

Strategic Management of Liquidity Risk

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Liquidity risk is at the heart of the banking industry. More generally, because it materializes at the level of the balance sheet, it provides a synthesis of the sum of risks a company faces. A structure dedicated to operational monitoring is indispensable, but its purview must be sufficiently expansive to contribute to the governance of the firm. Strategic management of liquidity risk must be underpinned by the implementation of early-warning indicators, by a dynamic process of stress testing, and the drawing up of contingency plans running from the most operational to the most strategic. It is important to have a clear understanding of the time constants of each of the measures aimed at responding to the growth of potential risks and, in this way, to manage the vulnerability of the firm.

Managing liquidity risk

Escalating risk

The recent crisis has underscored the need for a more definite estimation and closer management of liquidity risk. The risk is well-known, for it is at the very foundation of the banking industry: transforming short-term deposits into long-term investments. This mismatch risk isn't a real concern under normal circumstances. However, changes in the business model have made banking more vulnerable to idiosyncratic or systemic liquidity crises. Mismatch and transfer risk have indeed spread to investment banking, and cross-commitments between banks have made any mistrust of any one of them hazardous, due to the risk of money markets suddenly drying up. New regulatory requirements have sprung up, the old ones have been reinforced. In particular, the weighting of assets and liabilities included in the ratio calculation of liquidity and containment (exclusion) of equity has been revised. This change in regulatory requirements opens the way to more precise liquidity risk management based on internal methods, founded on two main pillars: (1) the definition of risk appetite as part of liquidity policies and in line with a system of limits; (2) the implementation of reporting and monitoring of firm positions. Beyond short-term management practices, genuine strategic liquidity risk management should be put in place.

The aims of strategic liquidity risk management

Defining a risk profile and liquidity risk appetite helps to better manage the overall balance sheet. This effectively means: (1) managing internal liquidity allocation according to a risk/return profile, thereby optimizing refinancing costs, and thus (2) above all, managing in a decentralized way the sizing of business activities. Internal transfer rates effectively indicate

¹ The following text is the product of the ALM/Stress Test working group. It has especially benefited from the contributions of Jean-Yves Blanc, Charles Laly, Christine Brocard, Caroline Versigny, Farah Kaci, Jean-Baptiste Neyret, Geoffrey Lallement, Jean-Paul Nicolai.

the cost of refinancing activities and, combined with risk budgets, more or less encourage functional units to develop their business.

The management practices put in place should also allow for management all along the development path the firm has set for itself, by anticipating risks and the responses to implement should the unexpected occur – or disaster become more probable. This means identifying vulnerabilities, stresses and points of concern and drawing up contingency plans in response. As we shall see, identification can be carried out through forward stress-testing. And we shall also see that strong management can't wait for disaster to occur before putting in place the appropriate responses, but should initiate advance responses, thus reducing the potential scope of the crisis, even if this means a reduction in anticipated income. In the context of strategic liquidity risk management, the ALM function should be part of a management culture that unites operational cash management and the strategic vision of executive management.

A risk that mirrors the business model of the bank

Managing liquidity can be understood as having the capacity to finance asset growth and meeting commitments when they fall due. The associated risk therefore naturally has multiple dimensions. It is the result of the business model and the structure of the balance sheet, and is closely linked to economic results. Other risk factors (credit, market, operational) are drivers of liquidity risk, to which specific micro- and macro-finance items can be added.

Liquidity risk is at the heart of the crisis we have just experienced; it is the bridge between individual institutions' risk-taking and financial stability. Indeed, when measured well, it sums up the essential weaknesses of each firm, which theoretically result in their difficulty in raising funds on the market. Liquidity risk management consequently enables reestablishing and maintaining stability in the banking system. Banks that manage their liquidity risk consistent with their business model will be the better prepared over the long term.

Building liquidity risk management

A revitalized field for risk management

Liquidity risk makes numerous other risks visible: each risk factor (credit, market, operational risk) that is likely to lead to a distortion in the balance sheet is a potential driver of liquidity risk.

Fundamentally, we are dealing with a risk that requires strategic and transversal management. The need for the latter goes beyond cash management/business line concerns and established risk silos. Ultimately, managing liquidity risk means managing, in real time, the economic balance sheet of the bank. And giving oneself the means to manage it in a decentralized way by optimizing efficiency².

