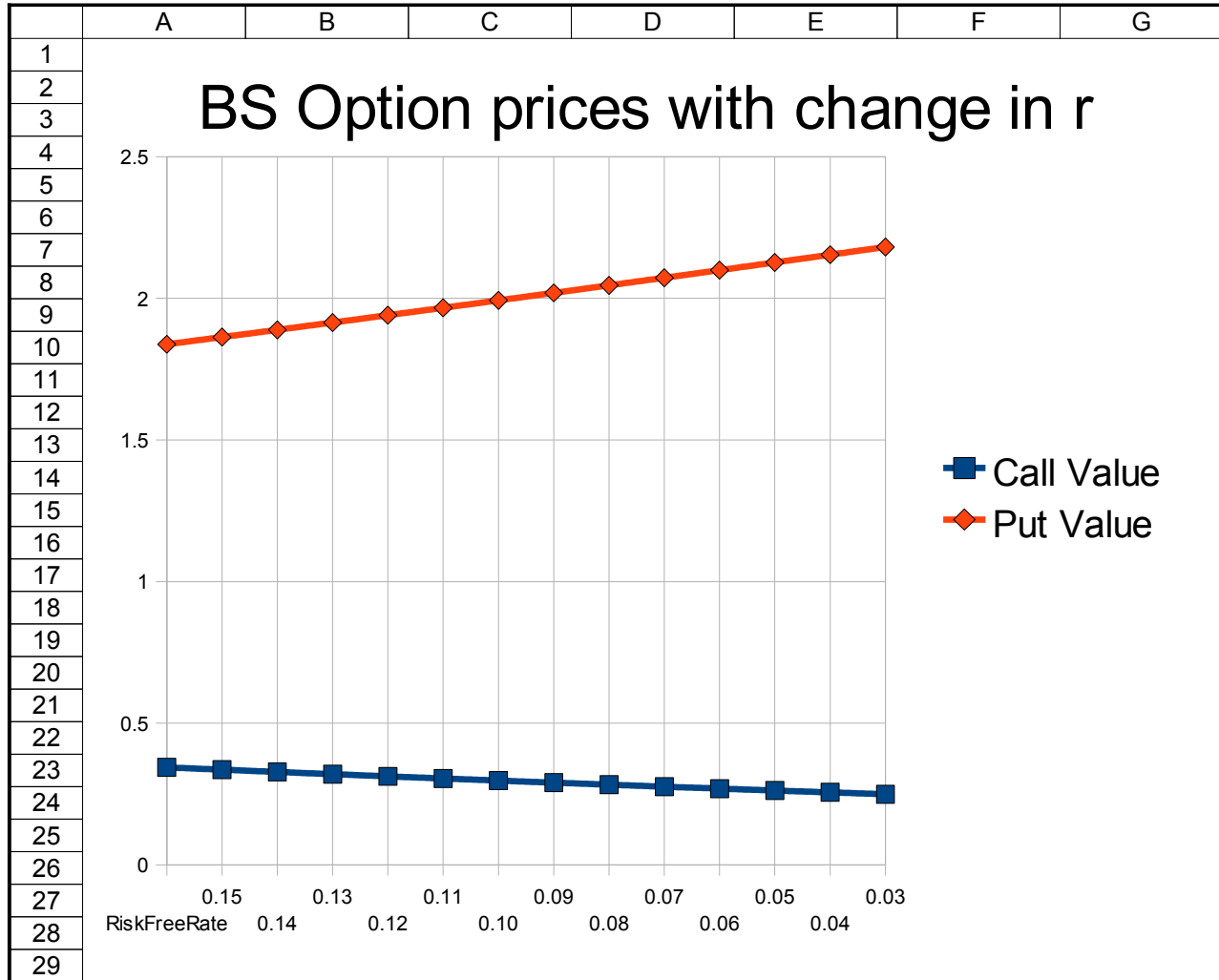


	A	B	C
1			
2	This sheet shows the output of Jquantlib's implementation of BS formula		
3			
4	Strike	40.00	
5	Underlying	38.00	
6	RiskFreeRate(p.a)	0.06	
7	Volatility(p.a)	0.20	
8	DividendYield(p.a)	0.00	
9	OptionType	call	
10	EvaluationDay	15	
11	EvaluationMonth	1	
12	EvaluatuionYear	2009	
13	MaturityDay	15	
14	MaturityMonth	2	
15	MaturityYear	2009	
16			
17	BlackScholesValue	0.28	
18			
19			
20	Strike	40.00	
21	Underlying	38.00	
22	RiskFreeRate(p.a)	0.06	
23	Volatility(p.a)	0.20	
24	DividendYield(p.a)	0.00	
25	OptionType	put	
26	EvaluationDay	15	
27	EvaluationMonth	1	
28	EvaluatuionYear	2009	
29	MaturityDay	15	
30	MaturityMonth	2	
31	MaturityYear	2009	
32			
33	BlackScholesValue	2.07	

	A	B	C	D	E	F	G
1							
2	This sheet shows the variation in option values with interest rates as calculated by						
3							
4	Strike	40.00	40.00	40.00	40.00	40.00	40.00
5	Underlying	38.00	38.00	38.00	38.00	38.00	38.00
6	RiskFreeRate	0.15	0.14	0.13	0.12	0.11	0.10
7	Volatility	0.20	0.20	0.20	0.20	0.20	0.20
8	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
9	OptionType	call	call	call	call	call	call
10	EvaluationDay	15	15	15	15	15	15
11	EvaluationMonth	1	1	1	1	1	1
12	EvaluatuionYear	2009	2009	2009	2009	2009	2009
13	MaturityDay	15	15	15	15	15	15
14	MaturityMonth	2	2	2	2	2	2
15	MaturityYear	2009	2009	2009	2009	2009	2009
16							
17	Call Value	0.34	0.34	0.33	0.32	0.31	0.3
18							
19							
20	Strike	40.00	40.00	40.00	40.00	40.00	40.00
21	Underlying	38.00	38.00	38.00	38.00	38.00	38.00
22	RiskFreeRate	0.15	0.14	0.13	0.12	0.11	0.10
23	Volatility	0.20	0.20	0.20	0.20	0.20	0.20
