The Evaluation and Optimization of TRADING STRATEGIES

SECOND EDITION

ROBERT PARDO

President, Pardo Capital Limited

The Evaluation and Optimization of TRADING STRATEGIES
SECOND EDITION

"The testing process is key to a profitable trading method and Bob Pardo brings order and sanity to it. He shows the reader how to navigate the minefield of optimization and offers *walk-forward testing* as a way to change a static system into a dynamic one."
—PERRY KAUFMAN
   AUTHOR OF *NEW TRADING SYSTEMS AND METHODS, FOURTH EDITION*

"Will your system work in the future? In this book Bob Pardo shows you exactly how to construct a trading system and then take the most important walk of them all—the walk forward test—to find out if your system is really worth trading. Now you can know before you trade!"
—LARRY WILLIAMS
   AUTHOR OF *TRADE STOCKS & COMMODITIES WITH THE INSIDERS: SECRETS OF THE COT REPORT,* AND *LONG-TERM SECRETS TO SHORT-TERM TRADING*

"How to evaluate likely future trading system performance is not just a question—it's *the question,* and Pardo's 1992 *Design, Testing, and Optimization of Trading Systems* was a milestone work in the field. Now his approach has been updated and expanded to reflect technological change as well as many insights gained along the way. A must-read for anyone who takes trading seriously."
—BRUCE DEVAULT
   PRESIDENT, QUANTEVO—ALGORITHMIC TRADING DEVELOPMENT

"Ask serious system developers for their recommended reading list, and Bob Pardo's book is likely to be among the first mentioned. This book is the real deal; a serious work that seeks to teach you what to look for and what to avoid in your quest for workable trading methodologies. Best of all, it helps you achieve the kind of objective, critical thinking necessary for mechanical trading success. Seekers of magical holy grails would be advised to look elsewhere, but for earnest professional trading aspirants, this is a most rewarding read."
—ART COLLINS
   AUTHOR OF *BEATING THE FINANCIAL FUTURES MARKET: COMBINING SMALL BIASES INTO POWERFUL MONEY MAKING STRATEGIES*
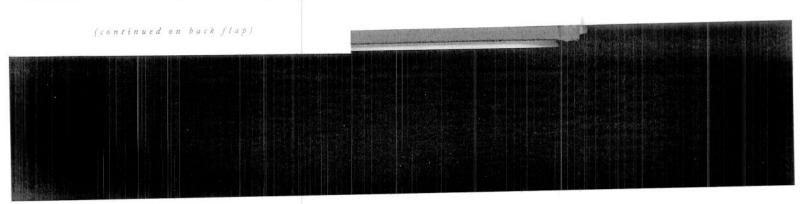
"This book is the definitive book on designing, testing, and using trading systems. There is no better book on the market."
—COURTNEY SMITH
   COURTNEY SMITH & CO., INC.

It would be an understatement to say that the world has changed dramatically in the sixteen years since the first edition of *Design, Testing, and Optimization of Trading Systems* was published in 1991. With all of the changes in communications, technology, and trading styles, a thorough and comprehensive working knowledge of how to properly design and test strategies has never been more important than it has become in today's extremely competitive markets. Robert Pardo argues that a trading strategy can only be properly evaluated and successfully traded when profit and risk have been measured precisely and accurately—which can only be done through computerized testing. In this updated and revised edition of his classic work, Pardo, a professional money manager and renowned expert in the design and testing of trading strategies and computerized trading applications, provides a clear-cut and specific road map for traders who want to transform a trading idea into a tested, verified, properly capitalized, and profitable automated trading strategy.

Pardo shows that the benefits of correct testing and optimization vastly outweigh the effort required to learn and master their proper application, and sets forth in detail the correct way to formulate, test, and evaluate a trading strategy. He explains how to properly optimize a trading strategy, incorporate out-of-sample data in the testing of a strategy, perform Walk-Forward Analysis™, develop a trading strategy profile, and judge real-time trading performance with respect to the trading strategy profile developed via historical testing. In addition, he identifies the symptoms of *overfitting*—

optimization that has "gone bad" resulting in false conclusions and offers guidelines to avoid it.

