analytics	in early warning indicator framework, 113
in collateral management, 89, 96-97, 98	efficiencies from, 25, 85
in early warning indicator framework, 114	lack of, 89
forecasting, 12, 51	as liquidity risk management challenge, 3
for funds transfer pricing efficiency, 257	available stable funding (ASF), 226, 227,
in intraday liquidity measurement, 68	228, 230, 241, 246, 247
for liquidity risk MIS, 141–154, 167, 173, 175, 176, 181	
in risk management framework, 18, 19, 25	balance sheet optimization, 243-249, 252
in stress testing framework, 50, 51, 54	banker's acceptances, 63
analytics base tables (ABTs), 149-150, 153	Banker's Banks, 57
asset-liability committee (ALCO)	Bank for International Settlements (BIS), 57,
and contingency funding plan, 124, 138	58
and early warning indicators, 113	bank holding companies, 34, 188
liquidity risk governance role of, 9, 10,	Bank of England, 62, 74
204	bar kruptcy, 193
and liquidity risk stress testing, 46–47	Bankruptcy Code, 189
MIS reports to, 144	banks
asset-liability management (ALM)	balance sheet optimization by, 243–249,
integration with liquidity risk	252
management, 19	business practice optimization by, 21, 22,
and liquidity stress testing, 51, 52–53, 54	23
and technology infrastructure, 197	collateral held by, 15, 85
under treasury function mandate, 142	and early warning indicators, 114-119
assets	and global financial crisis, 8, 150, 201
in balance sheet optimization, 245–247,	and intraday liquidity, 55-56, 59-60, 62,
249	63, 68–70, 72
in disclosures, 265, 266, 267,	liquid assets held by, 218, 222
271–274	liquidity/funding disclosures by, 263-275
encumbered/unencumbered, 232, 273	and liquidity ratios, 214, 239-243
in funding strategies, 7	and liquidity risk, 1, 3, 57-58, 256
intraday credit to purchase, 61, 62, 65	managing liquidity across jurisdictions,
liquid, 216, 221–223, 269	236, 242–243
liquidity of, 30, 129, 130	and market volatility, 86
maturities of, 253	pre-2008, 84
price volatility of, 63	profitability of, 24
See also liquid asset buffer	regulation of, 107, 201-211, 224-225,
audit. See internal audit	233
Automated Clearing House (ACH), 57	reporting by, 146–148
automation	stress testing at, 38–39, 47
for collateral management, 15, 89, 94, 98	See also specific types of banks

Basel Committee on Banking Supervision (BCBS; Basel III)	and liquidity risk management capabilities
capital/liquidity regulations under, 15, 24,	systemic risk in, 70
86, 88	business practice optimization, 21-24
cash flow classification rules, 158-160	business profile
and disclosures, 263, 274	and contingency funding plan, 122, 123,
and early warning indicators, 106, 107	125, 128, 140
impact of, 3, 85, 201–202, 233–234	and early warning indicators, 134
jurisdictional issues, 242–243	monitoring of, 126, 136
and liquid asset definition, 222	and recovery actions, 187
liquidity risk guidance, 58, 68, 77,	business strategy
203–211, 213, 216, 232, 261–262	costs of, 235
and liquidity risk MIS design, 173, 175	and disclosures to investors, 271
ratios of. See Liquidity Coverage Ratio;	and early warning indicators, 132
Net Stable Funding Ratio	and new regulations, 22
regulatory reports under, 50, 148	and risk tolerance, 205
and stress testing, 72–73	business units
base rate, in funds transfer pricing, 254, 255	and contingency funding plan, 124, 127
basis risk, 253	in funds transfer pricing, 251, 253
BNY Mellon, 94	performance measurement of, 24
board of directors	in risk management collaborations, 11,
and contingency funding plan, 126, 138	142
and liquidity risk oversight, 9, 202–206, 235	
	CAMEL rating system, 202–203, 210
reports for, 147 bond(s)	capital
haircuts to, 218, 219	in available stable funding, 226, 227, 228
as high-quality liquid assets, 217, 218, 222	in funds transfer pricing, 254
bond market indices, 16	recovery, 129–130, 185–186
borrowing capacity, 135	regulatory requirements for, 15, 16, 21,
broker-dealers	22, 87, 242
asset funding for, 139	in resolution plan, 190–193
and collateralization, 87, 88, 91	stable, 226, 227
expansion of, 83	in stress testing, 12, 13, 28, 40, 49, 51, 52
building societies, 235, 241, 242	54
business as usual (BAU)	tier 1, and intraday credit, 70
and contingent liquidity events, 121	working, 14, 224
and continuity of service, 18	capital actions, 8, 45, 46, 51, 186
and early warning indicators, 17, 112, 124	capital management
and intraday liquidity, 71	and contingency funding plan, 123, 139
and new liquidity ratios, 249	in liquidity risk MIS, 149
and recovery/resolution plans, 184, 192	post-crisis enhancement of, 8, 234, 236
business continuity planning (BCP)	capital markets
and contingency funding plan, 18, 123,	collateral in, 62
127	liquidity in, 7
in liquidity stress test development, 13	post-2008, 85–86, 102
business model	pre-2008, 83–85
and business practice optimization, 22	volatility in, 15
and contingency funding planning, 127	Capital Requirements Directive, 233
impact of ratios on, 219, 230, 235,	capital surcharge rules, 243
239_243 249	cash