24	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
25	OptionType	put	put	put	put	put	put
26	EvaluationDay	15	15	15	15	15	15
27	EvaluationMonth	1	1	1	1	1	1
28	EvaluatuionYear	2009	2009	2009	2009	2009	2009
29	MaturityDay	15	15	15	15	15	15
30	MaturityMonth	2	2	2	2	2	2
31	MaturityYear	2009	2009	2009	2009	2009	2009
32							
33	Put Value	1.84	1.86	1.89	1.91	1.94	1.97

	H	I	J	K	L	M	N
1							
2	Jquantlib's implementation of BS formula						
3							
4	40.00	40.00	40.00	40.00	40.00	40.00	40.00
5	38.00	38.00	38.00	38.00	38.00	38.00	38.00
6	0.09	0.08	0.07	0.06	0.05	0.04	0.03
7	0.20	0.20	0.20	0.20	0.20	0.20	0.20
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	call	call	call	call	call	call	call
10	15	15	15	15	15	15	15
11	1	1	1	1	1	1	1
12	2009	2009	2009	2009	2009	2009	2009
13	15	15	15	15	15	15	15
14	2	2	2	2	2	2	2
15	2009	2009	2009	2009	2009	2009	2009
16							
17	0.3	0.29	0.28	0.28	0.27	0.26	0.26
18							
19							
20	40.00	40.00	40.00	40.00	40.00	40.00	40.00
21	38.00	38.00	38.00	38.00	38.00	38.00	38.00
22	0.09	0.08	0.07	0.06	0.05	0.04	0.03
23	0.20	0.20	0.20	0.20	0.20	0.20	0.20
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	put	put	put	put	put	put	put
26	15	15	15	15	15	15	15
27	1	1	1	1	1	1	1
28	2009	2009	2009	2009	2009	2009	2009
29	15	15	15	15	15	15	15
30	2	2	2	2	2	2	2
31	2009	2009	2009	2009	2009	2009	2009
32							
33	1.99	2.02	2.05	2.07	2.1	2.13	2.15

	O
1	
2	
3	
4	40.00
5	38.00
6	0.02
7	0.20
8	0.00
9	call
10	15
11	1
12	2009
13	15
14	2
15	2009
16	
17	0.25
18	
19	
20	40.00
21	38.00
22	0.02
23	0.20
24	0.00
25	put
26	15
27	1
28	2009
29	15
30	2
31	2009
32	
33	2.18



