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RISK CONTROL

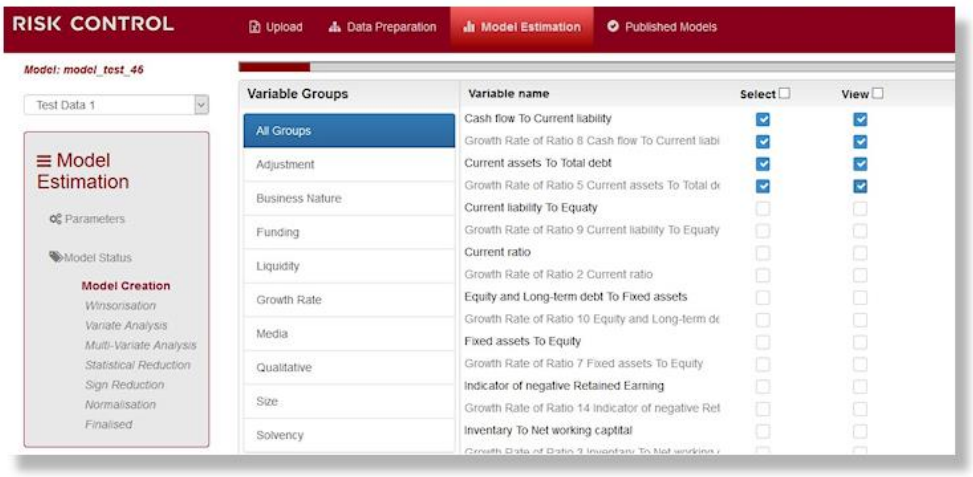
Note

RC-Credit Scoring System

Risk Control has devised an innovative software for creating and managing credit scoring models called RC-Credit Scoring System. The software allows users to build models in a structured way. This makes subsequent administration and maintenance straightforward and reduces the need for large quant teams.

The framework can simultaneously host multiple models (for example, for different segments of the market or for different markets). The software offers web services to other systems through which they can request credit scores for individual loans or portfolios.

Using this model, lenders and investors can develop their own scoring models rather than relying on off-the-shelf vendor models. As is well-known, scoring is only useful if the sample employed in estimation closely matches the loans to be scored.

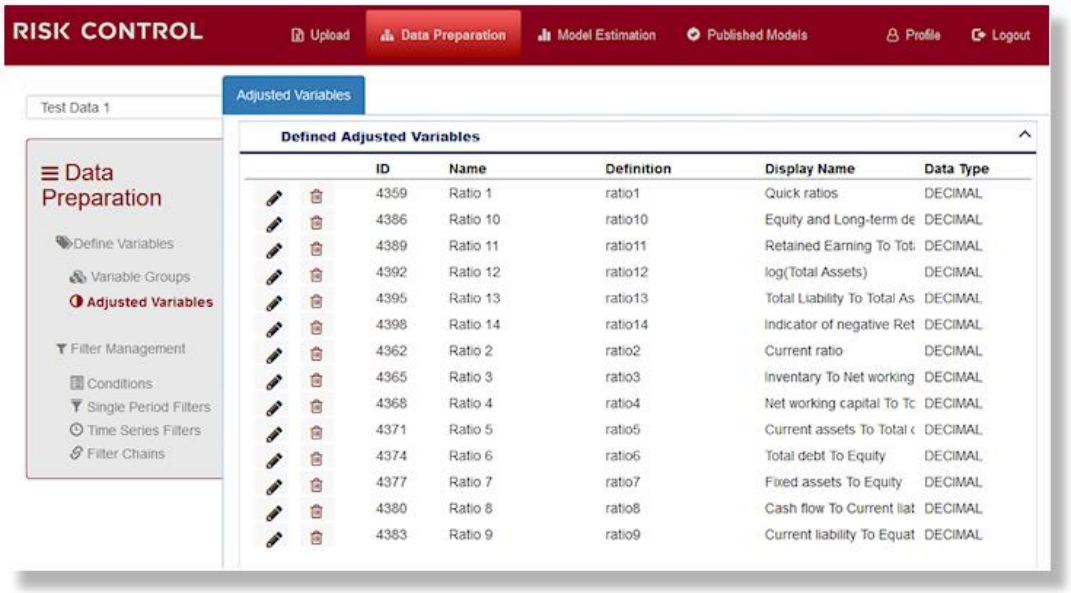


RC-Credit Scoring System features:

- Server-based and using JEE technologies, the system may be installed on client systems and accessed by users using standard browsers on any web-based device.
- The user may view tables and charts via the interface and download Excel workbooks containing the tables.
- At the core of the software is an XML document defining sequences of statistical modelling steps.
- These 'workflows' can be modified as required to support a range of different scoring methodologies without the need to rewrite the software.
- The approach is highly flexible and means that the software can easily host a wide range of credit scoring methodologies (or indeed predictive methodologies/models aimed at issues other than credit scoring such as prepayment).
- The software supports multiple scoring methodologies including a several "IRB bank type" logit-based models and machine-learning type approaches such as Artificial Neural Nets. Users may switch seamlessly between different methodologies in generating their models and generating credit scores.

The software offers several basic scoring methodologies. Using these analysts can build one or more models in a highly effective way without the support of developers or specialised quants.

Risk Control has also constructed downstream applications that request scores from the parent software application via REST services. These include a web-service enabled Excel client for portfolio analysis and a highly scalable Angular-JS application for counterparties or potential borrowers.



Technical Information

The RC-Credit Scoring System comprises three components that are mostly used in combination.

1. The **RC-Scoring Engine** component allows the web-based creation of rating models based on the application of statistical analysis to an existing portfolio. These models can be modified and re-evaluated until a model is finalised. These finalised models can be exported or published to subsequent components such as the RC-Scoring-Server. Results of each single step are visualised in charts and tables to allow detailed analysis of the results of all intermediate steps. Each step can be repeated with different parameters to identify the best performing values. All reports created throughout the model creation are persisted and can be recalled at any time.
2. The **RC-Scoring Server** component serves as a REST server for the evaluation of a scoring for provided data based on a particular rating model. To achieve this, the component accesses the published rating models from RC-Scoring Engine. To provide most flexibility for our clients, this component implements a REST-API which can be used by external software to evaluate scorings automatically.
3. The **RC-Scoring UI** component allows the web-based evaluation of scorings based on a set of input values. This component comes as a simple web application implemented AngularJS and allows the retrieval of scorings based on a particular model. All input parameters, which are defined by the model used, render an input field (or appropriate). As a response, the application displays the result in a configurable way, either in form of a traffic light or in more detail, according the amount of information the user is supposed to see.

The server software was realised with Spring-Boot and written in Java. The architecture allows the applications to run either as standalone applications or to be deployed in a microservice environment, which guarantees scalability, flexibility and reliability. The software uses a DBMS for data persistence and can be integrated in a client's environment by the support a wide range of databases such as Oracle, PostgreSQL, MySQL, etc.

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