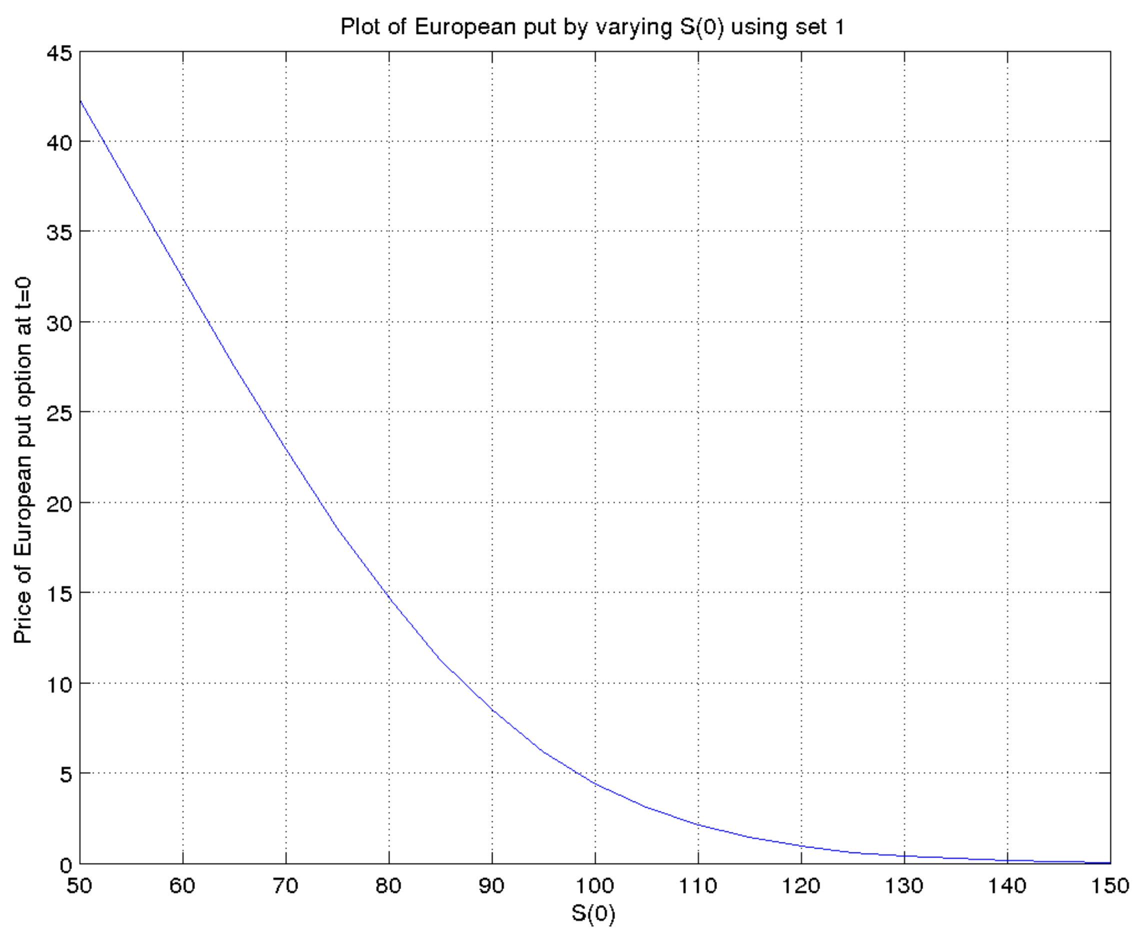
MA374-LAB2
Nikhil Agarwal
Roll:11012323