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	A	B	C	D	E	F	G
1							
2	This sheet shows the variation in option values with underlying as calculated by Jc						
3							
4	Strike	40.00	40.00	40.00	40.00	40.00	40.00
5	Underlying	50.00	48.50	47.00	45.50	44.00	42.50
6	RiskFreeRate	0.05	0.05	0.05	0.05	0.05	0.05
7	Volatility	0.20	0.20	0.20	0.20	0.20	0.20
8	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
9	OptionType	call	call	call	call	call	call
10	EvaluationDay	15	15	15	15	15	15
11	EvaluationMonth	1	1	1	1	1	1
12	EvaluatuionYear	2009	2009	2009	2009	2009	2009
13	MaturityDay	15	15	15	15	15	15
14	MaturityMonth	2	2	2	2	2	2
15	MaturityYear	2009	2009	2009	2009	2009	2009
16							
17	Call Value	10.17	8.67	7.17	5.68	4.21	2.83
18							
19							
20	Strike	40.00	40.00	40.00	40.00	40.00	40.00
21	Underlying	50.00	48.50	47.00	45.50	44.00	42.50
22	RiskFreeRate	0.05	0.05	0.05	0.05	0.05	0.05
23	Volatility	0.20	0.20	0.20	0.20	0.20	0.20
24	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
25	OptionType	put	put	put	put	put	put
26	EvaluationDay	15	15	15	15	15	15
27	EvaluationMonth	1	1	1	1	1	1
28	EvaluatuionYear	2009	2009	2009	2009	2009	2009
29	MaturityDay	15	15	15	15	15	15
30	MaturityMonth	2	2	2	2	2	2
31	MaturityYear	2009	2009	2009	2009	2009	2009
32							
33	Put Value	0	0	0	0.01	0.04	0.16

	H	I	J	K	L	M	N
1							
2	quantlib's implementation of BS formula						
3							
4	40.00	40.00	40.00	40.00	40.00	40.00	40.00
5	41.00	39.50	38.00	36.50	35.00	33.50	32.00
6	0.05	0.05	0.05	0.05	0.05	0.05	0.05
7	0.20	0.20	0.20	0.20	0.20	0.20	0.20
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	call	call	call	call	call	call	call
10	15	15	15	15	15	15	15
11	1	1	1	1	1	1	1
12	2009	2009	2009	2009	2009	2009	2009
13	15	15	15	15	15	15	15
14	2	2	2	2	2	2	2
15	2009	2009	2009	2009	2009	2009	2009
16							
17	1.64	0.77	0.27	0.07	0.01	0	0
18							
19							
20	40.00	40.00	40.00	40.00	40.00	40.00	40.00
21	41.00	39.50	38.00	36.50	35.00	33.50	32.00
22	0.05	0.05	0.05	0.05	0.05	0.05	0.05
23	0.20	0.20	0.20	0.20	0.20	0.20	0.20
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	put	put	put	put	put	put	put
26	15	15	15	15	15	15	15
27	1	1	1	1	1	1	1
28	2009	2009	2009	2009	2009	2009	2009
29	15	15	15	15	15	15	15
30	2	2	2	2	2	2	2
31	2009	2009	2009	2009	2009	2009	2009
32							
33	0.47	1.1	2.1	3.4	4.84	6.33	7.83

