

# Implementing the new liquidity risk management frameworks – the lessons learned



September 15<sup>th</sup>, 2010

PRICEWATERHOUSECOOPERS 

# Agenda

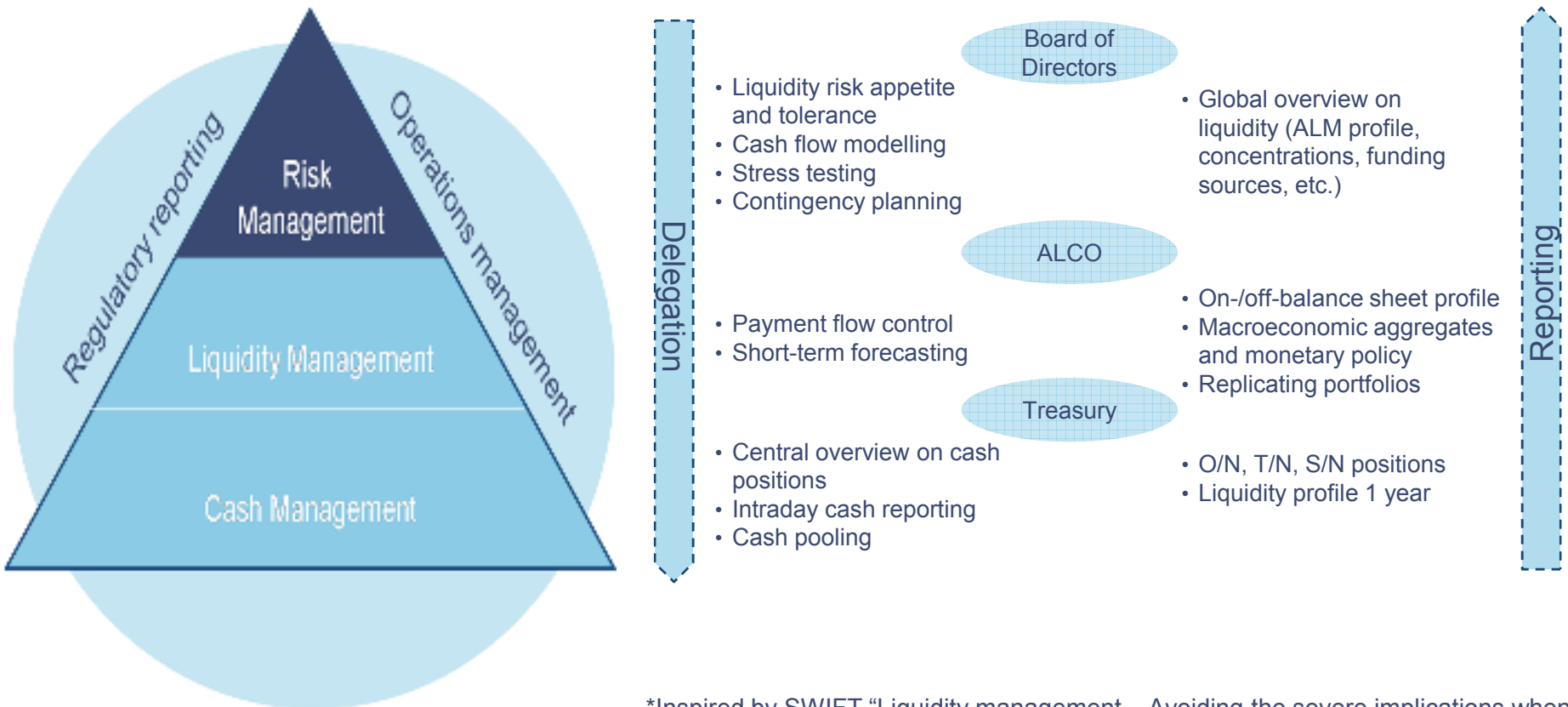
- 1) Linking liquidity management and liquidity risk management
- 2) Setting strategic objectives – Liquidity risk appetite and tolerance
- 3) Setting up an operational LRM framework

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# 1. Linking liquidity management and liquidity risk management

