

# Index

- Absolute benchmarks, 124–125
- Absolute PPP, 534
- Access bias, 441
- Accredited investor, 604
- Accumulated benefit obligation (ABO), 36, 41–42
- Actionable risk management, 587
- Activist investment approach, 542–543, 550
- Administration agreement, 469–470
- Administrative fees, 472
- Agency relationships, 251–252
- Agricultural products. *See also* Farmland investments
  - accessing returns, 260–264
  - biofuels, 260–261
  - direct ownership of land, 262–264
  - reasons for increased demand, 258–260
- Algorithmic-based hedge fund replication, 475, 476, 492–493, 494
- Alpha:
  - in commodities, 329–342
  - estimating, 478
  - in long/short equity strategies, 543–550
  - manager, 631
  - replication products as source of, 479
- Alternative betas, 475, 476, 479–480
- Alternative Investment Fund Managers Directive (AIFMD), 614
- Alternative Investment Management Association (AIMA) due diligence questionnaire, 589–590
- Anchoring, 197, 421
- Annual cropland, 268
- Anomalies, 422
- Appraisal-based indices, 221–224
- Appraisal-based returns, 231–234
- Arbitrage:
  - capital structure, 638
  - cash-and-carry, 304–305
  - convertible (*see* Convertible arbitrage)
  - cross-border, 564
  - and ETFs, 235–236
  - exchange-traded funds, 235–236
  - fixed-income, 638
  - latency, 563
  - limits to, 422–423
  - merger, 636–637
  - smoothing and, 192–193
- Art investments, 288–293, 298
- Asian currency crisis of 1997, 526–528
- Asness, Cliff, 569
- Asset allocation. *See also* Portfolio allocation; Portfolio design
  - bottom-up, 184–185
  - with commodities, 324–327
  - momentum-based, 353
  - naïve allocation, 82
  - pension plans, 30–41
  - strategic, 15
  - tactical, 15, 29–30
- Asset Managers' Committee (AMC) best practices report, 629–630
- Assets under management (AUM), 565–566, 624
- Asset swaps, 515–517
- At-the-money bonds, 506
- At-the-money convertibles, 510
- Audited financial statements, 470
- Audit/reporting/payment due date obligations, 294
- Autocorrelation, 196–198, 199–200
- Bache Commodity Index (BCI), 358
- Backfill bias, 441
- Backtested performance records, 466
- Backwardation, 305, 308, 352, 411–413
- Bad-leaver clause, 74
- Bailey criteria, 121
- Balanced funds, 155–156
- Balanced funds of funds (FoFs), 577
- Bank for International Settlements, 27
- Baring Private Equity Partners (BPEP), 167
- Bear spread, 331
- Behavioral bias, 421
- Behavioral finance, 420–422
- Benchmarking:
  - equity fund portfolios, 130–133
    - commitment-weighted benchmark, 131–132
    - Monte Carlo simulation, 132–133
  - and hedge fund replication, 483–485

- Benchmarking (*Continued*)  
 individual funds, 120–129  
   absolute benchmarks, 124–125  
   Bailey criteria, 121  
   examples, 125–129  
   extended peer group, 124  
   peer-group cohort, 123–124  
   public market equivalent (PME), 124  
   survivorship bias, 122  
 managed futures, 441–443, 452
- Beta:  
 alternative, 475, 479–480  
 bottom-up, 157–158  
 commodities, 343–362  
   direct physical ownership, 344  
   indices, 351–362  
     (*see also* Commodity indices)  
   indirect ownership, 344–350  
   leverage and option-based structures,  
     350–351  
   estimating, 478  
   historical, 154  
   inflation, 23  
   private equity funds, 153–161  
     based on modified and corrected data,  
       158–159  
     based on quoted comparable firms,  
       153–156  
     bottom-up approach, 157–158  
     relative volatility, 157
- Biases:  
 access, 441  
 backfill, 441  
 behavioral, 421  
 look-back, 440  
 personal allocation, 585–586  
 representativeness, 421  
 survivorship, 83, 122, 441, 577, 578
- Binomial tree model, 501–505
- Biofuels, 260–261
- Black box strategies, 571
- Black-Scholes model, 501, 518–519
- Blind-pool investment, 57, 86
- Blue-chip team, 108
- Bond floor, 516
- Bonds:  
 at-the-money, 506  
 busted, 506  
 convertible (*see* Convertible bonds)  
 issued by commodity firms, 345–346  
 zero-coupon, 500
- Book-to-market-value (B/M) ratio, 555
- Bottom-up asset allocation, 184–185
- Bottom-up beta, 157–158, 159
- Bottom-up cash flow projection, 149, 168–169
- Bottom-up hedge fund replication, 492–493
- Bottom-up investing, 541
- Bottom-up portfolio design, 89–91
- Bull spread, 331
- Business cycle, 373–378
- Business cycle hedging, 327
- Busted bonds, 506
- Buyout houses, 155–156
- Buyout transactions, 50  
   business models, 52  
   deal structuring, 52–53  
   management role, 53  
   valuation methods, 53–54
- Calendar spread, 330–331
- Call protections, 499
- CalPERS investment policy, 220
- Capacity constraint, 478, 586
- Capital asset pricing model (CAPM), 151–153,  
 247
- Capital at risk (CaR), 429–430
- Capital calls, 55. *See also* Drawdowns
- Capital drawdowns, 162. *See also* Drawdowns
- Capital-structure arbitrage, 638
- Cap rate, 214–215
- Cap rate spread, 218–219
- Carried interest, 56, 71–72, 78
- Carried-interest split, 75
- Carry trades, 529–533
- Cash-and-call strategy, 351
- Cash-and-carry arbitrage, 304–305
- Cash flow J-curve, 64
- Cash flow projections, 165–174  
   bottom-up approach, 149, 168–169  
   estimates, 166–169  
   forecasts, 166, 169–172  
   scenarios, 166, 172–174
- Cash flow schedules, 161–162
- Cash-flow-to-price (CF/P) ratio, 555
- Catch-up period, 75
- Causal relationships between commodity  
 returns and volatilities, 272–274
- Cause inspections, 611
- Charitable gifts:  
   endowments, 7–8  
   foundations, 8–10
- Chi, 511
- Chief compliance officer, 607–610
- Citigroup Pension Liability Index, 36
- Clawback, 76–77
- Clearing broker, 396, 400–401, 402
- Clones. *See* Hedge fund replication products
- Closed-end real estate mutual funds, 245
- Cloud computing, 628
- Code of ethics, 609–610

- Co-integration, 554
- Co-investment, 54
- Collateral, in commodity indices, 353
- Collateral income segregation, 400–402
- Collateral yield, 319–320
- College and university endowments, 7–8
- Commercial real estate, 186, 208–220, 226, 244–245. *See also* Real estate investment trusts (REITs)
- cap rates, 214–215
- closed-end mutual funds, 245
- core properties:
  - defining, 208, 212
  - expected return, 216–217
  - risk, 217–218
- NCREIF styles, 208–210
  - attributes of, 210–212
  - reasons for, 211–212
  - risk and return estimates for, 215–220
- opportunistic properties:
  - defining, 209–210, 212
  - risk premium approach to return estimates, 218–220
- options and futures on real estate indices, 244
- price discovery, 223–224
- private, 188–189
- real estate indices
  - (*see* Real estate indices)
  - risk management, 231–245
  - style boxes, 213–214
  - value-added properties:
    - defining, 208–209, 212
    - risk premium approach to return estimates, 218–220
- Commercial real estate indices, 228–229
- Commitments, 55
- Commitment-weighted benchmark, 131–132
- Commodities. *See also* Commodity futures; Commodity indices; Commodity trading advisers (CTAs)
  - agricultural, 270–274
  - alpha delivery in, 329–342
  - beta with, 343–362
  - and business cycle behavior, 373–378
  - cash-and-carry arbitrage, 304–305
  - convenience yield, 303–304
  - correlation spreads, 332–337
  - cost of carry, 304–305
  - crack spreads, 332–336
  - crush spreads, 336
  - debt-based strategies, 339
  - directional strategies, 329–330, 339–341
  - direct physical ownership, 344
  - due diligence (*see* Commodity portfolio strategies)
  - equity-based strategies, 338–339
  - and exchange rate movements, 371–373, 378
  - forward curves (*see* Commodity forward curves)
  - front-month equivalent (FME), 383
  - futures markets (*see* Commodity futures)
  - indirect ownership, 344–350
    - bonds, 345–346
    - commodity debt investments, 347–348
    - commodity index swaps, 344–345
    - commodity partnerships, 346–347
    - ETNs, 348
    - hedge-funds, 348–349
    - index-linked notes, 348
    - mutual funds and ETFs, 346
    - public commodity-based equities, 345
    - trade and production financing, 349–350
  - as inflation hedge, 364–371
  - inventory adjustments, 416–418
  - investment product development, 343
  - leveraged and option-based structures, 350–351
  - location spreads, 337–338
  - macroeconomic influences on, 363–378
  - major articles and studies, 316–319
  - markets overview, 301–302
  - portfolio strategies (*see* Commodity portfolio strategies)
  - processing spreads, 337
  - quality spreads, 337
  - relative value strategies, 329, 330–338
    - bear spread, 331
    - bull spread, 331
    - calendar spread, 330–331
    - correlation spreads, 332–337
    - dimensions of, 330
    - fundamental analysis, 339–341
    - time spreads, 330–332
  - research highlights, 315–316
  - risk management (*see* Commodity portfolio strategies)
  - role in asset allocation, 315–327
  - statistical properties of prices, 320–324
  - storable, 416–418
  - substitution spreads, 336–337
  - transportation and storage strategies, 338
- Commodity beta, defined, 352
- Commodity derivatives, 338
- Commodity forward curves, 305–314
  - liquidity preference hypothesis, 310
  - normal backwardation/preferred habitat, 308–309
  - option-based models, 311
  - rational expectations models, 306–308
  - segmented markets, 310

