Decision Analysis Using Excel QM

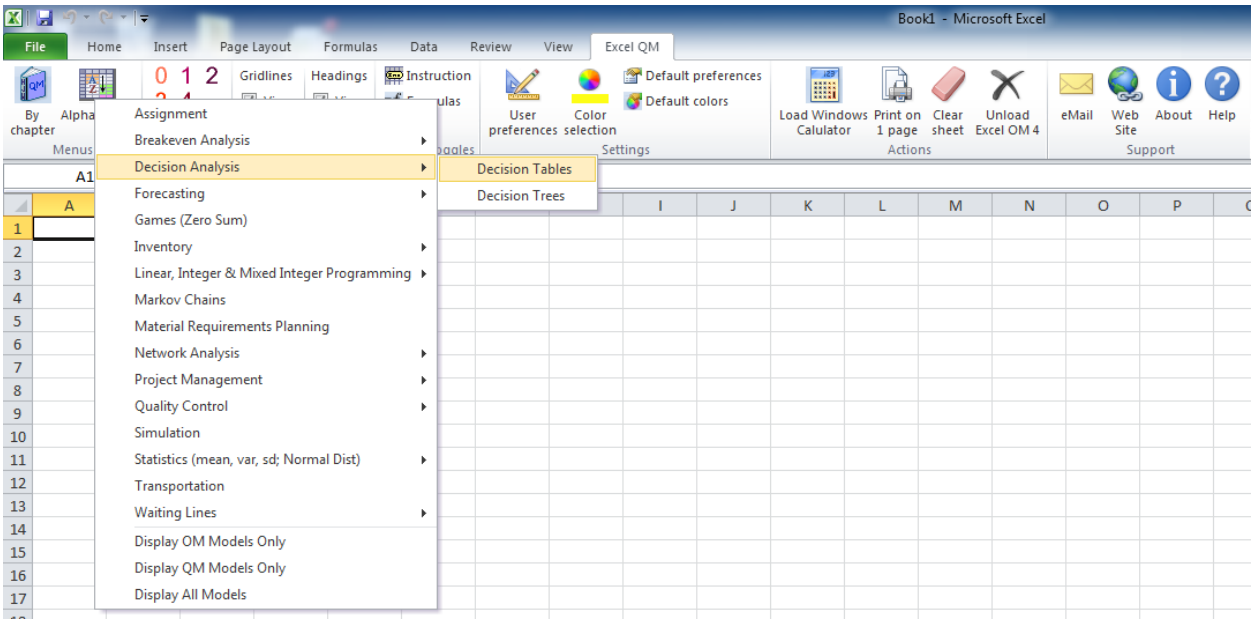
In this tutorial, we will work through a problem using decision analysis in Excel QM.

Mickey Lawson is considering investing some money that he inherited. The following payoff table gives the profits that would be realized during the next year for each of three investment alternatives he is considering:

