Perkumpulan Pengelola Pendidikan Malangkuçeçwara (P3.M)

STIE MALANGKUÇEÇWARA
d/h. ABM School *of* Economics

Terakreditasi "A", AKUNTANSI, 056/SK/BAN-PT/Akred/S/II/2014
Terakreditasi "A", MANAJEMEN, 257/SK/BAN-PT/Ak-VI/S/XII/2013

Penetapan Dosen Pembimbing Skripsi

Semester GASAL Tahun Akademik 2016/2017

Nomor : 0908/BAAK/X/2016

Setelah memperhatikan Surat Ketua Program Studi tentang usulan dosen pembimbing skripsi dengan ini Ketua STIE Malangkuçeçwara Malang menetapkan :

Nama	: Dra. NEVI DANILA, MBA, Ph.D
Sebagai	: Dosen Pembimbing 1
Nama	: - --
Sebagai	: Dosen Pembimbing 2

Untuk mahasiswa berikut

Nama	: ILMAWAN MAHMUDI
Nomor Pokok	: K.2013.5.32373
Skripsi yang diajukan	
Bidang Kajian	: MANAJEMEN KEUANGAN
Pokok Bahasan	: INTRODUCTION TO DERIVATIVE
Tempat/Obyek	: -
Judul Skripsi	: -

Demikian surat penetapan ini dikeluarkan untuk dilaksanakan dengan sebaiknya.
Penetapan ini berlaku sejak dikeluarkan.

Dikeluarkan di : Malang
Pada Tanggal : 07/10/2016
Ketua Program Studi Manajemen,

SEKOLAH TINGGI ILMU EKONOMI MALANGKUÇEÇWARA (P3M) MALANG

Dra. LINDANANTY, MM.
NIK-P.3M : 202.710.194

STIE Malangkuçeçwara

(Accounting Business Management)

Jl. Terusan Candi Kalasan - Malang Telp. 0341-491813

KARTU BIMBINGAN SKRIPSI
BAB I s.d. BAB III

BLN/TGL	BAB	PERMASALAHAN	PARAF
		Bulan : Oktober	
10 / 11		konsultasi Bagaimana Memulai Penelitian.	
		Bulan : Juli .	
7 / 15 .		Konsultasi data penelitian.	
7 / 16 .		Konsultasi Populasi & sampel penelitian	
7 / 19 .		Konsultasi masalah index opsi yg akan diteliti	
7 / 25 .		Konsultasi metode SPSS . (uji) yg akan dilakukan	
		Bulan : Juli	
7/26 .		Revisi Bab 1 - 2 .	
7/27		Konsultasi masalah teori & apapun yg berhubungan dg index & B-S	
7/28 .		Konsultasi metode Penghitungan Black - Scholes .	
		Bulan :	
		acc bab 1 s/d 3.	
		Bulan :	

Dosen Pembimbing 1

Dosen Pembimbing 2

Catatan:
Bobot Penilaian skripsi oleh pembimbing sebesar 50% dengan kreteria penilaian:
1. Ide/inovasi penelitian
2. Pemahaman konsep/teori
3. Pemahaman Metodologi
4. Kemampuan Analisis
5. Rutinitas Pembimbingan

MCE

Perkumpulan Pengelola Pendidikan Malangkuçeçwara (P3.M)

STIE MALANGKUÇEÇWARA
d/h ABM School of Economics

Terakreditasi "A", AKUNTANSI, 056/SK/BAN-PT/Akred/S/II/2014
Terakreditasi "A", MANAJEMEN, 257/SK/BAN-PT/Ak-VI/S/XII/2013

Penetapan Dosen Pembimbing Skripsi

Semester GASAL Tahun Akademik 2016/2017

Nomor : 0908/BAAK/X/2016

Setelah memperhatikan Surat Ketua Program Studi tentang usulan dosen pembimbing skripsi dengan ini Ketua STIE Malangkuçeçwara Malang menetapkan :

Nama	: Dra. NEVI DANILA, MBA, Ph.D
Sebagai	: Dosen Pembimbing 1
Nama	: - --
Sebagai	: Dosen Pembimbing 2

Untuk mahasiswa berikut

Nama	: ILMAWAN MAHMUDI
Nomor Pokok	: K.2013.5.32373
Skripsi yang diajukan	
Bidang Kajian	: MANAJEMEN KEUANGAN
Pokok Bahasan	: INTRODUCTION TO DERIVATIVE
Tempat/Obyek	: POJOK GALERI INVESTASI BEI STIE MALANGKUÇEÇWARA
Judul Skripsi	: ANALISA PERBANDINGAN HARGA OPSI YANG ADA DI PASAR DENGAN HARGA TEORITIS MENURUT BLACK SCHOLES

Demikian surat penetapan ini dikeluarkan untuk dilaksanakan dengan sebaiknya. Penetapan ini berlaku sejak dikeluarkan.

Dikeluarkan di : Malang
Pada Tanggal : 08/08/2017
Ketua Program Studi Manajemen,

SEKOLAH TINGGI ILMU EKONOMI MALANGKUÇEÇWARA P3M MALANG

Dra. LINDANANTY, MM.
NIK-P.3M : 202.710.194

MCE

STIE Malangkuçeçwara
(Accounting Business Management)
Jl. Terusan Candi Kalasan - Malang Telp. 0341-491813

KARTU BIMBINGAN SKRIPSI
BAB IV s.d. BAB V

BLN/TGL	BAB	PERMASALAHAN	PARAF
		Bulan : Juli	
		Konsultan data	
		—"— Perhitungan Volatility	
		Menyerahkan bab 4	
		Bulan : Juli	
		Revisi bab 4	
		Konsultan Perhitungan data menggunakan BS calculator	
		Perhitungan Volatility harian atau annual?	
		Bulan : Agustus	
		Konsultan implementan	
		—"— Bab 5	
		—"— Kesimpulan & saran	
		Bulan : Agustus	
		acc 425	
		Bulan :	

Dosen Pembimbing 1 Dosen Pembimbing 2

Catatan:
Bobot Penilaian skripsi oleh pembimbing sebesar 50% dengan kreteria penilaian:
6. Ide/inovasi penelitian
7. Pemahaman konsep/teori
8. Pemahaman Metodologi
9. Kemampuan Analisis

