

COMMODITIES TRADING

Foundations, Analysis, and Operations

Andrew D. Seidel • Philip M. Ginsberg

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and Operations*

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PRENTICE-HALL, INC., Englewood Cliffs, New Jersey, 07632

Library of Congress Cataloging in Publication Data

SEIDEL, ANDREW D.

Commodities trading.

Includes bibliographies and index.

1. Commodity exchanges. I. Ginsberg, Philip M.,
date II. Title.

HG6046.S44 1983 332.64'4 82-16164

ISBN 0-13-152678-2

Editorial/production supervision and interior design by Alice Erdman

Cover design by Edsal Enterprises

Manufacturing buyer: Ed O'Dougherty

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Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

ISBN 0-13-152678-2

Prentice-Hall International, Inc., *London*

Prentice-Hall of Australia Pty. Limited, *Sydney*

Editora Prentice-Hall do Brasil, Ltda., *Rio de Janeiro*

Prentice-Hall Canada Inc., *Toronto*

Prentice-Hall of India Private Limited, *New Delhi*

Prentice-Hall of Japan, Inc., *Tokyo*

Prentice-Hall of Southeast Asia Pte. Ltd., *Singapore*

Whitehall Books Limited, *Wellington, New Zealand*

PREFACE



Over the past several years, interest in the commodities markets has grown dramatically. The reasons for this surge in interest are manifold. In part, base commodities are not as plentiful as they once may have seemed, and all business activities have become more sensitive to their availability. In addition, the commodities markets have not only presented an attractive investment alternative to the securities markets they have become an increasingly popular vehicle to hedge investments in other markets and capture arbitrage opportunities.

The commodities markets no longer just trade in goods intended for human consumption or manufacturing such as wheat, cattle, plywood, and copper. They now encompass financial commodities—mortgages, commercial paper, foreign currencies, and government debt along with precious metals. Today the commodities markets have evolved into an effective mechanism to accommodate a wide range of business interests. They offer producers and processors an opportunity to shift their risks of loss owing to adverse price fluctuations; they offer security portfolio managers an opportunity to hedge their portfolio asset value against unseen economic circumstances, and they offer investors opportunities to capture returns and speculate on the future.

Despite the opportunities presented in the commodities markets, much of what passes for systematic analysis and management of commodity trading operations is based more on convention and intuition than on objective plan-

ning and empirically tested methodology. To be sure, few can afford to approach any investment opportunity ignorant of the underlying risks and institutional characteristics of the markets or naked to the use of the tools necessary to win. Yet in light of these requirements, it is remarkable how much of what passes for systematic commodity analysis clusters around two extreme performances: overtures of business and economic fundamentals on the one hand, and solo cords of mathematics and statistics on the other. The former all too often do not carry their analysis through to efficient and adaptable implementation, while the latter often sacrifice business context and practicality in their pursuit of rigorous decision rules. To a large extent this state of affairs is understandable. The application of economic analysis, statistical and mathematical methodologies, to commodity business problems is in its earliest stages, and its success is not yet common.

Unravelling the complexities of commodity trading is what this book is all about. It summarizes the various types of commodity markets and contracting and integrates this information with relevant aspects of economic analysis, statistics, and mathematics. Together, these foundations can provide a basis for systematic trading operations that can reduce risks and raise returns from levels otherwise achieved. Surely no single individual can be expected to master each of these disciplines or all of the ways they can be brought to bear upon all of the possible problems one can encounter in commodity business operations. Nevertheless, those responsible for the successful conduct of business must be well-enough versed in these areas to help translate real-life commodity market problems into tractable structures, to oversee the analysis, and to extract their business implications.

The book is directed toward several related audiences. On the one hand it is directed toward the MBA student, investor, research economist, commodity trader or broker, and financial manager. The intent is to help bridge the gap between the identification and specification of commodity trading problems and their analysis and control. On the other hand, the book is aimed at statisticians, mathematicians, and operations researchers to help them better understand the content and structure of problems arising in commodity trading that are ripe for their contribution.

