

Defining and Using Liquidity KRIs

By Leonard Matz

The need to respond quickly to the first signs of trouble cannot be overestimated.

Two fundamental truths shape liquidity risk management. First, we know that we face potentially devastating risks but that the probability of occurrence for those events is quite small. Second, we know that we simply cannot afford to hold enough liquidity in normal times to survive a worst-case problem. As I have often observed, insufficient liquidity can kill the bank suddenly but too much will kill it slowly.

How do we reconcile those extremes? How can liquidity risk be prudently managed without holding enough liquidity to survive a serious funding problem? One key part of the answer is always being ready to enhance liquidity promptly as soon as abnormal conditions are observed. The best way to do this is to identify a set of early warning signs typically called triggers or, in more recent discussions, key risk indicators (KRIs).

How Are KRIs Used?

Recognizing the symptoms isn't hard. Believing them is the problem. "We spent more time coming up with counter arguments—strong regional economy, well diversified loan portfolios, etc.—rather than considering what if [the symptoms] were right."¹ Other practitioners who have lived through similar experiences tell similar tales. Optimists say that it is just human nature to "look on the bright side." However you describe it, experience warns us that the first reaction of most managers is to minimize the potential severity of a problem or to assume that it will go away quickly. This is why KRIs are essential components of a robust contingency funding plan (CFP).

KRIs are not intended to supplant the judgment of experienced managers with a mechanical procedure. Nor are they intended as automatic indicators of trouble. Quite the contrary. KRIs are simply a tool for expediting the management process. Instead of wasting days discussing whether observed conditions represent a potential problem or are just minor ripples on a calm sea, managers use the KRIs as thresholds that tell them it is time to take a closer look.

Notice too that KRIs are plural. If one of your early warning indicators trips a threshold level previously defined by the bank, that variable should be given a second look. But it takes more than one KRI tripping its previously defined threshold before the policy or procedures require a special meeting to promptly assess the situation.

The need to respond quickly to the first signs of trouble cannot be overestimated. A good early warning system is an essential component of prudent liquidity risk management. Since enhancing liquidity is nearly impossible after the early stages of a problem, prompt responses are essential. As the Bank for International Settlements (BIS) observes: "In particular, the first days in any liquidity problem are crucial to maintaining stability."²

Each bank has to select the set of KRIs that is most relevant to the bank's situation and strategies. A bank primarily funded by insured deposits, for example, has far less need for a risk indicator of liability diversification than does a wholesale funded bank.

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Constructing KRIs

In many cases, simple ratios work best. For instance, the bank can report its net funding requirements in terms of cash flow coverage ratios. Here the bank calculates the total forecasted cash inflows, in a given scenario, at a given stress level, in a single time bucket; this number is then divided by the total forecasted cash outflows for that scenario, stress level and time bucket. Credit quality can also be indicated by ratios such as loan delinquency and nonperforming loan ratios.

KRIs can also be expressed in absolute quantities. For example, spreads are expressed in terms of basis points while liquid assets can be quantified in currency or time units.

A best-practice CFP should specify a minimum number of triggers that define when the liquidity environment is no longer normal. For example, the CFP might state that if four out of six triggers are tripped, the CFP is automatically activated. Instead of wasting precious time debating whether or not the liquidity environment has become abnormal, the tripping of the predefined triggers automatically shifts management's attention to potential remedial actions.

We recommend employing both quantitative and qualitative triggers. The quantitative triggers help avoid some of the recognition problems discussed earlier. The qualitative triggers permit managers

to exercise judgment. The absence of breaches of quantitative triggers does not necessarily mean that liquidity risk exposures are normal. The tripping of a few quantitative triggers, conversely, should lead to a required meeting and risk review but does not necessarily mean that liquidity risks are elevated.

How Many KRIs Do You Need?

Exhibit 1 describes seven general examples that relate to bank-specific funding events and four examples that relate to systemic funding events.

Each of these examples can drive multiple KRIs. For example, if a bank forecasts potential cash flows for a bank-specific scenario at three different stress levels and

uses 10 time buckets in each projection, then that single scenario can result in 30 different cash flow quantities. Similarly, the bank is likely to calculate multiple measures of funding concentrations.

