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Secretariat of the Basel Committee on Banking Supervision  
Bank for International Settlements  
CH-4002 Basel  
Switzerland

Consultative document - indicators to monitor banks' intraday liquidity risk

Logica [now part of CGI] has been engaged with banks discussing the supervision and control over intraday cash flows for many years. We have noted the BIS recommendations in past documents such as the Principles for Sound Liquidity Risk Management and Supervision (Sound Principles), which set guidelines for banks on their management of liquidity risk and collateral, and have supported banks seeking to manage their direct and indirect cleared currencies for intraday risk.

**In direct response to the listed questions:**

**1. Do the proposed indicators adequately capture the intraday liquidity risk run by banks?**

Each of the indicators represents useful information about intraday liquidity usage and risks. But we have some concerns over the assumed significance of some of the recommended indicators.

**2. Are the stress scenarios identified in the paper comprehensive?**

The four stress scenarios address:

- a) Direct stress to the institution and its operations
- b) Indirect stress when a major counterparty fails to deliver expected payments
- c) Behavioural stress when a customer is subject to rumour and indications of failure
- d) Market stress applicable to all banks where collateral values fall and markets 'dry up'

It might be advisable to add:

- e) Failure [temporary or longer term] of an infrastructure system/service  
[eg a clearing and settlement mechanism, or the local money market system]

**3. Is the proposed scope of application of the indicators clear?**

Subject to interpretation of their significance, the paper sets each indicator in a context that helps define its scope and purpose.

4. **What, if any, implementation challenges would the proposed reporting requirements present to banks?**

A critical challenge for many banks will be acquisition of intraday timing data. Indirect settlement services [correspondent banking] typically address the date of settlement, not the timing – which is entirely at the discretion of the host settlement bank. Current account or intraday statement messages do not carry timing data for settlement or availability of funds. Even direct members of clearing and settlement systems may find it hard to be certain about the timing of settlement [as opposed to the timing of submission of payment instructions]. Another challenge is apparent within the consultation paper in that uncontrolled payment flows create liquidity risk, but bank controlled scheduling of payment flows is unpopular with Central Banks and settlement systems which seek to provide liquidity efficiency settlement scheduling themselves.

5. **Are the different monitoring and reporting requirements for direct and indirect payment and settlement system participants clear?**

In part they are addressed, but the differences in operational models of national clearing and settlement systems also need to be addressed.

- a) Some process transactions immediately in receipt of instruction
- b) Some schedule payments to the bank's liquidity provision
- c) Some have algorithms to schedule payments, changing the sequence of transactions

## **Specific commentary on the proposed indicators**

Each indicator and its potential relevance and impact is reviewed in the following section. Based on our experience in the industry and with bank payments and operations, Logica proposes some considerations that should increase the relevance and the value of the indicators.

For reference, bold text is used to show quotations from the BIS consultation paper, giving context to our responses. Comments are addressed to each quotation.

**(i) Daily maximum liquidity requirement**

**The net cumulative intraday liquidity position of a bank is the difference between the value of its payments received and the value of its payments made at any point in the day. The bank's largest negative net cumulative position during the day will determine its maximum intraday liquidity requirement on that day.**

From experience and analysis of live bank cash flows, Logica has found that the net cumulative intraday liquidity position of banks varies widely during the day and from day to day. It is driven partly by the value and number of cash flows, but largely by their timing and customer/system participant behaviour.

The stated objective is to indicate the "maximum intraday liquidity requirement on that day", when in fact it indicates the maximum liquidity *usage* on that day. Such usage is strongly affected by the timing pattern and sequence of daily cash flows. To assess the maximum liquidity demand faced by a bank in stress scenarios it would be better to use the aggregate value of outward payments [from indicator (iii)] – that is, as if all inward cash flows are delayed or defaulted.

As defined, this indicator is likely to show how efficient the bank is in its management of cash flows. Banks which manage and control their cash flows will maintain a modest intraday liquidity usage. Banks without controls will have liquidity demands that depend on the natural timing of their business – thus settlement for eastern clients is likely to occur early in the day and for western clients, much later. Same day settlement for same day trading will be driven by the daily schedule of the Clearing and settlement mechanism used.

