



Measuring Counter Party liquidity Risks in FMIs

Tatu Laine
Payment Systems Department, Bank of Finland

Introduction

- Counterparty liquidity risk analysis in LVPS
- Analysis brought to participant level
- Two new liquidity risk indicators
- Stress tests' liquidity projections compared to HQLA (High Quality Liquidity Assets)

Disclaimer

The slides reflect the current view of the presenter. They do not necessarily represent the view of the Bank of Finland or the European System of Central Banks.

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Payment Systems Department, Bank of Finland

Methodology



Data and methodology

- TARGET2- Suomen Pankki -component, April 2020
- 16 business days, scenarios for 19 participants
- Scenario: a participant becomes a liquidity sink
 - not able to send, but still receiving payments
- This can occur due to a technical disruption, for example
- Tool: Stress tester in the new BoF-PSS3 simulator

Two new liquidity risk indicators

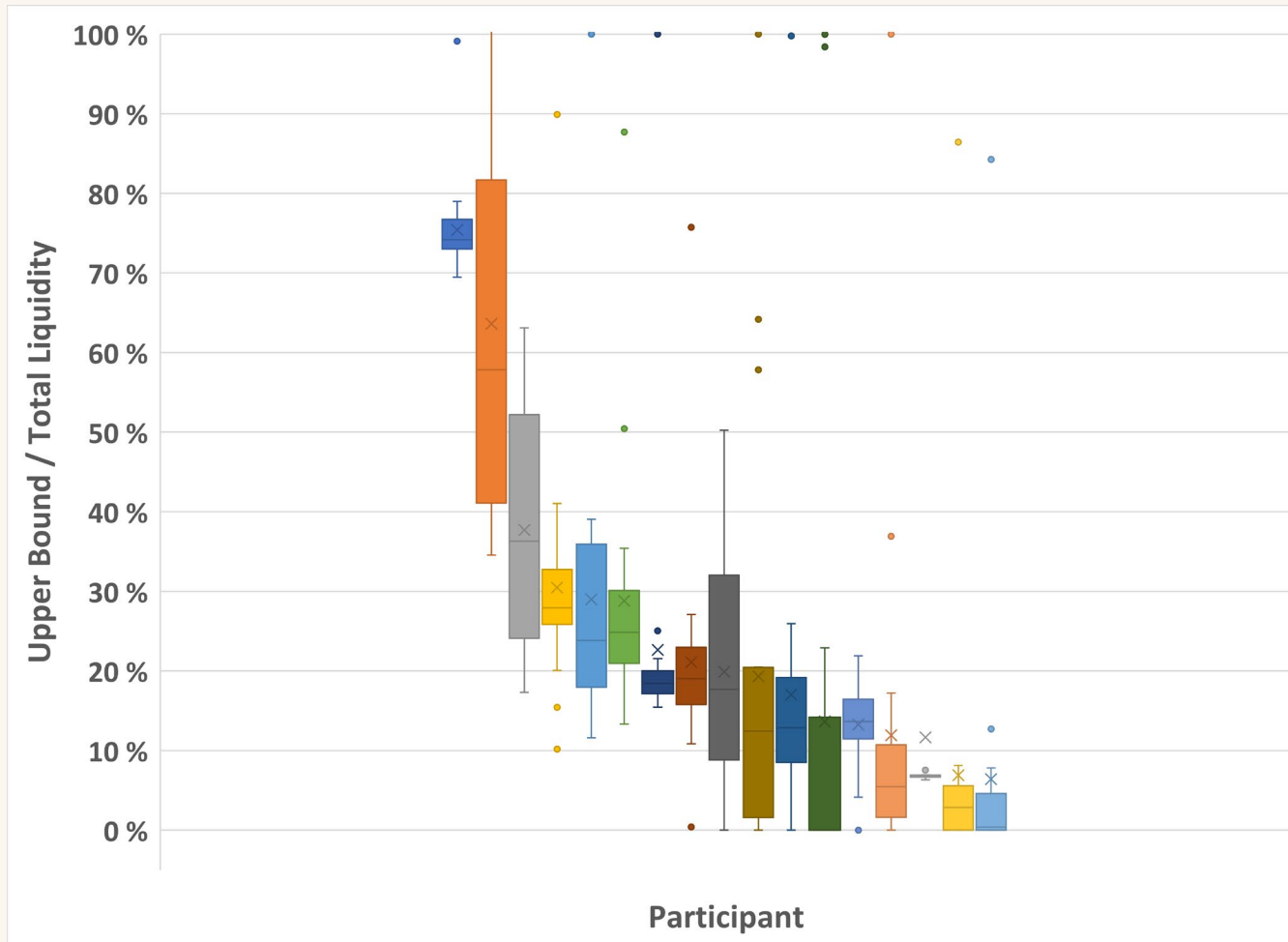
- Maximum liquidity deterioration (MaxLD) is defined as follow:
 - participant's extra liquidity to keep EoD unchanged when compared to the benchmark EoD
 - other participants are **unable** to bring in extra liquidity
- Minimum liquidity deterioration (MinLD) is defined as follow:
 - participant's extra liquidity to keep EoD unchanged when compared to the benchmark EoD
 - other participants are **able** to bring in extra liquidity