Despite its quantitative bent, the mathematical level of the book has been kept as elementary as possible. A review of the statistical and mathematical foundations are covered in separate chapters. Although much of the technical material presented is not new, the book does bring together, in a unified framework, principles and applications of economics, statistics, and mathematics heretofore unavailable in a single text.

The book is organized as follows:

PART I focuses on the institutional aspects of the commodities markets: the contracts, exchanges and controls, and elements of finance with

special emphasis on their application to commodity trading and investment. Included here are discussions of options, futures, and forward contracting. In addition, an overview of the role of the commodity markets, the participants, their objectives and interactions are presented together with a summary of major regulations and AICPA accounting recommendations.

PART II provides a summary of select aspects of operations research and time series analysis. Included here are elements of probability and statistics, decision theory, mathematical programming, and time series estimation and forecasting. Special emphasis is given to the application of these disciplines to commodity trading and provides a foundation for subsequent topics.

PART III addresses the technical analysis of commodity prices, with particular emphasis given to chart analysis and technical trading models. Among the topics included are stop-loss and non-parametric models, autoregressive moving-average models, and Kalman filter models. The section also includes several illustrative examples designed to highlight applications of these methodologies, their strengths and weaknesses.

PART IV explores the analysis of fundamentals in the commodity markets and its role in commodity trading activity. Here, elements of demand, production, and supply are summarized together with design features for fundamental models and guidelines for their development. In addition, operations oriented econometric models of several different commodities are presented. These applications include wheat, foreign exchange, gold, and money market instruments. Throughout these chapters, the models are used to illustrate the integration of fundamental economic information into commodity trading decisions. This is done from the vantage of different market participants with different trading objectives.

PART V ties together the topics covered in the previous chapters and turns to three aspects that encompass almost every activity of commodity trading. These aspects include the design and implementation of commodity trading strategies and tactics. Included here are elements of the probability of ruin, the planning horizon, and operational check lists. The chapter on portfolio selection and maintenance emphasizes the peculiarities of commodities and the implications of execution errors owing to illiquidity in the markets. The discussion of integrated, multi-commodity trading activity explores the financial constraints of the firm and the various trading desks and trading procedures to manage profits over different time bargains and across commodities. Here, inventory scheduling and the application of multi-commodity, multi-time period mathematical program procedures are applied to commodity trading.

While book length studies exist for many of the issues and methods the authors deem important, the intent of this book is to emphasize their integra-

tion. Accordingly it is necessary to be selective, drawing on those principles and methodologies that have stood the test of time or show promise of practical contribution. In this regard experience has been the leading edge of Ocam's razor. As such the book attempts to portray, as candidly and rigorously as possible, the practical problems and issues that face anyone ambitious enough to "enter the ring".

ACKNOWLEDGMENT

The help and guidance of many people contributed to the preparation of this book.

In particular, we must express our gratitude to David C. Hildebrand, Prentice-Hall's editor of economics and finance, who encouraged and enhanced our efforts and to Alice Erdman, Prentice-Hall's production editor, who tirelessly directed the manuscript through production.

We must also thank Neil Sheflin and Dennis Warner for their special contributions.

Finally, we are indebted to the following individuals for their valuable comments and suggestions: Martin Barrat, Jean Blin, Roger Gray, Roger LeRoy Miller, and Matthew Stirling.

Of course, the authors bear all responsibility for any theoretical and factual errors contained in the book. Similarly, the opinions, insights, and approaches to commodity trading are solely those of the authors.