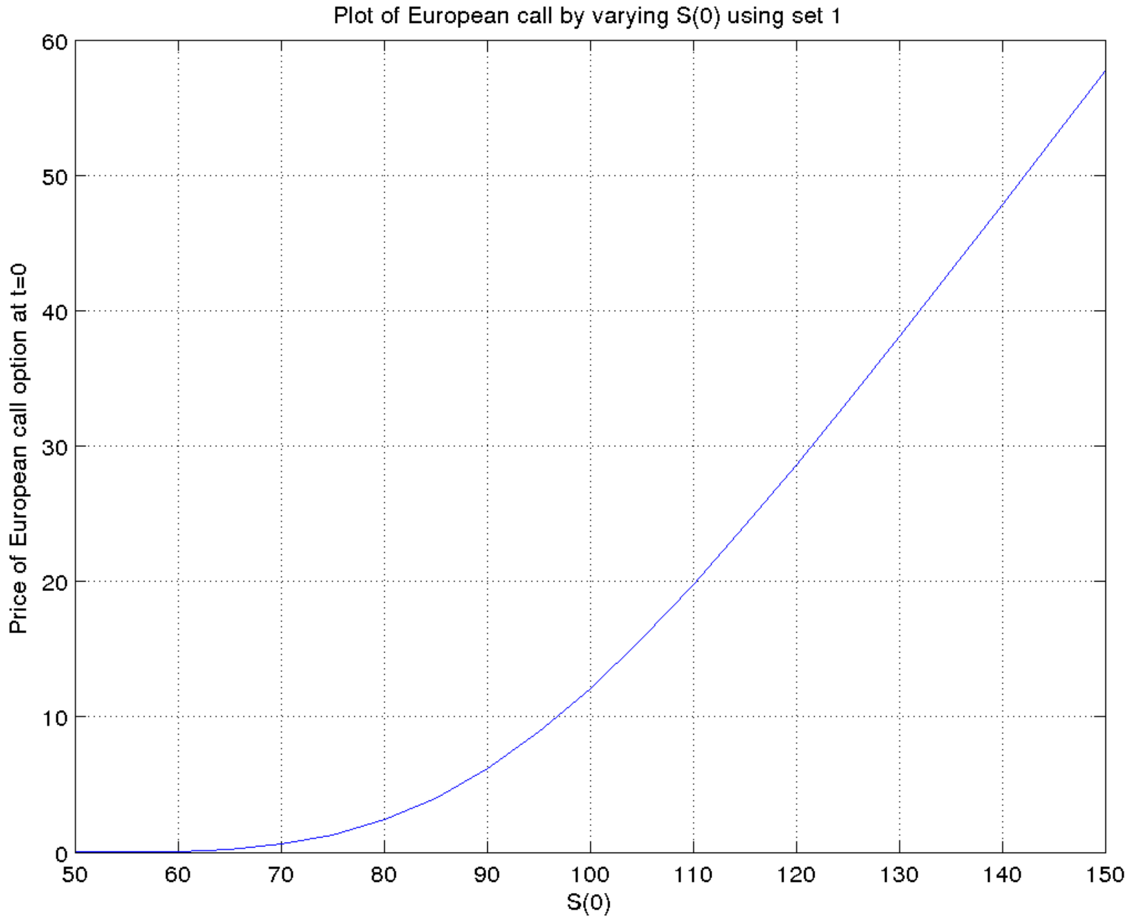
1.

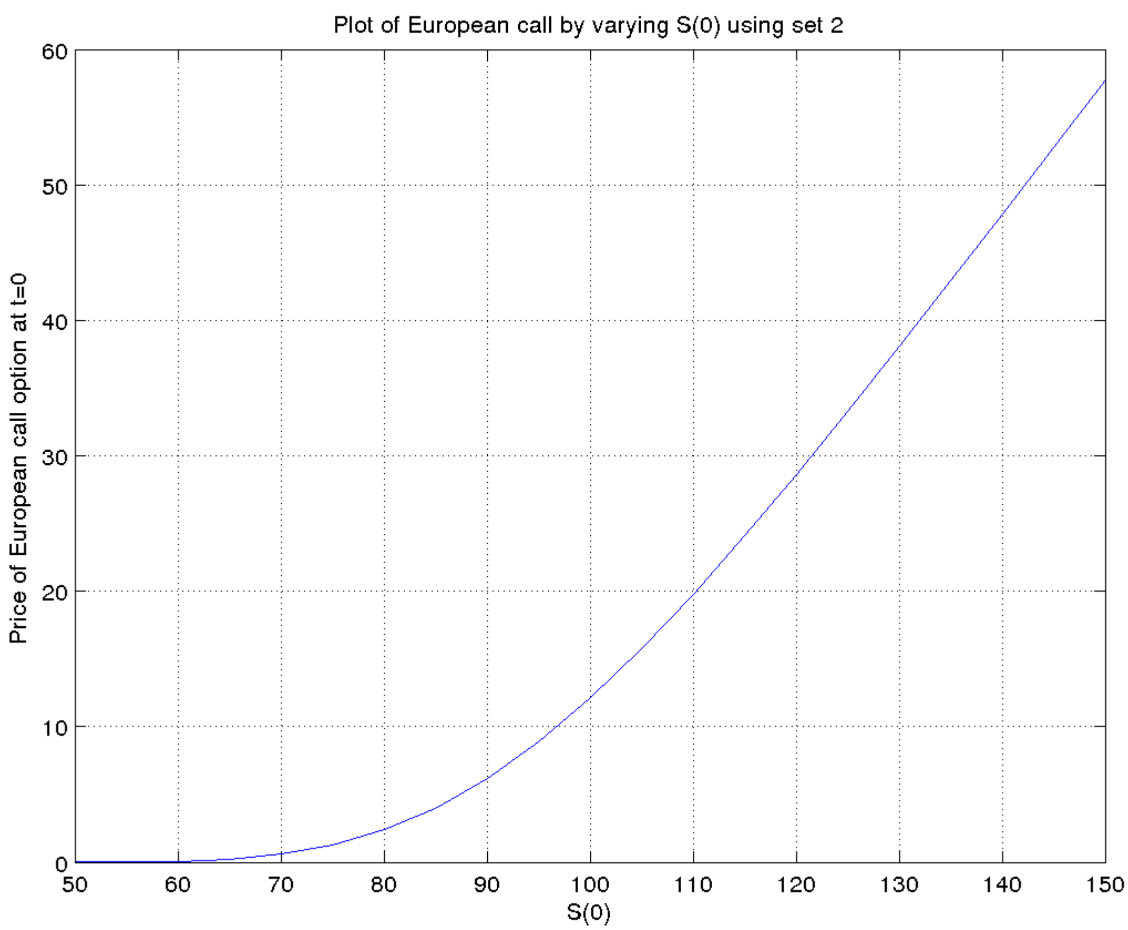
Observation:

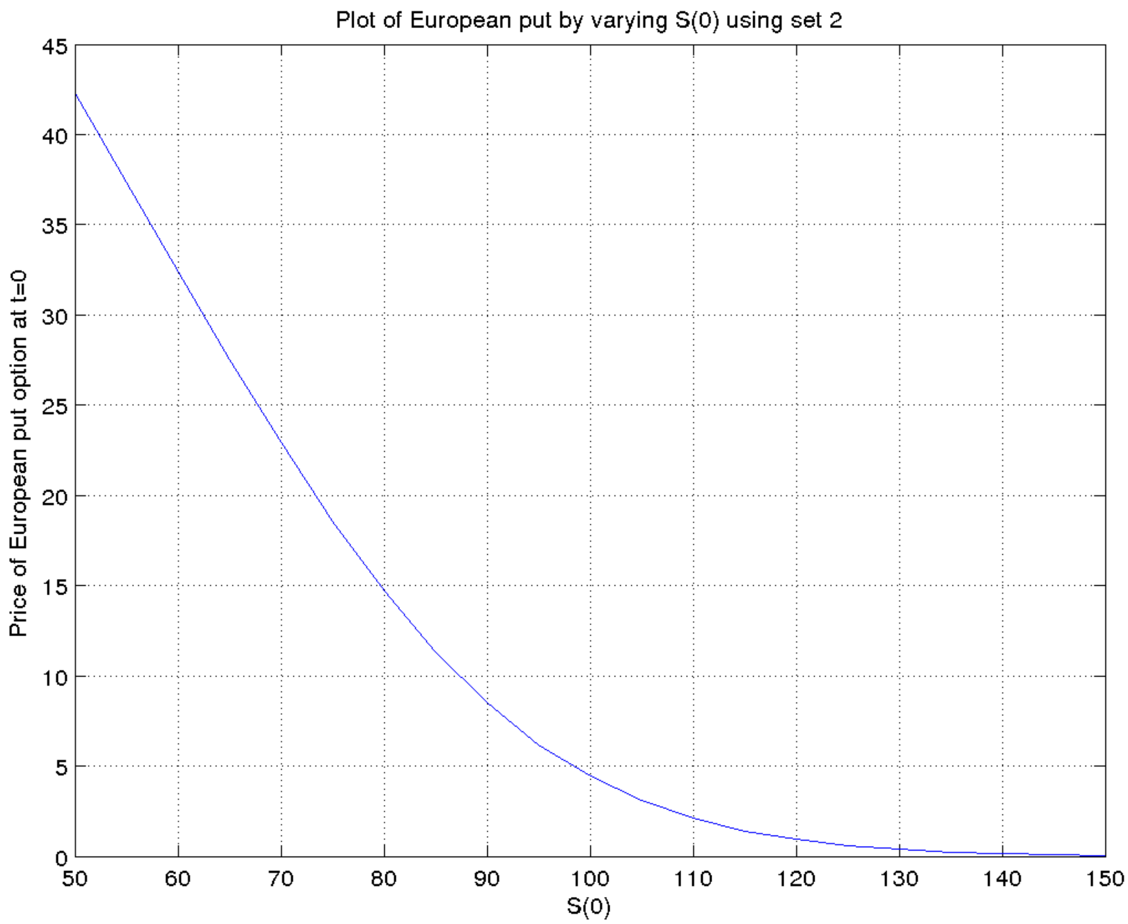
For set 1 The value of European call at t=0 is 12.08538001.
