

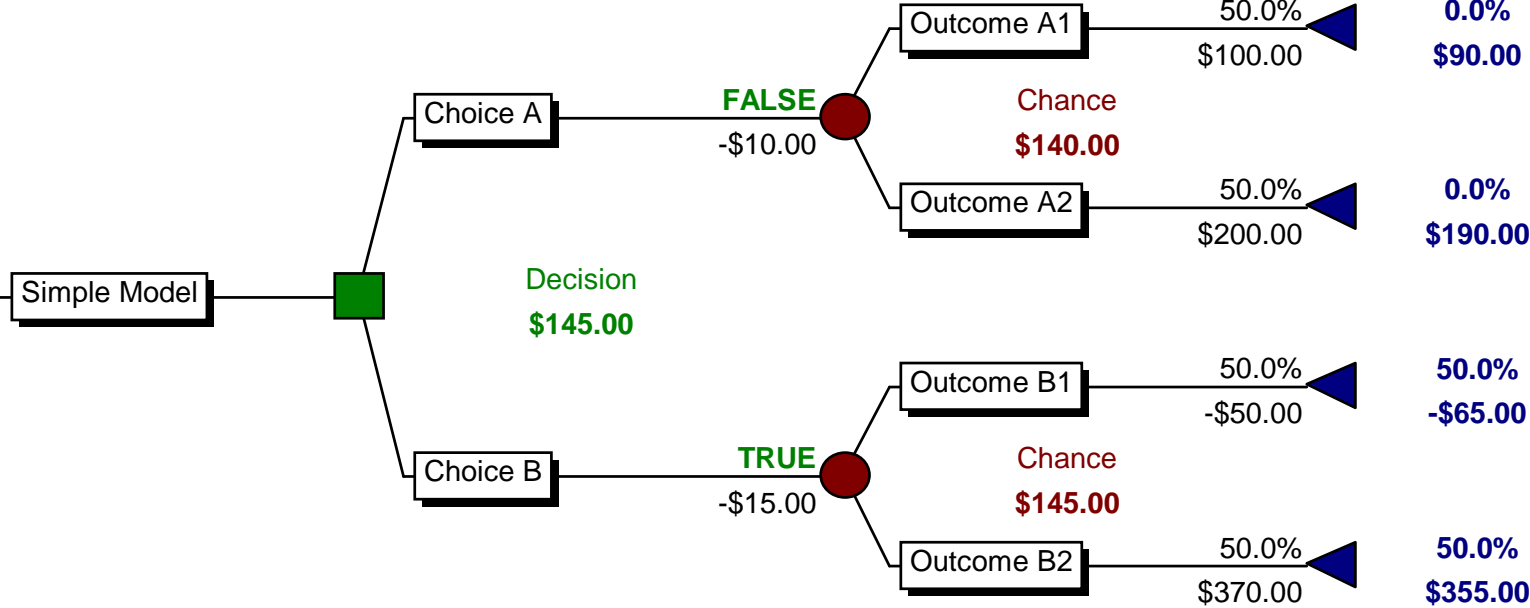
# Introduction to PrecisionTree 5.0

Erik Westwig  
Palisade Corporation

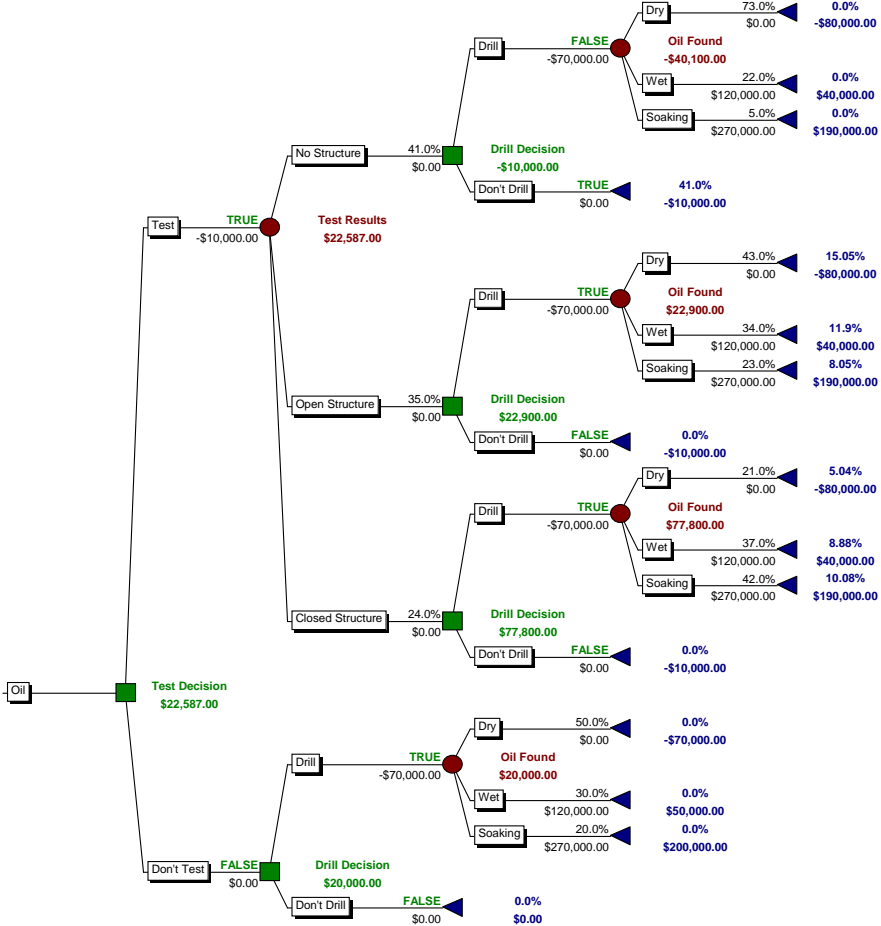
# Overview of PrecisionTree

- Decision Analysis Add-in for Microsoft Excel
- Analysis of
  - Decision Trees
  - Influence Diagrams
- Analysis Capabilities
  - Risk Profiles
  - Policy Suggestion
  - Sensitivity Analysis
  - Integration with Other Excel and Palisade Tools

# A Simple Decision Tree



# A Not So Simple Decision Tree



# Decision Tree Calculation

- Calculate All End-Node Path Values
- Apply Utility Function (If Specified)
- “Rollback” the Tree in Reverse
  - Simplify Chance Nodes
  - Make Optimal Choices
  - Repeat Until Done

# Model Analysis

## Risk Profiles

*A Risk Profile* is a discrete probability distribution, showing each possible outcome of the model, and its associated probability.

# Model Analysis

## Policy Suggestion

*A Policy Suggestion Report identifies the optimum choices for each decision in a model.*