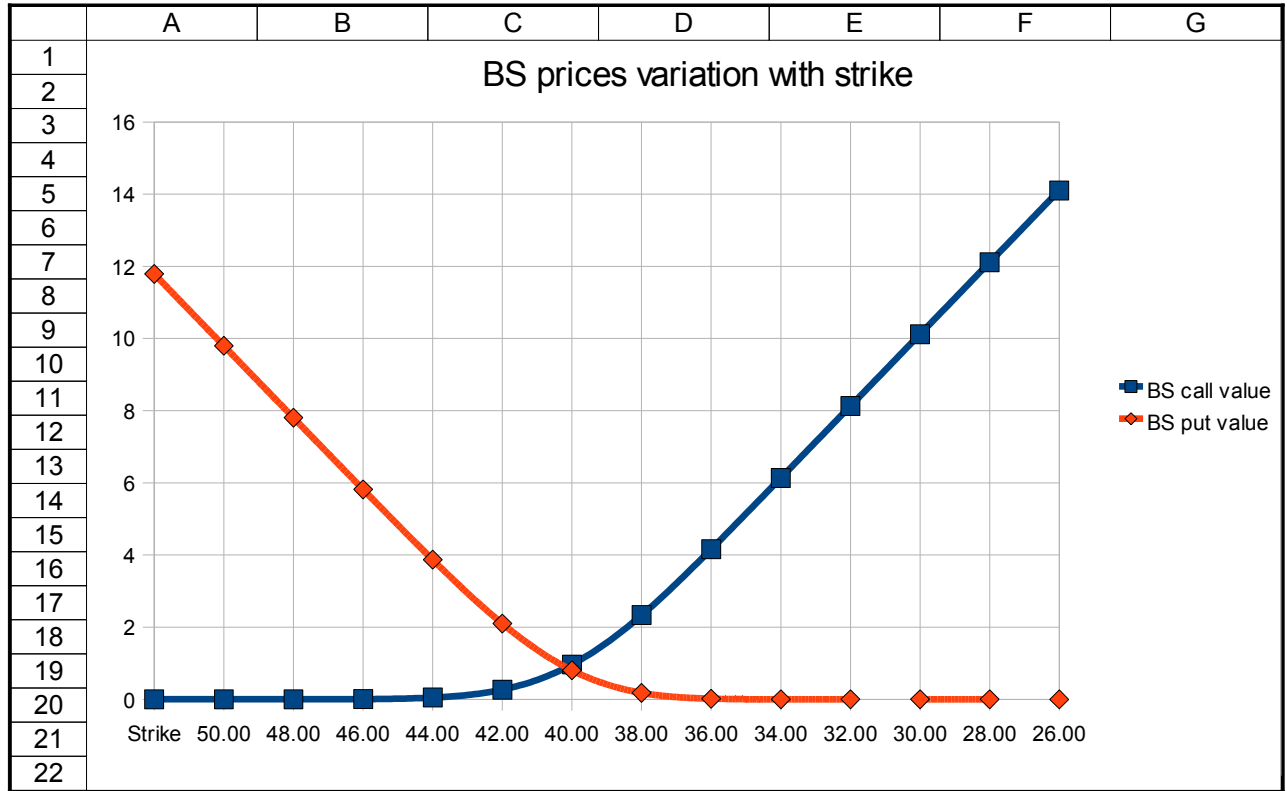
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1	
2	
3	
4	40.00
5	30.50
6	0.05
7	0.20
8	0.00
9	call
10	15
11	1
12	2009
13	15
14	2
15	2009
16	
17	0
18	
19	
20	40.00
21	30.50
22	0.05
23	0.20
24	0.00
25	put
26	15
27	1
28	2009
29	15
30	2
31	2009
32	
33	9.33



	A	B	C	D	E	F	G
1							
2							
3	This sheet shows the variation in option values with strike price as calculated by J						
4	Strike	50.00	48.00	46.00	44.00	42.00	40.00
5	Underlying	38.00	38.00	38.00	38.00	38.00	38.00
6	RiskFreeRate	0.05	0.05	0.05	0.05	0.05	0.05
7	Volatility	0.20	0.20	0.20	0.20	0.20	0.20
8	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
9	OptionType	call	call	call	call	call	call
10	EvaluationDay	15	15	15	15	15	15
11	EvaluationMonth	1	1	1	1	1	1
12	EvaluatuionYear	2009	2009	2009	2009	2009	2009
13	MaturityDay	15	15	15	15	15	15
14	MaturityMonth	2	2	2	2	2	2
15	MaturityYear	2009	2009	2009	2009	2009	2009
16							
17	BS call value	0	0	0	0.01	0.05	0.27
18							
19							
20	Strike	50.00	48.00	46.00	44.00	42.00	40.00
21	Underlying	38.00	38.00	38.00	38.00	38.00	38.00
22	RiskFreeRate	0.05	0.05	0.05	0.05	0.05	0.05
23	Volatility	0.20	0.20	0.20	0.20	0.20	0.20
24	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
25	OptionType	put	put	put	put	put	put
26	EvaluationDay	15	15	15	15	15	15
27	EvaluationMonth	1	1	1	1	1	1
28	EvaluatuionYear	2009	2009	2009	2009	2009	2009
29	MaturityDay	15	15	15	15	15	15
30	MaturityMonth	2	2	2	2	2	2
31	MaturityYear	2009	2009	2009	2009	2009	2009
32							
33	BS put value	11.79	9.8	7.81	5.82	3.87	2.1

