

# Microfoundations of Financial Economics

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## Excel tips for problem sets

The problem sets that accompany this course have been prepared using Excel. They involve tricks that might be unfamiliar to some of you. They are worth learning as they might prove useful in other situations.

### **1. Simtools**

Excel does not include functions to calculate moments of discrete probability distributions. Roger Myerson, a professor at the University of Chicago, has developed an add-in named Simtools to calculate such moments (and many other things). This add-in is available at Myerson's website:

<http://home.uchicago.edu/~rmyerson/addins.htm>

You will find clear explanation on how to install the add-in and a list of its functionalities.

### **2. Operations on matrices**

The course will use matrix algebra. To do calculations in Excel, you should be familiar with the following Excel formulas:

TRANSPOSE(array) to transpose a vector or a matrix

MMULT(array1,array2) to multiply to matrices

MINVERSE(array) to calculate the inverse

Note that these formulas are so called "array formulas". They are entered as follow:

1. select the cells where the result will appear
  2. type the formula
  3. press CTRL+SHIFT+ENTER to enter the formula.
- Details and example are available using Help in Excel.

### **3. Solver**

SOLVER is a code to solve non linear problems. Using SOLVER you can calculate the maximum or the minimum of a target cell by changing other cells. The optimisation can be subjected to constrains. In this course, SOLVER will be used to calculate equilibrium prices or efficient portfolios.

Explanations are available through Help in Excel.

SOLVER is accessed in the Tools menu. If you don't have it, you need to load it using Tools|Add-ins. Simply check the box Solver Add-in.