

Index

absolute volatility, 183, 198n34
actual (realized) volatility, 421, 434–36, 497
adjusted payments, 24, 524
Advisory Letter (AL 94-2, OCC), 332
agency bonds, 396n50, 402–7
agency mortgage-backed securities, 533
agency spreads, 406
American International Group (AIG), 60n26
American options, 465, 467, 468
American swaptions, 166, 209n40
amortizing swap, 131–32, 250n20
annualized basis point vol, 182, 194
arbitrage, 14–15nn26–27, 271, 275, 464–65, 464n1, 469n9
asset-or-nothing options, 510–11
asset swaps, 68–70; after Lehman bankruptcy, 404–7; FHLBC asset swaps, 403–4; FNMA asset swaps, 402–7; math for, 398–99; structuring of, 68n36, 400–407; trading of, 394–407
asset swap spread, 69, 395
assignments, 112–13
assumable mortgages, 531n3
at-the-money, 147, 192n28
at-the-money forward (ATMF), 174–75, 409
at-the-money spot, 409, 409n63
at-the-money swaptions, 198–204
average vol curve, 144
balance sheet management, 70–71
base rate, 250
base vol curve, 144, 286
basis points (bps): in cap and floor trades, 142n10, 149n17; defined, 7n11; present value of, 43–48
basis points per day vol, 202
basis point vol, 182, 183, 194, 200
basis risk, 354, 354n3
basis swaps, 28–34
BBA (British Bankers' Association), 4n5
bearish steepeners, 377
Bermudan cancelable swaps, 242–48, 242n11, 244n12, 426–27
Bermudan options, 474
Bermudan swaptions, 209–29; and

European swaptions, 209n41, 217n44, 220n48; and forward vol, 417n3; optimal exercise of, 211–17; valuation of, 217–29

bid price, 8

bid side repo rate, 23

bid side spread, 8

bid side swap rate, 10, 10n17, 18–21

Big Bets Gone Bad (Jorion), 321n24

binary accrual notes, 326–31; price sensitivity of, 328–31; pricing of, 326–28

binary corridor, 327

binary curve options, 335–36, 432n22, 434n23, 506n40

binary options, 434n23; pricing, 500–511

binomial option pricing, 475–83

Black, Fischer, 485

Black-Scholes formula, 180, 483–88, 487, 500n38

Black’s formula: binary options, 327; caps and floors, 142–44, 151; implied vol, 184, 198–204; lognormal nature of interest rates, 181–84; option pricing, 487–88; skew, 184–93; for swaptions, 180–81n19, 180–93

“bond,” 4, 5n6

bootstrapping, 86–102, 103, 173n12, 304, 310

bought spreads, 49

bps. *See* basis points

Brigo, D., 208n39, 272n41

British Bankers’ Association (BBA), 4n5

bullish flatteners, 377n27

Burghardt, Galen, 86

burnout, 532n6

buy swap spreads, 382

callable bonds, 192, 234–35, 234n5, 336–38, 351, 430n20

callable multi-step bonds, 296

call feature, 336–38

call options, 465, 469n11, 470–71

call swaptions, 166

cancelable swaps, 232–48; Bermudan, 242–48; exercising, 234n6; and index amortizing swaps, 253–56; solving for fixed rate in, 235–42; uses of, 234–35

cap/floor straddle, 272

caplets, 137, 142–43

capped floating rate notes (capped floaters), 139, 296, 308–10, 309n16

caps and floors, 135–65; cap-floor parity, 137–38; chooser caps, 153–55; convertible cap trades, 156–58; embedded cap trades, 140–42; periodic (sticky) caps and floors, 151–53; problem set, 159–65; step-up strike caps, 151; swaptions link to, 178–80; uses of, 138–40; valuation of, 137–38, 142–44, 147–50; variations of, 150–58; and volatility, 144–47, 146n15

