



## Solution Primer

Financial Services

# OneSumX Stress Testing

As the world continues to recover from one of the most damaging financial crises on record, there is intense pressure on firms to proactively deal with any possible future financial turbulence that could occur in the near and long term future. Regulatory bodies, central banks and the financial markets in general are putting a substantial degree of trust in firms to show that they are capable of dealing with risks and absorb possible losses without any negative impact for the ongoing support to the market, such as providing liquidity.

Any loss of such trust will easily hit the industry to unexpected and in some cases to a catastrophic degree.



## Stress Testing

Stress testing is the crucial element of financial analysis that institutions can employ to identify their strength and robustness against expected and unexpected performances of risk factors and related losses that arise usually during periods of financial crisis. As institutions are exposed to current as well as future market, counterparty, credit and behavioral risk factors and these factors are inherently correlated, stress testing should be naturally applied in both an integrated and siloed way.

Moreover, as the evolution of portfolio and accounts is driven by strategies for generating new and rolling over existing business, while considering the evolution of risk factors, stress testing needs to be able to be defined and employed using both static and dynamic analysis. Our integrated financial risk and profitability solution has all the necessary functionality needed for firms to construct, perform, analyze and report all types of financial stress testing.

**Institutions must be able to define deterministic scenarios for stressing those risk factors where instruments within the account and portfolios are exposed to. These stresses can range from simple to complicated rule-based shocks applied to single and/or multiple and integrated risk factors, or even to the parameters of algorithms for simulating the stochastic evolution of these factors named stress VaR. The impact of stress testing in Capital, Liquidity, Value and Income must also be calculated and reported accordingly.**

OneSumX supports firms to define and perform stress testing and analyze and report all downstream effects:

#### **Stressing market risk factors**

Stress scenarios defined by the institutions, regulators, central banks, etc., for stressing the current and future market risk factors, i.e. prices, curves, rates, must be employed. These scenarios can be from deterministic to more advanced rule-based shocks driven by assumptions such as microeconomic ones, and/or by considering the interactions and integration with the same or other types of risk factors such as counterparty downgrading, and/or by considering the evolution of markets and strategies of future business.

#### **Stressing credit & counterparty credit risk factors**

All counterparty credit characteristics such as ratings, spreads, probability of default (PD) and migrations (transition) matrices and descriptive characteristics such as regions, industry, etc. as well as behavioral characteristics, such as recovery rates can be considered in stress testing scenarios. Shocks on these characteristics can be applied based on the institution's scenarios.

Such scenarios could have a high degree of complexity, driven for instance by the strategies for defining new business and also by considering correlations between the counterparty credit risks with other types of risks such as the evolution of market prices. Idiosyncratic and sensitivity factors can be also taken into account.

Stress testing can be also applied to credit enhancements. The downstream impact to the credit exposures, wrong way risk, systemic and concentration risks under stress conditions can be measured and reported.

#### **Stress behavior**

The different types of behavioral risk such as the exercise of prepayments, credit line drawings, withdrawals, remaining principal, as well as sales and renegotiations are also modeled based on stress scenarios. These scenarios are driven by the expected or unexpected performance of market and counterparty credit risk factors.

#### **Stress VaR**

Institutions may need to apply stress scenarios into parameters of value at risk (VaR) models used to measure both market and credit risk based on stochastic algorithmic processes, providing Stress VaR results.

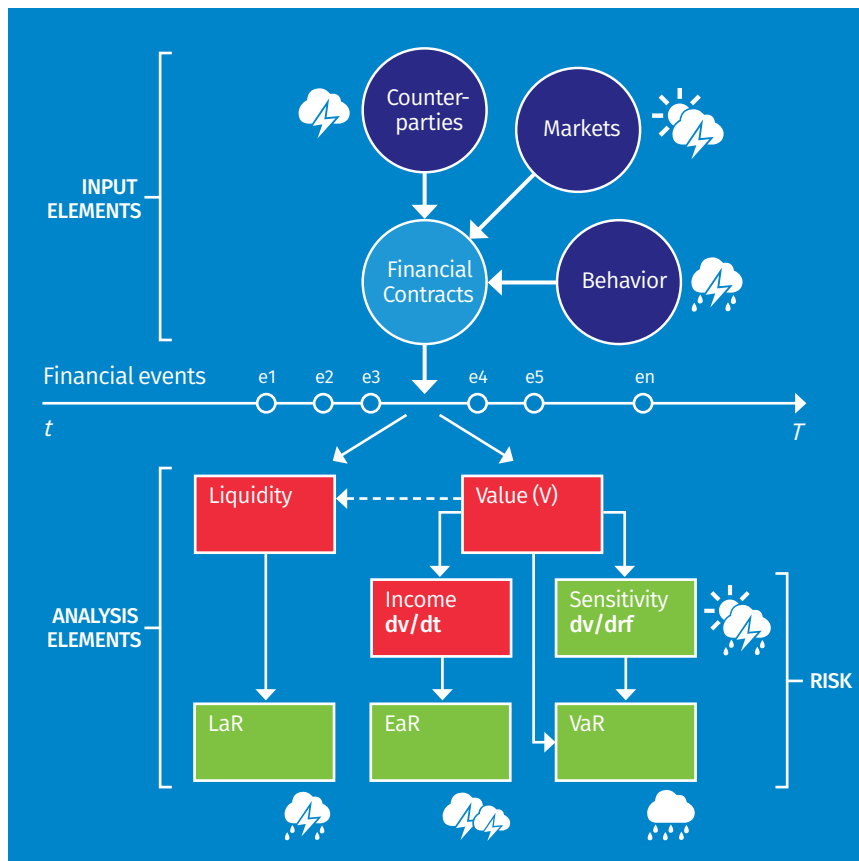
*Stress testing is the crucial element of financial analysis that institutions can employ to identify their strength and robustness.*