As a result, a bank that included all the examples in Exhibit 1 might end up calculating dozens of KRIs. At a minimum, a bank's early warning system should measure at least one KRI from each of the four groups defined in Exhibit 1. Obviously, more are better, and a broader range is better.

Banks should consider two additional factors before deciding how many KRIs are necessary.

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Exhibit 1. General Types of KRIs for Abnormal Funding Conditions

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

The first issue is one of practicality. Which KRIs can be produced automatically from liquidity risk, credit risk or rate risk models? Can others be produced by tweaking automated outputs? Which KRIs are already monitored by other areas of the bank? All of these KRIs will be relatively easy to reproduce for liquidity risk monitoring. Staffing and resources often severely constrain the production of KRIs that require a lot of manual input.

Second, how effective is your management reporting? Does the bank use color coding or summary exception reports so that potential problems stand out clearly from all the clutter? If so, the bank can employ a very large number of KRIs without overloading decision makers with too much information.

Banks that are part of financial groups or bank holding companies need to include KRIs that are indicative of the group's risk and reputation. Counterparties, especially capital markets funds providers, have exposure limits for the group as a whole, not just your bank. What we might describe as reputation contagion can cause a funding crisis just as easily as a problem within your bank.

Important Point. Notice that ratings downgrades are not mentioned in the first two groups of triggers listed below. They are only discussed in the third group. *Ratings downgrades are lagging indicators.* Instead of watching for downgrades, watch for the precursors of downgrades.

Four types of events may be considered triggers that identify the onset of a need for more prudential liquidity:

- Triggers for no current funding problems but a heightened level of bank-specific liquidity risk
- Triggers for no current funding problems but a heightened level of systemic liquidity risk
- Triggers for a mildly abnormal bank-specific funding environment that may deteriorate further
- Triggers for a mildly abnormal systemic funding environment that may deteriorate further

Examples: No Current Funding Problems but a Heightened Level of Bank-Specific Liquidity Risk

- Increase in the spread paid for uninsured deposits, borrowed funds or asset securitizations. This is one of the two most widely used triggers at large banks. The spread to monitor is the difference between the funding cost paid by the bank and the funding cost paid by the bank's peers. Actually, it is the trend, rather than the current spread, that is important. Spreads on any one day are influenced by many factors. Tracking the

trend in the cost-of-funds spread over a short time interval, for example, a five-day moving average, is preferable. If your bank is active in the capital markets, monitor spreads for both short-term and long-term rates.

- Reductions in tenors lenders are willing to accept. For example, the bank asks for a 90-day borrowing, and the lender comes back with an offer to lend only overnight.
- High or increasing rollover risk within the next week or weeks. This should include maturing time deposits, not just maturing borrowings.
- A violation of a liquidity risk limit or multiple measures of liquidity risk approaching limits.
- A decline in earnings. Obviously, an unexpected decline in earnings is not always merely the first in a series. But remember that liquidity is not just having enough funds—it's the perception of having enough funds. Whether or not an earnings decline is really serious, its potential impact on the confidence of funds providers may be serious.
- An increase in loan delinquency. Increases in consumer loan delinquency are usually a good leading indicator—particularly, if the bank's delinquent loan levels are larger or growing faster than those of its peers. However, business loan delinquency is a less reliable indicator. Commercial loans tend not to be categorized as problems until the problems are unmistakable.
- A decline in the bank's stock price relative to the change in stock prices for the bank's peers. Research has shown that this is an excellent early warning indicator. Since stock prices on any one

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day are influenced by many factors, track the price trend over short intervals, for example, a five-day moving average.

- Significant asset growth or acquisitions. This can be an excellent, if often underestimated, early indicator of future problems. If the bank's loan assets are growing faster than the rate of growth for the general economy, the bank can be achieving that growth rate only by increasing its market share. But increasing market share requires taking unfamiliar borrowers away from competitors who know those borrowers better. In short, this is well understood to be a high-risk activity.
- Legal, regulatory or tax changes that either increase risks or make risk management more difficult.