caps vs. payers trades, 416

carry and roll-down analysis, 354–61, 359n6, 361n8; conditional yield curve trades, 376n25; curve trades, 371–82, 450; swap spread trades, 385

cash-or-nothing options, 500, 503, 508. *See also* binary options

cash settled swaptions, 167, 179n16, 420n11

CDOs (collateralized debt obligations), 414n1

central clearing, 61–63, 62n29

CEV (Constant Elasticity of Variance) model, 208–9

CFTC (Commodity Futures Trading Commission), 61, 61n27

Chicago Mercantile Exchange, 77

chooser caps, 153–55, 153n20, 155–56nn21–23

chooser options, 516

Citron, Bob, 321, 321n25

clearing mandate, 61, 62n29

CMOs (collateralized mortgage obligations), 293n2

CMS (Constant Maturity Swap), 32, 273–77, 427n18

CMS spread options, 427–57; correlation skews, 439–41; delta hedging, 450–53; implied correlation, 433–34; implied vs. realized volatility, 434–36; origin of, 430–32; pricing of, 437–42; supply and demand for, 436–37

CMS spread range accrual notes, 332–38

CMT (Constant Maturity Treasury), 33, 33n43

collars, 138–39, 340

collateralized debt obligations (CDOs), 414n1

collateralized mortgage obligations (CMOs), 293n2

Commodity Futures Trading Commission (CFTC), 61, 61n27

comparative advantage, 1–2, 2n1

composite pages, 8, 106

conditional curve trades, 376–81

conditional swap spread trades, 389–94

Constant Elasticity of Variance (CEV) model, 208–9

Constant Maturity Swap (CMS), 32, 273–77, 427n18. *See also* CMS spread options

Constant Maturity Treasury (CMT), 33, 33n43

contract law, 25n39

convertible cap trades, 156–58, 156n24

convexity adjustments, 262–91; CMS swaps, 273–77; curve options, 437n26, 445n32; LIBOR in arrears swaps, 262–72

correlation risk, 414, 415, 434

correlation skews, 439–41

correlation trades, 414, 415–16

counterparty credit exposure, 58

counterparty risk, 2n3, 58–63, 58n24

coupon caps, 139–40, 308

Cox, John, 77n4

credit markets, 54, 58

credit risk, 302n9

credit scores, 532n6

credit spread, 398

Credit Support Annex (CSA), 58, 60n26, 105–6n26, 400

cross-currency basis swaps, 34

cross-currency swaps, 34–35, 66–68

currency risk, 57

curve caps, 334–36, 440, 440n30

curve floors, 433, 437, 440n30

curve options, 427–57; correlation skews, 439–41; delta hedging, 450–53; implied correlation, 433–34; implied vs. realized volatility, 434–36; origin of, 430–32; pricing of, 437–42; supply and demand for, 436–37

daily reset mechanism, 305–6, 305–6n13

Dattatreya, Ravi, 294, 325

day count: conversion formulas, 17–18; fixed-floating swaps, 12–17; and payments, 523–27; and pricing, 99–100

default by bond issuer, 395n47

deleveraged floaters, 296

delta, 488–92

delta hedging: binary curve options, 506n40; binary options, 503–8; curve options, 432, 432–33n22, 435, 450–53, 450n38, 452n40; defined, 489–90, 489n27; and long gamma, 495n32; return profile, 496n33; swaptions, 204n35

delta-neutral, 491

derivative markets, 292, 300, 465

Dickens, Charles, 292

digital options, 500. *See also* binary options

dirty price, 8n14, 22, 68, 395, 395n46, 399

discount factors, 81, 81n8

dispute resolution, 25n39

Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, 60–63

double old Treasury issue, 6n10

downward skew, 186, 205

dual-index floaters, 297

Duffie, Darrell, 62n29

duration: defined, 520–22; effective, 317, 522; Macaulay, 520–21; modified, 520–21