# Model Analysis

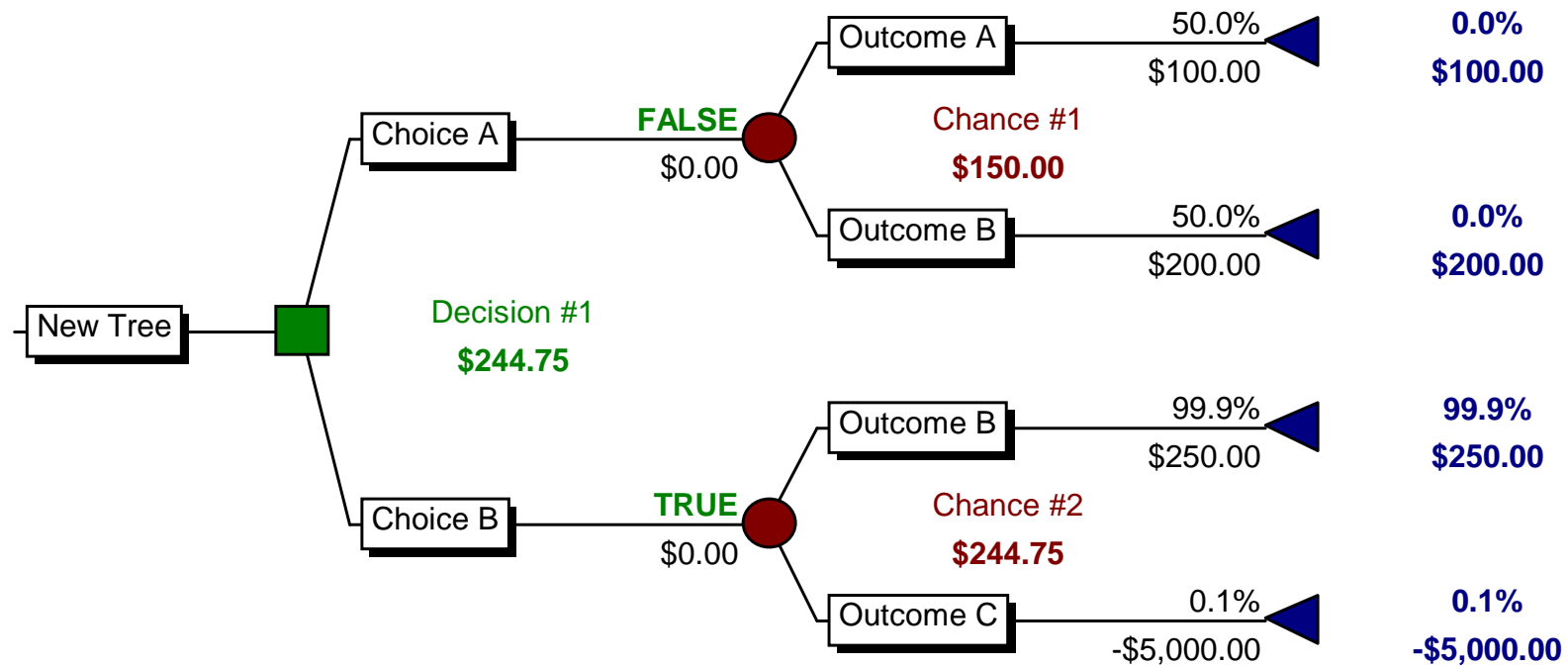
## Sensitivity Analysis

*A Sensitivity Analysis* shows how changing one or more of the underlying assumptions of the model affects the outcome.