Andrew D. Seidel
Philip M. Ginsberg

CONTENTS



PREFACE xxi

ACKNOWLEDGMENTS xxv

I Overview of Commodity Contracting

1. OVERVIEW OF COMMODITY CONTRACTING 3

1. Introduction 3

2. Overview of the Commodities Markets 4

*Extent of Trading and Types of Contracts/ Historical Perspective/
Uncertainty and the Transference of Risk/ The sixteenth Century
Vintner: A Twentieth Century Example/ The Sixteenth Century
Money Changer: Another Twentieth Century Example/*

3. Summary 10

4. Bibliography 10

2. ELEMENTS OF CASH, FUTURES, AND OPTIONS CONTRACTING 11

1. Introduction 11
2. Commonality and Variation in Commodity Contracting 12
Common Characteristics of Commodity Contracts/ Price/ Contract Horizon/ Quantity/ Place of Delivery/ Grade/ Nomenclature/ Variations in Markets
3. Direct Placement: The Cash Markets 15
4. Direct Placement: The Options Market 16
Types of Options and Rationale/ Intrinsic Value and Premium/ The Role of Options and the Redistribution of Risk/ The Contribution of Options to the Economy/
5. Organized Exchange Contracting: The Futures Markets 23
6. Options, Forward and Futures Contracts: Complements and Substitutes 26
7. Select Comparisons Between Commodity and Security Exchanges 27
8. Direct Placement and Open Outcry Markets: A Comparison 27
9. Summary 29
10. Bibliography 29

3. AMBIENT PERSPECTIVES ON ASSET AND LIABILITY MANAGEMENT 30

1. Introduction 30
2. Objectives of Forward Contracting 31
Inter-Temporal Hedging and Risk Transference/ Contract Substitutes and Complements/ Hedging, Correlation and Insurance/ Net Hedging/ Inter-Temporal Arbitrage: The Mechanics of Efficiency/ Cash and Carry Examples/ Arbitrage and Speculation: Some Gray Areas/ Returns to Arbitrage/ Speculation/ Concentration and Diversification/ Outright Positions and Spread Trading/ Unintentional Speculation: The Imperfect Hedge/
3. Contracting Across Commodities and Between Markets 38
Hedging for Price and Supply/ Arbitrage and Speculation/
4. Trading Across Commodities, Markets and Time 42
Multi-Dimensional Equilibrium: The Case of Foreign Exchange/ The Multinational and Interest Rate Parity/ Euromoney Rates/ A Foreign Exchange Hedge and Speculative Gain/ Multi-Dimensional Equilibrium: Spread Trading/ Objectives and Risks/ A Speculative T-Bond-GNMA Example/
5. Summary 48
6. Bibliography 48

4. ELEMENTS OF PRICE FORMATION 49

1. Introduction 49

2. Markets, Prices, Adjustments, and Forecasts 50

Markets, Linkages, and Equilibrium/ Market Process, Stability, and Efficiency/ Market Efficiency and Price Forecasting/

3. Price Differentials Between Delivery Dates 53

Contango and the Basis Upper Bound/ Backwardation and the Basis Lower Bound/ Arbitrage and the Convergence of Cash and Futures Prices/

4. Spread Trading and Risks 55

Speculative and Arbitrage Spread Risks/ Hedger Spread Risks/ A Short Hedge Example/

5. Price Formation and the Identification of Hedgers and Speculators 60

6. Summary 61

7. Bibliography 63

5. THE PRICING AND APPLICATION OF CONTINGENT CLAIMS 64

1. Introduction 64

2. Types of Contingent Claims and Factors Influencing Them 65

3. Option Values 65

Option Valuation Formulae/ Comparative Values of Options on Spot and Futures Contracts/ European Options on Spot and Futures Contracts/ American Options on Spot and Futures Contracts/ Value Rankings of American and European Puts and Calls/

4. Pitfalls of Option Valuation 71

Log Normality and Binomial Approximations/ Forecasting Volatility and Rates of Interest/ The Lack of Invariance/

5. Trading Applications 73

Hedging Inventory Value/ Reduction of Operating Costs Through Options and Futures Contracts/ Standby Commitments to Buy GNMA's and Futures Contract Hedging Strategies/ Options as a Source of Supply and Futures to Hedge Profits/ Stop-loss Determination for Day Trading through Options Valuation/

