STRESS TESTING BROKER DEALER FIRMS

In compliance with the Financial Industry Regulatory Authority (FINRA) regulations, Broker-Dealer firms are required to implement rigorous stress testing to ensure financial robustness. This document presents a high-level analysis of the principal challenges encountered in the development of a robust stress testing system. Our focus is on three fundamental components: technological infrastructure, procedural efficacy, and the integration of automation.

Insufficient stresses on Clearing Deposit requirement, No Contingency funding plans, Inaccurate Supplemental Liquidity Schedule (SLS) reporting; These are the observations published in the FINRA 2024 Annual Risk oversight report[1] about Broker-dealer firms on their Liquidity Risk Management reporting.

The Liquidity Risk management rule as outlined by SEC, assures that broker dealers have sufficient liquidity to conduct their business or to liquidate it without losses to customers. FINRA expects the Broker-Dealer firms to regularly assess its funding and liquidity risk management practices so that it can continue to operate under adverse circumstances. SEC further mandates that firms need to perform periodic Stress testing incorporating both idiosyncratic and systemic risk scenarios for a period of 30-calendar-days. It must ensure to build a combination of both historic and hypothetical adverse stress scenarios, encompassing both mitigable and non-mitigatable risks.

STRESS TESTING CHALLENGES

Stress tests typically assess a firm's resilience to adverse effects, attempting to gauge the firm's breaking point. Constructing a robust stress testing framework is essential to measure the asset buffers required for firms to remain liquid.

(a) Risks which are unique and specific to firm must be addressed. For example, a Broker-Dealer engaged in OTC bonds trading will have to have a robust duration risk measures given the rapid changes in interest rates change. Another example could be the impact of Quantitative Easing having an impact on the Repo/Reverse repo positions. Simulating scenarios to oversee a run-on deposit, is another case.

(b) Stress testing is a mix of historic and hypothetical scenarios. Choosing relevant scenarios, to analyze the potential impact on its Asset Buffers, Cash inflows and outflows is a key.

(c) The scenarios themselves need a constant monitoring and calibration. The scenarios are to be calibrated to everchanging macroeconomic and idiosyncratic risks. While large Broker-dealers with Banking parents may have sufficient capital, systems, people, and process, the smaller independent broker-dealers will need to rely on internal systems or vendors providing back-office support.

(d) Technological challenges While larger firms develop in-house stress testing platforms, smaller firms rely on third party vendors providing tools. Very few vendors provide stress testing tools which caters to FINRA needs.

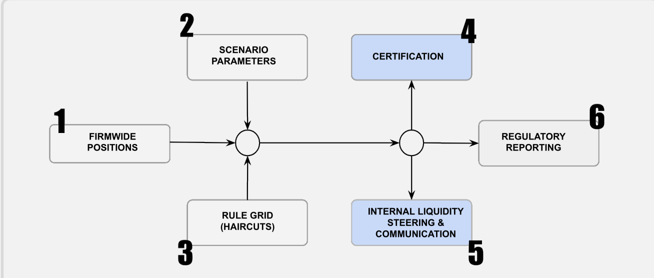
FIRMWIDE LIQDUITY RISK PROCESS LLM INCLUDED

Note: This does not include the periodic Stress testing exercise process

The illustrative diagram depicts the firmwide liquidity risk process of two components, The Liquidity Risk Engine and Stress testing reporting process. It is a combination of risk computation and usage of Generative AI in reporting and steering process (boxes in blue).

LIQUDITY RISK COMPUTATION

The Liquidity risk engine; is risk computation engine which computes the Liquidity reserve, based on Firmwide positions (1), by shocking with pre-determined Scenario Parameters (2) and Rule Grid (3) which includes the haircuts.



Stress testing system engineered with Risk Computing & LLM

(1) Firmwide positions – These are the firmwide transaction information of Assets, Cash inflows and Cash outflows based on the Business-As-Usual (BAU) looking forward with a 30-horizon.

(2) Scenario Parameters – They include Historical and Hypothetical scenarios, which are parameterized. Examples the 2008 Financial Crisis and 2020 Covid Crisis form Historical scenarios. Prolonged high inflation, Escalating Israel conflict Firms-wide bank run are Hypothetical scenarios.

(3) Rule Grid – This is an adaptable rule grid, which imposes the haircuts for specific Asset buffer(s) and cashflows. The Haircuts (or shocks) are supplied based on different stress conditions MILD or ADVERSE (See illustrative table below). The Haircuts are changed based as macro or firmwide conditions.

ASSET BUFFER*	MILD	ADVERSE
US Treasury	0%	0%
Investment Grade Corporate bonds	10%	15%
Securities in Major Index	50%	70%
Derivatives	100%	100%

Illustrative weights not for regulatory use

REPORTING, COMMUNICATION AND STEERING

(4) Certification (Generative AI)– Traditional processes involve manual anomaly analysis, trend monitoring, and posting adjustments. This can pose operational risks for larger institutions relying on back-office personnel. Generative AI automates this process with trained agents that analyze past trends and anomalies for specific trading desks. These agents can also generate comments based on certification outcomes, reducing operational tasks and risks.

(5) Regulatory Reporting – The SLS[2] reports can not only be automated but also integrated with a consistency check against the Balance Sheet. This integration ensures that both sources of financial information adhere to a uniform methodology.

(6) Internal control and Steering (Generative AI) – The rule engine can be tailored to enhance the firm's internal liquidity management further. The process involves comprehensive analysis and effective communication that provides strategic insights to the management team. Currently, this process is manual and requires detailed reports. Automation using Generative AI can greatly improve productivity and efficiency.

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[1] 2024 FINRA Annual Regulatory Oversight Report, publication date January 2023
[2] Supplemental Liquidity Schedule reports (SLS reports) by FINR