## Index

abnormal returns, 168, see also cumulative abnormal returns (CAR) accounting fair-value, 163 historical-cost, 163 accounting standards, see generally accepted accounting principles (GAAP); International Financial Reporting Standards (IFRS) active risk, 275 agents heterogeneity of, 381-382, 393 alternative investment funds (AIFs), 288 American International Group (AIG), 55, 185, 203 AIG-FP, 357, 460 American Recovery and Reinvestment Act (Recovery Act), 170 amplification mechanisms, 337-338, 460 antimoney laundering and countering financing of terrorism (AML-CFT), 517-518 artificial intelligence (AI), 185, 685 asset and liability management, 498 asset managers, 271-272 Asset quality reviews (AQRs), 22 asset quality reviews (AQRs), 459 assets under management (AUM), 262-263, 271, 281-282 asymptotic single risk factor (ASFM), 550 Australian Prudential Regulation Authority (APRA), 372–373 Austrian Central Bank (OeNB), 631 Systemic Risk Monitor (SRM), 98 backward induction, 494 Bagehot, Walter, 638 bancassurance, 585 Banco de México, 631 Banco do Brasil, 159 Bank for International Settlements, 530 Bank for International Settlements (BIS), 512 Committee on the Global Financial System (CGFS), 34, 35, 332 Innovation Hub, 686 International Data Hub (IDH), 195 bank holding companies (BHCs), 217, 461, 465 Bank of America, 149, 153, 163, 164, 167, 173

Bank of Canada, 5, 13, 57, 484, 508, 676 Bank Dynamic Balance Sheet model (BDBS), 5, 485-486, 500-508 Framework for Risk Identification and Assessment (FRIDA), 484 Macro-Financial Risk Assessment Framework (MFRAF), 5, 485-498, 508 Bank of Communications, 159 Bank of England (BoE), 13, 18-20, 23, 27, 53, 57, 60-62, 67-69, 80, 217, 251, 307, 346-347, 455, 458, 537, 635-638, 640-657, 676 Annual Cyclical Scenario (ACS), 17, 51-53, 59, 63 Biennial Exploratory Scenario (BES), 26, 28, 64-66, 326-327, 656-657 capital framework, 645-647 Financial Policy Committee (FPC), 18, 53, 64, 66, 240, 643 financial risk framework, 641-643 financial system model, 68-69 General Insurance Stress Test (GIST), 16, 299 Prudential Regulation Committee (PRC), 64 Prudential Regulatory Authority (PRA), 299-300, 307, 642, 643, 656 Risk Assessment Model of Systemic Institutions (RAMSI), 98, 105, 491-492 sterling monetary framework (SMF), 636-637 stress testing framework, 39 Bank of Israel, 407 Bank of Japan (BoJ), 53, 54, 80, 636 Bank of Montreal, 159 Bank of Nova Scotia, 159 Bank Recovery and Resolution Directive (BRRD), 373 bank run transmission mechanisms, 103-104 banking legal subsidiaries, 231 margins, 375-376 profitability, 375 regulation, 358-359, 370-372, 376, 664 regulatory constraints, 323, 501, 675 banks "gaming" results, 346 balance sheet re-optimisation process, 503

#### 698

behaviors, 17-18, 41, 497-500 counterbalancing capacity (CBC), 535, 537 funding cost, 535-536 resilience, 58, 497 risk-sharing arrangements, 212-213, 644-645 trust and custody, 261-263 Basel Committee on Banking Supervision (BCBS), 9, 35–36, 59, 112, 307, 332, 341, 364, 372, 445, 616 Advanced Internal Ratings Based (A-IRB) framework, 321 Basel I Capital Accord, 34–35, 306, 346 Basel II, 9, 35, 47, 48, 265, 306, 318, 346 Basel III, 23, 36, 190, 232, 316, 322, 324, 336, 364, 373, 486, 489, 501, 507, 523, 597, 616-619, 624, 626 Basel IV, 359 Market Risk Amendment (1996), 9, 306, 318 Working Group on Liquidity Stress Testing, 194-195 Bayesian persuasion literature, 213 Bear Stearns, 227, 240 behavior-based spread adjustments (pass-through), 502 Bernanke, Ben, 167, 218, 224, 370, 395, 399, 424 bilateral contracting mechanism, 610 binomial no-default theorem, 386 Bitcoin, 367, 401 Bloomberg Default Risk (DRSK) module, 536 Loan Crisis Data database, 158 book capital, 163 bootstrap methodology, 85 bounded rationality, 667, 668, 673 Brainard, Lael, 685 Brexit, 131, 185, 340, 648, 649, 654 Bridgewater, 167 CalPers pension fund, 442 Canadian Deposit Insurance Corporation (CDIC), 13, 486 Canadian Imperial Bank of Commerce, 159 capital dynamic measure, 325 year-to-year consistency, 325 capital adequacy, 12, 17, 22, 109, 249, 372-373, 635, see also supervisory oversight process, see countercyclical capital buffer (CCyB) buffer, 23 capital adequacy requirements (CARs), 370-372 capital conservation buffer (CCoB), 64, 458 capital shortfall, 144 cross-field relationships, 374-375 liquidity, 375 liquidity dry-out, 528-539 minimum capital requirements, 118, 371 procyclicality, 17, 458 quasi-assets, 144

