

■ **Index** ■

**A**

AAA rating, 251, 268, 277, 278,  
301  
Academic tenure, 44, 45,  
46–49  
scientific research and, 46–49  
AIG, 162  
Alt-A CDOs, 111  
American University (AU), 59,  
60  
Applied research, 53  
*The Apprentice*, 55  
Arthur D. Little (ADL), 180  
Asian crisis (1997), 7, 21, 257  
Asset-Backed Securities (ABS),  
114, 115–16  
Asset correlation, 102  
Avila, Maria, 131

**B**

Bank of America, 141  
Bank of England, 215  
Bankruptcy  
Enron, 7  
Lehman Brothers, 140  
WorldCom, 7

**Banks**

creation of Chief Modeling  
Officer position in, 74  
investment, 96, 111  
models and, 73  
value at risk and, 128  
Barclays Capital, 123, 161  
Barrier options, 215, 221–22  
call for ban of, 215  
dynamic hedging of,  
216–17  
trading of, 215  
Basel Capital Accord, 155  
Basel capital rules, 135  
Bear Stearns, 19, 130, 134, 135,  
137, 302  
fall of, 139  
value at risk, divulging of,  
137–38  
Berkshire Hathaway, 167, 168,  
256  
Bin Laden, Osama, 214  
Black, Fischer, 42, 52–56, 64,  
180, 181, 187, 201  
Black-Derman Toy model, 64  
Black-Litterman model, 64

- Black Monday (October 1987),  
8, 12, 18, 172, 175, 205–11,  
246, 283, 286, xxiv
- Black-Scholes and, 206–14
- dynamic hedging techniques  
and, 215–19, 271
- Nobel Prize and, 312
- Options Clearing Corporation  
as consequence of, 283–84
- trading activities as factor of,  
205
- volatility smile before and after,  
202
- Black-Scholes-Merton formula  
(BSM), 112, 178–92, 201–4,  
211, xiii, xiv, xliii, xv, xvi,  
xxxviii
- campaign against, 236–37
- criticism of, 222–25
- critique of, xxxi
- Nobel Prize, power of, 312–15
- option pricing before, 229–32
- as pricing formula, 189
- questioning necessity of,  
225–29
- supremacy of, 232–36
- as theoretical finance  
construct, 190–92
- Black-Scholes option pricing  
formula, 72, 103, 106, 110,  
121, 172, 175, 183, 288,  
xiii, xlvi, xxii, xxiv–xv,  
xxxiii, xxxvii
- as consensus pricing model,  
199
- conundrum, 177–242
- limitations of, 192–201
- limits of mathematics and,  
197–98
- negation of, 280
- portfolio insurance and,  
271–72
- self-correcting mechanism in,  
199
- volatility smile and, 193–201,  
201–4
- Black Swans, 8, 10, 18, 19, 21,  
25, 117, 155, 162, 163, 239
- Buffett, Warren and, 167
- credit crisis and, 258–61
- deceit and, 245–65
- derivatives and, 261–63
- double deceit and, 258–61
- failure to predict, 21–22
- finance theory and, 10
- hedge funds and, 249
- Long Term Capital  
Management and, 252–56
- The Black Swan* (Taleb), 247
- Bond market meltdown (1994),  
7
- Bonds, 102
- Boness, James, 186, 230, 231,  
314
- Bouton, Daniel, 169
- Brady Commission, 208
- Breaches, preventing, 136–37
- Bretton Woods system, 62, 228,  
295
- failure of, 229
- Bruce-McClane, John, 72
- Budget deficit, Vickrey, William  
and, 26
- Buffett, Warren, 167, 256, 310
- Business academics, 33–37
- theorization of, 34
- Business finance, evolution to  
financial economics, 29–58

