Notes on Sensit and Treeplan

Contents

SENSIT

What is SensIt?

SensIt is an Excel add-in that makes it easy to do sensitivity analysis inside an Excel spreadsheet. SensIt is written as an Excel macro. It was written by Mike Middleton of the University of San Francisco and Jim Smith of Duke University. Download a copy of SensIt from either of these URLs:

http://ourworld.compuserve.com/homepages/decision/
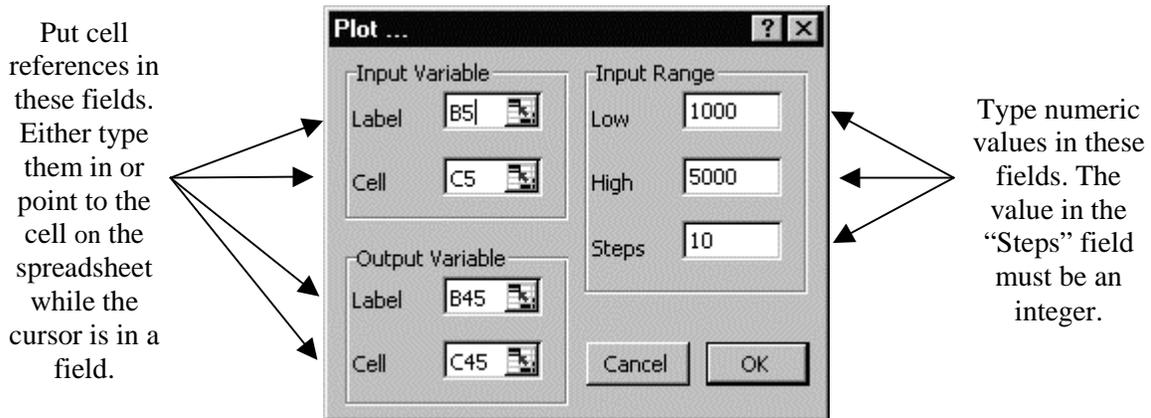**http://faculty.fuqua.duke.edu/~pecklund/excelreview/ExcelReview.htm**

Running SensIt

To run SensIt, load the **sensit.xla** file after starting Excel. When prompted, agree to run the SensIt macros. After SensIt loads you'll see two new commands at the bottom of the *Tools* menu: Plot and Tornado. We'll describe these two commands using the spreadsheet model **finance.xls** as an example. The **finance.xls** spreadsheet is also available for download from Fuqua's web site. This spreadsheet is used to perform a risk analysis in support of a new product launch decision. The outlined cells are "inputs" that refer to values in the upper left corner of the spreadsheet.
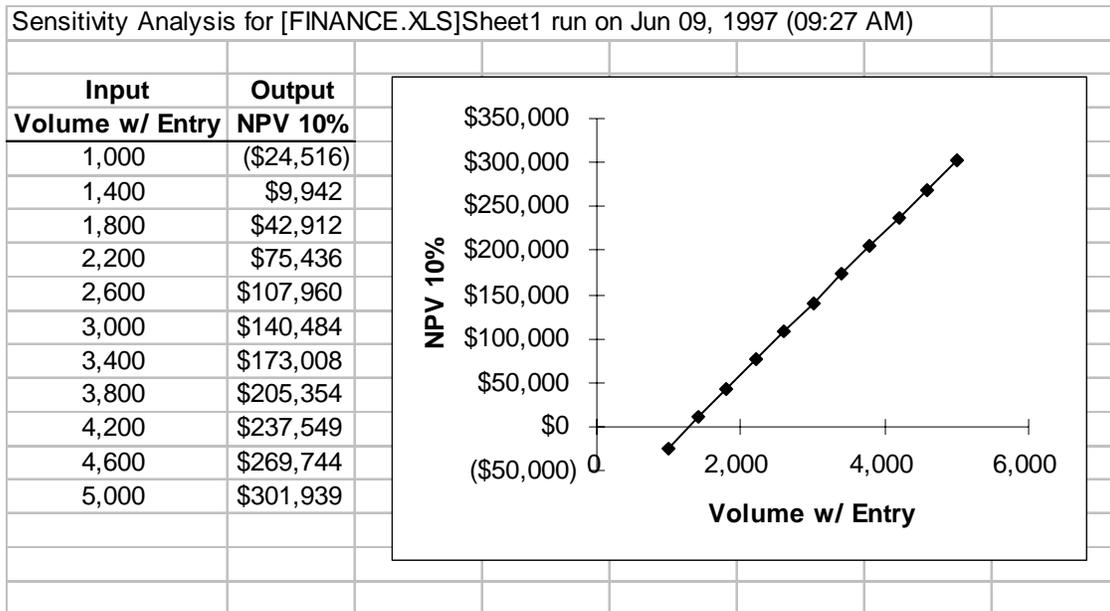
SensIt's Plot Command

Use SensIt's Plot command to examine the sensitivity of a single variable. In the example, one might be interested to see how "Volume w/Entry" affects "NPV". To do this, choose *Tools, Plot* (or, as a shortcut, hold down the **Control** key and hit the **p** key). The *Plot* dialog displays.

Put cell references in these fields. Either type them in or point to the cell on the spreadsheet while the cursor is in a field.

Type numeric values in these fields. The value in the "Steps" field must be an integer.

When you click the *OK* button in SensIt's *Plot* dialog, SensIt varies the value of the input variable you identified across the range you specified. It records the corresponding result values in the specified output cell.

