



1

1 2 3

2

1,000

1

3

1,000

25,340

3.95%

4

1,000

17.39

5

6

4

12

	12	24
	24	36
	36	48
		30%
		30%
		40%

7

	2011	15%	10%	2010
				2011
	2012	30%	11%	2010
				2012
	2013	45%	12%	2010
				2013

1

2

8

9

30

30

10

11

12

.....	5
.....	7
.....	7
.....	8
.....	9
.....	10
.....	11
.....	12
.....	14
.....	15
.....	19
.....	20
.....	21
.....	23
.....	23

()

1 2 3

1

2

3

4

1

1 2 3

2

1

2

8

3

4

5

1

2

3

147

1

2

3

4

5%

13

5

1,000

1

1,000

3.95%

1,000

8

A

1,000

13

5

520

52%

8

480

48%

				%	%
1			160	16	0.63
2			120	12	0.47
3			90	9	0.36
4			80	8	0.32
5			70	7	0.28
6			60	6	0.24
7			60	6	0.24
8			60	6	0.24
9			60	6	0.24
10			60	6	0.24
11			60	6	0.24
12			60	6	0.24
13			60	6	0.24
			1000	100	3.95

1

2

5%

9

3

4

1%

1 30

30

2 10

3 2

4 2

30

()

12

10

1 30

30

2 10 2

3 2

4 2

1

2

25%

50%

3

1,000

1

17.39

2

30

17.14

1

1

2

3

2

1

2

3

1

2

1

2

3

3

1

2

3

4

1

2

	2011	10%	2010	2011
		15%		
	2012	11%	2010	2012
		30%		
	2013	12%	2010	2013
		45%		

1

2

4

12

30% 30%

40%

1

$$Q = Q_0 \times (1 + n)$$

Q_0

n

Q

2

$$Q = Q_0 \times n$$

Q_0

n

1

n

Q

3

$$Q = Q_0 \times P_1 \times (1 + n) / P_1 \times P_2 \times n$$

Q_0

P_1

P_2

n

Q

4

1

$$P = P_0 \div (1 + n)$$

P_0

n

P

2

$$P = P_0 \div n$$

P_0

n

P

3

$$P = P_0 - V$$

P_0

V

P

4

$$P = P_0 \times (P_1 + P_2 \times n) / [P_1 \times (1 + n)]$$

P_0

P_1

P_2

n

P

5

1

2

3

1 2 3

,

1

Black-Scholes

2

3

4

1

22 —

Black-Scholes

$$c = SN(d_1) - Xe^{-r(T-t)}N(d_2)$$

$$d_1 = \frac{\ln(S/X) + (r + \sigma^2/2)(T-t)}{\sigma\sqrt{T-t}}$$

$$d_2 = \frac{\ln(S/X) + (r - \sigma^2/2)(T-t)}{\sigma\sqrt{T-t}} \quad d_1 - \sigma\sqrt{T-t}$$

S=

X=

T=

T-t=

r=

σ =

N(.)

ln(.)

2 2011 7 4

1 17.39

2

2011 6 28

2011 6 27

17.39

3

= + /2

1.5 2.5

3.5

4

41.38%

5

1

3.25% 2

4.15% 3

4.75%

5 5.25%

1.5

2.5 3.5

3.70%

4.45%

4.88%

	300	3.87	1,161
	300	5.20	1,560
	400	6.30	2,520
	1000		5,241

1,000

5,241

1

2011 7 4

	2011	2012	2013	2014
	-1391.50	-2201.50	-1230.00	-420.00
/	-0.06	-0.09	-0.05	-0.02

4 2011 7 4

2015 7 4

11 —

2011

7 4 2014 7 4

12

24

36

	1	2	3	
	1,161			1,161
	780	780		1,560
	840	840	840	2,520
	2,780	1,620	840	5,241

5,241

5,241

2

3

17,390

1

2

3

4

2

5

6

7

8

9

10

30

1

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3

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4

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30

7

1

2

3

4

5

6

1

2

3

4

5

6

7

1

2

3

1

2

3

2010 15% 30% 45%

10% 11% 12%

2008

-2010

31.55%

40.36% 13.70%

2010 3 18

1,098,686,549.02

2008 -2010

6.33% 9.10% 11.17%

10% 11% 12%

2011 11 18