- Commodity forward curves (*Continued*)  
 speculation and market impacts, 311–314  
 storage models, 309–310
- Commodity futures, 301–302, 312–314,  
 330–338. *See also* Commodity indices;  
 Commodity portfolio strategies;  
 Commodity trading advisers (CTAs)
- collateral yield, 319–320
- derivatives, 338
- and inflation hedging, 363–378
- and interest rates, 373–374
- intramarket relative value strategies, 338
- and options spreads, 330–338
- research into, 316–319
- risk management (*see* Commodity portfolio strategies)
- roll returns, 319–320
- scarcity, 320
- spot returns, 319–320
- statistical properties of prices, 321–323
- Commodity Futures Trading Commission (CFTC), 313, 392
- Commodity index-linked note, 348
- Commodity index swaps, 344
- Commodity indices, 312–313, 346. *See also*  
 Commodity futures
- and asset allocation, 324–327
- business cycle hedging, 327
- event risk hedging, 324–325
- inflation hedging, 326–327
- stock and bond diversification, 325–326
- Bache Commodity Index (BCI), 358
- compared to securities indices, 351–352
- defining, 351
- design issues:
- roll methodology, 354
  - total return vs. excess return, 354
  - value-based vs. quantity-based, 353–354
  - weighting methodology, 355
- Deutsche Bank Liquid Commodity Index (DBLCI), 358–359
- Dow Jones–UBS Commodity Index (DJUBSCI), 355, 356–357, 358
- effects of inflation on, 366–371
- effects of recession on, 377
- enhanced, 357–359
- excess returns, 354, 359, 360–362
- first-generation, 355
- Goldman Sachs Commodity Index (GSCI), 312, 316
- for leverage, 350–351
- Merrill Lynch Commodity Index eXtra (MLCX), 358
- perroll strategies, 357
- roll returns, 319–320, 352, 359, 360–362
- S&P GSCI, 355–356, 357, 358
- sources of returns, 352–353
- spot-based, 355
- spot returns, 359–360
- total return, 354, 359, 360–362
- UBS Bloomberg CMCI Index, 359
- Commodity markets, investor role in, 302–303
- Commodity pool operators (CPOs), 459
- compared to CTAs, 393–394
  - investing in, 392, 393
- Commodity pools, 459
- Commodity portfolio strategies, 379–387
- marking net asset value (NAV), 379–380, 387
  - measuring event risks, 381, 387
  - measuring liquidity risks, 384–385, 387
  - operational risk mitigation, 386–387
  - performance attribution, 385–386, 387
  - stress testing with VaR, 382, 384, 387
- Commodity rights, 339
- Commodity trading advisers (CTAs). *See also*  
 Commodity futures; Managed futures
- benchmarks for, 441–443, 452
  - benefits of, 394–395
  - collateral income and fund segregation, 400–402
  - compared to CPOs, 393–394
  - compared to global macro hedge funds, 522–523
  - CTA funds, 458
  - CTA indices, 435–439, 441, 443–446, 448–451
  - defining, 391, 393
  - discretionary strategies, 407–408
  - foreign currency exposure with, 401
  - funding level, 397
  - historical performance, 435–439, 465
  - investing in, 391–392
  - manager performance, 405–406
  - margin requirements, 395–396
  - margin-to-equity ratios, 402
  - notional level, 398
  - program structuring, 454–455
    - active management costs, 470–472
    - allocation levels, 454–455
    - candidate sourcing, 453
    - CTA funds vs. multi-CTA funds, 458–459
    - due diligence, 468–470
    - fund documents, 469–470
    - investment monitoring, 470
    - managed accounts, 459–463
    - management fees, 459
    - platforms, 463
    - portfolio diversification, 455–458
    - quantitative manager analysis, 464–468
    - risk/return analysis, 464–468

- single vs. multi-CTA fund, 454
- summary of approaches, 464
- relative value strategies, 407
- returns with, 396–400
- risk measures, 427–435 (*see also* Risk measures)
  - margin requirements, 427–429
- sample portfolio, 398
- strategies used by, 408–413
- trading level, 397, 399
- trend-following strategies, 406–407, 408, 413–415
- Commodity weights, 353
- Community foundations, 9
- Compliance, 606–610, 629
  - annual review, 609
  - code of ethics, 609–610
  - policies and procedures, 607
  - record keeping, 609
  - written communications/advertisements, 608–609
- Component valuation approach, 500–501
- Concentrated funds of funds (FoFs), 577
- Confirmation bias, 421
- Consumer Price Index (CPI), 11
- Consumer surplus, 304
- Contango, 305, 311, 352
- Contingent yield curve steepening, 535–536
- Contractually limited life, 55
- Contrarian strategies, 416
- Convenience yield, 303–304, 408–409, 411
- Conversion premium, 500
- Conversion price, 499
- Conversion ratio, 499
- Convertible arbitrage, 493, 497–519. *See also* Convertible bonds
  - asset swaps, 515–517
  - bond states, 506–507
  - bond valuation, 500–507
  - due diligence, 633–636
  - evolution of, 497–498
  - example of, 511–515
  - fund strategies, 633–634
  - and global financial crisis, 518
  - Greeks, 507–511
  - leverage and, 518, 636
  - Lipper Convertibles, LP, 634–635
  - liquidity in, 636
  - risk parameters, 635
  - terminology, 498–500
- Convertible bonds. *See also* Convertible arbitrage
  - defined, 498
  - four states of behavior, 506–507
  - valuation methods:
    - binomial model, 501–505
    - Black-Scholes model, 501, 518–519
    - component approach, 500–501
    - zero-coupon, 500
- Convertible preferred shares, 500
- Convertible price, 499
- Coproduction financing, 283
- Core properties. *See also* Commercial real estate
  - defining, 208, 212
  - expected return, 216–217
  - risk, 217–218
- Corporate actions, 546
- Corporate equity financing, 283
- Corporate foundations, 9
- Corporate governance, 69–70
- Corporate governance investment approach, 542–543
- Corpus, 7
- Correlation spreads, 332–337
  - crack spreads, 332–336
  - crush spreads, 336
  - processing spreads, 332
  - quality spreads, 337
  - substitution spreads, 336–337
- Cost-averaging approach, 99
- Cost of carry, 304–305
- Cost-of-carry model, 409–411
- Cost-of-living adjustment (COLA), 42
- Covered interest rate parity, 530
- Crack spreads, 332–336, 381
- Crop yield, 262–263
- Cross-border arbitrage, 564
- Cross-border real estate investing, 253–255
- Crush spreads, 336
- CTA funds, 458. *See also* CTA indices
- CTA indices, 435–439, 441, 443–446, 448–451
- CTAs. *See* Commodity trading advisers (CTAs)
- Currency hedging, 592
- Currency markets:
  - directional currency trades, 524–526
  - emerging markets, 526–528
  - purchasing power parity (PPP), 524, 534
  - trading models for, 528–535
    - carry models, 528, 529–533
    - momentum models, 533–534
    - trend-following models, 533–534
    - value models, 534–535
    - volatility models, 534–535
- Currency risk, 254, 276–277
- Data examining/cleaning, 560
- Data gathering, 559–560
- Data mining, 418

