth startups in exchange an a equity.

Source: Open Educational Resources (OER)

Pilot questions 5.3

1. What is capital allocation?
2. What is the goal of capital allocation?



3. Distinguish between strategic and tactical allocation.
4. Give one example of strategic allocation.
5. Give one example of tactical allocation.

5.4 Capital Markets And Institutions

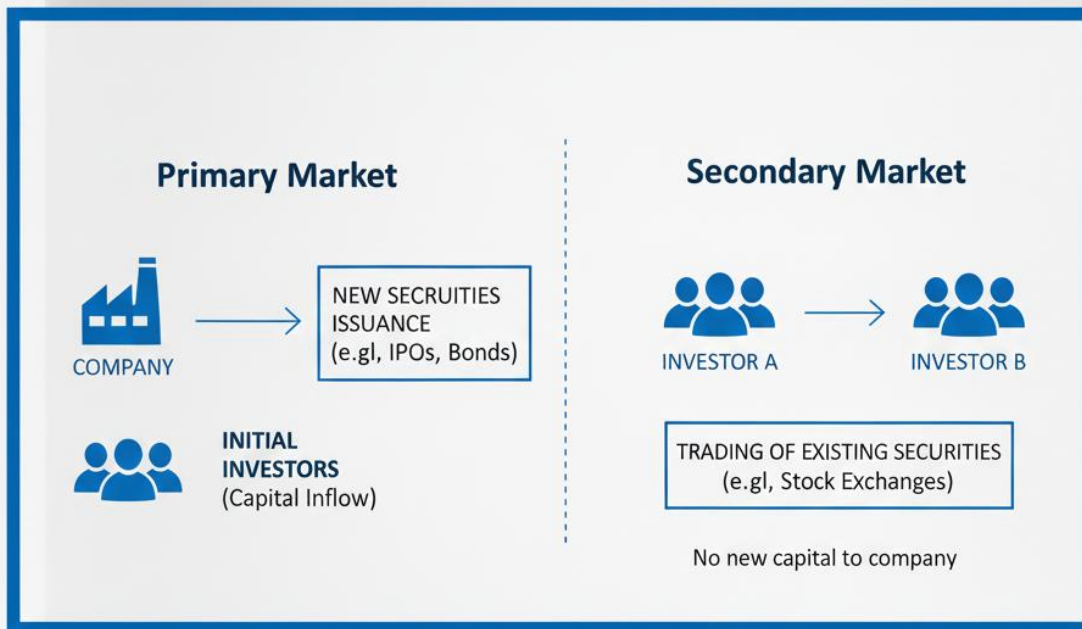
5.4.1 Primary vs secondary markets

- **Primary market:** Where new securities are issued and sold directly to investors (e.g., IPOs).
- **Secondary market:** Where existing securities are traded among investors (e.g., stock exchanges). The primary market raises new capital, while the secondary market provides liquidity and price discovery.

Fill in the blank: The market where new securities are issued is called the _____ market.



Figure 5.4 Primary vs Secondary Markets



Source: Open Educational Resources (OER)

5.4.2 Role of stock exchanges and investment banks

- **Stock exchanges:** Platforms for trading securities, ensuring transparency and liquidity.
- **Investment banks:** Facilitate issuance of securities, provide advisory services, and underwrite IPOs. Together, they connect companies seeking capital with investors.

Fill in the blank: Stock exchanges provide _____ and transparency in securities trading.



Table 5.4 Roles of Stock Exchanges and Investment Banks

FEATURE	STOCK EXCHANGES	INVESTMENT BANKS
Function	Provides a platform for trading securities; ensures fair and orderly markets.	Facilitates capital raising (IPOS, debt issuance); M&A advisory; trading and brokerage.
Key Activities	Listing of companies; market surveillance; clearing & settlement.	Underwriting; financial advisory, research & analysis.

