

# **Portfolio and Fund Management**

## **Module Introduction and Overview**

---

### **Contents**

<b>1</b>	<b>Introduction to the Module</b>	<b>2</b>
<b>2</b>	<b>The Module Author</b>	<b>3</b>
<b>3</b>	<b>Study Resources</b>	<b>3</b>
<b>4</b>	<b>Module Overview</b>	<b>4</b>
<b>5</b>	<b>Learning Outcomes</b>	<b>9</b>

# 1 Introduction to the Module

This module examines the principles and practice of portfolio management, from the perspective of the individual investor, and the professional fund manager employed by an institutional investor, such as a mutual fund, pension fund, or hedge fund. Over a period of decades there has been rapid and far-reaching change in the investments industry. Deregulation and financial liberalisation, and developments in information and communications technology, have contributed to a massive expansion of financial markets and the development of new trading strategies. The downside of these developments was a financial crisis in the late 2000s of a magnitude not seen previously since the 1920s and 1930s. Several of the causes of this crisis can be traced directly to innovations in security design, trading strategies fuelled by leverage, a lack of transparency, and a widespread attitude of complacency towards risk among investors, financial intermediaries, and regulators.

The module uses and discusses several of the most important building blocks of financial economics theory, including the capital asset pricing model and the efficient markets hypothesis. A core principle running through the module is that investment decisions are taken in a context where higher returns can only be earned at a cost of accepting greater risk. To make good investment decisions, the individual or professional investor needs to consider their financial objectives or goals, their time horizons, and their willingness to tolerate risk. The trade-off between reward and risk is a recurring theme. We measure reward as the expected return on a security, and risk is measured using the variance or the standard deviation of returns.

Many of the theoretical models and tools you will study in this module are based on the idea that the behaviour of most competitive financial markets approximates closely to the efficient markets hypothesis for most of the time. In summary, the efficient markets hypothesis suggests that the prices of financial securities incorporate all available information, so it is not possible to make profits by analysing past prices. In actuality, markets are not always efficient. You will consider explanations of market inefficiency from the area of behavioural finance. You will also examine the extent to which it is possible to make profits from exploiting pricing anomalies, when securities are underpriced or overpriced, and whether trading strategies that are based on an analysis of past price data can be profitable.

While you are studying this module, you will examine the major issues that are of concern to all investors. The module will provide you with theoretical knowledge and practical skills that are essential if you intend to pursue a professional career in the investment industry, or if you hope to be successful as a sophisticated private investor. The module will also be useful if you wish to understand how investors, traders and the investment industry operate. The style of presentation is predominantly non-technical, concentrating mainly on discussion of core principles and their practical application. Formal mathematical and statistical content is kept to a minimum level required for the development of some key concepts and tools.

---

## 2 The Module Author

**John Goddard** is Professor of Financial Economics and Deputy Head of Bangor Business School in Bangor University. Originally trained as an economist, he holds a Bachelor's degree from Lancaster University, and a Master's from University of London. He worked for several years in life insurance, before pursuing an academic career that includes previous appointments at Leeds University, Abertay University and Swansea University. His areas of research include the economics of the banking industry, financial markets and institutions, and the economics of professional football. He has teaching experience in the areas of finance, economics and statistics. He is co-author of the textbook *Industrial Organization: Competition, Strategy, and Policy* (5th Edition. Pearson, 2017), and the introductory guide *Banking: A Very Short Introduction* (Oxford University Press, 2016).

---

## 3 Study Resources

### Study guide

This study guide is your main learning resource for the module as it directs your study through eight study units. Each unit has recommended reading either from the key text or from supplementary module readings to which you will have access.



### Key text

In addition to the study guide, you will be assigned chapters in the following key text, which is provided for you.

Zvi Bodie, Alex Kane & Alan J Marcus (2018) *Investments*. 11th Edition. New York: McGraw-Hill Education.

The coverage of this book is broader than the content of the module, and you will be directed to read selected chapters. Each unit of the module provides guidance concerning the chapters and sections of the key text that will support your study of the topics in the unit. It is recommended that you read the indicated chapters and sections of the key text in conjunction with the study guide to strengthen your understanding. The key text includes many worked examples, and illustrates how the tools of portfolio and fund management are used in practice. The key text provides relatively less coverage of behavioural finance (which you will study in Unit 5) and technical analysis (Unit 6). In these units, more extensive explanation and analysis is provided in the study guide and in the module readings.