INDEX

■ 341 ■

- Business schools, xxx
  - academic tenure and, 44, 45, 46–49
  - criticism against, 31
  - finance departments in, 49–52
  - financial economists and, 30–31
  - Ford Foundation and, 34, 35
  - foundational structure of, 31
  - human behavior models and, 37
  - job opportunities and, 50–52
  - mathematics in, 40–41
  - Nobel Prize winners and, 40–41
  - student loans for, 50
- C**
- Capital Asset Pricing Model (CAPM), 180–86, 188, 230, 270, 313
- Carnegie Foundation, 34, 36, 49, 73
- Carnegie Tech Graduate School of Industrial Administration, 39
- Cassidy, John, 26
- Charlatanism, 128
- Chicago Board of Trade (CBOT), 227
- Chicago Board Options Exchange (CBOE), 187, 214, 227, 287, 288, 290, xliii, xlvi
- Chicago Mercantile Exchange (CME), 213–14, 227–28
- Chicago School, 26
- Chief Modeling Officer, creation of position, 74
- Chriss, Neil, 75–76
- Churchill, Winston, 30
- Citigroup, 141
- Clearing Corporation, of CME, 213
- Collateralized debt obligations (CDO), 101, 103, 108, 110, 112, 113, 114, 115, 117, 119, 126, 164, 249, 260, 268, 301
  - subprime, 133
  - tranches, 144, 282
- Competitive advantage, 192
- Complexity disguise, 256–58
- Computer programming, quant finance and, 68–69
- Computer revolution
  - IBM and, 61–62
  - quant finance and, 61
- Correlation crisis, 103, 106–10
- Correlation smile curve, 121
- Cox, Jennings, 203
- Credit crisis, 113, xxvi–xxxv
  - of 2007, 7
  - aspects of, 110–19
  - Black Swans and, 258–61
  - financial risk and, 149–50
  - Gaussian Copula model and, 119–21
  - Lehman Brothers and, 139–40, 161
  - mathematics and, 170–72
  - as perfect storm, 246–50
  - rating agencies and, 268–69
  - reasons for, 99–102
  - value at risk and, 19–21, 128, 130, 134–40

- Credit models, 121–26  
Credit ratings, as flawed  
    methodology, 251  
Credit Suisse, 135, 158  
    VaR exceptions of, 143  
Currency markets, 219–22
- D**
- Daiquiri cocktail analogy,  
    203–4  
Das, Satyajit, 61  
Decision making  
    factors affecting, 15  
    mathematics and, 27  
    statistics and, 27  
de la Vega, Joseph, 226  
Delta hedging, 189, 216  
Delta ratio, 103  
    hedge, 105  
Derivatives, 59, 61, 294–96  
    Black-Scholes-Merton formula  
        and, 226  
    Black Swans and, 261–63  
    as a business, 262–63  
    exotic, 68  
    forecasting and, 294  
    public relations and, 296  
    revolution, 95  
    value, 314  
Derman, Emanuel, 4, 26, 53,  
    65–68, 71, 75, 81, 88–89,  
    90, 202, 203  
DE Shaw, 78, 81, 85  
Dewing, Arthur Stone, 37  
Diller, Stanley, 63  
Distance to default, 124  
Donaldson, Lufkin & Jenrette  
    (DLJ), xliii
- Dow Jones, 32, 82, 107, 152,  
    162, 205, 206, 228  
    setback (1986), 235  
Duffie, Darrell, 124  
Durand, David, 39  
Dynamic hedging, 215, 233–35,  
    238, 275, 278, 282, 313,  
    315  
    of barrier options, 216–17  
    as cause of Black Monday, 271  
    normality assumption and, 283  
    Platonicity and, 233  
    of reverse knock-outs, 217  
    theory of, 280
- E**
- Econometrics, economics *versus*,  
    18  
Economics  
    econometrics *versus*, 18  
    Nobel Prize in, 305–18  
*Economist*, 29  
Economists, “physics envy” and,  
    3  
Efficient markets, 214  
Einhorn, David, 128, 130  
Einstein, Albert, xx  
Engle, Robert, 42  
Enron bankruptcy (2001), 7, 268  
Equity, 102  
    mezz *versus*, 103, 108  
    slice, 104  
Europe, UBS in, 253  
European Exchange Rate  
    Mechanism, 12  
*Euthyphro* (Plato), xii, xiii, xiv, xvi  
Exotic derivatives, 68  
Extremistan, 8, 9

