

Venue: **Risk & Compliance Solutions 2010**
Location: Chicago, IL
Date: May 1x, 2010
Time: 3:45-5:00 PM

Presentation title: **Liquidity Management: Regulatory Focus and Best Practices for 2010**

Presenter: Fred Poorman Jr., CFA
fpoorman@almnetwork.com

This presentation uses information provided by Leonard Matz, Sr. Consultant to the ALMnetwork and the Boston Consulting Group. Portions of this presentation are protected by copyright.

Agenda

- Liquidity Risk
 - 3 definitions
 - 3 questions
- New Regulations
 - Regulatory convergence
 - Qualitative vs. Quantitative approaches
 - 8 limits suggested by US regulators
 - 2 new ratios recommended by BIS
- Best Practices: Liquidity Risk Measurement & Management
 - Policies
 - Scenarios & Stress tests
 - Contingency Funding Plans
 - Indicators & Risk Limits
 - Oversight, internal controls and audit
- Conclusion

Agenda

- Liquidity Risk
 - 3 definitions
 - 3 questions
 - Liquidity Gap

Liquidity Risk

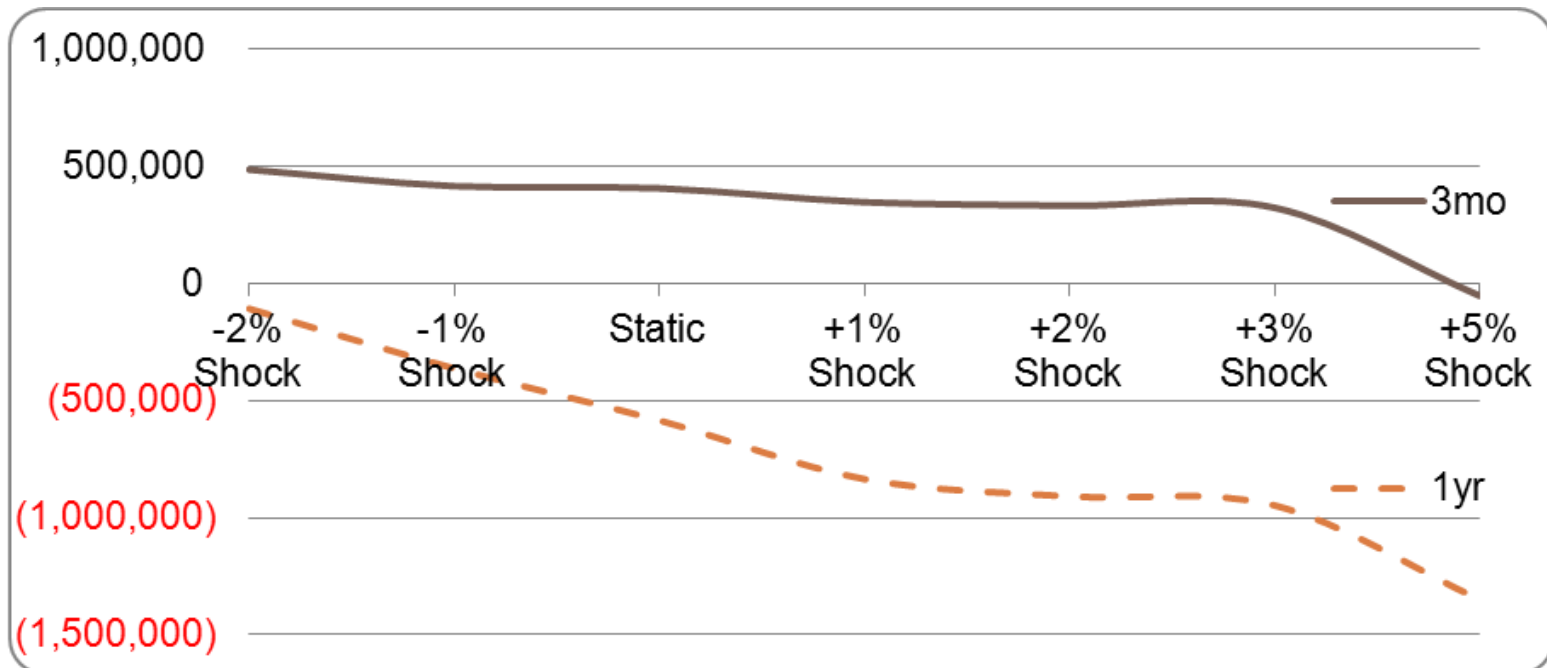
3 definitions

- **Liquidity Mismatch Risk**
 - The risk of a mismatch between either the amounts or the timing of cash in-flows and out-flows (bank-controlled)
 - Liquidity Gap
- **Market Liquidity Risk**
 - The potential that an institution cannot easily unwind or offset specific exposures, such as investments held as liquidity reserves, without incurring a loss because of inadequate market depth or market disruptions. (market, or systemic risk)
- **Liquidity Contingency Risk**
 - The risk that future events may require a materially larger amount of liquidity than the bank currently requires (or has available)
 - Intersection of bank- and market-risk

A measurement definition: Liquidity Gap

the Foundation of Liquidity & IRR reporting

- Liquidity Gap =
 - Projected Asset CF – Projected Liability CF + Projected Net Impact of Off-Balance Sheet CF
- Stylized example w/ net negative cash flow in months 4-12



Liquidity Risk Measurement & Management

3 questions for financial institution stakeholders

- Will there be enough money?
 - Quantity dimension
 - Cash flows
 - Liquid assets
 - Funding availability
- When we need it?
 - Time dimension
 - Business as usual
 - Stress scenario
- Is there a Plan B,C, and D?
 - Contingency Funding Plan (CFP, or LCFP)
 - Is it approved and updated?
 - Tied into Scenario analysis/Stress-Testing?
 - Failures related to no Plan B and/or inadequate Plan B, C,and D.