In this example, the program sets cell C5 to 1000 and records the value in cell C45. It then repeats this process 10 times for input values of 1400, 1800, 2200, …, 5000. When done, SensIt

produces a spreadsheet (separate from the original) that lists and plots the results (see below). The labels of the input and output variables are taken from cells $B5 and $B45, respectively.

Sensitivity Analysis for [FINANCE.XLS]Sheet1 run on Jun 09, 1997 (09:27 AM)		
Input	**Output**	
Volume w/ Entry	**NPV 10%**	
1,000	($24,516)	
1,400	$9,942	
1,800	$42,912	
2,200	$75,436	
2,600	$107,960	
3,000	$140,484	
3,400	$173,008	
3,800	$205,354	
4,200	$237,549	
4,600	$269,744	
5,000	$301,939	

A copy of the **finance.xls** spreadsheet follows.

	Inputs		Low	Base	High
Price w/o Entry	$70.00		$50.00	$70.00	$90.00
Price w/ Entry	$53.00		$40.00	$53.00	$68.00
Volume No Entry	3,500		3,100	3,500	3,900
Volume w/ Entry	3,300		2,800	3,300	3,800
Competitor Entry	1		0	1	1
Design Costs	$50,000		$37,000	$50,000	$63,000
Capital Investment	$100,000		$60,000	$100,000	$140,000
Operating Expense Facto	15.0%		6.5%	15.0%	23.0%
Unit Production Costs	23.33		15.50	23.33	32.00
Overhead	$3,300		$2,800	$3,300	$4,000

FINANCE   The @RISK Demonstration Model :
Product Launch Risk Analysis 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
	========	========	========	========	========	========	========	========	========	========
Price No Entry			$70.00	$88.20	$119.00	$112.70	$99.40	$94.50	$91.70	$90.30
Price With Entry			$53.00	$67.31	$79.50	$63.60	$60.95	$55.65	$54.59	$51.94
Volume No Entry			3500	4340	6580	5565	5180	5180	4970	4935
Volume With Entry			3300	4158	3564	3399	3300	3300	3432	3696
Competitor Entry:	1									
Design Costs	$50,000.00									
Capital Investment		########								
Operating Expense Factor			0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Sales Price			$53.00	$67.31	$79.50	$63.60	$60.95	$55.65	$54.59	$51.94
Sales Volume			3300	4158	3564	3399	3300	3300	3432	3696
Sales Revenue			$174,900	$279,875	$283,338	$216,176	$201,135	$183,645	$187,353	$191,970
Unit Production Cost			$23.33	$24.26	$25.23	$26.24	$27.29	$28.38	$29.52	$30.70
Overhead			$3,300	$6,944	$10,528	$8,904	$8,288	$8,288	$7,952	$7,896
Cost of Goods Sold			$80,289	$107,830	$100,461	$98,104	$98,354	$101,957	$109,264	$121,366
Gross Margin			$94,611	$172,045	$182,877	$118,072	$102,781	$81,688	$78,089	$70,604
Operating Expense			$12,043	$16,175	$15,069	$14,716	$14,753	$15,294	$16,390	$18,205
Net Before Tax	($50,000)	$0	$82,568	$155,870	$167,808	$103,357	$88,028	$66,395	$61,699	$52,400
Depreciation		$20,000	$20,000	$20,000	$20,000	$20,000				
Tax	($23,000)	($9,200)	$28,781	$62,500	$67,992	$38,344	$40,493	$30,542	$28,382	$24,104
Taxes Owed	$0	$0	$0	$59,081	$67,992	$38,344	$40,493	$30,542	$28,382	$24,104
Net After Tax	($50,000)	$0	$82,568	$96,789	$99,816	$65,013	$47,535	$35,853	$33,317	$28,296
	========	========	========	========	========	========	========	========	========	========
Net Cash Flow	($50,000)	($100,000)	$82,568	$96,789	$99,816	$65,013	$47,535	$35,853	$33,317	$28,296
NPV 10%	$164,877									

The **finance.xls** worksheet.

3

SensIt's Tornado Command

SensIt's Tornado command allows you to perform sensitivity analysis on a number of variables simultaneously. When you select the command *Tools, Tornado* the *Tornado* dialog appears.
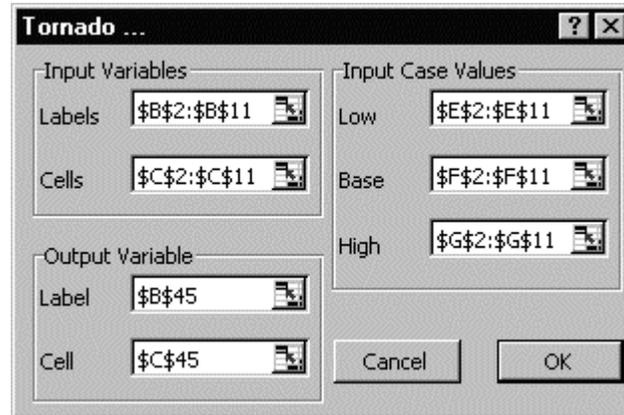
The *Tornado* dialog box requires a list of input variables and low, base, and high cases for each of the variables. The input variables must be arranged in a column (as in the **finance.xls** example) and the low, base, and high case values must be columns of the same length as in the input variables. When defining the high and low cases for each variable it is important to be consistent so that the "high" cases are all equally high and the "low" cases are all equally low. For example, you might specify:

- all the base case values to be estimates of the mean of the input variable
- all the low cases to be values such as there is a 1-in-10 chance of the variable being below this amount
- all the high cases to be values such that there's a 1-in-10 chance of the variable being above this amount

When you hit the *OK* button in the *Tornado* dialog SensIt sets all the input variables to their base-case values and records the output value (in this case from cell C45). It then goes through each of the input variables one at a time, plugs the low-case value into the input cell, and records the value in the output cell. It repeats the process for the high case. SensIt then produces a separate spreadsheet that lists the results and displays them in a "Tornado" chart. A copy of this results spreadsheet follows.