## Liquidity Management value pyramid\*



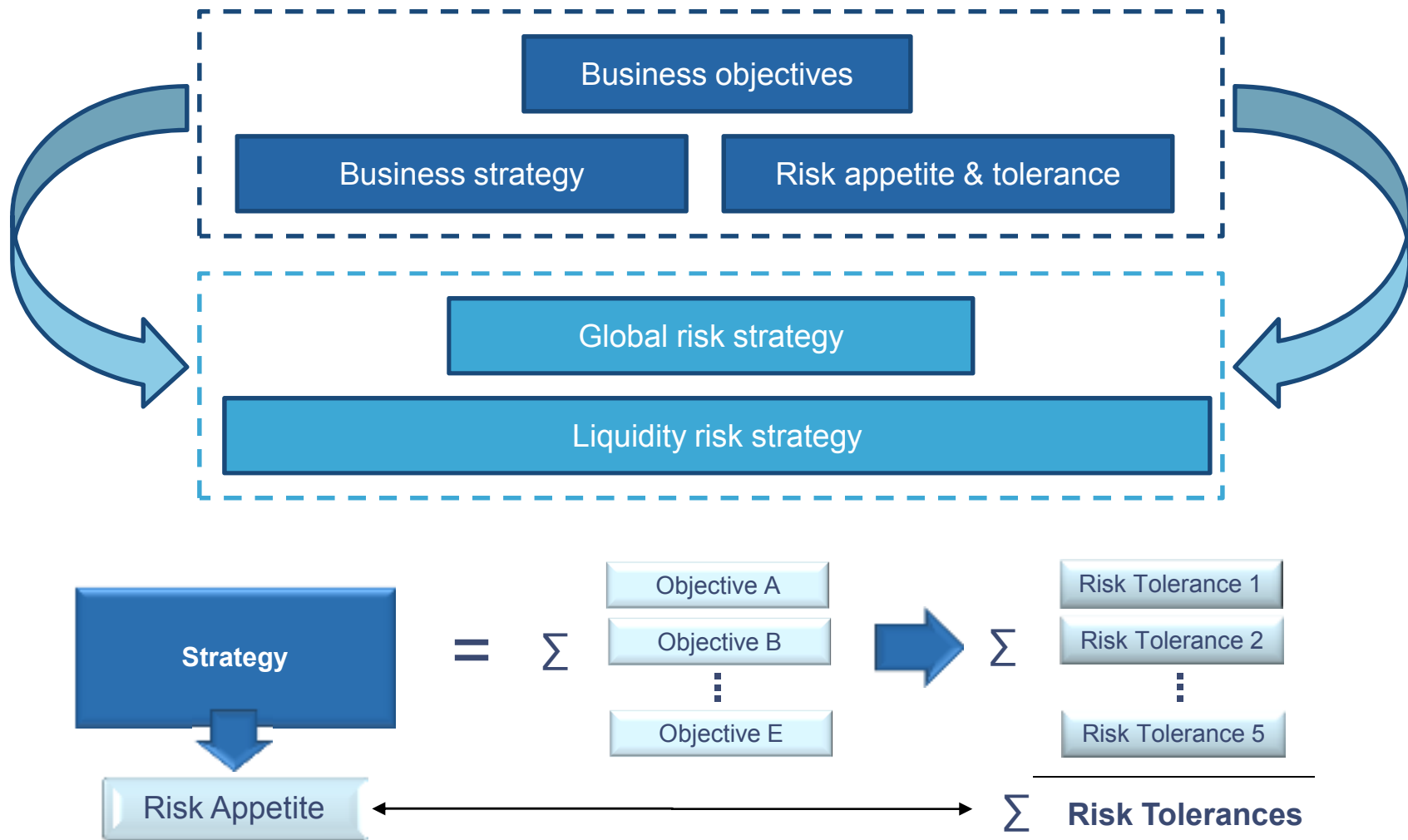
\*Inspired by SWIFT "Liquidity management – Avoiding the severe implications when lacking control over it"

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- 1) Linking liquidity management and liquidity risk management
- 2) Setting strategic objectives – Liquidity risk appetite and tolerance
- 3) Setting up an operational LRM framework

## 2. Setting strategic objectives – Liquidity risk appetite and tolerance

# Setting strategic objectives – Defining liquidity risk appetite and tolerance



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### 3. Setting up an operational LRM framework