6. Summary 78

7. Bibliography 79

x Contents

6. ELEMENTS OF FINANCE 81

1. Introduction 81

2. Rate of Return 82

Elementary Holding Period Rate of Return/ Complicating Factors/ Contract Size and Indivisibility/ Annualized Rates of Return from Daily Data/ Adjustments for Different Value Dates/ Margin Calls, Reinvestment Rates, and Rates of Return/

3. Select Return Calculations in Non-Financial Commodities 88

A Wheat Example/ Wheat-Money Market Arbitrage/

4. Investment Decisions 89

Uncertainty, Expected Return, and Risk for a Single Asset/ Expected Present Value/ Probability of a Given Rate of Return or Better/ Risk for a Single Asset of Reference/ The Decision Perspective: A Risk-Return Criterion/ Portfolio Investment Decisions/ Expected Return and Risk/ Covariability and Diversification/ Efficient Portfolios/ Portfolio Selection/

5. Summary 95

6. Bibliography 96

7. THE CASH AND FUTURES MARKETS FOR FINANCIAL ASSETS OF REFERENCE 97

1. Introduction 97

2. Difficulties of Trading Financial Commodities 98

3. Select Price, Rate, and Yield Relationships 99

Cash and Futures Market Price and Rate Relationships/ Bank Discount Rate and Bond Equivalent Yield/ Treasury Bill Index/ Actual and Futures Market Implicit Yield Curves/ Yield to Call and Yield to Call with Option/

4. Size, Quotation, and Timing Anomalies 107

Contract Size and Quotation Differences/ Timing Anomalies/ Mismatched Value Dates and the Cost of Carry/ Value Dates and Delivery Dates/

5. Select Trading Examples in Financial Instruments 110

Liquidity Arbitrage/ Treasury Bill Parity: Diversifying the Yield Curve Ride/

6. Gresham's Law: Treasury Bonds, GNMA's, and Yield to Maturity 114

Price, Term Structure, and Yield to Maturity/

7. Summary 116

8. Bibliography 117

8. REGULATION 118

1. Introduction 118

2. The Network of a Futures Trade 119

3. CFTC Regulation and Those Regulated 121

Individuals/ Futures Commission Merchants and Associated Persons/ Commodity Trading Advisors/ Commodity Pool Operators/

4. Exchange Regulation 126

Delivery/ Speculative Position Limits/ Reporting of Trades/ Settlement Prices/ Limit Price Moves/

5. IRS and Other Regulations 128

IRS Regulations/ The Taxable Event/ The Holding Period/ Investors: Long and Short/ Hedgers and Dealers/ Short Sale Rules and Straddles/ The Cash and Carry/ Economic Justification/ Other Regulations/ Banks/ Insurance Companies/ Pension Funds/

6. Summary 137

7. Bibliography 137

9. ACCOUNTING PERSPECTIVES ON FUTURES CONTRACTING AND FORWARD AND STANDBY COMMITMENTS 138

1. Introduction 138

2. Accounting Considerations for Futures Market Intermediaries 139

The Clearing Corporation/ The Futures Commission Merchant/

3. Accounting for Forward Placement, Futures Contracting, and Standby Commitments 140

Some Preliminaries/ Issues to Be Resolved/ AICPA Recommendations/ Consistency/ Recording on the Balance Sheet/ Presettlement Recording/ Hedging Criteria/ Anticipatory Hedging/ Rollovers/ Recognition of Gains and Losses/ Amortization of Loss/ Strip Ratability/ Disclosure/

4. Examples of Hedge Accounting 145

Short Hedge of Investment Security Accounted for on a Cost Basis/ Anticipatory Hedge of Purchase of GNMA Pass-Through Certificates/ Anticipatory (Long) Hedge of Purchase of Investment Security to Be Accounted for on a Cost Basis/ Anticipatory Hedge of Debt Issuance/

5. Summary 150

7. Bibliography 150

II Elements of Operations Research and Time Series Analysis

10. ELEMENTS OF PROBABILITY AND STATISTICS 153

1. Introduction 153

2. Probability 153

*Mutual Exclusivity and the Law of Addition/ Independence/
Joint Marginal and Conditional Probabilities/ Bayesian Analysis/
A Trading Example/ Objective and Subjective Probabilities/
Random Variables and Expected Values/ Random Walk and the
Probability of Ruin/ Probability Distributions/*