In the results spreadsheet, the variables are sorted by their "swing" — the absolute value of the difference between the output values in the low and high cases. In this example we see that if "Price with Entry" is set at the low value of $40 and all other variables are set at their base case value, NPV is $35,993. If "Price with Entry" is set to the high value of $68.00, NPV is $312,267. The swing is then the difference between these two values of $276,273. "Swing" serves as a rough measure of the impact of each input variable. "Percent variance" is a standardized measure of impact: it squares each swing and sums them up to get a "Total Variance" and reports the percentage of the "total variance" attributed to each input variable.

In general you should focus your modeling efforts on those variables with the swing in the Tornado analysis. But you must be careful in interpreting the results of a Tornado analysis. In this

example, the Tornado results indicate that "Price w/o Entry" and "Volume w/o Entry" have no impact on NPV. This is because in the base case Competitor Entry is set to 1 (indicating the presence of a competitor) and "Price w/o Entry" and "Volume w/o Entry" play no role in the model. If we had instead set "Competitor Entry" to 0 in the base case and rerun the Tornado analysis, "Price w/o Entry" and "Volume w/o Entry" would both have significant impacts on NPV and "Price w/Entry" and "Volume w/Entry" would have no impact. In cases like this, it's probably better to run separate Tornado analyses in the two different cases of "Competitor Entry". Any time you see a variable with zero swing it means the input cell has no impact on the output. These cases should be investigated carefully.

A copy of the Tornado results spreadsheet follows.

	A	B	C	D	E	F	G	H	I	J	K
4		**Input Values**				**Output Values (NPV 10%)**					Percent
5	Input Variable	Low	Base	High		Low	Base	High		Swing	Variance
6	Competitor Entry	0	1	1		$696,405	$164,877	$164,877		$531,528	70.3%
7	Price w/ Entry	$40.00	$53.00	$68.00		$35,993	$164,877	$312,267		$276,273	19.0%
8	Unit Production Costs	15.50	23.33	32.00		$250,473	$164,877	$69,323		$181,150	8.2%
9	Volume w/ Entry	2,800	3,300	3,800		$124,222	$164,877	$205,354		$81,132	1.6%
10	Capital Investment	$60,000	$100,000	$140,000		$185,763	$164,877	$143,722		$42,041	0.4%
11	Operating Expense Factor	6.5%	15.0%	23.0%		$185,420	$164,877	$145,542		$39,878	0.4%
12	Design Costs	$37,000	$50,000	$63,000		$172,436	$164,877	$157,143		$15,293	0.1%
13	Overhead	$2,800	$3,300	$4,000		$165,128	$164,877	$164,525		$603	0.0%
14	Price w/o Entry	$50.00	$70.00	$90.00		$164,877	$164,877	$164,877		$0	0.0%
15	Volume No Entry	3,100	3,500	3,900		$164,877	$164,877	$164,877		$0	0.0%

The **Tornado Analysis** for the **finance.xls** sample spreadsheet.

TreePlan

What is TreePlan?

TreePlan is an Excel add-in that allows you to build decision trees in Excel. It was developed by Professor Michael R. Middleton at the University of San Francisco and modified for use at Fuqua by Duke University Professor Jim Smith.

How to Get TreePlan

Download a copy of Treeplan from either of these URLs:

http://ourworld.compuserve.com/homepages/decision/
http://faculty.fuqua.duke.edu/~pecklund/excelreview/ExcelReview.htm

Running TreePlan

To run TreePlan, open the **treeplan.xla** file in Excel. When prompted, agree to run the TreePlan macros. With the **treeplan.xla** file loaded, a new command *Decision Tree* appears at the bottom of Excel's *Tools* menu.

Start a new decision tree in TreePlan by holding down the **Control** key and hitting the **t** key or by selecting *Tools, Decision Tree* from Excel's menus. Treeplan prompts you with a dialog box with three options. Choose the *New Tree* option to begin a new tree.

At the current cell Treeplan draws a default initial decision tree, extending downward and to the right with the selected cell as the upper-left-hand corner. For example, the figure below shows how TreePlan draws a new tree when cell B2 is selected.
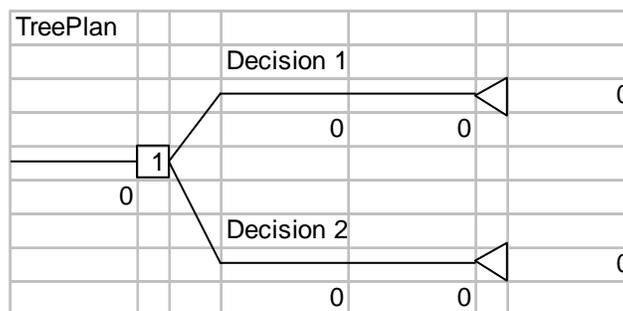
Important Notes:
- The new tree TreePlan creates will write over any existing data in that area of your spreadsheet so begin your tree to the *right* of where your data is stored.
- Once you've created a tree, don't add or delete any rows or columns in the tree-diagram area.