as high-quality liquid asset, 117	inventory of, 98
and intraday liquidity, 62, 63, 64	to mitigate counterparty credit risk, 81–82
for margin calls, 96	and recovery/resolution plans, 186, 195,
cash flow	196
classification of, 153, 154, 158–160	selection of, 97
and credit problems, 14	in stress test scenarios, 43–44
and early warning indicators, 108, 119	collateral management
estimating, 205, 206, 207	buy-side, 90–94
for retail/commercial banks, 86	case study, 99–102
treasury accountability for, 251	convergence in, 86, 90, 102–103
cash flow at risk (CFaR), 37	documentation in, 81–82
cash management function	functions of, 82
and intraday liquidity, 13, 14	holistic approach to, 87
management governance of, 205	infrastructure for, 15
in Volcker era, 55	in post-2008 markets, 85–86
central banks	in pre-2008 markets, 83-85
borrowing from, 186	sell-side, 88–90
deposits at, as recovery plan trigger, 186	collateral optimization
foreign, as contingent funding source, 196	function of, 16, 83 94–97
and global financial crisis, 85	need for, 87, 85
high-quality liquid assets from, 216, 217,	responsibility for, 97–98
221–222	technology to support, 98–99, 103
and intraday liquidity, 56, 62–64, 67, 70,	us of, 91
75	collateral service providers, 93–94
and risk management guidelines, 58	collateral trading desks, 96
See also Federal Reserve	Committee on Payment and Settlement
central clearing, 82, 87	Systems (CPSS), 57, 58
central counterparty (CCP)	Committee on Payments and Market
in collateralizations, 83, 91, 93	Infrastructures (CPMI), 57, 58
in FMUs, 75, 78	Commodity Futures Trading Commission
in securities settlement networks 69	(CFTC), 58
central securities depositories (CSDs), 78, 93	communication, organizational
chief financial officer (CFO), 126	about liquidity events, 13, 208
chief information officer (CIO), 20	and contingency funding plan, 124–127,
chief risk officer (CRO), 9, 10, 204	136, 137, 140
Clearing House Automated Payment System	See also reporting
(CHAPS), 74	Comprehensive Liquidity Assessment and
Clearing House Interbank Payments System	Review (CLAR), 122
(CHIPS), 57, 61	contingency funding plan (CFP)
clearinghouses	analytics to formulate, 152
and cross product margining, 95–96	applications of, 139
and derivatives, 246	design of, 123–125, 126, 138
and intraday overdrafts, 59, 62, 87	early warning indicators in, 132–134, 139
payments to, 13, 57	escalation levels for, 136–137
client intraday credit usage, 70–71	framework for, 125–138
collateral	function of, 121–122, 140
allocation of, 224	governance of, 125–128
availability of, 135, 139, 207, 273	guidance on, 122
in balance sheet optimizations, 246	and liquidity ratios, 235
for intraday overdrafts, 57, 61, 62, 69, 70,	and liquidity stress testing, 27, 44
75, 76	and recovery plan, 186

