

## Preface

A quantitative fund is an investment fund that uses quantitative investment management instead of fundamental human analysis.[1]

An investment process is classified as quantitative when investment management is fully based on the use of mathematical and statistical methods to make investment decisions. If investment decisions are based on fundamental analysis and human judgement, the process is classified as fundamental.[2] The quantitative investment process, essentially, breaks down into three key components:

Input system: Providing all necessary inputs such as market data and rules (see financial data vendor);

Forecasting engine: Generating estimations for prices and returns and also, risk parameters;

Portfolio construction engine: portfolio composition using optimizers or a heuristics-based system (see Portfolio optimization and Mathematical tools).

Quantitative portfolio managers and quantitative analysts usually require a strong background in mathematics and computer science, besides knowledge of the academic financial literature. Many quantitative specialists have a PhD in Financial Economics, Engineering or Mathematics. In depth knowledge is needed to as the investment algorithms employ advanced optimization methods using the latest academic insights. Statistical models are used to explore profits that may be made out of systematic market abnormalities which can be very fast such and requires high-frequency trading, but can also be slower requiring less turnover when the alpha is based on factor investing. <sup>1</sup>

In the present book, ten typical literatures about Quant funds published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on Quant funds. We hope this book can demonstrate advances in Quant funds as well as give references to the researchers, students and other related people.

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<sup>1</sup> [https://en.wikipedia.org/wiki/Quantitative\\_fund](https://en.wikipedia.org/wiki/Quantitative_fund)