² By sending an internal price signal (transfer rate or transfer price) that gives an indication of scarcity, the decentralized units can be left to make decisions on their own; since they are the ones in the best position both in terms of proximity and the information pertaining to their business, efficiency is optimized (within the constraints of head office priorities reflected in transfer price levels differentiated according to firm units). No doubt, these decentralization mechanisms also require the implementation of risk budgets, for economic capital is indeed being allocated.

This is achieved by way of an ALM function that manages liquidity risk, with cash management proactive in dealing with risk. Internal liquidity pricing must then incorporate the liquidity risk generated by the financed business activity.

Among the steps necessary for developing towards this end are the following: (1) defining liquidity risk appetite and articulating operational limits; (2) identifying and quantifying liquidity risk via dedicated stress tests; (3) putting in place early-warning indicators; (4) developing contingency plans that define the governance and actions to follow in case or in advance of a crisis.

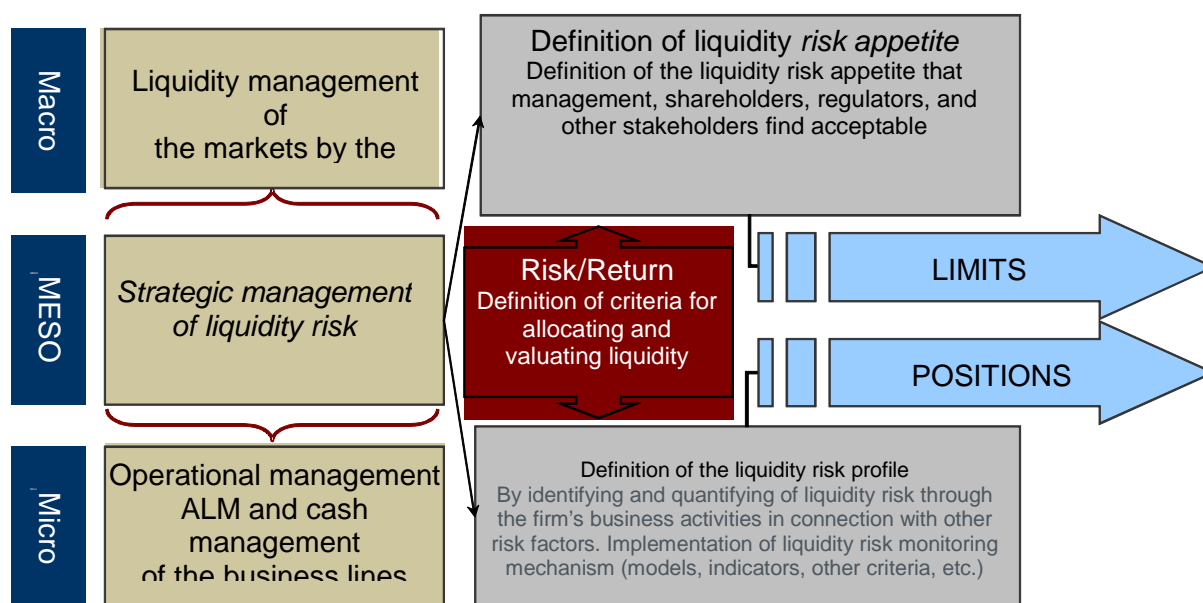
From the operational to the strategic

Operationally, one must account for the risk factors that generate funding liquidity risk and, by extension, solvency risk:

- Internal factors (liquidity requirements to finance the business and to meet obligations)
- External liquidity factors impacting funding liquidity (liquidity of asset markets, availability and cost of refinancing sources, reputation, score)
- Inclusion of liquidity risk with other risk factors
- Joint management of liquidity and credit risk
- Similarly, joint management of liquidity and reputation risk
- In addition, strategic management of liquidity risk aims to:
- Contribute to better management of the balance sheet in general by defining risk profile and risk appetite profile with respect to liquidity risk
- Manage the allocation of internal liquidity according to a risk/return profile
- Identify vulnerabilities, stresses and points of concern as well as responsive contingency plans through forward stress-testing measures