contingency funding plan (CFP) (Continued)	crisis management, 123, 124
in resolution planning, 20, 191, 194, 198	critical operations, 189, 190
in risk management framework, 17–18, 207–208	cross product margining, 95–96 currency
sample policy outline for, 128	differing, in LCR reporting, 232
stakeholders in, 124, 125, 126, 132	and liquidity disclosures, 273, 274
testing of, 128–129	for liquidity stress testing, 34–36
triggering, 17, 113, 137	See also foreign currency
contingent actions, 129-132, 138	currency risk, 253
contingent liquidity	custody banks, 84, 86, 91, 93, 96
categorization of, 121	
defined, 27, 29-30, 31	
in early warning indicator framework, 110	daily maximum intraday liquidity
and funds transfer pricing, 257-261, 262	usage, 70
and intraday credit, 76	dashboard, for liquidity risk, 51, 52,
sources of, 196	105–106, 113, 114
in stress test scenarios, 32, 44	data collection, 162–166, 1/5, 177
target level of, 48, 53	data dictionary, 167, 175
contingent liquidity risk, 253	data management
continuous improvement efforts, 13, 23	and contingency funding planning, 138
contractual obligations	and early warning indicator framework,
and disclosures, 265	113, 114
and resolution proceedings, 194, 195–196	and foreign currency liquidity risk, 208
in stress test scenarios, 32, 44	and intraday liquidity monitoring, 63,
Core Principles for Systemically Important	67–70, 72 for liquidity risk MIS, 142, 143–145, 148
Payment Systems, 58 corporate culture, 10–11	and stress testing framework, 50–51
corporate debt, 217, 219	supervisory guidance on, 211
counterparty credit risk	warehouse use in, 160–162
as early warning indicator, 116–117	data management policy, 167–168
mitigating with collateral, 81–82, 97	data profiling, 168–169
pre-2008, 84	data quality (DQ)
credit	and collateral management, 89, 97, 98
freeze of, 130	in funding projections, 188, 197
intraday, 59-60, 62, 64, 69-71	and liquidity stress test development, 40
credit default swaps, 107, 109, 133	in MIS framework, 166–172
credit facilities, and LCR rules, 224	and regulatory requirements, 18-19
credit rating	and risk management frameworks, 12
as early warning indicator, 115	data standardization, 169, 170
and LCR, 196	data validation, 169, 170-172, 179
and resolution proceedings, 196	daylight overdrafts. See intraday liquidity
and risk disclosures, 270	decision making
credit risk	and capability integration, 18
and collateral, 15, 81	and collateral management, 90, 97
as early warning indicator, 116	and contingency funding plan, 127
enhanced monitoring of, 14	and funds transfer pricing, 53, 252
interactions with other risk types, 204	and intraday liquidity policy, 67
in liquid asset buffer, 32	by investors, 271
oversight responsibility for, 10	and liquidity risk MIS, 143
See also counterparty credit risk	and regulatory compliance, 233
Credit Support Annexes (CSAs), 89, 97	and risk governance responsibility, 10, 11

denosite	Enhanced Disclosure Task Force (EDTF),
deposits central bank, 186	265–266, 272
and funds transfer pricing, 255–261	"Enhanced Prudential Standards (EPS) for
guarantees on, 223	Bank Holding Companies and Foreign
vs. loan balances, 274	Banking Organizations," 122, 201, 256
operational vs. nonoperational, 223–224,	enterprise risk management (ERM),
258	123, 139
outflows of, in stress test results, 42–43	enterprise risk management committee, 9
retail, 240–241	enterprise vendor solutions
time, 63	for analytics engine, 153
de-risking actions, 8, 186	for collateral management, 85, 88, 90–92,
derivatives	94, 96–99
in balance sheet optimization, 246	for liquidity risk management, 174
and bank funding requirements, 241	for reporting/MIP, 148
clearinghouse use for, 246	equities
and collateral management, 15, 85, 89-92,	haircuts to, 219
98, 195, 216, 221, 224	as high-quality liquid poset, 217
company position in, 215	investors in, 270
in liquidity stress testing, 32, 39, 41, 43	equity markets, 115
and resolution plans, 195	"EU Bank's Liquidity Stress Testing and
Design Authority and Architecture Review	Contingency Funding Plans," 122
Council, 176	European Banking Authority (EBA), 234,
deterministic models, 37	242
disclosure	European Banking Commission, 122
by banks, 240, 263–275	European Market Infrastructure Regulation
investor response to, 265, 266, 268,	(EMIR), 15, 85, 246
269–272, 275	exchanges
of LCR, 234	foreign, 34, 53, 79, 122, 134
leading practices in, 272–274	for high-quality liquid assets, 217
regulatory standards for, 15, 209 210, 263–266	pre-2008, 84
disclosure committees, 268	executive/senior management early warning indicators for, 16, 185
documentation	on liquidity crisis team, 126
for collateralizations, 82-83	and liquidity risk oversight, 9, 34, 138,
for liquidity stress teeting, 46	204, 206, 235
Dodd-Frank Wall Street Reform and	reports for, 147
Consumer Protection Act (DFA), 15, 85,	and risk model development, 12
92, 184, 188, 256	unu non mouel uevelopment, 12
. , . , ,	
	Federal Deposit Insurance Corporation
early warning indicators (EWIs)	(FDIC), 8, 184, 188
analytics to formulate, 152	federal funds rate, 55
in contingency funding plan, 132-134,	Federal Home Loan Banks (FHLBs),
139	63, 65, 196
framework for, 108–119	Federal Reserve
function of, 16–17, 105–106	Board of Governors, 55, 184, 188
and interest rate shock, 52	and collateral concerns, 69, 186
in recovery plan, 185, 186	and contingency funding plan guidance,
supervisory guidelines for, 107, 109, 112,	122
208	and daylight overdrafts, 56–57, 59, 62
electronic messaging, 92–93, 94	liquidity disclosures to, 267