Tatu Laine
Payment Systems Department, Bank of Finland

Results

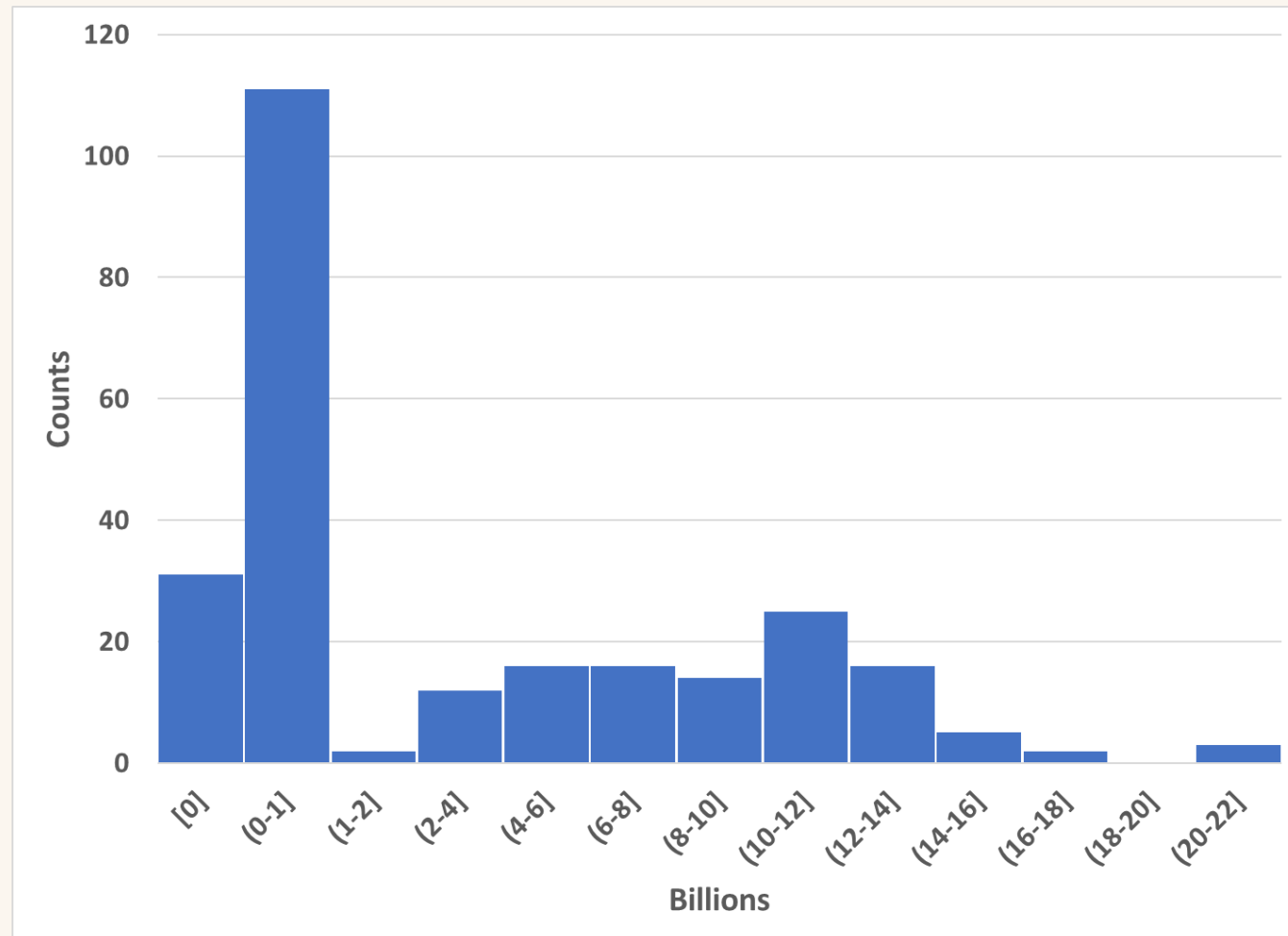


Liquidity needs and total liquidity capacity