INDEX

■ 343 ■

**F**

- Fannie Mae, 93
  - Fat Tony example (Taleb),  
297–303
  - Federal Reserve, 254
  - Federer asset price, 8
  - Filer, Herbert, 226
  - Finance
    - necessity of theorems in, 94
    - quantification of, 59–90, 95
    - quantitative, 96
    - quantitative tools and, 94
  - Finance departments, in business  
schools, 49–52
  - Finance theory, 252
    - Black-Scholes-Merton formula  
and, 315–18
    - Black Swans and, 10
    - dangers of, xlvii
    - frailty models and, 123
    - modern, 58
    - Nobel Prize and, 308
    - normality assumption and, 282
    - opinions on, 277–82
    - personal goals and, 245
    - placidity and, 283
    - reinforcement of, 25
    - value at risk and, 129
  - Financial economics
    - Black, Fischer and, 53
    - business finance to, 29–58
  - Financial institutions, creation of
    - Chief Modeling Officer  
position in, 74
  - Financial models, drawbacks of,  
10–11
  - The Financial Policy of Corporations*  
(Dewing), 37
  - Financial theory
    - philosophical backbone of,  
164–65
    - ruled by Normality, 13
  - Fixed exchange rates, Bretton  
Woods system, 62
  - Fixed-income securities, 102
  - Ford Foundation, 34, 35, 36, 49,  
73
  - Forecasting, 4, 86
    - derivatives, 294
    - errors in, 7
    - volatility, 289, 292
  - Foreign exchange markets,  
219–22
  - Formalism, 26, 29
  - Formulas
    - Black-Scholes-Merton formula  
as pricing, 189
    - option pricing, 186–89
  - Frailty factor, 122
  - Frailty model, 122–26
  - Frailty models
    - finance theory and, 123
    - risk management and, 126
  - Freddie Mac, 93
  - Friedman, Milton, 26, 29, 38,  
42
  - Funds
    - hedge, 43, 61, 74, 96, 128,  
249
    - quant, 17, 76
- G**
- Galbraith, John Kenneth, 22
  - Gann, W.D., 226
  - GARCH models, 174, 261, 263
  - Garten, Jeffrey, 44

- Gaussian Copula model, 99–100, 102–3, 107, 109, 111, 112, 117–18, 119, 122, 125, 132, 162, 164, 175, 270, 276, 299, xxxviii
  - credit crisis and, 119–21
  - normality assumption and, 283
  - One-Factor, 101
- Geometric Brownian Motion, 179
- Girsanov theorem, 198, xii–xiii
- Gladstein, Mathew, xliii–xlvi
- Goldman paper, 290
- Goldman Sachs, 25, 50, 55, 63, 64, 75, 89, 135, 142, 246, 290, 291
- Goldstein, Ramy, 253
- Gordon-Howell report, 34, 43
- Government securities, 270
- Grants, for business schools, 35
- Great Depression. *See* Market crash
- Greenspan, Alan, 74, 213
- H**
- Haug, Espen, 191, 204, 222–25, 229, 230, 235, 236, 239–42, 289
- Hedge funds, 43, 61, 74, 96
  - Black Swans and, 249
  - value at risk and, 128
- Hedging
  - Black-Scholes and, 207
  - dynamic, 215, 233–35, 238, 275, 278, 282, 313, 315
- Heritage Foundation, 23
- Hibon, Michelle, 24
- Highbridge Capital Management, 85
- High-yielding loans, 132
- Historical data, 14–21
  - predicting market movements with, 15
  - value at risk and, 154–55
- Historical value, for value at risk, 154–55
- Horn, Roy, 168
- Hughes, Ian, 281
- Hybrid portfolio management, 77
- I**
- Iatrogenic risk, 271
- IBM, 61–62
  - volatility of, 193–94
- Illiquid securities, 130
- Implied correlation, 106
  - decline in, 107
- Implied volatility, 106, 223, 262, 289, 290
- Incremental Risk Charge, 157
- International Monetary Fund (IMF), 23
- Internet bubble (2000), xxii
- Investment
  - in equity tranche, 104
  - model-driven strategy for, 76
  - quant, 84
  - quant fund managers and, 78
- Investment banking crisis, 113
- Investment banks, 61, 96, 111
  - in Europe, 253
  - VaR exceptions, 135
- iPhone, release of, 11
- iTraxx, 107