The objects in TreePlan's drawing scheme are:

⬜   Event Node

◁   Terminal Node *(May show up in Office 97 Excel as a vertical bar not a triangle.)*

◯   Chance Node

To

Build up a tree
Build up a tree by adding or modifying branches or nodes in the default tree.

Change tree labels
To change the branch labels or probabilities, click the cell containing the label or probability and type the new label or probability.

Modify a tree's structure
To modify the structure of a tree (e.g., add or delete branches or nodes in the tree) select the node or branch in the tree to modify and select *Tools, Decision Tree*. Alternatively, hit **Control-t**. TreePlan presents a dialog showing the available options.
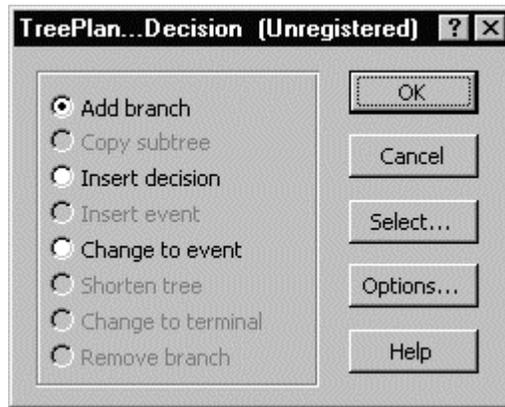

For example, to add an event node to the top branch of the tree shown below, select a terminal node at the end of that branch and hit **Control-t**.

Select this cell and hit **Control-t**.
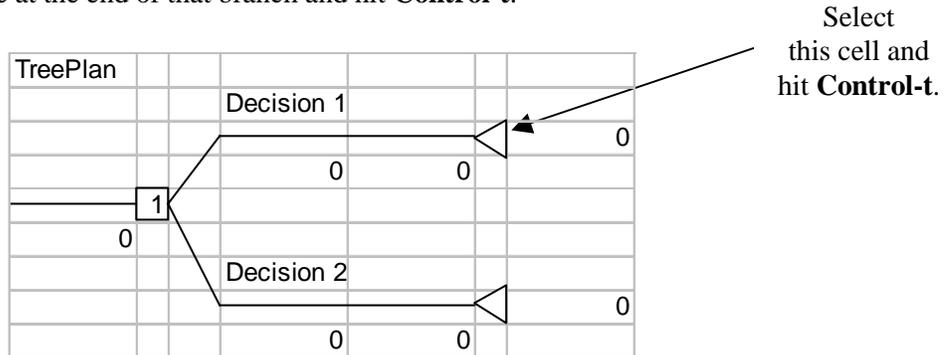
Treeplan presents this dialog to allow you to select the modification you want:
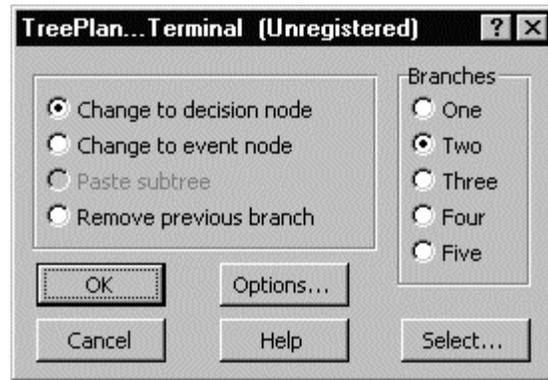
To add an event node to a branch, change the selected terminal node to an event node by
selecting *Change to event node* in the dialog box, selecting the number of branches (here,
two) and clicking the *OK* button. TreePlan redraws the tree with a chance node in place
of the terminal node.
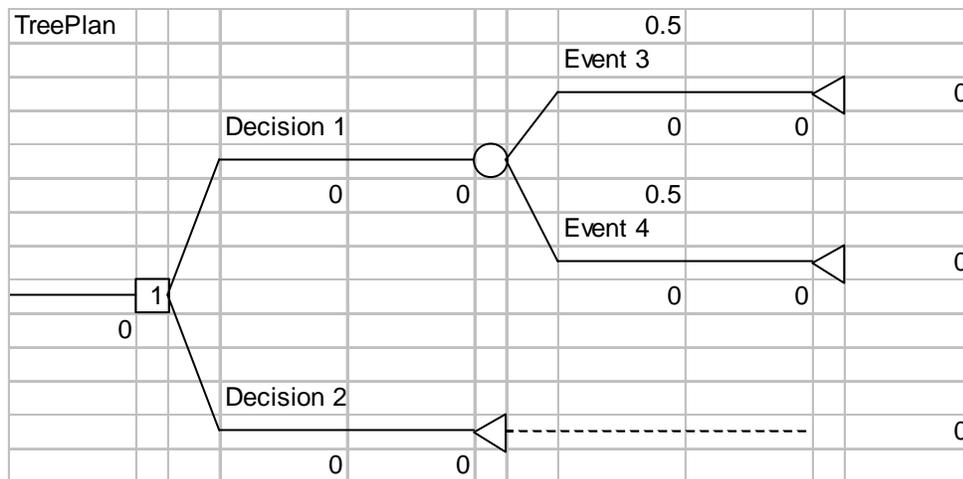
TreePlan's Dialog Boxes

The dialog boxes TreePlan presents will vary depending
on what you've selected when you choose *Tools,
Decision Tree* or hit **Control-t**. The *Event* dialog box at
right displays when you hit **Control-t** with an event node
selected. (A similar dialog box displays if you hit
Control-t with a decision node selected.) If you want to
add a branch to the selected node, choose *Add branch*
and click *OK*. To insert a decision or event node before
the selected node, choose *Insert decision* or *Insert event*
and click *OK*. To see a description of all available
commands, click *Help*.