Source: Open Educational Resources (OER)

5.4.3 Globalisation of capital markets

Capital markets are increasingly interconnected across countries. Globalisation allows investors to access international securities, diversify portfolios, and raise capital globally. However, it also introduces risks such as currency fluctuations and regulatory differences.

Fill in the blank: Globalisation of capital markets allows investors to access _____ securities and diversify portfolios.



Box 5.4

Globalisation of Capital Markets

Benefits

- Increased access to capital and investment opportunities.
- Enhanced market liquidity and efficiency.
- Diversification of risk for investors and companies.
- Promotes economic growth and development globally.

Risks

- Increased exposure of global financial crises.
- Regulatory challenges across borders.
- Currency fluctuations and exchange rate risk.
- Potential for capital flight and market volatility.

Source: Open Educational Resources (OER)

Pilot questions 5.4

1. What is the difference between primary and secondary markets?
2. Give one example of a primary market transaction.
3. What role do stock exchanges play in securities trading?
4. What role do investment banks play in capital markets?
5. Name one benefit and one risk of globalisation in capital markets.



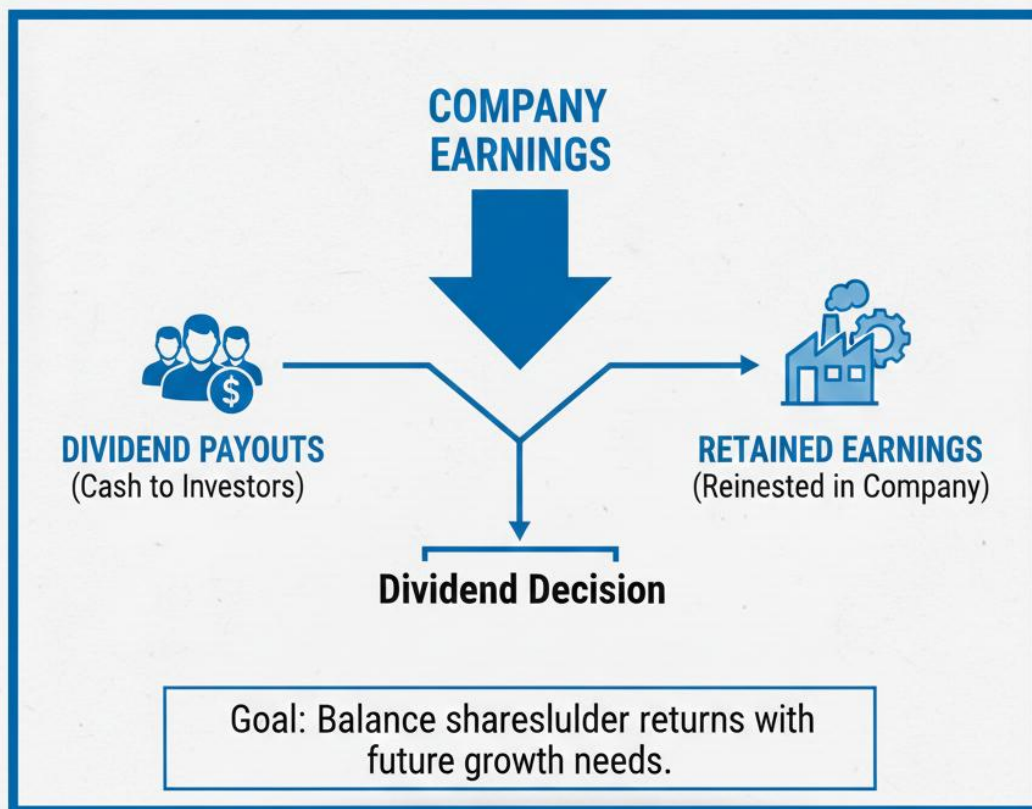
5.5 Capital Operations And Corporate Finance Decisions

5.5.1 Dividend policy and payout decisions

Dividend policy determines how much profit is distributed to shareholders versus retained for reinvestment. Companies may adopt stable, constant, or residual dividend policies depending on their financial strategy.