## Index

total loss-absorbing capacity, 337 capital adequacy, asset quality, management, earnings, liquidity, and sensitivity (CAMELS), 513 capital losses, 488 Capital One Financial, 172 Capital Purchase Program, 217, 228 capital ratios, 10, 179, 268 Capital Requirements Directive (CRD-IV), 190 carbon tax, 679 Carney, Mark, 679 Case-Shiller housing index, 389, 400 CDS mortgage market, 401 central banks balance sheets, 636-637, 640-641, 649 credit terms cycle, 402-404 haircuts, 534, 652 horizon scanning, 649-650 liquidity demand, 653-657 policy insolvency, 639 role of capital, 639-640 central clearing, 438-439, 441 central counterparties (CCPs), 89, 340, 434, 478, 576 as critical network hub, 5 clearing members (CMs), 434, 439-442, 444-445, 576, 581-581 central tendency, 308 channels of contagion, 529, 667, see also contagion, 676-691 Chicago Mercantile Exchange (CME), 440 China CITIC, 159 Citibank, 164, 306 Citigroup, 105, 167, 173 Clarida, Richard, 227 Clearing House Association, 208 clearing payment vector, 495 climate change, 28, 678-679 collateral, 384-385, 388, 401 collateral equilibrium theory, 402 collateralized loan obligations (CLOs), 234 collective investment undertakings (CIUs), 569 commercial paper (CP), 462 commercial paper markets, 364 Committee of European Banking Supervisors (CEBS), 38, 78, 514, 557 Committee of European Insurance and Occupational Supervisors (CEIOPS), 299 Committee on Capital Markets Regulation, 209 Committee on Payments and Market Infrastructures, 340 Committee on Uniform Securities Identification Procedures (CUSIP), 191 Commodity Futures Trading Commission (CFTC), 241, 437, 442-444, 459 Common Investment Schemes (CISs), 288 complex systems, 6 complexity, 259

Cambridge University Press 978-1-108-83073-7 — Handbook of Financial Stress Testing Edited by J. Doyne Farmer , Alissa M. Kleinnijenhuis , Til Schuermann , Thom Wetzer Index <u>More Information</u>

complexity science, 593-595 compliance costs, 26 compound annual growth rate (CAGR), 356 Comprehensive Capital Analysis and Review (CCAR), 15, 25, 28, 29, 38, 51, 53, 98, 100, 172, 208, 251, 260–261, 268, 272, 287, 312–313, 321, 326, 339, 355, 437, 457-459, 508, 664 Comprehensive Liquidity Assessment and Review (CLAR), 461 conditional value-at-risk (CoVaR), 597 conditioning factors, 85, 86 constrained mean-variance optimisation, 500 contagion, 55, 402, 496 direct and indirect channels, 577, 584 contagion analysis, 528-531 exposure-based approach, 530 market-based methodologies, 529, 530 contagion channels, 677 Continental Bank, 344 copulas, 83 Archimedean, 83 elliptical distributions, 83 extreme-value, 83 Gaussian, 86, 134, 135 MacroFin, 94 parametric and nonparametric, 83-86, 92, 93 Coronavirus Aid, Relief, and Economic Security (CARES) Act, 226 cosine similarity exercise, 122 countercyclical capital buffer (CCyB), 63-64, 458, 508, 517, 523, 540 counterparty credit risk, 260-261, 439 counterparty defaults, 478, 479 Counterparty Risk Management Policy Group (CRMPG), 112 covariance (CoVar), 154, 156-159, 432 COVID-19 pandemic, 1, 100, 171, 179-182, 225, 230, 236–237, 635, 661, 677–678, 690 postcrisis reform, 238-239 response, 236 CP spread, 464, 471 credit default losses (CDLs), 478 credit default swap (CDS), 11, 218, 398, 601, 622 credit dynamics stationary and nonstationary, 414 credit loss, 21 credit rating agencies, 378 Credit Suisse, 172 credit surface, 402-404, 406 Credit Valuation Adjustment (CVA) risk, 130-131 credit-valuation adjustment (CVA), 260, 261, 553 crises and credit growth, 145 as information events, 225-226, 237 Asian crisis (1997-98), 32, 37, 98 Black Monday (1987), 279 equity market sell-off (2002), 280 financial, 100-101, 354, 667

#### Index

699

historical scenarios, 33, 256-257, 303, 332 Japan 'lost decade', 234-235 Kuwait invasion, 257 lifecycle of, 230-235 Paris commodities futures market failure (1974), 439 stock market crash (1987), 304, 513 U.S. savings and loan (1980s), 98, 101, 105 US savings and loan (1980s), 234 CRISIS agent-based model (CRISIS ABM), 612-613 Cryan, John, 164 cryptocurrency, 367, 434 cumulative abnormal returns (CAR), 218 cumulative distribution function (CDF), 157 currency unions, 378 cyberattack, 66, 345 data colection storage, 204 data collection, 70, 188, 195-196, 347, 460, 475-476, 681-684 "zooming", 201-202 and organizational skill set, 204-205 availability, 250 call reports, 198 challenges, 189-190, 478-479, 548-549 Common Reporting (COREP), 198, 202 consumer credit, 255 data providers, 202 Financial Reporting (FINREP), 198, 202 governance, 196-200, 203, 205 granular data, 3, 185, 189, 201 in Austria, 188 information gaps, 200, 210, 225, 230-233, 342, 460, 548, 664 mandates, 189-190 meta data, 190 storage, 686-687 data governance four-quadrant model, 196 data sharing, 70-71 De Nederlandsche Bank (DNB), 195 debt at risk, 547 DebtRank, 598-600, 603, 607, 608, 615, 619, 620, 625, 629-630 default cascading, 595, 598 default insurance premium (DIP), 432, 597 deleveraging, 490, 583-584 designated financial market utilities (DFMUs), 442 Deutsche Bank, 164 dimensionality reduction, 111-113 Dimon, Jamie, 341, 370 disaster myopia, 14, 26, 47-49 disclosure and transparency, 12, 22-25, 60-62, 167, 182, 208, 229, 348-349, 459 confidential information, 143