The key text by Bodie, Kane and Marcus is written predominantly in a non-mathematical and non-technical style. However, if you are especially interested in the mathematical formulae and derivations underlying the material studied in the units, these are provided in the book, usually in Appendices to the relevant chapters. As noted, the book also contains extensive worked examples.

When you are directed to read from the book it will be useful for you to study these examples to develop your understanding of the practical implementation of the tools, methods and techniques covered in this module.

## **Module Readings**

We also provide you with access to academic articles and other reports and material that are assigned as core readings in the study guide. You are expected to read them as an essential part of the module. We have selected articles and reports which reinforce your understanding of the material in the study guide and key text, and which also demonstrate how the methods you are studying are applicable and relevant in the investment industry.

---

## **4 Module Overview**

### **Unit 1 Financial Planning, Financial Instruments, Risk and Return**

- 1.1 Introduction
- 1.2 Financial Objectives, Time Horizons and Risk Tolerance
- 1.3 Money Market Securities
- 1.4 Bonds
- 1.5 Equity
- 1.6 Derivatives
- 1.7 Property and Commodities
- 1.8 Rates of Interest and Rates of Return
- 1.9 Measuring Reward and Risk
- 1.10 Treasury Bills, Government Bonds and Equities: The Historical Record
- 1.11 Conclusion

### **Unit 2 Financial Intermediaries and Investment Companies**

- 2.1 Introduction
- 2.2 Financial Intermediaries
- 2.3 Types of Investment Company
- 2.4 Specialised Investment Companies and Vehicles
- 2.5 Pension Funds
- 2.6 Conclusion

### **Unit 3 Stock Markets and Benchmarks**

- 3.1 Introduction
- 3.2 Privately-Held and Publicly-Held Companies
- 3.3 Primary Securities Markets
- 3.4 Secondary Securities Markets
- 3.5 Special Types of Transaction on Secondary Markets
- 3.6 The World's Major Stock Exchanges
- 3.7 Regulation of Financial Markets
- 3.8 Leading Stock Market Indexes
- 3.9 Conclusion

## Unit 4 Optimal Portfolio Selection

- 4.1 Introduction
- 4.2 Risk Aversion, and a Risk Adjusted Performance Measure
- 4.3 Probability Distributions for Returns
- 4.4 Portfolio Theory I: Portfolios Containing One or Two Risky Securities
- 4.5 Portfolio Theory II: Optimal Portfolio Selection for Portfolios of Many Risky Securities
- 4.6 Conclusion

## Unit 5 Behavioural Finance

- 5.1 Introduction
- 5.2 Formation of Beliefs
- 5.3 Investor Preferences
- 5.4 Limits to Arbitrage
- 5.5 Applications of Behavioural Finance I: Aggregate Stock Market Puzzles
- 5.6 Applications of Behavioural Finance II: The Cross-Section of Stock Returns
- 5.7 Critique of Behavioural Finance
- 5.8 Conclusion

## Unit 6 Technical Analysis

- 6.1 Introduction
- 6.2 Historical Foundations of Technical Analysis
- 6.3 Tools of Technical Analysis
- 6.4 Technical Trading Rules and Systems Based on Charts and Moving Averages
- 6.5 Evaluation of Technical Analysis
- 6.6 Conclusion

## Unit 7 Passive and Active Portfolio Management

- 7.1 Introduction
- 7.2 Strategic and Tactical Asset Allocation
- 7.3 Fundamental Analysis
- 7.4 The Treynor–Black Single Index Model: Introduction
- 7.5 The Treynor–Black Model as a Tool for Portfolio Optimisation
- 7.6 The Black–Litterman Model
- 7.7 Conclusion

