

1 SURVEILLANCE DE LA LIQUIDITÉ

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1 COMPÉTENCE LÉGALE

1.1 LES FONDEMENTS

La loi du 24 octobre 2008 portant amélioration du cadre législatif de la place financière de Luxembourg (ci-après la loi du 24 octobre 2008) introduit dans la loi du 23 décembre 1998 relative au statut monétaire et à la Banque centrale du Luxembourg (ci-après la loi organique de la BCL) la compétence fondamentale de surveillance de la situation générale de la liquidité sur les marchés ainsi que de l'évaluation des opérateurs de marché à cet égard¹.

Les racines de cette nouvelle compétence sont à chercher dans les missions fondamentales que le Traité instituant la Communauté européenne (ci-après le Traité) confère au Système européen de banques centrales (ci-après le SEBC) en matière de liquidité.

L'article 105 (2) premier tiret du Traité attribue au SEBC la mission de «définir et mettre en œuvre la politique monétaire de la Communauté». Les banques centrales ont en général recours à deux instruments essentiels pour accomplir cette tâche : les injections de liquidité en temps normaux à travers les opérations de politique monétaire² et la mise à la disposition de liquidités d'urgence à travers le rôle du prêteur en dernier ressort³. Le rôle du prêteur en dernier ressort sera commenté plus amplement à la fin des développements qui suivent.

A la politique monétaire, l'article 105 (2) quatrième tiret rajoute la compétence de «promouvoir le bon fonctionnement des systèmes de paiement» dont le rôle est justement de faire transiter la liquidité à travers un ensemble de procédures, d'instruments et de systèmes interbancaires de transferts de fonds.

Ces missions fondamentales sont à mettre en relation avec l'article 105 (5) du Traité selon lequel «Le SEBC contribue à la bonne conduite des politiques menées par les autorités compétentes en ce qui concerne le contrôle prudentiel des établissements de crédit et la stabilité du système financier». Cet article «...rappelle le lien...entre les fonctions fondamentales des banques centrales et la stabilité financière ...»⁴.

Dans son avis portant sur les modifications apportées à la loi organique de la BCL par la loi du 24 octobre 2008, la Banque centrale européenne (ci-après la BCE) souligne l'importance de la liquidité pour la stabilité financière et pour les banques centrales : «...les banques centrales doivent concentrer leurs efforts sur la prévention des crises de liquidité à dimension systémique, dès lors qu'elles ont généralement recours à des opérations *d'open market* pour mettre en œuvre leurs décisions de politique monétaire et pour distribuer des liquidités au système financier et, partant, à l'économie réelle. La gestion du risque de liquidité des banques est une question importante pour les banques centrales, car les chocs de liquidité subis par une banque peuvent provoquer une réaction en chaîne et sont susceptibles de perturber l'efficacité et la stabilité du marché monétaire de trois manières. Premièrement, en raison de l'asymétrie de l'information, une crise de liquidité subie par une banque peut engendrer une montée de l'incertitude sur les marchés de gros et de détail en ce qui concerne

1 L'article 2 (4) de la loi du 23 décembre 1998 relative au statut monétaire et à la Banque centrale du Luxembourg prévoit que «La Banque centrale est en charge de la surveillance de la situation générale de la liquidité sur les marchés ainsi que de l'évaluation des opérateurs de marché à cet égard. Les modalités de coordination et de coopération pour l'exercice de cette mission font l'objet d'accords entre la Banque centrale et la Commission de surveillance du secteur financier ainsi que le Commissariat aux assurances, dans le respect des compétences légales des parties» ; http://www.bcl.lu/fr/media/communiqués/2008/10/Modification_de_la_loi_organique_de_la_BCL/loi_organique_29_oct_2008.pdf.

2 Voir article 18 des Statuts du SEBC.

3 Voir article 27-2 de la loi organique de la BCL.

4 Commentaires J. MEGRET, Le rôle des autorités prudentielles et des banques centrales, in *Intégration des marchés financiers*, dir. Dominique Servais, 3 éd., 2007, p. 59.

la situation de liquidité d'autres banques, phénomène qui, à son paroxysme, pourrait déboucher sur un assèchement des liquidités sur le marché monétaire et/ou sur une ruée bancaire. Dans des cas moins graves, cela pourrait entraîner une augmentation des coûts de refinancement pour les autres banques et une montée de l'incertitude en ce qui concerne la situation de trésorerie et les conditions du marché à l'avenir, ce qui compliquerait la gestion des liquidités. Deuxièmement, la part importante et toujours croissante des expositions interbancaires et des instruments du marché monétaire dans le financement des banques peut provoquer une réaction en chaîne, dès lors que les problèmes de liquidité que connaît une banque se traduisent directement par une pression accrue sur les liquidités (par exemple en raison du resserrement de la trésorerie et de besoins de refinancement imprévus) pour ses contreparties du système interbancaire. Troisièmement, le bradage des actifs peut, dans certaines circonstances, déboucher sur un effondrement du marché, réduisant ainsi la capacité de rééquilibrage des banques et, par conséquent, leur capacité à supporter les risques de liquidité. En cas de crise de liquidité potentielle, les banques centrales doivent pouvoir évaluer l'ampleur du problème de liquidité ainsi que les répercussions systémiques potentielles de la pression qui s'exerce sur les liquidités. Afin de pouvoir décider en connaissance de cause, elles doivent pouvoir s'appuyer, en temps utile, sur des informations fiables, comparables et complètes»⁵.