### 700

costs and benefits, 209-212, 219-221, 348 disclosure policies, 237-238, 340 in regulatory circles, 217-219 optimal disclosure policy, 214-216, 229 risks, 61-62, 209-212, 372-373 disclosure regime, 3-4 discounted cash-flow analysis, 264 Dodd-Frank Act, 19, 224, 232, 287, 319, 343 Dodd-Frank Act Stress Test (DFAST), 98, 172, 301, 312-313, 339, 456, 458, 466, 473, 664, 682 domestic systemically important banks (D-SIBs), 507 dot-com bubble, 178 Dow Jones, 181, 224 Economic Growth, Regulatory Relief and Consumer Protection Act, 19, 172 economic recovery scenarios, 236 Economic Simulation Library (ESL), 669-670 effects cross-border network effects, 530 distress contagion, 56 indirect contagion, 56-57 liquidity stress, 56 ripple effects, 333 Ellington Capital, 389 Emergency Economic Stabilization Act (EESA), 226, 227 emergency liquidity assistance (ELA), 528 environment, social and governance (ESG), 279 equity valuation, 585-586 eSecLending, 442 European Banking Authority (EBA), 16, 18-20, 38-39, 61, 78, 90-92, 158, 457, 557, 565, 586, 670 biannual program, 251 European Central Bank (ECB), 13, 18, 22, 23, 58, 78, 196, 217, 557 Financial Stability Review (FSR), 78, 90, 559, 564, 567 macroprudential framework, 558 semi-structural model, 58 STAMP€ model, 105 STAMP€ model, 560–561, 563 Stress-Test Elasticities (STEs) model, 86-87 systemic liquidity risk framework, 57 European Commission (EC), 13, 193-194, 377 European Comprehensive Assessment, 459 European Insurance and Occupational Pensions Authority (EIOPA), 78, 92, 299, 568, 585 European Market Infrastructure Regulation (EMIR), 93, 188, 194, 202, 587, 682 European Securities and Markets Authority (ESMA), 78, 92, 437, 442-444, 576 European Stability Mechanism, 13 European stress testing exercises, 12-13, 229

## Index

European supervisory authorities (ESAs), see European Securities and Markets Authority (ESMA); European Insurance and Occupational Pensions Authority (EIOPA) European System of Central Banks (ESCB), 191 AnaCredit, 188, 195, 589 European Systemic Risk Board (ESRB), 16, 39, 78, 90, 205, 366, 685 events black swan event, 181, 302 left-tail event, 344, 181 six-sigma, 302 tail events, 14, 50, 52, 489 ex ante tracking error, 275 exchange traded funds (ETFs), 271, 361-362 expected systemic loss (ESL), 600-601, 622, 625 exposure deposits and loans, 603 derivatives, 604 foreign exchange, 604-605 securities cross-holdings, 603 exposures at default (EAD), 253, 256, 489, 550-552 Fannie Mae, 220, 241, 328, 362, 365, 433 Federal Deposit Insurance Corporation (FDIC), 228 Federal Housing Finance Agency (FHFA), 365 Federal Open Market Committee (FOMC), 417, 420, 423-426 MBS purchase program, 424 Treasury purchase program, 424 Federal Reserve Bank of New York (FRBNY) Capital and Loss Assessment under Stress Scenarios (CLASS) model, 108, 255 Federal Reserve Bank of St. Louis, 462 Federal Reserve System (Fed), 11-13, 16-21, 61, 80, 182, 217, 224, 225, 236, 240, 259, 313, 319, 321, 326, 336, 343, 405-407, 417, 420-426, 442, 636, 670 CCAR, see Comprehensive Capital Analysis and Review (CCAR) Financial Stability Climate Committee (FSCC), 685 SCAP, see Supervisory Capital Assessment Program (SCAP) sensitivity analyses, 236-237 transparency, 25, 208 feedback effects, 56, 77, 101, 436, 502, 503, 531, 539-540, 581 feedback loops, 476-478 FICO (credit score), 382-384, 403 Financial Accounting Standards (FAS), 131 financial frictions, 344 Financial Industry Business Ontology (FIBO), 196 financial innovation, 356-357, 366 Financial Sector Assessment Program (FSAP), 1-2, 37, 39-40, 78, 98, 100, 112, 300, 458, 459, 461,

Cambridge University Press 978-1-108-83073-7 — Handbook of Financial Stress Testing Edited by J. Doyne Farmer, Alissa M. Kleinnijenhuis, Til Schuermann, Thom Wetzer Index <u>More Information</u>

> 468, 511, 513, 514, 520, 530, 536, 541-544, 546-547,676 Risk Assessment Matrix (RAM), 515, 519 Financial Stability Board (FSB), 28, 70-361, 512, 681 Global Monitoring report on Non-Bank Financial Intermediation (2018), 357, 366 financial stability objective function, 108-111 Financial Stability Oversight Council (FSOC), 205, 233, 240, 664, 684–685 financial system and real economy, 662, 677-681, 683 as complex adaptive system, 354, 663-664 bank-based, 358-359 complexity of, 48, 230-233, 459, 662-665 interconnections, 431, 458-459, 530, 579-580 market-based, 68, 357-364 nonbank, 66-67, 341, 355-356, 587, 674 structure of, 4-5, 358-364 undercapitalized, 146 financial systems, 353 financial-accelerator effects, 95, 477 Finrep-Corep templates, 561 FinTech, 200, 233, 366, 545 fire sales, 56-57, 101, 109, 146, 353, 399, 457, 476, 477, 488, 490, 493, 494, 537, 584 first-round effects, 559 fiscal cliff, 423 Fischer, Stanley, 407 flight to collateral, 402 flight to safety, 402, 573 Flow of Funds (US), 366 flow-of-fund matrices, 585 forecasting driver maps, 251-252, 262 forward stress test, 112 framework approaches Newey-West HAC-robust standard errors, 551 quantile regression approach, 551 Freddie Mac, 220, 241, 328, 362, 365, 433 Geithner, Timothy, 167, 395, 514 General Data Protection Regulation (GDPR), 203 generally accepted accounting principles (GAAP), 147, 263, 290, 295, 438 Global Legal Entity Identifier Foundation (GLEIF), 191, 192 Global Market Shock (GMS), 16 global market shock (GMS), 258-259, 326 global systemically important banks (GSIBs), 159, 326, 445, 616, 618 **GMAC**, 12 Goldman Sachs, 149, 173 governance corporate, 320 Government Accountability Office (GAO), 228, 457 government backstop, 167-168