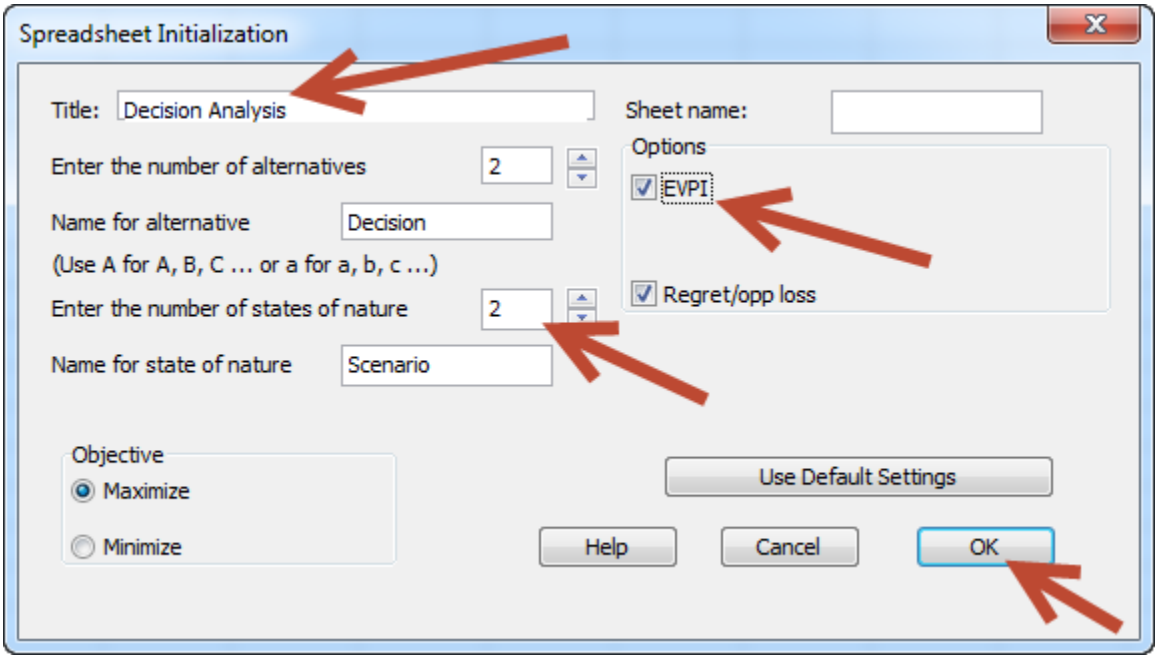
	State of Nature	
Decision Alternative	**Good Economy**	**Bad Economy**
Stock Market	$80,000	-$20,000
Bonds	$30,000	$20,000
CDs	$23,000	$23,000
Probability	0.5	0.5

Our goal is to develop a decision that will: a) maximize profits, and b) determine how much to pay for a perfect forecast of the economy.

Once you've opened Excel QM, click on the **Excel QM** tab → **Alphabetical** → **Decision Analysis** → **Decision Tables**.



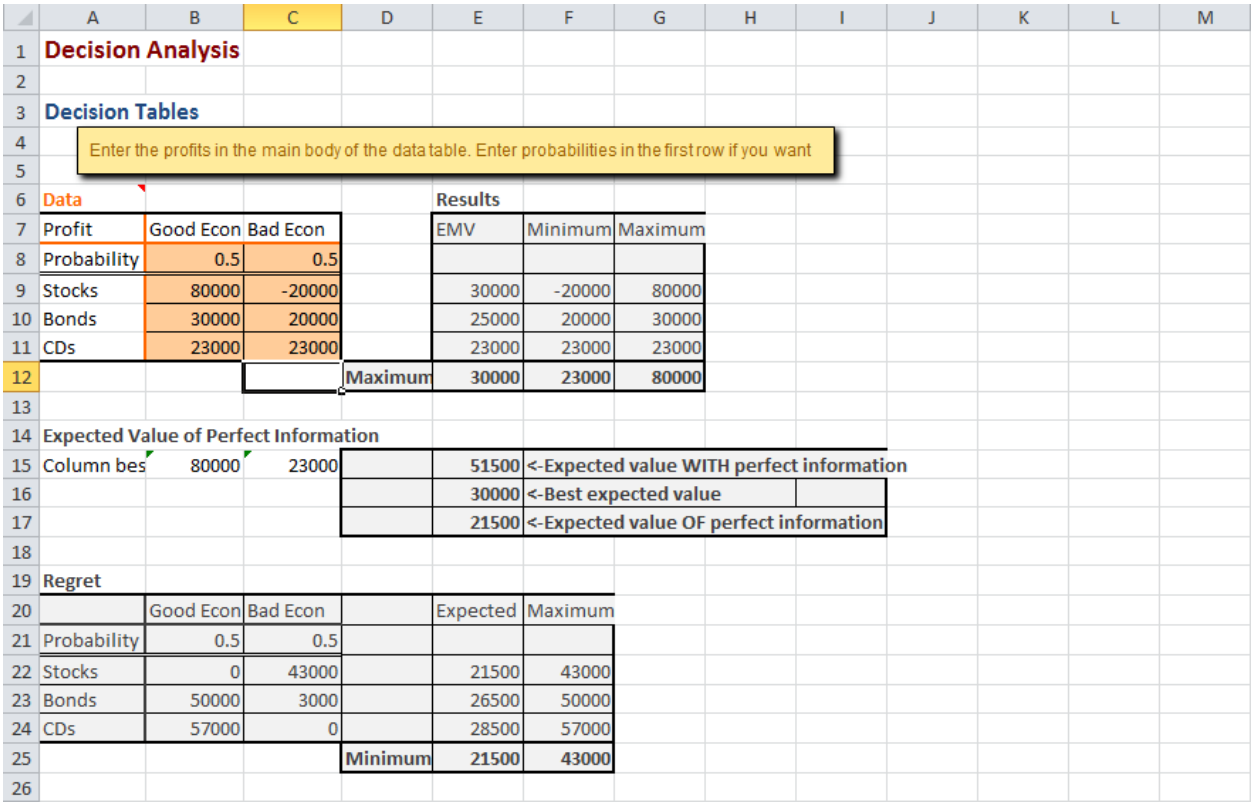
In the **Spreadsheet Initialization** window, go ahead and type Decision Analysis for the title. You will have three options, purchasing stock, bonds, or CDs, and we will have two scenarios that will be a good economy and a bad economy. Be sure to tick the box that says “EVPI,” so we can assess the value of the perfect forecast.



