Index

A

ad hoc convenience yield theory 3
'adaptation costs' 40
Agence Française de Developpement (AFD) 233
Agricultural Price Risk in Developing Countries 207–35
  incidence of risk exposure 209–15
    access problems 217
    basis risk problems 217–19
    coffee basis risk in Tanzania 218–19
    consumers 214
    credit 217
    developing country exchanges 219–21
    farmers 209–11
    instruments 215–16
    intermediaries, exporters, stockholders and banks 211–12
    overall supply chain 214–15
    producing country governments 212–14
    regulation 217
    size 217
  liberalization context 207–9
  price risk management 217, 221–33, 235
    Brazilian *Cedula Produto Rural 227*
    call options for contingent food security imports 231–2
    cotton price stabilization and smoothing in West Africa 232–3
    developing country intermediaries 221–3
    governments 230–3
    insurance vs 226–9
    intermediation via banks 225–6
    intermediation via cooperatives 223–4
    intermediation via exporters 224–5
    risk management intermediation by a Tanzanian Agricultural Bank 226
    risk-coping strategies 229–30
    versus price stabilization 223
    weather insurance in Malawi 229
Amaranth 56, 268, 270–81, 282
Asian freight option contract 163
Asian options 35
Atlantic thermohaline circulation (THC), collapse of 96
atomistic markets 51
Augmented-Dickey-Fuller (ADF) tests 183, 185–6, 193, 195, 196
autocorrelation 31
Autoregressive Integrated Moving Average (ARIMA) 171, 172

B

Bache Commodity Index (BCI)
Bachelier approach 131
backtesting 55
backwardation 3, 4, 11, 12, 15, 23, 27, 28, 29, 30, 67
Baltic Capesize Index (BCI) 155, 179
Baltic Clean Tanker Index (BCTI) 155, 178
Baltic Dirty Tanker Index (BDTI) 155, 178
Baltic Dry Index (BDI) 179, 183, 191, 195, 201
Baltic Exchange or the Platts indices 160
Baltic Freight Index (BFI) 157, 175
Baltic Handysize Index (BHSI) 155
Baltic International Freight Futures Exchange (BIFFEX) contract 157, 158, 164, 175
Baltic Panamax Index (BPI) 155, 179
Baltic Supramax Index (BSI) 155
bandwidth 57
Bank of Montreal (BMO) 260–4
basket option 83
bear calendar spread 256
Bear Stearns 283, 287
BHMI 179 O.K. or BHSI?
BHP Billiton 189
bid-ask spreads 53, 172–3
Black–Scholes framework 24, 130, 137
Black-Scholes-Merton (1973) model 183
block bootstrap 83
Bolsa Brasiliera de Marcadorias (BBM) 227

COPYRIGHTED MATERIAL
http://www.pbookshop.com

bootstrapping 55, 82–3, 88
Borsa Italiana 55
BP 258–60, 278–9, 282
Brazilian Mercantile and Futures Exchange (BM&F) 219, 220, 227

C
caisses de stabilisation 212
calendar spread options. 21, 256
Capesize index 191
capital subsidies 102, 103–5, 115
carbon, social cost of 96
carbon emission emission certificates 102
Carr Geman Madan Yor (CGMY) 137, 149
Castalia Fund Management Ltd. 158
CBOT-CME 55
Cedula Produto Rural (CPR) 227
Central Limit Theorem 228
Chicago Board of Trade 54, 264, 268
Chicago Board Options Exchange 287
Cholesky decomposition 83
Cholesky matrix 83
Citadel 276
Clarkson Fund Management Ltd. 158
closed spot markets 48
codifiability of transactions 33, 49
collateral risk 56
collateral value 56
commodity futures markets 228
Commodity Futures Trading Commission (CFTC) 258–60, 278–9, 280
commodity risk management, forms of 36
commodity sourcing and hedging (CSH) 36–7
commodity taxonomy 1
comparative statics 64–73
concatenation of futures prices 117–18
contango 11, 12, 27, 28, 29, 67, 222, 278
continuous time bivariate model 102
continuous-time equilibrium 62
continuous time stochastic dynamics 35
contract design 57
contraction mapping 3
Contracts for Difference (CFDs) 154
'convenience premium' 25
convenience yield 1, 11, 15, 16, 25
copper 188–90
correlation 81
correlation risk measurement for energy derivatives 81–9
correlation VaR 82, 85
cost–benefit analysis through NPV 130
cost-of-carry relationship 16, 31
cost of default insurance 52
cotton price in Burkina Faso 213
counterparty risk 54
covariance matrix 123
CRDB Bank Ltd
credit default swaps (CDS) 57
credit risk 57
'critical liquidation cycle' 256
cross-clearing 55
crude oil 186–8
CSH 39