The most significant aspect of this indicator will be how it varies from day to day, showing whether the bank is in control or at the mercy of external influences, and thus vulnerable to liquidity risk. High positive or negative levels in this net cash flow indicator represent serious liquidity risk against the system or bank where the account/position is held and managed. Indirect participants' liquidity usage is heavily dependent on the efficiency and chosen liquidity strategy of their correspondent bank agents.

The indicator is also heavily dependent on the accuracy of the assigned timing of the cash flows, which should be associated with the availability of the funds for re-use [ie 'cleared funds'].

#### **(ii) Available intraday liquidity**

**Banks will be required to report the amount of intraday liquidity available to them at the start of each business day and the lowest amount of available intraday liquidity by value on a daily basis throughout the reporting period. The indicator will enable supervisors to assess whether a bank has sufficient intraday liquidity available on a daily basis to meet its normal intraday liquidity requirement.**

The definition of 'liquidity' provided in the consultation paper includes 'Payments received from other payment system participants, including operations carried out in intraday, and/or overnight money markets'.

Settlement banks expect to balance their outward and inward cash flows towards a zero sum end of day position. RTGS systems typically demand pre-funding of liquidity and by their nature impose fully funded liquidity on all settlements. The level of liquidity provision made within the RTGS is assessed against expected net cash flows and provision for intraday imbalances. The analysis to meet the stated objective – has the bank got sufficient liquidity provision for normal daily requirements – would require comparison of the liquidity provided into the RTGS system and the net cash flow for the day. If these are close or equal then the bank is relying on others to smooth over misaligned timing of cash flows, or expecting to release liquidity as required through assets at the central bank or even money market deals. The difference represents the contingency provision made by the bank for such transient requirements. Low provision for cash flow imbalances will typically cause delays and liquidity stress to the community, even if the bank in question remains fully liquid.

Indirect participants in a currency clearing and settlement have a different scope of available liquidity. Initially it is the balance on their account plus any committed credit lines. It can also fund the account intraday through some trade deals in some markets. Or it can transfer funds between settlement bank accounts that it holds in that currency. The challenge using current correspondent banking services is to get accurate and timely information on current balances and outstanding and committed cash flows.

#### **(iii) Total payments**

**This indicator will require banks to report the total value of their gross daily payments made and received in payment and settlement systems. This will enable supervisors to establish the overall scale of their payment and settlement activity.**

This is straight forward and unambiguous, measuring cash 'turnover', and should be monitored

as separate payment and receipt value totals for each currency.

**(iv) Time-specific and other critical obligations**

**Banks will be required to report the volume and value of their time-specific and other critical obligations and the total number and value of time critical obligations that were missed during the reporting period. This will enable supervisors to gain a better understanding of banks' time-specific obligations and to monitor that those obligations are being managed appropriately.**

In major clearing and settlement systems, default on settlement deadlines is a very serious incident with an impact on the other members and the operations of the system. It is therefore very rare and these settlement systems will keep precise records of all such missed deadlines and might make a more objective source for this data.

There is a need for greater clarity in the definition of 'time-specific and other critical obligations'. Arguably all settlement obligations [value date today] are critical. Default has a knock-on effect on counterparties and customers. Therefore all daily cut-off times for RTGS or other settlement processes should be defined as time-specific events affecting payments. It is therefore necessary to classify the information supplied by time deadline. Most banks face a number of intraday obligations from various settlement systems during the day which impact on the local RTGS and particular risk may arise when such deadlines are close in time.

In practice, settlement system administrators can decide to extend the deadline for operational reasons. In such circumstances, late payments may not 'miss the deadline' despite being timed after the normal deadline. It has also been noted that delays to payments can occur as a result of regulatory AML processes and other investigations. A clear definition of default – 'missed deadline' - is needed.