Agenda

- New Regulations
 - Regulatory convergence
 - Qualitative vs. Quantitative approaches
 - 8 limits suggested by US regulators
 - 2 new ratios recommended by BIS

New Regulations

regulatory convergence

- **Basel Committee of Banking Supervision**
 - Principles for Sound Liquidity Risk Management and Supervision. September 2008. (qualitative)
 - Principles for Sound Stress Testing Practices and Supervision. January 2009. (becoming more quantitative)
- **US regulations**
 - Interagency Policy Statement on Funding and Liquidity Risk Management, March 2010 (qualitative)
 - Quantitative is next?
 - Interagency approach = congruence & convergence
- **International**
 - UK Financial Services Authority CP08-22, Strengthening Liquidity Standards, CP08-24, Stress and Scenario Testing , December 2008
 - APRA's prudential approach to ADI liquidity risk, September 2009
- Are regulatory mandated Liquid Asset ratios next? maybe...

Qualitative vs. Quantitative approaches

Approach	Qualitative	Quantitative
Policies	Guidance	Requirements
Contingency Funding Plans	Guidance	Requirements
Model audits	Guidance	Requirements
Internal controls	Guidance	Requirements
Cash flow metrics	Guidance – behavioral assumptions	Required coverage for defined periods
Liquid assets	Guidance – scenario dependent	Required minimum levels
Stress tests	Guidance	Requirements

Qualitative approach: 8 new limits suggested in U.S. Matz summary

1. Cash flow projections that include discrete and cumulative cash flow mismatches or gaps over specified future time horizons under both expected and adverse business conditions.
2. Target amounts of unpledged liquid asset reserves.
3. Measures used to identify volatile liability dependence and liquid asset coverage ratios
4. Asset concentrations that could increase liquidity risk through a limited ability to convert to cash (e.g., complex financial instruments, bank-owned life insurance, and less marketable loan portfolios).

Qualitative approach: 8 new limits suggested in U.S. Matz summary

5. Funding concentrations that address diversification of funding sources and types, such as large liability and borrowed funds dependency, secured versus unsecured funding sources, exposures to single providers of funds, exposures to funds providers by market segments, and different types of brokered deposits or wholesale funding.

6. Funding concentrations that address the term, re-pricing, and market characteristics of funding sources. This may include diversification targets for short-, medium-and long-term funding, instrument type and securitization vehicles, and guidance on concentrations for currencies and geographical markets.

Qualitative approach: 8 new limits suggested in U.S. Matz summary

7. Contingent liability exposures such as unfunded loan commitments, lines of credit supporting asset sales or securitizations, and collateral requirements for derivatives transactions and various types of secured lending.

8. Exposures of material activities, such as securitization, derivatives, trading, transaction processing, and international activities, to broad systemic and adverse financial market events. This is most applicable to institutions with complex and sophisticated liquidity risk profiles

New U.S. Guidance large banks only?

- Liquidity FTP

14. Institutions should consider liquidity costs, benefits, and risks in strategic planning and budgeting processes. Significant business activities should be evaluated for both liquidity risk exposure and profitability. More complex and sophisticated institutions should incorporate liquidity costs, benefits, and risks in the internal product pricing, performance measurement, and new product approval process for all material business lines, products and activities.

Incorporating the cost of liquidity into these functions should align the risk-taking incentives of individual business lines with the liquidity risk exposure their activities create for the institution as a whole. The quantification and attribution of liquidity risks should be explicit and transparent at the line management level and should include consideration of how liquidity would be affected under stressed conditions.

Quantitative approach: 1st new ratio recommended BIS proposal (BCG summary)

- Liquidity Coverage Ratio (LCR)
- $LCR = \frac{\text{High Quality Liquid Assets/}}{\text{Net cash outflows over a 30-day time period}}$
- Summary
 - Analysis should be cashflow based
 - Contractual cashflows plus behavioral adjustments
 - Specific scenarios require specific actions
 - Banks should therefore analyze scenarios separately and be forced to go beyond the proposed worst-of-all scenario
 - Consideration of “High quality liquid assets”
- Liquidity Gap is the foundation here, not historic ratios

Quantitative approach: 2nd new ratio recommended BIS proposal (Matz summary)

- Net stable funding ratio (NSFR)
 - The net stable funding ratio measures the amount of longer-term, stable sources of funding employed by an institution relative to the liquidity profiles of the assets funded and the potential for contingent calls on funding liquidity arising from off-balance sheet commitments and obligations.
 - The standard requires a minimum amount of funding that is expected to be stable over a one year time horizon based on liquidity risk factors assigned to assets and off-balance sheet liquidity exposures.
 - The ratio is intended to promote longer-term structural funding of banks' balance sheets, off-balance sheet exposures and capital markets activities
- Liquidity Gap is the foundation here, not historic ratios