Click **OK** and the spreadsheet will come up.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Decision Tables**												
2		Enter the profits in the main body of the data table. Enter probabilities in the first row if you want											
3													
4	Data				Results								
5	Profit	Scenario 1	Scenario 2		EMV	Minimum	Maximum						
6	Probability				Probabilities do not sum to 1								
7	Decision 1				0	0	0						
8	Decision 2				0	0	0						
9	Decision 3				0	0	0						
10				Maximum	0	0	0						
11													
12													
13	Column bes	0	0										
14													
15	Regret												
16		Scenario 1	Scenario 2		Expected	Maximum							
17	Probability	0	0										
18	Decision 1	0	0		0	0							
19	Decision 2	0	0		0	0							
20	Decision 3	0	0		0	0							
21				Minimum	0	0							
22													

Now enter the information in the payoff table above into the spreadsheet.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Decision Analysis**												
2													
3	**Decision Tables**												
4		Enter the profits in the main body of the data table. Enter probabilities in the first row if you want											
5													
6	Data				Results								
7	Profit	Good Econ	Bad Econ		EMV	Minimum	Maximum						
8	Probability	0.5	0.5										
9	Stocks	80000	-20000		30000	-20000	80000						
10	Bonds	30000	20000		25000	20000	30000						
11	CDs	23000	23000		23000	23000	23000						
12				Maximum	30000	23000	80000						
13													
14	Expected Value of Perfect Information												
15	Column bes	80000	23000		51500	<-Expected value WITH perfect information							
16					30000	<-Best expected value							
17					21500	<-Expected value OF perfect information							
18													
19	Regret												
20		Good Econ	Bad Econ		Expected	Maximum							
21	Probability	0.5	0.5										
22	Stocks	0	43000		21500	43000							
23	Bonds	50000	3000		26500	50000							
24	CDs	57000	0		28500	57000							
25				Minimum	21500	43000							
26													

We see from the results that our expected value for the stock market is $30,000; Bonds is $25,000; and CDs is $23,000. Thus, the decision that will maximize our profits is the one that gives us the maximum EMV, or in this case, investing in the stock market.

As for the price to pay for a perfect forecast of the economy, we see that the expected value of perfect information is $21,500.

Click here to download the completed spreadsheet so you can compare it to yours.

This concludes the tutorial on solving a problem using decision analysis in Excel QM