SQUAREHEAD ALM Simulation System

User Manual

In this Manual, you will learn how to:

- ✓ Navigate the risk management model and input various parameters
- ✓ Run the simulation, execute transactions and view results

GUI

The GUI (Graphical user interface) of this model is the home page of the model. On this Excel sheet, you will set parameters, run the simulation, execute transactions and review results. The first thing that any user should review are the parameters of the model, the parameters have default settings that can be changed to meet the user's needs. The parameters in this model are the Liquidity Risk Tolerance (e), Cash Account Buffer (B), Duration Gap Lower Bound (c) and Duration Gap Upper Bound (h). The Liquidity Risk Tolerance (e) is:

$$LCR(t_{sim}) \geq 1 + e$$

Where LCR represents the Liquidity Coverage Ratio. The Liquidity Risk Tolerance has a default value of 0.05 (5%). The Cash Account Buffer (B) is the maximum amount of cash to be left in the cash account (with any excess cash reinvested). The default setting for Cash Account Buffer is $200,000USD. The Duration Gap Bounds, c and h ensure that the Duration Gap is within the range [-c, h], the default amount is c=h=0.1.

Parameters

Liquidity Risk Tolerance (e)	0.05
Cash Account Buffer (B)	$200,000.00
Duration Gap Lower Bound (c)	0.1
Duration Gap Upper Bound (h)	0.1

The next part of GUI that is important to look at is the input sheets, under the section "Balance Sheet of ABC Bank". The Balance Sheet is an input that chooses which Excel sheet will represent ABC Bank's Balance Sheet. Bond Market is the input that selects which sheet will act as the bond market (where the simulation will buy and sell bonds to and from). The FX Rates links the sheet where the model will draw all the exchange rates. The Risk Measure Report input is an output sheet that once the simulation is run, all risk metrics at each time simulation date (both at the beginning and at the end).

Balance Sheet of ABC Bank

Balance Sheet	Balance Sheet of ABC Bank
Bond Market	bondmkt
FX Rates	SpotFX
Risk Measure Report	Risk Metrics Report

The next section of the GUI is the Output information; under this heading, information about Cash, LCR and DGAP at each time simulation is displayed. This section will have new values printed as the simulation progresses.

Output

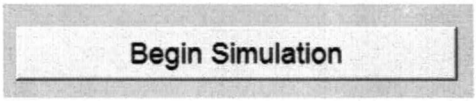
Cash	$ 5,472.99
LCR	1.05
DGAP	0.074075667

Current Date
2011/4/1

Finally, we have the time information. This section shows the simulation date, the time steps and the time horizon of the simulation. The simulation date is December 1, 2010 and the Time Step is in monthly increments. The default time horizon is 6 months and the model will prompt you after you have progressed through six steps.

Simulation Date	Time Steps	Time Horizon
2010-12-01	1 months	6 months

The inputs that can be altered by the user are the parameters e, B, c, and h, as well as Simulation Date and Time Horizon. To begin the simulation, click on the button labelled "Begin Simulation".



Simulation

Once the simulation has begun, the model will analyze the items on the balance sheet and a report will pop up displaying Cash, LCR and DGAP. This is the report at the "beginning of the day" before any risk management strategies are implemented. The model will then recommend strategies (buying or selling of bonds) to the user if there are issues with LCR, Cash and DGAP not being in the correct range. The user must choose to accept the recommended strategy and the transactions will be executed so that the risk measurement metrics fall within the accepted ranges.

The simulation will also report an "end of day" report at each time step. This report shows the key risk metrics at their values after the trading day (transactions mentioned in the previous paragraph have been executed). Afterwards, the user will be asked whether they want to move forward to the next simulation date (1 month after the initial simulation date).

If the user selects "No", the simulation will be terminated. However, if the user selects "Yes" then the model moves forward 1 month and the key metrics will be recalculated. Cash is calculated as the old cash levels minus net cash outflows; and if a net funding gap exists, it is covered by selling high quality liquid assets. At this point, the user will now be at the "beginning of the day" at this new time and repeats the previously outlined process.

This simulation process continues until the user decides to terminate, since the default time horizon is 6 months (or six time steps) once they have reached this point, the model will prompt the user to end the simulation. The user will then be able to either end the simulation or continue moving forward past the time horizon.

Conclusion

Once the simulation has ended, a report is generated about the simulation that includes levels of the key risk metrics at beginning and end of day for each time. This report can be found on the Risk Measure Report sheet.

This user manual provides a basic guidance of how to use the model. For further details on the risk management, please see the Risk Analysis report. For further details on what the code does and how various functions work see either the VBA module or the Group 1 Spec.