Corporate Investment Appraisal

Masters in Finance

2017-2018

Fall Semester

Clara C Raposo

Problem Set 10: Solutions

Warrants, Rights, Convertibles

Problem 1

N	3	million
N*Price	15	million
m	0,8	milion
Unit Price Warrant	3	
r	2	
K	5,5	
T	4	
sigma	0,3	
Rf	1%	

Price	5

(a)

Lamda	0,347826087	
d1	0,455183042	
d2	-0,144816958	
N(d1)	0,67551122	
N(d2)	0,442427696	
Call	4,74	
Warrants	1,648722633	million
Each warrant	2,060903292	

(b)

Share Price	5,250425789

(c)

Ojective:B26=B6		
B26-B6	0	Data/WhatIfAnalysis/"Tools"/"Goalseek"
Solution	1,78	

(d)

u	1,349858808
d	0,740818221
p	0,442059121

Tree "V"

t=0	1	2	3	4
17,4	23,48754325	31,70486713	42,79709413	57,77003446
	12,89023704	17,4	23,48754325	31,70486713
		9,549322468	12,89023704	17,4
			7,074312079	9,549322468
				5,240779287

Tree Call

4,646257653	8,646747411	15,53158902	26,46127188	41,27003446
	1,560344102	3,347609308	7,151720995	15,20486713
		0,172392088	0,393894503	0,9
			0	0
				0

Warrants	1,616089618	million
Each warrant	2,020112023	

Problem 2

N	2	million
mrK	2,5	million
Price	4	
m	2	million
r	?	
T	0,17	
K	4	
Fee Bank	0,4	million
sigma	0,2	
Rf	1%	

(a)

mrK=2.5 million

2*r*6*4=2.5

r	0,3125	you need 4 shares to buy 1 new share

(b)

Lamda	0,238095238	
d1	0,061237244	considering fee fair-priced…
d2	- 0,020412415	
N(d1)	0,524414865	
N(d2)	0,49185719	

Call	0,27	million	considering fee fair-priced
Rights	0,06357477	million	
Right	0,031787385		

(c)

Shares	7,93642523	million	considering fee fair-priced	8	million	Shares+Righ
Share	3,968212615					

(d)

Put	0,253692	million	considering fee fair-priced
Fee	0,060402811	million	THIS should be the fair price…

Problem 3

Convertible Bond:		
Coupon	6,00%	
T	6	years
par		
Face Value	1000	
m	100000	
K	8	

Shares:	
N	45000000
Price	6,5
sigma	0,25

Market:	
Rf	1,00%
yield_standard	7%

(i) V(Straight Bond)

94083811,7

PV(Coupons) 28379129,71

(ii) Warrant Component

Inputs:

Lamda ?

mrK=8*100000

r	125
Lamda	0,217391304

V	364120870,3
F/Lamda	460000000
T	6
Rf	1,00%
sigma	0,25

d1	0,02246898
d2	-0,589903455

N(d1)	0,508963072
N(d2)	0,277627689

Call	65052517,79
Warrants	14141851,69

(iii) Convertible Bonds

108225663,4