SYNTHESIS
COLLECTION OF TECHNOLOGY

Manuel Moura · Rui Neves

Using Fundamental Analysis and an Ensemble of Classifier Models Along with a Risk-Off Filter to Select Outperforming Companies

Springer

Synthesis Lectures on Technology Management & Entrepreneurship

Series Editor

Henry Riggs, Palo Alto, USA

In the dynamic intersection of technology innovation and entrepreneurship, organizations navigate a rapidly evolving landscape. Books in the series **Synthesis Lectures on Technology Management & Entrepreneurship** are aimed at helping readers with different backgrounds understand topics in the field. Coverage includes successful entrepreneurship, effective management of emerging technologies to deal with uncertainty and capitalize on opportunities, management of innovation processes, and approaches to improve performance and foster a climate of continuous innovation and adaptation in the organization.

Manuel Moura · Rui Neves

Using Fundamental Analysis and an Ensemble of Classifier Models Along with a Risk-Off Filter to Select Outperforming Companies

Manuel Moura
Instituto Superior Técnico
Instituto de Telecomunicações
Lisbon, Portugal

Rui Neves
Instituto Superior Técnico
Instituto de Telecomunicações
Lisbon, Portugal

If disposing of this product, please recycle the paper.

To my Parents and Brother
—Manuel Moura

To Susana and Tiago
—Rui Neves

Preface

The stock market serves as the backbone of the financial world, providing a platform for buying and selling company shares. It plays a critical role in the economic ecosystem, enabling companies to raise capital for expansion and offering investors opportunities to gain from their investments. Our exploration starts with unravelling the complexities of how the stock market operates, including the various investment types and the economic factors that influence market trends. A thorough understanding of the stock market's mechanisms is crucial for investors aiming to navigate its volatile nature and identify profitable ventures. By dissecting the layers of market operations and investment strategies, we lay a foundation for making informed and strategic investment decisions.

Delving deeper into the financial anatomy of companies, we examine financial statements and the practice of fundamental analysis. These financial narratives provide a transparent view of a company's economic health, operational performance, and prospects. Analysing documents like income statements, balance sheets, and cash flow statements allows investors to gauge a company's financial stability and growth potential. Fundamental analysis, rooted in this financial information, becomes a pivotal process in assessing whether a stock is undervalued or poised for future success. This examination of financial data is essential for making sound investment choices, highlighting the significance of financial literacy in investing.

Progressing to the intersection of finance and technology, we introduce machine learning in finance, a field that fuses traditional financial insights with advanced computational algorithms. This fusion has revolutionized investment strategies, enabling the analysis of vast datasets to uncover market trends and predict future movements. Time series classification, a crucial aspect of machine learning, uses historical data to forecast future market behaviour, offering a strategic edge in investment decision-making. This technological advancement not only improves financial analysis but also creates adaptive and dynamic investment strategies capable of responding to market fluctuations.

In the realm of investment and finance, ensemble methods stand out for their ability to synthesize predictions from multiple models into a single forecast. This approach can mitigate the risks associated with depending on only one model, enhancing the reliability and accuracy of investment predictions. Ensemble methods integrate the strengths of