- Data snooping, 418
- Deal-by-deal carried interest, 71–72
- Dealer sales, 239
- Deal sourcing, 109–111
- Decomposition, 554
- Deep-in-the-money bonds, 506
- Deep-out-of-the-money bonds, 506
- Defaulting investor, 116
- Default risk, 339
- Deferral of taxes, 249–250
- Defined benefit (DB) pension plans, 34–43
  - accumulated benefit obligation (ABO), 36, 41–42
  - asset allocation, 40–41
  - compared to defined contribution (DC) plans, 44–45
  - compared to social security plans, 43
  - defining liabilities, 35–36
  - frozen/terminated, 39
  - funded status, 36–37
  - liability-driven investing (LDI), 41–42
  - portability of benefits, 35
  - projected benefit obligation, 36, 41–42
  - required return assumption, 38
  - surplus risk, 37
- Defined contribution (DC) pension plans, 43–46
  - drifting asset allocation, 45
  - portability of benefits, 44
  - target-date funds, 46
- Delta, 507–509, 512–514
- Depreciation tax shields, 248–249
- Derivatives:
  - commodity derivatives, 338
  - in long/short equity strategies, 632
- Deutsche Bank Liquid Commodity Index (DBLCI), 359
- Directional currency trades, 524–526
- Directional strategies, 329–330, 339–341
- Direct ownership of land, 262–264
- Disaggregated Commitments of Traders (DCOT), 313
- Discount rates, 151–159
  - capital asset pricing model (CAPM), 151–153
  - private equity beta, 153–159
- Discretionary strategies:
  - commodities, 407–408
  - equity hedge funds (*see* Long/short equity strategies)
- Disposition effect, 421
- Distressed bonds, 506
- Distressed securities funds, 642–644
- Distributions, defined, 56
- Distributions in kind, 163
- Distribution to paid-in ratio (DPI), 120, 126
- Distribution waterfall, 67, 75–77
- Diversification. *See also* Naïve diversification; Portfolio allocation
  - commodities, with stocks and bonds, 325–326
  - in commodity indices, 353
  - with CTAs, 394, 454
  - with funds of funds (FoFs), 590–591
  - and hedge fund replication products, 483
  - in private equity funds, 95–97
  - vintage-year, 99
- Dodd, David, 543
- Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (the Dodd-Frank Act), 604, 613
- Dormant cash, forgone interest on, 471
- Dow Jones–UBS Commodity Index (DJUBSCI), 355, 356–357, 358–359
- Drawdowns, 55, 162, 164, 165, 170. *See also* Capital calls
- Drifting asset allocation, 45
- Due diligence:
  - in commodity portfolios (*see* Commodity portfolio strategies)
  - in funds of funds (FoFs), 574, 588–590
  - hedge funds (*see also* Operational due diligence)
    - convertible arbitrage, 633–636
    - distressed securities, 642–644
    - emerging markets, 639–640
    - fixed-income arbitrage, 637–639
    - long/short equity, 630–633
    - merger arbitrage, 636–637
    - multistrategy funds, 640–642
  - investment vs. operational, 468–470
  - in manager selection, 111–116 (*see also* Manager selection)
    - operational (*see* Operational due diligence)
  - process due diligence, 622–623
  - strategy-specific issues (*see* Strategy-specific due diligence)
- Durable assets, 302
- Dynamic asset allocation, 352–353
- Dynamic delta hedging, 512
- Dynamic strategy, 351
- Early-stage venture capital, 49–50
- Earnings-to-price (E/P) ratio, 555
- Economic assets. *See* Real assets
- Economic terms clauses, 67
- Efficient market hypothesis, 413–415, 420
- Ellis, Charles, 30
- Emerging markets, 526–528, 549, 639–640
- Emerging team, 108
- Empirical data, 165

- Endowments:
- acceptance of liquidity risk, 19
  - aggressive asset allocation in, 15–16
  - asset allocation comparisons, 13
  - defined, 7
  - endowment model, 12–20, 24–25, 27
  - exposure to alternative investments within, 13
  - first-mover advantage, 17–18
  - foundations, 8–10
  - historical manager behavior, 21–24
  - inflation risk, 23
  - intergenerational equity, 10, 21, 23
  - liquidity issues, 24–27
  - manager selection importance, 16–17
  - network effect, 18–19
  - principal-agent conflict, 13–14
  - rebalancing, 28–30
  - returns of, 11
  - spending rate, 10–11, 21–24
  - strategic asset allocation in, 15
  - tail risk in, 30–32
- Enhanced commodity indices, 357–359
- Enterprise value, 339
- Equalization fees, 100, 105
- Equity market neutral (EMN) funds. *See* Quantitative equity market neutral (EMN) strategies
- Equity options hedges, 31–32
- Equity proxy bonds, 506
- Equity REITs, 187–188
- Equity risk premium, 153
- Established team, 108
- Ethics code, 609–610
- European Central Bank, 535–536
- European Currency Unit (ECU), 524–526
- European Monetary System (EMS), 524–526
- Event risk, 324–325, 381, 387
- Event risk hedging, 324–325
- Excess return index, 354
- Excess returns, 354, 359, 360–362
- Exchange Rate Mechanism (ERM) crisis of 1992–1993, 524–526
- Exchange rate risk, 529
- Exchange rates, commodities and, 371–373, 378
- Exchange-traded funds (ETF) arbitrage, 564
- Exchange-traded funds (ETFs)
- and arbitrage, 235–236
  - based on real estate indices, 244–245
  - commodity-based, 346, 348
- Exchange-traded notes (ETNs), 348
- Exclusivity responsibilities, 294
- Expansion, 376
- Expansion-stage venture capital, 50
- Expected economic value, 114
- Expected future spot prices, 411–413
- Expiration risk, 298
- Exponential smoothing method, 431
- Exposure inertia, 485
- Expropriation, 258
- Extended peer group, 124
- External events, 628–629
- Externalities, 280
- Factor-based hedge fund replication, 475, 483–488, 493
- Factor-based informational inefficiency, 549
- Fama-French three-factor model, 567
- Farmland and timberland indices, 229
- Farmland investments:
- agricultural products, 258–264
  - background and motivations for, 257–258
  - and commodity price volatility, 270–274
  - direct ownership of land, 262–264
  - farm subsidies, 263–264
  - principal components analysis, 269
  - return factors, 264–270
  - standard regression analysis, 266–268
- Farm subsidies, 263–264
- Feedback, 421
- Feedback-based global macro managers, 523–524
- Fees. *See also* Management fees/costs
- in funds of funds (FoFs), 591, 592
  - of hedge fund replication products, 482
  - hedge funds, 624–625
- Field of use provisions, 294
- Film production and distribution, 281–288, 298
- costs and financing, 282–284
  - estimating relationship of returns to film production, 286–288
  - life cycle/stages, 282
  - revenue and profit studies, 284–286
  - revenues from, 281–282
- Financial assets, 302
- Financial crisis. *See* Global financial crisis
- Financial statements, audited, 470
- Firm-specific informational inefficiency, 548–550
- First-mover advantage, 17–18
- First-order autocorrelation, 196–198
- Fisher effect, 189
- Fixed-income arbitrage, 637–639
- Floor value, 351
- Follow-on funding, 163
- Foreign currencies. *See* Currency markets
- Foreign exchange risk, 395, 632–633
- Foreign investment, real estate, 253–255
- Forgone interest on dormant cash, 471