For set 1 The value of European put at t=0 is 4.39701465.
For set 2 The value of European call at t=0 is 12.12304707.
For set 2 The value of European put at t=0 is 4.43468171.

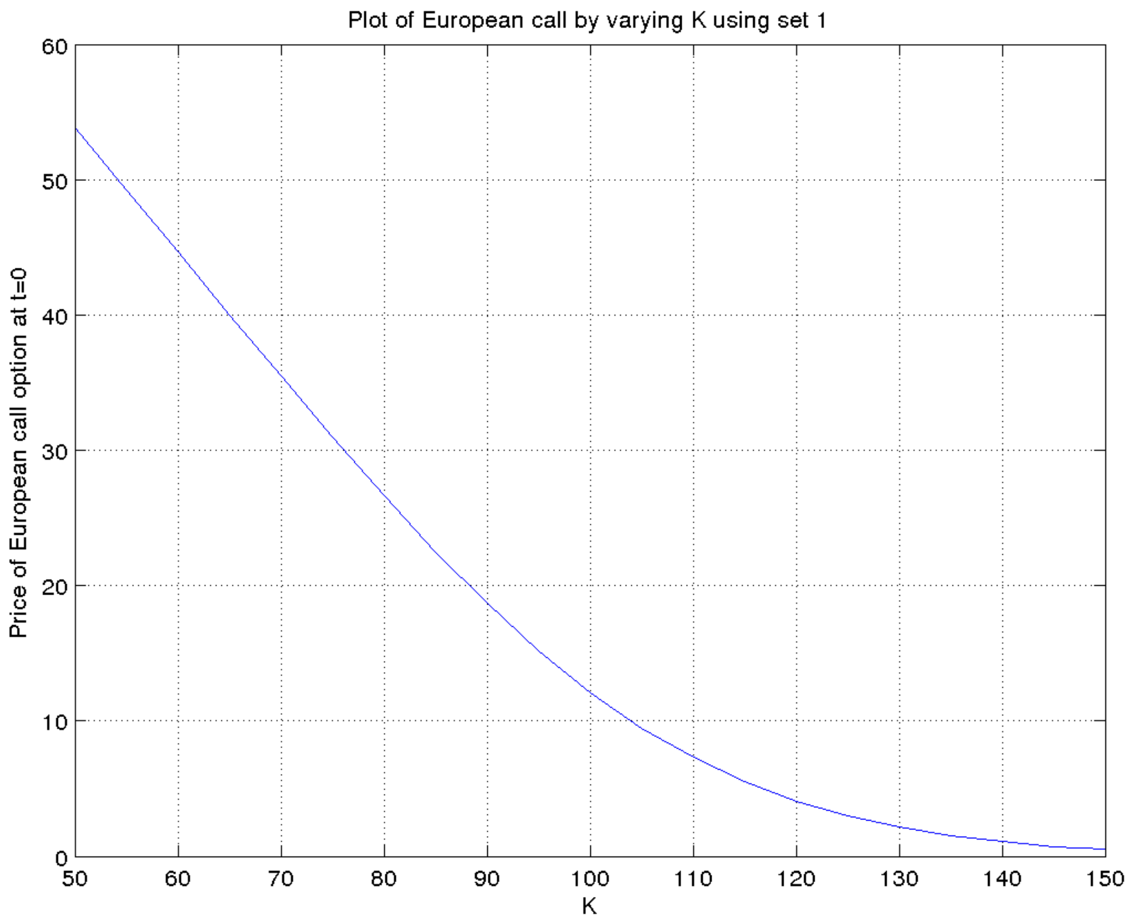
Graphs:

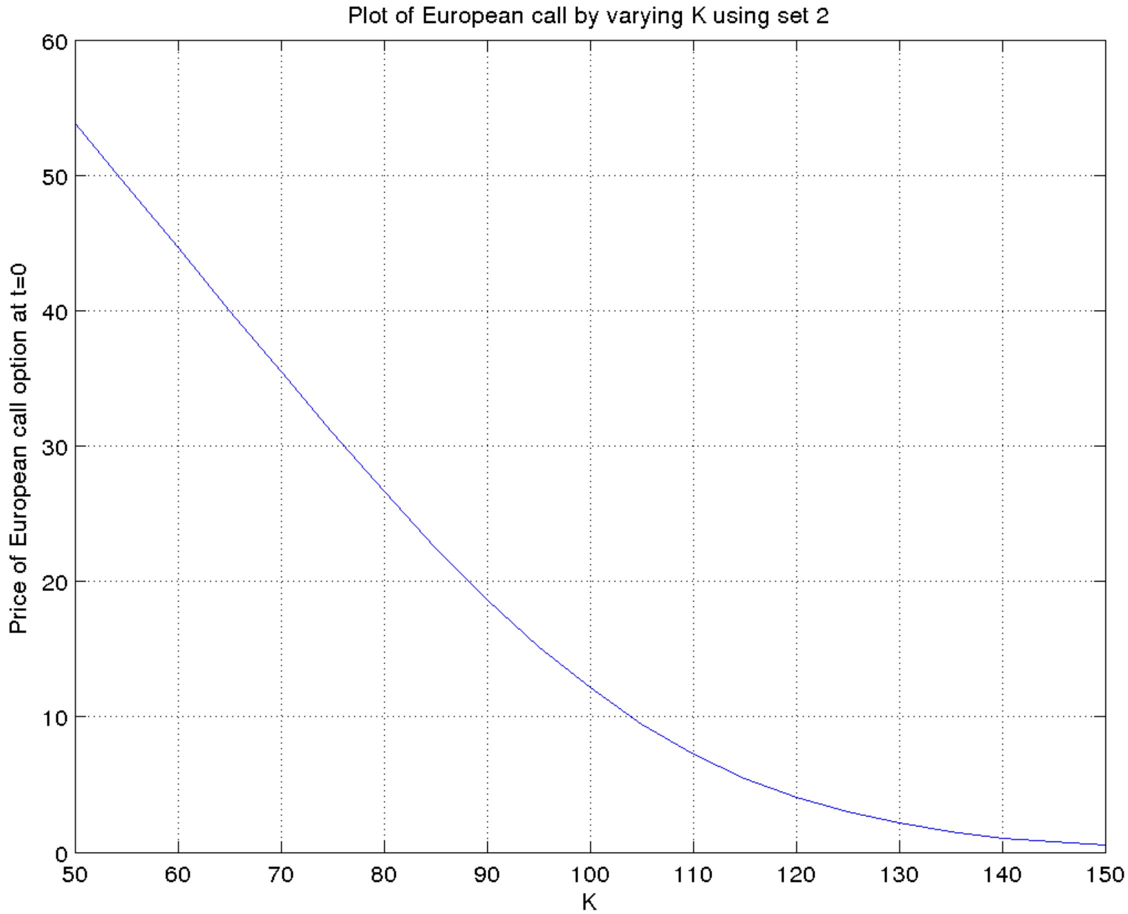


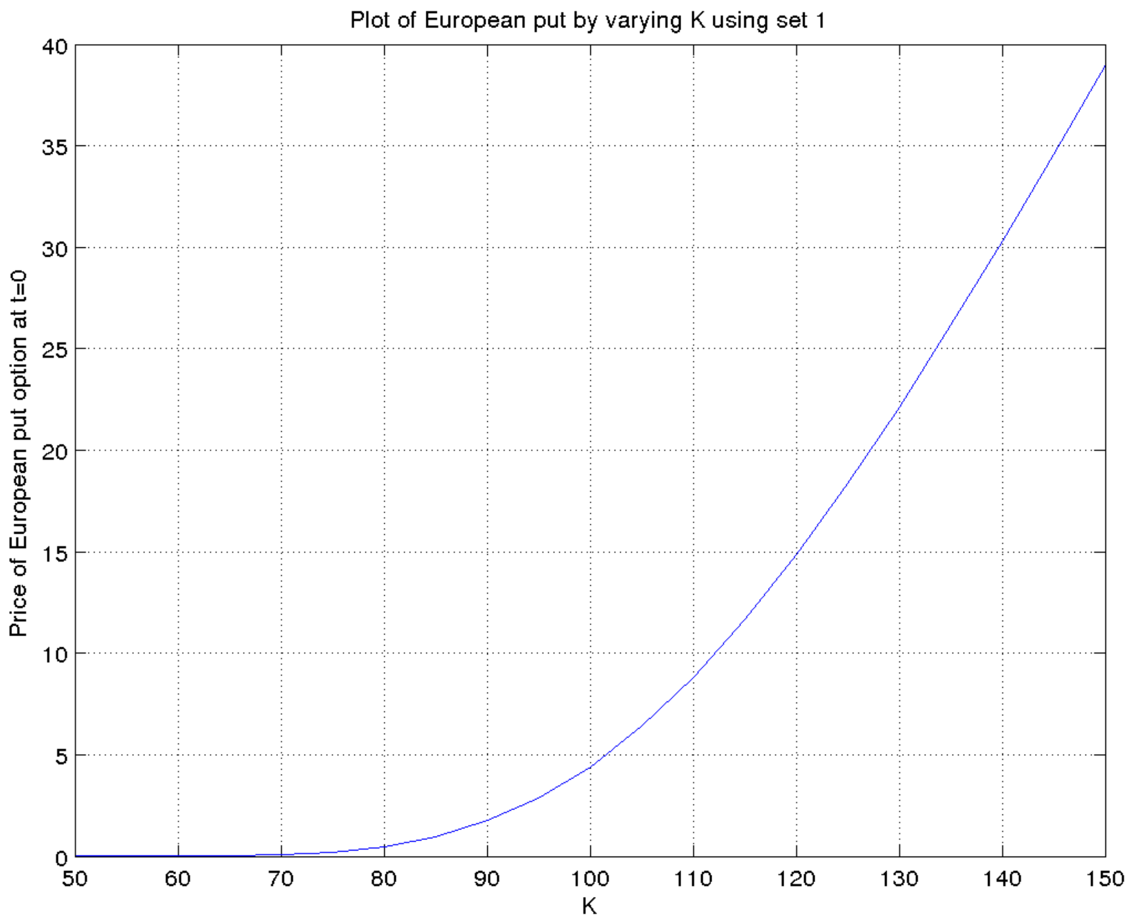

Plot of European call by varying S(0) using set 1
Price of European call option at t=0
S(0)
0
10
20
30
40
50
60
50
60
70
80
90
100
110
120
130
140
150