3. Statistics 163

*Non-Random and Simple Random Sampling/ Stratified and
Sequential Sampling/ Use of Random Numbers/ Sample Size/
Estimates and Estimators/ Unbiasedness, Consistency, and
Efficiency: The Quality of an Estimate/ Degrees of Freedom/
Probability Estimates, Hypothesis Testing, and Confidence Intervals/
Speculation, and the Random Walk, and Probability Estimates/
Arbitrage, The "t" Statistic and Hypothesis Testing/ Portfolio
Assessments, X^2 , and Hypothesis Testing/ Arbitrage and
Confidence Intervals/ Market Fundamentals and the "F" Test/
Parametric and Non-Parametric Statistics/ The Sign Test: Durham
and Red No. 2 Wheat/ The Runs Test: An Essential of Technical
Analysis/ Serial Correlation: The Foundation of Time Series Analysis/
Correlation and Regression/ Select Relationships and Measures/
Limitations/*

4. Summary 175

5. Bibliography 176

11. ASPECTS OF TIME SERIES ANALYSIS 177

1. Introduction 177

2. Time Series: A Definition and Operational Diagnosis 177

*Discrete Snapshots of Continuous Activity: Model Implications/
The Partial Indeterminacy of the Future/ Interconnectedness/*

3. Stationarity and Ergodicity: Two Important and Related
Properties 179

4. Specification 181

5. Identification and Estimation 181

6. Estimation Revisited 182

7. Causality and Feedback 182

8. Filters 183

9. Forecasting	184
<i>Forecast Accuracy: Analysis and Improvement/</i>	
10. Time Series Models, Serial Correlation, and Spectral Analysis	185
<i>Spectral Analysis or Correlation Analysis: An Analyst's Choice/</i>	
<i>Auto- and Cross-Spectral Analysis: An Elementary Overview/</i>	
<i>Filter Applications of Spectral Analysis/ Tests for Significance of</i>	
<i>Power Spectra/ Assessments of Lead-Lag Relationships/ Cross-</i>	
<i>Spectral Identification of Distributed Lags/ Practical Considerations in</i>	
<i>Spectral Analysis/</i>	
11. Summary	194
12. Bibliography	195
12. ELEMENTS OF DECISION THEORY	196
1. Introduction	196
2. Decision Making: Conditions, Elements, and Perspectives	196
<i>Courses of Action, States of the World, and Payoffs/ Expected Value</i>	
<i>Criteria and Non-Sequential Stochastic Decisions/ An Elementary</i>	
<i>Decision Problem: Buy Today or Buy Tomorrow to Cover a Short/</i>	
<i>The Bidding Problem/ The Value of Information and Sequential</i>	
<i>Decisions/ Sequential Decisions and Bayesian Statistics/</i>	
3. Investment Decisions and Utility	206
<i>Maximization of Expected Utility/ Construction of an Individual's</i>	
<i>Utility Function/ Interpretation of a Utility Decision Curve/ The</i>	
<i>Exponential Utility Function/ Applications of Utility Analysis to</i>	
<i>Commodity Decisions Involving Risk/ Assessing an Outright</i>	
<i>Position/ To Hedge or Not/ How Much to Invest and What</i>	
<i>Amount to Hedge/</i>	
4. Summary	218
5. Bibliography	218
13. ELEMENTS OF MATHEMATICAL PROGRAMMING	220
1. Introduction	220
2. Elements of Classical and Non-Linear Programming	221
<i>Classical Programming/ Non-Linear Programming/ The Kuhn-Tucker</i>	
<i>Conditions/ Linear Programming/ Quadratic Programming/</i>	
3. Control Problems and Probabilistic Programming Problems	
<i>Control Problems/ Dynamic Programming/ Multiperiod-</i>	
<i>Multicommodity Linear Programming/ Goal Programming/</i>	
<i>Probabilistic Programming/ A Stud Lumber Example/</i>	
4. Summary	242
5. Bibliography	243