Quantitative approach

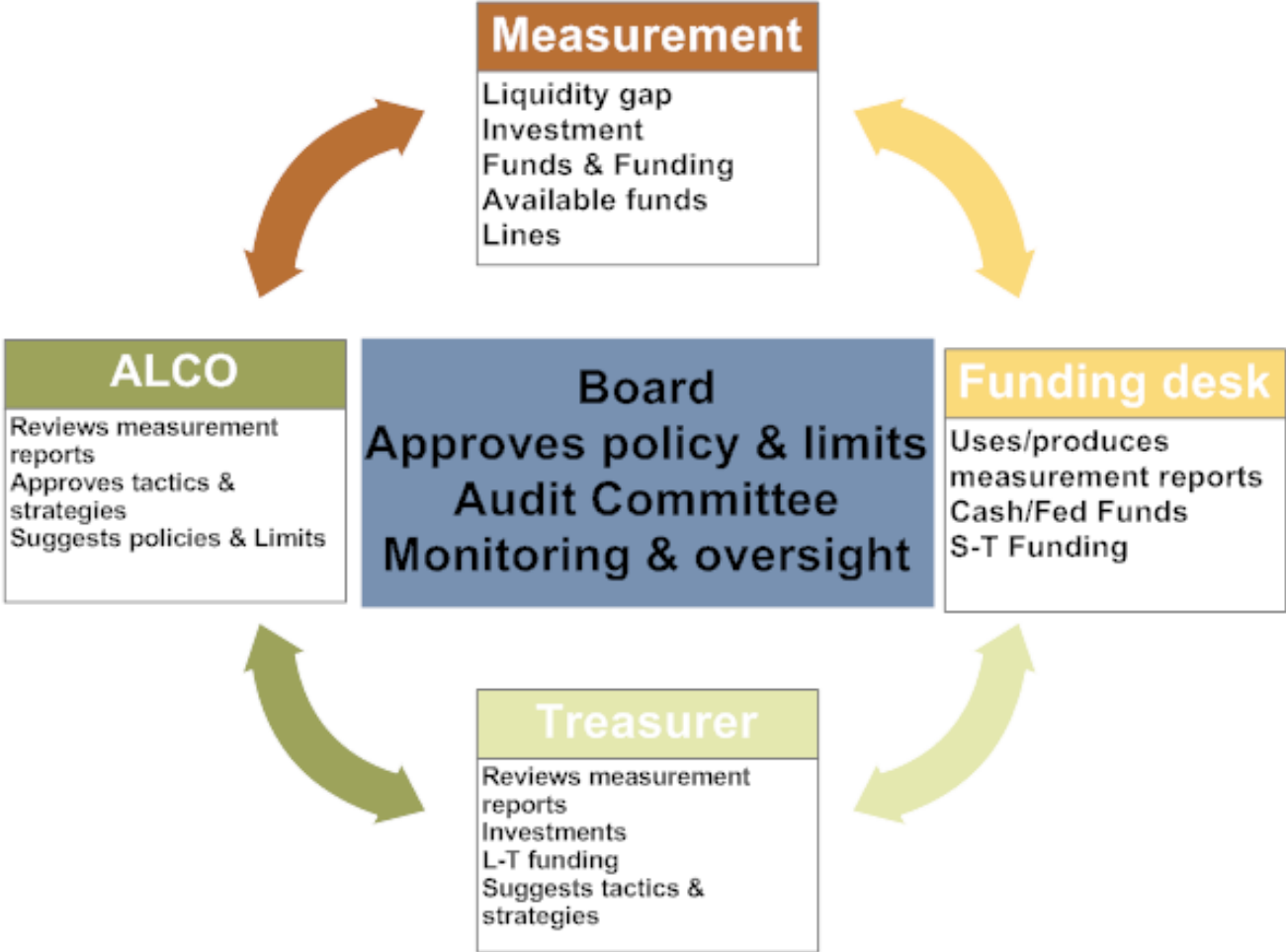
BIS proposal (BCG summary)

- Measuring & monitoring
 - Analyses of contractual maturity mismatches is highly data intensive; Data should be used for cash flow based gap analysis (see above)
- Funding concentration – open questions:
 - Concentration analysis referring to gross or net exposure?
 - Is shareholders' equity included in the concentration analysis?
 - Threshold of 1% of total liabilities does not differentiate between different accounting regime (e.g., netting of derivative exposure and repos)
 - How is "instrument/product" defined?
- Liquidity Gap is the foundation here, not ratios