	H	I	J	K	L	M	N
1							
2							
3	quantlib's implementation of BS formula						
4	38.00	36.00	34.00	32.00	30.00	28.00	26.00
5	38.00	38.00	38.00	38.00	38.00	38.00	38.00
6	0.05	0.05	0.05	0.05	0.05	0.05	0.05
7	0.20	0.20	0.20	0.20	0.20	0.20	0.20
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	call	call	call	call	call	call	call
10	15	15	15	15	15	15	15
11	1	1	1	1	1	1	1
12	2009	2009	2009	2009	2009	2009	2009
13	15	15	15	15	15	15	15
14	2	2	2	2	2	2	2
15	2009	2009	2009	2009	2009	2009	2009
16							
17	0.96	2.33	4.16	6.14	8.13	10.12	12.11
18							
19							
20	38.00	36.00	34.00	32.00	30.00	28.00	26.00
21	38.00	38.00	38.00	38.00	38.00	38.00	38.00
22	0.05	0.05	0.05	0.05	0.05	0.05	0.05
23	0.20	0.20	0.20	0.20	0.20	0.20	0.20
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	put	put	put	put	put	put	put
26	15	15	15	15	15	15	15
27	1	1	1	1	1	1	1
28	2009	2009	2009	2009	2009	2009	2009
29	15	15	15	15	15	15	15
30	2	2	2	2	2	2	2
31	2009	2009	2009	2009	2009	2009	2009
32							
33	0.8	0.18	0.02	0	0	0	0

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4	24.00
5	38.00
6	0.05
7	0.20
8	0.00
9	call
10	15
11	1
12	2009
13	15
14	2
15	2009
16	
17	14.1
18	
19	
20	24.00
21	38.00
22	0.05
23	0.20
24	0.00
25	put
26	15
27	1
28	2009
29	15
30	2
31	2009
32	
33	0