Federal Reserve (Continued)	foreign exchanges (FXs)
on liquidity risk management framework,	and contingency funding plan, 122
108, 256	and liquidity stress testing, 53
Payment System Risk policy, 58	market volatility for, 134
Regulation YY, 204–210	and PCS services, 79
reporting requirements of, 148	and trapped liquidity, 34
Fed Funds	front office
and intraday liquidity, 59, 63, 65	collaborating with independent risk
and recovery plans, 186	function, 11
volatility of, 114	and collateral management, 15, 87, 89,
Fedwire Securities Service, 57, 61, 74, 75	90, 97, 98, 102
financial institutions	and contingency funding planning, 125
deposit outflows from, 42-43	funding
failure resolution for, 184, 189–196	access to, 207, 214
and financial crisis, 1, 8, 263	concentrations of, 135, 146, 232, 235
governance at, 9	disclosure of, 263–275
and intraday liquidity, 13-14	distribution of, 253
and liquidity crisis, 27, 44	liquidity of, 29–30, 4), 64, 129, 134, 135
liquidity risk management as core	146
competency at, 7	long-term, 22, 134, 226, 240
performance analyses of, 270	mismatches, 20, 205, 265, 270, 271, 272
profitability of, 24	projecting need for, 187–188, 197, 206
stress scenario projections of, 197	and resolution plan, 191, 194
subsidiaries of, 34, 36	recal. See retail funding
See also banks	hort-term, 7, 22, 31, 41, 129, 130, 132,
financial market infrastructure (FMI), 77	135, 146, 186, 210, 214
financial market utilities (FMUs)	stable, 226, 227–229
and collateralization, 86	unplanned changes in, 202, 204
defined, 77–78	wholesale. See wholesale funding
and intraday overdrafts, 59, 62, 64, 67-71	funding profile
pre-2008, 84	for disclosure, 265, 270, 271, 272, 274,
risk management for, 73–76	275
Financial Stability Board (FSB), 183, 185,	and early warning indicators, 16
213, 265	and maturity horizons, 135, 235
forecasting (of liquidity)	and regulatory standards, 210, 215, 226
accuracy of, 36, 89	target, 49
intervals used for, 20, 36–37	treasury monitoring of, 126
and intraday credit, 61, 64	funds transfer pricing (FTP)
in liquidity risk MIS, 146	framework for, 253, 257–262
forecasting analytics	function of, 251, 252
and risk management frameworks, 12	integration with MIS, 142, 149, 173
and stress testing frameworks, 51	liquidity ratios embedded in, 235
foreign currency	and liquidity stress test model, 53
and early warning indicators, 134	and new regulation, 23–24, 249,
and intraday liquidity, 14	256–257
* * *	
liquid asset reserve in, 273 and liquidity risk management guidance,	pre-2008 shortcomings of, 251–252
208	rate determination in, 253–255
	and target funding profile, 49
and ratio calculations, 243	and volatility, 255
and Habbed Hollion V. 34	CHILLIES COMBUSSION MERCHANIS 33

general ledger (GL) account reconciliation,	Hong Kong interbank payment system, 74
158–160, 161, 176	hot money vs. sticky money, 3, 49
global financial crisis	
and disclosures, 263, 275	idiosyncratic risk
and early warning indicators, 106, 119	and contingency funding plan, 129, 130
and funds transfer pricing, 251, 252, 261	and liquidity stress testing, 39, 45, 51
and liquidity, 1, 7–8, 9, 27, 38, 58, 150,	in recovery plan scenarios, 187
201	in resolution plan scenarios, 192
and regulations, 21, 23	in stress scenarios, 152
and risk management policies, 84–85, 180,	and unsecured wholesale funding, 43
205, 213	independent risk oversight, 10, 11, 47–48,
global master repurchase agreements	108
(GMRAs), 97	information management, 18–20
global systemically important banks (GSIBs),	information monitoring (IM), 142
210, 243	information technology (IT), 19, 50, 176
governance	infrastructure. See technology
and contingency funding planning,	Interagency Policy Statement on Funding and
125–128	Liquidity Risk Management (SR 10–6),
function of, 9	208, 256
and liquidity stress testing, 27-28, 46-48	interbank market
and model development, 12, 18	
responsibility for, 9-11, 204-209	borrowing on, 59, 78, 186
government bonds, 217, 218, 222	and global financial crisis, 150 indirect members of, 73–74
government debt, 63, 65	interest rate(s)
government-sponsored entities, 57	current, 56
government support for company recovery,	in early 1980s, 55
189, 191	as early warning indicator, 115
Group of Experts on Payment Systems,	interest rate risk
57–58	analytical engine for, 149
Group of Ten (G10) countries, 57–58	and funds transfer pricing, 253
Group of Twenty (G20) countries, 213, 269	and stress testing, 51, 52–53
guarantee funds, 75	interest rate swaps, 81–82
	internal audit
	in intraday liquidity governance, 66
haircuts	in risk management governance, 10, 209
in LCR application, 218–219	and stress testing, 48
and regulatory requirements, 158	internalization, 100
in stress scenarios, 39, 42, 152	International Accounting Standards Board
hedge funds, 90–91, 131	(IASB), 263–265
high-quality liquid assets (HQLAs), 207	international banks, 263, 269, 272
availability of, 214, 216	International Swaps and Derivatives
classifications of, 143, 217	Association, 89
composition of, 218	intraday credit relative to tier 1 capital, 70
definition of, 216, 222-223, 243, 269	intraday liquidity
intrafirm transfers of, 207	defined, 78
and LCR, 215	evolution of, 55–58
operational requirements for, 218	and recovery/resolution planning, 195,
regulatory requirements for, 144, 158, 240	198
in stress scenarios, 152	sources of, 59-60, 62-64
historical statistical models, 37	uses of, 60–62