duration gap, 403, 403n59

duration-neutral, 362–63, 363n10, 368n19, 410

dynamic delta hedging, 490

early redemption provisions, 351–52. *See also* callable bonds

effective date, 5, 23

effective duration, 317, 522

embedded cap trades, 140–42, 141n9

embedded options, 230–91; Bermudan cancelable swaps, 242–48; cancelable swaps, 232–48, 253–56; CMS swaps, 273–77; convexity adjustments, 262–91; index amortizing swaps, 248–56; knockout swaps, 256–62; LIBOR in arrears swaps, 262–72; pricing of, 252–53; problem set, 278–91; structured notes, 293n4

equity tranche, 414–15n1

error function, 540

Eurodollar futures: cash flows, 79n5; convexity bias of, 84–86; hedging with, 84–85n10; and pricing, 76n1, 79–84; and swap rates, 76–77

European cancelable swaps, 242, 242n11

European options, 465, 467–68, 468n7, 516

European put-call parity, 474

European swaptions, 166, 209n41, 217n44, 220n48

exchange rate risk. *See* currency risk

exercise price. *See* strike

exposure profile, 58

extendible bonds, 296

extendible swaps, 282

Fama, Eugene, 88n14

FAS 133 (Financial Accounting Standards), 138n4, 250, 303n10

FCM (futures commission merchant), 62n29

Federal Home Loan Mortgage Corporation (FHLMC) asset swaps, 403–4, 403n58

Federal Housing Administration (FHA), 531n3

Federal National Mortgage Association (FNMA) asset swaps, 402–7, 407n62

Federal Reserve: and forward starting swaps as benchmarks, 128; and Greenspan Conundrum, 128n39; and LIBOR in arrears swaps, 267; and Orange County bankruptcy, 321, 323; and structured notes, 294, 332; Supervision and Regulation Letter (SR 94-45), 332; Treasury purchases by, 56n17

Federal Reserve Statistical Release H.15, 32

FHA (Federal Housing Administration), 531n3

FHLMC (Freddie Mac) asset swaps, 403–4, 403n58

FICO scores, 532n6

Financial crisis of 2008, 2n3, 4n5. *See also* Lehman bankruptcy

fixed-floating swaps, 4–28; bid and offer swap rates, 18–21; day count conversion formulas, 17–18; generalized payment frequency formulas, 17–18; OIS swaps, 27; pay frequency and day count, 12–17; repos, 21–23; resets and payments, 23–25; sample term sheet, 25–27

flat skew, 187, 205, 239n9

flat swap curve, 274

flattener trades, 362, 377n27, 432

flight to quality, 54, 364n12

flip-flop swap, 287

flipper bonds, 297

floating rate notes (floaters), 305–8; capped, 308–10; defined, 295; inverse, 310–24; Prime, 305–7

floored floaters, 296

floorlets, 137, 142–43

floors. *See* caps and floors

FNMA (Fannie Mae) asset swaps, 402–7, 407n62

following payments, 24, 523–27

forward contracts, 77–78n4

forward curve, 97, 411

forward curve trades, 373–76, 388n39

forward premium, 148

forward price, 77n4, 355, 388n39, 419

forward rates, 87, 88, 88n14, 91–95, 97–99

forwards are realized, 370, 370n20

forward space, 373, 373n23

forward starting caps or floors, 147

forward starting swaps: as basis swaps, 32; as benchmark, 126–29; conditional yield curve trades, 376n25; hedging, 115; hedging with, 124–26; pricing of, 113–29; uses of, 124–29

forward swap spread, 388n39

forward volatility, 146, 220n48, 417n3

forward vol trades, 416–27; and Bermudan cancelable swaps, 426–27; description of, 419–21; heuristic pricing of, 421–24; and spot price, 424–25