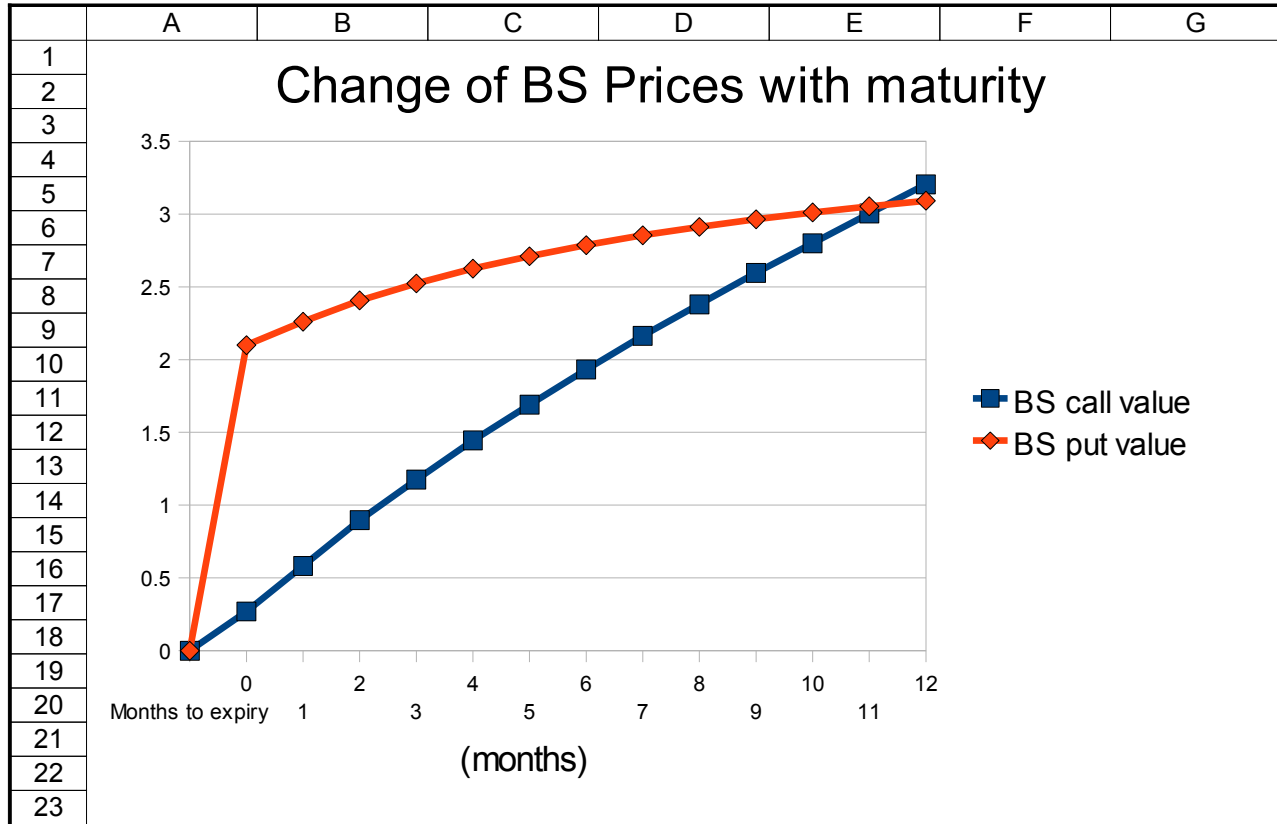


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	A	B	C	D	E	F	G
1							
2	This sheet shows the variation in option values with time to expiry as calculated by						
3							
4	Strike	40.00	40.00	40.00	40.00	40.00	40.00
5	Underlying	38.00	38.00	38.00	38.00	38.00	38.00
6	RiskFreeRate	0.05	0.05	0.05	0.05	0.05	0.05
7	Volatility	0.20	0.20	0.20	0.20	0.20	0.20
8	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
9	OptionType	call	call	call	call	call	call
10	EvaluationDay	15	15	15	15	15	15
11	EvaluationMonth	1	1	1	1	1	1
12	EvaluatuionYear	2009	2009	2009	2009	2009	2009
13	MaturityDay	15	15	15	15	15	15
14	MaturityMonth	1	2	3	4	5	6
15	MaturityYear	2009	2009	2009	2009	2009	2009
16	Months to expiry	0	1	2	3	4	5
17	BS call value	0	0.27	0.58	0.9	1.18	1.44
18							
19							
20	Strike	40.00	40.00	40.00	40.00	40.00	40.00
21	Underlying	38.00	38.00	38.00	38.00	38.00	38.00
22	RiskFreeRate	0.05	0.05	0.05	0.05	0.05	0.05
23	Volatility	0.20	0.20	0.20	0.20	0.20	0.20
24	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
25	OptionType	put	put	put	put	put	put
26	EvaluationDay	15	15	15	15	15	15
27	EvaluationMonth	1	1	1	1	1	1
28	EvaluatuionYear	2009	2009	2009	2009	2009	2009
29	MaturityDay	15	15	15	15	15	15
30	MaturityMonth	1	2	3	4	5	6
31	MaturityYear	2009	2009	2009	2009	2009	2009
32	Months to expiry	0	1	2	3	4	5
33	BS put value	0	2.1	2.26	2.41	2.52	2.63

	H	I	J	K	L	M	N
1							
2	Jquantlib's implementation of BS formula						
3							
4	40.00	40.00	40.00	40.00	40.00	40.00	40.00
5	38.00	38.00	38.00	38.00	38.00	38.00	38.00
6	0.05	0.05	0.05	0.05	0.05	0.05	0.05
7	0.20	0.20	0.20	0.20	0.20	0.20	0.20
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	call	call	call	call	call	call	call
10	15	15	15	15	15	15	15
11	1	1	1	1	1	1	1
12	2009	2009	2009	2009	2009	2009	2009
13	15	15	15	15	15	15	15
14	7	8	9	10	11	12	1
15	2009	2009	2009	2009	2009	2009	2010
16	6	7	8	9	10	11	12
17	1.69	1.93	2.16	2.38	2.6	2.8	3
18							
19							
20	40.00	40.00	40.00	40.00	40.00	40.00	40.00
21	38.00	38.00	38.00	38.00	38.00	38.00	38.00
22	0.05	0.05	0.05	0.05	0.05	0.05	0.05
23	0.20	0.20	0.20	0.20	0.20	0.20	0.20
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	put	put	put	put	put	put	put
26	15	15	15	15	15	15	15
27	1	1	1	1	1	1	1
28	2009	2009	2009	2009	2009	2009	2009
29	15	15	15	15	15	15	15
30	7	8	9	10	11	12	1
31	2009	2009	2009	2009	2009	2009	2010
32	6	7	8	9	10	11	12
33	2.71	2.79	2.85	2.91	2.96	3.01	3.05