# Payoff Calculation Methods

- Cumulative
- Formula
- Linked Spreadsheet
- VBA Macro

# (Mis)Analysis Using Expected Values



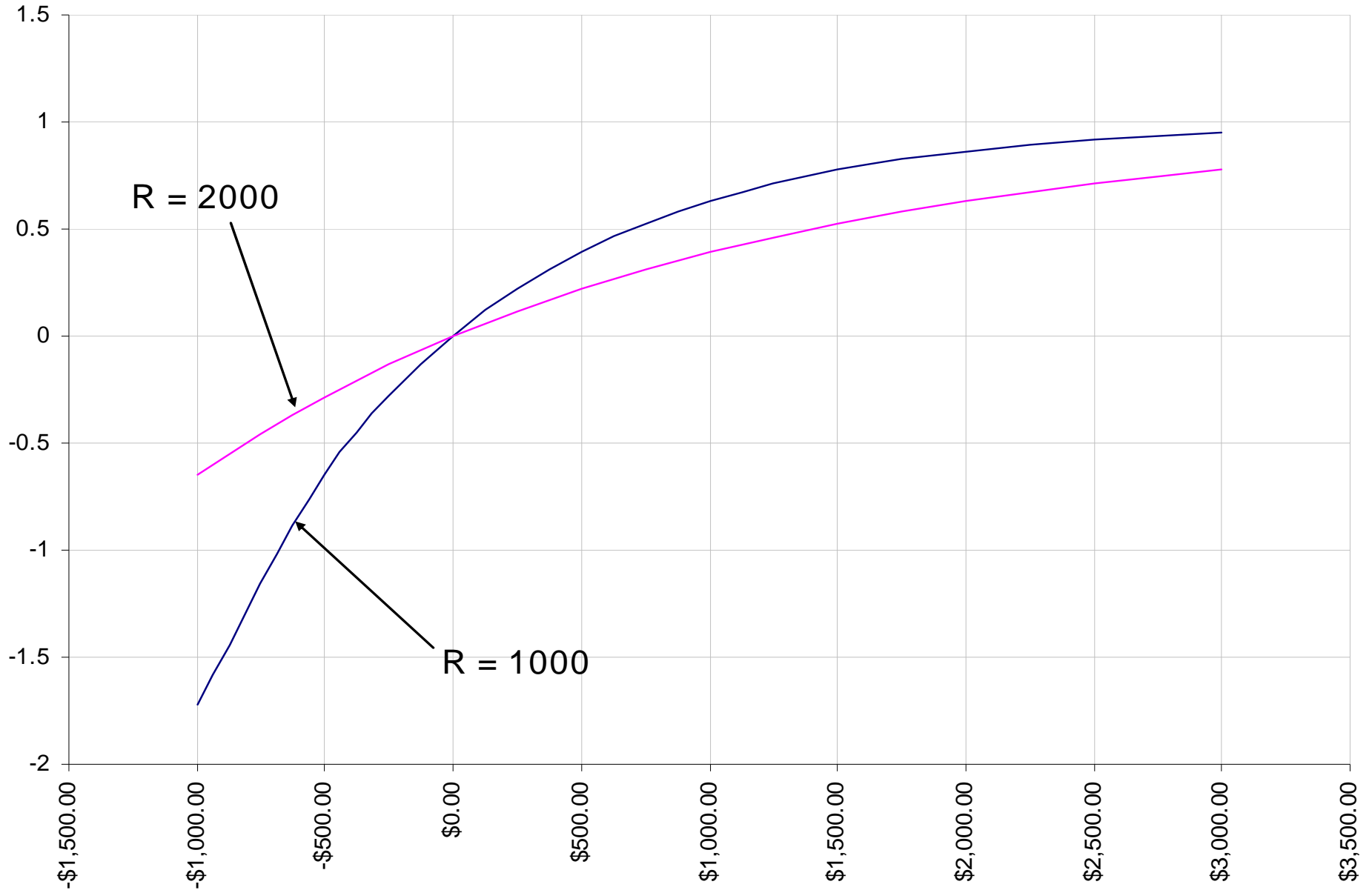
# Utility Functions

Use a *Utility