#### Index

701

Government National Mortgage Asociation (GNMA), 367 government-sponsored entities (GSEs), 328, 362 Great Depression, 26, 224, 413, 415 Global Financial Crisis (GFC), 1, 9, 26, 28, 32, 35, 37, 40, 41, 77, 98, 105, 112, 162, 208, 224, 234, 306, 331, 402, 456, 460, 485, 538, 661, 663, 672-673, 677 losses, 21 response, 263, 464 Great Recession, see Global Financial Crisis (GFC) Greece sovereign debt, 401 green energy transition, 680 Greenspan, Alan, 428 gross domestic product (GDP), 51, 87, 519, 584 HBoS, 640-641 held for trading (HFT), 552 heterogeneity, 100, 102-105 in behaviors, 250 in business models, 104 high-quality liquid assets (HQLA), 374, 378-379, 527 Hirshleifer effect, 213-215 housing sector, 422, 585, 588 Howey Test, 367 HSBC Group Board, 59 hurdle rates, 19, 21, 39, 523 Iceland, 49 illiquidity threshold, 494, 495 impact evaluation, 24 income and substitution effect, 395 income and substitution effect, 396 Industrial Bank Co., 159 information asymmetries, 57 insurance "search for yield", 573 actuarial reserves, 292 commercial, 289 consumer, 289 customer behavior, 298 default, 584 disruption, 585 life insurance, 290, 567 modeling challenges, 298-299 primary insurance, 567 property and casualty (P&C), 290, 567 regulation, 289-290, 295-296, 299-300 reinsurance, 567 reserve estimation, 292 insurance sector, 92, 289-291, 340, 362 insurers composite, 290 Euro-area, 568-570 liabilities, 296

## 702

pensions, 92, 573 reinsurance, 290, 297 interbank exposures, 495 interest rate shocks, 247 interest rates, 92 "tight credit", 382-383 Internal Capital Adequacy Assessment Process (ICAAP), 15, 318 International Association of Accounting Supervisors (IAIS), 296, 299 ICS 2.0, 296 International Banking Research Network, 195 International Financial Reporting Standards (IFRS), 147, 290, 295, 438 International Monetary Fund (IMF), 5, 9, 13, 53, 54, 80, 190, 511, 654, 681 Financial Sector Stability Assessments (FSSAs), 511, 518 FSAP, see Financial Sector Assessment Program (FSAP) growth-at-risk (GaR) methodology, 95, 512, 514-516, 544-545 Macro-Financial System Simulator (MASS), 58, 522 Transparency Exercise, 514 International Organisation for Standardization (ISO), 191 International Securities Identification Number (ISIN), 191 intervention recapitalization, 224 safety nets, 237-239 inverted production cycle, 567 JP Morgan (JPM), 151-152, 173 JP Morgan Chase, 164 Judson, Ruth, 190 jusen, 235 Kerviel, Jérôme, 266 Kidder Peabody, 384 Knightean uncertainty, 687 kurtosis, 83, 489 largest counterparty default, 261 LCH Clearnet, 439 Legal Entity Identifier (LEI), 188, 191-193, 205, 683 Lehman Brothers, 55-56, 164, 192, 227, 233, 439, 538.579 LEI Regulatory Oversight Committee, 191 lender of last resort (LLR), 13, 651 lending commercial, 252-254 retail. 254-256 leptokurtosis (fat tails), 129, 337, 339 Less Significant Institutions (LSIs), 90 "level K reasoning", 667

## Index

leverage, 5, 155, 401, 411, 517 and macroprudential policy, 405 asset prices, 383, 388-391 binomial leverage theorem, 386 down risk or volatility, 383, 386-387, 394 endogenous leverage, 381, 383-386, 399 financial innovation cycle, 401 leverage cycle, 381-392, 675 procyclicality of, 539 slow leverage cycle, 391-392 leverage constraints, 539-540, 668 leverage cycle crash, 382, 397-399 debt-fragility mechanism, 384, 395-397 leverage mechanism, 394-395 liquid wealth mechanism, 383-384, 393-394 leveraged lending, 234 leveraged structures, 305 liabilities, 503 liquidity insolvency, 343 Lloyds Banking Group Ltd., 159 Lloyds TSB, 641 loan-to-value (LTV) limits, 370 loans commercial and industrial (C&I), 253 commercial real estate (CRE), 253 London Interbank Offer Rate (LIBOR), 461-462 London Interbank Offer Rate-overnight indexed swap (LIBOR-OIS), 538 long-run marginal expected shortfall (LRMES), 147-148, 150-153 Long-Term Capital Management (LTCM), 304, 354 loss given default (LGD), 253, 256, 489, 503, 550-553, 562-563, 585 machine learning (ML), 185, 255, 545, 686 macroprudential authority (MPA), 684-687, 690 macroprudential policy, 63-64, 78, 410, 427, 455, 541, 589, 684, 688 Mahalanobis distance, 115, 122 management information systems, 334 margin call, 393 marginal expected shortfall measure (MES), 432 marginal systemic risk ( $\Delta$ ESL), 623, 625–626 marginal systemic risk (ESL), 601-602 market ecology theory, 670-673 market losses, 489 Market Risk Amendment (MRA), 306 market volatility, 671, 672 market-based capital measures, 163, 165-166, 183 market-efficiency hypothesis, 670-671 market-stressed tangible common equity (TCE) ratios, 176 market-to-market (MTM) accounting, 489 effects, 495 market-to-market (MTM) losses, 490, 493-494, 537 Markets in Financial Instruments Directive (MiFIR), 194

Cambridge University Press 978-1-108-83073-7 — Handbook of Financial Stress Testing Edited by J. Doyne Farmer , Alissa M. Kleinnijenhuis , Til Schuermann , Thom Wetzer Index <u>More Information</u>

