Module 04 – Multiperiod Modeling

Exploratory Data Analysis:

Investment Letter	Investment	Inflow	Outflow
A	Bubblegum Benchmark Fund	1	2
B	Caramelized Capital	1	3
E	SweetYield Ventures	1	6
A	Bubblegum Benchmark Fund	2	3
C	Nougat Nest Investments	2	5
A	Bubblegum Benchmark Fund	3	4
B	Caramelized Capital	3	5
D	Peppermint Profit Partners	3	7
A	Bubblegum Benchmark Fund	4	5
A	Bubblegum Benchmark Fund	5	6
B	Caramelized Capital	5	7
C	Nougat Nest Investments	5	8
A	Bubblegum Benchmark Fund	6	7
A	Bubblegum Benchmark Fund	7	8
B	Caramelized Capital	7	9
A	Bubblegum Benchmark Fund	8	9
A	Bubblegum Benchmark Fund	9	10

Model Formulation

MIN: A1 + B1 + C1 + D1 + E1

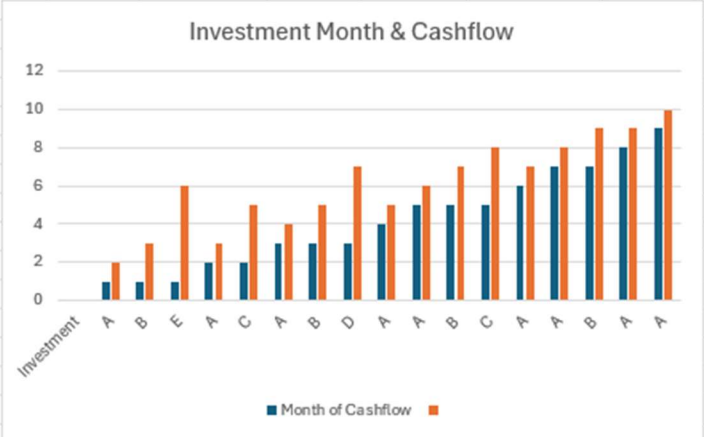
Month 2:
1.0199 A_1 -1A_2 – 1C_2 = 0
Month 3:
1.0422 B_1 + 1.0199 A_2 – 1A_3 – 1B_3 – 1D_3 = 250
Month 4:
1.0199 A_3 – 1A_4 = 0
Month 5:
1.0644 C_2 + 1.0422 B_3 + 1.0199 A_4 – 1A_5 – 1B_5 – 1C_5 =0
Month 6:
1.109 E_1 + 1.1199 A_5 - 1A_6 = 250
Month 7:
1.0867 D_3 + 1.0422 B_5 + 1.0199 A_6 - 1A_7 -1B_7 = 0
Month 8:
1.0644 C_5 + 1.0199 A_7 – 1A_8 = 0
Month 9:
1.0422 B_7 + 1.0199 A_8 – 1A_9 = 0
Month 10:
1.0199 A_9 =500

Model Optimized for Least Cost out of Pocket

	Month of Cashflow				Cash Flow Summary for Month									
Investment	Inflow	Outflow	Amount	Return	1	2	3	4	5	6	7	8	9	10
A	1	2	$ -	1.99%	-1	1.0199								
B	1	3	$655.21	4.22%	-1	<--->	1.0422							
E	1	6	$225.43	10.90%	-1	<--->	<--->	<--->	<--->	1.109				
A	2	3	$ -	1.99%		-1	1.0199							
C	2	5	$ -	6.44%		-1	<--->	<--->	1.0644					
A	3	4	$ -	1.99%			-1	1.0199						
B	3	5	$ -	4.22%			-1	<--->	1.0422					
D	3	7	$432.86	8.67%			-1	<--->	<--->	<--->	1.0867			
A	4	5	$ -	1.99%				-1	1.0199					
A	5	6	$ -	1.99%					-1	1.0199				
B	5	7	$ -	4.22%					-1	<--->	1.0422			
C	5	8	$ -	6.44%					-1	<--->	<--->	1.0644		
A	6	7	$ -	1.99%						-1	1.0199			
A	7	8	$ -	1.99%							-1	1.0199		
B	7	9	$470.39	4.22%							-1	<--->	1.0422	
A	8	9	$ -	1.99%								-1	1.0199	
A	9	10	$490.24	1.99%									-1	1.0199
		Total Month 1	$880.64		Surplus Funds:	$ -	$250.00	$ -	$ -	$250.00	$ (0.00)	$ -	$ -	$500.00
					Required PMT:	$ -	$ 250	$ -	$ -	$ 250	$ -	$ -	$ -	$ 500

Investment	Can Start	Months to Mature	Return
A	1	1	0.0199
B	1	2	0.0422
C	2	3	0.0644
D	3	4	0.0867
E	1	5	0.109

This model recommends the most efficient investment plan for the company's capital while ensuring there are enough liquid assets available to make intermediary payments in months 3, 6, and 10.



Model with Stipulation

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?

If the model is amended to show a scenario with a lump payout at the end of the period, it will be altered. The total investment in month one will fall from approximately $880 to $830. Most of the investments now fall into investment B, with some placed into investment D in month 3. Without the requirement for liquid capital to make these intermediary payments, there is increased flexibility in what the money can be invested in.

	Month of Cashflow				Cash Flow Summary for Month									
Investment	Inflow	Outflow	Amount	Return	1	2	3	4	5	6	7	8	9	10
A	1	2	$ -	1.99%	-1	1.0199								
B	1	3	$830.67	4.22%	-1	<--->	1.0422							
E	1	6	$ -	10.90%	-1	<--->	<--->	<--->	<--->	1.109				
A	2	3	$ -	1.99%		-1	1.0199							
C	2	5	$ -	6.44%		-1	<--->	<--->	1.0644					
A	3	4	$ -	1.99%			-1	1.0199						
B	3	5	$ -	4.22%			-1	<--->	1.0422					
D	3	7	$865.73	8.67%			-1	<--->	<--->	<--->	1.0867			
A	4	5	$ -	1.99%				-1	1.0199					
A	5	6	$ -	1.99%					-1	1.0199				
B	5	7	$ -	4.22%					-1	<--->	1.0422			

Investment	Can Start	Months to Mature	Return
A	1	1	0.0199
B	1	2	0.0422
C	2	3	0.0644
D	3	4	0.0867
E	1	5	0.109