- Forgone loss carryforward, 471  
 Form 13F filings, 550, 604, 633  
 Form ADV, 606  
 Form PF, 613  
 Forward curves, 383. *See also* Commodity forward curves  
 Forward strategies, 386  
 Foundations, 8–10  
   return targets, 12  
   spending rate, 11  
 Fraud responsibilities, 587–588  
 Fraud risk, 619–620  
 Front-month equivalent (FME), 382–383  
 Frozen pension plan, 39  
 Fundamental analysis, in quantitative strategies, 555–556  
 Fundamental directional strategies, 329–330  
 Fundamental equity hedge fund strategies, 539–552. *See also* Long/short equity strategies  
 Fundamental indicators, 555–556  
 Fund-as-a-whole carried interest, 71–72  
 Fund bubble hypothesis, 478  
 Funded status, 36–37  
 Funding level, 397  
 Funding sources, 163–164  
 Fund manager, relationship life cycle with investor, 59–62  
 Fund manager selection. *See* Manager selection  
 Fund monitoring. *See* Monitoring funds  
 Fund-raising cycle, 56  
 Fund selection. *See* Asset allocation; Portfolio allocation; Portfolio design  
 Funds of funds (FoFs), 54–56, 571–601  
   benefits of, 590–593  
   disadvantages of, 592–593  
   diversification and intermediation, 58  
   due diligence in, 588–590  
   fees associated with, 591, 592  
   functions of, 573–574  
   incentives, oversight, and agreements, 59  
   industry asset allocation, 576  
   industry growth, 574–575  
   inflows/outflows, 574, 575  
   as intermediaries, 56–58  
   lack of bias in, 577  
   manager selection, 586, 591  
   performance, 578, 579, 580  
   portfolio construction, 578–586  
     equally risk-weighted strategy, 583, 584  
     equally weighted strategy, 582, 583  
     mean variance optimization, 583, 584–585  
     personal allocation biases, 585–586  
     skew and kurtosis reduction, 585  
     strategy weighting, 581–586  
   resources and information, 58–59  
   risk management, 586–588  
   selection skills and expertise, 59  
   strategy types, 577  
   value-added, 58–59  
   value comparison to single hedge funds, 593–597  
 Futures. *See also* Commodity futures; Managed futures  
   agricultural, 261  
   long-maturity, 353  
   on real estate indices, 244  
 Futures commission merchant (FCM), 391, 393  
 Futures curve positioning, 354  
  
 G20 Study Group on Commodities, 313  
 Gamma, 447, 509–510  
 Gap financing, 283  
 Gating provision, 625  
 General investment proposal, 68  
 Generalists, 542  
 General partner (GP), 55, 67, 623  
   life cycle stages, 60–61, 65  
   and limited partner relationship life cycle, 59–62  
 Global financial crisis, 518, 521  
   effect on endowment funds, 12, 27  
   lessons from, 27  
   and liquidity issues, 24, 27  
   rebalancing from, 29  
   unsmoothing of returns, 198–205  
 Global macro hedge funds, 521–537  
   compared to CTAs, 522–523  
   compared to tactical allocation, 30  
   contingent yield curve steepening, 535–536  
   currency trading models, 528–535  
   discretionary vs. systematic management, 522–523  
   directional currency trades, 524–526  
   and emerging markets, 526–528  
   feedback-based management, 523  
   information-based management, 523  
   model-based management, 523  
   multistrategy, 524  
   risk management, 536–537  
 Global regulation, 614–616  
 Going direct, 54  
 Goldman Sachs Commodity Index (GSCI), 312, 316, 355–356, 357, 358  
 Good-leaver clause, 74  
 Governmental social security plans, 43  
 Grading-based economic model (GEM), 149–150  
 Grading of funds, 114–115  
 Graham, Benjamin, 543

- Granger causality, 272
- Greeks, 507–511
- chi, 511
  - delta, 507–509
  - gamma, 509–510
  - omicron, 511
  - phi, 511
  - rho, 511
  - theta, 510
  - upsilon, 511
  - vega, 510
- Gross exposure, 631
- Hammer prices, 289
- Hard call, 499
- Hard lockup provision, 625
- Harvard University endowment, 21, 25, 26, 27
- Harvesting period, 162
- Hayes, Brian, 569
- Hedge fund indices, 573, 574, 598–601
- investable, 599–601
  - noninvestable, 598–599
- Hedge fund replication products:
- algorithmic (bottom-up) approach, 475, 476, 492–493, 494
  - basis for, 477–480
    - capacity constraint hypothesis, 478
    - fund bubble hypothesis, 478
    - increased allocation to active funds hypothesis, 478
  - factor-based approach, 475, 483–488, 493
  - overview, 494–495
  - payoff distribution approach, 475, 488–492, 493
  - potential benefits, 476–477
    - as a source of alpha, 479
    - as a source of alternative beta, 479–480
    - unique benefits, 480–483
- Hedge funds. *See also* Hedge fund strategies
- approaches for accessing, 573–575
  - assets under management (AUM), 624
  - basket approach, 31–32
  - best practices, 629–630
  - cash movement in, 626
  - client profile, 625–626
  - commodity-based, 348–349 (*see also* Commodities)
  - due diligence (*see* Operational due diligence; Strategy-specific due diligence)
  - equity options hedges, 31–32
  - fee structure, 624–625
  - idea generation, 627–628
  - inflows/outflows, 574, 575
  - long-biased, 349
  - long/short equity strategies (*see* Long/short equity strategies)
  - manager selection, 619–621
  - operational due diligence (*see* Operational due diligence)
  - organizational structure, 623
  - ownership structure, 623–624
  - portfolio construction, 630
  - regulation (*see* Regulation)
  - technology issues, 628
  - value comparison to funds of funds (FoFs), 593–597
  - withdrawals and redemptions, 625
- Hedge fund strategies:
- convertible arbitrage (*see* Convertible arbitrage)
  - distressed securities, 642–644
  - emerging markets, 526–528, 639–640
  - equity funds (*see* Long/short equity strategies; Quantitative equity market neutral (EMN) strategies)
  - fixed-income arbitrage, 637–639
  - funds of funds (*see* Funds of funds (FoFs))
  - global macro (*see* Global macro hedge funds)
  - long/short equity (*see* Long/short equity strategies)
  - merger arbitrage, 636–637
  - multistrategy funds, 640–642
- Hedging:
- business cycle, 327
  - with commodities, 345
  - defining, 303
  - event risk, 324–325
  - in hedge fund replication products, 482
  - inflation, 326–327
- Hedonic price estimators, 289, 290
- Hedonic price index, 225
- Herding, 421
- Heterogeneity, in real estate, 182, 183
- Higher Education Price Index (HEPI), 11
- High-frequency trading (HFT), 556
- Histograms of real estate returns, 231
- Historical beta, 154
- Historical risk premiums, 153
- Holding period, 556
- Hurdle rate, 56, 72–73, 75
- Hybrid bonds, 506
- Idiosyncratic risk, 152
- Illiquidity risk, 24–25, 297
- Impact cost, 383–385
- Improvements provisions, 294
- Incentive fees, 73
- Income returns, 319–320

- Increased allocation to active funds hypothesis, 478
- Incubators, 155–156
- Independent foundations, 9–10
- Index-linked notes, 350
- Indices:
- appraisal-based, 221–224
  - commodities (*see* Commodity indices)
  - CTA, 435–439, 441, 443–446, 448–451
  - desirable properties of, 598
  - farmland and timberland, 229
  - of hedge funds (*see* Hedge fund indices)
  - managed futures, 392
  - mortgage, 230
  - NCREIF, 228–229, 236–237
  - non-appraisal-based, 224–226
  - private commercial real estate, 228–229
  - real estate (*see* Real estate indices)
  - transaction-based, 226, 229
- Indirect commodity investments, 344–350
- Inflation, 21–24
- anticipated vs. unanticipated, 189–190
  - unexpected, 369
- Inflation beta, 23
- Inflation hedging, 326–327, 364–371
- Inflation-protected bonds, 42
- Inflation risk, 23
- Information-based global macro managers, 523
- Information ratio, 434
- Initial lockup periods, 625
- Initial margin, 427, 428
- Inspections, 610–612
- Instant history bias, 441, 577
- Intangible assets. *See* Intellectual property (IP)
- Integrity, 619
- Intellectual property (IP), 279–298
- art investments, 288–293, 298
  - characteristics of, 279–281
  - film production and distribution, 281–288, 298
    - costs and financing, 282–284
    - estimating relationship of returns to film production, 286–288
    - life cycle/stages, 282
    - revenue and profit studies, 284–286
    - revenues from, 281–282
  - mature IP, 279
  - mezzanine IP lending, 297
  - patent investments, 293–294
    - acquisition and licensing strategies, 294
    - enforcement and litigation strategies, 294–295, 296
    - sale license-back (SLB) and financing strategies, 295–297
  - patents:
    - investing risks, 297–298
    - sales and pooling, 297
  - securitization, 295
  - unbundled IP, 279
- Interest rate parity, 530–532
- Interest rates, and commodity prices, 373–374
- Intergenerational equity, 10, 21, 23
- Interim internal rate of return (IIRR), 117–120, 126, 147–148
- Internal rate of return (IRR), 117–120, 126, 147–148
- International real estate investing, 185–186, 253–255
- In-the-money, 500
- Introducing broker, 391, 393
- Inventory adjustments, 416–418
- Investment advisory agreement, 469
- Investment due diligence, 468–470
- Investment period, 56
- Investment properties of art, 288
- Investment-specific risk, 152
- Investor protection clauses, 67
- J-curve, 62–64
- Jones, Alfred Winslow, 543
- Junior debt, 284
- Junk bonds, 506
- Kappa distribution, 286
- Keynes, John Maynard, 307, 308, 411
- Key-person provision, 74
- Kovner, Bruce, 537
- Kurtosis, 96–97, 585
- Latency arbitrage, 563
- Law of one price, 534
- Legal risk, 277, 298
- Leverage:
- in convertible arbitrage, 518, 636
  - in fixed-income arbitrage, 638
  - in funds of funds (FoFs), 592
  - liquidity issues and, 27
  - in multistrategy funds, 641
  - in real estate investments, 250–251
- Liability-driven investing (LDI), 41–42
- Limited liability structure, 460
- Limited partners (LP), 55, 59–62, 67, 163–164, 623
- Limited partnership advisory committee (LPAC), 69
- Limited partnership agreement (LPA), 67–78
- carried interest, 71–72, 78
  - conflicts of interest, 77
  - corporate governance, 69–70