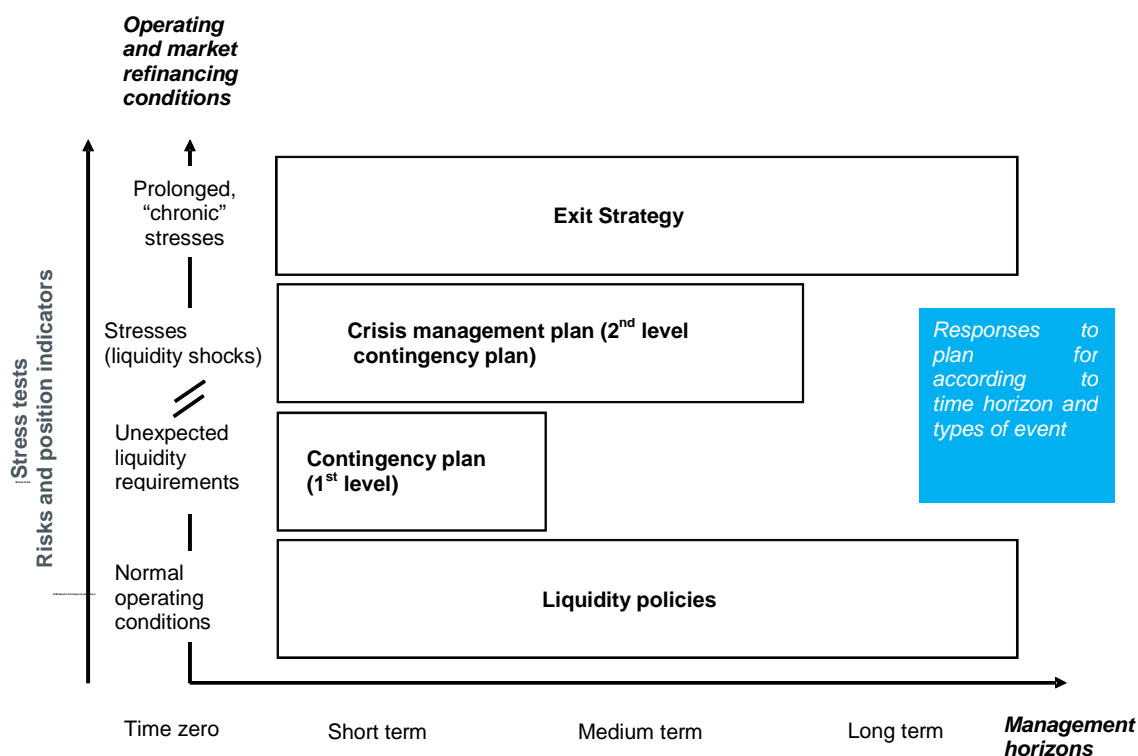
What means, methods, models, and procedures are needed to take on the challenge?

Summary of the targeted procedures



Operating conditions and management horizons

It is important to carefully measure the different temporal aspects involved. Certain responses to developments in market conditions should be planned for beforehand.



Operational liquidity policy is developed on a daily basis. It obviously includes risk-measurement mechanisms. It identifies short-term deficits (gap limits) and defines the funding limits of the business lines. Generating and monitoring regulatory ratios (BdF, FSA ratios) should also be followed on a routine basis.

Putting in place short-/medium-/long-term liquidity management means drawing up 1st level contingency plans: liquidity shocks and squeezes. Policies for building and using liquidity reserves (qualifying, and immediately available, funds from the central bank) should also be predefined, so as to include the supplementary value or cost incurred by decisions affecting the reserves. In particular, determining the size of reserve portfolios is naturally contingent on prior definition of the rules of growth in line with early-warning indicators.

Next come 2nd level contingency plans, triggered as part of crisis management. They include contingent rules for reorientation towards other external sources of financing (credit lines, public offerings).

Finally, certain measures involve long-term constants. They cannot be immediately put in place in response to a crisis without major, and potentially fatal, additional expenditure. They must, however, be incorporated from the outset into thinking about long-term liquidity policy, which must be developed today. Crisis exit strategies are an essential part of this, including risk/return analysis of the different business activities, as well as potential balance sheet restructuring carried out through the discontinuation of certain operations or, at the very least, the reallocation of economic capital. This is where considerations of the firm's risk profile must be brought to bear in advance, while accounting for the cost of adapting.