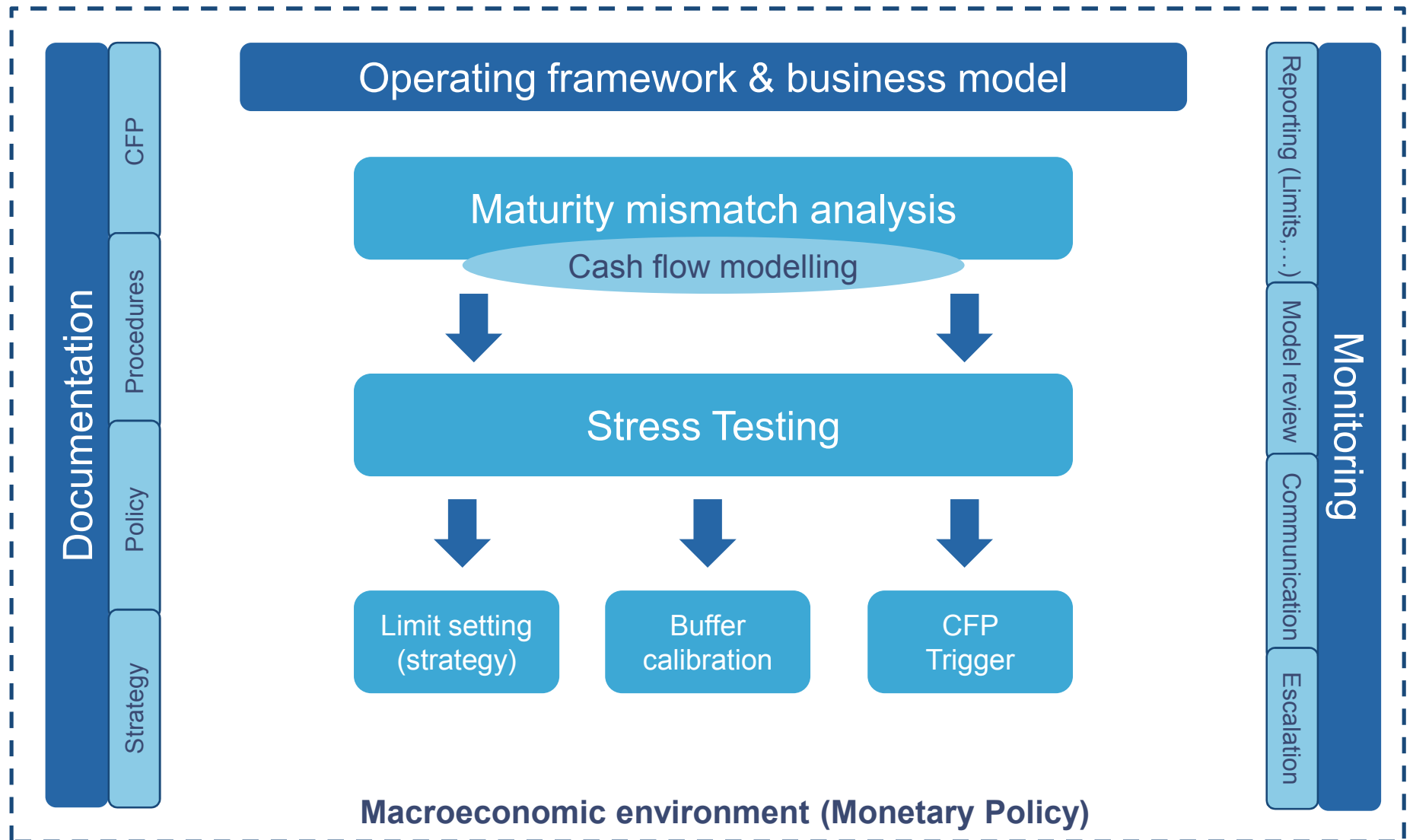
## Implications of current regulation for bank LRM frameworks





### 3. Setting up an operational LRM framework

## Operational overview of Liquidity Risk Management



### 3. Setting up an operational LRM framework

## Setting up the maturity mismatch analysis

The maturity mismatch analysis is a transposition of a bank's balance sheet into its cash flow profile.

**1** Contractual cash flows:  
Contractual cash flow profile of balance sheet

**2** Assumptions - Outflows:  
Estimated amount of potential cash outflows (e.g. non-rolled wholesale funding, drawn credit lines, etc.)

**3** Assumptions - Inflows:  
Estimated amount of potential cash inflows (e.g. Inflows from maturing loans not rolled, issuance, etc.)