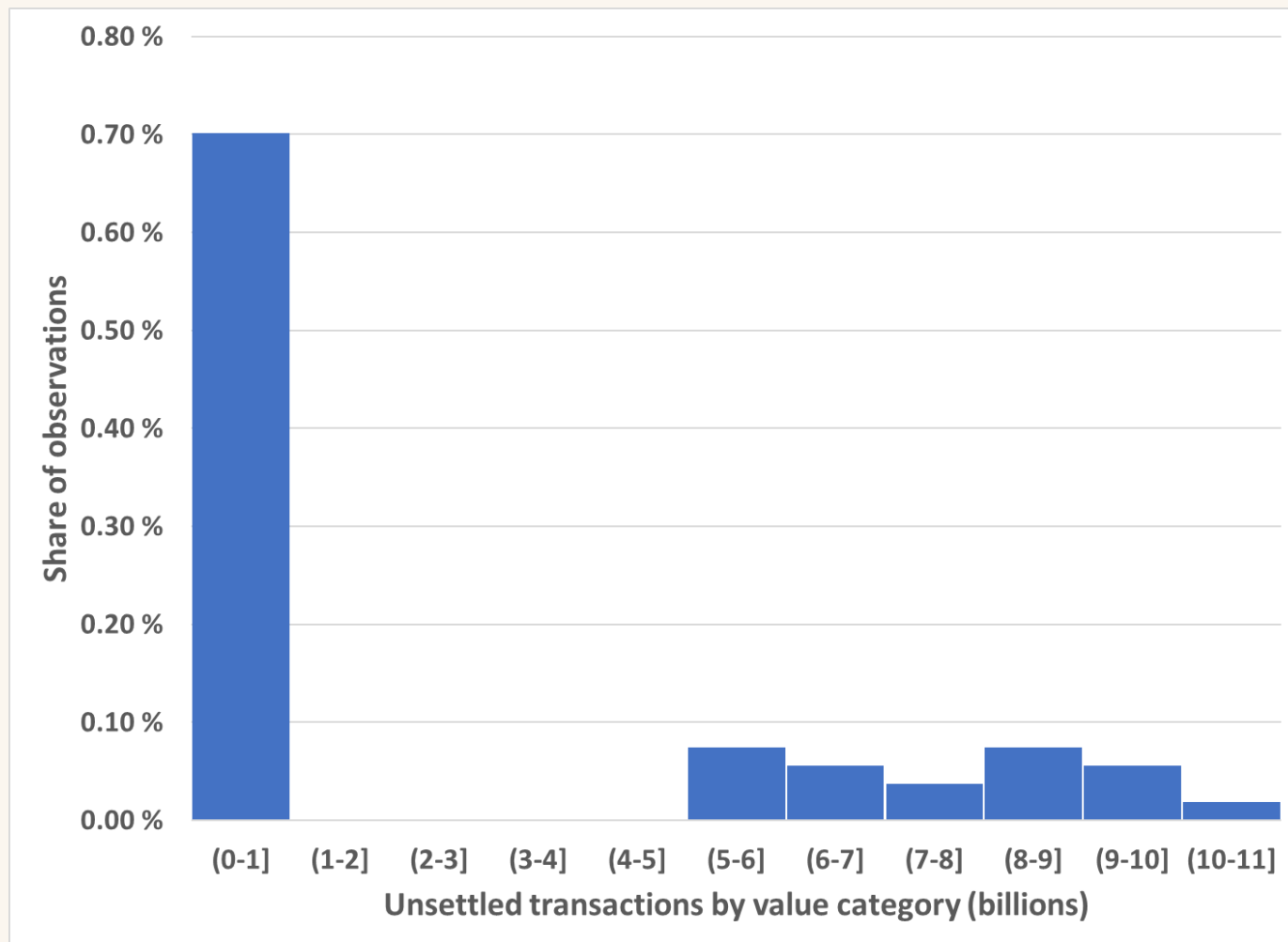
Box plots of UB relative to Total liquidity by participants over 16 days. One special case has been taken out. Source: Bank of Finland calculations