D
'dangerous anthropogenic interference' 93, 95
Default cost 52
'Deloitte report 262
deseasonalized forward curve 29
disaster recovery plans 56
dismal theorem (weitzman) 91–7
  implications 94–6
Dow Jones AIG commodity index 287, 288
dynamic equilibrium model 62–4

E
E-GARCH-VaR model 179
econometric models 61
'effective price function' 42
EIA 188
eigenvalues 84–5, 123
eigenvectors 123
Emerging Markets (EM), commodities in 239–54
  asset markets and economic growth 239–44
  emerging markets equity markets and commodity markets, integration of 244–7
  implications for the investment policy 247–54
Energy Futures Portfolio, risk hedging of 117–27
  hedging the portfolio risk 124–7
  identifying the key risk factors 123–4
  mapping portfolios to constant maturity futures 117–19
  portfolio key risk factors 119–23
enterprise resource planning (ERP) systems 47
equilibrium models 61
ETFs 188
Euronext 55
European Central Bank 255
European Union 208, 233
'ex post opportunism' 35
exchange-based cleared freight futures 154
exchange costs 52
exchange mergers 55
exchanged-owned clearing houses 54
exotic options 35
Expectations Hypothesis of the Term Structure (EHTS) 166

http://www.pbookshop.com

expected cost of default 52
Expected Shortfall (ES) 178, 179
expected spot prices 61
expert knowledge 55, 56
exponential historical simulation 178, 179
exponentially weighted moving average specifications 178
extreme value theory 55
Eydeland-Wolyniec 6

F
Fast Fourier Transform (FFT) methodology 131
Federal Energy Regulatory Commission (FERC) 279, 280
Federal Reserve Board (Fed) 255
feed-in tariffs 102, 103–4, 105–6, 115
filtered historical simulation 179
first intermonth spread 27
'first mover advantage' 219
first-to-expire futures contract 10
fixed expiration dates (European options) 35
flexible expiration dates (American options) 35
'flow trading' 265
fonds de lissage (smoothing funds) 233
forward contracts 9
forward curve 66–70
  in commodity markets 1, 9–31
  indicators 26–31
  for non-seasonal commodities 14–16
  simulations 26
forward freight agreements (FFAs) 154–7
  'hybrid' (cleared) 161–2
forward freight rate dynamics 174–5
Fourier Space time-stepping (FST) 131
'free goods' 58
freight derivatives and risk management 153–79
  empirical research 164–78
  hedging effectiveness 169–70
  market surveys 173–4
  measuring freight market risk 177–8
  microstructure effects in freight derivatives markets 172–3
  predictive power 171–2
  price discovery 165–9, 175–7
  trading on spot market price volatility 170–1
freight derivatives contracts 153
freight forwards 154
freight futures 157–61
freight options 162–4, 175–7
front-month contract 10
fund-of-hedge-funds diversification 266–7
Futures Commission Merchant (FCM) 255
futures 215–16
futures contracts 9
futures prices 62

G
GARCH model 170, 178, 179
Gaussian copula 136
General Clearing Member (GCM) 158
General Error Distribution (GED) 179
generalized hyperbolic (GH) distributions 134, 135, 137, 149
Generalized Method of Moments (GMM) 173
generalized seasonal forward curve model 17, 21–4, 31
geometric Brownian motion 15, 18, 19, 23, 129, 130, 131, 183
Gibbs sampling 203
GJR-GARCH model 170
Global Maritime Investments (GMI) 158
GLS-based unit root test 185, 186, 200
Goldman Sachs 266
Granger causality test 246
green certificates (GC) 102, 103, 104, 106, 115
green investments 58
green rates 207
green tags *see* green certificates

H
Heath, Jarrow and Morton (HJM, 1992) 19, 127, 174
hedge fund risk management 266
hedged stabilization 232
high volatility 61
Historical or the Filtered Historical Simulation 179
historical simulation 178, 179
hold-up behavior 35

I
identically distributed (IID) demand shock 3
IMAREX Freight Option (IFO) contract 163
implied correlations 82
impulse response analysis 246
'impulse response function' of Var model 246
independent clearing houses 54
industry representative organizations 213
institutional risk management 258–65
  large institutions 264–5
  position limits 264
  regulatory and legal risk 258–60
  valuation risk 260–4
insurance 228
Insurance Association of Malawi (IAM) 229
Intercontinental Exchange (ICE) 9, 10, 272, 280
intermediation 58
International Commodity Exchange 53
International Maritime Exchange (IMAREX) 154, 158–9
International Securities Exchange 53

http://www.pbookshop.com

J
joint characteristic function 131
joint exchange ownership 55
JP Morgan 266, 276
jump-reversion model 134