Le risque d'un choc macroéconomique constitue donc la justification du rôle des banques centrales en matière de régulation et de surveillance de la liquidité. Selon Walter Bagehot «In wild periods of alarm, one failure makes many, and the best way to prevent these derivative failures is to arrest the primary failure which caused them».

C'est la raison pour laquelle la surveillance permanente de la liquidité auprès des opérateurs de marché par la Banque centrale devra permettre de vérifier sur place la gestion des liquidités, la présence de collatéral et l'affectation de ce collatéral. Il ne s'agit pas d'empiéter sur le rôle de surveillance prudentielle exercé par la Commission de surveillance du secteur financier (ci-après la CSSF), mais de compléter ce dernier compte tenu de l'expérience technique et de l'intérêt particulier de la banque centrale dans ce domaine⁶.

1.2 LES OPÉRATEURS VISÉS

Quant aux opérateurs visés, l'article 2(4) de la loi organique de la BCL vise potentiellement tous les opérateurs de marché et notamment les contreparties de politique monétaire de la BCL, les autres institutions financières monétaires (IFM), les émetteurs d'instruments de paiement, les autres professionnels du secteur financier, les entreprises d'assurances, les organismes de placement collectif autres que les IFM, les fonds de pension, les sociétés d'investissement en capital à risque (SICAR), et enfin, les organismes de titrisation.

D'un point de vue pratique la surveillance des opérateurs par la BCL vise principalement les établissements de crédit, contreparties de politique monétaire. Elle peut s'appliquer, au cas par cas, aux autres opérateurs énumérés ci-dessus dans la mesure où l'activité de ces derniers est susceptible d'avoir un impact significatif sur la situation de la liquidité des établissements de crédit, sur la situation générale de la liquidité des marchés ou sur la bonne conduite des opérations de politique monétaire.

5 BCE, avis du 10 septembre 2008 sollicité par la Banque centrale du Luxembourg sur des amendements au projet de loi portant amélioration du cadre législatif de la place financière de Luxembourg et modifiant la loi du 23 décembre 1998 relative au statut monétaire et à la Banque centrale du Luxembourg, [CON/2008/42]; http://www.ecb.int/ecb/legal/pdf/fr_con_2008_42.pdf.

6 Voir Projet de loi 5842 portant amélioration du cadre législatif de la place financière de Luxembourg, commentaire des amendements gouvernementaux déposés le 5 juin 2008; <http://www.chd.lu/archives/MergeServlet?lot=J-2007-O-0694>.

1.3 LA MISE EN ŒUVRE DE LA SURVEILLANCE DE LA LIQUIDITÉ

a) L'adoption d'un règlement par la BCL

Le cadre général de la surveillance de la liquidité sera arrêté par un règlement de la BCL pris sur base de l'article 34 (1) de sa loi organique et adressé aux opérateurs de marché. Le cadre général ainsi que ses modalités d'exécution sont conformes aux règles et décisions de la BCE ainsi qu'aux dispositions arrêtées par les organisations et enceintes internationales dans le domaine de la stabilité financière. Le règlement tient particulièrement compte des recommandations du Comité européen des superviseurs bancaires (CEBS)⁷ et des principes édictés par le Comité de Bâle sur le contrôle bancaire⁸. Dans le cadre de l'élaboration du règlement, la BCL a consulté des comités composés d'experts externes et notamment le Comité des juristes de la BCL et la Commission des marchés. Elle a par ailleurs présenté son approche en la matière à tous les établissements de crédit de la place.

La Banque centrale évalue les opérateurs de marché en ayant recours à toutes les informations dont elle peut disposer en vertu de ses différentes missions et de la coopération avec les autres banques centrales et autorités de surveillance prudentielle.

Les opérateurs quant à eux veilleront à mettre en place un cadre approprié de gestion prospective de leur liquidité afin d'être en mesure de remplir, à tout moment et dans leur intégralité, leurs obligations.

b) La coopération interinstitutionnelle

Conformément au nouveau paragraphe 4 de l'article 2 de la loi organique de la BCL, la Banque centrale coopère dans l'exercice de la mission de surveillance de la liquidité avec la CSSF et avec le Commissariat aux assurances. Les modalités de cette coopération seront formalisées par des accords de coopération signés entre les autorités intéressées. L'accord à conclure avec la CSSF prévoit que les deux autorités échangent notamment les données relatives aux enquêtes spécifiques et les données collectées sur base de lettres circulaires ou de règlements auprès des établissements de crédit, des autres professionnels du secteur financier ainsi que des Opcvm. Il sera tenu compte des exigences prévues en matière d'échange d'informations par le «*Mémorandum of Understanding on cross-border financial stability*» du 1^{er} juin 2008⁹ et des évaluations et conclusions résultant de contrôles et d'analyses effectués par les Parties dans le cadre de leur mission de surveillance prudentielle respective ainsi que des sanctions et instructions individuelles prononcées à l'égard des entités visées.