The Copy subtree Command

The *Copy subtree* command is particularly useful when building large trees. If two or more parts of the tree are similar you can copy and paste "subtrees" rather than building up each part separately. To copy a subtree select the node at the root of the subtree, hit **Control-t**, choose *Copy subtree,* and then click *OK*. This tells TreePlan to copy the selected node and everything to the right of it in the tree. To paste the subtree from the Clipboard to another location on your tree, select a terminal node, hit **Control-t**, choose *Paste subtree,* and click *OK*. TreePlan duplicates the specified subtree at the terminal node you selected.

Formatting

Since a TreePlan decision tree is built directly in Excel, you can use Excel's commands to format your tree. For example, you can use bold or italic fonts for branch labels by selecting the cells you want to format and changing them using Excel's formatting commands. To help you, TreePlan provides a *Select* dialog box that appears when you choose *Tools, Decision Tree* or hit **Control-t** without a node selected.
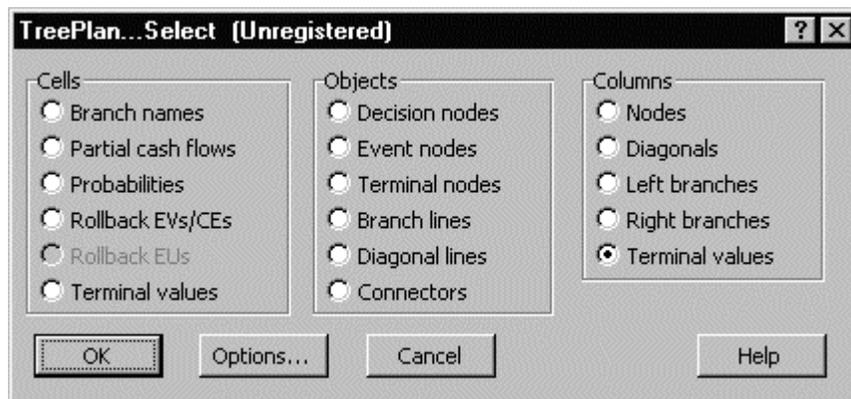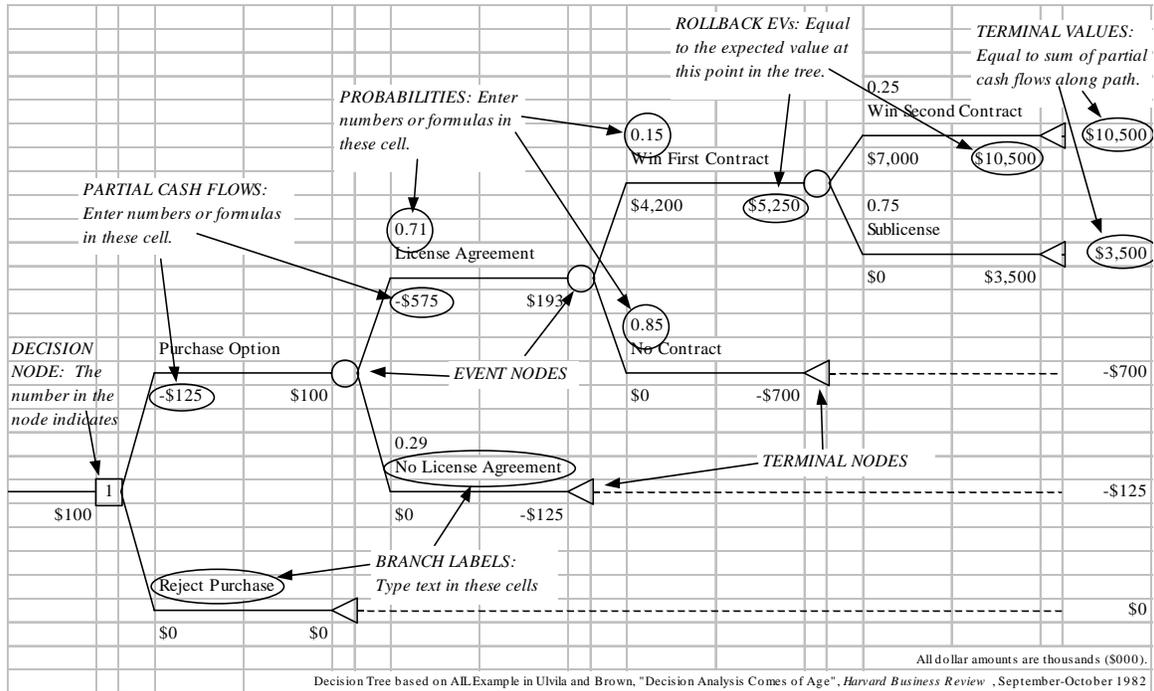

The *Select* dialog box also appears if you click the *Select* button on the *Node* dialog box.