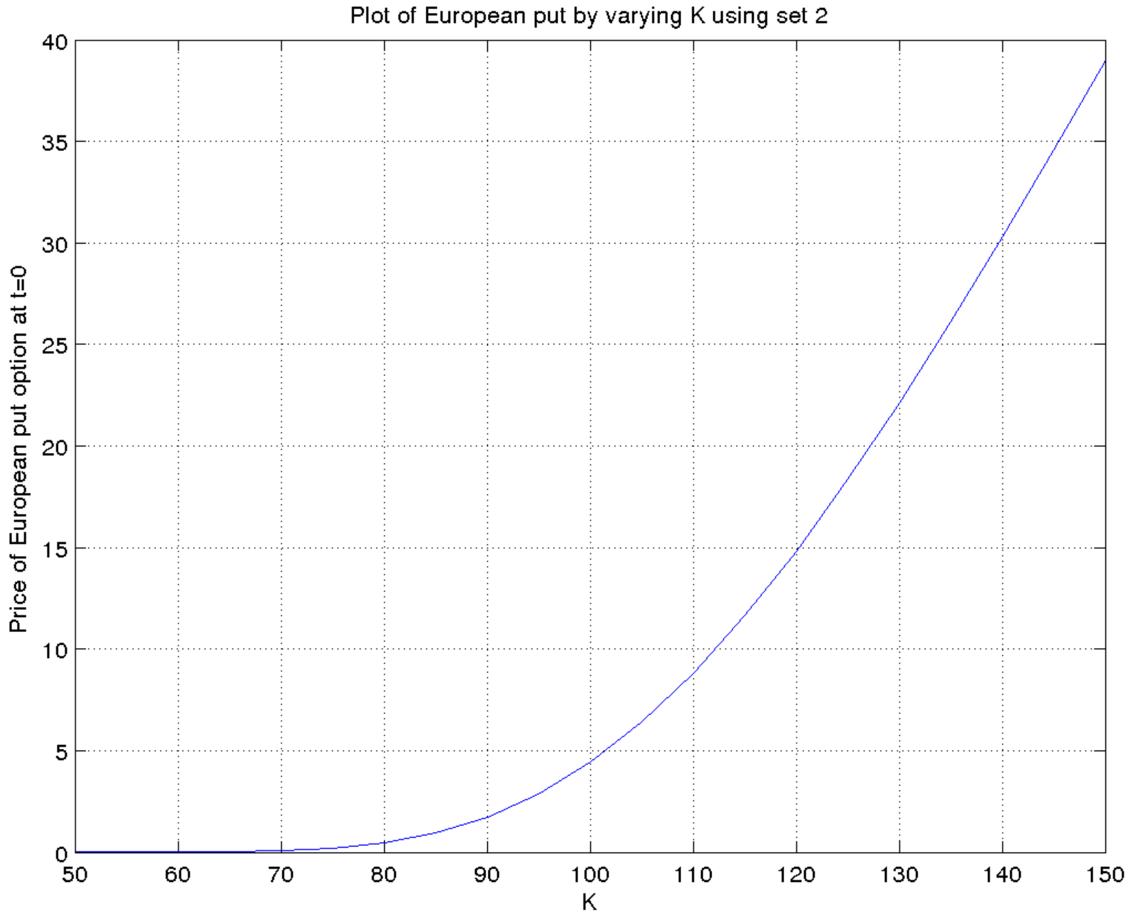

Plot of European call by varying S(0) using set 2
Price of European call option at t=0
S(0)
0
10
20
30
40
50
60
50
60
70
80
90
100
110
120
130
140
150

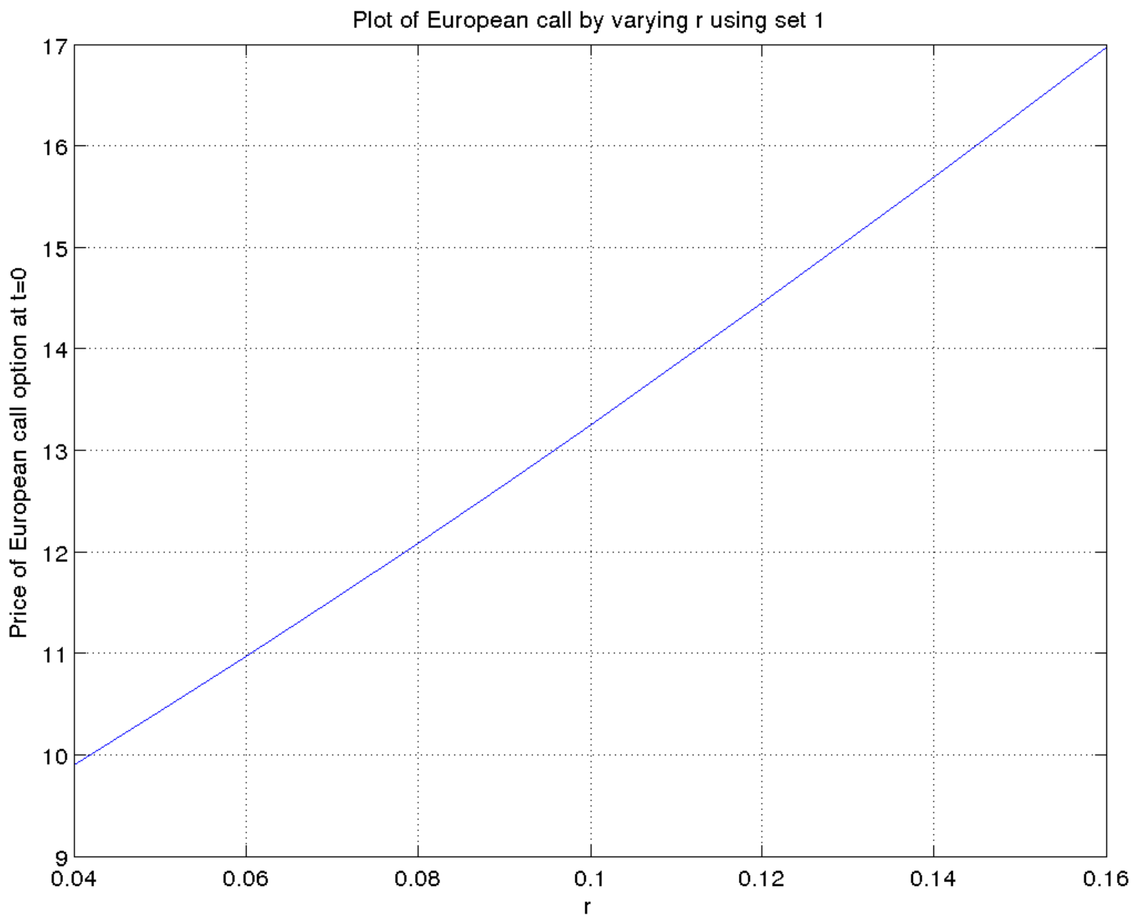