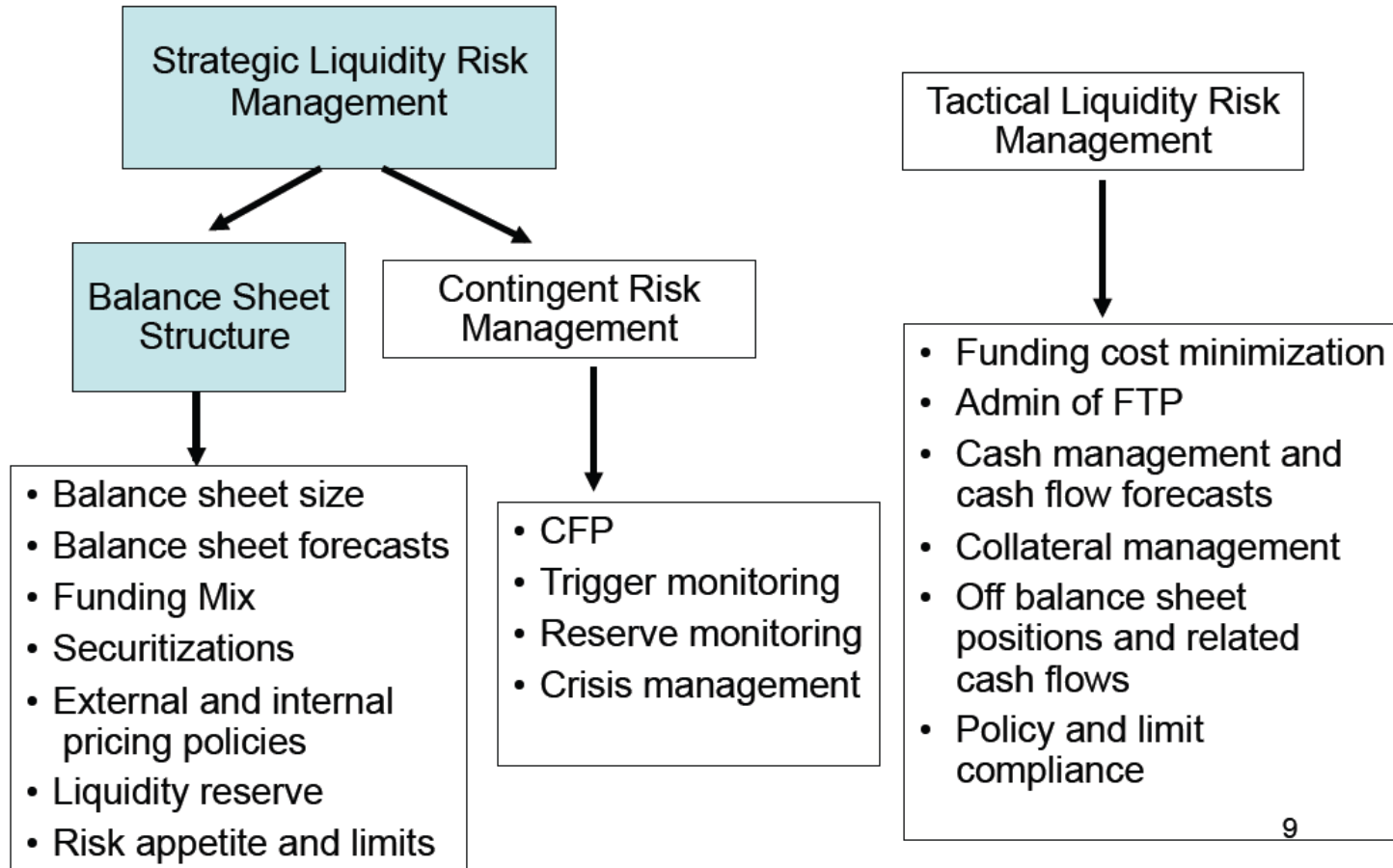
Agenda

- Best Practices: Liquidity Risk Measurement & Management
 - Policies
 - Scenarios & Stress tests
 - Contingency Funding Plans
 - Indicators & Risk Limits
 - Oversight, internal controls and audit

Liquidity Measurement & Management not the same thing



Liquidity Risk Management: Tactical & Strategic not the same thing (Matz approach)



Lots of policy requirements in the U.S.

Matz summary

- Institutions should have documented strategies for managing liquidity risk and clear policies and procedures for limiting and controlling risk exposures that appropriately reflect the institution's risk tolerances.
- Policies and procedures should provide for the formulation of plans and courses of actions for dealing with potential temporary, intermediate-term, and long-term liquidity disruptions.
- Policies, procedures, and limits also should address liquidity separately for individual currencies, legal entities, and business lines, when appropriate and material, and should allow for legal, regulatory, and operational limits for the transferability of liquidity as well.
- Policies should clearly articulate a liquidity risk tolerance that is appropriate for the business strategy of the institution considering its complexity, business mix, liquidity risk profile, and its role in the financial system.
- Policies should also contain provisions for documenting and periodically reviewing assumptions used in liquidity projections.
- Policy guidelines should employ both quantitative targets and qualitative guidelines.
- Policies also should specify the nature and frequency of management reporting. In normal business environments, senior managers should receive liquidity risk reports at least monthly, while the board of directors should receive liquidity risk reports at least quarterly.

Scenarios

BIS 2008 Principle 10

- A bank should consider short-term and protracted, as well as institution-specific and market-wide, stress scenarios in its stress tests, including:
 - a simultaneous drying up of market liquidity in several previously highly liquid markets
 - severe constraints in accessing secured and unsecured funding; restrictions on currency convertibility
 - and severe operational or settlement disruptions affecting one or more payment or settlement systems.
- **Bank-specific**
 - Credit risk, Op risk/fraud
 - High stress cut off FED or FHLB
 - Extreme should rely on asset liquidity only
- **Market**
 - Global recession, Limited/no funding as above (FHLB for example)

Scenarios

Consultant perspective

- Bank scenario examples
 - Credit events
 - Op Risk/Fraud
 - Geographic out of favor (FL/PR)
 - Line of Business out of favor (Internet, CRE, Sub-prime)
 - Credit lines drawn / Funding lines pulled
- Market scenario example
 - Global recession
 - Market liquidity dries up
 - FHLB funding reduced
 - Increased haircuts/market rates & volatility
 - No unsecured/secured funding across markets

Stress test

BIS 2008 Principle 10

- Regardless of how strong its current liquidity situation appears to be, a bank should consider the potential impact of severe stress scenarios, and not discount severe scenarios as “implausible”.