LAMPIRAN 1

Data penelitian

Tipe Kontrak	Ex date	Strike Price	Premi	Tipe kontrak	Ex date	Strike Price	Premi
C	28-Jul-17	850	592,30	C	31-Jul-17	720	723,00
C	28-Jul-17	860	582,30	C	31-Jul-17	740	703,00
C	28-Jul-17	870	572,30	C	31-Jul-17	760	682,80
C	28-Jul-17	880	562,50	C	31-Jul-17	780	662,80
C	28-Jul-17	890	552,50	C	31-Jul-17	800	643,00
C	28-Jul-17	900	542,60	C	31-Jul-17	820	622,70
C	28-Jul-17	910	533,90	C	31-Jul-17	840	602,90
C	28-Jul-17	920	523,80	C	31-Jul-17	860	582,60
C	28-Jul-17	930	513,80	C	31-Jul-17	880	562,70
C	28-Jul-17	940	502,60	C	31-Jul-17	900	542,70
C	28-Jul-17	950	492,60	C	31-Jul-17	910	532,70
C	28-Jul-17	955	487,60	C	31-Jul-17	920	522,70
C	28-Jul-17	960	482,90	C	31-Jul-17	930	512,70
C	28-Jul-17	965	478,10	C	31-Jul-17	940	502,70
C	28-Jul-17	970	473,10	C	31-Jul-17	950	492,70
C	28-Jul-17	975	468,10	C	31-Jul-17	955	487,70
C	28-Jul-17	980	463,10	C	31-Jul-17	960	482,70
C	28-Jul-17	985	458,10	C	31-Jul-17	965	477,70
C	28-Jul-17	990	453,10	C	31-Jul-17	970	472,70
C	28-Jul-17	995	448,20	C	31-Jul-17	975	467,70
C	28-Jul-17	1000	443,30	C	31-Jul-17	980	462,70
C	28-Jul-17	1005	438,20	C	31-Jul-17	985	457,70
C	28-Jul-17	1010	433,30	C	31-Jul-17	990	452,70
C	28-Jul-17	1015	428,30	C	31-Jul-17	995	447,70
C	28-Jul-17	1020	423,30	C	31-Jul-17	1000	442,70
C	28-Jul-17	1025	418,30	C	31-Jul-17	1005	437,70
C	28-Jul-17	1030	413,30	C	31-Jul-17	1010	432,70
C	28-Jul-17	1035	408,30	C	31-Jul-17	1015	427,70
C	28-Jul-17	1040	403,30	C	31-Jul-17	1020	422,70
C	28-Jul-17	1045	398,30	C	31-Jul-17	1025	417,70
C	28-Jul-17	1050	393,50	C	31-Jul-17	1030	412,70
C	28-Jul-17	1055	388,30	C	31-Jul-17	1035	407,70
C	28-Jul-17	1060	383,30	C	31-Jul-17	1040	402,70
C	28-Jul-17	1065	378,30	C	31-Jul-17	1045	397,70
C	28-Jul-17	1070	373,30	C	31-Jul-17	1050	392,70
C	28-Jul-17	1075	368,30	C	31-Jul-17	1055	387,70
C	28-Jul-17	1080	363,30	C	31-Jul-17	1060	382,70
C	28-Jul-17	1085	358,30	C	31-Jul-17	1065	377,70
C	28-Jul-17	1090	353,30	C	31-Jul-17	1070	372,70
C	28-Jul-17	1095	348,30	C	31-Jul-17	1075	367,70
C	28-Jul-17	1100	343,30	C	31-Jul-17	1080	362,90
C	28-Jul-17	1105	338,30	C	31-Jul-17	1085	358,10
C	28-Jul-17	1110	333,30	C	31-Jul-17	1090	353,10
C	28-Jul-17	1115	328,30	C	31-Jul-17	1095	348,10
C	28-Jul-17	1120	323,30	C	31-Jul-17	1100	343,10

C	28-Jul-17	1125	318,30	C	31-Jul-17	1105	338,10
C	28-Jul-17	1130	313,30	C	31-Jul-17	1110	333,10
C	28-Jul-17	1135	308,30	C	31-Jul-17	1115	327,90
C	28-Jul-17	1140	303,30	C	31-Jul-17	1120	331,10
C	28-Jul-17	1145	298,30	C	31-Jul-17	1125	318,10
C	28-Jul-17	1150	293,00	C	31-Jul-17	1130	313,10
C	28-Jul-17	1155	288,00	C	31-Jul-17	1135	308,10
C	28-Jul-17	1160	283,00	C	31-Jul-17	1140	303,10
C	28-Jul-17	1165	278,00	C	31-Jul-17	1145	298,10
C	28-Jul-17	1170	273,00	C	31-Jul-17	1150	293,10
C	28-Jul-17	1175	268,00	C	31-Jul-17	1155	288,10
C	28-Jul-17	1180	263,10	C	31-Jul-17	1160	283,10
C	28-Jul-17	1185	258,00	C	31-Jul-17	1165	278,10
C	28-Jul-17	1190	253,00	C	31-Jul-17	1170	273,10
C	28-Jul-17	1195	248,00	C	31-Jul-17	1175	267,90
C	28-Jul-17	1200	243,00	C	31-Jul-17	1180	263,10
C	28-Jul-17	1205	238,00	C	31-Jul-17	1185	258,10
C	28-Jul-17	1210	233,00	C	31-Jul-17	1190	253,00
C	28-Jul-17	1215	228,00	C	31-Jul-17	1195	247,70
C	28-Jul-17	1220	223,00	C	31-Jul-17	1200	242,80
C	28-Jul-17	1225	218,00	C	31-Jul-17	1205	237,80
C	28-Jul-17	1230	213,00	C	31-Jul-17	1210	232,80
C	28-Jul-17	1235	208,00	C	31-Jul-17	1215	227,80
C	28-Jul-17	1240	203,00	C	31-Jul-17	1220	222,80
C	28-Jul-17	1245	198,00	C	31-Jul-17	1225	217,80
C	28-Jul-17	1250	193,00	C	31-Jul-17	1230	212,80
C	28-Jul-17	1255	187,80	C	31-Jul-17	1235	207,80
C	28-Jul-17	1260	182,80	C	31-Jul-17	1240	202,80
C	28-Jul-17	1265	177,80	C	31-Jul-17	1245	197,80
C	28-Jul-17	1270	172,80	C	31-Jul-17	1250	192,80
C	28-Jul-17	1275	167,80	C	31-Jul-17	1255	187,80
C	28-Jul-17	1280	162,80	C	31-Jul-17	1260	182,80
C	28-Jul-17	1285	158,00	C	31-Jul-17	1265	177,80
C	28-Jul-17	1290	153,00	C	31-Jul-17	1270	172,80
C	28-Jul-17	1295	148,00	C	31-Jul-17	1275	167,80
C	28-Jul-17	1300	143,10	C	31-Jul-17	1280	162,80
C	28-Jul-17	1305	137,90	C	31-Jul-17	1285	157,80
C	28-Jul-17	1310	132,90	C	31-Jul-17	1290	152,80
C	28-Jul-17	1315	127,90	C	31-Jul-17	1295	147,90
C	28-Jul-17	1320	122,60	C	31-Jul-17	1300	143,20
C	28-Jul-17	1325	117,60	C	31-Jul-17	1305	138,10
C	28-Jul-17	1330	113,80	C	31-Jul-17	1310	133,30
C	28-Jul-17	1335	107,70	C	31-Jul-17	1315	128,30
C	28-Jul-17	1340	103,00	C	31-Jul-17	1320	123,20
C	28-Jul-17	1345	97,70	C	31-Jul-17	1325	118,20
C	28-Jul-17	1350	92,70	C	31-Jul-17	1330	113,00
C	28-Jul-17	1355	87,70	C	31-Jul-17	1335	108,00
C	28-Jul-17	1360	83,00	C	31-Jul-17	1340	103,00
C	28-Jul-17	1365	77,70	C	31-Jul-17	1345	98,00
C	28-Jul-17	1370	73,70	C	31-Jul-17	1350	93,20
C	28-Jul-17	1375	68,20	C	31-Jul-17	1355	88,10
C	28-Jul-17	1380	62,80	C	31-Jul-17	1360	83,10
C	28-Jul-17	1385	57,90	C	31-Jul-17	1365	78,50