Timeline	Known net cash flows	Assumptions		Funding gap
		Outflows	Inflows	
t+1	-300	-10	200	-110
t+2	-50	-25	350	275
t+3	-50	-100	550	400
t+4	-600	-200	600	-200
t+5	-500	-210	1200	490
.....	.....	.....	.....	.....
t+100	-1000	-800	1900	100
.....	.....	.....	.....	.....
t+200	-750	-1000	900	-850
.....	.....	.....	.....	.....

**4** Funding gap:  
When outflows outweigh inflows within a given time bucket, this gap needs to be covered by available liquidity (counterbalancing capacity) or carried over from other periods

### 3. Setting up an operational LRM framework

## Liquidity risk stress testing – The concept

The contractual maturity mismatch analysis is the basis for designing and implementing stress tests.

1. Design of stress scenarios at different degrees of severity

#### Scenario

- Idiosyncratic, Market-wide and Hybrid

#### Severity

- Mild, Moderate and/or Severe

2. Cash flow modeling to simulate:

- Behaviour of different counterparties
- Impact of crisis on different market segments

#### Parametrisation

- Assessment of historic data series
- Expert judgment
- Development of parametres for respective scenarios & severities

3. Quantification of liquidity buffer

#### Liquidity buffer

- Sum inflows and outflows per time bucket to obtain net funding gap
- Determine cumulative funding gap over 30 day period

### 3. Setting up an operational LRM framework

## Liquidity risk stress testing – An example

Stress tests can be set up in spreadsheets or be part of tailored LRM tools.

Timeline	Known net cash	STRESS - Bank specific					STRESS - Market-wide				
		Assumptions		Funding gap	Liquidity buffer	Net Liquidity position	Assumptions		Funding gap	Liquidity buffer	Net Liquidity position
		Outflows	Inflows				Outflows	Inflows			
t+1	-300	-500	650	-150	150	0	-750	600	-450	450	0
t+2	-50	-800	900	50	-	50	-600	850	200	-	200
t+3	-50	-1200	1000	-250	200	0	-850	850	-50	-	150
t+4	-600	-1600	1200	-1000	1000	0	-1200	1000	-800	650	0
t+5	-500	-1450	1600	-350	350	0	-1400	950	-950	950	0
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
t+30	-800	-1200	550	-1450	1450	0	-1500	750	-1550	1550	0

Required size liquidity buffer: 15000

Required size liquidity buffer: 18500

#### Stress Scenario – Idiosyncratic:

- Typically loss of market confidence in an individual bank or banking group, equivalent to a multi-notch downgrade.
- Assumptions to consider
  - Reduction in rollover of unsecured wholesale funding
  - Outflow of certain percentage of retail deposits

#### Stress Scenario – Systemic:

- Typically simultaneous tightening of available funding in several markets and uncertainty about, or a general decline in, the value of financial assets
- Assumptions to consider:
  - Negative impact on value of certain assets
  - Increased draw on guarantees and credit facilities

### 3. Setting up an operational LRM framework

## Implementing the liquidity buffer

Once the required size of the liquidity buffer has been ascertained, operational obligations and asset eligibility criteria have to be respected in the actual implementation.

#### Operational requirements:

- Assets included in buffer must be:
  - i. Available for the treasurer of the bank
  - ii. Unencumbered
  - iii. Freely available to group entities
- BIS statement that operational requirements to be finalised by the end of the year

#### Asset eligibility:

- Qualitative criteria (CEBS & BIS)
  - i. Market-related criteria
  - ii. Fundamental criteria
  - iii. Central Bank-eligibility
- Quantitative criteria(BIS only)
  - i. “Level 1” of buffer restricted to highest-quality assets (e.g. 0% risk-weighted Government bonds, bonds guaranteed by public-sector entities, etc.)
  - ii. “Level 2” of buffer restricted to high-quality non-financial corporate and covered bonds
  - iii. Strict haircuts specified by the supervisor

### 3. Setting up an operational LRM framework

## Setting up the Contingency Funding Plan

The contingency funding plan is a specific procedure aimed at ensuring a structured management of a potential liquidity crisis.