intraday liquidity risk	and collateral optimization, 96
history of, 55–58, 77	as contingent funding, 196
management of, 13-14, 66-68, 73-77	disclosure of, 266, 272-273
measurement of, 68–71	and early warning indicators, 135, 186
stress testing for, 71–73	function of, 32, 106
supervisory guidance on, 211	and intraday liquidity, 62-63
intraday overdraft (IOD), 77	in liquidity stress test model, 33
investment banks, 230, 239, 240-241, 242,	requirement for, 86, 240, 252
249	risk management framework provisions
investment portfolio	for, 235
and de-risking, 186	size of, 48, 53, 112, 243, 257, 258, 271
liquidity optimization for, 48–49	liquid assets
and stress test results, 42, 51	definition of, 216, 221–223, 269
investors, and risk disclosures, 265, 266,	See also high-quality liquid assets
268, 269–272, 275	liquidity
200, 200 272, 273	analysis for resolution plan, 194–196, 198
	analysis for risk management, 202
JP Morgan Chase, 28	and balance sheet optimization, 249
ji morgan onase, 20	BAU base of, 20
	and collatera Optimization, 96
key performance indicators (KPIs), 145, 146	and contract ia maturity mismatches, 232
, F,,,,,	convergence with collateral, 86, 103
	cests, 23–24, 53, 215, 218, 235, 246, 256,
large value payment systems (LVPSs), 60, 61,	259
62, 75, 76, 77	tefined, 29–30
Lehman Brothers, 28	erosion of, 201
lending	estimating minimum level, 38
vs. deposit balances, 274	excess, 63, 261, 272
and excess liquidity, 261	functions of, 30–31
impact of new regulations on, 243, 247	insufficient, 106, 134, 135, 184
level playing field issues, 216	international standards on, 213
Leverage Ratio (LR), 239, 242, 243, 244,	intraday, 59–64, 195, 198
246–249	optimization of, 48–49
liabilities	savings mechanism for, 76
in balance sheet optimization, 245, 247,	transferring, 223
249	trapped, 21, 34, 194, 196
contingent, 44, 138, 192	Liquidity Coverage Ratio (LCR)
disclosures of, 265, 266, 267, 271–274	application of, 218–219, 235
and early warning indicators, 133	banks favored by, 22
in funding strategies, 7, 213	buffer requirement of, 256, 257. See also
and interest rate shocks, 52	liquid asset buffer
maturities of, 231, 245, 253	calibration of, 144, 158, 219–223
and runoff rate, 219, 223	and collateral needs, 87
short-term, 135, 205	and contingency funding plan, 136
LIBOR	and disclosure, 210, 234, 240, 269, 272
as early warning indicator, 115	drawbacks of, 227
and funds transfer rate, 254	function of, 213, 215
and intraday liquidity, 63	impact of, 239–249, 252
and OTC derivatives, 89	implementation of, 224–225
liquid asset buffer	improving, 246
carrying cost of, 259–261	and liquidity stress testing, 40, 49
, 0000 01, 201	and industry offices resulting, 10, 12