Stress tests

Consultant perspective

- Normal/Business Plan
 - Liquidity GAP from ALM is base or reconciled to
- Mild
 - Some deposit runoff, for example
- Moderate
 - Lack of access to new/old unsecured
- Severe
 - Lack of access to new/old secured
 - Usually single source remains (FED or FHLB)
- Extreme
 - Asset liquidity only

Scenario/Stress tests

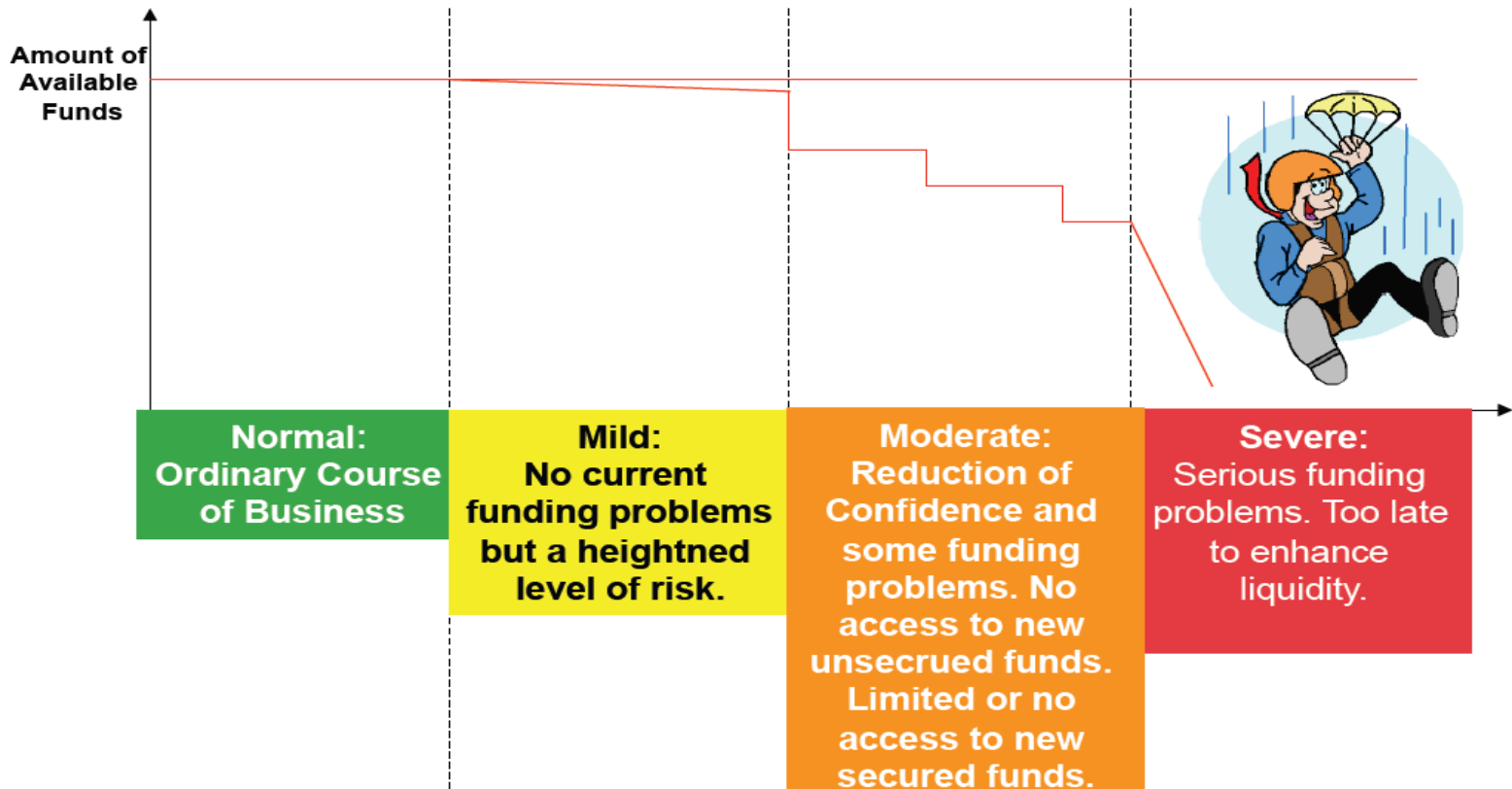
Consultant perspective: Wholesale Funding (or deposits or...)

Stress / Scenario	Plan	Mild	Moderate	Severe	Extreme
Bank: Credit	New sources	No new Unsecured	No new secured	FHLB only	None
Bank: Op Risk	New sources	Possibly unsecured	Possibly secured	FHLB only	None
Market: Funding crisis	New sources	No new unsecured	No new secured	FHLB only	None
Bank+ Market	New sources	No new Unsecured	No new unsecured	FHLB only	None

Scenario/Stress tests

Consultant perspective: Remember the time dimension

- Tie together scenarios & stress tests to Contingency Plan!

