Graphical User Interface Manual

This manual describes the Matlab Toolbox for Option Replication and Portfolio Insurance Graphical User Interface (GUI) Application. The GUI is a form of user interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation. The GUI can be run by typing `guitool` in Matlab's command window. Also, the figure window containing the GUI is resizable.

GUI menu

The initial screen is as in figure 1.

FIGURE 1: Initial screen of GUI

As shown in figure 1 the GUI includes options for the initial space, certain subject in $\mathbb{R}^n$, the toolbox functions and for additional output choices. Also, it contains a brief descriptions for every input and output argument and some annotations.

Space selection

The GUI has two radio buttons for space selection. In the previous chapters we were focused on problems dealing with vector lattices of $\mathbb{R}^n$ or $C[a,b]$. So, the first option is to choose between the methods of $\mathbb{R}^n$ or those of $C[a,b]$.

Initial Space:

◉ R^n ○ C[a,b]

FIGURE 2: Space selection

For the $\mathbb{R}^n$ option the GUI's layout is as shown in figure 1 and for the $C[a,b]$ option is as shown in figure 3.

Toolbox GUI ?

Initial Space:

○ R^n ◉ C[a,b]

Toolbox Functions:

minsport ▽

Input:

[____] : Marketed space (X vector mx1)

[[__] , [__]] : Time range [a,b]

[____] : Portfolio (theta vector mx1)

[____] : Floor (phi vector mx1)

Output*: ☐ mip = minimum-cost insured portfolio at every arbitrage price

Notice: X = [f(t) ; g(t) ; h(t)] , where f, g, h denote the securities in terms of variable t (time).

* Check Box puts output on Variables editor.

Run

FIGURE 3: Layout of $C[a,b]$

Function selection

For each choice of the initial space, there is a pop-up menu which includes all the functions referred to it. See figures 4, 5.

FIGURE 4: Function selection of $\mathbb{R}^n$

FIGURE 5: Function selection of $C[a, b]$

More specifically, the pop-up menu of $\mathbb{R}^n$ differentiates its included functions by three radio buttons and each one of them correspond to a different subject (fig. 6).

FIGURE 6: Subject selection of $\mathbb{R}^n$

Input forms

For each function there are as many edit texts (fig. 7) as its input arguments.

FIGURE 7: Edit text

Every input argument can be inserted directly with the help of GUI's resizable layout, or as variable if it has already been declared in the workspace. See figures 8, 9.

FIGURE 8: Insert input arguments directly

FIGURE 9: Insert input arguments as variable

For the function `rabopb` two input forms come with two radio buttons in order to deactivate the one form that the user need to find its range (fig. 10).

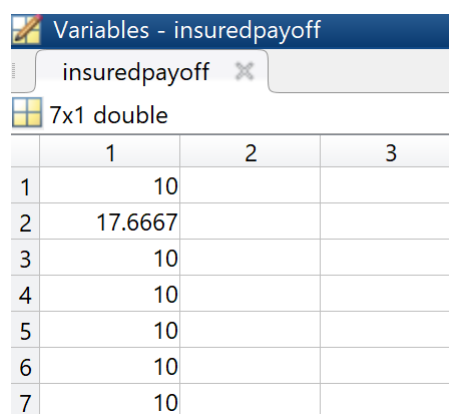FIGURE 10: Choose between forms

Output options

For each function there are as many check boxes (fig. 11) as its outputs. When the run button is clicked the generated results are stored in the workspace and can be viewed in the command window. If the check boxes are checked, when the calculate button is clicked, the GUI will also open the Variable editor with the generated results in it (fig. 12).

FIGURE 11: Check boxes

FIGURE 12: Output on Variable editor

Pushbuttons

The GUI has two pushbuttons. The first one is the help button (fig. 13) and, when it is clicked, it opens a .pdf file with this chapter in it. And the second one is the run button (fig. 14) which runs the selected function in the pop-up menu combined with the form's input when it is clicked.

FIGURE 13: Help button

FIGURE 14: Run button

Brief descriptions and annotations

As can be seen in most of the figures in this manual, the GUI gives a brief description of each input or output which is located right next to it and a notice right under the outputs. Also, on the GUI's bottom left there is an annotation for the check boxes.