- distribution waterfall, 67, 75–77
- fees and expenses, 71
- fund size and term, 70–71
- general partner (GP) contribution, 73–74
- investment objectives, 70
- key features, 69–77
- key-person provision, 74
- management fees and expenses, 71, 78
- preferred return or hurdle rate, 72–73
- structure, 68
- termination/divorce, 74–75
- types of clauses, 67
- Limited partnership structure, 68
- Limiting liability, 55
- Limits to arbitrage, 422–423
- Lintner, John, 439
- Lipper Convertibles, LP, 634–635
- Liquidation and reinvestment costs, 471
- Liquidity. *See also* Liquidity management and calendar spreads, 331
  - in convertible arbitrage, 636
  - with CTAs, 395
  - defined, 24
  - of distressed securities, 642
  - with funds of funds (FoFs), 591
  - of hedge fund replication products, 481
  - in hedge funds, 632
  - in real estate, 182, 240–241, 253
- Liquidity costs, 385
- Liquidity-driven investing, 25
- Liquidity lines, 163
- Liquidity management, 161–177
  - cash flow projections, 165–174
    - estimates, 166–169
    - forecasts, 166, 169–172
    - scenarios, 166, 172–174
  - cash flow schedules, 161–162
  - with endowments, 24–27
  - overcommitment strategy, 174–176
  - sources of liquidity, 162–164
  - undrawn capital strategies, 164
  - vintage year, 26
- Liquidity preference hypothesis, 310
- Liquidity premiums, 19, 253
- Liquidity risk, 19, 388, 476
- Liquidity risk management, 384–385
- Liquid yield option notes (LYONs), 500
- Listed property company (LPC), 186
- Location spreads, 337–338
- Lockup periods, 625
- Long-biased hedge funds, 349
- Longevity risk, 34
- Long gamma, 447
- Long/short equity strategies:
  - activist (corporate governance) approach, 542–543, 550
  - background of, 543
  - blend approach, 540
  - bottom-up approach, 541
  - cash and leverage, 540
  - derivatives in, 632
  - distinction from quantitative EMN strategies, 555–556
  - due diligence, 630–633
  - foreign exchange risk, 632–633
  - gross/net exposures, 631
  - growth approach, 540
  - investment opportunity set, 539
  - investment restrictions, 632
  - liquidity of positions, 632
  - management expertise, 547–548
  - management turnover, 540
  - market size, 543
  - market timing, 540
  - naked short selling, 631
  - nonlisted stocks, 632
  - portfolio concentration, 540
  - return attribution in, 550–552
  - returns sources, 548–550, 631
  - sector-specific approach, 542
  - strategy mechanics:
    - idea expression, 545
    - idea generation, 544
    - risk management, 546–547
    - trade execution, 545–546
  - top-down approach, 541–542
  - value approach, 540
- Long volatility, 446–448
- Look-back bias, 440
- Lumpiness, 182
- Macroeconomic risk, 298
- Macroeconomics, 363–378. *See also* Global macro hedge funds
- Macroeconomic strategies. *See* Global macro hedge funds
- Maintenance margin, 427, 428
- Managed account platform, 454
- Managed accounts, 459–463, 600. *See also* Commodity trading advisers (CTAs); Managed futures
- Managed futures. *See also* Commodity trading advisers (CTAs)
  - collateral income and fund segregation, 400–402
  - collateral requirements, 397
  - compared to tactical allocation, 30

- Managed futures (*Continued*)
- contrarian strategies, 416
  - CTA indices, 448–451
  - economic theory:
    - cost-of-carry model, 409–411
    - theory of normal backwardation, 411–413
    - theory of storage and convenience yield, 408–409
  - effects of market trends, 413–415
  - and efficient market hypothesis, 413–415
  - foreign currency exposure, 400
  - funding level, 397
  - gain/loss settlement, 397
  - industry regulation, 392–394
  - industry structure, 391–403
  - liquidating value, 397
  - margin requirements, 395–396
  - margin-to-equity ratios, 402
  - momentum strategies, 416–420
  - notional level, 398
  - performance analysis:
    - alpha-beta separation of returns, 443–446
    - benchmarking, 441–443, 452
    - CTA indices, 435–439, 441, 443–446
    - data reporting for, 439–441
    - historical performance, 435–439
    - volatility exposure, 446–452
  - returns in, 396–400
  - risk measures, 427–435
    - (*see also* Risk measures)
    - sources of return, 405
    - and technical analysis, 423–425
    - trading level, 397
    - trend-following strategies
      - (*see* Trend-following strategies)
  - Managed futures indices, 392
  - Management:
    - manager selection (*see* Manager selection)
    - in real estate, 251–252
  - Management buy-in (MBI), 50
  - Management buyout (MBO), 50
  - Management fees/costs, 71, 73, 78
    - forgone loss carryforward, 471
    - funds of funds, 56
    - hedge funds, 624–625
    - multi-CTA funds, 459
  - Manager access, 591
  - Manager alpha, 631
  - Manager-investor relationship, 59–62
  - Manager monitoring. *See* Monitoring funds
  - Manager selection, 107–116. *See also*
    - Operational due diligence
    - biography confirmation, 620
    - deal sourcing, 109–111
    - decision and commitment, 116
    - due diligence in, 111–116
    - evaluation, 113–115
    - final and legal, 116
    - limitations of, 112
    - meeting the team, 113
    - process of, 112–116
    - reasons for, 111
    - screening, 112–113
    - in endowment model, 16–17
    - funds of funds (FoFs), 573–574, 586
    - importance of integrity, 619
    - triangulation, 621
  - Mandatory conversion securities (MCSs), 500
  - Margin requirements, managed futures, 395–396, 427–429
  - Margin-to-equity ratios, 402, 429
  - Market access, with CTAs, 394
  - Market anomalies, 415, 422
  - Market-based returns, 231–234
  - Market clientele, 239
  - Market data, 165
  - Market impact cost, 384–385
  - Market-linked returns, 631
  - Market risk, 152
  - Market segmentation, 238–239
  - Market timing, 15, 99, 406
  - Market-traded real estate vehicles, 225–226
  - Marking to market, 634
  - Master-feeder structure, 458
  - Master limited partnership (MLP) structure, 347
  - Masterpiece effect, 289
  - Matching contributions, 44
  - Mature intellectual property, 279
  - Maturing treasury investments, 163
  - Maturity, in commodity indices, 353
  - Maximum drawdown, 432–433
  - Mean reversion, 554, 560–561
  - Mean variance optimization, 583, 584–585
  - Merger arbitrage, 636–637
  - Merrill Lynch Commodity Index eXtra (MLCX), 358
  - Mezzanine financing, 50
  - Minimum royalty provisions, 294
  - Miscellaneous third-party financing, 283
  - Mixed approach to portfolio design, 89, 92–93
  - MLM Index, 442
  - Model-based global macro managers, 523
  - Modern portfolio theory (MPT), 81, 83
  - Modified delta, 509
  - Momentum, 554
  - Momentum-based asset allocation, 353
  - Momentum factor, 564–565