forward yield curve trades, 373–76, 388n39

Freddie Mac (FHLMC) asset swaps, 403–4, 403n58

full invoice price, 8n14

full knockout swaps, 256, 289

funded form, 293n4

funding costs, 125–26, 303, 303n11

future issuance hedging, 124–26

futures commission merchant (FCM), 62n29

futures convexity bias, 84–86

gamma: of option pricing, 492–97; of swaptions, 175

general collateral (GC), 22, 51–53

government-sponsored enterprises (GSEs), 300, 533

Greenspan, Alan, 128

Greenspan Conundrum, 128n39

Gupta, Anurag, 86

haircuts, 23n36, 322

handchecks: conditional spread trades, 394n45; and pricing, 103, 103n22, 106–10, 108n30, 111–12

hedge funds: and curve options, 336, 437; and non-inversion notes and swaptions, 192

hedging: with Eurodollar futures, 84–85n10; and forward starting swaps, 115, 124–26; with Treasuries, 49n8, 64–65n33, 84–85n10, 106n27. *See also* delta hedging

heuristic pricing of forward vol trades, 421–24

high-strike curve caps, 440, 440n30, 441

high-strike options, 192n28

holding periods: and curve trades, 367–73; and swap spread trades, 385–87.

Hoskins, Bill, 86

Hull, John, 463, 466

IANs (index amortization notes), 297

implied correlation, 433–34, 438n28, 460

implied correlation skew, 441

implied swaption vol, 174–75

implied vol: Black's formula, 198–204; conditional spread trades, 393; conditional yield curve trades, 377, 377n27, 380n29; defined, 144, 146n14; forward vol trades, 417; index amortizing swaps, 252n25; realized volatility vs., 434–36; and swaption prices, 184, 184n24, 219n47

index amortization notes (IANs), 297
 index amortizing swaps, 248–56; and
 cancelable swaps, 253–56; implied
 volatility, 252n25; pricing, 252–53
 Ingersoll, Jonathan E., Jr., 77n4
 interest rate-linked structured notes,
 294
 interest rate risk, 40–48, 302n9
 interest rate swaps, 3–28; defined, 3–4;
 fixed-floating, 4–28
 International Swaps and Derivatives
 Association (ISDA), 2n3, 27, 59
 in-the-money, 104, 467
 inverse floating rate notes, 310–24;
 defined, 297; interest rate sensitivity
 of, 316–18; market trends for, 294;
 and Orange County bankruptcy,
 321, 321n24; pricing of, 312n18,
 315–20, 320n23
 IO bonds, 329n30
 ISDA (International Swaps and
 Derivatives Association), 2n3, 59
 ISDAFIX, 32, 32–33n42
 iteration function, 239n8, 310n17
 Jarrow, Robert, 77n4
 Jorion, Philippe, 321nn24–25, 323
 knockout swaps, 256–62, 283, 289, 347,
 347n34, 458
 knockout trigger, 257, 261, 261n33, 289
 LEANs (LIBOR Enhancement Accrual
 Notes), 324–26
 legal remedies, 25n39
 Lehman bankruptcy: and asset swap
 trades, 404–7; and relative value
 trades, 353n2; and swap spreads,
 406n61, 454–55; timeline of, 454n42
 leveraged capped floaters, 298
 leveraged inverse floaters, 297, 312,
 321, 323
 Li, Ada, 62n29
 LIBOR (London Interbank Offered
 Rate): and caps and floors, 136–37;
 defined, 4n5; and general collateral,
 51–53; and liquidity concerns, 54;
 and pricing model, 96n19,
 100–101n21, 102, 105n26; and repo
 rates, 52n12; and target redemption
 notes, 344–47
 LIBOR Enhancement Accrual Notes
 (LEANs), 324–26
 LIBOR in arrears swaps, 262–72
 LIBOR minus, 403
 LIBOR-OIS spread, 27, 105–6n26
 LIBOR plus, 403
 LIBOR space, 373n23
 liquidity issues, 2n3, 54
 loan to value (LTV), 529n1
 lockout period, 239, 242, 250
 lognormal implied vol, 184, 186,
 198–204, 205–6, 541, 541n1
 lognormal nature of interest rates,
 181–84, 181–82nn20–21
 long-dated options, 175, 175n14, 435,
 498
 long-end swap spreads, 406
 long gamma, 495, 495n32, 505
 long spreads, 49
 Longstaff, Francis, 244n13
 long swap spreads, 382
 long vol, 509
 low-strike curve floors, 440n30, 441
 low-strike options, 192, 432n22, 437
 LTV (loan to value), 529n1
 Lubke, Theo, 62n29
 Macaulay duration, 520–21
 macro trades. *See* relative value and
 macro trades
 major swap participants, 61
 margin, 308
 mark-to-markets, 63n32, 104–10, 167n1
 matched-maturity asset swaps, 400,
 407n62
 MBS. *See* mortgage-backed securities
 mean reversion, 145
 Mercurio, F., 208n39, 272n41
 Merton, Robert C., 416n2