C	28-Jul-17	1390	52,90	C	31-Jul-17	1370	73,50
C	28-Jul-17	1395	47,90	C	31-Jul-17	1375	68,60
C	28-Jul-17	1400	43,50	C	31-Jul-17	1380	64,10
C	28-Jul-17	1405	38,10	C	31-Jul-17	1385	58,70
C	28-Jul-17	1410	33,60	C	31-Jul-17	1390	53,70
C	28-Jul-17	1415	28,70	C	31-Jul-17	1395	48,80
C	28-Jul-17	1420	24,30	C	31-Jul-17	1400	43,90
C	28-Jul-17	1425	0,81	C	31-Jul-17	1405	38,90
C	28-Jul-17	1430	0,62	C	31-Jul-17	1410	34,30
C	28-Jul-17	1435	10,70	C	31-Jul-17	1415	29,40
C	28-Jul-17	1440	0,80	C	31-Jul-17	1420	24,40
C	31-Jul-17	600	842,60	C	31-Jul-17	1425	20,00
C	31-Jul-17	620	822,60	C	31-Jul-17	1430	15,70
C	31-Jul-17	640	802,60	C	31-Jul-17	1435	12,10
C	31-Jul-17	660	782,60	C	31-Jul-17	1440	7,60
C	31-Jul-17	680	762,60	C	31-Jul-17	1445	4,90
C	31-Jul-17	700	742,60	C	31-Jul-17	1450	2,95
P	28-Jul-17	1420	0,95	P	31-Jul-17	1650	209,10
P	28-Jul-17	1425	1,20	P	31-Jul-17	1655	214,10
P	28-Jul-17	1430	1,75	P	31-Jul-17	1660	219,10
P	28-Jul-17	1435	2,90	P	31-Jul-17	1665	224,10
P	28-Jul-17	1440	4,50	P	31-Jul-17	1670	229,10
P	28-Jul-17	1445	7,00	P	31-Jul-17	1675	234,10
P	28-Jul-17	1450	10,40	P	31-Jul-17	1680	239,10
P	28-Jul-17	1455	14,50	P	31-Jul-17	1685	244,10
P	28-Jul-17	1460	19,40	P	31-Jul-17	1690	249,10
P	28-Jul-17	1465	23,70	P	31-Jul-17	1695	254,10
P	28-Jul-17	1470	29,10	P	31-Jul-17	1700	259,10
P	28-Jul-17	1475	34,10	P	31-Jul-17	1705	264,10
P	28-Jul-17	1480	39,20	P	31-Jul-17	1710	269,10
P	28-Jul-17	1485	43,50	P	31-Jul-17	1715	274,10
P	28-Jul-17	1490	49,10	P	31-Jul-17	1720	279,10
P	28-Jul-17	1495	54,20	P	31-Jul-17	1725	284,10
P	28-Jul-17	1500	59,20	P	31-Jul-17	1730	289,10
P	28-Jul-17	1510	69,20	P	31-Jul-17	1735	294,10
P	28-Jul-17	1520	79,20	P	31-Jul-17	1740	299,10
P	28-Jul-17	1530	89,20	P	31-Jul-17	1745	304,10
P	28-Jul-17	1540	99,20	P	31-Jul-17	1750	309,10
P	28-Jul-17	1550	109,20	P	31-Jul-17	1755	314,10
P	28-Jul-17	1600	158,7	P	31-Jul-17	1760	319,10
P	28-Jul-17	1650	208,7	P	31-Jul-17	1765	323,00
P	28-Jul-17	1700	258,7	P	31-Jul-17	1770	328,00
P	31-Jul-17	1425	2,00	P	31-Jul-17	1775	333,00
P	31-Jul-17	1430	2,50	P	31-Jul-17	1780	338,00
P	31-Jul-17	1435	3,90	P	31-Jul-17	1785	343,00
P	31-Jul-17	1440	5,50	P	31-Jul-17	1790	348,00
P	31-Jul-17	1445	8,10	P	31-Jul-17	1795	353,00
P	31-Jul-17	1450	11,30	P	31-Jul-17	1800	358,00
P	31-Jul-17	1455	15,30	P	31-Jul-17	1805	364,10
P	31-Jul-17	1460	19,50	P	31-Jul-17	1810	369,00
P	31-Jul-17	1465	24,50	P	31-Jul-17	1815	373,90
P	31-Jul-17	1470	29,30	P	31-Jul-17	1820	378,90
P	31-Jul-17	1475	34,20	P	31-Jul-17	1825	383,90

P	31-Jul-17	1480	39,10	P	31-Jul-17	1830	388,80
P	31-Jul-17	1485	44,30	P	31-Jul-17	1835	393,80
P	31-Jul-17	1490	48,80	P	31-Jul-17	1840	398,80
P	31-Jul-17	1495	54,20	P	31-Jul-17	1845	403,60
P	31-Jul-17	1500	58,10	P	31-Jul-17	1850	408,60
P	31-Jul-17	1505	64,00	P	31-Jul-17	1855	413,60
P	31-Jul-17	1510	68,90	P	31-Jul-17	1860	418,60
P	31-Jul-17	1515	73,90	P	31-Jul-17	1865	423,60
P	31-Jul-17	1520	78,90	P	31-Jul-17	1870	428,60
P	31-Jul-17	1525	83,70	P	31-Jul-17	1875	433,80
P	31-Jul-17	1530	88,90	P	31-Jul-17	1880	438,80
P	31-Jul-17	1535	93,70	P	31-Jul-17	1885	443,80
P	31-Jul-17	1540	98,70	P	31-Jul-17	1890	448,80
P	31-Jul-17	1545	103,70	P	31-Jul-17	1895	453,60
P	31-Jul-17	1550	108,70	P	31-Jul-17	1900	458,60
P	31-Jul-17	1555	113,70	P	31-Jul-17	1905	463,30
P	31-Jul-17	1560	118,70	P	31-Jul-17	1910	469,00
P	31-Jul-17	1565	123,70	P	31-Jul-17	1915	473,60
P	31-Jul-17	1570	128,70	P	31-Jul-17	1920	478,60
P	31-Jul-17	1575	133,70	P	31-Jul-17	1925	483,60
P	31-Jul-17	1580	138,70	P	31-Jul-17	1930	488,60
P	31-Jul-17	1585	143,70	P	31-Jul-17	1935	493,60
P	31-Jul-17	1590	148,70	P	31-Jul-17	1940	498,60
P	31-Jul-17	1595	153,80	P	31-Jul-17	1945	503,60
P	31-Jul-17	1600	159,10	P	31-Jul-17	1950	508,60
P	31-Jul-17	1605	164,10	P	31-Jul-17	1955	513,60
P	31-Jul-17	1610	169,10	P	31-Jul-17	1960	518,60
P	31-Jul-17	1615	174,10	P	31-Jul-17	1965	523,60
P	31-Jul-17	1620	179,10	P	31-Jul-17	1970	528,90
P	31-Jul-17	1625	184,10	P	31-Jul-17	1975	533,80
P	31-Jul-17	1630	189,10	P	31-Jul-17	1980	538,80
P	31-Jul-17	1635	193,80	P	31-Jul-17	1985	544,10
P	31-Jul-17	1640	198,80	P	31-Jul-17	1990	549,10
P	31-Jul-17	1645	203,80	P	31-Jul-17	1995	553,80

