Stress Test Analyzer

Application for defining stress scenarios and performing stress tests

Overview

Stress testing is becoming increasingly important in risk management. Its purpose is generally to provide information about the way in which unusually adverse conditions affect the risk situation of a bank.

Stress tests are conducted for systemically relevant institutions by the ECB, Federal Reserve and Bank of England but are also required by national regulations. Banks are also expected to examine stress scenarios as part of a forward-looking approach to risk assessment.
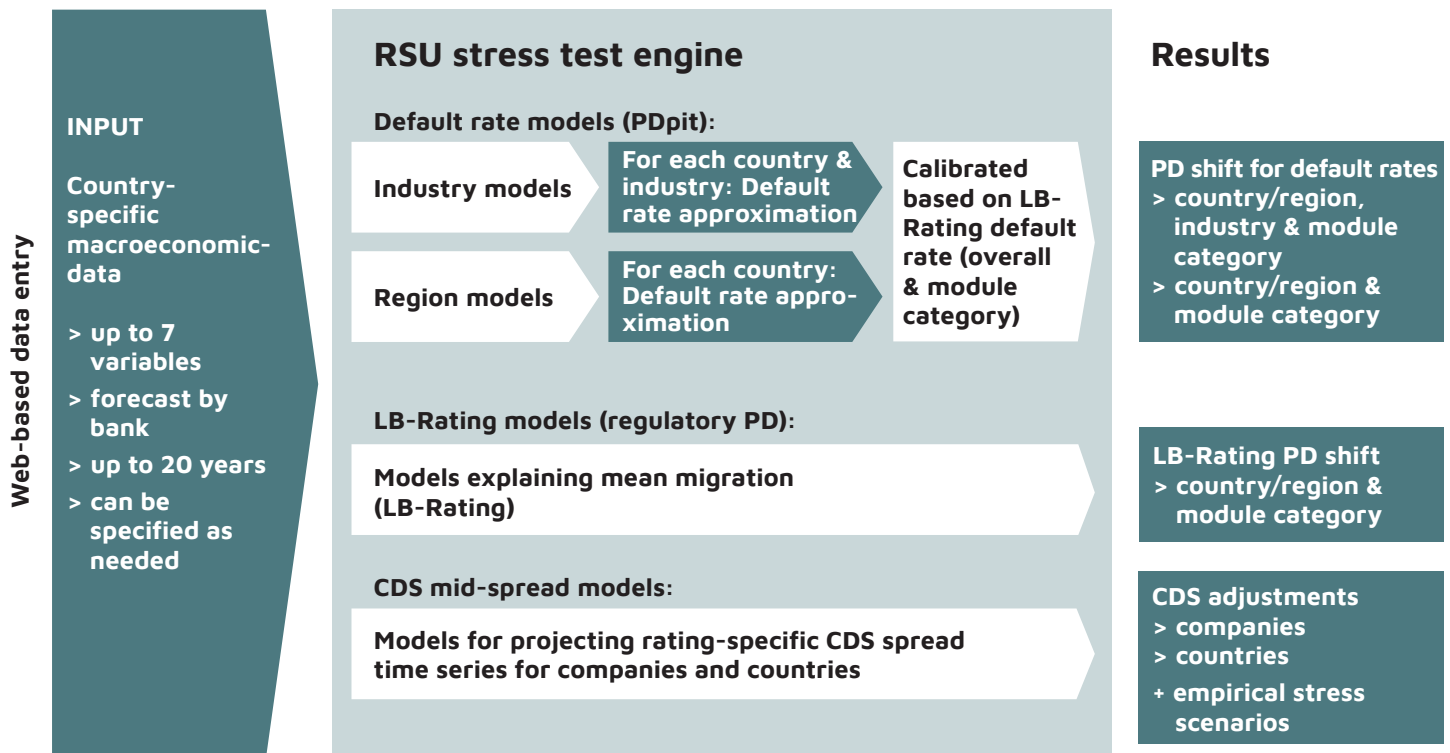
Scope of application

Stress Test Analyzer meets the methodological requirements defined by the EBA and ECB for the European stress tests regarding credit risk. In addition, it allows to perform stress tests required by national authorities or needed for internal purposes. Stress scenarios can be defined and stress tests can be performed for all countries worldwide, covering periods of up to 20 years. Stress Test Analyzer produces projections of default rates, regulatory probabilities of default (LB-Rating PD shifts) and CDS mid-spreads for the defined test periods. Based on these, the system calculates shift factors for default rates for different countries, industries and categories of LB-Rating modules (Corporates, Financials, Specialised Lending), LB-Rating PD shifts for different countries, regions and categories of LB-Rating modules, and CDS adjustments for companies and countries.

Methodology function

For the calculation of the PD shifts, banks need to specify macroeconomic variables, for example GDP growth, for various regions. The information entered can be checked against historical data stored in the system for many countries. Moreover, the system provides consistent historical macroeconomic stress scenarios for more than 20 countries as well as 10,000 simulated macroeconomic stress scenarios for each variable, generated by means of a global macroeconomic model (GVAR), for use in stress test analyses including reverse stress tests.

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The shift factors for the default rates are derived from the macroeconomic scenarios entered using complementary models ("satellite models") and are calibrated based on the default rates observed for LB-Rating. The LB-Rating PD shifts are calculated in a single step using different satellite models for countries, regions, and categories of LB-Rating modules. The changes in CDS spreads are also modelled directly for companies and countries.

The projected default rates, LB-Rating PDs and grade de-specific changes in CDS spreads are represented graphically and the corresponding PD shifts and CDS adjustments are displayed. In addition, the effects of the stressed PDs on the portfolio can be analysed directly. Empirical stress scenarios for CDS spreads calculated by the system can be used to perform analyses for freely selectable groups of countries or companies for any period or quantile.

Web-based data entry

INPUT

Country-specific macroeconomic-data

> up to 7 variables
> forecast by bank
> up to 20 years
> can be specified as needed

RSU stress test engine

Default rate models (PDpit):

Industry models → For each country & industry: Default rate approximation

Region models → For each country: Default rate approximation

→ Calibrated based on LB-Rating default rate (overall & module category)

LB-Rating models (regulatory PD):

Models explaining mean migration (LB-Rating)

CDS mid-spread models:

Models for projecting rating-specific CDS spread time series for companies and countries

Results

PD shift for default rates
> country/region, industry & module category
> country/region & module category

LB-Rating PD shift
> country/region & module category

CDS adjustments
> companies
> countries
+ empirical stress scenarios

Implementation

Stress Test Analyzer is a web-based application available with both German and English text; it only requires a VPN connection. Like all applications provided by RSU, it is operated under the strict security standards customary in the banking industry. Protected transmission channels and secure data storage at a level 3-certified data processing centre ensure a high degree of data security.

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