KEY FEATURES			
<b>Trigger</b>	Manual or automatic deployment of CFP	Quantitative triggers (e.g. stress tests or spreads)	Qualitative triggers (e.g. observed flight to quality)
<b>Escalation</b>	Convocation of a dedicated crisis committee	Pre-defined roles and responsibilities	Clearly defined processes to enable quick decision making
<b>Remedial actions</b>	Menu of remedies to be used in “mix-and-match” manner	E.g. asset reduction, liquidity buffer, Central Bank, etc.	Trigger levels for intensity of actions (e.g. pre-emptive measures)
<b>Communication</b>	Plan for internal and external communication	Provide trust to market through information and transparency	Close cooperation with internal and external stakeholders
<b>Board approval</b>	Provides Risk Manager and crisis committee with adequate decision-making power to react quickly and also to address delicate matters (e.g. communication plan)		
<b>Testing</b>	Testing of operational infrastructure (e.g. market access)	Review and update of CFP-document	Testing of functionality (e.g. practice run)

### 3. Setting up an operational LRM framework

## Documenting the liquidity risk management framework

#### Liquidity risk strategy

- Link between liquidity risk & overall risk strategy/business objectives
- Definition of liquidity risk
- Definition of risk appetite & tolerance (strategic objectives regarding liquidity risk)
- Etc.

#### Liquidity risk policy

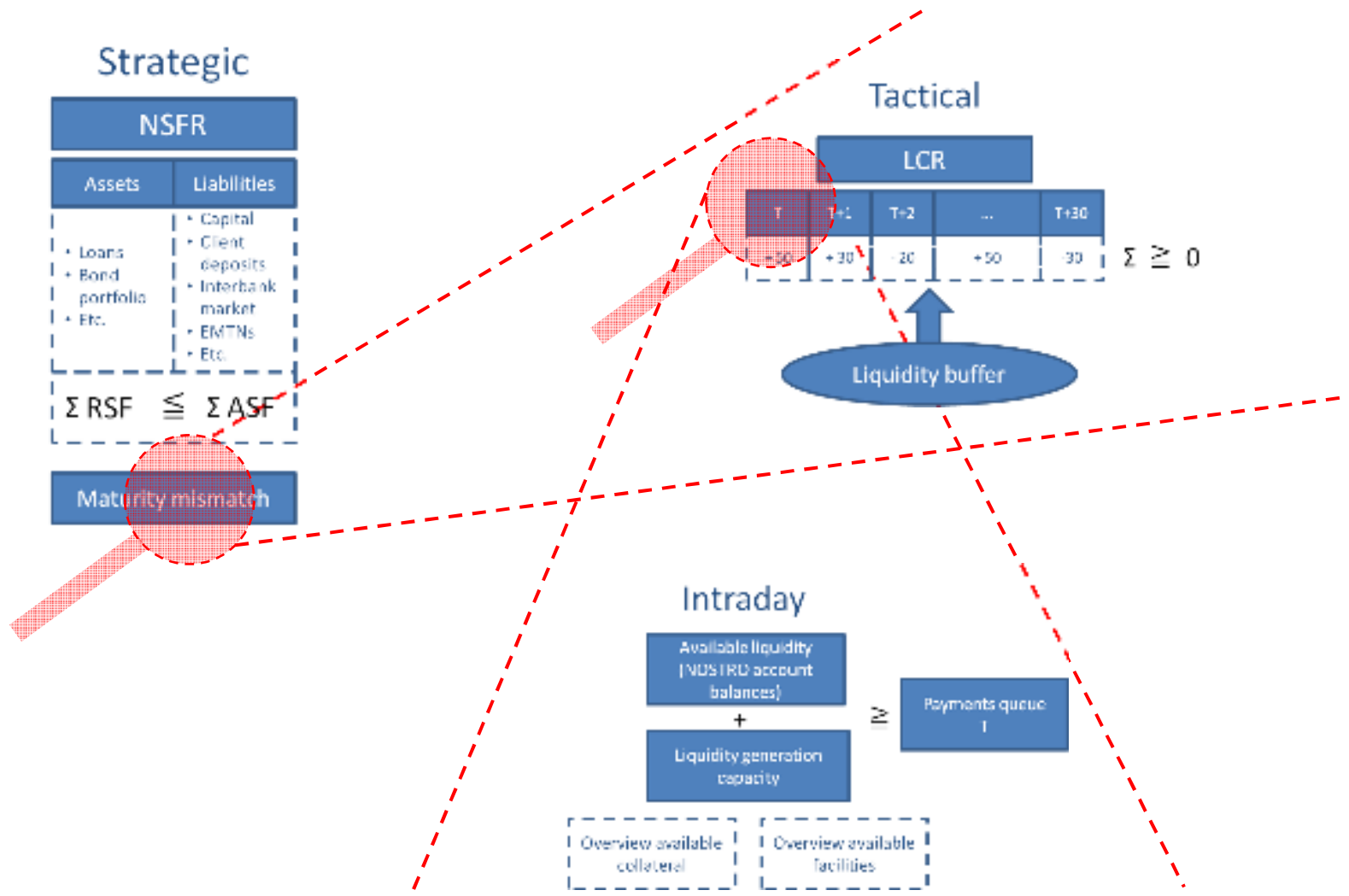
- Organisation, roles & responsibilities
- Structure of monitoring & reporting framework
- Principles cross-border liquidity management
- Etc.