> Markov process, 411 Markov regime-switching regressor, 535-537 Markowitz optimisation framework, 502 maxmin loan, 386 Met Life, 299 microprudential policy, 410 "Minsky effect", 43 Mishkin, Frederic, 233 mixed-integer linear programming (MILP), 619 model innovation, 29, 673-677 Model Risk Management (MRM), 252, 301-302, 306–307, 313 history of, 303-307 modeling, 334 access to funding markets, 493 Advanced Measurement Approach (AMA) capital models, 265, 266 asset return, 83 copulas, 90 deposits, 264-265 financial spillovers, 467-479 fire sales, 476 management actions, 499, 501-502 market- and business-specific approaches, 257-258 non-interest expenses, 265 of expectations, 413 outputs, 295, 496-497 retail lending, 255 revenue, 257-258, 262 scenario choice, 20–22, 143, 333, 519 scenario impact, 20, 81, 332–333, 519 segmentation, 265 sense-checking outputs, 681 sovereign risk, 377-378 transition risk, 543-544, 679, 684 models, 301-302 age-period-cohort models, 255 Agent-Based Model (ABM), 42, 43 agent-based model (ABM), 540, 579-581, 594, 607, 617, 622-624, 666-667, 680, see also CRISIS agent-based model (CRISIS ABM) Automatic Scenario Generation Model (ASGM), 136-139, 141 autoregressive moving-average (ARMA), 115 bank business models, 104 Bayesian model averaging (BMA), 551, 563 Bayesian model averaging (BMA)risk credit risk, 562 Bayesian vector autoregression (BVAR), 90 bivariate GARCH, 155 bivariate volatility model, 155 bottom-up, 558 calibration, 412-416, 469, 491, 507-508 challenger (secondary) models, 251, 309 conceptualization and development, 309-311, 334 conditional value at risk (CVaR), 142

#### Index

703

contagion models, 56, 57, 675 credit default, 469 disclosure and transparency, 62, 208, 214-215, 219-221, 333 dynamic condition correlation (DCC), 148, 152 Dynamic Conditional Beta (DCB), 144-145, 148-149 dynamic stochastic general equilibrium (DSGE) models, 43, 137, 358, 415, 520 econometric, 308 empirical, 42 exponential GARCH (EGARCH), 137 factor models, 283-285 Federal Reserve Board (FRB)/US macroeconomic model, 17 Flexible System of Global Models (FSGM), 520-521 forecasting (statistical), 305, 308, 310 general equilibrium models, 43, 86, 579, 639, 661, 666, 667 generalized autoregressive conditional heteroskedasticity (GARCH), 85, 137, 148, 152 Global Circulation Model (GCM), 140 Global Macrofinancial Model (GFM), 520 global VAR (GVAR), 87-89 Glosten-Jagannathan-Runkle GARCH (GJR-GARCH), 152 GlostenJagannathanRunkle GARCH (GJR-GARCH), 149 hazard model, 256 heterogeneous agent models, 189 independent validation, 311 infinite-horizon, 414 interaction, 348 loan-level models, 255 logical data model (LDM), 196-200 marketing data vs. accounting data-based, 21, 22 National Institute Global Econometric Model (NiGEM), 87, 91 New Keynesian, 411-412, 416 nonequilibrium, 680 option-pricing, 303 out-of-equilibrium models, 661, 678 outputs, 523 Oxford Economics, 91 parametric, 85 partial-equilibrium model, 537 potential exposure (PE), 128 pricing, 135, 308, 310 reduced-form (structural), 456, 478, 583 regulatory, 25 results, 312 satellite, 81, 515, 522-560 simulated, 42 solvency-liquidity dry-out model, 538 state-transition models, 255 stochastic frameworks, 43

#### 704

supervisory, 108, 460, 476 top-down, 21, 108, 558, 564, 588 two-period, 338, 414, 487 uncertainty, 312 valuation, 142-143, 264, 286 value-at-risk (VaR), 48, 128, 142, 156-157, 272, 306, 354, 597 vector autoregressions (VARs), 87, 530, 584 Modigliani-Miller (M-M) theorem, 388 Monetary Authority of Singapore, 53, 67 monetary policy, 5, 406-407, 410-411, 424, 427-428 "leaning against the wind", 411, 413-416, 418-420, 424, 426-428 money market funds (MMFs), 355-356, 364 Money Market Statistical Reporting (MMSR), 188, 202 monitoring universe of nonbank financial intermediation (MUNFI), 360 Monte Carlo simulations, 115, 310 Morgan Stanley, 173 Morgan Stanley Capital International (MSCI) All-Country World Index (ACWI) exchange-traded fund (ETF) (MSCI ACWI ETF), 147, 149 mortgage lenders, 366-367 mortgage-backed securities (MBSs), 663, 672 mortgage-backed-security-related liabilities (MBS), 227, 232 multilayer networks, 587, 602-607, 623 mutual fund data, 189 mutual funds, 361 myopic optimization, 675 Nasdaq exchange, 440, 444 Nash equilibrium, 502-507, 579 National Bank of Austria, 534 National Bureau of Economic Research (NBER), 248 National City, 463-464, 469 National Council on Compensation Insurance, 293 National Cyber Security Centre (UK), 66 nationalization, 166-167 net asset value (NAV) funds, 272, 287 net fees and commision income (NFCI), 564 net interest income (NII), 552, 563, 566-567 network analysis, 434-435, 448 network effects, 476 Network for Greening the Financial System (NGFS), 544 network-based systemic risk, 594-596, 598 as externality, 602, 607 in multi-layer networks, 596, 603 policy implications, 625-626 quantification, 597-602 networks, 627-628 bipartite, 606, 608 clustering coefficient, 627

### Index

degree and degree distribution, 627 direct exposure, 603-605, 619-620 exposure, 596 financial, 434, 448, 593 hub-and-spoke topology, 434 indirect exposure, 606-607, 620-621 managing systemic risk, 607-611, 625 multilayer, 627 network dynamics, 667-668 random graph, 627 scale-free, 628 systemically optimal networks, 624-625 topology, 593, 596-597, 607, 619-621, 627, 689 nodes, 434-596 node depth, 434, 435 nonperforming loans (NPLs), 537, 550, 566 Norges Bank, 53, 417-420 Monetary Policy Report, 420 Northern Rock, 538 NYU Stern Volatility Lab, 438, 445 Obama administration, 166 Office of Federal Housing Enterprise Oversight (OFHEO), 220, 241-242, 328 Office of Finance Research (OFR), 205, 233, 240 Office of the Comptroller of Currency (OCC), 13, 306Office of the Superintendent of Financial Institutions (OSFI) (Canada), 13, 57, 299, 484 Liquidity Adequacy Requirements (LAR) Guideline, 492 Net Cumulative Cash Flows (NCCF) return, 492 Olsen, Øystein, 420 open-market paper, 361 optimal monetary policy, 413 conceptual framework, 411-412 optimal portfolio choice theory, 498-502 option-adjusted spread, 403 Options Clearing Corporation, 442 Orange County (California), 305 ordinary least squares (OLS) regression, 115 ordinary least squares (OLS) regressions, 256 Organisation for Economic Co-operation and Development (OECD), 190, 415 New Approaches to Economic Challenges (NAEC) Innovation Lab, 686 other financial institutions (OFIs), 576-581 Over-the-Counter (OTC) markets, 188, 203, 581 derivatives, 438 Own Risk & Solvency Assessment (ORSA), 291, 299 P-quants, 310 Paris Agreement, 66, 679 PCE inflation, 424 pension funds, 362 Phillips curve, 406