**(v) Value of customer payments made on behalf of financial institution customers**

**This indicator will require correspondent banks to report the gross value of their daily payments made on behalf of all of their financial institution customers.**

**The bank will also be required to report the value of payments settled on behalf of each of its five largest financial institution customers (by value), including "internalised payments" that are settled across its books.**

This indicator will help to identify Systemically Significant Financial Institutions. Figures will be required *separately* for outward payments, inward payments and book transfers [which are of course both inward and outward]. Internalised payments by their nature do not impact on the external RTGS payment flows and are not subject to the same liquidity risks. Instead, they make the host bank into a critical part of the 'system' and their performance can impact other bank's liquidity.

There is a need for clarity on the metric for largest by value. Is this by intraday cash flow values or by size of bank?

The term "Financial Institutions" also needs further clarification. Does it just refer to banks or does it also cover so-called "Non Banking Financial Institutions" such as insurance companies and fund managers. Also should there not be an interest in larger corporates, especially multi nationals where the obligations can be substantial.

As the timing of customer payments is at the discretion of the host bank, whatever the service level commitments made, the timing of these flows is of less interest. But a comparison of the value of the payments against proprietary host bank values will be of interest

**This will enable supervisors to assess the degree of payment concentration in the bank's provision of correspondent banking services.**

If the indicator also reported the volumes, then much more information could be derived related to the type, value and risk of the correspondent banking business.

Inclusion of 'internalised payments' without segregation from real external flows will also hinder comparison with indicator (iii).

**(vi) Intraday credit lines extended to financial institution customers**

**This indicator will require correspondent banks to report the total sum of intraday credit lines extended by them to all of their financial institution customers.**

**The correspondent bank will also be required to report the value of the credit lines extended to each of its largest five financial institution customers (by value), distinguishing between secured and unsecured credit and committed and uncommitted lines.**

**For those same five customers, the bank will also be required to report the maximum daily usage of credit lines granted, again distinguishing between secured and unsecured and committed and uncommitted lines.**

Most banks operate with uncommitted credit lines. Their purpose is to smooth daily operations for the host bank, bridging normal flows of payments and receipts. The host bank applies sensible daily limits to such exposures, but does not *guarantee* to apply such permissions or limits. In recent work with a large bank we found only one committed credit line across all currencies and relationships. If these operational controls had been published then banks faced having to include them in risk and reporting figures and provisions. If they withdraw all such lines, then it will have a serious impact on the smooth process of daily settlements.

It can be suggested that these 'credit lines' are in fact risks taken by operational services to ensure smooth and efficient settlement. They are not the same as account risk limits and clients have no right to 'draw down' these amounts. In fact they may not be informed of the limits. But even if they are classified as distinct from customer credit lines, banks should be able to demonstrate their ability to measure, monitor and control these exposures.

This indicator will expose this practice and the scale of unsecured risk. It is worth noting that many banks, although certainly not all, also operate 'cover payment' settlement risk by making payments before evidence of receipt of cover [for banks that do not hold accounts in their books]. This service to the industry ensures 'timely reachability' to domestic markets for foreign banks. This indicator should therefore also address cover payment limits operated by the bank.

The maximum daily usage of credit lines lies in the gift of the host bank and its chosen timing for execution of third party payments. Implementing this indicator will probably require new functionality as account credit limits processing at most banks simply authorise release of each payment in turn without an audit trail of the exposure and/or timing for each decision event.

**(i) Timing of intraday payments**

**This indicator, which applies only to direct participants, will show the average time of a bank's daily payment settlements over a reporting period. The indicator can be described as the value-weighted average time of settlement.**

There is a need for clarity over the 'time' to be used for this. Only the CSM itself has the timing of 'settlement' – for instance in CHIPS, USD payments are regularly delayed and re-sequenced within available liquidity. The time of submission of the settlement cash flow is not the same as the time of settlement within the clearing and settlement system.

**It will enable supervisors to identify changes to the timing of a bank's intraday outgoing payments over time.**

The stated intent is to note changes in timing behaviour of the banks' payments. But without reference to the matching flow of receipts, it has little meaning. If the two flows were to move together it would imply that a bank was minimising its use of external liquidity. If they moved independently then it might imply that the bank pays little attention to intraday liquidity and its risks!