- Momentum oscillator system, 423–424
- Momentum strategies, 493
  - behavioral foundations of, 420–422
  - combining with value strategies, 565
  - in commodity futures, 416–418
  - with currencies, 528, 533–534
  - in EMN funds, 559, 561
  - for financial futures, 418–420
- Monetary policy, 373–374
- Monitoring funds:
  - actions resulting from, 142–144
  - exit routes, 143–144
  - and information gathering, 139–142
    - specific information, 141–142
    - standard monitoring information, 140–141
    - transparency, 139–140
  - intensity management, 142–144
  - objectives of, 136–139
    - to control style drift, 137–138
    - to protect downside, 137
    - value creation, 138–139
  - as part of a control system, 135–136
  - trade-offs of, 136
- Monte Carlo simulation, 132–133, 168
- Mortality risk, 34
- Mortgage arbitrage, 638
- Mortgage indices, 230
- Mortgage REITs, 187–188
- Mortgages, 185
- Mount Lucas Management, 442
- Moving average–based trading systems, 423
- Multi-CTA funds, 459
- Multistrategy funds, 640–642
- Multistrategy funds of funds (FoFs), 577
- Multistrategy global macro funds, 524
- Mutual funds:
  - closed-end real estate, 245
  - commodity-based, 346
- Naïve allocation, 82
- Naïve diversification, 97–98, 247
- Naked short selling, 631
- NAREIT index, 202–205, 229–230
- National Association of College and University Business Officers (NACUBO), 8–12
- National Council of Real Estate Investment Fiduciaries. *See* NCREIF indices; NCREIF styles
- National Futures Association (NFA), 392
- NCREIF indices, 201–205, 221, 222–223, 228–229, 236–237, 268
- NCREIF styles, 208–210, 213–214
- Net asset value J-curve, 64
- Net delta, 512
- Net exposure, 631
- Net operating income (NOI), 214–215
- Network effect, 18–19
- Non-appraisal-based indices, 224–226
  - hedonic price index, 225
  - REITs, 225–226
  - transaction-to-transaction indices, 224
- Nonlisted stocks, 632
- Normal backwardation, 308, 411–413
- Normal contango, 311
- Normalized variables, 558
- Notional level, 397
- Observed transaction prices, 224
- Obsolescence, risk of, 298
- Offering documents, 469
- Omega ratio, 434–435
- Omicron, 511
- Operating foundations, 9
- Operational due diligence, 468–470, 574, 617–644
  - administration, 626–627
  - assets under management (AUM), 624
  - best practices, 629–630
  - biography confirmation, 620
  - cash movement, 626
  - client profile, 625–626
  - compliance, 629
  - defined, 618
  - disclosure, 629
  - Form 13F filings, 628
  - fraud risk, 619–620
  - fund fee structure, 624–625
  - idea generation, 627–628
  - initial lockup periods, 625
  - integrity and, 619
  - losses from external events, 628–629
  - organizational structure, 623
  - ownership structure, 623–624
  - personnel turnover, 621
  - prime broker relationships, 627
  - prior-employee interviews, 621–622
  - process due diligence, 622–623
  - process overview, 618
  - redemption terms, 625
  - risk management, 629
  - strategy-specific issues, 630–644
  - technology problems, 628
  - trading and business operations, 629
  - triangulation, 621
  - valuation, 626, 629
  - withdrawals and redemptions, 625
- Operational risk, 297–298, 387. *See also* Operational due diligence
  - defining, 617

- Opportunistic properties:
  - defining, 209–210, 212
  - risk premium approach to return estimates, 218–220
- Opportunity loss, 472
- Optionality value, 507
- Options. *See also* Convertible arbitrage; Greeks; Long/short equity strategies
  - collars, 31
  - and commodities, 330–338, 350–351
  - in commodity forward curves, 311
  - put spread, 31
  - on real estate indices, 244
  - rebalancing and, 29
  - for reducing tail risk, 31–32
- OTC contracts. *See* Commodity portfolio strategies
- Out-of-the-money bonds, 506
- Overcommitment ratios, 175
- Overcommitment strategy, 26, 84, 174–176
- Overdraft facility, 87
- Over-the-counter (OTC) contracts. *See* Commodity portfolio strategies
- Over-the-counter (OTC) swaps, 344–345
  
- Pairs trades, 553
- Parametric approach to VaR, 430
- Paretian distributions, 286
- Parity, 500
- Partnerships:
  - commodity-based, 346–347
  - master limited partnerships (MLPs), 347
- Patents, 298
  - acquisition and licensing strategies, 294
  - enforcement and litigation strategies, 294–295, 296
  - investing risks, 297–298
  - sale license-back (SLB) and financing strategies, 295–297
  - sales and pooling, 297
- Payoff distribution-based hedge fund replication, 488–492
- Payoff function, 490
- Peer-group cohort, 123–124
- Peer groups, 441
- PE funds. *See* Private equity (PE) funds
- Pension plans, 33–46
  - advantages, 33–34
  - defined benefit (DB) plans, 34–42 (*see also* Defined benefit (DB) pension plans)
  - defined contribution (DC) plans, 43–46 (*see also* Defined contribution (DC) pension plans)
  - frozen/terminated, 39
  - largest sponsors, 34
  - portability of benefits, 35, 44
  - social security plans, 43
- Pension Protection Act of 2006, 45
- Performance. *See also* Performance evaluation
  - funds of funds (FoFs), 578
  - realized vs. forecasted, 562
- Performance attribution, 384–386
- Performance evaluation:
  - biases affecting, 439–441
  - equity fund portfolios, 129–130
  - individual funds, 117–120
  - quantitative manager analysis, 464–468
- Performance fees, 592
- Permanent cropland, 268, 269
- Perpetuity, 7
- Personal allocation bias, 585–586
- Personnel turnover, 621
- Phi, 511
- Pioneering Portfolio Management* (Swensen), 12
- Platform companies, 463
- Pooling, of patents, 297
- Pooling, of securities, 235
- Porsche and Volkswagen short squeeze of 2008, 627–628
- Portable retirement benefits, 35
- Portfolio allocation. *See also* Asset allocation; Portfolio design
  - real estate, 247–255
    - agency relationships, 251–252
    - cross-border investment, 253–255
    - income taxation, 247–250
    - information asymmetries, 252
    - leverage, 250–251
    - liquidity and transaction costs, 253
- Portfolio design, 83, 88–106, 630. *See also* Asset allocation; Portfolio allocation
  - bottom-up approach, 89–91
  - funds of funds (FoFs), 573
  - mixed approach, 89, 92–93
  - modern portfolio theory, 83
  - risk profile, 99–106
  - risk-return management:
    - core-satellite approach, 93–95
    - diversification, 95–97
    - market-timing and cost-averaging approaches, 99
    - naïve diversification, 97–98
    - top-down approach, 89, 91–92
- Portfolio risk, 159
- Preferred equity redemption cumulative stock (PERCS), 500
- Preferred habitat hypothesis, 308–309
- Preferred return, 56, 73, 75
- Preroll strategies, 357

