Module 04 – Multiperiod Modeling

Exploratory Data Analysis

*In this section, you should perform some data analysis on the data provided to you. Please format your findings in a visually pleasing way and please be sure to include these cuts:*

* *Make a nicely formatted table with the needed data on each investment*

Model Formulation

*Write the formulation of the model into here prior to implementing it in your Excel model. Be explicit with the definition of the decision variables, objective function, and constraints*

Min (yr 1 Investment): A1+B1+E1

Constraints:

Year 2: 1.099A1 – 1A2 – 1C2 = 0

Year 3: 1.0422B1 + 1.0199A2 – 1A3 – 1B3 – 1D3 = 250

Year 4: 1.1099A3 – 1A4 = 0

Year 5: 1.0646C2 + 1.0422B3 + 1.0199A4 – 1A5 – 1B5 – 1C5 = 0

Year 6: 1.1094E1 + 1.0199 – 1A6 = 250

Year 7: 1. 0869 D3 + 1.0422B5 + 1.0199A6 – 1A7 -1B7 = 0

Year 8: 1.0643C5 + 1.0199A7 – 1A8 = 0

Year 9: 1.0422B7 + 1.0199A8 – 1A9 = 0

Year 10: 1.0199A9 = 500

Model Optimized for Least Cost out of Pocket

*Implement your formulation into Excel and be sure to make it neat. This section should include:*

* *A screenshot of your optimized final model (formatted nicely, of course)*
* *A text explanation of what your model is recommending*
* *Add some sort of visualization. Some ideas:*
  + *A pie chart or stacked bar chart to compare money out of pocket vs end amount*
  + *A line chart to show either current amount or cumulative amount invested in each investment*
  + *Any other solution you may have*

A screenshot of a spreadsheet

AI-generated content may be incorrect.

A white sheet with black text

AI-generated content may be incorrect.

A graph with numbers and text

AI-generated content may be incorrect.

A graph with green lines and red and blue lines

AI-generated content may be incorrect.

Model with Stipulation

*Please copy the tab of your original model before continuing with the next part to avoid messing up your original solution.*

*Try one of these 2 scenarios:*

* *If we remove the midterm payments and instead pay the entirety at the end of the time period, does your model change at all? If so, why may there be a change?*
* *An investor normally tries to not be oversubscribed/overexposed to one single investment. Can you add a constraint to your model to limit the amount of exposure in any single investment and describe how the model has changed?*

*Solver with stipulation took away surplus funds and required payments which just spanned out the increments and consolidated more.*

*A white grid with black lines

AI-generated content may be incorrect.*