Function* to recognize that the value of money is not linear.

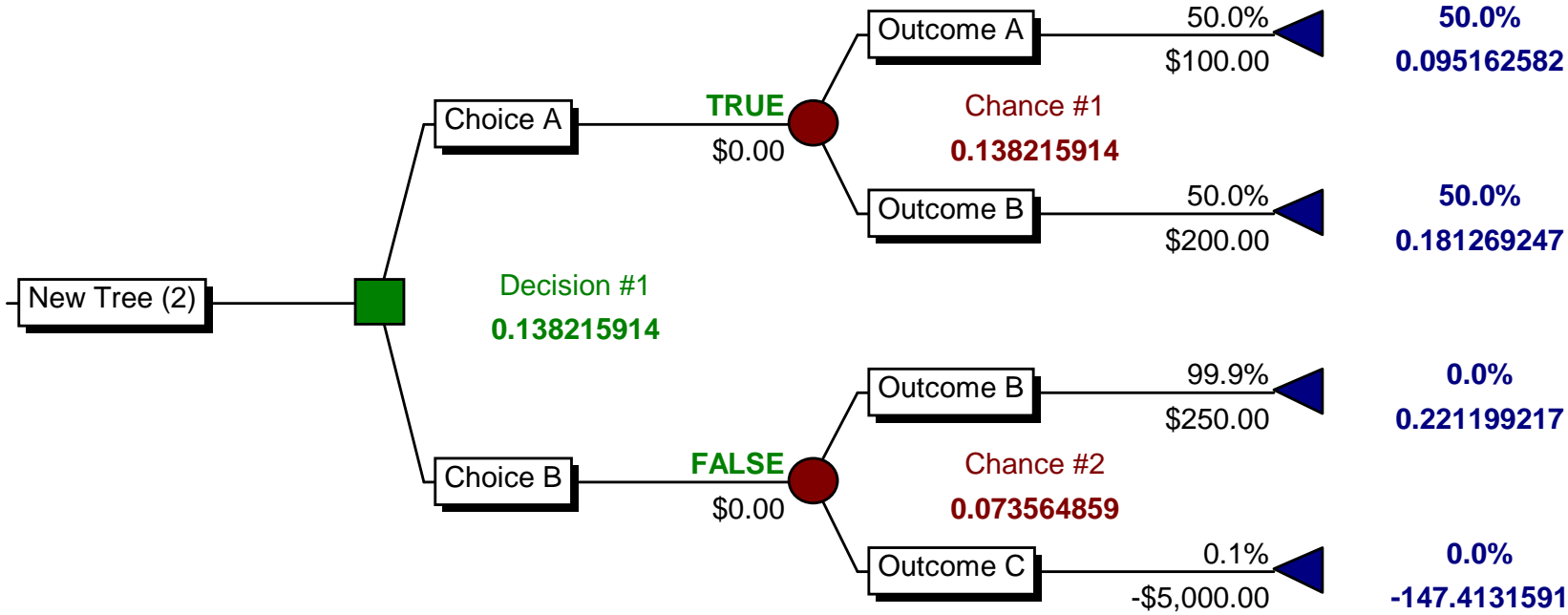
Stupid Example:

Compare the relative attitudes of Erik Westwig to Bill Gates concerning a venture worth \$1000.