From the *Select* dialog box you can select all items of a particular type in the tree. For example, if you choose *Probabilities* and click *OK*, TreePlan selects all the probabilities in the tree. You can then format all the probabilities simultaneously using Excel's formatting commands. You can sometimes speed up formatting by formatting entire columns. Note that because of limitations in Excel, the *Select* dialog isn't available when working with very large trees.

Anatomy of a TreePlan Decision Tree

An example of a TreePlan decision tree is shown below. In the example, a firm must decide whether to purchase an option on the defense market rights to a new flight safety system. The tree consists of *decision nodes, event nodes,* and *terminal nodes* connected by *branches.* Each branch is surrounded by cells containing formulas, cell references, or labels pertaining to that branch. You can edit the *labels, probabilities,* and *partial cash flows* associated with each branch. The

partial cash flows are the amount the firm "gets paid" to go down that branch. Here, the firm pays $125,000 if it decides to purchase the option and another $575,000 if it signs the license agreement.

ROLLBACK EVs: Equal to the expected value at this point in the tree.

TERMINAL VALUES: Equal to sum of partial cash flows along path.

PROBABILITIES: Enter numbers or formulas in these cell.

PARTIAL CASH FLOWS: Enter numbers or formulas in these cell.

0.25
Win Second Contract
$10,500

0.15
Win First Contract
$7,000 $10,500 $10,500

$4,200 $5,250

0.75
Sublicense
$3,500

0.71
License Agreement
-$575 $193
$0 $3,500

DECISION NODE: The number in the node indicates

Purchase Option
-$125 $100

0.85
No Contract
$0   -$700   -$700

EVENT NODES

TERMINAL NODES

1
$100

0.29
No License Agreement
$0   -$125   -$125

BRANCH LABELS: Type text in these cells

Reject Purchase
$0 $0 $0

All dollar amounts are thousands ($000).

Decision Tree based on AIL Example in Ulvila and Brown, "Decision Analysis Comes of Age", *Harvard Business Review*, September-October 1982
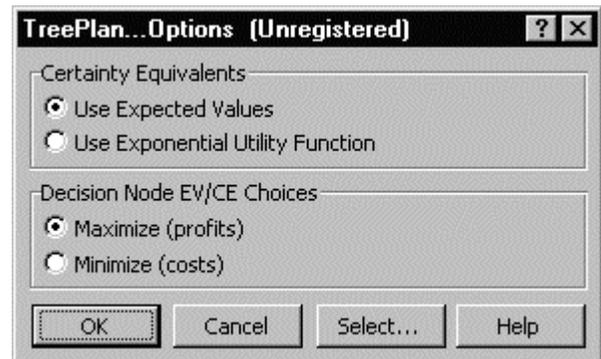
Solving Trees

Trees are "solved" using formulas embedded in the spreadsheet. The *terminal values* sum all the partial cash flows along the path leading to that terminal node. The tree is then "rolled back" by computing expected values at event nodes and by maximizing at decision nodes. The *rollback EVs* appear next to each node and show the expected value at that point in the tree. The numbers in the decision nodes indicate which alternative is optimal for that decision. In the example, the "1" in the decision node indicates that it's optimal to "Purchase Option" because that alternative leads to the highest expected value ($100,000).

Controlling Calculations

TreePlan has a few options that control the way calculations are done in the tree. To select these options click the *Options* button in any of TreePlan's dialog boxes. The first choice is between *Use Expected Values* and *Use Exponential Utility Function.* The default is to rollback the tree using expected values. If you choose to use the exponential utility function, Treeplan computes utilities of endpoint cash flows at the terminal nodes

TreePlan...Options (Unregistered)   ? ×

Certainty Equivalents
⦿ Use Expected Values
○ Use Exponential Utility Function

Decision Node EV/CE Choices
⦿ Maximize (profits)
○ Minimize (costs)

OK   Cancel   Select...   Help

and then rolls back these utilities instead of expected values. Certainty equivalents are calculated in the cell above the expected utilities. You can also choose one of the options *Maximize (profits)* or *Minimize (costs).* The default is to maximize profits. If you choose to minimize costs instead, the cash flows are interpreted as costs and decisions are made by choosing the minimum expected value/utility rather than the maximum.

TreePlan's Online Help
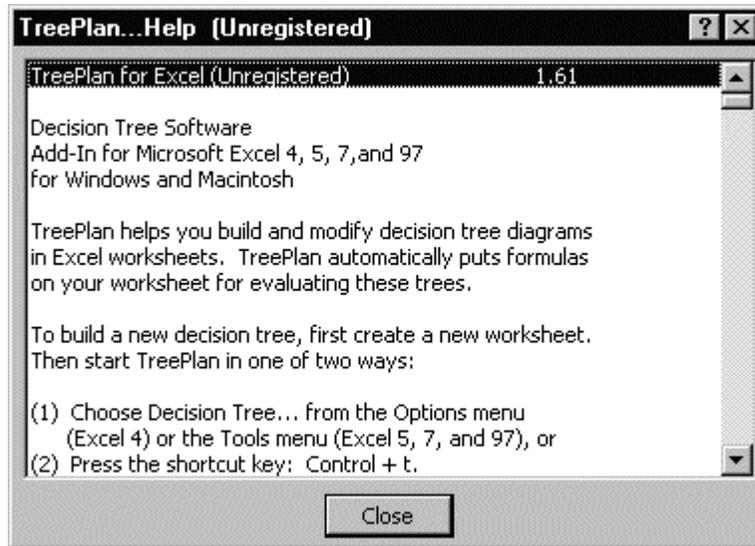
To learn more about these features and any other TreePlan feature please see TreePlan's online help file.