Severity of studied scenarios



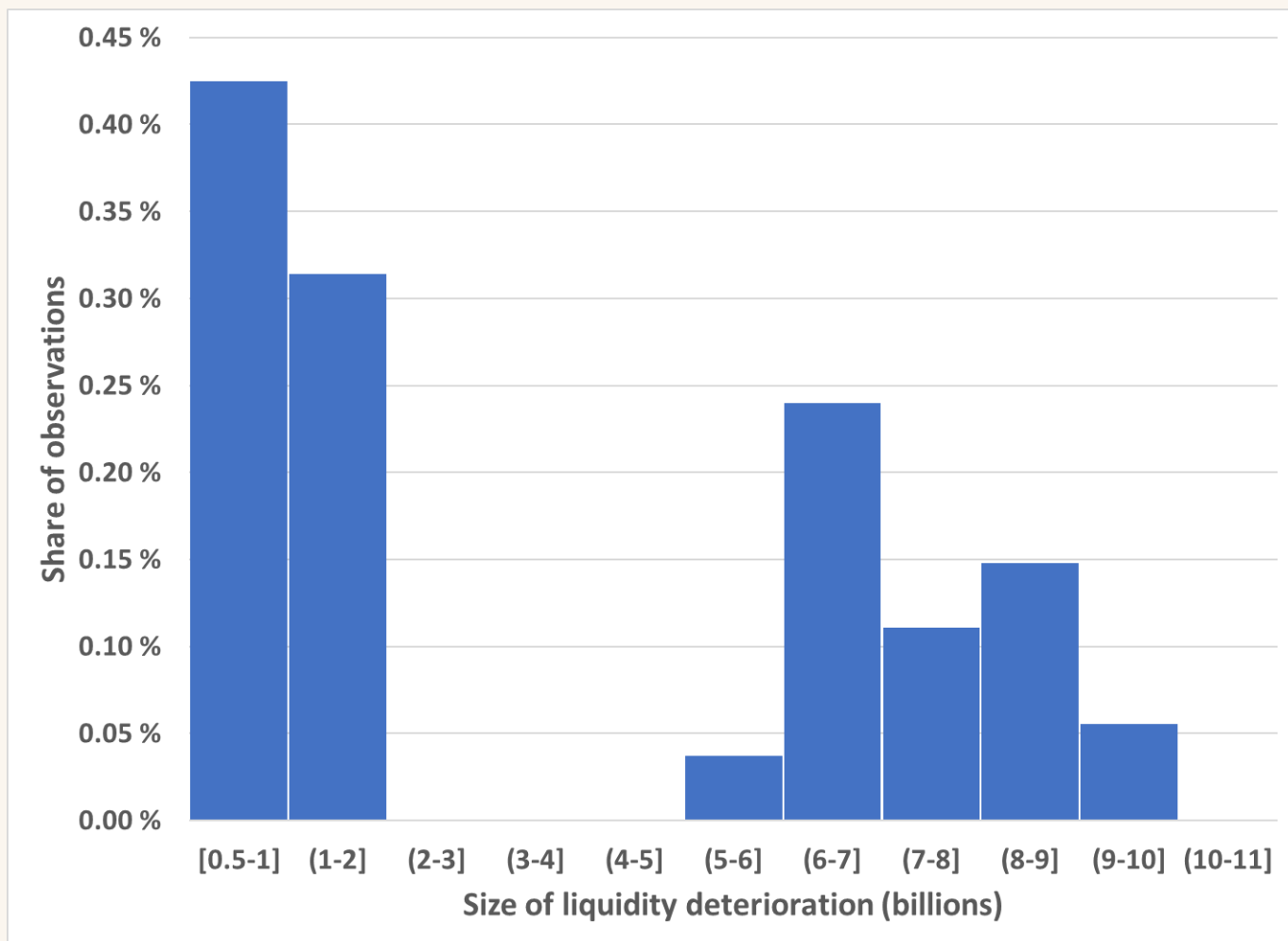
Distribution of system level direct effects of each scenario per 16 days by size. Source: Bank of Finland calculations

