Liquidity stress tests for banks – range of practices and possible developments[1]

Executive summary

Authorities regularly monitor liquidity risk in the banking sector. The traditional role played by banks in credit intermediation and maturity transformation exposes them to liquidity risk. This risk is therefore a key consideration for banks, as well as for the authorities concerned with their prudential supervision and with financial stability. Recent episodes of banking stress have reaffirmed the importance of the management of liquidity risk to the resilience of the banking sector. They have also highlighted how the nature of this risk keeps evolving given changes in the structure of the financial system, technology and customer behaviour.

Liquidity stress tests are traditionally employed by financial authorities to assess the materiality of liquidity risk within the banking sector. These tests, which allow both banks and authorities to take a forward-looking perspective, can take different forms. At entity level, stress tests allow both authorities and banks to review how the latter's liquidity positions evolve under adverse conditions and test their resilience. Authorities typically run in-house stress tests to cross-check the results of banks' exercises and form their own views about their safety and soundness. Authorities can also conduct liquidity stress tests to assess the resilience of the banks to severe liquidity shocks. These exercises can also allow authorities to assess the interconnections and interdependencies among banks, possibly extending coverage to other types of financial institution.

An important element of liquidity stress tests with a sector- or system-wide focus is the need to reflect the shift in the allocation of liquidity in the system. In a system-wide liquidity crisis, liquidity tends to drain away from the institutions that are perceived to be the weakest and often becomes concentrated in stronger firms, putting the former at risk. Liquidity stress tests, by sizing net outflows under a predetermined stress scenario, help to identify the most vulnerable banks. In the very short time horizon of a stress test, and differently to solvency stress tests, each bank's management reactions can both increase the bank's survival chances and alter the impact of the initial shock on the rest of the banking sector, or on other financial firms. Crucial to the realism of liquidity stress tests is therefore a set of assumptions that reflect management responses, contagion and second-round effects, although these have proved extremely difficult to model up to now.

This paper reviews a range of approaches used by authorities running liquidity stress tests. Six authorities have been interviewed for this paper: the Australian Prudential Regulation Authority (APRA), the Bank of England (BoE), the Central Bank of Brazil (BCB), the Monetary Authority of Singapore (MAS), the Sveriges Riksbank (SCB) and the Single Supervisory Mechanism of the European Central Bank (ECB/SSM). The paper discusses exercises that build on bank-run stress tests as well as those that are conducted by the authorities and that cover the banking sector and non-bank financial institutions (NBFIs). At the core of the paper are exercises that are specifically designed as liquidity stress tests with a

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sector-wide focus. These are fully fledged, self-standing liquidity stress tests that cover the banking sector in a given jurisdiction.

Three distinctive approaches emerge from the review of the selected authorities' practices. The first approach is to rely on stress tests run by the individual banks themselves. In this case, authorities derive a sector-wide view of liquidity risk by building on the results of the bank-run stress tests. This approach is common to all sampled jurisdictions. The second approach is stress testing exercises that have been specifically designed with a banking sector-wide focus. Three examples of this approach – exercises conducted by the BCB, the ECB/SSM and the SCB – are discussed in detail in the paper. The exercises are compared across several dimensions, including objectives, governance, scope, scenario design, methodology and supervisory follow-up. The third approach is exercises that focus on better understanding the interactions between banks and NBFIs. These exercises are exploratory, typically run only occasionally, given their complexity and the level of resources that they involve. Both the BoE and MAS have and/or are conducting such one-off exercises.

Recent market stress episodes have highlighted further areas of development for liquidity stress tests. A liquidity stress test incorporates multiple assumptions, concerning for instance depositors' behaviour and corrections in asset prices. Their features may evolve over time and such changes need to be reflected in the tests. Following the 2023 banking turmoil, innovations in liquidity stress tests may be needed to reflect changes in technology and depositor behaviour. There may also be a need to revisit other key assumptions underpinning stress tests, such as those about the treatment of high-quality liquid assets in times of stress, the availability of intragroup funding for banks and concentration of exposures on both the asset and liability sides.

There is also a need to further develop liquidity stress tests concerning modelling of interactions among banks and between banks and NBFIs. Moving from a single bank to a system-wide perspective requires tracking the impact of the liquidity shock across several financial firms. To do so, authorities need a comprehensive mapping of interactions among banks (eg connections via interbank markets, common exposures) and, increasingly, between banks and NBFIs. However, such modelling is demanding, to the extent that analysing the impact of links with NBFIs is still mostly qualitative. When considering second-round effects and contagion risk, authorities use simplifying assumptions, which are made to approximate the transmission of the liquidity shock across individual financial firms. However, such assumptions may be inadequate, and underestimate the severity of shocks and the speed with which liquidity may disappear in stress scenarios. There is also an increasing need for new vintages of liquidity stress tests to reflect the actions of individual banks and NBFIs. Finally, stress tests would ideally also allow to assess the cumulative impacts of these actions and reactions on the financial system. This could shed light on the circumstances under which changes in the collective behaviour of banks or NBFIs may lead them to become shock absorbers or shock amplifiers during a liquidity crisis.