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*

A table with numbers and a number of numbers

AI-generated content may be incorrect.

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*

|  |  |
| --- | --- |
| Caramelized Capital | A |
| Gumball Growth Group | B |
| Licorice Leverage Group | C |
| LuxeLollipop Asset Management | D |
| Marshmallow Margin Group | E |

* Min: A1 + B1 + C1+ D1 + E1
  + Ai = amount (in 1000s) placed in investment A at the beginning of month i = 1,2,3,4,5,6,7,8,9
  + Bi = amount (in 1000s) placed in investment A at the beginning of month i = 1,3,5,7
  + Ci = amount (in 1000s) placed in investment A at the beginning of month i = 2,5
  + Di = amount (in 1000s) placed in investment A at the beginning of month i = 3
  + Ei = amount (in 1000s) placed in investment A at the beginning of month i = 1
* Constraints – Starting month 2
  + 1.0199A1 – 1A2 – 1C2 = 0
  + 1.0422B1 +1.0199A2-1A3\_1B3-1D3 = 250
  + 1.0199A3 – A4 = 0
  + 1.0645C2 + 1.0422B3 +1.0199A4 – 1A5 -1B5 -1C5 = 0
  + 1.1094E1 +1.0199A5 – 1A6 = 250
  + 1.0871D3 + 1.0422B5 +1.0199A6 -1A7 -1B7 = 0
  + 1.0645C5 +1.0199A7 -1A8 = 0
  + 1.0422B7 + 1.0199A8 -1A9 =0
  + 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 graph with a pie chart

    AI-generated content may be incorrect.*
  + *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.

* With this investment strategy, my model recommendation is saving around 120,000 dollars. If we were to just pay with no investments the costs would be much higher

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?*
* *A graph with a pie chart

  AI-generated content may be incorrect.*
  + The out of pocket payment goes down. It drops about 50 dollars from what it was before