The trading game has never been as large or as lucrative as it is today. Nor have the markets ever been more efficient than they are today. Yet traders the world over continue to make profits. Why? They have found an edge. For anyone planning to employ algorithmic or mechanical strategies in their trading, this book presents, in a straightforward and accessible style, the edge that *you* can use to obtain and enjoy the fruits of profitable trading.
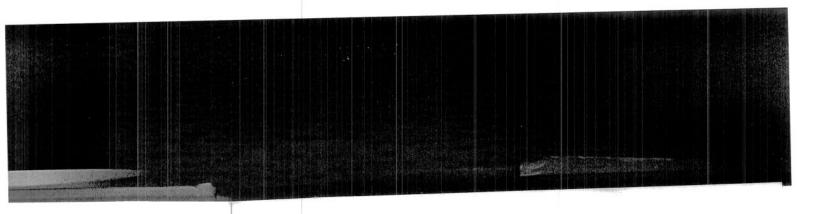
ROBERT PARDO is a recognized expert in the design and testing of trading strategies and computerized trading applications, and a long-standing professional money manager. He is founder and President of Pardo Capital Limited, a professional money management firm; Pardo Group Limited, a consulting firm; and Pardo Analytics Limited, a proprietary market analysis services firm. Since 1983, Pardo has continuously updated his software as well as designed, programmed, and documented versions of various commercial trading applications. He has worked as a consultant with world-class trading firms such as Goldman Sachs, Transworld Oil, and Daiwa Securities, and created the XT99 trading platform as a joint venture and ongoing strategic alliance between Pardo Capital Limited and Dunn Capital Management. Contact Robert at rep@pardocapital.com, or go to his Web site at http//www.pardocapital.com.

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Additional Praise for

The Evaluation and Optimization of Trading Strategies

"The *decisive* step in system trading is the determination of the reliability and robustness of your system. This greatly expanded and very accessible new edition of Bob's classic presents a thorough yet easy to apply and time-tested methodology to accurately make this determination. This makes it possible to form a realistic idea of how your system should perform in the future and increases the likelihood of lasting real-time trading profit."
—Murray Ruggerio, Vice President of Research and Development for TradersStudio; Contributing Editor *Futures* Magazine.
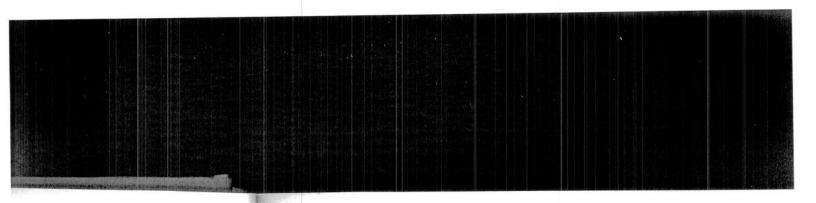
"Bob Pardo has re-written his own excellent book, and made it even better. It contains a basic step-by-step guide to building a trading system, along with an introduction to advanced system building concepts and tools. Simply avoiding the problems and errors Bob warns about can help lead to real time success. A must read for anyone interested in a systematic approach to trading."
—Michael Tepper, Atlas Capital Management, Inc.

"A significant contribution that will present, explain, clarify, and illustrate Algo Trading strategies and how to properly test/optimize trading models, thoroughly researched and perceptive. It will give the reader very practical and seasoned insight into the world of Algo Trading. Bob Pardo brings a very lucid approach to a very esoteric subject; a welcome departure from most texts. It is both accessible and rigorous, which is quite rare."
—Bruce J. Serra, Vice President, Institutional Sales, MF Global Inc.

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