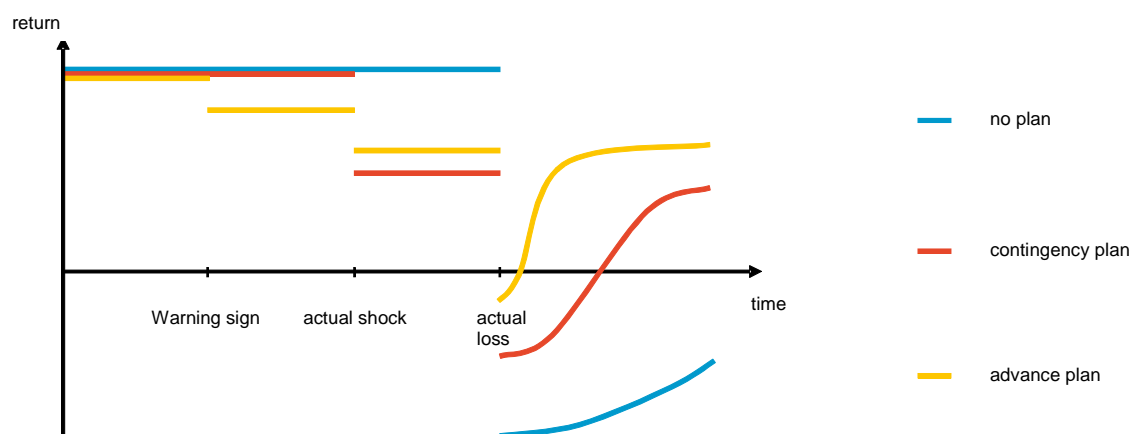
A timeframe for decision-making and impact on returns

Let's be clear about what we mean by decision-making timeframe. There are in fact different strategies corresponding to different decision-making timeframes; somewhat conceptually:

- one might choose not to prepare for the occurrence of an unexpected event, in which case one is likely to suffer major losses;
- one might draw up a contingency plan, which allows one to react as soon as an unexpected event occurs and thus to reduce losses and speed recovery to an acceptable level of return;
- finally, one might design a plan that anticipates the contingency plan and is set up prior to the shock, after a yet-to-determined warning sign. In this case, one pays a kind of insurance premium which reduces profitability but in return reduces potential losses.

Accepting a drop in return prior to a crisis naturally means having a less vulnerable risk profile when a crisis occurs. The important thing here is *ex ante* preparedness and, especially, the “optimal” choice of timeframe.

This type of management, sometimes called sequential, seeks out the option values of strategies, advancing those that maximize adaptive capacities.



The cornerstone of management practices: stress tests

Stress tests for identifying latent risk

Liquidity crises, whether idiosyncratic or systemic, are extreme risks. Therefore, stress tests are the cornerstone for identifying the risk.

Liquidity risk is not taken into account by VaR and requires a dedicated approach. Liquidity risk stress testing has today emerged as a panacea for the regulator, scoring agencies, and risk managers. It is undoubtedly a useful approach for identifying vulnerabilities in the firm's liquidity profile. But stress testing is easier to explain than to implement. Depending on its desired purpose – regulations, financial communication, management – the mechanism is not necessarily the same.

With regard to third parties, the stress test process should be based on dependable and generic factors (valid at the transversal level of the firm and comparable from one firm to another). It must be founded on well-documented models and reporting comprehensible to all stakeholders.