Les Parties pourront également coopérer dans le domaine du contrôle des opérateurs de marché. La Partie qui entend procéder à un contrôle sur place pourra solliciter l'assistance de l'autre Partie. Le contrôle peut se faire de manière conjointe ou peut être effectué par l'autre Partie pour le compte de la Partie demanderesse.

1.4 LE RÔLE DU PRÊTEUR EN DERNIER RESSORT

Comme nous l'avons déjà indiqué ci-dessus¹⁰, le rôle du prêteur en dernier ressort constitue un autre pilier essentiel du rôle des banques centrales en matière de liquidité et justifie par ailleurs la surveillance de la liquidité par la BCL.

⁷ Comité européen des superviseurs bancaires «Second Part of CEBS's technical advice to the European Commission on liquidity risk management», 18 septembre 2008, CEBS 2008 14.

⁸ Comité de Bâle sur le contrôle bancaire, «Principles for Sound Liquidity Risk Management and Supervision», juin 2008.

⁹ Par exemple, les informations spécifiées à l'annexe B, VSCA, du Mémorandum of Understanding du 1^{er} juin 2008.

¹⁰ Voir point 1.1.

La loi du 24 octobre 2008 insère un nouvel article 27-2 dans la loi organique de la BCL selon lequel, «La Banque centrale peut, en cas de circonstances exceptionnelles, octroyer des prêts à court terme à ses contreparties, dans le respect de son indépendance et des dispositions prohibant le financement monétaire. Elle consent ces prêts sur la base d'une sûreté appropriée; celle-ci peut comporter une garantie de l'Etat dans les conditions convenues préalablement entre l'Etat et la Banque centrale. Le privilège de la Banque centrale établi à l'article 27-1(1) est applicable à ces prêts».

La fonction du prêteur en dernier ressort consiste à pouvoir fournir de manière exceptionnelle des liquidités principalement à des établissements de crédit qui rencontrent des problèmes de liquidités temporaires, contre les garanties adéquates et compte tenu du risque systémique. Cette mission est limitée à la fourniture de liquidités à une banque solvable qui doit faire face à une impasse temporaire de liquidité.

Jusqu'ici cette mission de la BCL était fondée sur l'article 22 de sa loi organique qui prévoit que «Afin d'atteindre son objectif et d'accomplir ses missions, la Banque centrale peut effectuer des opérations de crédit avec des établissements de crédit et d'autres intervenants du marché sur la base d'une sûreté appropriée pour les prêts». D'un point de vue juridique, l'utilisation de cet article à cette fin est incertaine puisque l'article 22 vise les opérations de politique monétaire prévues par le Traité et les Statuts du SEBC, alors que la mission de prêteur en dernier ressort est considérée comme étant une mission exclusivement nationale.

Il était donc urgent, surtout dans le contexte de crise actuelle, de modifier la loi organique de la BCL sur ce point en lui conférant une mission formelle qui lui permet d'exercer une compétence qui, depuis le 19^e siècle, fait partie des missions de base des banques centrales dans le domaine de la stabilité financière.

Dans son avis du 10 septembre 2008, la BCE accueille favorablement l'adoption de la nouvelle disposition légale: «... la BCE est fortement favorable au projet de loi, qui offre un fondement juridique à une éventuelle fourniture de liquidités d'urgence par la BCL sous la forme de prêts à court terme octroyés à ses contreparties, tout en prévoyant des mesures juridiques appropriées permettant de sauvegarder l'indépendance de la banque centrale et de respecter l'interdiction du financement monétaire prévue à l'article 101 du Traité...». La prohibition prévue par l'article 101 du Traité s'applique lorsque la Banque centrale supporte une institution financière insolvable alors que cette compétence devrait appartenir à l'Etat et être soumise aux règles communautaires en matière d'aides d'Etat.

Les nouvelles compétences de la BCL en matière de liquidité marquent un tournant décisif dans son histoire dans la mesure où, à travers ces missions, la Banque centrale peut désormais jouer le rôle qui lui revient en matière de stabilité financière. Le nouveau cadre légal permet également de se conformer aux exigences formulées par le «*Mémorandum of Understanding on cross-border financial stability*» du 1^{er} juin 2008 et de positionner la surveillance de la place financière de Luxembourg dans la lignée des développements institutionnels les plus récents entraînés par la crise économique et financière.



2 LIQUIDITY SURVEILLANCE OPERATIONAL FRAMEWORK

2.1 MOTIVATION AND OBJECTIVES

The Law of 24 October, 2008, made the Banque centrale du Luxembourg (BCL) responsible for the surveillance of the general liquidity situation on the markets as well as for evaluating financial market operators for this purpose.¹¹ The new BCL task requires the macro-prudential surveillance of the Luxembourg banking system in particular, and the monitoring of financial markets, including the money market and the interbank market, in general. This function is to be put into the broader BCL task of contributing to preserve financial stability and its ultimate objective within the ESCB, which is to maintain the country's price stability.