- Price channel-based trading systems, 423
- Price discovery, 223–224
- Price smoothing. *See* Smoothing
- Primary real estate market, 188
- Prime brokers, 627
- Princeton University endowments, 25, 27
- Principal-agent conflict, 13–14
- Principal-guaranteed notes, 350
- Private adviser exemption, 603–604
- Private commercial real estate, 188–189
- Private commercial real estate indices, 228–229
- Private equity (PE) funds:
- correlation with public equity returns, 81–82
  - discount rates (*see* Discount rates)
  - funds of funds:
    - conflicts of interest, 77
    - diversification, 58
    - incentives, oversight, and agreements, 59
    - as intermediaries, 56–58
    - resources and information, 58–59
    - selection skills and expertise, 59
    - value-added, 58–59
  - fund structure, 67–78
  - grading system, 114–115
  - as intermediaries, 54–56
  - investment process, 79–87
    - actions and implementation, 84–85
    - fund selection, 84
    - liquidity management, 83–84
    - portfolio design, 83 (*see also* Portfolio design)
    - portfolio monitoring, 84–85
    - portfolio objectives, 80–82
- J-curve, 62–64
- limited and general partner relationship life cycle, 59–62
- liquidity management (*see* Liquidity management)
- main strategies, 49–50
- management role, 53–54
- manager selection (*see* Manager selection)
- measuring performance and benchmarking:
  - individual funds, 117–129
  - portfolios of funds, 129–133
- monitoring, 135–144 (*see also* Monitoring funds)
- principal functions, 55
- publicly traded private equity (PTPE) funds, 155–156
- real estate (*see* Private equity real estate funds (PERE funds))
- research of performance history, 109–110
- risk control, 86
- risk measurement framework, 85–86
- risk mitigation, 86–87
- summation, 177
- valuation methods:
  - economic value approach, 149–150
  - internal rate of return (IRR), 147–148
  - net asset value (NAV), 145–147
  - venture capital vs. buyouts, 50–54
- Private Equity Principles of the Institutional Limited Partners Association (ILPA), 69
- Private equity real estate funds (PERE funds), 209
- Private placement memorandum, 68
- Private real estate equity, 187
- Probability densities, 287
- Process due diligence, 622–623
- Processing spreads, 332
- Profit and loss (P&L) attribution, 385–386
- Pro forma performance records, 466
- Projected benefit obligation (PBO), 36, 41–42
- Projection models, 165
- Protected cell company, 463
- PTPE beta, 154–156
- Public commodity-based equities, 345
- Publicly traded private equity (PTPE), 154–155
- Public market equivalent (PME), 124
- Public real estate equity indices, 229–230
- Public real estate investment, 187
  - closed-end real estate mutual funds, 245
  - exchange-traded funds based on real estate indices, 244–245
  - options and futures on real estate indices, 244
- REITs (*see* Real estate investment trusts (REITs))
- Purchasing power parity (PPP), 524, 534
- Qualified majority, 74
- Quality spreads, 337
- Quant, defined, 568
- Quantitative directional strategies, 330
- Quantitative equity hedge fund strategies, 553–572
- Quantitative equity market neutral (EMN) strategies, 553–571
  - distinction from long/short equity strategies, 555–556
  - evolution of, 557
  - fundamental factor-based, 555–556
  - mechanics of, 559–563
  - momentum-based, 559
  - quant meltdown of August 2007, 568–571
  - returns sources, 563–567
    - exchange-traded fund arbitrage, 564
    - latency arbitrage, 563
    - returns to a momentum factor, 564–565
  - Sharpe ratio vs. capacity of assets under management, 565–566

- Quantitative equity market neutral (EMN) strategies (*Continued*)  
 screening process, 557–558  
 technical analysis–based, 553–555  
 trading frequency–based, 556–557  
 z-scoring and outlier control, 558–559
- R&D (research and development), 293–298  
 accessing returns through patents, 293–294  
 estimating returns to, 293  
 expenditures for, 280
- Rational expectations models, 306–308
- Reactive deal sourcing, 109–111
- Real assets, 23, 302
- Real estate. *See also* Commercial real estate  
 advantages and disadvantages, 181–182  
 asset allocation:  
   bottom-up, 184–185  
   heterogeneity of subcategories, 183  
   top-down, 183–184  
 categories of, 185–188  
   domestic vs. international, 185–186  
   equity vs. debt, 185  
   market categorizations, 188  
   primary vs. secondary market, 188  
   private commercial, 188–189  
   private vs. public, 187–188  
   residential vs. commercial, 186  
   risk and return classification, 188  
 commercial (*see* Commercial real estate)  
 core, 188  
 core properties, 208, 212, 216–218  
 as a diversifier, 242–244  
 inflation and, 189–190  
 opportunistic, 188, 209–210, 212, 218–220  
 portfolio allocation in, 247–255  
   agency relationships, 251–252  
   cross-border investment, 253–255  
   income taxation, 247–250  
   information asymmetries, 252  
   leverage, 250–251  
   liquidity and transaction costs, 253  
 return drivers of, 189–190  
 risk management in, 231–245 (*see also* Risk management)  
 unsmoothing of returns, 198–205  
 value-added, 188, 208–209, 212, 218–220
- Real estate indices, 221–230  
 appraisal-based, 221–224  
 ETFs based on, 244–245  
 farmland and timberland, 229  
 non-appraisal-based, 224–226  
 options and futures on, 244  
 private commercial, 228–229  
 public real estate equity indices, 229–230  
 residential, 228  
 summary of, 227
- Real estate investment trusts (REITs), 187–188, 225–226, 244. *See also* REIT index  
 as indicators of private real estate values, 237–238  
 liquidity and volatility, 240–241  
 turnover, 239–240
- Real estate returns:  
 drivers of, 189–190  
 price smoothing, 191–194  
   and arbitrage, 192–193  
   persistence in, 193  
 problems resulting from, 193–194
- Real estate style boxes, 213–214
- Real interest rate, 374, 378
- Realizations, 56
- Realized return, 120
- Real option value, 114
- Rebalancing, 15, 28–30
- Recession, 376–377
- Redemption form, 469
- Redemptions, 625
- Redemption terms, 625
- Reemerging team, 108, 109
- Regular inspections, 610–611
- Regulation, 603–616  
 in Asia, 615–616  
 compliance, 606–610  
 Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (the Dodd-Frank Act), 604  
 in Europe, 614–615  
 in funds of funds (FoFs), 592  
 overseas hedge funds, 606  
 private adviser exemption, 603–604  
 regulatory assets under management (RAUM), 605  
 reporting requirements, 612–613  
 SEC inspection program, 610–612  
 SEC vs. state registration, 605
- Regulatory risk, 298
- Reinvestment costs, 471
- REIT index, 202–205, 236–237
- REITs. *See* Real estate investment trusts (REITs)
- Relative PPP, 534
- Relative risk measures, 157
- Relative strength index (RSI) trading system, 423–424
- Relative value strategies, 329, 330–338, 407  
 bear spread, 331  
 bull spread, 331  
 calendar spread, 330–331  
 correlation spreads, 332–337  
 dimensions of, 330

- fundamental analysis, 339–341
  - time spreads, 330–332
- Relative volatility, 157
- Repeat-sales estimators, 289, 290
- Repeat-sales index, 224, 225
- Replacement capital, 50
- Replication products. *See* Hedge fund
  - replication products
- Reporting requirements, 612–613
- Representativeness bias, 421
- Rescue strategies, 50
- Research and development. *See* R&D (research and development)
- Reservation of rights provisions, 294
- Residential real estate properties, 186
- Residential real estate properties index, 228
- Residuals, 561
- Residual value to paid-in ratio (RVPI), 120, 127
- Retirement income-replacement ratio, 35
- Return attribution, 550–552
- Return enhancers, 476
- Return target, 12
- Return volatility estimation, 430–431
- Rho, 511
- Risk:
  - currency, 254, 276–277
  - default, 339
  - event, 324–325, 380–381, 387
  - expiration, 298
  - foreign exchange, 395, 632–633
  - fraud, 619–620
  - hidden, 588
  - idiosyncratic, 152
  - illiquidity, 24–25, 297
  - inflation, 23
  - investment-specific, 152
  - legal, 277, 298
  - liquidity, 19, 384–385, 388, 476
  - longevity, 34
  - macroeconomic, 298
  - market, 152
  - mortality, 34
  - operational, 297–298, 387, 617 (*see also* Operational due diligence)
  - in patent investing, 297–298
  - portfolio, 159
  - regulatory, 298
  - rollover, 209
  - sector, 298
  - surplus, 37
  - systematic, 152
  - tail, 30–32
  - technology, 297–298, 628
  - vs. uncertainty, 80
- Risk and return classifications, 190
- Risk and return measurement. *See also* Alpha; Risk management
  - art investments, 292
  - and asset allocation, 30
  - capital asset pricing model (CAPM), 151–153, 247
  - commercial real estate, 215–220
- Risk diversifiers, 476–477
- Risk-free rate, 152
- Risk management, 629
  - actionable, 587
  - fraud responsibilities, 587–588
  - funds of funds (FoFs), 574, 586–588
  - hidden risks, 588
  - private equity funds, 85–87
    - risk control, 86
    - risk measurement framework, 85–86
    - risk mitigation, 86–87
  - public vs. private real estate, 231–245
    - accurate pricing and risk estimation, 234
    - ETFs and arbitrage, 235–236
    - hedging, 236–237
    - market-based vs. appraisal-based returns, 231–234
    - market segmentation, 238–239
    - pooling of securities vs. securitization, 235
    - public real estate products, 244–245
    - real estate as diversifier, 242–244
    - REITs and valuation, 237–238
- Risk measurement framework, 85–86
- Risk measurement risk, 255
- Risk measures:
  - capital at risk (CaR), 429–430
  - exponential smoothing method, 431
  - in managed futures, 427–435
  - margin requirements, 427–429
  - maximum drawdown, 432–433
  - omega ratio, 434–435
  - stop-loss rules, 429
  - stress testing, 433
  - value at risk (VaR), 430–432, 434
- Risk mitigation, 86
- Risk-neutral probability, 503
- Risk premium, 412–413
- Risk premium approach to return estimates, 218–220
- Risk-transfer mechanisms, 87
- Robertson, Julian, 521, 543
- Rolling correlation coefficients, 366–368
- Rolling window analysis, 546
- Roll methodology, 354
- Rollover risk, 209
- Roll procedure, 354