INDEX

■ 345 ■

**J**

Jarrow, Robert, 171  
Jensen, Michael, 181  
Job opportunities, business  
    schools and, 50–52  
Jonas, Stan, 73, 146  
Jorion, Philippe, 146, 149, 151,  
    153  
JPMorgan, 85, 138, 158  
Junk mortgages, defaults on, 132

**K**

Kassouf, Sheen, 186  
Kerviel, Jérôme, 169, 170  
Kerviel risk, 169, 170  
Keynesianism, 26  
Knock-out options, 220  
    necessity of, 219–22  
Koren, Yaron, 9  
Krugman, Paul, 29

**L**

Latin American banking crisis, 7  
Leeson, Nick, 169  
Leeson risk, 170  
Lehman Brothers, 134, 135, 161,  
    302  
    bankruptcy of, 140  
    credit crisis and, 139–40  
Lehman Stories, 137  
Leibowitz, Martin, 62  
Leland, Hayne, 212, 234  
Lending practices, mortgage, xxix  
Leverage, 134  
Levitt, Steven, 56  
Levy distribution, 284  
Lewis, Michael, 257  
Li, David, 104, 121

Liquidations, VaR-dictated,  
    155–56

Lo, Andrew, 7, 19, 175

Loans, 102  
    high-yielding, 132  
    NINJA, 99, 113  
    student, 50

Long Term Capital Management  
(LTCM), 12, 16–17, 21, 63,  
    146, 165–67, 175, 252–56,  
    271, 273–75, 283, 284, 285,  
    286, 289, xlvi

Black Swans and, 252–56  
complexity disguise and,  
    256–58  
fall of, 246, 272  
Nobel Prize and, 312  
normality assumption and, 283  
volatility of, 252

**M**

Makridakis, Spyros, 24  
Malabre, Alfred, 22  
Market crash  
    of 1929, 7, 132, 271  
    of 1987, 7, 205–11, 246, 283  
    (See also Black Monday  
    (October 1987))  
Nasdaq (2000), 7  
normal distribution and,  
    197–98  
possibility of, 13  
Market default correlation,  
    102–6  
Markowitz, Harry, 42  
Marx, Karl, 26  
Masters in Finance program, 172  
Mathematical modeling, 69, 97

- Mathematical prodigies, market and, xlv
- Mathematics
  - Black-Scholes pricing option and, 197–98
  - in business schools, 40–41
  - credit crisis and, 170–72
  - in decision making, 27
- McKinsey, 50
- McLeod, Alistair, 123
- M3-Competition, 24
- M-Competition (1982), 24
- Mediocristan, 8, 9
- Merrill Lynch, 20, 134, 145, 157, 302
  - risk management and, 142
  - value at risk and, 141–45
- Merton, Robert, 177, 183, 184, 185, 233, 253, 272, 274
- MGM Mirage, 168
  - Siegfried and Roy show and, 168
- Miller, Merton, 38, 42
- Miller-Modigliani theory, 175, 190
- Modeling, 4, 100
  - default correlation, 102
  - errors in, 7
  - mathematical, 69, 97
  - quant fund managers and, 66
- Modern Portfolio Theory, 190
- Modigliani, Aldo, 42
- Monte Carlo simulation, 112
- Morgan Stanley, 78, 143, 155
- Morrice, Brad, 131
- Mortgage bail outs, 93
- Mortgages, 102, 259
  - defaulting on, 252
  - junk, 132
  - lending practices, xxix
  - subprime crisis and, 131, 166, 260
- N**
- Nasdaq crash (2000), 7, 175, 265
- Nelson, S.A., 226
- Newton, Isaac, 6, xx
- New York Stock Exchange, 213, 226, xlviii
- Niederhoffer, Victor, 164, 165, 166, 167
- Nietzsche, Friedrich, 309, 310
- Nikkei, 202
- NINJA loans, 99, 113, 301
- Nobel, Alfred, 310, 311
- Nobel, Peter, 310, 311, 316
- Nobel Prize
  - Black Monday and, 312
  - Black-Scholes option pricing formula and, 172, 185, 195, 236, 312–15
  - business schools and, 40–41
  - eliminating in economics, 305–18
  - finance theory and, 308
  - Long Term Capital Management and, 312
  - Sweden's Central Bank and, 311, 312
- Normal distribution, 197
- Normality assumption, 11, 12–14, 164, 225, 248, 274, xxii
  - criticism of, 282–86
  - dynamic hedging and, 283
  - financial theory ruled by, 13
  - Gaussian Copula and, 283

