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## Bank liquidity stress test

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## 1. Introduction

The aim of bank liquidity risk stress-testing is to assess banks' resilience to sudden negative shocks to their liquidity flows and the liquidity of their assets. The test is based on idiosyncratic shocks to individual banks. The test results can therefore be interpreted solely from the perspective of one bank. They cannot be aggregated across banks, as the test assumes that an outflow of liquidity from one bank means an inflow of liquidity into another. The test is static and does not model banks' response to the shock generated. The test conforms to the liquidity sub-groups<sup>1</sup> in the domestic banking system.

The main data input is data reported by banks in the Statement on Contractual Maturity [AMSIFE10](#). These data are the source for the contractual maturity of the inflows, outflows and counterbalancing capacity of a bank's liquid assets. In the test, the data from the Statement are applied to outflow and inflow factors and haircuts on liquid assets in the counterbalancing capacity. The parameter settings are selected by expert judgement taking into account the established practices for banking liquidity regulation tools, especially the LCR, and the parameters selected for similar tests conducted abroad.<sup>2</sup> The result of the test is the quantification of the liquid assets included in the counterbalancing capacity available to cover the net outflow generated by the shock at the six-month test horizon.

## 2. Test methodology

A bank's counterbalancing capacity ( $b$ ) comprises its liquidity buffer ( $LA$ ) in the given period ( $t$ ) and the difference between its outflows ( $OUT$ ) and inflows ( $IN$ ) accumulated in previous periods, i.e. its net liquidity outflow ( $NO$ ). The bank uses its counterbalancing capacity to cover its net outflow ( $NO$ ) in the given period ( $t$ ). The test is dynamic and simply monitors over a period of six months ( $t = 1-6$ ) whether the bank will exhaust its counterbalancing capacity (a negative liquidity gap;  $LG < 0$ ):

$$\sum_{t=1}^6 LG_t^b = \sum_{t=1}^6 \left( \sum_{j=1}^n LA_{j,t}^b (1 - h_{j,t}) - \sum_{T=1}^t NO_T^b \right)$$

$$NO_t^b = \sum_{j=1}^n OUT_{j,t}^b r_{j,t} - \sum_{j^*=1}^n IN_{j^*,t}^b (1 - p_{j^*,t})$$

The parameters for the haircuts on the assets in the liquidity buffer and for the outflow and inflow factors of the test ( $h$ ,  $r$  and  $p$  respectively) are chosen by expert judgement and are inspired by the

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<sup>1</sup> Article 8 of Regulation (EU) No. 575/2013 of the European Parliament and of the Council of 26 June 2013.

<sup>2</sup> <https://www.bankingsupervision.europa.eu/press/pr/date/2019/html/ssm.pr190206~3fc0116031.en.html>

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current LCR regulations<sup>3</sup> (see Table 1). The parameters may be changed for the purposes of conducting sensitivity analyses based on currently perceived risks (owing to the loan moratorium, for example). In such cases, the test parameters are published along with the results.

The liquidity buffer (LA) is made up of the following assets ( $j$ ): cash, withdrawable central bank reserves and tradable assets (T-bills, government bonds and other securities). The calculation of outflows (OUT) includes the following items ( $j'$ ): liabilities resulting from securities issued and collateralised loans, deposit outflows, maturing derivatives, credit facilities provided and other outflows (e.g. guarantees received and monetary pledges received). The calculation of expected inflows (IN) includes the following items ( $j^*$ ): due amounts from collateralised loans and capital market transactions (e.g. inflows from repos, and bonds) and from loans and other receivables (interest on loans), maturing derivatives, maturing paper in own portfolio and other inflows.

The result of the test is the evolution of the liquidity gap (LG) over time for individual banks (published in anonymised form). The LG is positive when the quantity of liquid assets in the bank's counterbalancing capacity is sufficient to cover the net outflows accumulated in the given period. The CNB monitors this indicator on a monthly basis over a six-month test horizon.

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<sup>3</sup> Although the LCR requirement for covering net liquidity outflows has rather stricter scenario parameters than those used in this test, the LCR is a stress test with a horizon of “only” 30 days.

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**Table 1 Example of a liquidity stress test scenario**

| <b>Outflow items, rate of outflow:</b>                                    | <b>1M</b>             | <b>2M and 3M</b>             | <b>over 3M</b> |
|---|-----------------------|------------------------------|----------------|
| Stable retail deposits  | 2%                    | 1 %                          | 1 %            |
| Other retail deposits   | 3 %                   | 2 %                          | 1 %            |
| Operational deposits  | 10 %                  | 7 %                          | 5 %            |
| Non-operational deposits from credit institutions                         | 100%                  | 100 %                        | 100 %          |
| Non-operational deposits from other financial customers                   | 25%                   | 25%                          | 25%            |
| Non-operational deposits from central banks                               | 0%                    | 0%                           | 0%             |
| Non-operational deposits from non-financial corporates                    | 10%                   | 7%                           | 5%             |
| Non-operational deposits from other counterparties                        | 15%                   | 10%                          | 5%             |
| Liabilities resulting from secured lending                                |                       | 100%                         |                |
| Liabilities resulting from securities issued                              |                       | 100%                         |                |
| Maturing derivatives  |                       | 100%                         |                |
| Other outflows  |                       | 100%                         |                |
| Retail credit lines   | 5%                    | 5%                           | 5%             |
| NFC credit lines  | 15%                   | 15%                          | 15%            |
| <b>Inflow items, inflow haircut:</b>                                      | <b>for each month</b> |                              |                |
| Retail loans  |                       | 50%                          |                |
| Corporate loans   |                       | 50%                          |                |
| Loans to other non-financial counterparties other than NFCs and retail    |                       | 50%                          |                |
| Loans to and receivables from credit institutions and financial customers |                       | 0%                           |                |
| Other inflows   |                       | 100%                         |                |
| Inflows from secured operations   |                       | 0%                           |                |
| <b>Liquid assets, haircut on liquid assets:</b>                           | <b>for each month</b> |                              |                |
| Corporate bonds   |                       | 10–100% depending on quality |                |
| Covered bonds   |                       | 10–100% depending on quality |                |
| Shares  |                       | 40–100% depending on quality |                |
| Central government  |                       | 10-20 % depending on quality |                |
| Cash, T-bills, government bonds   |                       | 0%                           |                |

Source: CNB

Note: M = month.

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