III Technical Analysis

INTRODUCTION TO TECHNICAL ANALYSIS 248

**14. LANGUAGE AND AMBIENT PERSPECTIVES
OF TECHNICAL ANALYSIS 248**

1. Introduction 248
2. Trends, Seasonals, and Related Patterns 249
The Trend/ Momentum/ Reversal and Retracement/ Trend Length/ Seasonal Movements/ Oscillations/ Congestion or Consolidation/
3. Sequences of Different Movements: Pattern Classification 250
Fulcrum and Inverse Fulcrum/ Resistance and Support/ Breakout and Catapult/ Triangles and Pennants/ Tops and Bottoms/ Gaps/ Corrective Patterns/
4. Trading Considerations 252
Preliminary and Confirming Indicators/ Technically Weak and Technically Strong Price Movements/ Technical Rally and Technical Reaction/ Price Objective and Stop Loss/
5. Summary 254
6. Bibliography 254

15. CHART ANALYSES AND TECHNICAL TRADING RULES 256

1. Introduction 256
2. Bar Charts 257
Time Perspective/ Inter-Day Charting/ Trend/ Turning Points: Top and Bottom Formations/ Intermediate or Mid-Formation Patterns/ Trading Rules Based on Inter-Day Bar Charts/ The Thrust Method/ The Congestion Phase N-Day Opposite Rule and the Theory of Runs/ Minor Trend Rule/ The N Day Rule/ The Wave or Impulse-Response Rule and a "Stabilizing" Market/ Channel Rules/ Price Objectives and Price Forecasts/ Support and Resistance Extrapolation/ Basis Point Per Time Unit Extensions/ Revelational Methods/ Intra-Day Bar Charts/ Normal Intraday Price Patterns and Departures from the Norm/ Episodic Intraday Pattern and Trading Rules/
3. Point and Figure Charts 274
Construction of a Point and Figure Chart/ Box Size, B, and Reversal Rule, R/ Point and Figure Chart Trading Rules/ Price Objectives from Point and Figure Charts/ Vertical Count Method/ Horizontal Count/ Convex Count Method/ Intraday Point and Figure Charts/
4. Summary 282
5. Bibliography 283

16. UNIVARIATE FORECASTING METHODS AND TRADING SYSTEMS 285

1. Introduction 285
2. Moving Averages and Exponential Smoothing 286
Higher-Order Models/ Estimation and Forecasting Compendium/
3. Generalized Adaptive Smoothing 289
4. ARIMA Models 292
Non-Seasonal ARIMA Models/ ARIMA Models with Seasonal Oscillations/ Forecasting by ARIMA Models/ Special Considerations of Daily Commodity Price Data for ARIMA Models/
5. Kalman Filters 296
6. Choosing a Method 298
7. Univariate Forecasting Methods and Trading Systems 299
Trading Range Moving Average with Adaptive Volatility Adjustments/ Velocity and Acceleration-Deceleration: A Second Order Smoothing System/ General Adaptive Smoothing Systems/ ARIMA Model Trading Systems/ Kalman Predictor Model/
8. Summary 303
9. Bibliography 304

17. MULTIVARIATE FORECASTING MODELS AND TRADING SYSTEMS 305

1. Introduction 305
2. Elementary First-Difference Model and Trading System 306
3. ARIMA Transfer Function Noise Models 308
Estimation: Single Independent Variable/ Multiple Independent Variables/ Seasonal Transfer Function-Noise Models/ Forecasts with Transfer Function-Noise Models/ Trading Rules for Transfer Function-Noise Models/
4. Kalman Filtering: The Multivariate Case 312
One-Period-Ahead Forecasts/ Multiple Independent Variables/ Trading Rules for the Multivariate Kalman Filter Model/
5. Summary 316
6. Bibliography 316