The role of central banks in financial stability has evolved in tandem with financial innovation and as a result of the interplay of ideas and experiences. For example, the Great Depression brought a shift toward increased regulation and the introduction of deposit insurance. In the 1970s, pushed by developments in academia and the limitations of the functioning of deposit insurance, the pendulum turned back toward a more market friendly regulation. As exemplified by ongoing policy discussions regarding the current crisis, financial innovation, by bringing forward new vulnerabilities, is forcing again a change in the financial stability paradigm toward a greater involvement of central banks. Prudential regulation and supervision, and deposit insurance, although ultimately concerned with financial stability, concentrate on financial market operators' individual behavior. In contrast, as central banks formulate and implement monetary policy with the ultimate objective of maintaining price stability, they are intrinsically concerned with preserving financial stability. Central banks also preserve financial stability by insuring the smooth functioning of the clearing and settlement payment systems, by their participation in crisis prevention, management and resolution, and as ultimate providers of emergency liquidity.

Financial stability and liquidity are intimately related in a monetary economy. Financial stability is a range of states in which the financial system facilitates the performance of the monetary economy, and is able to dissipate financial imbalances originated either endogenously or as a result of adverse unanticipated events. Financial stability is thus best viewed as a *process* and as such, it is *dynamic and uncertain*.¹² Liquidity is also dynamic; it is not an intrinsic, static, feature of financial instruments or markets.

Market developments such as reliance on market funding, the use of complex financial instruments, and the globalization of financial markets have increased the significance of market liquidity, i.e., the degree of easiness with which asset positions can be traded without significantly affecting the price of corresponding assets and liabilities. These developments highlight the intrinsic endogeneity of liquidity, which then can be more broadly interpreted as the ability of market participants to take risks on each other as they seek to fund asset purchases and meet obligations, both in normal and stressful environments. This brings into play the possibility of systemic liquidity risk and the role of the central bank as the ultimate provider of *fiat* liquidity via ELA operations in times of crisis, which the new Law also authorizes. In essence, effective liquidity surveillance should help minimizing the risk of facing ELA provision requests, and in this sense, it is for the BCL part and parcel of its balance sheet risk management.

¹¹ In this note, financial markets operators comprise banks and non-bank financial institutions, including insurance companies.

¹² According to CEBS 2008 147, liquidity risk is the current or prospective risk arising from an institution's ability to meet its obligations as they come due without incurring unacceptable losses.

Therefore, financial operators' liquidity risk management is crucial for the BCL. A liquidity shock in a financial institution can disrupt the stability of the money market through contagion. As a result, liquidity itself can become a contagion channel by triggering discreet changes in asset prices, in the capital base of financial institutions, and thus, by feedback, onto banks' funding capacity. Interbank markets can become a source of crisis, or even aggravate a crisis, if fundamental uncertainty makes it too costly for banks to assess counterparty risk. This eventuality, observed in the current crisis, constitutes a clear example of the endogeneity of liquidity (see box related to the link between liquidity and procyclicality). This form of macro liquidity shock via contagion provides the rationale for liquidity regulation, supervision and macro-prudential surveillance.

Box 1:

THE CRISIS, LIQUIDITY, AND PROCYCLICALITY

The ongoing crisis has dramatically shown how much the role of liquidity and procyclicality in financial stability has increased in recent times. Liquidity is best viewed as the ability of market participants to *take risks* on each other as they seek to fund asset purchases and meet obligations, both over normal and stressful environments. Therefore, liquidity is not an intrinsic, static, feature of financial instruments or markets; it is endogenous. Liquidity is the outcome of confidence among market participants on the risk distribution of the decisions they make, and thus the monetary price they pay or receive. In the past, liquidity crises were largely associated with deposit "runs", that in turn were the outcome of depositors' doubts about the solvency of a banking institution. Recently, structured complex products blurred the distinction between banks, insurance and security firms. Property and risk were transferred from the banks' balance sheets to investors, while insurers provided liquidity lines linking thereby, in an inextricable manner, banks, insurance firms, and non-bank financial institutions, creating thereby a new paradigm for financial markets and liquidity. The expansion of banks' funding sources beyond deposits came, however, at the expense of a more complex assessment of risks. And the spreading of risk expanded the possible sources of instability in ways not always transparent. As a result, the sources of financial instability and the role of liquidity changed. In addition, developments in risk management such as Value at Risk, the use of margins, haircuts and triggers as well as procyclical valuation practices, increased the natural procyclicality of financial markets. As a result, now, financial instability can also result from market instability, from non-bank financial institutions, and from ever larger, private clearing and settlement systems.

In modern financial markets, liquidity plays its paramount role in several new ways.

- Banks do not only provide liquidity, but rely on market liquidity, which affects the asset side of their balance sheets. Banks' regular trading of short- and long-term securities to manage risk implies that liquidity can affect solvency rapidly.
- In a world of mark-to-market accounting, discreet changes in asset prices affect the capital base of financial institutions immediately, and feedback onto banks' funding capacity. As a result, a liquidity shock can transform into a solvency shock, independently of any "run" on a bank.
- Liquidity can act as a powerful contagion channel as it moves asset prices, and the capital base of financial institutions and affect their capacity to provide liquidity to the market. This process is amplified by the procyclical impact of active leverage management (see below). The financial system has moved from contagion via defaults to contagion via asset price changes and measured risks.

