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## Introduction

*The more precisely the position is determined, the less precisely the momentum is known in this instant, and vice versa.*

Heisenberg (1901–1976) *The Uncertainty Principle* (1927)

*Learn as much by writing as by reading.*

Lord Acton (1834–1902)

### WHY MEASURE PORTFOLIO PERFORMANCE?

Whether we manage our own investment assets or choose to hire others to manage the assets on our behalf we are keen to know “how well” our collection or portfolio of assets is performing.

The process of adding value via benchmarking, asset allocation, security analysis, portfolio construction, and executing transactions is collectively described as the investment decision process. The measurement of portfolio performance should be part of the investment decision process, not external to it.

Clearly, there are many stakeholders in the investment decision process; this book focuses on the investors or owners of capital and the firms managing their assets (asset managers or individual portfolio managers). Other stakeholders in the investment decision process include independent consultants tasked with providing advice to clients, custodians, independent performance measurers and audit firms.

Portfolio performance measurement answers the three basic questions central to the relationship between asset managers and the owners of capital:

- (1) *What* is the return on their assets?
- (2) *Why* has the portfolio performed that way?
- (3) *How* can we improve performance?

Portfolio performance measurement is the quality control of the investment decision process providing the necessary information to enable asset managers and clients to assess exactly how the money has been invested and the results of the process. The US Bank Administration Institute (BAI, 1968) laid down the foundations of the performance measurement process as early as 1968. The main conclusions of their study hold true today:

- (1) Performance measurement returns should be based on asset values measured at market value not at cost.
- (2) Returns should be “total” returns, that is, they should include both income and changes in market value (realised and unrealised capital appreciation).
- (3) Returns should be time-weighted.
- (4) Measurement should include risk as well as return.

## THE PERFORMANCE MEASUREMENT PROCESS

Performance measurement is essentially a three-stage process:

- (1) *Measurement*:
  - Calculation of returns, benchmarks and peer groups
  - Distribution of information
- (2) *Attribution*:
  - Return attribution
  - Risk analysis (*ex post* and *ex ante*)
- (3) *Evaluation*:
  - Feedback
  - Control

## THE PURPOSE OF THIS BOOK

The writing of any book is inevitably a selfish activity, denying precious time from family who suffer in silence but also work colleagues and friends driven by the belief that you have something to contribute in your chosen subject.

The motivation to write the first edition was simply to provide the book I most wanted to read as a performance analyst which did not exist at the time.

The vocabulary and methodologies used by performance analysts worldwide are extremely varied and complex. Despite the development and global success of performance measurement standards there are considerable differences in terminology, methodology and attitude to performance measurement throughout the world.

The main aims of the first edition were:

- (1) Provide a reference of the available methodologies and to hopefully provide some consistency in their definition.
- (2) Promote the role of performance measurers.
- (3) Provide some insights into the tools available to performance measurers.
- (4) Share my practical experience.

Since the first edition I'm pleased to say the CFA Institute have launched the CIPM designation which further reinforces the role of performance measurement and is a major step in developing performance measurement as a professional activity. I can certainly recommend the CIPM course of study and I'm delighted to have successfully achieved the CIPM designation. The CIPM curriculum has also to some degree influenced the content of this second edition.

With practical examples this book should meet the needs of performance analysts, portfolio managers, senior management within asset management firms, custodians, verifiers and the ultimate clients. I'm particularly pleased that this second edition includes a CD including many of the practical examples used throughout the book.

## ROLE OF PERFORMANCE MEASURERS

Performance measurement is a key function in an asset management firm, it deserves better than to be grouped with the back office. Performance measurers provide real added value, with feedback into the investment decision process and analysis of structural issues. Since their role is to understand in full, make transparent and communicate the sources of return within

portfolios they are often the only independent source equipped to understand the performance of all the portfolios and strategies operating within the asset management firm.

Performance measurers are in effect alternative risk controllers able to protect the firm from rogue managers and the unfortunate impact of failing to meet client expectations.

## BOOK STRUCTURE

The chapters of this book are structured in the same order as the performance measurement process itself, namely:

- Chapter 2 Calculation of portfolio returns
- Chapter 3 Comparison against an appropriate benchmark
- Chapter 4 Proper assessment of the reward received for the risk taken
- Chapters 5 to 10 Attribution of the sources of excess return
  - Chapter 5 Fundamentals of attribution
  - Chapter 6 Multi-currency attribution
  - Chapter 7 Fixed income attribution
  - Chapter 8 Multi-period attribution
  - Chapter 9 Attribution issues
  - Chapter 10 Attribution for derivatives
- Chapter 11 Presentation and communicating the results

Inevitably, due to time constraints the first edition was not complete; the second edition affords me the opportunity to make substantial additions and improvements.

In Chapter 2 the “what” of performance measurement is introduced describing the many forms of return calculation including the relative merits of each method together with calculation examples.

Performance returns in isolation add little value; we must compare these returns against a suitable benchmark. Chapter 3 discusses the merits of good and bad benchmarks and examines the detailed calculation of commercial and customised indexes. I’ve added a section on random portfolios, some additional remarks, a few benchmark statistics and extended the section on performance fees.

Chapter 4 is substantially enhanced to include risk measures for hedge funds in an attempt to catalogue all the available risk measures used by performance analysts including suggestions for consistent definition were such definitions are lacking.

The original Chapter 5 in the first edition was perhaps too long. Attribution is a broad subject; Chapter 5 is now focused on the fundamentals of attribution, principally the Brinson model and its adaptation to arithmetic and geometric approaches.

Chapter 6 focuses on multi-currency attribution, including the important work of Karnosky and Singer plus a detailed description of geometric multi-currency attribution.

Chapter 7 is largely new material focusing on fixed income attribution. Since the investment decision process of fixed income managers is fundamentally different the unadjusted Brinson model is not appropriate.

Attribution analysis is useful for analysing performance not only for the most recent period but also for the longer-term requiring the linking of multi-period attribution results. The issues of multi-period attribution are discussed in Chapter 8.

Chapter 9 is new material covering a variety of technical attribution issues including security-level analysis, off benchmark investments, and balanced and multi-level attribution.

4 Practical Portfolio Performance Measurement and Attribution

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Chapter 10 is also new material covering the measurement and attribution of derivative instruments and attribution for various alternative asset strategies such as market neutral and 130:30 funds.

Finally, in Chapter 11 we turn to the presentation of performance and consider the global development of performance presentation standards. The second edition is updated for the latest version of the GIPS standards published in 2006.