mid-market yield, 8

mixed swaps, 61n27

modeling for pricing, 41, 95–97. *See also* Black-Scholes formula; Black's formula; normal model

modified duration, 42, 520–21

Modified Following payments, 24, 523–27

“money,” 5, 5n6

money market funds, 293n4, 294, 332

moneyness of option, 434n23

mortgage-backed securities (MBS):
balance sheet management via swaps, 70–71; creation of, 533–35; defined, 533; and index amortizing swaps, 251–52, 252n24; negative convexity of, 56n19, 57n23, 535; rate sensitivity of, 56n18

mortgages, 529–35; defined, 529; servicing of, 139, 139nn6–7, 533

mortgage space, 373n23

multi-European swaptions, 166, 209–29; optimal exercise of, 211–17; valuation of, 217–29

multiperiod extensions in binomial options pricing, 481–83

negative carry, 98, 387n39, 408

negative convexity, 251, 251n23, 535

negative gamma, 496n35

Negative Interest Rate Method, 164

negative rates, 194n30

net present value (NPV), 6n9, 40–41, 68n37, 105n25

new issue hedging, 63–68, 65n34

non-inversion notes, 332–38; call feature, 336–38; curve caps, 334–36; curve options, 430, 430n20, 439; defined, 299; pricing of, 333–38

nonstandard swaps: assignments, 112–13; forward starting swaps, 113–29; mark-to-markets, 104–10; pricing of, 102–29; unwinds, 111–12

nontransferability of mortgages, 531n3

normal implied vol, 183, 196n33, 198–204, 205–6, 425, 426n17, 541, 541n1

normalized vol, 182, 194

normal model: forward vol trades, 421n12, 425; implied vol, 196n33, 198–204; option sensitivities under, 543; swaptions, 193–208

normal vol, 182, 194

notional principal, 5

NPV. *See* net present value

offer price, 8

offer side repo rate, 23

offer side spread, 8

offer side swap rate, 10, 10n17, 18–21

Office of the Comptroller of the Currency (OCC), 332

off-the-money swaptions, 205–6

OIS (Overnight Index Swap), 27, 105–6n26

Oldfield, George S., 77n4

old Treasury issue, 6n10

“ones,” 12n21

on-the-run Treasury, 6n10, 387n37, 390n40

open repos, 21, 21n34

option, defined, 465

option pricing, 463–518; basics of, 463–68; binary options, 500–511; binomial pricing, 475–83; Black-Scholes formula, 483–88; boundaries on, 468–74; delta, 488–92, 503–8; early exercise of options, 472–74; European put-call parity, 474; gamma, 492–97; multiperiod extensions, 481–83; packages, 510–11; problem set, 512–18; sensitivities, 488–500, 543; theta, 499–500; vega, 497–98, 508–9

oral contracts, 25n39

Orange County bankruptcy: and inverse floating rate notes, 321, 321n24; and LIBOR in arrears swaps, 262–63, 262–63n35, 267; and