From experience with analysis of intraday timing of cash flows it was apparent that no simple patterns existed from day to day so that for a change in this indicator to have significance, it would have to shown real divergence from the 'scatter' of patterns and not just from the average.

#### **(ii) Intraday throughput**

**This indicator will show the proportion, by value, of a bank's outgoing payments that settle by specific times during the day (eg the percentage of a day's payments that settles by 9 am, 10 am etc.) This will enable supervisors to identify changes over time to a bank's intraday throughput. It would also enable supervisors to identify specific times during the day when a bank might be particularly vulnerable to liquidity or operational difficulties.**

With its focus on outgoing payments, this indicator simply shows if a bank is 'holding back' payments to improve its transient liquidity availability. It seems to assume that no prioritisation or control is made on outward cash flows. Banks that move most value early in the day through their agent settlement banks could be considered to be exploiting the liquidity cover of the institutions that they use. However the timing of settlement is in the gift of those settlement agents who control the timing of the actual settlement cash flows.

Late payment – holding back large values late in the day – could indicate cumulative settlement risk, or could simply be matching flows to receipts. This indicator, without addressing receipts, cannot give a definitive story. For instance, in the CHIPS model, late settlement could be imposed by the counterparty being late in its payments. The timing is under the control of the CSM [in this case CHIPS].

Some clearing and settlement systems already dictate value moved performance against intraday deadlines to ensure balanced behaviour between their members.

### **Specific commentary on the stress scenarios**

**It is proposed, therefore, that banks should apply one or more broadly defined stresses to the above indicators to determine the likely impact on their normal intraday liquidity requirements.**

**Four stress scenarios have been identified and are described below, not all of which will be appropriate to all banks. Banks should therefore agree with their supervisor which of the scenarios are relevant to their particular circumstances and business model.**

**(i) Own financial stress: A bank suffers, or is perceived to be suffering from, a stress event**

This could be simply summarised by 'loss of intra-day credit lines', combined with changed behaviour of counterparties holding back cash flows. The bank is then dependent on its own balances and available collateral.

**(ii) Counterparty stress: A major financial institution counterparty suffers an intraday stress event which prevents it from making payments**

This would represent loss of expected receipts from the largest counterparty, and possible replacement [duplication of payment] demands on liquidity to meet critical settlement obligations. Early detection of delayed receipts from a counterparty is a valuable operational risk control. For the purposes of clarification these counterparties should include nostro agents and custodians.

**(iii) Customer stress: The customer bank of a correspondent bank suffers a stress event**

This represents the risk exposure to the largest customer FI's inward cash flows – ie where the bank's liquidity provisions have relied upon expected net receipts into a customer account.

**(iv) Market-wide credit or liquidity stress**

This addresses intraday market downgrading of value of liquidity collateral and loss of fresh liquidity sources – including FX swaps, etc.

Experience with bank clients has shown that there are no constant patterns of intraday liquidity profiles. These stresses on one day could be easily ridden out, whilst on the next day they could sink the bank. So care is needed in the specification of criteria for the stress test scenarios. The stress tests must be applied to multiple days or to a selected 'worst case' day if vulnerability is to be detected. A bank has a number of options to address these stresses, and where liquidity vulnerability is exposed there may be a call for suitable stress strategies to be developed. A balance is required between risk measures and operational efficiency. Additional collateralisation is not necessarily the only or best approach. Planning for 'doomsday' [black swan] scenarios can be a sequence of stages adjusting controls and strategies. The critical factor is to recognise the stress factors and the symptoms of impending problems.

## **Key application issues**

**49. Other ancillary payment and settlement systems (eg retail payment systems, CLS, some securities settlement systems and central counterparties), place demands on a bank's intraday liquidity when these systems settle their obligations in another system (typically large value payment systems). The intraday liquidity requirements arising from the settlement obligations of these ancillary systems are to be treated as the equivalent of time critical obligations. Consequently, separate monitoring indicators will not be necessary for such ancillary systems.**

The intraday liquidity management practices of these organisations themselves should be assessed. It is noticeable that all the focus of the consultative paper is on banks, but these infrastructure systems are critical elements of liquidity management and liquidity risk.