and MIS design, 173	evolution of, 7–8
and multiple currencies, 232	framework for, 11-12, 13, 27, 108, 142,
in new regulatory environment, 107, 263	214–215, 235, 251
in recovery/resolution planning, 186, 198	function of, 207
reporting requirements, 233–234	governance in, 9-11, 204-205, 209, 234
and required liquidity estimating, 20, 206	importance of, 27
technical challenges with, 223-224	information systems for. See liquidity risk
liquidity crisis team (LCT), 126, 137	management information systems
liquidity events	integration of, 3–4, 236
preparing for, 18	leading practices in, 8, 9
triggers of, 111–112	rating system for, 202–203
liquidity gap analysis, 129, 173	reporting in. See reporting
liquidity pools, 218, 222	stakeholders in, 25, 108
liquidity position metrics, 45–46, 118, 269	supervisory guidance for, 201-211, 234
liquidity profile	transformation of, 1, 201, 252
alignment with risk appetite, 46	liquidity risk management data mart, 145,
and contingency funding plan, 129, 132,	150, 153–157, 167, 170, 176, 179
136, 138	liquidity risk management information
disclosures about, 265, 270, 274, 275	portal (MIP), 144, 145–146, 148
and early warning indicators, 16	liquidity risk management information
and intraday liquidity, 60	systems (MIS)
measuring prospective, 45	capabilities of, 142
on MIP, 145	components of, 143–145
short-term, 52	data management in, 153-172
treasury monitoring of, 126	design of, 172–176
vs. yield, 49	function of, 143, 181
liquidity risk	governance of, 18–20
and collateral management, 15–16, 86	implementation of, 141, 176–178
cost of, 251–252	output from, 174
disclosure of, 263–275	regulatory guidance on, 206
and forecasting, 17	reporting in, 146–148
and global financial crisis, 1, 7-8, 9	testing of, 179–180
health metrics for, 134–136	liquidity risk strategy, 20, 205
identifying, 37, 108, 110, 152	liquidity stress testing (LST)
interactions with other risk types, 204	analysis engine in, 149, 150-153
intraday, 13-14, 55-58, 66-77	and contingency funding planning, 17,
monitoring of, 132, 206-207	124, 129
responsibility for, 9, 10	disclosures about, 266, 274
significance of, 1	framework for, 11-13, 28, 50-51, 108
liquidity risk inventory, 108, 110	frequency of, 46
liquidity risk management (LRM)	function of, 27, 29, 30, 32, 34, 36, 48,
analytical engine for, 142, 145, 149–153	53–54
business objectives for, 173	and funds transfer pricing, 24, 257-261
and business practice optimization, 21-24	governance of, 46–48
contigency planning in. See contingency	integration with related risk models,
funding plan	51–53
continuity of service in, 18	and intraday credit, 71-73
and disclosure, 209–210, 234, 265, 266,	in LCR application, 218
268	and resolution planning, 20, 191, 194, 198
early warning indicators in. See early	reverse, 40
warning indicators	liquidity stress testing policy, 46–47

liquidity stress test model assumptions in, 40–44, 45	monetary policy, and intraday overdrafts, 58
baseline scenario for, 37–38, 47	money markets, 63, 78
components of, 32–33	money supply, 56
design of, 34–37	Monitoring Tools for Intraday Liquidity
governance of, 48	Management, 58, 68
and liquidity buffer size, 256	Monte Carlo simulation, 37, 153
outputs of, 44–46	mortgage-backed securities (MBSs)
stress scenarios for, 38–40, 46, 47, 53,	and collateral requirements, 87, 94
129, 149, 152, 153, 235	haircuts to, 219
liquidity transfer pricing (LTP), 252	as high-quality liquid assets, 217
liquidity transfer restrictions, 34	and stable funding requirements, 228, 230
London Interbank Offered Rate. See LIBOR	multiple-pool FTP rate determination, 253
Long Term Capital Management, 203	mattiple poor 111 rate determination, 255
zong romi oupmi management, zoo	
	net credit cap, 76
management committee, 126, 137	net debit cap, 56–57, 60, 62, 74, 75–76, 78
margin calls	Net Settlement Services (Federal Reserve), 57
collateral to meet, 81, 92, 96	Net Stable Funding Ratio (NSFR)
and data access, 89	banks favore 1 by, 22, 240-241
disputes about, 83	and contingency funding plan, 136
intraday, by FMUs, 74	design of, 230
in post-2008 markets, 86	function of, 213, 226-227
in pre-2008 markets, 84, 203	impact of, 239–249
market disruption	implementation of, 231–232
and liquidity disclosures, 234, 268	and MIS design, 173
preventing, 184	in new regulatory environment, 107, 246,
taking advantage of, 106	247, 263
withstanding, 204, 272	and public disclosure, 210, 240
market indicators, 16, 115, 116	reporting requirements, 233–234
market rates	technical issues with, 230–231
collecting data on, 162, 165, 170	netting, 57–58, 76, 78, 246
and funds transfer pricing, 251, 253	noncontractual obligations, 44
market risk	Northern Rock, 38, 42
and discounts to assets, 206	nostro accounts, 60, 61, 64, 78
and funds transfer pricing, 251, 252, 253	
interactions with other risk types, 204	(() 1 11 1 : 57
in liquid asset buffer, 32	offshore dollar clearing, 57
monitoring of, 10	online analytical processing (OLAP), 146,
market securities, liquidity of, 226	148
market sentiment, 118	operational liquidity, 30, 31
market signals, 131	operational risk, 10, 204
Markets in Financial Instruments Directive	operations function, 13, 14
(MiFID) 2.0, 102	optimization
matched-maturity FTP rate determination,	balance sheet, 243–249, 252
253–254	business practice, 21–24
Matters Requiring Attention (MRAs), 114	collateral, 16, 83, 87, 89, 91, 94–99, 103
max cap, 57	for portfolios, 48–49
M.E.R.I.T. framework, 108–114	optionality risk, 253
metadata, use of, 168, 169 modular framework development, 13	organizational reputation market signal impact on, 131–132
modular manicwork development, 13	market Signal impact on, 131–132