Poisson process, 138

Cambridge University Press 978-1-108-83073-7 — Handbook of Financial Stress Testing Edited by J. Doyne Farmer, Alissa M. Kleinnijenhuis, Til Schuermann, Thom Wetzer Index <u>More Information</u>

policy financial stability, 101 Powell, Jerome, 172, 426 Predictive Risk-Factor Stress, 278 preprovision net revenue (PPNR), 333 Prince, Chuck, 49, 376 probability distribution, 309, 518 probability of default (PD), 253, 489, 503, 536, 542, 550, 551, 562 propensity-to-spend reversal, 395, 397 Q-quants, 310 quadratic loss function, 411 quantitative easing (QE), 196, 265, 407, 537, 636 Quarles, Randal, 181, 182, 236, 237 Quicken Loans, 366 Rabobank, 192 ratios Amihud measure of stock market liquidity, 537 asset-maintenance, 523 common equity Tier 1 (CET1), 19, 39, 268, 311-313, 461, 466, 470-471, 473, 474, 480, 487, 496 debt-service to income (DSTI), 542, 547 debt-to-income (DTI), 383, 384, 391, 403, 541 gross written premium (GWP), 569 interest coverage ratio (ICR), 547 leverage, 147, 312, 327-328, 489-490, 500 liquidity coverage ratio (LCR), 202, 321, 336, 373-374, 460, 461, 495, 500, 501, 508, 527, 531,688 loan-to-value (LTV), 383, 384, 386, 391, 394, 403, 541, 552, 563, 588 net stable funding ratio (NSFR), 336, 373-374, 461, 508, 688 risk-weighted capital, 500 total capital (TC), 312 real estate investment trusts (REITS), 365 recapitalization, 230 redemption impacts, 573 regression modeling, 86, 254, 266, 308 RegTech, 233 regulation sovereign debt and exposures, 377-379 Regulation on Wholesale Energy Market Integrity and Transparency (REMIT), 194 regulatory arbitrage, 24, 231, 357 regulatory assessments, 157-159, 672 regulatory capital, 163-166 regulatory capital regime, 166, 233, 320 regulatory coordination, 240-241, 357 regulatory credibility, 241–242 regulatory fragmentation, 233, 240, 684 regulatory measures, 154 Tier 1 capital ratio, 11, 18, 38, 165-166, 268, 312 reinsurance excess of loss, 297

#### Index

#### 705

proportional vs. tranched basis, 297 quota share, 297 relationship because the unprecedented level, 468 repo markets, 356, 364, 538 repurchase agreement ('repo'), 40, 260, 361 requirements capital, 410, 688-689 liquidity, 410 Reserve Bank of New Zealand (RBNZ), 64 Reserve Primary Fund, 56, 57 resilience of financial system, 10, 100, 317, 431, 456 retail bank ring-fencing (UK), 689 return on capital, 500 returns on equity (ROE), 65, 314, 375 reverse stress test, 15, 89-90, 101, 111-123, 133, 279.437 applied reverse stress testing (ARST), 100, 101, 113–115, 121–124 Riksbank, 417 Ramses model, 414 risk, 79, 83 "loss given materialiation", 79, 81 absolute and relative risk metrics, 274 aggregate, 542 asset risk, 291-292 banking system, 106, 247-248, 322-323 capital, 501 climate risk, 27, 65-66, 542-544, 678-679, 683, 691 concentration and substitutability, 439 credit risk, 550-553, 562, 571, 572, 576, 595 cyber risk, 27, 66, 299, 345, 545, 690 determining risk appetite, 268, 275-277 downside risk, 275, 381, 512, 516 economic, 595 endogeneity, 354, 638-639 identification, see risk identification illiquidity, 331-332, 335, 339, 527 insolvency, 331-332, 335, 339 insurance risk, 16 insurance risks, 291-294, 571-572 interest rate, 247, 571 investment risk, 272-274 lapse risk, 571 levels of contagion, 528 liquidity, 495, 527, 534 market risk, 95, 552-553, 564, 571, 651 nonfinancial risks (NFRs), 265-268 nontraditional / emerging threats, 293, 342, 345 operational risk, 16, 265, 564 price of, 517 solvency, 492, 493, 534 sovereign risk, 378, 536 strategic risk, 341 tail risk, 336, 342, 354 underwriting risk, 572, 573, 575 VaRisk, 155