K
Kalman filter 192

L
Lagrange multiplier test 185
law of one price 45
lead-lag relationship 168
Lévy models 129, 131
linear combinations 24
linear correlation 81–2
liquidity 49, 53
liquidity risk 53, 54, 57
London Clearing House Clearnet (LCH.Clearnet) 154, 161
London International Financial Futures and Options Exchange (LIFFE) 157, 158
London Metal Exchange (LME) 189
London Stock Exchange 55
Low Carbon Buildings Programme (UK) 103

M
Man Group 266
margin computations 54
marginal cost function 64
margining 54–5
Margrabe formula 130
market integrity 55–6
market liberalization 234, 235
market liquidity 56
market oversight 56–7
market price of risk 62
market recovery 56
market risk management 267–88
  exit strategy 283–4
  leverage level 285–8
  scenario analyses 284–5
  sizing 268–83
  trade construction 267–8
Markov Regime Switching process model 167
Markov-switching 199
martingale property 14, 15, 24, 133
maturity T 16
maximum likelihood 20
maximum option 83
maximum producible capacity 101
mean-reversion 18, 19, 20, 23, 61
  in crude oil, copper, and shipping 183–203
Meixner process 137, 148
MF Global, Inc. 264
minimum option 83
Minimum Variance Hedge Ratio (MVHR) 169
mixed jump-diffusion pricing 131
Monte Carlo *resampling* method. 82
Monte Carlo simulations 24, 86, 91, 130, 179
moral hazard 55
Morgan Stanley 266
MotherRock 268, 269–70, 276, 277
moving average smoothed indicator 27–8, 29
MSCI EM index 245
MSCI Emerging Markets
MSCI World equity indices for international exposure
multifactor forward curve models 25
multifactor models 14
multivariate Variance Gamma (VG) 131, 134
multivariate Vector Autoregressive (VAR) 171

N
National Association of Small Farmers of Malawi (NASFAM) 229
Natural Gas (NG U-V) spread 269
Natural gas derivatives 268
nearby contract 10
new derivative markets, design of 51–8
New York Mercantile Exchange (NYMEX) 9, 10, 154, 158, 160–1, 272, 280
  natural gas 137–44
Newsvendor rule 38
Ng-Pirrong augmented storage model 4
no arbitrage 133
non-stationary prices 195
non-storable commodities 1, 6
Non-storable Uniform Product Model 37
Nord Pool 62, 73–7
  risk premia esimation75– 7
  spot prices 74–5
'normal backwardation' 12
Normal Inverse Gaussian (NIG) dynamics 134, 137, 147
Norwegian Options and Futures clearing-house (NOS) 158
NYBOT 227, 233

O
one-factor models 14
one-period premia 68
OPBL 262
open spot markets 48
operating profits 53
Optionable, Inc.,' 252
options 215, 216
Ordinary Least Squares (OLS) 22, 167
Ornstein-Uhlenbeck process 19, 23, 132, 134, 192

http://www.pbookshop.com

Ospraie Management 283
Ospraie Point Fund 283
oversmoothing 28
Over-The-Counter (OTC) 58, 154
  contracts 53, 54
  derivatives markets 155
  instruments 216
  markets 51
  networks 54

P

Panamax index 191
parameters
  of demand process 73
  of risk allocation 70–3
parastatal organizations 212, 213, 235
partial integro-differential equation (PIDE) 131
perfect competition 51
periodic market efficiency 256
perturbation of correlation matrix 82–3
  angle representation of the correlation matrix 83–4, 88
  bootstrap method 82–3, 88
  eigenvalues 84–5
  individual correlations 82, 83
Phillips-Perron (PP) tests 185, 186, 193, 196
Pirrong-Jermakyan 6
PJM electricity 137–44
pollution permits 57–8
portfolio risk 56
Power Purchase Agreements (PPAs) 47
price discovery 53–4
price risk management techniques 235
price smoothing agenda 235
price spikes 61
price stabilization schemes 234
principal component analysis (PCA) 15, 123, 127
  of forward curve 23, 24–6, 28
principal component loadings 24
Principal-Agent literature 35
privatization of industries 51
processing costs 52
production costs 40
proportional product model 48
proprietary-trading risk management 265–6