INDEX

■ 347 ■

- Long Term Capital
  - Management and, 283
  - trading and, 251
  - value at risk and, 283
- O**
- Obama, Barack, 301
- O'Brian, John, 212
- Ohio State Fisher School
  - Business, 47
- Olin Business School, 46
- One-Factor Gaussian Copula, 101
- Option industry, birth of modern, 227
- Option pricing
  - before Black-Scholes-Merton formula, 229–32
  - formulas, 186–89
  - supply and demand and, 224
- Options Clearing Corporation (OCC), 283–84
- Option traders, 216
- Option trading, history of, 241
- Ormerod, Paul, 22
- Outliers, 13
- P**
- Payne, Andy, 123
- Perfect storm, credit crisis as, 246–50
- Performativity, of theory, 6
- Pierson report, 34, 43
- Platonism, 42
- Platonism, 183, 185
  - dynamic hedging and, 233
- Portfolio insurance, 207
  - Black-Scholes model and, 271–72
  - fathers of, 234–35
- Portfolio management, hybrid, 77
- Precision, yearning for, 267–96
- Pricing
  - of digital and barrier options, 68
  - option (*See* Option pricing)
- Pricing formula,
  - Black-Scholes-Merton formula as, 189
- Pricing options
  - Black-Scholes formula and, 289
  - Black-Scholes-Merton formula and, 237–42
- Prohibition (1920s), 12, 13
- Pure research, 53
- Q**
- Quant crisis, 82
- Quant finance, 60
  - automation and, 79–82
  - computer programming and, 68–69
  - computer revolution and, 61
  - credit models and, 121–26
  - Derman, Emanuel and, 65–68
  - graduate programs in, 60
  - models, importance of, 73–74
  - revenue and, 63–64
  - role of models in academia
    - versus* trading floors, 71–73
- Quant fund managers, 64
  - academic theorists *versus*, 66
  - Chriss, Neil, 75–76

- Quant fund managers (*Continued*)  
  educational background of, 66  
  Fat Tony example and, 298  
  investment and, 78  
  modeling and, 66  
  professional activities of, 87
- Quant funds, 17, xxxvi  
  activities of, 82–86  
  crisis, 78, 175  
  definition of, 76  
  future of, 79  
  key to, 80  
  performance of, 77–78
- Quantification, of finance, 59–90
- Quantitative finance, 96, 252, 279  
  adherence to, 286  
  defeat for, 119  
  volatility index, 287–93
- Quantitative risk management  
  limitations of, 264  
  pure *versus* applied science and, 265
- Quant screens, 77
- Quant trading, 84
- R**
- Ramirez, Alberto, 131
- Ratings agencies, credit crisis and, 268–69
- Ratings crisis, 113
- Ratings shopping, 118
- Rebonato, Ricardo, 263
- Regulation, value at risk and, 155–59
- Renaissance Technologies, 85
- Research  
  academic tenure and, 46–49  
  applied *versus* pure, 53
- Residential Mortgage Backed Securities (RMBS), 113, 114
- Reverse knock-outs, 217  
  dynamic hedging of, 217
- Risk  
  measurement of, 17  
  value at risk and, 151–52
- Risk management, 59, 87, 299  
  frailty models and, 126  
  limitations of quantitative financial, 264  
  Merrill Lynch and, 142  
  option traders and, 216
- Rosenfeld, Eric, 212
- Rubin, Robert, 64
- Rubinstein, Mark, 212, 234, 235, 314
- Ruble (Russian), devaluation of, 254
- Russia, ruble devaluation in, 254
- Russian default-LTCM crisis, 7, 78, 175, 274–75, 284
- S**
- Safe haven effect, 108
- Salomon Brothers, 62, 75, 212
- Scholes, Myron, 42, 177, 178, 201, 253, 272, 274
- Scientific research, academic tenure and, 46–49. *See also* Research
- SEC. *See* U.S. Securities and Exchange Commission (SEC)
- Securities, government, 270
- Seo, John, 43
- September 11, 2001 terrorist attacks, effects of, 214