#### 706

risk ammendment internal ratings-based (IRB) approach, 35, 48, 255-256, 501, 536 risk assessment, 79-80, 424 risk density, 158 Risk Directorate (UK), 642 risk identification, 67, 136, 249-252, 320, 322 risk management, 320, 513 "three lines of defense", 335 balance sheets, 647 integrating stress testing, 59-60, 323 model risk, 301, 304, 311-313 risk aversion and appetite, see also stress tests, risk aversion and appetite risk reporting, 132-133, 356 risk taxonomy, 130-131 risk tolerance, 50, 507, 528, 635, 637-638, 642, 643, 647, 652 risk transmission channels, 543 risk weighted assets (RWA), 19, 24, 327-328, 465, 466, 473, 616-617 risk-amplification mechanisms, 515 Rocket Mortgage, 366 Roosevelt, Franklin D., 395 root-mean-squared error (RMSE), 29, 152 Royal Bank of Scotland (RBS), 640-641 "ruin" events, 112 second-round (amplification) effects, 10, 55-59, 67, 95, 485, 486, 489, 496, 497, 559, 564–565, 583, 586 securities asset-backed commercial paper (ABCP), 232, 356, 538 asset-backed securities (ABSs), 305, 356 available for sale (AFS), 258, 263, 552 collateralized debt obligations (CDOs), 129-130, 305, 378 collateralized mortgage obligations (CMOs), 305, 379 commercial mortgage backed securities (CMBSs), 305 held to maturity (HTM), 263 interest-only (IO), 305 non-trading, 263-264 principal-only (PO), 305 securitization, 360, 362 Securities Exchange Commision (SEC), 240, 272, 286-287 Securities Financing Transaction Regulation (SFTR), 194, 202 Securities Financing Transactions Data Store (SFTDS), 587 Securities Holdings Statistics (SHS), 189, 201, 202, 682 securities lending markets, 356 seigniorage income, 644

### Index

shadow banking system, 43, 48, 227, 232, 341, 348, 360-363, 459, 663 regulatory oversight, 364-367 Shiller, Robert, 400 shocks, 14, 26 "twin shocks" scenario, 573 availability and threshold heuristics, 14 endogenous reaction, 338 exogenous liquidity shock, 86, 580 liquidity, 27, 57-58, 493, 527 macrofinancial, 16, 559-560 macroprudential funding shock, 456, 473-476 market, 27 nonfinancial, 16, 27, 690 prudential funding shock, 465-467 solvency, 27, 56, 57 to mark-to-market portfolios, 20 short-term wholesale funding (STWF), 456, 460-476, 479 "shrinking to health", 477 Simple Risk-Factor Stress, 278 Single Supervisory Mechanism (SSM), 13, 22, 90, 557-558 sliced inverse regression factor analysis, 111 Slutsky equation, 396 Society of Actuaries, 293 Solvency II capital standards, 291, 296 solvencyliquidity nexus, 676-677 Soros, George, 402 sovereign holdings, 564 spillovers, 5, 55, 56, 437, 455, 456, 460-461, 521, 583-586, 675 index of aggregate vulnerabilities, 476 macroprudential, 473-476 SR profile, 599-600, 605, 620 Standard & Poor (S&P) 500, 170, 671 stranded assets, 543 stress test scenario design, 2, 3, 13-15, 332-334 and heterogeneity of financial system, 99, 108-123, 673-677 banking sector, 50, 247, 503, 508, 546 capturing systemic effects, 41 central counterparties (CCPs), 93-94, 442-444, 581-582 countercyclical, 17-18, 53, 94, 314 dependency breaks, 85-86, 88, 93-94 dimensional dependence, 87-88 high-frequency asset price methodologies, 81-86 historical sample period, 86 IMF stress tests, 514-522 information disclosure, 61, 212-216, 218, 339-341, 348-349, 524 insurers, 567-576 layer-of-shocks approach, 522 loss and revenue estimation, 328 macro-financial, 77-78, 86-87, 91-92, 95 model dependence, 87

Cambridge University Press 978-1-108-83073-7 — Handbook of Financial Stress Testing Edited by J. Doyne Farmer , Alissa M. Kleinnijenhuis , Til Schuermann , Thom Wetzer Index <u>More Information</u>

> modeling, 12, 81 multifactor scenarios, 295 narrative-based approach, 78-81, 90 nonbanks, 40-41, 92, 512, 546-547, 588 plausibility, 133 quantifying probabilities, 87-88 risk identification, 40, 64, 129-133, 248-252, 341 risk-surveillance process, 131 scenario horizon, 86, 130, 295, 336 scenario severity, 15, 50-53, 80, 94, 327, 340, 456, 458, 519, 650, 652–653 supervisory, 323-329 systemically chosen scenario approach (SCS or SCSA), 100, 101, 114, 115, 118-121, 123-124 traditional risk management models, 128–129 using historical experience, 15, 139-140 worst case scenario search (WCS), 88-89 stress test scenarios "double-hit", 92-93 "salient risks" approach, 326 adversity set, 114 calibration, 81, 90-91, 95, 128, 528 curve-inversion, 92-93 duration, 20, 294 hot spots, 108, 111, 112, 121 hypothetical, 257 incorporating shock-transmission channels, 105 micro- and macroprudential approaches, 5, 410-411, 557-559 peacetime vs. wartime, 4, 13, 25, 27, 171, 211, 268 scope, 19-20, 28, 650-652 short term, 295 uncertainty, 96 stress testing and capital planning, 240-242, 301, 322, 323 and data collection, 200-203, 333-334 asset management, 271 at IMF, 5 balance sheets, 499, 573-576 banking sector, 4, 29, 32-36, 90-92, 248, 318, 486, 522–531, 587 broader financial system, 576-582 capital, 4, 323, 331, 335, 339, 461, 473 central banks, 6, 643-648 central counterparties (CCPs), 90, 95, 431-433, 435-437 climate-change, 140 containing crises, 234 counterparty defaults, 478 counterparty exposures, 261, 262, 366 credit-loss stress testing, 253-254 designing a framework, 650-653 factor models, 283-285 financial macrocosm, 688-691 for CCAR, 287-288 for insurance companies, 294-295

