Discount Factor and Dividend Rate Calculation
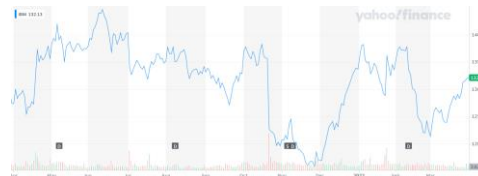
Mojtaba Amini
2041518

Target Asset	Today	today price
International Business Machines Corporation (IBM)	3/30/2022	131.94

Property	Value
Market Cap	118.135B
Forward Dividend & Yield	6.56 (4.99%)
Ex-Dividend Date	10-Feb-22

Maket price chart of share

Box Spread				Call-Put Parity		
Maturity						
1 month (6/5/2022)						
K2		K1		K	call pirce	put price
134		125		134	2.95	6.05
call pirce	put price	call pirce	put price	correspond dividend (Percent)		
2.95	6.05	8.3	2.69	4.195971902		
Discount Factor				Market Dividend	Error	
0.967777778				4.99	0.159123867	Result 1
Maturity						
3 month (15/7/2022)						
K2		K1		K	call pirce	put price
150		110		150	0.68	21.38
call pirce	put price	call pirce	put price	correspond dividend (Percent)		
0.68	21.38	19.62	1.2	4.603319412		
Discount Factor				Market Dividend	Error	
0.978				4.99	0.0774911	Result 2

	Maturity				
	6 month (21/10/2022)				
K2		K1		K	call pirce	put price
160		100		160	1.1	32.55
call pirce	put price	call pirce	put price	correspond dividend (Percent)		
1.1	32.55	31.4	3.72	4.391400024		
Discount Factor				Market Dividend	Error	
0.9855				4.99	0.119959915	**Result 3**

	Maturity				
	9 month (20/01/2023)				
K2		K1		K	call pirce	put price
180		80		180	0.57	52.8
call pirce	put price	call pirce	put price	correspond dividend (Percent)		
0.57	52.8	50.7	1.07	0.611634066		
Discount Factor				Market Dividend	Error	
1.0186				4.99	0.877428043	**Result 4**

The result of the lasst part are not reasonable at all, the wrong value of the dividend rate is due to the

*The final value of the calculated dividend rate has been compare with forward dividend rate that has been mentioned in the summary of the company

*Since there wasn't option with maturity near the one years. The last one has the 9-months maturity