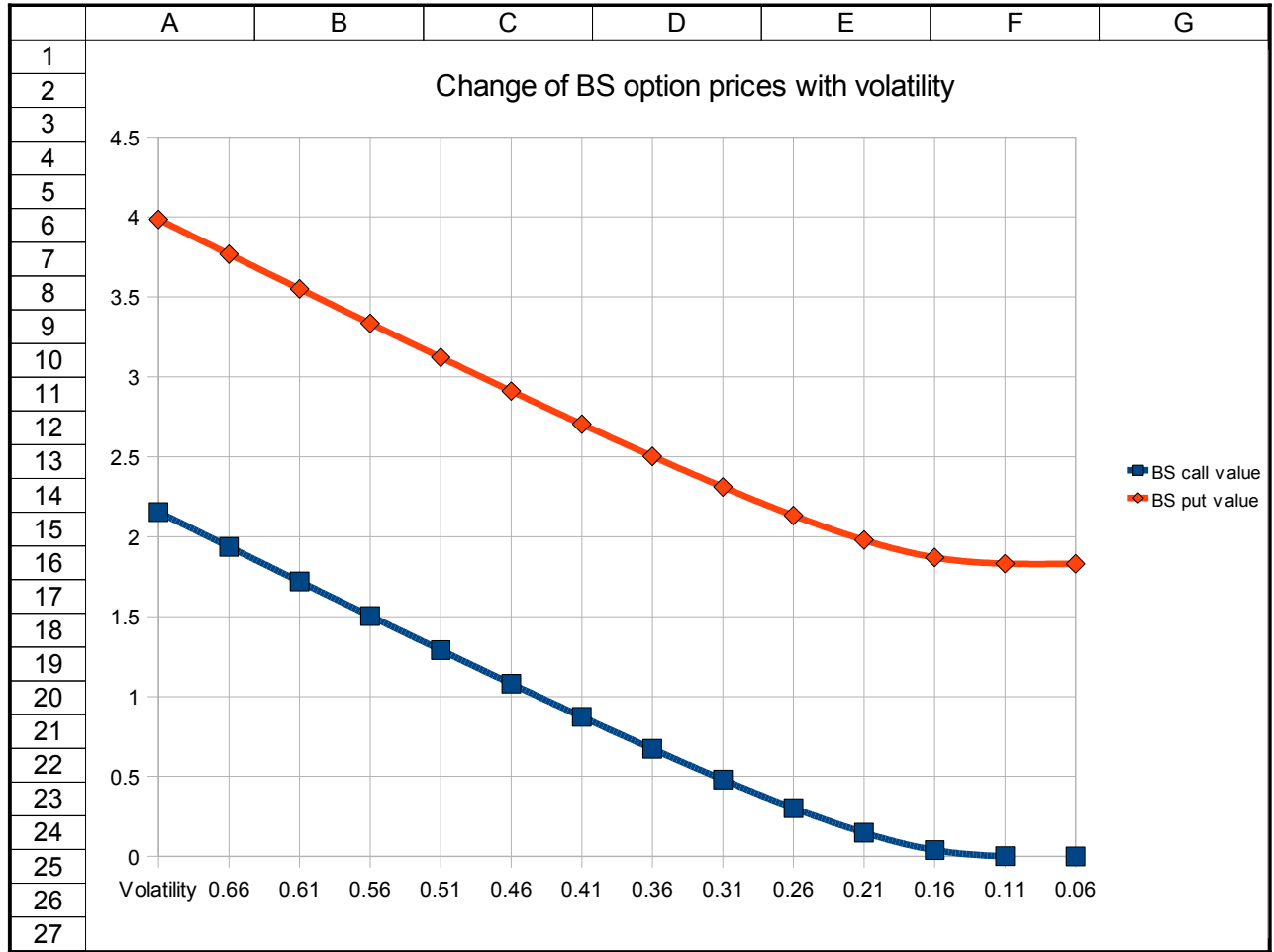
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1	
2	
3	
4	40.00
5	38.00
6	0.05
7	0.20
8	0.00
9	call
10	15
11	1
12	2009
13	15
14	2
15	2010
16	13
17	3.2
18	
19	
20	40.00
21	38.00
22	0.05
23	0.20
24	0.00
25	put
26	15
27	1
28	2009
29	15
30	2
31	2010
32	13
33	3.09