#### Index

707

for trading activity, 256 foundations of, 32, 49-50, 433 frequency, 437 future of, 6, 40-44, 62-71 incentives against, 48-49 institutions for occupational retirement provision (IORP), 92 insurance sector, 4, 92, 95 integrating capital and liquidity testing, 342-345 interbank network, 495-496 leaning against the wind, 426-427 leverage, 489-491 leverage cycle, 405, 407-408 limitations, 25-27, 230 liquidity, 331, 335, 340, 491-495, 527-528, 534, 537-539, 654 macroprudential, 10, 58, 63-64, 100, 145-146, 353-358, 364, 410, 456-460, 475, 477, 511-512, 557-589 market data, 22, 144 market-based, 171-179 microprudential, 4, 10, 20, 100, 336, 342-345, 511 model portfolios, 279-281 model risk, 302, 309 model taxonomy, 307-309 net income, 262-263, 500 networks, 5, 448 nonfinancial risks (NFRs), 27, 266-268 overconfidence, 687 pension fund sector, 95 performance measurement, 268 procyclicality, 178-179 reluctance to engage with, 15 resolution planning, 15, 337 revenue, 254 sensitivity analysis, 345, 648 setting capital requirements, 324-329 solvency, 522-523, 524, 536 supervisory, 4, 317-330, 340, 346-347, 436-437, 442, 444-447, 558, 652 systemic risk, 484-485 stress tests "encompassing frameworks", 42 "financial stability" / "systemic risk", 100, 101, 105, 113 advantages of, 129 automatic scenario generation (ASG), 133, 136-139 cash-flow-based, 527-528 challenges, 9, 10, 22-25, 69-71, 102, 128, 142, 178-179, 364, 485, 668 climate, 679 communicating results, 22-25 concurrent, 53-55, 58, 63 credibility, 9-10, 23, 228-229, 459-460 criteria for passing, 18-19 during crisis / war, 232

#### 708

dynamic balance sheet, 39, 465 failure, 60, 129, 528 for policy advice, 541-542 historical, 278, 279 history of, 2, 9, 32-39, 48, 98, 317-319, 513-514 identifying crises, 662 macroprudential, 5-674 market-based approaches, 144-145, 178 microprudential, 102, 433, 513, 670 money market funds (MMFs), 92, 93, 95 objectives, 9, 10, 12-14, 433, 456, 497-499 official sector, 36-40 optimism, 172-175 plausibility, 128 regulatory, 5, 59–60, 67, 108, 171, 234, 286–288, 355, 357, 359, 372, 455, 459 risk aversion and appetite, 14-15, 29, 268, 507 risk factors, 16 solvency, 455, 488-489, 534-540 static balance sheet, 38-39, 487-488 strategy-specific stress tests (SSSTs), 133-136 stress outflows, 654 system-wide, 6, 41, 43, 66-70, 77, 95-96, 100, 357, 582-588, 661-662, 669, 679-688, 690-691 trading, 259 user-defined, 278 stress transmission channels, 101, 431 insurance sector, 572-573 structural vector autoregression (SVAR), 89, 540 structured investment vehicles (SIVs), 105 subprime loans, 401 subprime mortgages, 26, 55, 104, 401 Suez Canal Ever Given incident, 690 supervision microprudential, 331 traditional approaches, 322 Supervisory Capital Assessment Program (SCAP), 9-12, 23, 37-38, 60, 98, 101, 105, 155-156, 162, 167, 170–171, 182, 224–230, 234–235, 239, 241, 299, 316, 318-319, 334 supervisory oversight process, 316-317 minimum capital requirement (Pillar 1), 523 Pillar 2, 10, 19, 25, 318, 523 Supervisory Review and Evaluation Process (SREP), 323, 457 Swiss National Bank (SNB), 458 system assets in distress (SAD), 110-111, 124 systemic effects (SE) reduced-form approaches, 42, 43 systemic-effect losses, 42 systemic expected shortfall measure (SES), 154, 155, 597 systemic impairment, 116, 118 systemic risk, 101, 110, 111, 146, 439, 486, 497, 511, 512, 529, 584, 593-602, 623-626, 662, 663, 671

### Index

amplification mechanisms, 41, 508, 531 economic simulation modeling, 665-670 equilibrium modelling, 665-666 interconnectedness, 41 quantification of, 42 systemic risk buffer (SRB), 542 Systemic Risk Council, 437 Systemic Risk Measurement (SRISK), 3, 146–159, 432, 438, 444-447, 597 aggregate SRISK, 149-150 domestic SRISK (DMES), 150, 153 Global Marginal Expected Shortfall (GMES), 153-154 sensitivity analysis, 150-151 systemic risk tax (SRT), 607, 609, 610, 613-615, 623 systemic risks "reduced form" metrics, 42 systemically important financial institutions (SIFIs), 316, 378, 624 Tarullo, Daniel, 171, 208 Task Force on Climate-Related Financial Disclosures, 544 Taylor rule, 422 technical innovation, 44, 231, 367, 682 TED spread, 461-462, 464, 466, 470, 473, 475 Term Funding Scheme (TFS), 646 Title 12 (US Code), 232-233 Tobin tax, 609, 610, 613, 614 Toho Sogo Bank, 235 total loss-absorbing capacity (TLAC), 689 transaction-specific tax, 608-610 transient factors, 285 transition to low-carbon economy, 543 Treaty of Rome, 377 Troubled Asset Relief Program (TARP), 217-218, 372, 514 Trump administration, 285 Tsipras, Alexis, 395 UK Consumer Price Index (CPI), 309 UK Treasury (Her Majesty's Treasury HMT), 636 undertakings for the collective investment in transferable securities (UCITS) funds, 272, 288 unemployment, 17, 224, 415, 458, 519, 588 Unified Payment Interface (UPI), 205 United Nations (UN), 190 US Congress, 225 US Treasury, 227-228 V-Lab, 147, 149, 150, 153, 158 MESSIM, 148, 150, 153-154 valuation at amortized cost, 572 at fair value, 572 Venmo, 367 verisimilitude, 667, 687

Cambridge University Press 978-1-108-83073-7 — Handbook of Financial Stress Testing Edited by J. Doyne Farmer , Alissa M. Kleinnijenhuis , Til Schuermann , Thom Wetzer Index <u>More Information</u>

Index

volatility clustering, 83, 671 volatility index (VIX), 171, 392, 601, 622 Volcker rule, 689 vulnerabilities, 353, 511, 515–518, 651 institutional, 517–518 structural, 517 vulnerability analysis, 21, 512

Wachovia, 164, 463–464, 469 Wall Street Journal, 208 709

waterfall, 440, 444, 581, 643–644 wealth effect, 394 Wells Fargo, 163, 164, 172–174 William the Conqueror, 190 World Bank (WB), 9, 513, 551 *World Economic Outlook* (WEO), 518 World Trade Center, 293

Yellen, Janet, 431, 682