Examples: No Current Funding Problems but a Heightened Level of Systemic Liquidity Risk

- Large increase in prevailing rates for new liabilities obtained from brokers, *via* the Internet or directly from capital markets lenders.
- Significant change in currency exchange rate. This is an excellent early warning indicator for banks in countries heavily dependent on either imports or exports.
- A strong or unexpected central bank shift from an accommodative to a restrictive monetary policy.
- Changes in unemployment rates or other macroeconomic indicators to levels associated with recessions.
- Loss of funds provider confidence in a major capital markets participant that threatens to spread to other capital markets participants.
- A violation of a liquidity risk limit or multiple measures of liquidity risk approaching limits.
- Indicia of a potential peak in an asset bubble. Examples might be "irrational exuberance," speculative trading approaching levels that might be characterized as frenzied and widespread reductions in or waivers of business standards normally deemed prudent.
- Political interference in either bank lending or banking supervision.

Examples: A Mildly Abnormal Bank-Specific Funding Environment That May Deteriorate Further

- An increase in the level of either nonperforming loans or loan losses. Bank of New England's illiquidity resulted from the reactions of funds providers after the bank's real estate losses became public knowledge. For Continental Illinois, it started with oil and gas loans. Other examples can be cited. Like problem loan levels, loan losses tend to be a lagging indicator and, therefore, not the best early warning trigger.
- More severe, multiple or uncorrected violations of liquidity risk limits.
- A downgrading by a nationally recognized statistical rating organization (NRSRO). This is one of the two most widely used triggers in the contingency plans for large banks. It is a logical trigger, because many wholesale market funds providers base their credit decisions on published ratings. Therefore, as a bank's ratings decline, funds providers reduce the amount of funds they are willing to supply or completely drop the bank from their approved lists. However, ratings should never be the only trigger. *Nor should a ratings downgrade be considered to be an early warning.* Rating agencies are notoriously slow to react to deteriorating credit quality. By the time a bank's rating falls, the liquidity risk manager may not have enough time to undertake liquidity enhancement measures.
- Pressure to buy back bank obligations trading in secondary markets.
- Customers who normally pay for bank services by maintaining balances shift to paying fees.
- Turndowns of borrowing requests. Turndowns are not uncommon. For example, a particular seller may not necessarily be interested in selling on every single day of the year. But the trend in turndowns is important. If more funds providers begin declining to lend, or if the amounts that they are willing to lend seem to be declining, it may be a sign of deteriorating confidence.

The critical factor is neither what [KRIs] are nor how many there are but rather how they are used.

- Requests for collateral or smaller transaction sizes from lenders previously willing to provide unsecured funds or larger transaction amounts.

Examples: A Mildly Abnormal Systemic Funding Environment That May Deteriorate Further

- Difficulty selling securities that are normally liquid.
- Indicia of a “credit crunch.” For example, systemwide increases in loan demand or reduced availability of interbank funds.
- Flight to quality in capital markets.
- Spread of a loss of confidence among funds providers from one or more major capital markets participants to numerous other capital markets participants.
- A payment systems disruption that slows or confuses funds transfers between financial institutions.
- Significant increase in the severity and/or duration of a recession.
- More severe, multiple or uncorrected violations of liquidity risk limits.
- Political events that influence either economic activity or confidence. For example, Canadian banks might be affected by Quebec secession, European banks by future EU referendums.
- A material increase in credit quality at financial

institutions caused by a postbubble decline in asset prices.

Conclusion

KRIs are certainly not the only—or even the most important—part of robust liquidity measurement and management. But they may be one of the most glossed-over tools.

Small banks and banks predominantly funded by retail deposits can easily set up a monitoring system for a handful of appropriate KRIs. At the other extreme, some large, internationally active banks have 50 KRIs or more.

In the final analysis, the critical factor is neither what they are nor how many there are but rather how they are used. When regularly monitored KRIs enable you to quickly recognize and react to abnormal funding conditions, you protect your bank from the much more difficult task of enhancing liquidity after problems have developed.

Endnotes

- ¹ Charles Frankle, *Managing Liquidity Contingency Risk, Contingency Plans and Practical Insights* (Incisive Media Liquidity Risk training course, London, Feb. 4, 2002).
- ² Principal 5, Paragraph 28, “Sound Practices for Managing Liquidity in Banking Organizations,” Feb. 2000.

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