LAMPIRAN 2

Perhitungan Black Scholes

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	850	860	870	880	890	900	910	920
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	592,30	582,30	572,30	562,50	552,50	542,60	533,90	523,80
Output								
d1	7,450	7,279	7,110	6,942	6,776	6,613	6,451	6,291
d2	7,382	7,211	7,041	6,874	6,708	6,545	6,383	6,222
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	556,22	546,29	536,36	526,43	516,50	506,57	496,63	486,70
Solver								
Differ (Market – BS)	36,07629	36,00778	35,93926	36,07075	36,00224	36,03372	37,26521	37,09669
Volatility	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	930	940	950	955	960	965	970	975
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	513,80	502,60	492,60	487,60	482,90	478,10	473,10	468,10
Output								
d1	6,132	5,976	5,821	5,744	5,667	5,591	5,515	5,440
d2	6,064	5,907	5,752	5,675	5,599	5,523	5,447	5,372
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	476,77	466,84	456,91	451,94	446,98	442,01	437,05	432,08
Solver								
Differ (Market – BS)	37,02818	35,75966	35,69115	35,65689	35,92264	36,08838	36,05412	36,01986
Volatility	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	980	985	990	995	1000	1005	1010	1015
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	463,10	458,10	453,10	448,20	443,30	438,20	433,30	428,30
Output								
d1	5,365	5,290	5,216	5,142	5,069	4,996	4,923	4,851
d2	5,297	5,222	5,148	5,074	5,001	4,928	4,855	4,783
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	427,11	422,15	417,18	412,22	407,25	402,29	397,32	392,35
Solver								
Differ (Market – BS)	5,365	5,290	5,216	5,142	5,069	4,996	4,923	4,851
Volatility	5,297	5,222	5,148	5,074	5,001	4,928	4,855	4,783

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1020	1025	1030	1035	1040	1045	1050	1055
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	423,30	418,30	413,30	408,30	403,30	398,30	393,50	388,30
Output								
d1	4,779	4,707	4,636	4,565	4,494	4,424	4,354	4,285
d2	4,711	4,639	4,568	4,497	4,426	4,356	4,286	4,216
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	387,39	382,42	377,46	372,49	367,53	362,56	357,59	352,63
Solver								
Differ (Market – BS)	35,91153	35,87727	35,843	35,80873	35,77445	35,74017	35,90587	35,67156
Volatility	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1060	1065	1070	1075	1080	1085	1090	1095
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	383,30	378,30	373,30	368,30	363,30	358,30	353,30	348,30
Output								
d1	4,215	4,146	4,078	4,009	3,941	3,874	3,806	3,739
d2	4,147	4,078	4,009	3,941	3,873	3,805	3,738	3,671
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	347,66	342,70	337,73	332,77	327,80	322,83	317,87	312,90
Solver								
Differ (Market – BS)	4,215	4,146	4,078	4,009	3,941	3,874	3,806	3,739
Volatility	4,147	4,078	4,009	3,941	3,873	3,805	3,738	3,671

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1100	1105	1110	1115	1120	1125	1130	1135
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	343,30	338,30	333,30	328,30	323,30	318,30	313,30	308,30
Output								
d1	3,673	3,606	3,540	3,474	3,409	3,343	3,278	3,214
d2	3,604	3,538	3,472	3,406	3,340	3,275	3,210	3,145
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	0,999	0,999
N(d2)	1,000	1,000	1,000	1,000	1,000	0,999	0,999	0,999
Call price BS	307,94	302,97	298,01	293,05	288,08	283,12	278,16	273,19
Solver								
Differ (Market – BS)	3,673	3,606	3,540	3,474	3,409	3,343	3,278	3,214
Volatility	3,604	3,538	3,472	3,406	3,340	3,275	3,210	3,145

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1140	1145	1150	1155	1160	1165	1170	1175
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	303,30	298,30	293,00	288,00	283,00	278,00	273,00	268,00
Output								
d1	3,149	3,085	3,021	2,958	2,894	2,831	2,769	2,706
d2	3,081	3,017	2,953	2,889	2,826	2,763	2,700	2,638
N(d1)	0,999	0,999	0,999	0,998	0,998	0,998	0,997	0,997
N(d2)	0,999	0,999	0,998	0,998	0,998	0,997	0,997	0,996
Call price BS	$268,23	$263,27	$258,31	$253,36	$248,40	$243,45	$238,50	$233,55
Solver								
Differ (Market – BS)	3,149	3,085	3,021	2,958	2,894	2,831	2,769	2,706
Volatility	3,081	3,017	2,953	2,889	2,826	2,763	2,700	2,638

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1180	1185	1190	1195	1200	1205	1210	1215
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	263,10	258,00	253,00	248,00	243,00	238,00	233,00	228,00
Output								
d1	2,644	2,582	2,520	2,459	2,398	2,337	2,276	2,216
d2	2,576	2,514	2,452	2,391	2,329	2,268	2,208	2,147
N(d1)	0,996	0,995	0,994	0,993	0,992	0,990	0,989	0,987
N(d2)	0,995	0,994	0,993	0,992	0,990	0,988	0,986	0,984
Call price BS	$228,61	$223,67	$218,74	$213,81	$208,89	$203,98	$199,07	$194,18
Solver								
Differ (Market – BS)	2,644	2,582	2,520	2,459	2,398	2,337	2,276	2,216
Volatility	2,576	2,514	2,452	2,391	2,329	2,268	2,208	2,147

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1220	1225	1230	1235	1240	1245	1250	1255
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	223,00	218,00	213,00	208,00	203,00	198,00	193,00	187,80
Output								
d1	2,155	2,096	2,036	1,976	1,917	1,858	1,800	1,741
d2	2,087	2,027	1,968	1,908	1,849	1,790	1,731	1,673
N(d1)	0,984	0,982	0,979	0,976	0,972	0,968	0,964	0,959
N(d2)	0,982	0,979	0,975	0,972	0,968	0,963	0,958	0,953
Call price BS	$189,30	$184,43	$179,58	$174,75	$169,93	$165,14	$160,36	$155,62
Solver								
Differ (Market – BS)	2,155	2,096	2,036	1,976	1,917	1,858	1,800	1,741
Volatility	2,087	2,027	1,968	1,908	1,849	1,790	1,731	1,673