INDEX

■ 349 ■

- Sharpe, William, 42  
Shaw, David, 82, 83  
Shreve, Steven, 26  
Simon, Herbert, 39  
Simons, Jim, 78, 82, 83  
Sloan School of Business,  
172–76, 181  
SocGen, 168, 169  
Soros, George, 215  
S&P 500, 10, 18, 25, 106, 111,  
116, 118, 124, 134, 166,  
168, 209, 213, 276, 288, 290  
Sprenkle, Case, 182, 186, 230,  
231, 314  
Standard deviation, 11, 136, 279,  
290  
Standard & Poor. *See* S&P 500  
Static delta hedging, 186  
Statistics, in decision making, 27  
Stern School of Business, 177  
Structured investment vehicles,  
116  
Student loans, 50  
Subprime crisis, 113, 131, 252  
Subprime lending, 123  
Subway reform, Vickrey, William  
and, 26  
Supply and demand, 107  
option prices and, 224  
Sveriges Riksbank. *See* Sweden's  
Central Bank  
Sweden's Central Bank, 23  
criticism of, 317  
Nobel Prize and, 311, 312
- T**  
Tail events, 18  
Taleb, Nassim Nicholas, 7, 10,  
14, 19, 22, 54, 93, 94, 146,  
149, 150, 162, 166, 192,  
200, 204, 222–25, 229, 230,  
235, 236, 239–42, 247, 271,  
289, 295, xxi–xxv  
Fat Tony character,  
297–303  
Tenure, academic, 44, 45,  
46–49  
Theorems  
Girsanov, 198  
necessity of, in finance, 94  
Theory  
dynamic hedging, 280  
finance (*See* Finance theory)  
performativity of, 6  
Traders, 68–70  
Black-Scholes-Merton formula  
and, 224  
Black-Scholes option pricing  
formula and, 196, 291  
option, 216  
Trading  
of barrier options, 215  
Black-Scholes-inspired, 205  
normal strategy, 252–56  
quant, 84  
Trading floors  
models in, 71–73  
quant finance and, 97  
Treydor, Jack, 180, 181, 182  
Trump, Donald, 55
- U**  
UBS, 135, 141  
in Europe, 253  
U.S. Securities and Exchange  
Commission (SEC), 20,  
130, 137  
U.S. Treasury Bills, 124

**V**

Value at risk (VaR), 17, 19, 86,  
126, 127–59, 270, 271, 285,  
xv, xxiv, xxxi, xxxiv, xxxviii  
Bear Stearns and, 137–38  
call for support for, 153  
credit crisis and, 19–21,  
134–40  
defined, 128–29  
destabilizing powers of, 147  
exceptions, 20  
failures of, 129, 145–53  
Fat Tony example and, 302  
as flawed methodology, 251  
flaws in, 128  
historical data and, 154–55  
Long Term Capital  
Management and, 274–75  
low *versus* high, 158–59  
market troubles and, 140–45  
mathematics of, 129  
Merrill Lynch and, 141–45  
normality assumption and, 283  
as regulatory requirement,  
155–59  
role as capital charge setter,  
131–34  
role of, 273  
underestimated figures and,  
133  
weighted, 139  
Value derivatives, 314  
Vanguard Group, 80  
Vickrey, William, 26  
Viniar, David, 12  
VIX. *See* Volatility index (VIX)  
VIX-speak, 287

Volatility, 136, 165, 223  
currency pairs suffering,  
219–20  
European equity index, 253  
forecast, 289, 292  
implied, 223, 262, 289, 290  
of Long Term Capital  
Management, 252  
Volatility fudging, 197, 201, 224  
Volatility index (VIX), 166,  
287–93, xl  
calculation, 290  
as fear gauge, 288  
Volatility smile, 190, 193–201,  
279, xxv  
birth of, 210–11  
before and after Black Monday,  
202  
Black-Scholes option pricing  
formula and, 201–4  
negation of Black-Scholes  
formula by, 280  
Volatility surface, 203  
Vulgarity, 178

**W**

Weighted VaR, 139  
Wilmott, Paul, 26  
World Bank, 59, 117  
WorldCom bankruptcy (2002), 7  
World Economic Outlook  
(IMF), 23  
World War II, 205

**Z**

Zach, Tzachi, termination of,  
46–49



