# Index

Merton credit modeling (*cont.*)
  predictive power of default estimates,
    368–371
  term structure, 359–360
  volatility, 297
Merton, Robert, 297
method of block maxima, 234–236
Metropolis–Hastings Algorithm, 259
mezzanine tranche, 319
Michaud, Richard, 153
mixtures of normals, 267, 278
Modified duration, 92
Modigliani and Modigliani ($M^2$) measure, 52
Modigliani–Miller Indifference Theorem,
    402–406
monetary policy, Eurozone, 352–354
money market account, 54
money, functions of, 10–12
moneyness, 276–278
Monte Carlo simulations, 253–258
  comparison to delta-normal, 255
  yield curves, 117
Moody's Analytics, 366
Moody's credit ratings, 341–347, 354–357
Morgenstern, *see* von Neumann Morgenstern
    (VNM) theory
Morini, Massimo, 284–285
mortality risk, 419
mortgages
  convexity hedging, 434–439
  house prices, 310–311
  triggering a run on the bank, 407
moving average (MA) process, 292

natural probability, 68
Nelson–Siegel curve, 107–109
Newton's Method (convex optimization),
    171–173
no-arbitrage, 58–66, 193
nominal rates, 82–84
non-callable coupon bond, 88
nonstationary time series, 290
normal distribution, 211, 267–270
normality, 210
  causes of non-normality, 216–217
  checking with Q-Q and P-P plots, 213–215
  mixtures of normals, 222–226
notional amount, 411

objective function, 159, 161
off-the-run bond, 88
Omega Ratio, 53
on-the-run bond, 88

optimization, *see also* convex optimization, 159
option
  implied correlations, 312–316
option-adjusted spread duration (OASD), 374
option-adjusted spread (OAS), 373
option American call, 270
option-implied volatilities, 312–316
optionality period, 437
options
  call, 273, 274, 286–289
  distribution reshaping, 423–429
  fixed income, 433–434
  option greeks, 429–433
  put, 271, 286–289, 393
  quantity-adjusting (quanto), 391–395
  terminology, 270
  and volatility, 273–276
  volatility skews, 276–278
ordinary least squares (OLS), 155
Ornstein–Uhlenbeck process, 113, 116–119,
    283

P-P (probability-probability) plots, 215
p-values, 147
par curves, 100–102
parameter estimation methods, 139
  Bayes's Rule, 139–142
  resampled efficient frontier, 151–154
  shrinkage estimators, 142–147
  statistical tests, 147–151
passive investors, 189
payer swap, 411
payoff (options), 271, 423–429
peaks over thresholds (POT) method, 240
Pearson correlation, 301–303
  limitations, 303
peril-free arbitrage, 59
perils, 2
periodicity, 289
Perron–Frobenius Theorem, 75
personal preference
  risk, 6–9, 26–31
  utility theory and wealth management, 32
physical settlement, 271, 383
Pickands Theorem, 239, 241
portfolio duration, 96
portfolio insurance, 39–42
positive assets, 132
possibility effect, 35
predictive power of default estimates, 368–371
price system, communication by, 11–12
price takers, 421
prices of risk, 195