structured notes, 293, 293n5, 321–24, 323n26; and swap spreads, 50n9

origination of mortgage loans, 533

out-of-the-money, 104, 467

Overnight Index Swap (OIS), 27, 105–6n26

overnight repos, 21

over-the-counter (OTC), 2n2, 58n24, 60

package pricing, 510–11

pair off, 132

par asset swaps, 68, 394

parity: cap-floor, 137–38; European put-call, 474; swaptions, 169–70, 205n36

par yield curve, 88

payer swaptions, 166, 178, 211n42, 226

payment conventions, 523–27

payment frequency: fixed-floating swaps, 12–17; formulas, 17–18

payoff profile. *See* return profile

Peng, Scott, 294, 325

pension funds, 455

period-by-period knockout swaps, 256, 283

periodic (sticky) caps and floors, 151–53

physically settled swaptions, 167, 179n16, 211n42, 420n11

pooling of mortgages, 533

positive carry, 98, 408

preceding payments, 24, 523–27

prepayment of mortgages, 532n6

present value, defined, 519–20

present value of basis point (PV01), 43–48, 48–49nn6–7, 102

pricing of binary accrual notes, 326–28

pricing of binary options, 500–511

pricing of capped floating rate notes, 309–10

pricing of caps and floors, 137–38, 142–44, 147–50

pricing of curve options, 437–42

pricing of embedded options, 252–53

pricing of forward vol trades, 421–24

pricing of index amortizing swaps, 252–53

pricing of inverse floating rate notes, 315–20

pricing of LIBOR in arrears swaps, 263–66

pricing of non-inversion notes, 333–38

pricing of straddles, 517–18

pricing of swaps, 76–134; assignments, 112–13; bootstrapping the curve, 86–102; day count changes, 99–100; Eurodollar futures, 76n1, 79–84; forward rates, 91–95, 97–99; forward starting swaps, 113–29; futures convexity bias, 84–86; handchecks, 103, 106–10, 111–12; mark-to-markets, 104–10; model for, 95–97; nonstandard swaps, 102–34; present value of basis point, 102; problem set, 130–34; source of, 76–86; unwinds, 111–12; zero coupon rates, 90–91

pricing of swaptions, 175–209; Black’s model, 180–93; Constant Elasticity of Variance (CEV) model, 208–9; normal model, 193–208; other models, 208–9; SABR model, 209

Prime floating rate notes, 305–8, 305–6n13

principal-linked derivatives, 293n3

problem set, 36–39, 72–75, 130–34, 159–65, 222–29, 278–91, 339–52, 408–13, 458–62, 512–18

product innovations, 414–62; Bermudan cancelable swaps, 426–27; correlation trades, 415–16; curve options, 427–57; forward vol trades, 416–27; problem set, 458–62

put options, 465, 471–72, 503–4

puts payers, 393

put swaptions, 166

puttable swaps, 278–79

PV Coupon 01 approach, 364, 364n13, 365n16

quoted price, 8n14

Raabe, Matthew, 321n25

ratchet floaters, 298

range notes, 324–31; binary accrual notes, 326–31; defined, 298; LEANs, 324–26; market trends for, 294

rate bias, 421n14, 426

realized (actual) volatility, 421, 434–36, 497

receiver swaptions, 166, 226

reference rate, 250

regional banks, 249

regional dealers, 302n8

registration mandate, 61

regulatory framework: Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, 60–63; for structured notes, 331–32

relative value and macro trades, 353–413; after Lehman bankruptcy, 404–7; asset swap trades, 394–407; carry and roll-down analysis, 354–61; conditional swap spread trades, 389–94; conditional yield curve trades, 376–81; curve trades, 361–81; FHLMC asset swaps, 403–4; FNMA asset swaps, 402–7; forward yield curve trades, 373–76; problem set, 408–13; spread of spreads trade, 387–89; swap spread trades, 382–94