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1260	1265	1270	1275	1280	1285	1290	1295
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	182,80	177,80	172,80	167,80	162,80	158,00	153,00	148,00
Output								
d1	1,683	1,625	1,567	1,509	1,452	1,395	1,338	1,281
d2	1,615	1,557	1,499	1,441	1,384	1,327	1,270	1,213
N(d1)	0,954	0,948	0,941	0,934	0,927	0,918	0,910	0,900
N(d2)	0,947	0,940	0,933	0,925	0,917	0,908	0,898	0,887
Call price BS	$150,90	$146,22	$141,57	$136,95	$132,38	$127,85	$123,36	$118,93
Solver								
Differ (Market – BS)	1,683	1,625	1,567	1,509	1,452	1,395	1,338	1,281
Volatility	1,615	1,557	1,499	1,441	1,384	1,327	1,270	1,213

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1300	1305	1310	1315	1320	1325	1330	1335
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	143,10	137,90	132,90	127,90	122,60	117,60	113,80	107,70
Output								
d1	1,225	1,169	1,113	1,057	1,001	0,946	0,891	0,836
d2	1,157	1,100	1,044	0,989	0,933	0,878	0,822	0,767
N(d1)	0,890	0,879	0,867	0,855	0,842	0,828	0,813	0,798
N(d2)	0,876	0,864	0,852	0,839	0,825	0,810	0,795	0,779
Call price BS	$114,55	$110,23	$105,97	$101,77	$97,64	$93,58	$89,60	$85,69
Solver								
Differ (Market – BS)	1,225	1,169	1,113	1,057	1,001	0,946	0,891	0,836
Volatility	1,157	1,100	1,044	0,989	0,933	0,878	0,822	0,767

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1340	1345	1350	1355	1360	1365	1370	1375
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	103,00	97,70	92,70	87,70	83,00	77,70	73,70	68,20
Output								
d1	0,781	0,726	0,672	0,618	0,564	0,510	0,456	0,403
d2	0,713	0,658	0,604	0,549	0,496	0,442	0,388	0,335
N(d1)	0,783	0,766	0,749	0,732	0,714	0,695	0,676	0,657
N(d2)	0,762	0,745	0,727	0,709	0,690	0,671	0,651	0,631
Call price BS	$81,87	$78,13	$74,47	$70,91	$67,43	$64,06	$60,77	$57,59
Solver								
Differ (Market – BS)	0,781	0,726	0,672	0,618	0,564	0,510	0,456	0,403
Volatility	0,713	0,658	0,604	0,549	0,496	0,442	0,388	0,335

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1380	1385	1390	1395	1400	1405	1410	1415
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	62,80	57,90	52,90	47,90	43,50	38,10	33,60	28,70
Output								
d1	0,350	0,297	0,244	0,191	0,139	0,087	0,035	-0,017
d2	0,282	0,229	0,176	0,123	0,071	0,019	-0,033	-0,085
N(d1)	0,637	0,617	0,596	0,576	0,555	0,535	0,514	0,493
N(d2)	0,611	0,590	0,570	0,549	0,528	0,507	0,487	0,466
Call price BS	$54,51	$51,52	$48,64	$45,87	$43,19	$40,62	$38,15	$35,79
Solver								
Differ (Market – BS)	0,350	0,297	0,244	0,191	0,139	0,087	0,035	-0,017
Volatility	0,282	0,229	0,176	0,123	0,071	0,019	-0,033	-0,085