- Uncertainty has nowadays a bigger impact than before because liquidity is inversely related to the degree of information asymmetry prevailing in the market; and information asymmetry is pervasive in modern securitized markets where “mark-to-market” becomes often “mark-to-models”, and uncertainty about asset values easily becomes uncertainty about solvency.
- Uncertainty of a fundamental nature¹ can make it too costly for banks to assess counterparty risk, and interbank markets can now become a source of crisis, or even aggravate a crisis.
- Strategic uncertainty can make a bank hoard liquidity to reap the benefits of a relatively superior hedging strategy, also affecting thereby interbank market liquidity negatively.

The ongoing crisis also is, therefore, a solemn witness of the wisdom embodied in the Law of 24 October, 2008, making the BCL responsible for markets and market operators’ liquidity surveillance. Because the role of liquidity and contagion has become more important, it is natural to reinforce central banks’ special role in financial stability. As a liquidity shock in a financial institution can disrupt the efficiency and stability of the money market through contagion, financial operators’ liquidity risk management is crucial for the BCL. Financial operators’ liquidity problems can also affect the conduct of monetary policy and impair the ultimate objective of preserving price stability. Therefore, while market participants are expected to manage their risks and to bear the consequences of their economic transactions, they tend not to take into account the possible systemic risks that may ensue from their actions. These developments justify the opportunity and the wisdom of markets and market operators’ liquidity surveillance task given by the recent Law to the BCL, as well as the required cooperation among national financial markets supervisors.

The ongoing crisis has been partly nourished and certainly amplified in its severity by institutional shortcomings that contribute to the intrinsic cyclicity of banking. There is a plethora of studies explaining the observed procyclicality of financial systems.² Not only asymmetric information justifies central bank’s involvement in liquidity surveillance, but also the well-known countercyclical bias in economic agents’ risk evaluation during the business cycle. Basic optimism, which explains the inherent bullish bias in financial markets, as well as short-sightedness (like St. Augustine’s plea to be made chaste but not yet), are largely responsible for cyclicity in the financial industry. This reality of societal behavior should be taken as a constraint and permeate the ongoing and much needed discussion of current regulatory frameworks in order to remove, or at least attenuate, the sources of procyclicality embedded in them.

Several sources of procyclicality in the financial system have been identified.

- Value at Risk (VaR) increased leverage in a procyclical way. VaR nurtured a certain “illusion of control”, i.e., the idea that by quantifying risk, it could be controlled. This approach failed not only because of the use of data referring to a short history of low period volatility, but more fundamentally, because it fed the perception that the “default probabilities” and “loss given defaults” measures of Basel II existed for structured products, with the same probability distribution and sensitivity to shocks as traditional securities. Rating may have provided the illusion that fundamental uncertainty could be transformed into “risk”.
- Mark-to-market may have also contributed to leverage and procyclicality by allowing upfront recognition of profits even when banks were in fact exposed to the economic risk of transactions for a number of years. Similarly, the desire to have more assets in the trading book due to lower regulatory capital charges, promoted leverage.


¹ In F. Knight’s sense.

² E.g., Kashyap, A. and J. Stein [2004], “Cyclical implications of Basel II capital standards”, Federal Reserve Bank of Chicago, Economic Perspectives 1, 18–31, and an empirical analysis for Luxembourg, de Walque, G., O. Pierrard, and A. Rouabah, “Financial (in)stability, supervision and liquidity injections: a dynamic general equilibrium approach, Cahiers d’Etudes, Banque Centrale du Luxembourg, October 2008.

- Haircuts and margin requirements as well as triggers based on market value, by making debt look less risky, favored leverage and procyclicality. Haircuts and margins were competed down during the last upswing enhancing procyclicality as well.
- The use of hedge accounting was hampered by the complexity of its requirements. As a result, financial institutions reported hedged assets in trading portfolios or used the fair value option. When during the crisis the liquidity of the cash asset declined more than the liquidity of the derivative used as hedge, basis risk increased income volatility and boosted deleveraging.
- Managers' remuneration schemes, by using short-term measures of performance, fuelled leverage and procyclicality. Those schemes fostered the traditional self-serving bias in financial markets by which excess risk is built during the upswing, given the notorious difficulty of economic agents to measure risk alluded above.

Developing an EU macro-prudential approach is a must: discussions should move away from a nearly exclusive focus on what can be delivered under the existing framework to what a framework of financial stability *should* deliver. There is a need to complement micro-prudential measures with a macro-prudential dimension which would limit the costs of procyclicality, as it was done with the recent Law attributing the task of liquidity surveillance to the BCL. A main guiding principle is to enhance their consistency with international standards and promote the transparency of rules and supervisory actions to increase effectiveness and credibility. The policy responses that are been discussed to build a principle-based EU macro-prudential approach cover changes in accounting and prudential rules, supervisory actions, and actions by central banks and ministries:

- Enhanced analysis and monitoring of system-wide risks by making sure that EU authorities collect and share comprehensive and reliable data, such as leverage and maturity mismatches, and sharpen analysis of the data for policy purposes.
- Enforce minimum initial margins and haircuts for over-the-counter derivatives and securities financing transactions.
- Changes in accounting rules to better reflect the uncertainty in the valuation of financial products along the cycle, i.e., the recognition that mark-to-market has limitations given the incomplete nature of markets, and that it needs to take into account the time horizon of instruments and the liquidity of the markets they are traded in. More widespread use of stress tests, especially for new risks or products with limited historical data, is needed.
- Reduce further the procyclicality of the Capital Requirement Directive by technical measures such as the introduction of buffers in good times that should be allowed to be drawn down during downturns, by introducing dynamic provisioning, by supplementing risk-based capital requirements with a simple, transparent leverage measure, and by technical adjustments to the calculation of capital.
- Accounting standard setters and prudential supervisors may examine changes to standards to dampen adverse price dynamics such as by limiting the use of fair value accounting for financial instruments or credit institutions and by facilitating the transfer of certain financial assets from the trading portfolio to the held-to-maturity portfolio in times of severe illiquidity.
- Linking remuneration schemes to the long-term performance of banks.



Financial operators' liquidity problems can also affect the conduct of monetary policy and impair its ultimate objective of preserving price stability. First, problems in the money market can impair liquidity supply both to the financial system and the real economy. Second, volatile money markets and uncertainty about market liquidity can increase divergences of EONIA rates from the ECB interest rate target impairing monetary policy implementation. Third, liquidity problems can negatively affect the smooth functioning of payment and settlement systems. Fourth, liquidity difficulties can trigger a disorderly unwinding of leveraged positions, and affect monetary market stability. Finally, the BCL in its role of crisis prevention, management and resolution, needs reliable information on agents' liquidity risk management and contingency funding plans in order to determine whether a financial institution's difficulties may result in a significant contagion risk and a systemic problem. Ultimately, liquidity surveillance is a BCL tool to manage the risk that financial market operators pose on its balance sheet.

In conclusion, the new competence of the Banque centrale du Luxembourg implies monitoring, based on internal information, cooperation with prudential regulators, contacts with financial institutions and on-site visits, as well as analysis and research, the adequacy of operators' liquidity risk frameworks and their projected liquidity profiles both in normal and stressed times so as to contribute within the ESCB to the objective of price stability, to the smooth functioning of the payment and settlement systems, and to preserve the stability of the financial system.

2.2 LIQUIDITY SURVEILLANCE: INSTRUMENTS

This section starts by discussing liquidity risk and liquidity risk management, and by justifying the use of liquidity surveillance tools according to the respective business line of each financial market operator. It then explains the paramount role of the BCL informational framework, both for normal and stressed times. It also contains a brief presentation of the BIS tools for liquidity surveillance and it proposes a set of additional tools to be developed over time so as to optimize the BCL's liquidity surveillance mandate.

2.2.1 Liquidity risk definitions and liquidity risk management

a) Liquidity risk definitions

Liquidity can be broadly interpreted as the ability of market participants to take risks on each other as they seek to fund asset purchases and meet obligations, both in normal and stressful environments, and it is thus intrinsically endogenous. The source of banks' liquidity risk is mainly the maturity transformation of assets and liabilities they perform by financing long-term investment with short-term sources. Credit institutions have to face primarily three standard on-balance sheet kinds of liquidity risk¹³: funding liquidity risk which can be of a contingent nature or of a structural nature, and market liquidity risk. The first two types of risks arise mainly on the liability side of banks' balance sheets, while the last one relates to the asset side via financial markets' behavior. The latter risk is idiosyncratic to the type of product that a bank holds in its portfolio. This distinction is relevant in the context of liquidity risk management as different risks should be monitored by different tools and following different analytical approaches. Of course, there is also off-balance sheet liquidity risk resulting from, for instance, contingent liabilities, proprietary derivatives positions, liquidity support facilities for securitization.

Contingent liquidity risk refers to a temporary situation where a bank fails to fulfill its financial obligations in a timely manner as they fall due, without incurring excessive costs. This temporary situation may become permanent: i.e., contingent liquidity needs may become structural. This event may lead to solvency issues in a relatively short time.

13 M. Brunnermeier and L. Pedersen, "Market liquidity and funding liquidity", manuscript, 2007.

b) Liquidity risk management

On the liabilities' side, banks have to monitor their funding sources; more specifically, funding sources include banks' access to funding markets, the stickiness of the bank's funding sources, and future potential cash outflows originated from derivatives' activity. On the assets' side, banks' monitoring should include financial markets' accessibility, the timing to liquidate large volumes of assets, the impact of the liquidity buffer on banks' lending capacity, the potential opportunity cost of holding a high quality, liquidity buffer and its impact on banks' profitability, the mark-to-market evolution of their liquidity buffers, collateral haircuts to be applied in central bank operations and repos with other financial institutions.

Off-balance liquidity risk has grown in importance over time. Monitoring off-balance sheet liquidity risk includes monitoring the impact on cash flows deriving from maturity, exercise and repricing of derivatives, contingent obligations from contracts such as letters of credit, guarantees, warrants, committed funding facilities, such as un-drawn loans, credit cards, overdrafts, and liquidity support to sponsored and third party SIVs, roll-over difficulties, and sponsors' solvency.