Subsequent unsettled transactions in scenarios (1%)



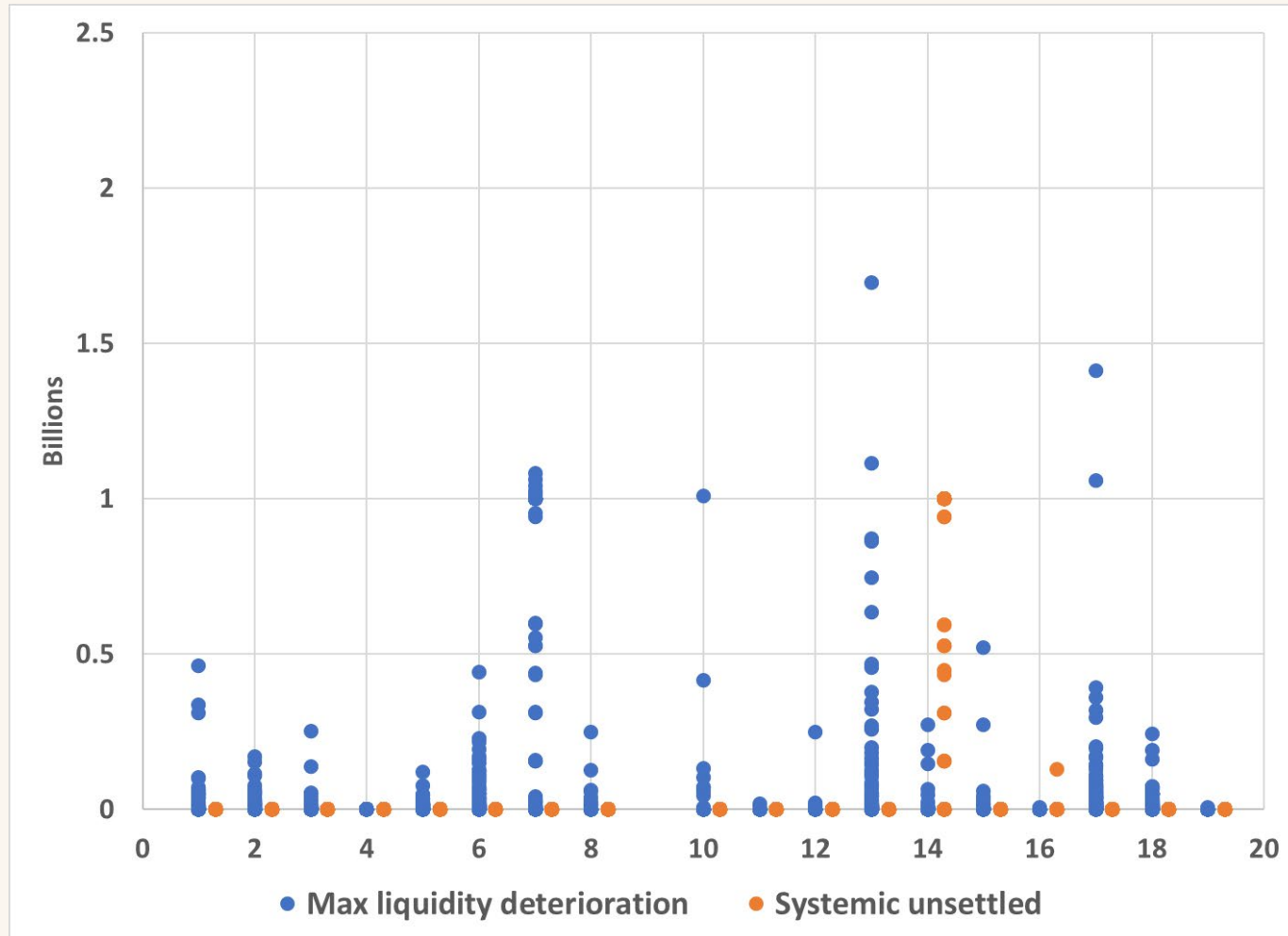
The observations are the value of the systemic unsettled transactions for each participant in each 19 simulated scenarios per 16 days. 99% of the cases are causing no contagion effect and therefore left out of the graph. Source: Bank of Finland calculations