## Unit 8 The Evaluation of Portfolio Performance

- 8.1 Introduction
- 8.2 Performance Evaluation: The Sharpe, Jensen and Treynor Measures
- 8.3 Performance Evaluation: Other Performance Measures
- 8.4 The Contribution of Market-Timing Ability to Performance
- 8.5 Performance Attribution
- 8.6 Style Analysis
- 8.7 Performance Evaluation for Hedge Funds
- 8.8 Conclusion

**Unit 1** examines the financial instruments that are the building blocks of any investment portfolio. These securities include risk-free, or very low risk money market instruments, such as treasury bills and certificates of deposit. The unit also considers government and corporate bonds, which are longer-

term instruments that may range from virtually risk-free to high risk, depending on the credit rating of the issuer. Moving further up the risk spectrum, the unit considers corporate shares or equity. The owner of corporate equity has an ownership stake in a listed company, and property rights in any residual income that remains after all other creditors have been reimbursed. The unit also considers derivatives, which are typically high-risk instruments, whose payoffs derive from the value of other securities. Property and commodities are relatively illiquid investment instruments that may offer portfolio diversification benefits.

**Unit 2** examines the financial intermediaries that are the key players in the investment industry. These intermediaries act as go-betweens in financial transactions, and facilitate the channelling of funds from lenders to borrowers. Financial intermediaries include financial advisers, brokers, wealth managers, and investment bankers. These companies provide their clients with access to financial markets, as well as a range of information and advisory services. Investors wishing to profit from exposure to instruments such as equities, bonds, property or commodities do not always have to purchase these assets directly, and you will see how financial intermediaries provide investment vehicles such as unit investment trusts, mutual funds, exchange-traded funds, and hedge funds. In Unit 2 you will also examine pension funds: any individual who is a member of a pension fund has a stake in a portfolio of pooled investments.

**Unit 3** considers the financial markets in which securities are traded. The unit distinguishes between primary markets for newly-issued securities, and secondary markets, for the purchase and sale of securities that were issued previously. In relation to primary markets, the unit considers initial public offerings, which involve a privately-owned company offering shares for sale to the public for the first time. Primary markets also include seasoned equity offerings. These involve a publicly-traded company seeking to raise additional shareholder capital. In relation to secondary markets, the unit examines over-the-counter markets, specialist markets, and Electronic Communications Networks. You will see that secondary markets have been transformed by the growth of electronic trading, which has created new opportunities for trading at long distance, and for the development of automated trading strategies such as algorithmic trading and high-frequency trading. You will examine transactions in secondary markets including buying on margin, and short selling. The unit briefly considers several of the world's most important stock markets, located in the US, Western Europe and East Asia, and assesses how stock market indexes are used as benchmarks for evaluating investment performance.

Units 1, 2 and 3 identify the main types of company, the financial instruments, and the markets that comprise the investment industry.

**Unit 4** examines the fundamental problem of selecting a portfolio of risky and risk-free investments that provides the best possible combination of potential reward and risk. The unit considers the theoretical solution to this

portfolio optimisation problem first formalised by Harry Markowitz in the 1950s. The Markowitz portfolio theory demonstrates how the rational investor should construct their optimal portfolio through diversification. You will examine how a diversified portfolio is created by purchasing many securities offering different combinations of expected return and risk, and how this achieves a better reward-risk combination than would be obtained by assigning the entire fund to the purchase of any single security. A key insight in Unit 4 is that the optimal portfolio of risky assets is the same for all investors regardless of their individual risk preferences. Once the optimal risky portfolio is found, investors can create an overall portfolio that matches their risk preferences by combining the optimal risky portfolio with risk-free investments. The unit also briefly considers the assumption in finance theory that returns follow a normal distribution, and how to measure and assess departures from normality.

The Markowitz portfolio theory (like much of mainstream finance theory), is based on the assumption that participants in financial markets behave rationally. It is assumed that stock prices always reflect the best available information about fundamentals, and stock prices change only in response to the arrival of new relevant information. **Unit 5** challenges these propositions, and examines the predictions from behavioural finance. Behavioural finance suggests that some trading activity in financial markets, and some patterns in security prices, can be explained by models in which some agents act in a manner that is not fully consistent with the assumptions of rational behaviour. The behavioural finance literature draws on insights from psychology to explain how agents form their beliefs, how their preferences are defined, and how these beliefs and preferences influence their decisions. This unit also considers 'limits to arbitrage'. In mainstream finance theory, arbitrage traders take advantage of pricing anomalies, and their trades eliminate mispricing, restoring security prices to their fundamental values. In Unit 5 you will see that if some agents are not completely rational, and there are limits to arbitrage, this can have a substantial and long-lasting impact on asset prices.