2.2.2 The mapping exercise, and its impact on business-model driven liquidity management


In a forward-looking perspective, liquidity risk management tools should be seen as a set of instruments enabling the BCL to achieve its objectives. Yet, it is clear that the type of instrument to be used for liquidity management surveillance has to be adapted to the business model of the institution that is monitored. An example relevant for Luxembourg is that transition from one custodian bank to another is a long process of at least six to nine months; client balances do not suddenly migrate due to the change in relationship. A mapping of Luxembourg banks according to their business activity as well as to their funding sources was used by the BCL to determine the critical variables for liquidity risk surveillance (e.g., clients' deposits, interest rates, economic fundamentals, stock markets). This mapping is to be interpreted as dynamic, and thus should be reviewed periodically.

A possible approach to liquidity risk monitoring implies requesting banks to set thresholds according to funding sources and/or business activity, testing their access and the evolution of the critical variables for liquidity risk management, as well as stress-testing their dependence on these sources of funding and business activity. Banks should model the impact of the critical variables and funding sources on their liquidity position.

2.2.3 Informational framework

Efficient monitoring of liquidity risk requires an informational framework. The framework is based on a common understanding of the type of financial institutions that will be monitored first in the context of the new responsibilities granted by the law. The monitoring activity encompasses not only banks but also financial markets operators such as certain categories of mutual funds (e.g., money market funds, MMFs), hedge funds and insurance companies. In general, every financial market operator that the BCL would deem as appropriate in the context of its new task should be potentially included in the perimeter of observation.

Within the informational framework, the BCL internal information ranks top, but it is not sufficient to fulfill efficiently the new responsibility given by the Law. Internal information has to be complemented by information received from the CSSF, obtained regularly from financial market operators or gathered via on-site visits, and *in fine*, information obtained from other central banks and supervisors. So, the sources of the informational framework can be internal or external according to their degree of availability and accessibility.



2.2.4 Practical tools for monitoring liquidity risk

Banks have various tools available to manage liquidity risk. The main available tools identified by the BIS are three: liquidity risk limits and metrics, liquidity stress tests (LSTs), and contingent funding plans (CFPs).

a) The BIS traditional liquidity risk monitoring tools

The traditional liquidity risk managing tools proposed as best practice by the BIS tends to be common tools already available to some Luxembourg banks. Yet, a major task ahead is to try to ensure comparability of data across financial market operators, and thus to standardize reporting as much as possible.

The liquidity risk limits and metrics include: cash flow/liquidity gap analysis, which provides a forward-looking view of liquidity needs of a bank; the liquidity stock approach, which consists of holding a stock of unencumbered highly rated liquid assets to be used to face a temporary liquidity shortage; the balance-sheet mismatch or structural funding gap, which provides a long-term view of the structural liquidity position of a bank; and liquidity ratios of various kinds used to monitor liquidity.¹⁴ In the context of its task of liquidity risk monitoring, the BCL integrates the above mentioned indicators, at least to a minimum extent, with information about the group liquidity position. A thorough assessment of a bank's liquidity position is necessary for the BCL to be able to fulfill its new task with due diligence and competence.

Liquidity stress-testing

In Luxembourg, LST is frequently done at group level, and only few cases include idiosyncratic risks. Therefore, effective liquidity surveillance will require enhancements to current LST practices. The following measures may enhance the current framework in Luxembourg banking institutions.

First, entities of foreign groups should be more actively involved than in the past in setting up scenarios that reflect risks carried by the local entity, and the results of the stress tests have to be effectively communicated to the local board and should lead to local corrective actions. Second, scenarios should be defined according to the specific risks carried by the local entity and serve as a tool to address specific inadequacies of the liquidity position of the bank in case such an event will occur. Third, markets taken under consideration should include: the unsecured inter-banking market, certificates of deposit/commercial paper, bond/covered bond issuances, repurchase agreements, retail/institutional clients' activities, forex swaps, securitization, central banks' open market operations. Fourth, market liquidity of financial instruments has to be integrated in stress tests of banks, either by rule of thumb and expert judgment, or recurring to more sophisticated models. The monitoring of the liquidity of certain markets where the bank is heavily exposed should be done on a regular basis. Fifth, the time horizon of the LST should not be too limited; the duration of the stress test should define the survival horizon, which is the basis for the definition of the liquidity risk tolerance of the bank.

Finally, for financial stability purposes, the central bank may request certain banks and other financial institutions to carry on specific stress tests. The results of these harmonized exercises could be used in the context of general liquidity risk assessment of the Luxembourg financial sector.

¹⁴ There is no perfect metrics. For instance, the liquidity stock approach may be more efficient in the case of an idiosyncratic shock than in the case of a systemic shock. The balance-sheet maturity mismatch approach depends heavily on the classification of funding sources between stable and unstable; yet, a stable source can quickly become unstable.