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1400	1400	1400	1400	1400	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1420	1425	1430	1435	1440	600	620	640
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	24,30	0,81	0,62	10,70	0,80	842,60	822,60	802,60
Output								
d1	-0,069	-0,120	-0,172	-0,223	-0,274	12,663	12,181	11,715
d2	-0,137	-0,189	-0,240	-0,291	-0,342	12,595	12,113	11,647
N(d1)	0,473	0,452	0,432	0,412	0,392	1,000	1,000	1,000
N(d2)	0,445	0,425	0,405	0,386	0,366	1,000	1,000	1,000
Call price BS	$33,52	$31,36	$29,30	$27,34	$25,47	$811,47	$791,61	$771,74
Solver								
Differ (Market – BS)	-9,22363	-30,5563	-28,682	-16,6369	-24,6706	31,13015	30,99312	30,85609
Volatility	13,65%	13,65%	13,65%	13,65%	13,65%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	660	680	700	720	740	760	780	800
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	782,60	762,60	742,60	723,00	703,00	682,80	662,80	643,00
Output								
d1	11,263	10,824	10,398	9,984	9,581	9,189	8,808	8,436
d2	11,195	10,756	10,330	9,916	9,513	9,121	8,740	8,368
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	$751,88	$732,02	$712,15	$692,29	$672,43	$652,57	$632,70	$612,84
Solver								
Differ (Market – BS)	30,71906	30,58203	30,44501	30,70798	30,57095	30,23392	30,09689	30,15986
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	820	840	860	880	900	910	920	930
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	622,70	602,90	582,60	562,70	542,70	532,70	522,70	512,70
Output								
d1	8,073	7,719	7,373	7,035	6,705	6,542	6,382	6,223
d2	8,005	7,651	7,305	6,967	6,637	6,474	6,314	6,155
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	$592,98	$573,11	$553,25	$533,39	$513,53	$503,59	$493,66	$483,73
Solver								
Differ (Market – BS)	29,72283	29,78581	29,34878	29,31175	29,17472	29,10621	29,03769	28,96918
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	940	950	955	960	965	970	975	980
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	502,70	492,70	487,70	482,70	477,70	472,70	467,70	462,70
Output								
d1	6,066	5,910	5,833	5,756	5,680	5,604	5,529	5,453
d2	5,998	5,842	5,765	5,688	5,612	5,536	5,461	5,385
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	$473,80	$463,87	$458,90	$453,94	$448,97	$444,00	$439,04	$434,07
Solver								
Differ (Market – BS)	28,90066	28,83215	28,79789	28,76364	28,72938	28,69512	28,66086	28,62661
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	985	990	995	1000	1005	1010	1015	1020
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	457,70	452,70	447,70	442,70	437,70	432,70	427,70	422,70
Output								
d1	5,379	5,304	5,230	5,157	5,083	5,010	4,938	4,866
d2	5,311	5,236	5,162	5,089	5,015	4,942	4,870	4,798
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	$429,11	$424,14	$419,18	$414,21	$409,24	$404,28	$399,31	$394,35
Solver								
Differ (Market – BS)	28,59235	28,55809	28,52383	28,48958	28,45532	28,42106	28,3868	28,35254
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1025	1030	1035	1040	1045	1050	1055	1060
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	417,70	412,70	407,70	402,70	397,70	392,70	387,70	382,70
Output								
d1	4,794	4,722	4,651	4,580	4,510	4,440	4,370	4,300
d2	4,726	4,654	4,583	4,512	4,442	4,372	4,302	4,232
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	$389,38	$384,42	$379,45	$374,48	$369,52	$364,55	$359,59	$354,62
Solver								
Differ (Market – BS)	28,31828	28,28401	28,24975	28,21548	28,1812	28,14692	28,11262	28,07832
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1065	1070	1075	1080	1085	1090	1095	1100
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	377,70	372,70	367,70	362,90	358,10	353,10	348,10	343,10
Output								
d1	4,231	4,162	4,094	4,026	3,958	3,890	3,823	3,756
d2	4,163	4,094	4,026	3,958	3,890	3,822	3,755	3,688
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Call price BS	$349,66	$344,69	$339,72	$334,76	$329,79	$324,83	$319,86	$314,90
Solver								
Differ (Market – BS)	28,043993	28,009645	27,975266	28,140845	28,306371	28,271827	28,237192	28,202442
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1105	1110	1115	1120	1125	1130	1135	1140
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	338,10	333,10	327,90	331,10	318,10	313,10	308,10	303,10
Output								
d1	3,689	3,623	3,557	3,491	3,426	3,361	3,296	3,231
d2	3,621	3,555	3,489	3,423	3,358	3,293	3,228	3,163
N(d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	0,999
N(d2)	1,000	1,000	1,000	1,000	1,000	1,000	0,999	0,999
Call price BS	$309,93	$304,97	$300,00	$295,04	$290,07	$285,11	$280,15	$275,19
Solver								
Differ (Market – BS)	28,167543	28,132457	27,897134	36,061512	28,025519	27,989062	27,952034	27,914302
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1145	1150	1155	1160	1165	1170	1175	1180
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	298,10	293,10	288,10	283,10	278,10	273,10	267,90	263,10
Output								
d1	3,167	3,103	3,039	2,976	2,912	2,849	2,787	2,724
d2	3,099	3,035	2,971	2,907	2,844	2,781	2,719	2,656
N(d1)	0,999	0,999	0,999	0,999	0,998	0,998	0,997	0,997
N(d2)	0,999	0,999	0,999	0,998	0,998	0,997	0,997	0,996
Call price BS	$270,22	$265,26	$260,30	$255,35	$250,39	$245,44	$240,49	$235,54
Solver								
Differ (Market – BS)	27,87571	27,83607	27,79516	27,75272	27,708444	27,661975	27,4129	27,560744
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1185	1190	1195	1200	1205	1210	1215	1220
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	258,10	253,00	247,70	242,80	237,80	232,80	227,80	222,80
Output								
d1	2,662	2,600	2,539	2,477	2,416	2,355	2,295	2,234
d2	2,594	2,532	2,471	2,409	2,348	2,287	2,227	2,166
N(d1)	0,996	0,995	0,994	0,993	0,992	0,991	0,989	0,987
N(d2)	0,995	0,994	0,993	0,992	0,991	0,989	0,987	0,985
Call price BS	$230,60	$225,66	$220,72	$215,79	$210,87	$205,95	$201,05	$196,15
Solver								
Differ (Market – BS)	27,504958	27,34492	26,979918	27,009152	26,931718	26,846606	26,752691	26,648725
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1225	1230	1235	1240	1245	1250	1255	1260
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	217,80	212,80	207,80	202,80	197,80	192,80	187,80	182,80
Output								
d1	2,174	2,114	2,055	1,996	1,936	1,877	1,819	1,760
d2	2,106	2,046	1,987	1,927	1,868	1,809	1,751	1,692
N(d1)	0,985	0,983	0,980	0,977	0,974	0,970	0,966	0,961
N(d2)	0,982	0,980	0,977	0,973	0,969	0,965	0,960	0,955
Call price BS	$191,27	$186,40	$181,54	$176,70	$171,87	$167,07	$162,29	$157,54
Solver								
Differ (Market – BS)	26,53333	26,404997	26,262072	26,102759	25,925115	25,727047	25,506309	25,26051
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1265	1270	1275	1280	1285	1290	1295	1300
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	177,80	172,80	167,80	162,80	157,80	152,80	147,90	143,20
Output								
d1	1,702	1,644	1,586	1,529	1,472	1,415	1,358	1,301
d2	1,634	1,576	1,518	1,461	1,404	1,347	1,290	1,233
N(d1)	0,956	0,950	0,944	0,937	0,929	0,921	0,913	0,903
N(d2)	0,949	0,943	0,936	0,928	0,920	0,911	0,901	0,891