relative volatility, 182, 184, 198n34

replication of forward vol trades, 422–24, 424n16

repo rates, 21–23; and LIBOR rates, 52n12; and swap spreads, 55n16, 385

repurchase agreements (repos): defined, 21–23; and haircuts, 23n36; and Orange County bankruptcy, 293n5, 321–22; and spread risk, 54; in swap spread trades, 385

resets and payments: daily reset mechanism, 305–6, 305–6n13; fixed-floating swaps, 23–25; Prime floating rate notes, 305–6

residual swaption position, 217, 219n47

return profile: binary call options, 511n43; curve options, 450; delta hedging, 496n33; index amortizing swaps, 254–56; LIBOR in arrears swaps, 272

reverse inquiry, 156n24, 158n25

risk characteristics of swaps, 40–63; counterparty risk, 2n3, 58–63, 58n24; currency risk, 57; interest rate risk, 40–48, 43–48, 302n9; problem set, 72–75; spread risk, 48–57

risk-free rate, 465n5

risk-neutral probabilities, 480

risk-neutral valuation, 480, 480n22

roll-down analysis, 41n1, 354–61, 385n35

Ross, Stephen A., 77n4

SABR model, 209

Santa-Clara, Pedro, 244n13

Sawyer, Nick, 429, 437

Scholes, Myron, 485. *See also* Black-Scholes formula

Schwartz, Eduardo S., 244n13

Securities and Exchange Commission (SEC), 61, 61n27, 332

senior tranche, 414–15n1

servicing of mortgage loans, 139, 139n6–7, 533

settlement date, 77n4, 136, 419

short-dated curve options, 434n25, 435, 438n29

short-dated options, 498

short-dated swaptions, 175, 175n14

short gamma, 496, 496n34, 505

short spreads, 49

short stub, 400n52

short swap spreads, 382

short vol, 509

single European swaptions, 166, 209n41, 217n44, 220n48

single old Treasury issue, 6n10

“sixes,” 12n21

skew: Bermudan swaptions, 221; Black's formula, 184–93; swaptions, 205–6

smirk pattern, 188, 192n28

snowball bonds, 298–99, 298n7

sold spreads, 49

sold swap spreads, 382

special repos, 22

spot price, 355, 424–25

spot starting caps, 136, 136n1

spot starting transactions, 23

spot volatility, 146

spread lock, 390n41

spread of spreads trade, 387–89

spread risk, 48–57

spread trades, 49

statute of frauds, 25n39

steepener trades, 361–62, 377, 432

step-up strike caps, 151, 151n18

sticky (periodic) caps and floors, 151–53

stop-loss, 367, 367n17

straddles: cap/floor straddle, 272; CMS swaps, 277; forward vol trades, 417, 417n5, 421n12; pricing, 517–18

strike, 174, 192, 465, 469n11

strike mismatch, 192n29

structured notes, 292–352; binary accrual notes, 326–31; capped floating rate notes, 308–10; defined, 300–304; floating rate notes, 305–8; inverse floating rate notes, 310–24; LEANs, 324–26; market trends for, 294, 299–300; non-inversion notes, 332–38; and Orange County bankruptcy, 321–24, 323n26; Prime floating rate notes, 305–8; problem set, 339–52; range notes, 324–31; regulatory response to, 331–32; target redemption notes, 344–52; types of, 295–99

Subrahmanyam, Marti, 86

Sundaresan, Suresh, 78n4, 79

super floaters, 340

supernormal skew, 188

Supervision and Regulation Letter (SR 94–45, Federal Reserve), 332

swap curve: and interest rate risk, 41; inversion of, 332–33, 333n31, 453–57; and pricing of swaps, 94n18; and roll-down, 357–58, 358n5; and step-up strike caps, 151n18. *See also* curve options

swap dealers, 61

swap execution facility, 61

swaplets, 137

swaps, 3–39; amortizing swap, 131–32; basis swaps, 28–34; cross-currency swaps, 34–35; fixed-floating swaps, 4–28; interest rate swaps, 3–28; problem set, 36–39; risk characteristics, 40–63; traditional uses of, 63–75. *See also* pricing of swaps