#### Contingency funding plan

- Definition of crisis situation
- Definition of triggers to initiate CFP
- Structure of escalation procedures, roles & responsibilities
- Definition of possible countermeasures
- Etc.

### 3. Setting up an operational LRM framework

## Post crisis liquidity risk management – Key challenges for banks





# **Questions and Answers**

# PwC: Liquidity Risk Management Credentials - Projects

LIQUIDITY RISK MANAGEMENT ASSISTANCE			
Country	No of staff provided	Name of client	Date
Luxembourg	4	German bank	01/07/09 – to date
<b>Detailed description of project</b>			<b>Type of services provided</b>
<p>In the first phase of this project, we assisted the Bank in a review of its Liquidity Risk Management framework. Based on interviews with employees throughout the Bank and a review of existing documentation, we performed an in-depth analysis of the current state of the Bank's liquidity risk management framework in light of current and prospective regulatory requirements as well as market best practice. Upon completion of the analysis, we developed recommendations and respective tailored action plans on how to address any identified gaps in a structured manner.</p> <p>In a second phase, the Bank asked us to assist in the implementation of several elements related to its Liquidity Risk Management framework, notably the required documentation (liquidity risk strategy, liquidity risk policy and contingency funding plan) as well as in calibrating a liquidity buffer and defining the respective processes. In close collaboration with the treasury and risk management departments, we assisted the Bank in drafting its liquidity risk documentation, which included coordination with group headquarters located abroad. Furthermore, we supported the Bank in calibrating its liquidity buffer in a way compliant with the principles set forth by the CEBS in its "Guidelines on liquidity buffers and survival periods".</p> <p>In a third phase, we are currently assisting the Bank in a variety of aspects, amongst others in a conceptual analysis of its maturity mismatch analysis as well as in implementing a framework for monitoring its funding capacity and in managing concentrations regarding liquidity risk.</p>			<ul style="list-style-type: none"> <li>• Analysis of regulatory compliance of liquidity risk management framework</li> <li>• Development of recommendations and action plans on how to address identified gaps</li> <li>• Assistance in drafting liquidity risk documentation</li> <li>• Support in defining and calibrating liquidity buffer</li> <li>• Assistance in conceptual analysis of Liquidity Risk Management methodology</li> </ul>

ASSISTANCE IN IMPLEMENTATION OF LIQUIDITY RISK MANAGEMENT FRAMEWORK			
Country	No of staff provided	Name of client	Date
Luxembourg	3	British Bank	1.07.2010 – to date
<b>Detailed description of project</b>			<b>Type of services provided</b>
<p>The scope of this project is to implement an integral liquidity risk management framework at a Luxembourg subsidiary of a British Bank. In a first step, we are currently setting up the maturity mismatch analysis, which is designed to be the centrepiece of the Bank's liquidity risk management framework and as such transposes the Bank's balance sheet into its cash flow profile. In this phase of the project, we first mapped the balance sheet into different cash flow categories and then extracted the cash flows from the systems into the respective categories. In a subsequent step, we performed statistical analysis on historical data series in order to derive a basis for behavioural modelling of different categories (e.g. retail and wholesale deposits).</p> <p>In the next phase, we will design and implement the respective monitoring and reporting framework and design the contingency funding plan. In the last phase, we will draft the required documentation to formalise the liquidity risk management framework.</p>			<ul style="list-style-type: none"> <li>• Design and implementation of maturity mismatch analysis</li> <li>• Stress testing and calibration of liquidity buffer</li> <li>• Definition of monitoring and reporting framework</li> <li>• Design of contingency funding plan</li> <li>• Drafting of liquidity risk management documentation</li> </ul>

In case of any further questions, please do not hesitate to contact:

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# Thank you for your attention