- Roll returns, 319–320, 352, 359, 360, 362
- Rotation age, 275
- Row cropland, 268
- S&P GSCI, 355–356, 357, 358
- Sample selection bias, 226
- Scarcity, 320
- Scenario analysis, 546. *See also* Stress testing
- Secondary purchase, 50
- Secondary real estate market, 188
- Secondary transactions, 55, 143
- Sector risk, 298
- Sector specialists, 542
- Sector-specific investing, 542
- Securities and Exchange Commission (SEC):  
inspection program, 610–612  
registration, 603–604
- Securities indices, compared to commodity indices, 351–352
- Securitization, 87, 143–144, 235
- Security selection, 15
- Segmented markets, 310
- Segregated account structures, 401
- Segregation of funds, 400–402
- Selection bias, 440, 577
- Selling short, 546–547
- Semistrong form efficiency, 414
- Senior secured debt financing, 283
- Shareholder activism, 633
- Sharpe ratio, 434, 565
- Short position, 546–547
- Short squeezes, 547
- Short stock rebate, 515
- Side pockets, 643
- Signal generation/conversion, 561–562
- Single-currency margining, 396
- Single-strategy funds of funds (FoFs), 577
- Skewness, 96–97, 585
- Slate equity financing, 282–283
- Smoothing, 191–194. *See also* Unsmoothing and arbitrage, 192–193  
in core real estate investing, 216–218  
exponential smoothing method, 431  
first-order autocorrelation, 196–198  
models of:  
estimating parameter for first-order autocorrelation, 196–197  
lagged return focus, 196  
reported prices as lags of true prices, 194–196  
persistence in, 193  
problems resulting from, 193–194  
reasons for, 197–198
- Social security plans, 43
- Soft call, 499
- Soft lockup provision, 625
- Soros, George, 521, 524–526
- Sortino ratio, 105–106
- Spark spreads, 381
- Special purpose vehicle (SPV), 143–144, 460–463
- Speculators, 302–303, 314
- Spending rates, 10–11, 21–24
- Spillover effects, 280
- Spot prices, 410, 411
- Spot returns, 319–320, 352, 359–362
- Standard Portfolio Analysis of Risk (SPAN), 395–396
- Static returns, 631
- Statistical arbitrage funds, 554–555
- Stock-out risk, 310
- Stop-loss rules, 429, 633
- Storable commodities, 416–418
- Storage models, 309–310
- Storage strategies, 338
- Straddles, 447
- Strafaci, Edward A., 634–635
- Strategic asset allocation, 15
- Strategy-specific due diligence, 630–644  
convertible arbitrage, 633–636  
distressed securities, 642–644  
emerging markets, 639–640  
fixed-income arbitrage, 637–639  
long/short equity, 630–633  
merger arbitrage, 636–637  
multistrategy funds, 640–642
- Stress testing, 382–384, 433
- Strong form efficiency, 414
- Style drift, 137–138
- Subprime mortgage crisis, 568–571
- Subscription agreement, 68, 469
- Substitution spreads, 336–337
- Super gap financing, 284
- Supply and demand, and commodity prices, 371–372
- Surplus risk, 37
- Survivorship bias, 83, 122, 441, 577, 578
- Swaps, commodities, 344–345
- Swap-spread arbitrage, 637–638
- Sweep inspections, 611
- Swensen, David, 12, 13–14, 23
- SWOT analysis, 541
- Systematic risk, 152
- Tactical asset allocation (TAA), 15, 29–30
- Tail risk, 30–32
- Target-date funds, 46

- Taxes:  
  and CTAs, 395  
  in funds of funds (FoFs), 592  
  and real estate investments, 247–250
- Technical analysis, 423–425, 553–555
- Technology risk, 297–298, 628
- Terminated pension plan, 39
- Theory of normal backwardation, 411–413
- Theory of storage, 408–409, 411
- Theta, 510
- Thorpe, Edward, 568
- Timberland and farmland indices, 229
- Timberland investing, 258, 274–277
- Time horizon, 366–368
- Time spreads, 330–332
- Time-zero IRR, 130, 131
- Top-down asset allocation, 183–184
- Top-down cash flow projection, 149–150
- Top-down investing, 541–542
- Top-down portfolio design, 89, 91–92
- Top-quartile funds, 123
- Total return index, 354
- Total returns, 22, 120, 354, 359, 360–362
- Total value to paid-in ratio (TVPI), 120, 126
- Trackers. *See* Hedge fund replication products
- Trading frequency, 556–557
- Trading level, 397, 399
- Trading range breakout, 423
- Trailing stop losses, 633
- Transaction-based index (TBI), 229
- Transaction-based real estate indices, 226
- Transaction fees/costs, 253, 472, 562
- Transaction-to-transaction index, 224
- Transparency, 139–140, 592–593  
  with CTAs, 395  
  in hedge fund replication products, 481  
  in hedge fund reporting, 633
- Transportation strategies, 338
- Trend-following strategies, 406–407, 408, 423, 493  
  behavioral foundations of, 420–422  
  cost-of-carry model, 409–411  
  with currencies, 528, 533–534  
  efficient market hypothesis and, 413–415  
  empirical research on, 423–425  
  momentum strategies, 416–423  
  profitability of, 415–423  
  theory of normal backwardation, 411–413  
  theory of storage, 408–409
- Treynor ratio, 434
- Triangulation, 621
- UBS Bloomberg CMCI Index, 359
- Unbundled intellectual property, 279
- Uncertainty vs. risk, 80
- Uncovered interest rate parity, 531
- Undrawn capital, 164
- Unexpected inflation, 369
- Uniform Management of Institutional Funds Act, 22
- Unrealized return, 120
- Unsmoothing, 198–205  
  example of, 201–205  
  first-order autocorrelation given, 198–199  
  interpreting results of, 204–205  
  with more than first-order correlation, 201  
  three steps of, 199–200  
  using prices rather than returns, 200–201
- Upsilon, 511
- U.S. Treasury Inflation-Protected Securities (TIPS), 42
- Valuation methods:  
  buyout transactions, 53–54  
  private equity funds, 145–150  
  economic value approach, 149–150  
  internal rate of return (IRR), 147–148  
  net asset value (NAV), 145–147  
  venture capital vs. buyouts, 53–54
- Value-added properties:  
  defining, 208–209, 212  
  risk premium approach to return estimates, 218–220
- Value and Capital: An Inquiry into Some Fundamental Principles of Economic Theory* (Hicks), 306–307
- Value at risk (VaR), 382–383, 430–432, 434
- Value models, 528, 534–535
- Variation margin, 396
- Vega, 510
- Vega hedging, 514
- Venture capital (VC), 49–54  
  business models, 51–52  
  deal structuring, 52  
  management role, 53  
  valuation methods, 53
- Venture capital (VC) funds, 79. *See also* Private equity (PE) funds  
  diversification, 96–97  
  Europe vs. United States, 101–104  
  publicly traded private equity (PTPE) and, 155–156  
  risk profile, 99–106
- Ventures, 155–156
- Vesting period, 35
- View commonality, 485

- Vintage year, 26, 55  
Vintage-year diversification, 99  
Volatility:  
  and agricultural commodities, 270–274  
  in funds of funds (FoFs), 584  
  in managed futures, 446–452  
  in real estate, 240–241  
  relative, 157  
Volatility arbitrage, 638  
Volatility strategies, 386, 528, 534–535  
Volkswagen and Porsche short squeeze of 2008,  
  627–628  
Weak form efficiency, 414  
Weighting, 353, 354–355  
Winsorizing, 558  
Withdrawals and redemptions, 625  
Yale University endowment model, 12–14,  
  17–18, 23, 24–25, 27, 30, 173  
Yield-curve arbitrage, 638  
Zero-sum games, 405  
Zlotnikov, Vadim, 569  
Z-scoring of data, 558

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>

<http://www.pbookshop.com>