Call price BS	$152,81	$148,12	$143,45	$138,83	$134,24	$129,69	$125,19	$120,74
Solver								
Differ (Market – BS)	24,987108	24,68342	24,346624	23,973772	23,561791	23,107505	22,707637	22,458833
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1305	1310	1315	1320	1325	1330	1335	1340
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	138,10	133,30	128,30	123,20	118,20	113,00	108,00	103,00
Output								
d1	1,245	1,189	1,133	1,077	1,021	0,966	0,911	0,856
d2	1,177	1,120	1,064	1,009	0,953	0,898	0,843	0,788
N(d1)	0,893	0,883	0,871	0,859	0,846	0,833	0,819	0,804
N(d2)	0,880	0,869	0,856	0,843	0,830	0,815	0,800	0,785
Call price BS	$116,34	$112,00	$107,72	$103,49	$99,34	$95,26	$91,24	$87,31
Solver								
Differ (Market – BS)	21,757673	21,300693	20,584398	19,705291	18,859887	17,744737	16,756455	15,691735
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1345	1350	1355	1360	1365	1370	1375	1380
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	98,00	93,20	88,10	83,10	78,50	73,50	68,60	64,10
Output								
d1	0,801	0,747	0,692	0,638	0,584	0,530	0,477	0,424
d2	0,733	0,678	0,624	0,570	0,516	0,462	0,409	0,355
N(d1)	0,788	0,772	0,756	0,738	0,720	0,702	0,683	0,664
N(d2)	0,768	0,751	0,734	0,716	0,697	0,678	0,659	0,639
Call price BS	$83,45	$79,68	$75,99	$72,39	$68,89	$65,47	$62,15	$58,93
Solver								
Differ (Market – BS)	14,547374	13,5203	12,107586	10,706477	9,6144068	8,0290153	6,4481677	5,169968
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	1	1
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1385	1390	1395	1400	1405	1410	1415	1420
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	58,70	53,70	48,80	43,90	38,90	34,30	29,40	24,40
Output								
d1	0,370	0,317	0,265	0,212	0,160	0,108	0,055	0,004
d2	0,302	0,249	0,197	0,144	0,092	0,039	-0,013	-0,064
N(d1)	0,644	0,625	0,604	0,584	0,563	0,543	0,522	0,501
N(d2)	0,619	0,598	0,578	0,557	0,537	0,516	0,495	0,474
Call price BS	$55,81	$52,78	$49,86	$47,05	$44,33	$41,72	$39,21	$36,80
Solver								
Differ (Market – BS)	2,8927718	0,9151976	-1,0638653	-3,1452498	-5,4295076	-7,4169077	-9,8074368	-12,400803
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	1	1	1	1	1	1	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1425	1430	1435	1440	1445	1450	1420	1425
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	20,00	15,70	12,10	7,60	4,90	2,95	0,95	1,20
Output								
d1 , -d1	-0,048	-0,099	-0,151	-0,202	-0,253	-0,304	0,073	0,124
d2 , -d2	-0,116	-0,168	-0,219	-0,270	-0,321	-0,372	0,141	0,193
N(d1), (-d1)	0,481	0,460	0,440	0,420	0,400	0,381	0,529	0,550
N(d2), (-d2)	0,454	0,433	0,413	0,394	0,374	0,355	0,556	0,576
Call / Put price BS	$34,50	$32,29	$30,19	$28,19	$26,28	$24,47	$43,61	$46,42
Solver								
Differ (Market – BS)	-14,49644	-16,593516	-18,090942	-20,587384	-21,381273	-21,520823	-42,6559	-45,218
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,65%	13,65%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1430	1435	1440	1445	1450	1455	1460	1465
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	1,75	2,90	4,50	7,00	10,40	14,50	19,40	23,70
Output								
-d1	0,176	0,227	0,278	0,329	0,379	0,430	0,480	0,530
-d2	0,244	0,295	0,346	0,397	0,448	0,498	0,548	0,598
N(-d1)	0,570	0,590	0,609	0,629	0,648	0,666	0,684	0,702
N(-d2)	0,596	0,616	0,635	0,654	0,673	0,691	0,708	0,725
Put price BS	$49,33	$52,34	$55,45	$58,65	$61,95	$65,33	$68,80	$72,36
Solver								
Differ (Market – BS)	-47,5801	-49,4407	-50,9481	-51,6503	-51,5454	-50,8311	-49,4048	-48,6641
Volatility	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1400
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1470	1475	1480	1485	1490	1495	1500	1510
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	29,10	34,10	39,20	43,50	49,10	54,20	59,20	69,20
Output								
-d1	0,580	0,630	0,679	0,729	0,778	0,827	0,876	0,973
-d2	0,648	0,698	0,748	0,797	0,846	0,895	0,944	1,042
N(-d1)	0,719	0,736	0,752	0,767	0,782	0,796	0,809	0,835
N(-d2)	0,742	0,757	0,773	0,787	0,801	0,815	0,827	0,851
Put price BS	$76,01	$79,73	$83,53	$87,40	$91,35	$95,36	$99,44	$107,77
Solver								
Differ (Market – BS)	-46,9062	-45,6283	-44,3275	-43,9008	-42,2453	-41,1579	-40,2355	-38,5735
Volatility	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1400	1400	1400	1400	1400	1400	1400	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1520	1530	1540	1550	1600	1650	1700	1425
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	79,20	89,20	99,20	109,20	158,7	208,7	258,7	2,00
Output								
-d1	1,070	1,166	1,262	1,356	1,822	2,273	2,710	0,052
-d2	1,138	1,234	1,330	1,425	1,890	2,341	2,778	0,120
N(-d1)	0,858	0,878	0,896	0,913	0,966	0,988	0,997	0,521
N(-d2)	0,873	0,891	0,908	0,923	0,971	0,990	0,997	0,548
Put price BS	$116,34	$125,10	$134,04	$143,13	$190,30	$239,07	$288,45	$42,56
Solver								
Differ (Market – BS)	-37,135	-35,8964	-34,835	-33,9295	-31,5985	-30,3662	-29,7488	-40,5608
Volatility	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,65%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1430	1435	1440	1445	1450	1455	1460	1465
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	2,50	3,90	5,50	8,10	11,30	15,30	19,50	24,50
Output								
-d1	0,103	0,155	0,206	0,257	0,307	0,358	0,408	0,459
-d2	0,171	0,223	0,274	0,325	0,375	0,426	0,476	0,527
N(-d1)	0,541	0,561	0,581	0,601	0,621	0,640	0,658	0,677
N(-d2)	0,568	0,588	0,608	0,627	0,646	0,665	0,683	0,701
Put price BS	$45,33	$48,20	$51,17	$54,24	$57,40	$60,66	$64,00	$67,44
Solver								
Differ (Market – BS)	-42,831	-44,3014	-45,6708	-46,1376	-46,0998	-45,3557	-44,5028	-42,939
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1470	1475	1480	1485	1490	1495	1500	1505
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	29,30	34,20	39,10	44,30	48,80	54,20	58,10	64,00
Output								
-d1	0,509	0,559	0,608	0,658	0,707	0,756	0,806	0,854
-d2	0,577	0,627	0,676	0,726	0,775	0,824	0,874	0,922
N(-d1)	0,694	0,712	0,728	0,745	0,760	0,775	0,790	0,804
N(-d2)	0,718	0,735	0,751	0,766	0,781	0,795	0,809	0,822
Put price BS	$70,96	$74,57	$78,26	$82,02	$85,86	$89,78	$93,76	$97,81
Solver								
Differ (Market – BS)	-41,6616	-40,3681	-39,1557	-37,7215	-37,0626	-35,5761	-35,6588	-33,8079
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1510	1515	1520	1525	1530	1535	1540	1545
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	68,90	73,90	78,90	83,70	88,90	93,70	98,70	103,70
Output								
-d1	0,903	0,952	1,000	1,048	1,097	1,144	1,192	1,240
-d2	0,971	1,020	1,068	1,116	1,165	1,213	1,260	1,308
N(-d1)	0,817	0,829	0,841	0,853	0,864	0,874	0,883	0,892
N(-d2)	0,834	0,846	0,857	0,868	0,878	0,887	0,896	0,905
Put price BS	$101,92	$106,09	$110,32	$114,61	$118,94	$123,32	$127,75	$132,22
Solver								
Differ (Market – BS)	-33,0201	-32,1925	-31,4219	-30,9056	-30,0404	-29,6235	-29,0521	-28,5234
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1550	1555	1560	1565	1570	1575	1580	1585
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	108,70	113,70	118,70	123,70	128,70	133,70	138,70	143,70
Output								
-d1	1,287	1,335	1,382	1,429	1,476	1,522	1,569	1,615