	A	B	C	D	E	F	G
1							
2	This sheet shows the variation in option values with volatility changes as calculate						
3							
4	Strike	40.00	40.00	40.00	40.00	40.00	40.00
5	Underlying	38.00	38.00	38.00	38.00	38.00	38.00
6	RiskFreeRate	0.05	0.05	0.05	0.05	0.05	0.05
7	Volatility	0.66	0.61	0.56	0.51	0.46	0.41
8	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
9	OptionType	call	call	call	call	call	call
10	EvaluationDay	15	15	15	15	15	15
11	EvaluationMonth	1	1	1	1	1	1
12	EvaluatuionYear	2009	2009	2009	2009	2009	2009
13	MaturityDay	15	15	15	15	15	15
14	MaturityMonth	2	2	2	2	2	2
15	MaturityYear	2009	2009	2009	2009	2009	2009
16							
17	BS call value	2.15	1.94	1.72	1.5	1.29	1.08
18							
19							
20	Strike	40.00	40.00	40.00	40.00	40.00	40.00
21	Underlying	38.00	38.00	38.00	38.00	38.00	38.00
22	RiskFreeRate	0.05	0.05	0.05	0.05	0.05	0.05
23	Volatility	0.66	0.61	0.56	0.51	0.46	0.41
24	DividendYield	0.00	0.00	0.00	0.00	0.00	0.00
25	OptionType	put	put	put	put	put	put
26	EvaluationDay	15	15	15	15	15	15
27	EvaluationMonth	1	1	1	1	1	1
28	EvaluatuionYear	2009	2009	2009	2009	2009	2009
29	MaturityDay	15	15	15	15	15	15
30	MaturityMonth	2	2	2	2	2	2
31	MaturityYear	2009	2009	2009	2009	2009	2009
32							
33	BS put value	3.99	3.77	3.55	3.33	3.12	2.91

	H	I	J	K	L	M	N
1							
2	d by Jquantlib's implementation of BS formula						
3							
4	40.00	40.00	40.00	40.00	40.00	40.00	40.00
5	38.00	38.00	38.00	38.00	38.00	38.00	38.00
6	0.05	0.05	0.05	0.05	0.05	0.05	0.05
7	0.36	0.31	0.26	0.21	0.16	0.11	0.06
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	call	call	call	call	call	call	call
10	15	15	15	15	15	15	15
11	1	1	1	1	1	1	1
12	2009	2009	2009	2009	2009	2009	2009
13	15	15	15	15	15	15	15
14	2	2	2	2	2	2	2
15	2009	2009	2009	2009	2009	2009	2009
16							
17	0.87	0.67	0.48	0.3	0.15	0.04	0
18							
19							
20	40.00	40.00	40.00	40.00	40.00	40.00	40.00
21	38.00	38.00	38.00	38.00	38.00	38.00	38.00
22	0.05	0.05	0.05	0.05	0.05	0.05	0.05
23	0.36	0.31	0.26	0.21	0.16	0.11	0.06
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	put	put	put	put	put	put	put
26	15	15	15	15	15	15	15
27	1	1	1	1	1	1	1
28	2009	2009	2009	2009	2009	2009	2009
29	15	15	15	15	15	15	15
30	2	2	2	2	2	2	2
31	2009	2009	2009	2009	2009	2009	2009
32							
33	2.7	2.5	2.31	2.13	1.98	1.87	1.83

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4	40.00
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20	40.00
21	38.00
22	0.05
23	0.01
24	0.00
25	put
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27	1
28	2009
29	15
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