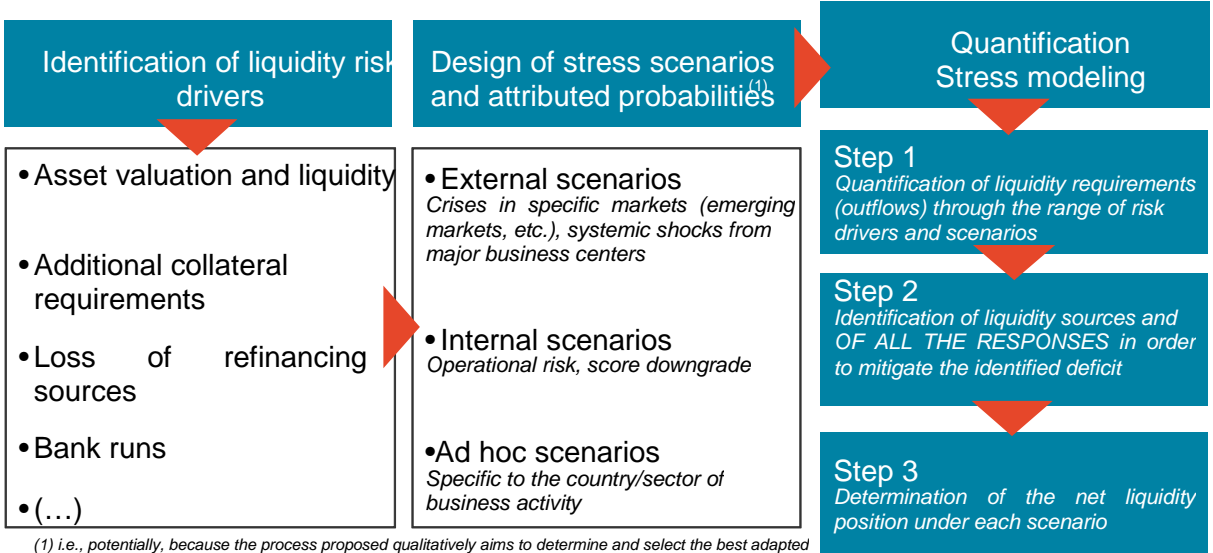
As for management practices, the stress test must above all be conceived of as a robust and flexible tool. In particular, scenarios must be able to be modified according to the vulnerabilities identified.

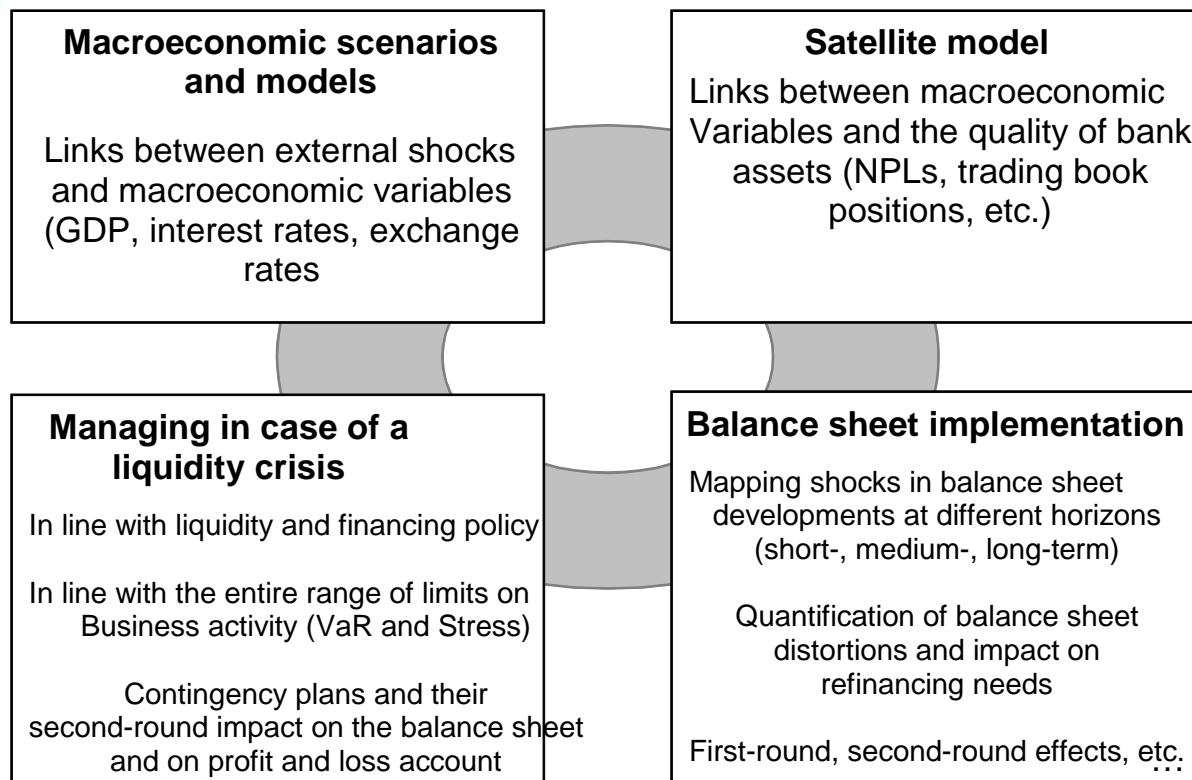
Constructing one’s future and one’s uncertainties

Stress tests mustn’t be constructed only to identify structural worst-case situations. For it is always possible to imagine the worst in a stress scenario. Stress tests must be considered management instruments in their own right. This means imagining the worst in order to identify the vulnerability and thereby the response strategy that reduces that vulnerability.