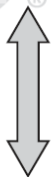


Scenario/Stress tests

Consultant perspective on Funding sensitivity

- Fred
 - Case studies available including the 1st week of May 2010 (PR banks)
- How to Quantify and Manage Liability Stickiness, by Leonard Matz
 - http://almnetwork.com/stuff/Matz_BAF_22-02_09.pdf

Exhibit 2. A Stickiness Continuum

Tolerance for credit quality or liquidity concerns	Entity	Amount	Percent
Very sensitive to perceived deterioration in credit quality or safety	Money market mutual funds		
	Rating sensitive providers		
	Pension funds		
	Insurance companies		
	Other funds providers with fiduciary responsibility		
	Broker/dealers		
	Regional and money center banks in your country		
	Foreign banks		
	Large corporations		
	Community banks in your market area		
Only sensitive to credit quality and liquidity when problems are very bad and highly publicized	Local, uninsured, unsecured depositors		
	Customers who are net borrowers (their loan balances exceed their deposit balances)		
	Local, secured funds providers		
	Insured depositors		

Why is a Contingency Funding Plan (CFP) Needed?

From PATH 2007, Ray Diggs, OCC

- Banks have a better chance of effectively dealing with a crisis.
- Liquidity risks in a bank are better understood.
- The Board & Senior Management gain greater comfort that appropriate actions can and will be taken during a crisis.
- It's a requirement!

Components of a CFP

From PATH 2007, Ray Diggs, OCC

- Objectives
- Early Warning Triggers (now called KRIs)
- Definition of a Liquidity Crisis
- Action Plans/Crisis Stages
- Testing
- Reporting & Communication