Fill in the blank: Dividend policy determines how much profit is distributed to _____.

Figure 5.5
Dividend Policy and Payout Decisions



Source: Open Educational Resources (OER)

5.5.2 Share repurchases and restructuring



Share repurchases occur when companies buy back their own shares, reducing supply and potentially increasing share value. Restructuring involves reorganising a company's capital structure to improve efficiency, reduce costs, or adapt to new strategies.

Fill in the blank: Share repurchases reduce the supply of a company's _____ in the market.

Table 5.5

Share Repurchases and Restructuring

FEATURE	SHARE REPURASSES	RESTRUCTURING
Purpose	Return cash to shareholders; increase EPS & share value; offset dilution from stock options	Optimize operations; divest non-core assets; reduce costs; prepare for sale/merger
Impact	Reduced share count; increased ownership concentration; potential tax efficiency for investors	Altered business focus/-asset mix; potential layoffs/sales; usually aims to long-term value creation

Source: Open Educational Resources (OER)

5.5.3 Mergers, acquisitions, and capital restructuring

Mergers and acquisitions (M&A) involve combining companies to achieve synergies, expand markets, or gain competitive advantages. Capital restructuring may include changing debt-equity ratios or divesting assets to strengthen financial health.



Fill in the blank: Mergers and acquisitions are strategies used to achieve _____ and expand markets.

Box 5.5 Mergers, Acquisitions, and Capital Restructuring

Mergers & Acquisitions (M&A)

- **Merger:** Two companies combine form a a new single entity.
- **Acquisition:** One company purchases another, own a new owner.
- **Strategic Goals:** Market expansion, cost synergies, new technologies. Promotes economic growth and diversification globally.

Capital Restructuring

- **Debt Restructuring:** Renegotiating debt terms to improve liquidity (extend maturities, (e.p, extend, lower interest rates).
- **Equity Restructuring:** Altering of mix of equity, new equity issuance.
Purpose: Optimize capital structure, reduce financial risk, fund growth of distress

Source: Open Educational Resources (OER)

Pilot questions 5.5

1. What does dividend policy determine?
2. Name one type of dividend policy.
3. What happens when a company repurchases its own shares?
4. What is restructuring in corporate finance?
5. Why do companies engage in mergers and acquisitions?



Series Summary [Series 5]

This Series explored the structure and functions of the money management industry and the key aspects of capital operations. We began with an overview of the industry, identifying major players such as asset managers, mutual funds, hedge funds, and pension funds, along with the role of regulation. We then examined methods of capital raising through equity, debt, and hybrid instruments. Next, we studied capital allocation principles and investment strategies, distinguishing between strategic and tactical decisions. We analysed capital markets, including primary and secondary markets, the role of stock exchanges and investment banks, and the impact of globalisation. Finally, we concluded with corporate capital operations, covering dividend policy, share repurchases, and mergers and acquisitions.

By completing this Series, you should now be able to understand the money management industry, explain capital raising and allocation strategies, analyse capital markets and institutions, and evaluate corporate capital operations.

Glossary of Terms [Series 5]

- **Asset manager:** Professional firm managing investments for clients.
- **Capital allocation:** Distribution of financial resources among projects or assets.
- **Debt financing:** Raising funds through borrowing (bonds, loans).
- **Dividend policy:** Strategy for distributing profits to shareholders.
- **Equity financing:** Raising capital by issuing shares of ownership.
- **Hybrid instruments:** Financial instruments combining features of debt and equity (e.g., convertibles, preferred shares).
- **Investment bank:** Institution facilitating issuance of securities and providing advisory services.
- **Mutual fund:** Pooled investment vehicle for diversified portfolios.
- **Pension fund:** Institutional investor managing retirement savings.
- **Primary market:** Market for new securities issuance.
- **Secondary market:** Market for trading existing securities.
- **Share repurchase:** Company buying back its own shares.