Risk liquidity indicator (MaxD) caused by scenarios



The value of the maximum deterioration indicator shows for 19 studied scenarios. On the X-axis are the amounts of liquidity deteriorations caused by the scenarios. On the Y-axis are the share of observations. 24% are causing less than 500 million deterioration effect and 75% 0, both representing 99% of the cases are left out of the graph. Source: Bank of Finland calculations

Participants taking the biggest hits and causing contagion



Box plots of systemic unsettled transactions (orange dots) and maximum liquidity deterioration indicator (blue dots) by participants. The boxes squeeze to the zero line. The few extremely high values are not shown for confidentiality reasons. Source: Bank of Finland calculations

Risk liquidity indicator relative to liquidity capacity

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0%	38%	0%	0%	10%	0%	11%	0%	0%	0%	1%	0%	0%	4%	0%	0%	0%	2%
2	18%	0%	0%	0%	0%	5%	5%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%
3	0%	0%	0%	0%	0%	5%	0%	23%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	4%	0%	1%	0%	0%	5%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
6	0%	14%	1%	0%	19%	0%	0%	0%	0%	17%	1%	0%	8%	0%	0%	2%	0%	0%
7	0%	3%	1%	0%	5%	4%	0%	0%	0%	0%	1%	0%	0%	0%	0%	2%	0%	0%
8	0%	0%	39%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	21%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	12%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
13	4%	0%	6%	0%	2%	12%	0%	0%	0%	0%	1%	0%	0%	0%	0%	7%	1%	0%
14	86%	0%	0%	0%	0%	2%	11%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
15	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
16	63%	41%	67%	0%	1%	10%	11%	0%	0%	0%	9%	0%	12%	32%	6%	0%	1%	0%
17	14%	7%	4%	0%	1%	14%	11%	0%	0%	0%	1%	0%	1%	2%	0%	1%	0%	0%
18	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Each row corresponds to scenario and the numbers correspond to the failing participants. On the columns are the other counterparties. The values are the maximum liquidity impact experienced over the 16 days by the participants in the columns. The values are capped to 100%. Source: Bank of Finland calculations