mitigating risks to, 216, 231 and resolution triggers, 194 organizational silos and collateral management, 88, 90, 97 and liquidity risk management, 25, 139 and risk governance, 10 outsourcing for analytical engine, 153 of collateral management, 93–94, 96 overdrafts, daylight. See intraday liquidity overnight funding, 43, 63, 65, 134 overnight index swap (OIS), 89, 115 over-the-counter (OTC) trades, 83, 85, 87,	function of, 20–21, 183–185, 197 liquidity analysis in, 194–196, 198 and liquidity stress testing, 51 recovery plan, 185–188 resolution plan, 188–196 red books, 57 regulations and business practice optimization, 21–24, 25 for cash flow classification, 153, 154, 158–160 and collateral, 87, 90, 97 compliance with, 18–19, 210, 232–236,
92 payment, clearing, and settlement systems	239–243 for contingency funding plans, 122, 139 and data requirements, 160 and disclosure, 267, 272, 275
(PCSs), 60, 61, 66, 68, 75, 79	and funds transfer pricing, 256, 261
payments	impact of, 243–249
to clearinghouses, 13, 57	and intraday (iquidity, 77
finality of, 78–79	jurisdictional issues with, 36, 225,
monitoring for intraday liquidity risk, 68,	242-243
and operational liquidity, 30	and LCR implementation, 224–225 for recovery/resolution plans, 183–184,
retail, 62, 77	197, 198
See also settlements	and reporting requirements, 50, 144, 146,
payment throughput, 71	148, 267, 272
performance management	and risk management practices, 2, 3, 107,
and Basel III liquidity ratios, 235	201–211, 263
and liability stress testing, 54	transformation of, 1, 8, 85, 102, 119,
and risk management frameworks, 12	201–202
principal component analysis (PCA), 152	See also specific regulations
Principles for Financial Market	reporting
Infrastructure, 58	and capability integration, 18
"Principles for Sound Liquidity Risk Management and Supervision" (Sound	and contingency funding plan, 127, 137, 138, 140
Principles), 106, 108, 205-207, 215	and early warning indicators, 108, 113,
profitability	114, 119
and liquidity cost allocation, 23–24 and regulatory requirements, 249	and GL account reconciliation, 158–160, 161
	international issues in, 225
	and intraday liquidity, 187
quantitative easing, 246	in liquidity risk MIS, 142, 144, 146–148, 208
	from liquidity stress test, 45–46, 47, 50, 54
Recommendations for Securities Settlement	public disclosure of, 209–210, 267, 268
Systems (RSSS), 58	regulatory requirements for, 18, 214,
recovery and resolution planning (RRP)	233–234
and contingency funding plan, 18, 122,	responsibility for, 9, 10
128, 137, 139	Report on Netting Schemes, 57
contractual issues in, 195–196	repricing risk, 253

repurchase transactions (repos)	risk models
in balance sheet optimization, 246	development of, 12
collateral in, 85, 86, 87, 98	integration of, 51–54
as early warning indicators, 118	risk mutualization, 75
and function convergence, 90	risk profile
in recovery plans, 186	and contingency funding plan, 17, 123,
reputation. See organizational reputation	125, 128, 136
required stable funding (RSF), 226,	disclosure of, 209–210, 263–275
227–229, 241, 247	governance of, 10, 46, 48, 126
resolution trigger, 192, 193	for intraday liquidity, 77
restricted liquidity, 30, 31	and liquidity position, 202
retail banks, 86, 230, 239, 240-241	and recovery plans, 187
retail funding	risk strategy, 11. See also liquidity risk
in balance sheet optimization, 243	strategy
bank reliance on, 22	risk-weighted assets (RWAs) density, 22, 242
as early warning indicator, 107	runoff rate, 42–43, 158, 219, 220–221, 223
and runoff rate, 223, 240	
stability of, 214, 226, 227, 228	safe harbor provisions, 32
vs. wholesale, 49	Securities and Excharge Commission (SEC),
reverse liquidity stress test, 40	58, 263–265
ring-fencing, 194, 196, 249	securities set lement networks (SSNs),
risk	68–65 74, 78
monitoring of, 10	senior management. See executive/senior
systemic vs. idiosyncratic, 39, 45, 51, 129,	nanagement
130, 152, 187	service level agreements (SLAs), 168, 180
See also specific types	settlement risk, 78, 83
risk appetite	settlements
and contingency funding plan, 123	and daylight overdrafts. See intraday
and intraday liquidity governance, 56	liquidity
and liquid asset buffer, 106	deadlines for, 76
and liquidity ratios, 235	guidelines for, 57–58
setting of, 9, 10, 11, 25, 27, 205	and resolution proceedings, 196
and stress test governance, 46 risk assessment	tracking, 69
and intraday liquidity, 67	See also payments
	sharp indicators, 111
in liquidity risk management framework, 108	single-pool FTP rate determination, 253
risk culture, 10–11, 25	"Sound Practices for Managing Liquidity in
risk management	Banking Organizations," 203, 204
and collateral optimization, 97	stagflation, 55 sticky money vs. hot money, 3, 49
for financial market utilities, 73–76	stock market indices, 16
guidelines for, 58	straight-through processing (STP), 89, 94, 98
from initiation point, 11	strategic liquidity, 30, 31
and intraday liquidity, 66–67	strategic riquidity, 50, 51 strategic planning, 17, 123
and regulations, 23	stress categories, 72–73
resolution plan integrated with, 191	stressed inflows, 32, 33
and stress testing, 47–48, 51	stressed liquid asset buffer, 32, 33
See also liquidity risk management	stressed outflows, 32, 33
risk measurement/monitoring	stress scenarios
and early warning indicators, 110–111	and Basel III requirements, 235
and intraday liquidity, 67	function of, in MIS, 206