**Unit 6** considers technical analysis. Technical analysts believe that future stock price movements can be anticipated by analysing recurring patterns in historical market data. Unit 6 examines the tools of technical analysis, including recognition of historical patterns in price and volume data, and calculation of moving averages, volatility measures, and other technical indicators. You will also assess the investment strategies based on technical analysis. The unit considers computer-based algorithmic trading strategies, including high-frequency trading, which are an adaptation of technical analysis. The unit examines the potential for making profits from technical analysis, and discusses the argument from many academic financial economists who question the relevance and value of technical analysis.

**Unit 7** considers passive and active portfolio management styles. A fund manager following a passive style sets percentage targets for the weighting or importance of broadly-defined asset classes in the portfolio, such as

government bonds, corporate bonds, and equities. The unit shows how an active portfolio management style involves varying these weightings. You will examine the key elements in an active style, including security selection, identifying securities that are mispriced using security or fundamental analysis, and market timing. Market timing involves changing the composition of the portfolio in response to anticipated market movements or fluctuations in economic conditions.

Unit 7 also examines some practical aspects of portfolio optimisation and active fund management. The unit explains how the Markowitz approach to portfolio optimisation can potentially be quite costly to implement, because it involves estimation of many parameters relating to all the securities that could be included in the optimal portfolio. The unit considers two alternative tools that greatly simplify the task of constructing the optimal portfolio, and which are recommended for security selection and asset allocation. The Treynor-Black single-index model examines the extent to which the returns on individual securities are related to the returns on a market-index portfolio, which greatly reduces the number of parameters to be estimated. The Black-Litterman model allows the fund manager to modify the predictions from the capital asset pricing model using their own views concerning the expected performance of assets. You will examine the construction and application of both of these models.

**Unit 8** examines how to measure and evaluate investment performance. The unit first considers the risk-adjusted performance measures that were devised by several prominent early practitioners of financial economics, including the Sharpe ratio, the Treynor measure, and Jensen's alpha. The unit also examines the information ratio, the  $M^2$  measure and the Morningstar risk-adjusted return. The unit then considers performance attribution, which identifies how the decisions taken by a fund manager in relation to asset allocation, security selection and market timing each contribute to the fund's overall performance. The unit also examines returns-based style analysis. This is a tool for drawing inferences about a fund's investment style, by searching for similarities between the observed returns for the fund, and the returns on market indices representing a range of relevant asset classes. If a fund provides information about its style, this technique can be used to check if the fund is actually following its declared style. If a fund does not provide clear information about its investment style, then inferences can be drawn about the style most likely to have produced the fund's observed historical returns. The unit also highlights the particular challenges for performance evaluation of hedge funds. The investment style of hedge funds is usually opaque and variable, and hedge funds adopt unconventional investment strategies and extreme risk profiles. These factors mean the performance of hedge funds cannot be adequately assessed using the standard measures



---

## 5 Learning Outcomes

When you have completed your study of this module, you will be able to:

- demonstrate knowledge of the types and functions of financial instruments, financial intermediaries and financial markets
- explain the use of Markowitz portfolio theory in constructing an investment portfolio that delivers an investor's preferred combination of expected return and risk, and assess the limitations of portfolio theory as a practical tool for portfolio optimisation
- identify patterns of trading and asset prices that are inconsistent with the predictions of rational behaviour and the efficient markets hypothesis, and critically evaluate the explanation of these inconsistencies provided by behavioural finance
- explain the main tools of technical analysis and evaluate investment strategies derived from technical analysis
- discuss the distinction between passive and active investment styles, and critically evaluate the usefulness of the Treynor-Black and Black-Litterman models as practical tools for active investment
- assess the applicability of performance measures; attribute investment performance to components deriving from asset allocation, security selection and market timing; and explain the use of style analysis to identify a fund's investment style.