Contingent funding plans

As with LST, among Luxembourg banks, CFPs are frequently done at a group level and some have a separate CFP locally developed. A set of improvements to current practices to make them compatible with the liquidity surveillance requirements of the BCL include the following. First, the local entity should be more closely involved in the definition of a CFP, and banks should not solely rely on central banks' money in a first instance in a case of crisis. Second, CFPs should be tested regularly and the accessibility of the various sources of funding should be assessed on a regular basis. Finally, CFPs should in principle be formalized to improve transparency.

b) A BCL toolkit for liquidity risk surveillance

Beyond the standard liquidity management tools already described above, it is clear that liquidity risk surveillance requires the development of a specific expertise within the BCL. This expertise includes the capacity to assess output from tools already in place in the financial industry and that will be reported to the BCL on a regular basis as a result of its new competency. It also implies developing in house the components of an analytical toolkit for forecasting systemic liquidity needs. That toolkit will grow over time as new data (e.g., the new reporting) are generated. The toolkit will have to be constantly assessed in terms of its capacity to behave as an early warning system of liquidity shocks with potential systemic implications in a cost-efficient manner. A key task ahead is the standardization of the reporting.

The following tools could be developed. They are novel techniques in the sense that they have not been used for liquidity risk surveillance, or, alternatively, have not been used at all. They have various degrees of complexity and will be, consequently, only available at different dates in the future as expertise is developed and observations populate the necessary databases.

Dynamic ratio-driven evaluation of financial market operators

Financial soundness indicators already calculated by the BCL can be further developed to facilitate the evaluation of financial operators, including by adding a forward-looking dimension to those indicators. For example, the ROE ratio can be divided further into components that would allow the BCL to distinguish between increases in banks' efficiency and productivity, and increases in banks' return as a result of leverage. If increases in the ROE are largely the result of increases in banks' leverage, the fragility of the financial system will also increase. It should be possible to track the profile of the financial system vulnerability with this approach.

More specifically, liquidity ratios and liquidity gaps can be used in a forward-looking way to anticipate systemic liquidity needs. Statistical techniques can construct confidence intervals reflecting the nonlinearities of financial markets around central baselines.

Indicator model of systemic liquidity

A dataset of indicators assessing in an historic- and forward-looking manner financial operators' liquidity can be used to track systemic liquidity. In addition, the approach can identify operators' idiosyncratic needs. The approach can be useful, therefore, to motivate further analysis of vulnerable financial operators.



Aggregate default probability

A panel dataset of performance indicators, i.e., distance to default (DD) for financial market operators, can determine common underlying factors that drive financial stability. Those common factors could be complemented by a number of observable factors that affect banks and non-bank financial firms to forecast and monitor DD as a proxy of financial stability over time.

Risk-adjusted balance sheet analysis

Valuation linkages are crucial for the macroeconomy, especially under the presence of non zero probability of default. The observation that the value of entities' liabilities depend on the value of their assets (Merton's contingent claims analysis), and its application to macroeconomic models provides a framework for risk-adjusted balance sheets of all the interlinked sectors of an economy, including the sovereign. A macrofinancial framework of interlinked sector balance sheets where contingent claim principles are applied to measure risk exposure and transmission, can provide a coherent and integrated framework for monitoring financial stability.

2.2.5 Surveillance of markets

The potential indicators to watch can be divided into several categories: money market developments, credit spread developments, foreign exchange developments, and stock markets behavior. A number of indicators track developments in money markets. The indicators include fluctuations of daily short-term rates; spreads between secured and unsecured interbank lending rates; differences between Euribor fixings, EONIA swap rates and Eurepo fixings; differences between Euribor fixings and market quotes for deposits; repo market developments and trends in collateral acceptance; and bidding behaviour at tender operations.

A number of indices track the evolution of credit and credit risk. The most common in the industry include the ITRAXX Europe Main and Crossover Index; the US CDX Investment Grade and Crossover Index; the EMBI+ Emerging market government spreads; swap spread changes; changes in the CDS premium for sectors or single issuers; and credit rating changes. Understanding the *raison d'être* of changes in these indicators can be a valuable tool within the arsenal of tools to do liquidity surveillance.

Foreign exchange developments on major currency pairs, both spot and forward, can also be a useful tool to assist the BCL in liquidity surveillance. These include not only nominal but also real exchange rate developments of the U.S. dollar, the euro, the yen, the pound sterling and the Swiss franc.

Finally, stock market developments should be tracked using broad indices, sectoral and geographical indices. Similarly, volatility measures can be useful to the BCL's liquidity monitoring objective; they include the VDAX index, the VIX index and the MOVE index.

2.3 CONCLUSION

The BCL received by the Law of 24 October, 2004, the explicit responsibility to supervise not only the general liquidity situation of the market, but also of market operators. The explicit nature of the BCL task implies the development of a framework to accomplish its legal mandate efficiently.

Efficient liquidity surveillance will be formally communicated to markets by issuing a regulation that sets up the general principles and will be followed by technical annexes. A Memorandum of Understanding, first with the CSSF and then with the CA, will formalize the institutional cooperation required by law. The internal intelligence will continue to be developed by implementing liquidity monitoring tools, by thorough analysis of already available information, and *in fine*, by direct contacts with monitored institutions and exchange of information with other central banks and supervisors.

The BCL liquidity surveillance framework will require not only regular enhancements, but periodic adaptation to the rapidly changing regulatory landscape. In this endeavor, the constant reassessment of its capacity to preserve financial stability in Luxembourg and to contribute to the stability of the Euro zone will be the overriding principles.