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PAIRS TRADING

Quantitative Methods
and Analysis

Ganapathy Vidyamurthy

PAIRS TRADING

Comprised of three information-packed parts, *Pairs Trading* presents an in-depth look at the various aspects of these strategies and provides quantitative tools to assist in their analysis. The first part of this comprehensive resource sets the context for the rest of the book by introducing preliminary material on some key topics, including time series, factor models, and Kalman filtering.

After presenting the broad ideas and concepts of this trading method, *Pairs Trading* delves into two different versions of pairs trading in the equity markets—statistical arbitrage pairs trading and risk arbitrage. Part II of this book details statistical arbitrage pairs trading, which is a relative value arbitrage on two securities based on the premise that there is a long-run equilibrium between the prices of the stocks comprising the pair. Part III moves on to illustrate the trading techniques and strategies associated with risk arbitrage—the widely practiced arbitrage technique that involves pairs trading arising in the context of corporate events, especially mergers and acquisitions.

Written in a straightforward and accessible style, *Pairs Trading* provides a framework that will allow you to boost the bottom line of any portfolio.

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Pairs trading is the simplest possible example of employing a market neutral strategy. It involves the trading of securities in pairs comprised of a long position in one security and a short position in the other. If performed properly, an investor will be in the ideal position of gaining in any situation—whether the market rises or falls.

Author Ganapathy Vidyamurthy examines two versions of pairs trading that arise in the context of statistical arbitrage and risk arbitrage. He offers a compelling point of view that integrates theory and practice—providing in-depth analysis and insight in both of these cases. Issues encountered when translating theory to practice are addressed in a direct manner, arming the investment professional with the quantitative tools needed to answer key questions relating to this type of trading.

Written in an easy, accessible style, the book is a seamless blend of ideas ranging from econometrics, control theory, and operations research to core financial theories like arbitrage pricing theory and the theory of contingent claims. It is organized in three information-packed parts. Part I sets the context for the rest of the book by introducing material on key topics including time series, factor models, and Kalman filtering.

Part II of the book details statistical arbitrage pairs, a relative value arbitrage based on the premise that there is a long-run equilibrium between the prices of the stocks comprising the pair. Part III moves on to illustrate the trading techniques and strategies associated with risk arbitrage. This widely practiced arbitrage technique involves pairs trading that arises in the context of corporate events,

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especially mergers and acquisitions. You'll also discover why—although they are called arbitrage strategies in the industry—they are by no means risk-free.

Pairs Trading contains specific and tested formulas for identifying and investing in pairs. To further facilitate an understanding of this method, a bulleted summary highlighting key points is provided at the end of every chapter. Peppered with humor and snippets of history, *Pairs Trading* provides a framework for and insights on applying rigorous analysis to trading pairs in the equity markets.

GANAPATHY VIDYAMURTHY has been working in the financial markets for nearly a decade. During this time, he created the entire risk management software infrastructure for RBC Dominion Securities in New York, and built valuation models and automated execution strategies for UBS Warburg and JP Morgan Fleming. He is currently the principal of Himalaya Consulting.

Beyond finance, Mr. Vidyamurthy's interests range from discrete optimization to algorithmic music composition—a field in which he is often cited.

Mr. Vidyamurthy has a master's degree in electrical communication engineering from the Indian Institute of Science and a master's degree from the Courant Institute of Mathematical Sciences of New York University.

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