Decision trees and expected value of perfect information (EVPI) calculations with MS Excel

http://ipsec.pl/node/1058

Here is a collection of Excel spreadsheets I have been using while studying decision trees and value of information concepts. ¡!–break–¿ I'm publishing these since there seems to be a gap between available theoretical descriptions and materials demonstrating how to actually calculate these using popular tools. If you are looking for a good introduction into the concepts of decision trees and EVPI, then I'd recommend ¡a href="http://www.public.asu.edu/ kirkwood/DAStuff/decisiontrees/index.html"¿Decision Tree Primer¡/a¿ by Craig W. Kirkwood. Especially the examples and exerices are quite clear and easy to follow.

However, if you try to calculate them by hand you will find out that it's very time consuming and it's easy to make mistakes mdash; even with Excel it's not an issue of complex calculations, but getting right fields referenced and copied. So for actual calculations I strongly recommend a free ¡a href="http://decisiontree.sourceforge.net"¿Decision Tree add-on for Excel¡/a¿. They allow you to easily build graphical decision and probability trees, include risk aversion and probability flipping that are needed to solve some exercises in the primer.

If you have problems with understanding anything, just go and search on YouTube mdash; for example there's a very nice series from Gator Tutoring. In short, clean series they explain concepts like ¡a href="http://www.youtube.com/watch?v=qp9vzzQON6I"¿certainty equivalent¡/a¿, ¡a href="http://www.youtube.com/watch?v=u6e7vieYJ2c"¿expected utility¡/a¿ and many others. You might also have a look at Wikipedia: ¡a href="http://en.wikipedia.org/wiki/Risk$_a version$" > $riskaversion < /a >, < ahref = "http : //en.wikipedia.org/wiki/Exponential_utility" > exponentialutility < /a >$.

Note that the exponential utility function in Kirkwood's primer is written as:

¡equation¿u(x) = 1 - e$^{-x/R}$ $< /equation >$

And he's using ¡em¿risk tolerance¡/em¿ expressed in dollars as R parameter. The function in Excel add-on is defined in slightly different way and expects a fraction parameter *gamma*:

¡equation¿u(x) = 1 - e$^{-gamma/x}$ $< /equation >$

The conversion is simple:

¡ol¿¡li¿put the dollar R value in some field in the spreadsheet (e.g. A1) ¡li¿define a field with label ¡em¿gamma¡/em¿ with formula ¡em¿=1/A1¡/em¿ ¡/ol¿