

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*

Investment	Inflow	Outflow	Return
Bonbon Balance Investments	1	2	1.99%
CandyCrest Holdings	1	3	4.23%
TaffyTrend Ventures	1	6	10.95%
Bonbon Balance Investments	2	3	1.99%
LuxeLollipop Asset Management	2	5	6.46%
Bonbon Balance Investments	3	4	1.99%
CandyCrest Holdings	3	5	4.23%
SugarFund Capital	3	7	8.68%
Bonbon Balance Investments	4	5	1.99%
Bonbon Balance Investments	5	6	1.99%
CandyCrest Holdings	5	7	4.23%
LuxeLollipop Asset Management	5	8	6.46%
Bonbon Balance Investments	6	7	1.99%
Bonbon Balance Investments	7	8	1.99%
CandyCrest Holdings	7	9	4.23%
Bonbon Balance Investments	8	9	1.99%
Bonbon Balance Investments	9	10	1.99%

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

Objective: Min (Amount invested in Period 1) = $A_1 + B_1 + E_1$

DV: amount invested in each stock in each period.

Constraints:

Year 2: $1.0199A_1 - 1A_2 - 1C_2 = 0$

Year 3: $1.0423B_1 + 1.0199A_2 - 1A_3 - 1B_3 - 1D_3 = 250$

Year 4: $1.0199A_3 - 1A_4 = 0$

Year 5: $1.0646C_2 + 1.0423B_3 + 1.0199A_4 - 1A_5 - 1B_5 - 1C_5 = 0$

Year 6: $1.1095E_1 + 1.0199A_5 - 1A_6 = 250$

Year 7: $1.0868D_3 + 1.0423B_5 + 1.0199A_6 - 1A_7 - 1B_7 = 0$

Year 8: $1.0646C_5 + 1.0199A_7 - 1A_8 = 0$

Year 9: $1.0423B_7 + 1.0199A_8 - 1A_9 = 0$

Year 10: $1.0199A_9 = 500$

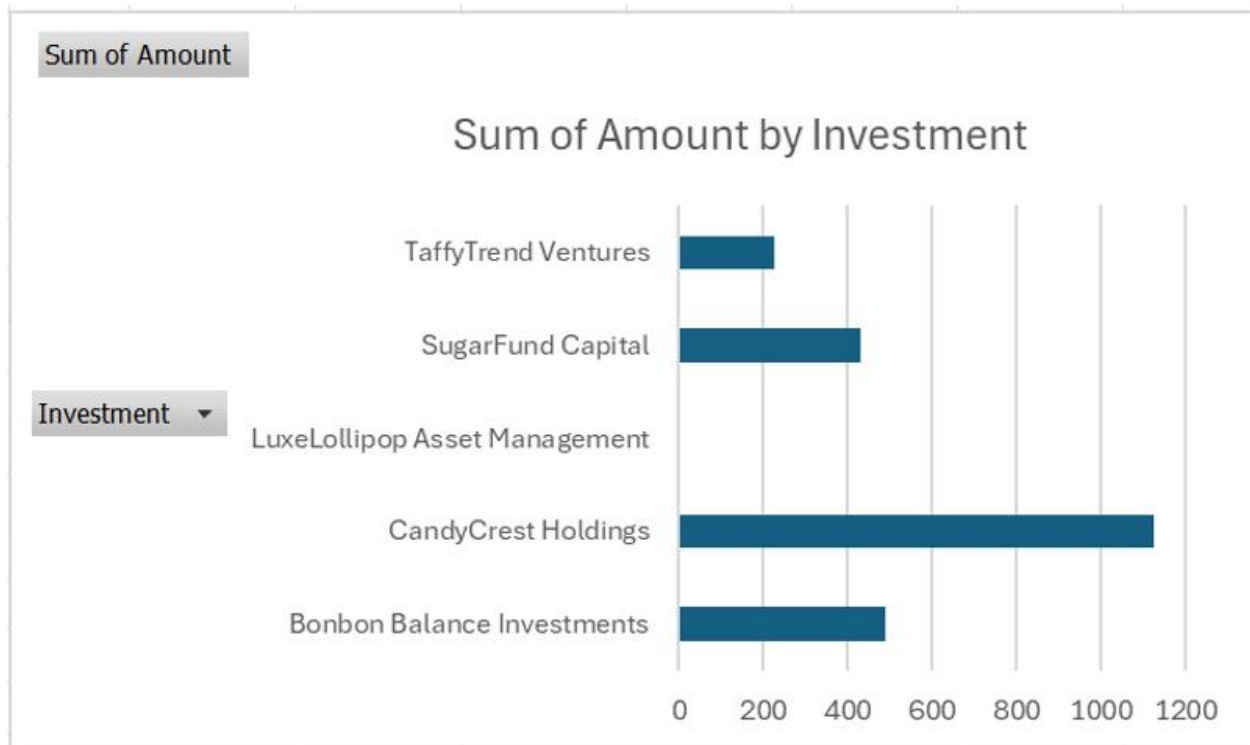
Model Optimized for Least Cost out of Pocket

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:
 - o A pie chart or stacked bar chart to compare money out of pocket vs end amount
 - o A line chart to show either current amount or cumulative amount invested in each investment
 - o Any other solution you may have

Investment	Inflow	Outflow	Amount	Return	1	2	3	4	5	6	7	8	9	10
Bonbon Balance Investments	1	2	0	1.99%	-1	1.0199								
CandyCrest Holdings	1	3	655.0732539	4.23%	-1	<--->	1.0423							
TaffyTrend Ventures	1	6	225.3267237	10.95%	-1	<--->	<--->	<--->	<--->	1.1095				
Bonbon Balance Investments	2	3	0	1.99%		-1	1.0199							
LuxeLollipop Asset Management	2	5	0	6.46%		-1	<--->	<--->	1.0646					
Bonbon Balance Investments	3	4	0	1.99%			-1	1.0199						
CandyCrest Holdings	3	5	0	4.23%			-1	<--->	1.0423					
SugarFund Capital	3	7	432.7828525	8.68%			-1	<--->	<--->	<--->	1.0868			
Bonbon Balance Investments	4	5	0	1.99%				-1	1.0199					
Bonbon Balance Investments	5	6	0	1.99%					-1	1.0199				
CandyCrest Holdings	5	7	0	4.23%					-1	<--->	1.0423			
LuxeLollipop Asset Management	5	8	0	6.46%					-1	<--->	<--->	1.0646		
Bonbon Balance Investments	6	7	0	1.99%						-1	1.0199			
Bonbon Balance Investments	7	8	0	1.99%							-1	1.0199		
CandyCrest Holdings	7	9	470.3484041	4.23%							-1	<--->	1.0423	
Bonbon Balance Investments	8	9	0	1.99%								-1	1.0199	
Bonbon Balance Investments	9	10	490.2441416	1.99%									-1	1.0199
total invested in year 1			880.40		surplus funds	0	250	0	0	250	0	0	0	500
					Req'd Payments	0	250	0	0	250	0	0	0	500

The model tells us that the least cost out of pocket would be to invest \$655.07 in Candy Crest Holdings and \$225.33 in Taffy Trend Ventures during period 1. This will yield the exact amount needed to meet the required payments.



Model with Stipulation

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?

The stocks invested in are almost the same the only that wasn't used from before was E₁, in the first month the investment is 50 dollars less, but the total invested is higher.

- 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?