Click the *Help* button from any TreePlan dialog box to see TreePlan's *Help* pages.

The contents of the TreePlan's file is reproduced below.

TreePlan's Online Help File

TreePlan for Excel   1.58

Decision Tree Software
Add-In for Microsoft Excel 4, 5, 7,and 97
for Windows and Macintosh

TreePlan helps you build and modify decision tree diagrams in Excel worksheets. TreePlan automatically puts formulas on your worksheet for evaluating these trees.

To build a new decision tree, first create a new worksheet. Then start TreePlan in one of two ways:

(1) Choose Decision Tree... from the Options menu
     (Excel 4) or the Tools menu (Excel 5, 7, and 97), or
(2) Press the shortcut key: Control + t.

When the TreePlan...New dialog box appears, choose New Tree. TreePlan builds a tree diagram with an initial decision node and two branches. The tree diagram begins with the upper left corner of the diagram near the active cell at the time New... is chosen. TreePlan assigns the name TreeDiagram to the range of the tree diagram and initially sets Excel's Print_Area equal to TreeDiagram.

To change the structure of the tree diagram, select a node, start TreePlan, and choose commands from a TreePlan dialog box.

On the left side of each branch of the tree diagram, there is a name field above the branch line and a partial-cash-flow value field below the line. On the left side of event branches, there is also a probability field above the name field. Decision nodes also have a number in them indicating the optimal branch.

On the right side of each branch of the tree diagram, there is a rollback Expected Value field below the line near each node. TreePlan automatically puts the rollback EV formula into this cell: maximum of successor EVs at a decision node, and expected value of successor EVs at an event node.

To the right of the terminal nodes, there is an endpoint value field that sums all of the partial cashflows in the tree.

Internally, TreePlan uses the TreeData range, near cell GV1000, to construct the TreeDiagram.

CAUTION: Do not insert or delete rows or columns in the TreeDiagram or TreeData ranges. Modify the tree diagram only by using TreePlan's menu options.

TREEPLAN...DECISION and
TREEPLAN...EVENT dialog boxes

Add branch
    Adds a single branch after the selected node .
    (No more than 5 branches are allowed.)

Copy subtree
    Copies the selected node and all its successors to the
    TreePlan clipboard.

Insert decision
    Inserts a decision node and single branch before the
    selected node.

Insert event
    Inserts an event node and single branch before the
    selected node.

Change to decision
    Changes the selected event node to a decision node and
    erases the probability fields from the event branches.

Change to event
    Changes the selected decision node to an event node.

Shorten tree
    Removes the selected node and its single successor
    branch.

Change to terminal
    Changes the selected node to a terminal node. All
    successor branches are erased.

Remove branch
    Erases the selected node, the previous branch, and any
    successor branches and nodes.

TREEPLAN...TERMINAL dialog box

Change to decision node
    Changes the selected terminal node to a decision node
    with one to five successor branches.

Change to event node
    Changes the selected terminal node to an event node
    with one to five successor branches.

Paste subtree
    Pastes the subtree onto the selected terminal node from
    the TreePlan clipboard.

Remove previous branch
    Erases the selected terminal node and the previous
    branch.

TREEPLAN...SELECT dialog box

Cells
    To select a set of nonadjacent cells for subsequent
    formatting, select the appropriate option button.
    (In large trees, this option may not be available.)

Objects
    To select all objects, choose Select Special from the
    Formula menu, and select the Objects option button.
    (In large trees, this option may not be available.)

Columns
    To select a set of nonadjacent columns for subsequent
    formatting, select the appropriate option button.

TREEPLAN...OPTIONS dialog box

Certainty Equivalents
    The default is to rollback the tree using expected values.
    If you chose to use exponential utilities, TreePlan will
    compute utilities and certainty equivalents at each node.
    For the Maximize option, the rollback formulas are
    $U=A-B*EXP(-X/RT)$ and $X=-LN((A-U)/B)*RT$, and for the
    Minimize option, $U=A-B*EXP(X/RT)$ and
    $X=LN((A-U)/B)*RT$.

    NOTE: TreePlan uses the name RT to represent the
    risk tolerance parameter of the exponential utility
    function; the names A and B determine scaling.
    If the names A, B, and RT don't exist, they are initially
    defined as A=1, B=1, and RT=999999999999. The
    name UseExpUtility is a flag indicating whether to use
    exponential utilities or expected values.

Decision Node EV/CE Choices
    The default is to Maximize profits. If you choose to

Minimize costs instead, the cash flows are interpreted as costs, and decisions are made by choosing the minimum expected value/CE rather than the maximum. TreePlan uses the name MinimizeCosts as a flag indicating whether to maximize profits or minimize costs.

ACKNOWLEDGMENT

Sincere thanks to Professor James E. Smith, Duke University, for adding exponential utility and several other features.

TREEPLAN REGISTRATION

TreePlan is distributed as shareware and may be provided at no charge to the user for evaluation. If you find this program useful and continue to use TreePlan after a 30-day evaluation period, you must make a registration payment to Decision Support Services. The registration fee will license one copy for use on any one computer at any one time.