swap spreads: conditional, 389–94; and GC-LIBOR, 51–53; and level of rates, 54; for longer holding periods, 385–87; and repo rates, 54, 55n16; and shape of yield curve, 53–54; spread of spreads trade, 387–89; supply and demand for, 53; and systematic credit and liquidity concerns, 54; trading of, 7, 7n13, 8, 382–94; and Treasury supply, 53

swaption matrix, 175, 286, 425

swaption on a forward starting swap, 417–18

swaption parity, 169–70, 205n36

swaptions, 166–229; at-the-money, 198–204; Bermudan, 209–29; Black's model evaluation for, 180–93; caps/ floors link to, 178–80; exercising, 167n3; implied vol, 184, 198–204; lognormal implied vol, 198–204, 205–6; lognormal nature of interest rates, 181–84; multi-European, 209–29; normal implied vol, 198–204, 205–6; normal model, 193–208; off-the-money, 205–6; overview, 166–78; parity,

169–70, 205n36; pricing, 175–78, 180–209; problem set, 222–29; skew, 184–93, 205–6; uses of, 170–72; value at expiration, 168–69; volatility of, 174–75

swaption straddles, 196, 226

sympathy moves, 393n44

synthetic floating rate funding, 64, 266–67, 304

tail, 174

target redemption notes, 344–52

teaser rates, 296

technical bid, 53

term repos, 21–22

term sheet, 25–27, 25n39

theta: curve options, 449; option pricing, 499–500

Thomson Reuters, 8

“threes,” 12n21

total invoice price, 22

Tradeweb Markets LLC, 8

trading mandate, 61

trading special, 22, 52n10

trading the mortgage basis, 354n3

tranches, 414–15n1

Treasury market: conditional spread trades, 389–90n40; curve trades, 363n12; Fed purchases in, 56n17; hedging with, 49n8, 64–65n33, 84–85n10, 106n27; interest accrual basis, 22n35; and liquidity concerns, 54; on-the-run issue, 6n10; pricing in, 8n14; supply and spread risk, 53; and swap spreads, 382, 382–83nn32–33, 455n43

Treasury space, 373n23

2s10s swap curve flattener, 362

2s10s swap curve steepener, 361–62, 363n11

two-way markets, 30–31, 30n40

unadjusted payments, 24, 524

underwriting fees, 302n10

unfunded form, 293n4

unwinds, 111–12, 232n3, 247n15, 387

upfront fees or premium, 400, 428

valuation: of Bermudan swaptions, 217–29; of caps and floors, 142–44, 147–50; of multi-European swaptions, 217–29; swaptions, 172–74. *See also entries starting with “pricing”*

vega: binary options, 434n23, 508–9; option pricing, 497–98, 508–9; swaptions, 175

volatility (vol): absolute, 183, 198n34; actual, 421, 434–36, 497; average vol curve, 144; base vol curve, 144, 286; basis point, 182, 183, 194, 200; and caps and floors, 144–47; forward, 146, 220n48, 416–27, 417n3; and futures convexity bias, 86; implied, 198–204, 434–36; realized, 421, 434–36, 497; relative, 182, 184, 198n34; spot, 146; swaptions, 174–75; terminology of, 144n13. *See also implied vol*

volatility risk, 380, 380n28

vol differential, 377n27, 393

vol grid, 175

Wall Street Journal on LIBOR, 4n5

weighted reset mechanism, 305, 305–6n13

yield curve, 53–54, 54n14, 66. *See also curve options*

yield to maturity, 42, 520

yield/yield asset swaps, 400, 400–401nn52–53

yield/yield asset swap spread, 69, 402

zero coupon rates, 87, 88, 90–91, 108n31

zero coupon swaps, 13

Zero Interest Rate Method, 164

Zhou, Fei, 217