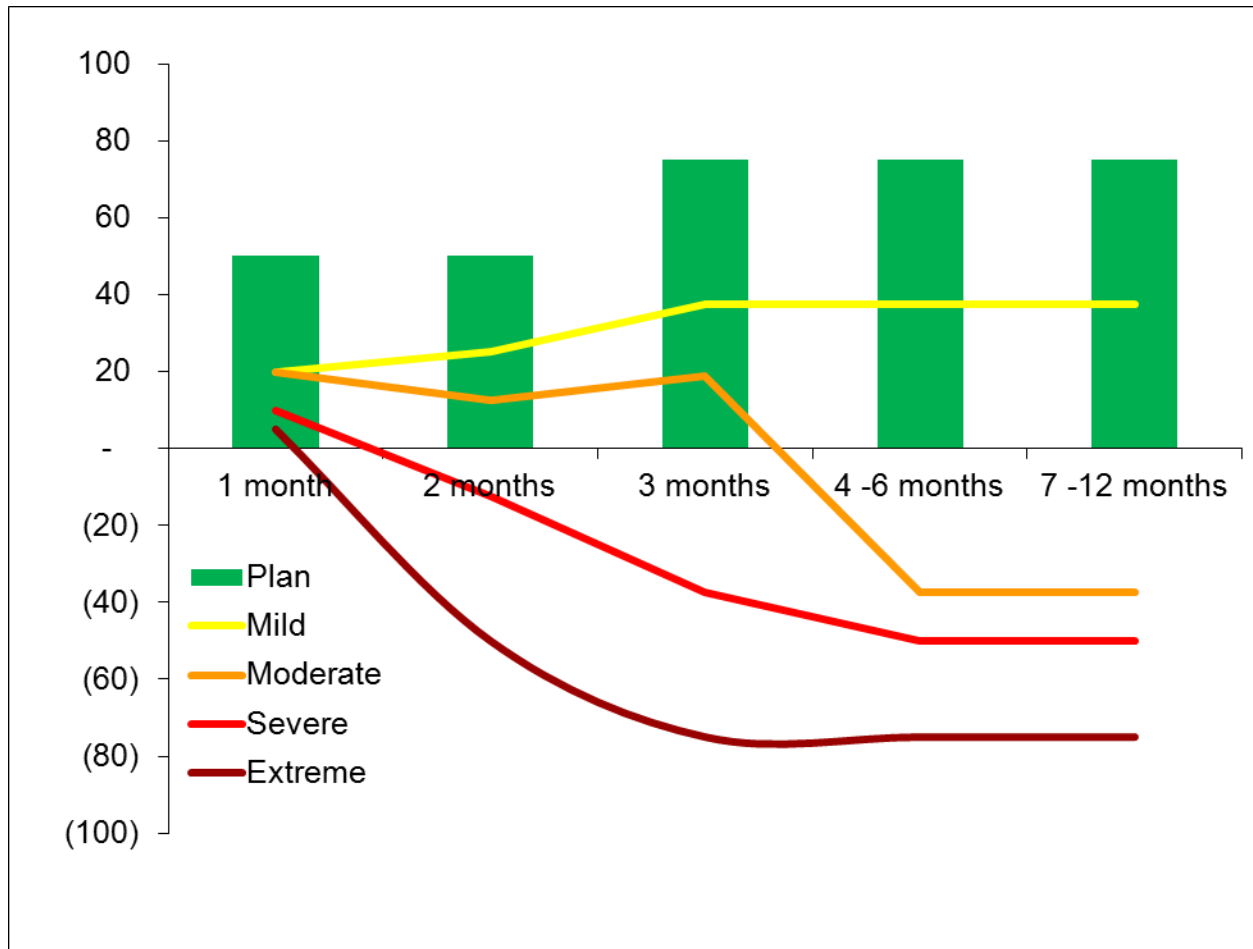
CFP Objective

From PATH 2007, Ray Diggs, OCC

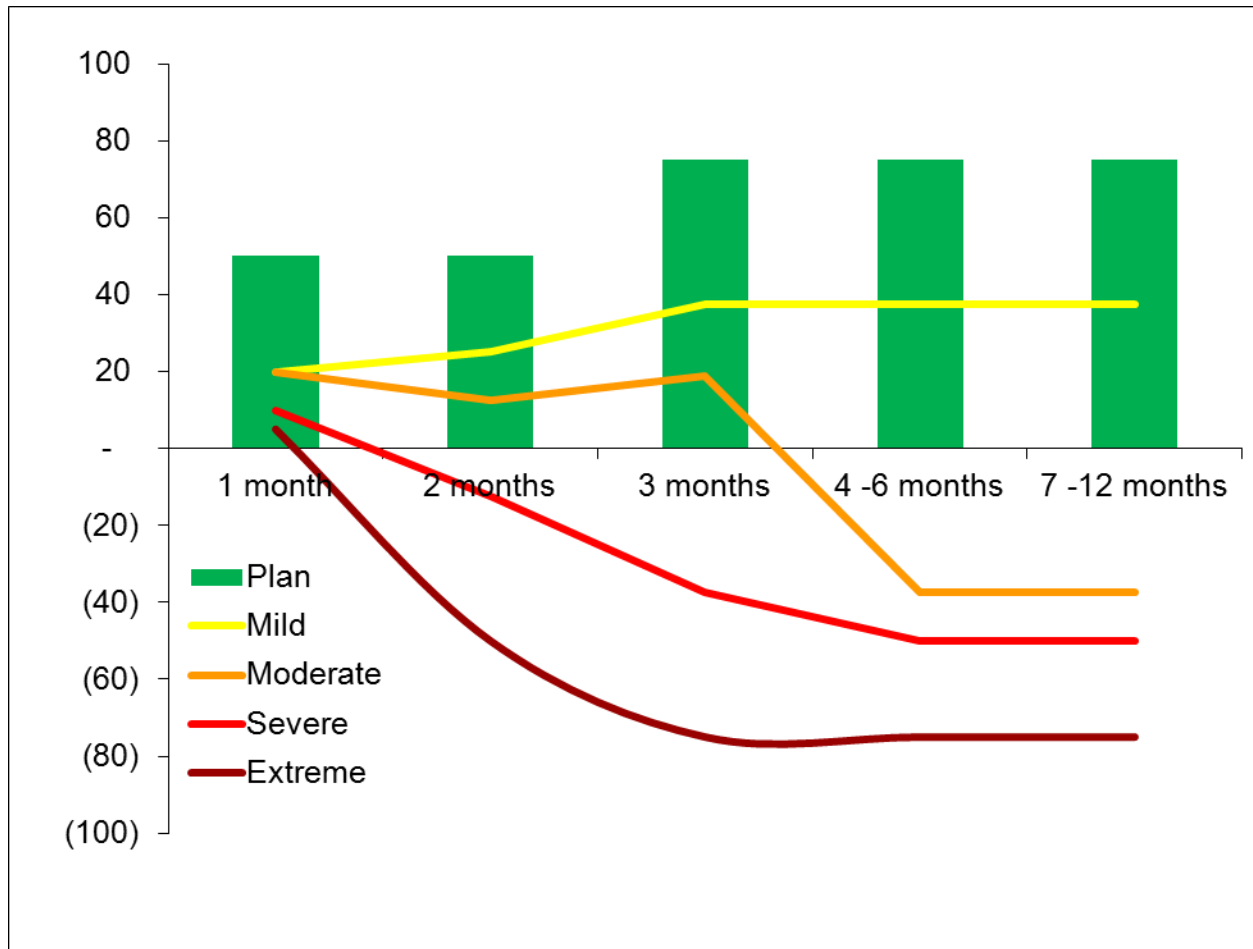
- Maintain normal operations for a specific period of time (e.g., 90 days).
- Meet funding requirements of core businesses without unsecured funding.

CFP Objective

Survivability horizon/Periodic net LC\$ or LCR



Policy objective: to survive until you can raise enough cash. What is risk limit here?



Key Risk Indicators (KRI)

Consultant perspective

- Fred
 - NPAs because you know internally before the world
- “Defining and Using Liquidity KRIs”, Leonard Matz
 - http://almnetwork.com/stuff/Matz_BAF_21-05_08.pdf

Exhibit 1. General Types of KRIs for Abnormal Funding Conditions

	Bank-Specific Problem	Systemic Problem
Internal information	<ul style="list-style-type: none"> • Forecasts indicating unacceptably high net funding requirements in upcoming periods • Forecasts indicating unacceptably low levels of liquid assets in upcoming periods • Overreliance on short-term borrowings • Overreliance on borrowings from very confidence-sensitive funds providers • Deteriorating credit quality • Significant operational risk loss 	<ul style="list-style-type: none"> • Forecasts indicating unacceptably high net funding needs in upcoming periods • Forecasts indicating unacceptably low levels of liquid assets in upcoming periods
External information	<ul style="list-style-type: none"> • Widening spreads, compared to peers, for purchased funds 	<ul style="list-style-type: none"> • Economic leading indicators forecasting a recession • Widening spreads for borrowings of all banks

Internal Controls From new Guidance

- Requirement and better practices
 - **Please work with Internal Audit!**
- “An institution’s internal controls consist of procedures, approval processes, reconciliations, reviews, and other mechanisms designed to provide assurance that the institution manages liquidity risk consistent with board-approved policy. Appropriate internal controls should address relevant elements of the risk management process, including adherence to policies and procedures, the adequacy of risk identification, risk measurement, reporting, and compliance with applicable rules and regulations.”