Payment into CLS is only part of the liquidity significance. The pattern of payout from CLS, driven by the CLS multi-currency account risk management, has a significant impact on available liquidity in many currencies. Shortages of one currency during the day, delaying full CLS settlement until the last minute, will affect availability of other currencies and expected liquidity in those currencies during the day. CLS is very aware of this and has a strong focus on efficient recycling of liquidity.

**59. Direct participants are expected to report the monthly average and maximum and minimum value for all of the monitoring indicators set out in Section A. In addition, they are expected to report the 5th percentile for the indicator of available intraday liquidity and the 95<sup>th</sup> percentile figure for the following indicators:**

The purpose of the indicators is to identify vulnerabilities and influences on liquidity risk. Eliminating the 'extremes' of reported numbers will potentially hide critical vulnerabilities, and exposure to real stress scenarios. There needs to be a distinction made between provision of the 'whole picture' and any conclusions or actions drawn from the data. The regulators are quite free to trim the data, but hiding it from them is not the answer.

### **Annex 3: Combining the indicators**

#### **(4) Total payments and value of customer *payments made* on behalf of financial institutions**

**If a large proportion of a bank's total payment activity is made on behalf of financial institution customers, and depending on the type of the extended credit lines, the settlement bank could be more vulnerable to a stress experienced by a customer. The supervisor may wish to understand how this risk is being mitigated by the bank.**

For *payments made*, the host bank always has the option to delay or deny service to protect its liquidity. The real vulnerability here is if it relies on *expected customer receipts* [or assumed end-of-day balances] for its own liquidity. If such expected receipts represent a large fraction of the host banks expected liquidity then indeed it is vulnerable to stresses experienced by that customer.

#### **(5) Timing of intraday payments and daily maximum liquidity need:**

**If a bank starts to defer its payments and this coincides with a reduction in its liquidity usage (as measured by its largest net cumulative outflow), the supervisor may wish to establish whether the bank has taken a strategic decision to delay payments to reduce its usage of intraday liquidity. This behavioural change might also be of interest to the payment system overseer given the potential knock-on implications to other participants in the payments system.**

Here is one of the dilemmas for the regulators. They are expecting banks to pay attention to management of intraday liquidity, but when there is evidence that the bank is reducing its demand for intraday liquidity, this is seen as a threat to other participants. Liquidity today is becoming a scarce resource and it is to be expected that any bank will seek to achieve 'liquidity efficiency'. Whether tactics to achieve liquidity efficiency are applied within individual banks, or are supported centrally by the payment infrastructures [RTGS etc], they must by their nature impact the timing of cash flows for counterparties.

One last general, but important point needs to be made. The intraday liquidity demands on banks are already high and wide ranging, arising as they do from payment systems, central counterparties, custodians, CLS and securities settlement systems. This is in addition to the



more general regulatory requirements around liquidity coverage and ratios. It is therefore important that any regulatory measures that may arise out of the proposed reporting be fair and measured. Qualifying collateral is becoming an increasingly scarce resource, required as it is for an increasing number of regulatory and commercial considerations.

## **Conclusions**

Strategy and practice in intraday cash flow management varies greatly between banks. The responsibility for monitoring and controlling the bank's execution of settlement obligations falls to operational staff and requires significant levels of experience. They must not only coordinate daily workloads and priorities but also recognise incidents and issues that require intervention to avert defaults, delays and settlement breaks.

Banks may already have effective controls in place, but in the new regulatory regimes, this must be demonstrated to the satisfaction of the regulators and supervisors – and that is not easy without automated monitoring and defined liquidity management strategies. The indicators proposed in this BIS consultation paper will all contribute to a better understanding of the industry practices and will provide information to support policies and strategies to reduce risks without disruption of the industry and its support of business.

Yours sincerely

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