and funds transfer pricing, 255	Target2, 74
for LCR, 215–216	technology
for liquidity stress test model, 38-40, 46,	for analytics, 153
47, 53, 129, 149, 152, 153	challenges in supplying, 3
for recovery plan, 184, 185, 187-188, 197	for collateral management, 85, 90, 91,
for resolution plan, 191-194, 197	92–93, 94, 96–99, 103
and risk type, 51	for data management, 19-20, 175, 188
stress testing	to meet regulatory requirements,
of banks, 22	12, 15
capital, 40, 52	for recovery/resolution planning, 197
and disclosures, 270, 274, 275	for reporting, 148
and early warning indicators, 112, 114,	for stress testing, 50–51, 54, 72
119	term funding, 43, 63, 65
and global financial crisis, 8	term liquidity premium, 254–255,
liquidity. See liquidity stress testing (LST)	256, 258
regulatory guidance on, 206	term liquidity risk, 253
reverse, 40	testing
scenarios used in. See stress scenarios	in contingency funding plan, 18,
subsidiaries	128–129, 208
and contingency funding plans, 127	of liquidity risk MIS, 179–180
liquid asset reserve held by, 273	techniques for, 37
in resolution proceedings, 193	See also liquidity stress testing; stress
and stress testing, 34, 36	testing
survival horizon, 36, 44–45, 106, 146	tier 1 capital, 70
swap trades	tine critical payment, 69, 79
bilateral interest rate, 81, 83, 88	time deposits, 63
clearing of, 92	"too big to fail," 22, 183
collateral for, 15, 82, 87, 224	total loss absorbing capacity (TLAC), 22,
credit default, 133	243, 248
and cross product margining, 95	trade clearing, and collateral, 85, 92
and internalization, 100	transparency. See disclosure
post-2008, 85, 247	Treasury bills, 65
systemically important finencial institutions	treasury data warehouse (TDW), 143, 145,
(SIFIs)	160–162, 166, 167, 170, 176, 179
defined, 79	treasury function
and intraday liquidity, 67	analytical engine for, 149
supervisory guidance for, 211	and collateral management, 15, 90, 91
systemic risk	and contingency funding plan, 124, 126
and contingency funding plan, 129, 130	127, 138
defined, 79	and funds transfer pricing, 251, 253,
early warning indicators of, 111	261
and intraday liquidity, 66, 69, 70	and intraday liquidity, 13, 60, 62,
and liquidity stress testing, 39, 45, 51	63, 66
in recovery plan scenarios, 187	and liquid assets, 32
reducing, 198	and liquidity extress testing, 47
and regulatory policy, 183	and liquidity stress testing, 47
in stress scenarios, 152	and MIS design, 176
system of records (SOR), 166, 175	and risk assessment, 107

and risk disclosures, 268 and risk management governance, 9, 10, 142, 204

universal banks, 239, 240, 241 user acceptance test (UAT) for source data, 170, 171, 179–180

value transfer network (VTN), 77 volatility of asset prices, 63 of bank cash flows, 63 and funds transfer pricing, 255 of markets, 15, 86, 133 Volcker, Paul, 55

Washington Mutual, 28–29, 38, 42 wholesale funding bank reliance on, 22, 203, 214, 240, 243, 275 as early warning indicator, 107 monitoring of, 146 as recovery plan trigger, 186 vs. retail, 49 unsecured, 43 wholesale funding curve, 257, 261 wire transfers, and intraday liquidity, 60, 61 working capital, 14, 224

yield curve, 52–53
yield vs. portfolio liquidity, 48–49