-d2	1,355	1,403	1,450	1,497	1,544	1,591	1,637	1,684
N(-d1)	0,901	0,909	0,916	0,923	0,930	0,936	0,942	0,947
N(-d2)	0,912	0,920	0,926	0,933	0,939	0,944	0,949	0,954
Put price BS	$136,73	$141,28	$145,87	$150,48	$155,13	$159,81	$164,51	$169,23
Solver								
Differ (Market – BS)	-28,0347	-27,5836	-27,1674	-26,7839	-26,4307	-26,1057	-25,8068	-25,532
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1590	1595	1600	1605	1610	1615	1620	1625
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	148,70	153,80	159,10	164,10	169,10	174,10	179,10	184,10
Output								
-d1	1,662	1,708	1,754	1,800	1,845	1,891	1,936	1,982
-d2	1,730	1,776	1,822	1,868	1,914	1,959	2,005	2,050
N(-d1)	0,952	0,956	0,960	0,964	0,968	0,971	0,974	0,976
N(-d2)	0,958	0,962	0,966	0,969	0,972	0,975	0,977	0,980
Put price BS	$173,98	$178,75	$183,53	$188,34	$193,16	$197,99	$202,84	$207,70
Solver								
Differ (Market – BS)	-25,2795	-24,9475	-24,4343	-24,2385	-24,0585	-23,8931	-23,7408	-23,6006
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1630	1635	1640	1645	1650	1655	1660	1665
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	189,10	193,80	198,80	203,80	209,10	214,10	219,10	224,10
Output								
-d1	2,027	2,072	2,117	2,162	2,206	2,251	2,295	2,339
-d2	2,095	2,140	2,185	2,230	2,274	2,319	2,363	2,407
N(-d1)	0,979	0,981	0,983	0,985	0,986	0,988	0,989	0,990
N(-d2)	0,982	0,984	0,986	0,987	0,989	0,990	0,991	0,992
Put price BS	$212,57	$217,45	$222,34	$227,24	$232,15	$237,06	$241,98	$246,90
Solver								
Differ (Market – BS)	-23,4714	-23,6521	-23,5419	-23,4398	-23,0451	-22,9571	-22,875	-22,7984
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1670	1675	1680	1685	1690	1695	1700	1705
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	229,10	234,10	239,10	244,10	249,10	254,10	259,10	264,10
Output								
-d1	2,383	2,427	2,471	2,515	2,558	2,602	2,645	2,688
-d2	2,451	2,495	2,539	2,583	2,626	2,670	2,713	2,756
N(-d1)	0,991	0,992	0,993	0,994	0,995	0,995	0,996	0,996
N(-d2)	0,993	0,994	0,994	0,995	0,996	0,996	0,997	0,997
Put price BS	$251,83	$256,76	$261,70	$266,64	$271,58	$276,52	$281,47	$286,42
Solver								
Differ (Market – BS)	-22,7265	-22,659	-22,5953	-22,5351	-22,478	-22,4236	-22,3717	-22,3219
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1710	1715	1720	1725	1730	1735	1740	1745
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	269,10	274,10	279,10	284,10	289,10	294,10	299,10	304,10
Output								
-d1	2,731	2,774	2,817	2,859	2,902	2,944	2,987	3,029
-d2	2,799	2,842	2,885	2,927	2,970	3,012	3,055	3,097
N(-d1)	0,997	0,997	0,998	0,998	0,998	0,998	0,999	0,999
N(-d2)	0,997	0,998	0,998	0,998	0,999	0,999	0,999	0,999
Put price BS	$291,37	$296,33	$301,28	$306,24	$311,20	$316,16	$321,12	$326,08
Solver								
Differ (Market – BS)	-22,274	-22,2278	-22,1832	-22,1398	-22,0976	-22,0565	-22,0162	-21,9767
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1750	1755	1760	1765	1770	1775	1780	1785
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	309,10	314,10	319,10	323,00	328,00	333,00	338,00	343,00
Output								
-d1	3,071	3,113	3,154	3,196	3,238	3,279	3,321	3,362
-d2	3,139	3,181	3,223	3,264	3,306	3,347	3,389	3,430
N(-d1)	0,999	0,999	0,999	0,999	0,999	0,999	1,000	1,000
N(-d2)	0,999	0,999	0,999	0,999	1,000	1,000	1,000	1,000
Put price BS	$331,04	$336,00	$340,96	$345,92	$350,89	$355,85	$360,82	$365,78
Solver								
Differ (Market – BS)	-21,9379	-21,8998	-21,8621	-22,9249	-22,8881	-22,8517	-22,8156	-22,7797
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1790	1795	1800	1805	1810	1815	1820	1825
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	348,00	353,00	358,00	364,10	369,00	373,90	378,90	383,90
Output								
-d1	3,403	3,444	3,485	3,526	3,566	3,607	3,647	3,687
-d2	3,471	3,512	3,553	3,594	3,634	3,675	3,715	3,755
N(-d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(-d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Put price BS	$370,74	$375,71	$380,67	$385,64	$390,60	$395,57	$400,53	$405,50
Solver								
Differ (Market – BS)	-22,744	-22,7086	-22,6733	-21,5382	-21,6032	-21,6683	-21,6335	-21,5987
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1830	1835	1840	1845	1850	1855	1860	1865
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	388,80	393,80	398,80	403,60	408,60	413,60	418,60	423,60
Output								
-d1	3,728	3,768	3,808	3,848	3,887	3,927	3,967	4,006
-d2	3,796	3,836	3,876	3,916	3,955	3,995	4,035	4,074
N(-d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(-d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Put price BS	$410,46	$415,43	$420,39	$425,36	$430,33	$435,29	$440,26	$445,22
Solver								
Differ (Market – BS)	-21,6641	-21,6295	-21,5949	-21,7604	-21,726	-21,6915	-21,6571	-21,6228
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1870	1875	1880	1885	1890	1895	1900	1905
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	428,60	433,80	438,80	443,80	448,80	453,60	458,60	463,30
Output								
-d1	4,045	4,085	4,124	4,163	4,202	4,241	4,279	4,318
-d2	4,113	4,153	4,192	4,231	4,270	4,309	4,347	4,386
N(-d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(-d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Put price BS	$450,19	$455,15	$460,12	$465,09	$470,05	$475,02	$479,98	$484,95
Solver								
Differ (Market – BS)	-21,5884	-21,354	-21,3197	-21,2854	-21,2511	-21,4168	-21,3825	-21,6482
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1910	1915	1920	1925	1930	1935	1940	1945
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	469,00	473,60	478,60	483,60	488,60	493,60	498,60	503,60
Output								
-d1	4,356	4,395	4,433	4,471	4,509	4,547	4,585	4,623
-d2	4,424	4,463	4,501	4,539	4,578	4,616	4,653	4,691
N(-d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(-d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Put price BS	$489,91	$494,88	$499,85	$504,81	$509,78	$514,74	$519,71	$524,67
Solver								
Differ (Market – BS)	-20,9139	-21,2796	-21,2454	-21,2111	-21,1768	-21,1426	-21,1083	-21,074
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%

Option type 1=call,0=put	0	0	0	0	0	0	0	0		
Index price (S)	1407	1407	1407	1407	1407	1407	1407	1407	1407	1407
Riskfree rate (r)	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%	2,75%
Exercise price (X)	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995
Time to maturity (t)	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs	0,25 yrs
Market Option Price	508,60	513,60	518,60	523,60	528,90	533,80	538,80	544,10	549,10	553,80
Output										
-d1	4,661	4,699	4,736	4,774	4,811	4,848	4,885	4,922	4,959	4,996
-d2	4,729	4,767	4,804	4,842	4,879	4,916	4,953	4,990	5,027	5,064
N(-d1)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
N(-d2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Put price BS	$529,64	$534,61	$539,57	$544,54	$549,50	$554,47	$559,43	$564,40	$569,37	$574,33
Solver										
Differ (Market – BS)	-21,0398	-21,0055	-20,9712	-20,937	-20,6027	-20,6685	-20,6342	-20,2999	-20,2657	-20,5314
Volatility	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%	13,61%