Upon registering TreePlan, you will be sent by postal mail a disk containing the most recent version of the software and documentation. The registered TreePlan package has a 30-day money-back guarantee. Registered users will be notified of the next major version and are entitled to unlimited technical support via postal mail, Compuserve 71330,3445, or Internet: middleton@usfca.edu.

A site license agreement is required to use TreePlan on a computer network, and academic pricing is available. Please contact Decision Support Services for details.

An evaluation copy of TreePlan and other information may be obtained from the Decision Support Services web site:

  http://ourworld.compuserve.com/homepages/decision

TREEPLAN REGISTRATION BY CHECK

The registration fee for TreePlan is $29.00 (California residents, add sales tax) plus $4.00 shipping to U.S. and Canada, $6.00 elsewhere. Make money order or check (in U.S. funds drawn on a U.S. bank) payable to Decision Support Services, and mail to:

Decision Support Services   Voice/Fax (415) 673-6217
2105 Buchanan Street, #1   Compuserve 71330,3445
San Francisco, CA 94115

TREEPLAN REGISTRATION BY CREDIT CARD

You can order with MC, Visa, Amex, or Discover from Public (software) Library by calling 800-2424-PsL or 713-524-6394 or by fax to 713-524-6398 or by Compuserve Email to 71355,470. You can also mail credit card orders to PsL at P.O. Box 35705, Houston, TX 77235-5705.

The above numbers are for orders only. The author cannot be reached at these PsL phone numbers.

Any questions about the status of the shipment of the order, refunds, registration options, product details, technical support, volume discounts, dealer pricing, site licenses, non-credit card orders, etc., must be directed to 415-673-6217 (Voice/Fax), Compuserve 71330,3445, or Decision Support Services, 2105 Buchanan Street, #1, San Francisco, CA 94115.

To insure that you get the latest version, PsL will notify us the day of your order, and we will ship the product directly to you. PsL has assigned item/product #11325 to TreePlan for Excel. The prices are $33 US/Canada and $35 overseas.

TREEPLAN DISTRIBUTION

Please share copies of TreePlan freely with prospective users. You are granted permission to make as many copies as you wish. Do not distribute copies that have been altered.

Disk vendors, bulletin boards, other distributors, and individuals may distribute TreePlan as long as you clearly explain the shareware concept, the need for users to register the products they use, and the fact that the price of

your disks/CD-ROM/service is a copying fee only and does not constitute payment for the product.

Please direct questions about volume discounts, dealer pricing, rack vending, book bundling, or other distribution methods to 415-673-6217 (Voice/Fax), Compuserve 71330,3445, or Decision Support Services, 2105 Buchanan Street, #1, San Francisco, CA 94115.

ABOUT SHAREWARE

Shareware is a method of distributing software that gives you a chance to try software before buying it. If you try a shareware program and continue using it, you are expected to register. Individual programs differ on the details about the evaluation period, registration fee, and support.

Copyright laws apply to both shareware and commercial software, and the copyright holder may choose to retain all rights. The only meaningful difference between shareware and commercial software is the method of distribution. Shareware authors specifically grant the rights to copy and distribute the software and documentation, either to all users and by all methods, or with some restrictions.

You should try to find software that suits your needs and budget, whether it's commercial or shareware. Both types have good programs and bad, but shareware makes finding the right program easier, because you can try before you buy. Also, because shareware distribution costs are much lower, shareware prices are often lower, too. Finally, shareware has the ultimate money-back guarantee: if you don't use it, you don't pay for it.

ASP OMBUDSMAN INFORMATION

This program is produced by a member of the Association of Shareware Professionals (ASP). ASP wants to make sure that the shareware principle works for you. If you are unable to resolve a shareware-related problem with an ASP member by contacting the member directly, ASP may be able to help. The ASP Ombudsman can help you resolve a dispute or problem with an ASP member, but does not provide technical support for members' products. Please write to the ASP Ombudsman at 545 Grover Road, Muskegon, MI 49442-9427, Fax 616-788-2765, or send a Compuserve message via Compuserve Mail to ASP Ombudsman 70007,3536.

WARRANTY

Users of TreePlan must accept this disclaimer of warranty:
TreePlan copyrighted software and documentation are
provided on an 'as is' basis. The author and Decision
Support Services disclaim all warranties, expressed or
implied, including, without limitation, the warranties of
merchantability and of fitness for any purpose. The user
assumes all risks as to the quality and performance of this
software and documentation. The author and Decision
Support Services assume no liability for indirect,
consequential, or incidental damages which may result from
the use or misuse of TreePlan. Some states do not allow
the exclusion of the limit of liability for consequential or
incidental damages, so the above limitation may not apply
to you. This agreement shall be governed by the laws of the
State of California and shall inure to the benefit of the author
and Decision Support Services and any successors,
administrators, heirs, and assigns. Any action or
proceeding brought by either party against the other arising
out of or related to this agreement shall be brought only in a
state or federal court of competent jurisdiction located in the
city and county of San Francisco, California. The parties
hereby consent to in personam jurisdiction of said courts.

AUTHOR INFORMATION

Please send comments about TreePlan and suggestions
for improvements to:

Michael R. Middleton
McLaren School of Business
University of San Francisco
2130 Fulton Street
San Francisco, CA 94117

Internet: middleton@usfca.edu

TreePlan for Excel (Unregistered)   1.58
Copyright 1996
Michael R. Middleton
All Rights Reserved