Tatu Laine

Payment Systems Department, Bank of Finland

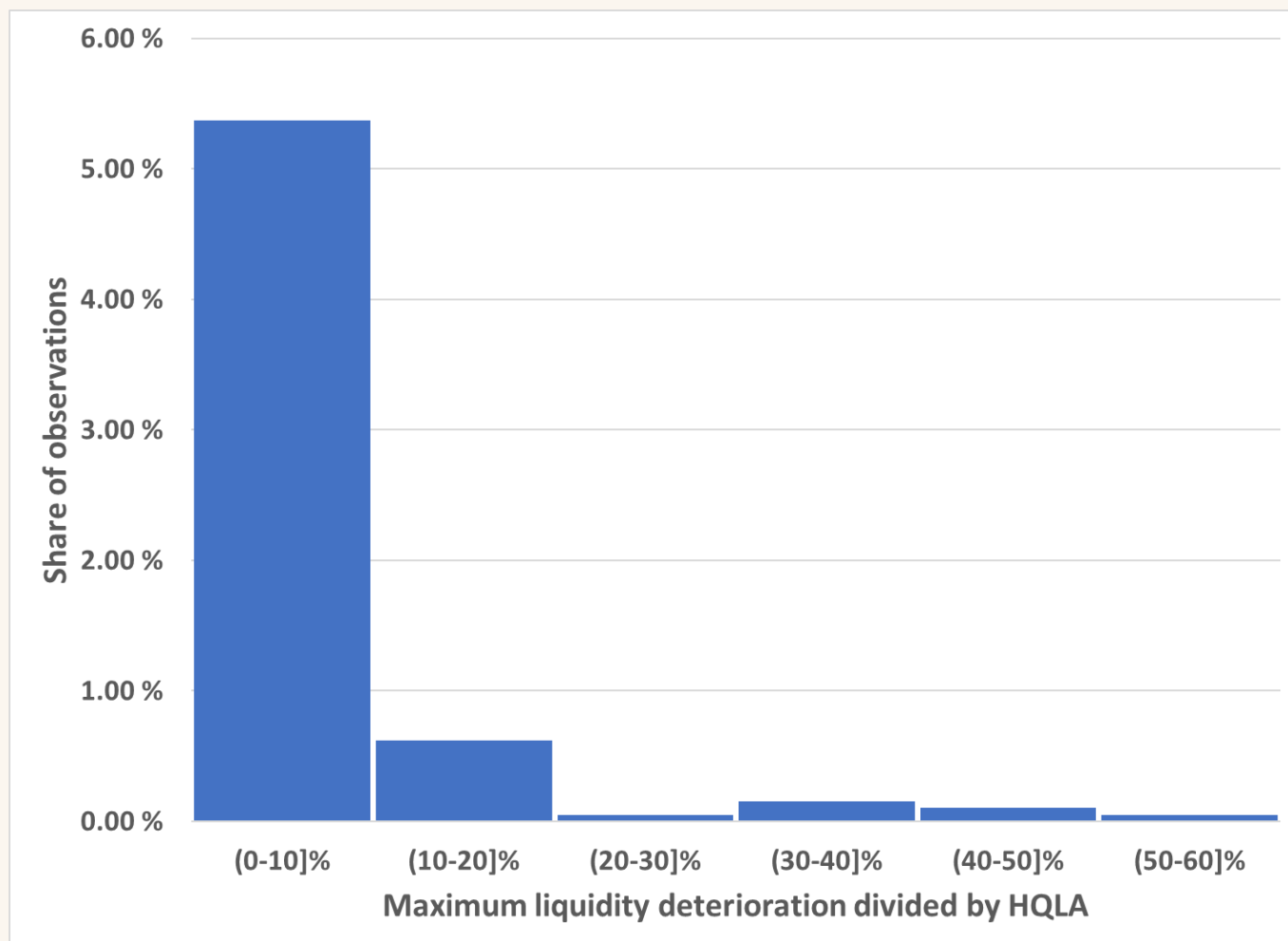
Risk liquidity indicator relative to HQLA



HQLA (High Quality Liquidity Assets)

- LCR (Liquidity Coverage Ratio) is a requirement under Basel III
 - Banks are required to hold an amount of HQLA enough to fund cash outflows for 30 days
 - Better liquidity indicator
- Data source: FIN-FSA
- Motivation for using HQLA:
 - So far main focus in settlement performance analysis
 - Now new indicators compared to available HQLA
- Liquidity risk indicator defined only in TARGET2-system
 - Pressure against HQLA can sum up also from other payments systems

Liquidity Risk Indicator Relative to HQLA



The maximum deterioration indicator divided by the available group level high quality liquid assets (HQLA). Only the 6.35% high end tail of the scenario outcomes are shown.
Source: Bank of Finland calculations

Tatu Laine
Payment Systems Department, Bank of Finland

Summary



Summary

- TARGET2- Suomen Pankki -data analyzed by using the BoF-PSS3
- Two new risk liquidity indicators introduced
 - maximum and minimum liquidity deterioration indicators
- Liquidity deteriorations occur more often than settlement failures
- Liquidity risk indicator 0-20% to HQLA (in 6% of cases)
- In some cases, even 60% to HQLA



Thank you!

Questions?

Tatu Laine
Payment Systems Department, Bank of Finland