# Impact on capital, liquidity, value, income and risk measurements

The impact of stressing market, counterparty and behavioral risk factors on a siloed or integrated basis, related to capital, liquidity, value and income provides the corresponding risk measurements. Our stress testing functionality is part of our overall OneSumX Financial Risk Management solution and allows firms to define and implement their own stress scenarios. The functionality includes simple to complex stress scenarios, and risk factors can be stressed not only individually but also in combination, considering their correlations.

The OneSumX Financial Risk Management solution is integrated in a way that interaction of market, credit and behavioral risk factors can be modeled under stress conditions to analyze the downstream impact in capital, liquidity, value and income. This ensures that our clients have full transparency and a comprehensive view of the impact that each risk factor has on business, under stress and volatile conditions; moreover, the solution ensures that there is consistency in the results among the entire institution's accounts and portfolios.

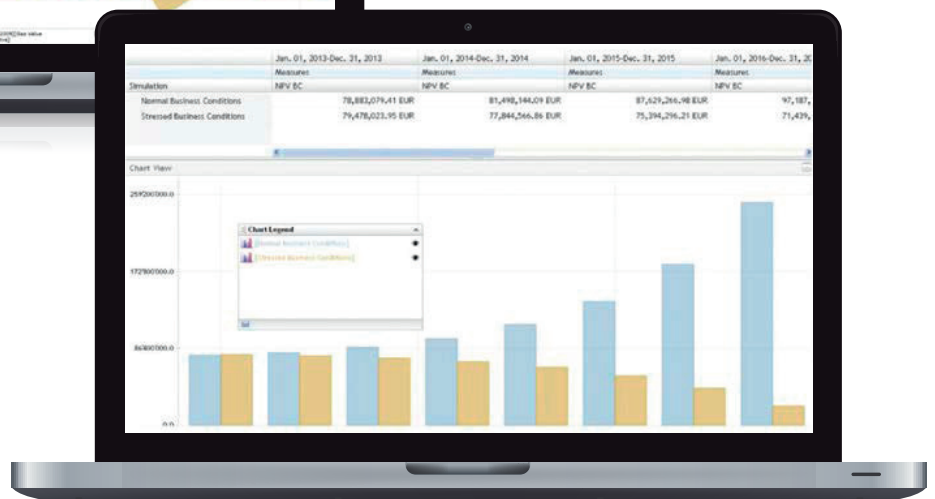
Figure 1: The impact of stressing Market, Credit and Behavior to Capital, Liquidity, Value as well as P&L



Thanks to our dynamic analysis the evolution of risk factors can be simulated under consideration of the stress scenarios. The results are then used in the design of strategies on how to manage the profitability and performance of the existing business as well as which new business opportunities should be generated in order to provide the maximum profitability with minimum expected or unexpected losses.



Survival period analysis



Dynamic simulation – what-if simulation with new production and rollovers

*OneSumX Financial Risk Management is integrated in a way that interaction of market, credit and behavioral risk factors can be modeled under stress conditions to analyze the downstream impact in liquidity, value and income.*

With our static analysis an institution has the ability to evaluate the results of stress conditions based on current conditions and can identify which of the existing business operations are at risk and what are the possible unexpected losses.

Thanks to our dynamic analysis the evolution of risk factors can be simulated under consideration of the stress scenarios. The results are then used in the design of strategies on how to manage the profitability and performance of the existing business as well as which new business opportunities should be generated in order to provide the maximum profitability with minimum expected or unexpected losses. The solution also supports definition of strategies on sales, hedging, collateral management and limits, under scenarios on expected and stress conditions.

The OneSumX Financial Risk Management solution provides powerful stress testing capabilities under different strategies and scenarios for providing all analytics needed to measure and maximize both performance and robustness of firms' existing and future accounts and portfolios.

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The group serves customers in over 180 countries, maintains operations in over 40 countries, and employs approximately 19,000 people worldwide. The company is headquartered in Alphen aan den Rijn, the Netherlands. Wolters Kluwer shares are listed on Euronext Amsterdam (WKL) and are included in the AEX and Euronext 100 indices. Wolters Kluwer has a sponsored Level 1 American Depositary Receipt (ADR) program. The ADRs are traded on the over-the-counter market in the U.S. (WTKWY).

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When you have to be right