Stress tests must therefore be regularly redefined in order to best ensure the solidity of the firm. From a theoretical point of view, this method allows us to construct a series of futures contingent on what the managed firm’s real position is currently. “Futures space” is optimized along with action space (see the article in the June 2009 OTC Conseil Parisian newsletter and the viewpoint expressed in the January 2010 newsletter). The theoretical foundation is in practice the result of common sense. But that doesn’t mean that one should rely solely on common sense; it is essential to officially implement a systematic process that offers not simply business reporting indicating figures devoid of interest and of an indication of the action to take, but rather offers the means to achieve genuinely solid firm governance.

A synthetic approach to developing stress tests





Developing stress test measures and the associated risks

Practically speaking, liquidity risk management combines the identification of vulnerabilities through liquidity stress testing and scenario analysis. It is a good idea to list and foresee severe but plausible scenarios:

- Inclusion of the events of 2008
- “Shocks” (extreme short-term events) versus prolonged “chronic stresses”
- Stress scenarios specific to the firm versus stresses to the market in its entirety

The response of counterparties and creditors to an isolated or general liquidity stress should be included in stress scenarios.

The inclusion of “possible responses” in case of stress comes next: availability of refinancing sources and possible courses of action to take. It is therefore important to map risk mitigation techniques and stopgap measures. Liquidity policy is in this way designed in harmony with the risk appetite determined by executive management in consideration of the agreed-upon costs (short- but also long-term) to compensate for the effects of different scenarios through the implementation of appropriate responses. In the same way, the list of crisis contingency/management plans is defined in order to bolster short-, medium-, and long-term liquidity policy, whether this means using other liquid asset pools or, more fundamentally, restructuring or discontinuing operations.

The goal is a stress test of the balance sheet. The notion of vulnerability is therefore at the heart of the approach. It is important to distinguish between forward liquidity risk exposure and the ability to offset the occurrence of unexpected events. In concrete terms, the results of stress tests take the form of a balance sheet distortion: first, the stress tests reveal a need for financing by projecting an unbalanced balance sheet (liquidity deficit); second, the

scenarios require balance sheet restructuring as other financing sources are found. First round – seeking out liabilities that will fill the need for funding; Second round – liquidation of assets and decline in the balance sheet. Stress tests thus allow one to identify weak points and vulnerabilities in the balance sheet and to define (or study) contingency plans in case of a crisis.

Principles of management

Managing all the contingency plans through one “policy”

In the following table are laid out the main management principles to put in place.

The building blocks of contingency plans
<p>Appropriate liquidity risk governance and reporting that enables:</p> <ul style="list-style-type: none"> - Acting on early-warning indicators and warnings - Avoiding or mitigating potential crises as quickly as possible
<p>A well-documented management action plan</p> <ul style="list-style-type: none"> - Alternative sources of liquidity - Risk levels triggering appropriate action
<p>Informed by a comprehensive range of scenarios and stress tests</p>
<p>A communications plan</p> <ul style="list-style-type: none"> - Internal and external communication - Management of reputation risk in order to prevent contagion/amplification
<p>A liquidity policy</p> <ul style="list-style-type: none"> - Steady and contingent sources of liquidity
<p>Approved by executive management, communicated to regulators, and including management personnel</p>

Changes in the ALM function

In this context, the ALM function must evolve. Indeed, it is important to better account for funding liquidity risk in transfer pricing.

It is equally important to examine the close relationship between funding liquidity (the ability to mobilize and direct financing onto the market) and asset liquidity (the ability to quickly sell an asset at a price close to its intrinsic value).

It is especially important to genuinely manage and not simply passively record the liquidity cost and pass the information along. ALM is in fact the starting point for decentralized management of the firm’s development. Above all, equip ALM with a management culture (or reinforce this culture) that unites operational cash management and the strategic vision of executive management.

All in all...

All in all, liquidity risk must be thought of as the fundamental risk that firms face. Whether it is a strategic or business risk, in any case it is a risk included in Basel II's pillar 2, and managing it concerns the governance of the firm itself. That is why an approach centered on the issue of vulnerability leads to genuinely strategic management of liquidity risk.