- **Tactical allocation:** Short-term adjustments to exploit opportunities.
- **Strategic allocation:** Long-term investment decisions based on objectives.

Concept Check Questions [Series 5]

Objective Questions

1. Money management involves the professional management of _____ portfolios. (SLO 5.1)
2. Mutual funds pool money from many _____. (SLO 5.1)
3. Equity financing raises capital by issuing _____. (SLO 5.2)
4. Debt financing requires repayment of principal plus _____. (SLO 5.2)
5. Convertible bonds can be converted into _____ shares. (SLO 5.2)
6. Capital allocation aims to maximise _____. (SLO 5.3)
7. Strategic allocation focuses on long-term objectives, while tactical allocation involves _____ adjustments. (SLO 5.3)
8. The market where new securities are issued is called the _____ market. (SLO 5.4)
9. Stock exchanges provide _____ and transparency in trading. (SLO 5.4)
10. Mergers and acquisitions are strategies used to achieve _____. (SLO 5.5)

Short-Answer Questions

11. Define money management and name two of its services.
12. Distinguish between equity and debt financing.
13. Explain the difference between strategic and tactical allocation.
14. What is the role of investment banks in capital markets?
15. Give one benefit and one risk of globalisation in capital markets.

Long-Answer Questions

16. Analyse the role of regulation in the money management industry.
17. Evaluate the advantages and disadvantages of equity vs debt financing.
18. Discuss how capital allocation decisions affect firm value.



19. Assess the impact of globalisation on capital markets and investors.
20. Explain the importance of dividend policy, share repurchases, and M&A in corporate finance.

Answers to Concept Check Questions [Series 5]

Objective

1. Investment.
2. Investors.
3. Shares.
4. Interest.
5. Equity.
6. Value.
7. Short-term.
8. Primary.
9. Liquidity.
10. Synergies.

Short-Answer

11. Money management is the professional management of investments; services include asset allocation and risk management.
12. Equity financing issues shares; debt financing borrows funds with repayment obligations.
13. Strategic = long-term objectives; tactical = short-term adjustments.
14. Investment banks underwrite securities, advise companies, and facilitate capital raising.
15. Benefit: diversification; Risk: currency fluctuations/regulatory differences.

Long-Answer

16. Regulation ensures transparency, protects investors, and maintains stability in financial markets.
17. Equity avoids repayment but dilutes ownership; debt preserves ownership but adds obligations.
18. Efficient allocation maximises returns and firm value; poor allocation wastes resources.



19. Globalisation expands opportunities but increases exposure to risks like volatility and currency shifts.
20. Dividend policy signals stability, repurchases boost share value, and M&A drive growth and restructuring.

Answers to Pilot Questions [Series 5]

Pilot questions 5.1

- Professional management of investments.
- Asset allocation, risk management.
- Asset managers, mutual funds, hedge funds, pension funds.
- Invest in diversified portfolios.
- Protect investors and maintain stability.

Pilot questions 5.2

- Raising capital by issuing shares.
- Dividends and voting rights.
- Borrowing funds via bonds or loans.
- Convertible bonds, preferred shares.
- Debt financing does not dilute ownership.

Pilot questions 5.3

- Distribution of financial resources.
- Maximising value.
- Strategic = long-term; Tactical = short-term.
- Investing in new technology.
- Shifting funds during downturns.

Pilot questions 5.4

- Primary = new securities; Secondary = existing securities.
- IPO.
- Provide liquidity and transparency.



- Underwrite securities and advise companies.
- Benefit: diversification; Risk: currency fluctuations.

Pilot questions 5.5

- How much profit is distributed to shareholders.
- Stable dividend policy.
- Reduces supply of shares.
- Reorganising capital structure.
- To achieve synergies and expand markets.