Governance Risk Control (GRC) Checklist for Internal A

Checklist	Status	Ref
A. Comply with The IA's Attribute Standards (15-25% IP)		
1. Define purpose, authority, and responsibility of the internal audit activity		
a. Determine if the purpose, authority, and responsibility of the internal audit activity are clearly documented and approved		
b. Determine if the purpose, authority, and responsibility of the internal audit activity are communicated to the engagement clients		
c. Demonstrate an understanding of the purpose, authority, and responsibility of the internal audit activity		
2. Maintain independence and objectivity		
a. Foster independence		
1) Understand organizational independence		
2) Recognize the importance of organizational independence		
3) Determine if the internal audit activity is properly aligned to achieve organizational independence		
b. Foster objectivity		
1) Establish policies to promote objectivity		
2) Assess individual objectivity		
3) Maintain individual objectivity		
4) Recognize and mitigate impairments to independence and objectivity		
3. Determine if the required knowledge, skills, and competencies are available		
a. Understand the knowledge, skills, and competencies that an internal auditor needs to possess		

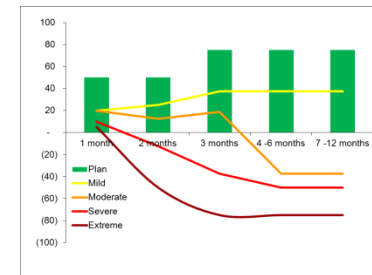
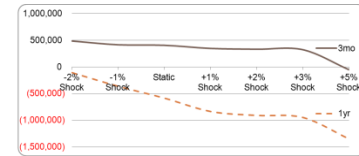
Independent Review

From new Guidance

- Requirement and better practices
 - **Make sure review team is experienced and qualified!**
- “Management should ensure that an independent party regularly reviews and evaluates the various components of the institution’s liquidity risk management process. These reviews should assess the extent to which the institution’s liquidity risk management complies with both supervisory guidance and industry sound practices, taking into account the level of sophistication and complexity of the institution’s liquidity risk profile.”

Conclusion: consistency across national/international agencies. Almost all Regulators now recommend or require:

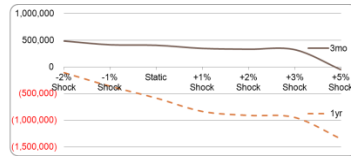
- Prospective measures of liquidity risk.
 - Retrospective ratios are no longer valued.
- Comprehensive and integrated policies and governance.
- Scenario based measurement and stress testing.
- Contingency funding plans with:
 - early warning indicators (KRIs)
 - a pre-defined escalation process,
 - Plans B,C,D...
 - specific action steps and responsibilities
 - Survivability horizon calculations
- Enhanced internal controls.
- Increased Board oversight.
- Independent review process.



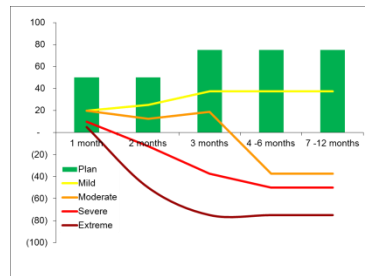
Checklist	Items	Yes	No
Governance Risk Control (GRC) Checklist for Internal A			
A. Comply with The IIA's <i>International Standards for the Professional Practice of Internal Auditing</i> (IS 2511) (P)			
1. Define purpose, authority, and responsibility of the internal audit activity			
a.	Determine if the purpose, authority, and responsibility of the internal audit activity are clearly documented and approved		
b.	Determine if the purpose, authority, and responsibility of the internal audit activity are communicated to the engagement clients		
c.	Demonstrate an understanding of the purpose, authority, and responsibility of the internal audit activity		
2. Maintain independence and objectivity			
a.	Establish independence		
1)	Understand organizational independence		
2)	Recognize the importance of organizational independence		
3)	Determine if the internal audit activity is properly aligned to achieve organizational independence		
b.	Establish objectivity		
1)	Establish policies to promote objectivity		
2)	Address individual objectivity		
3)	Maintain individual objectivity		
4)	Recognize and mitigate engagements to independence and objectivity		
5)	Determine if the required knowledge, skills, and competencies are available		
a.	Understand the knowledge, skills, and competencies that an internal auditor needs to possess		

Executive Summary: three things “to do” now

1. Forward looking measurement.



2. Integrated Policies & Contingency Funding Plans.



3. Enhanced:

- Internal controls.
- Increased Board oversight.
- Independent review process.

Governance Risk Control (GRC) Checklist for Internal A

Checklist	Items	Yes	No
A. Comply with The IA's Authority Standard (IS 2512) (P)			
1. Define purpose, authority, and responsibility of the internal audit activity			
a. Determine if the purpose, authority, and responsibility of the internal audit activity are clearly documented and approved			
b. Determine if the purpose, authority, and responsibility of the internal audit activity are communicated to the engagement clients			
c. Demonstrate an understanding of the purpose, authority, and responsibility of the internal audit activity			
2. Measure independence and objectivity			
a. Foster independence			
1) Understand organizational independence			
2) Recognize the importance of organizational independence			
3) Determine if the internal audit activity is properly aligned to achieve organizational independence			
b. Create objectivity			
1) Establish policies to promote objectivity			
2) Monitor internal objectivity			
3) Monitor individual objectivity			
4) Recognize and mitigate impairments to independence and objectivity			
3. Determine if the required knowledge, skills, and competencies are available			
a. Understand the knowledge, skills, and competencies that an internal auditor needs to possess			