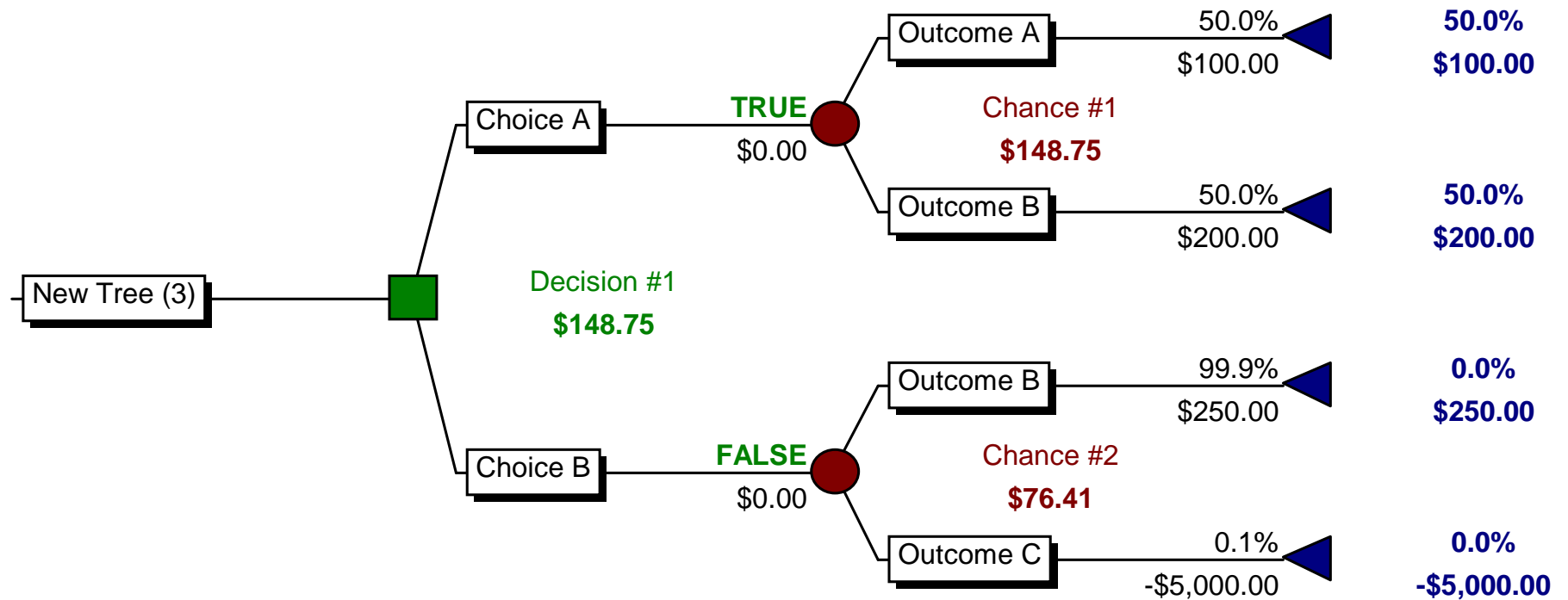
# Exponential Utility Function



# Analysis with Exponential Utility R=1000



# Analysis with Exponential Utility Function $R=1000$ (Certainty Equivalents)



# PrecisionTree and VBA

PrecisionTree 5.0 has a new programmatic interface which can be called easily from within Excel.

- Calculation of Models using VBA
- VBA Automation

# Influence Diagrams

- Advantages

- Compact
- Automatic Bayesian Revision

- Disadvantages

- Difficult to Understand
- Hard to Build Asymmetric Models

# A Example Influence Diagram

PrecisionTree

Oil Diagram	
Expected Value	\$128,000.00
Std. Deviation	\$107,373.18
Minimum	-\$43,000.00
Maximum	\$227,000.00