R

rainfall contracts 57
random walk 178
Rational Expectation Hypothesis 1, 10, 192
reduced-form models 61
relative convenience yield 18
relative one-period risk premium 77
relative premia 68–70
Relative Strength Index 26
Renewable Energy Sources (RES) 101
renewables, incentives for investing in 101–15
  capital subsidies 109–11
    German case 110–11
    Italian case 109–10
  feed-in tariffs 111–12
    German case 112
    Italian case 111–12
  green certificates 112-
    German case 114
    Italian case 112–13
  models 105–6
  risk analysis 109–14
  statistical estimations 107–8
  subsidies for energy 103–4
right skewness 61
Rio Tinto 189
risk aversion 41
risk-coping behavior 235
risk management 230–1
risk management in Commodity Derivatives Trading 255–88
risk pooling 228
risk premia 61, 62, 266
  of electricity futures 61–80
'roll risk' 222
rollover 10

S

Saracen 268, 281–3
scenario analysis 55
Scheinkman-Schectman rational expectations model 3
  Pirrong extension 3–4
seasonal cost-of-carry model 17–21
seasonal forward curve model 17–24, 31
seasonality 61
second generation problem 209
Securities and Exchange Commission (SEC) 260
Seemingly Unrelated Regressions Estimation (SUREVECM) 171
semimartingales 133
Shanghai Futures Exchange (SHFE) 189
shipping 190–1
'side-selling'. 225
simulation based approaches 178
Singapore Exchange AsiaClear (SGX AsiaClear) 154, 161–2
Sklar's theorem 132, 136
smooth stationary bootstrap 29
Société Générale 56
social cost of carbon (SCC) 91
SOFITEX 213
South African Futures Exchange (SAFEX) 219, 220, 231–2

http://www.pbookshop.com

spark spread option 102, 129–49
bivariate gas–electricity process behavior and 140–1
modelling specification in the multivariate case 145–6
modelling specifications in the univariate case 147–9
Carr Geman Madan Yor (CGMY) process 149
Generalized Hyperbolic (GH) process 149
Meixner process 148
normal inverse Gaussian 147
variance gamma 147
PJM electricity and NYMEX natural gas 137–44
marginal calibration and marginal fit 137–9
multivariate FST prices of the spark spread 141–4
time change 133, 134–7
multivariate models 134–6
univariate models 134
spot prices 10, 62
stabilization agencies 212
stabilization schemes 232
state-dependent demand analysis 48
static arbitrage-based approach 14, 15
stationarity tests 185
stationary time series. 195
statistical scenario generation 56
stochastic cost of carry 18
stochastic differential equation 1
stochastic premium 17, 18
storable commodities 1–6
stress testing 56
structural breaks in crude oil, copper, and shipping, 183–203
ADF and PP unit-root tests 195–7
dataset 193
extended ADF regressions with one and two structural breaks 197
first estimate of the break dates 193–5
GLS-based unit-root test with one and two structural breaks 197–201
implications for commodity risk management 201–3
structural models
of commodity prices 1–6, 7
of non-storables' prices 7
supply management, physical and financial risk management in 33–49
Supramax index 191
swaps 215

T
T-Bills 288
Term Auction Facility (TAF) 255
Term Commodity Arbitrageur Facility (TCAF) 255
Term Securities Lending Facility (TSLF) 255
Theory of Storage 1–2, 7, 18
time to maturity 17
tradeable renewable certificates *see* green certificates
traditional cost-of-carry model 18
'transmission mechanisms' 223
transparency 53
Triangular Angles Parametrization (TAP) 83, 88
truncation lag parameter 195

U
UBS Equity Risk Appetite Indicator 287
unbiasedness hypothesis 166–7
UNCTAD 219
undersmoothing 28
unhedged stabilization 232
unit root test 183, 185, 192, 193
see also Augmented-Dickey-Fuller; Phillips-Perron tests
United Nations Framework Convention on Climate Change 93, 94
univariate Fourier space-time stepping technique 137
USAID 208

V
Value-at-Risk (VaR) models 10, 25, 37, 38, 41, 165, 177, 179, 283
Variance Gamma (VG) 131, 134, 137, 147
variance–covariance matrix 168
VECM-GARCH model 168, 170
Vector Autoregression (VAR) model 171, 246
Vector Error-Correction Model (VECM) 167, 168, 171
VIX 287

W
weather derivatives 57
West Texas Intermediate (WTI) 186, 187, 188, 195, 201, 203
white certificates 102
Willingness-To-Pay (WTP) 42
World Bank 208, 229

http://www.pbookshop.com