Plot of European put by varying S(0) using set 2
Price of European put option at t=0
S(0)
0
5
10
15
20
25
30
35
40
45
50
60
70
80
90
100
110
120
130
140
150


Plot of European call by varying K using set 1
Price of European call option at t=0
K
0
10
20
30
40
50
60
50
60
70
80
90
100
110
120
130
140
150

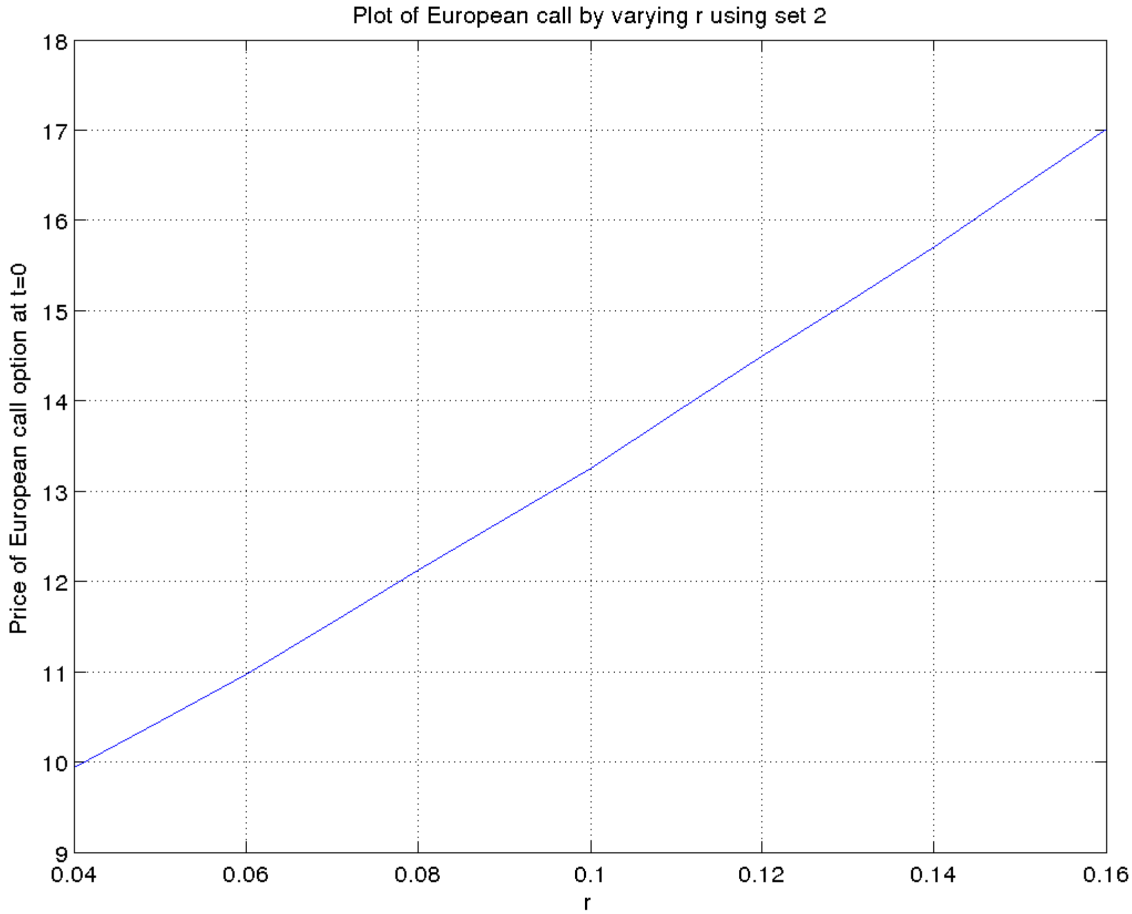

Plot of European call by varying K using set 2
Price of European call option at t=0
K
0
10
20
30
40
50
60
50
60
70
80
90
100
110
120
130
140
150

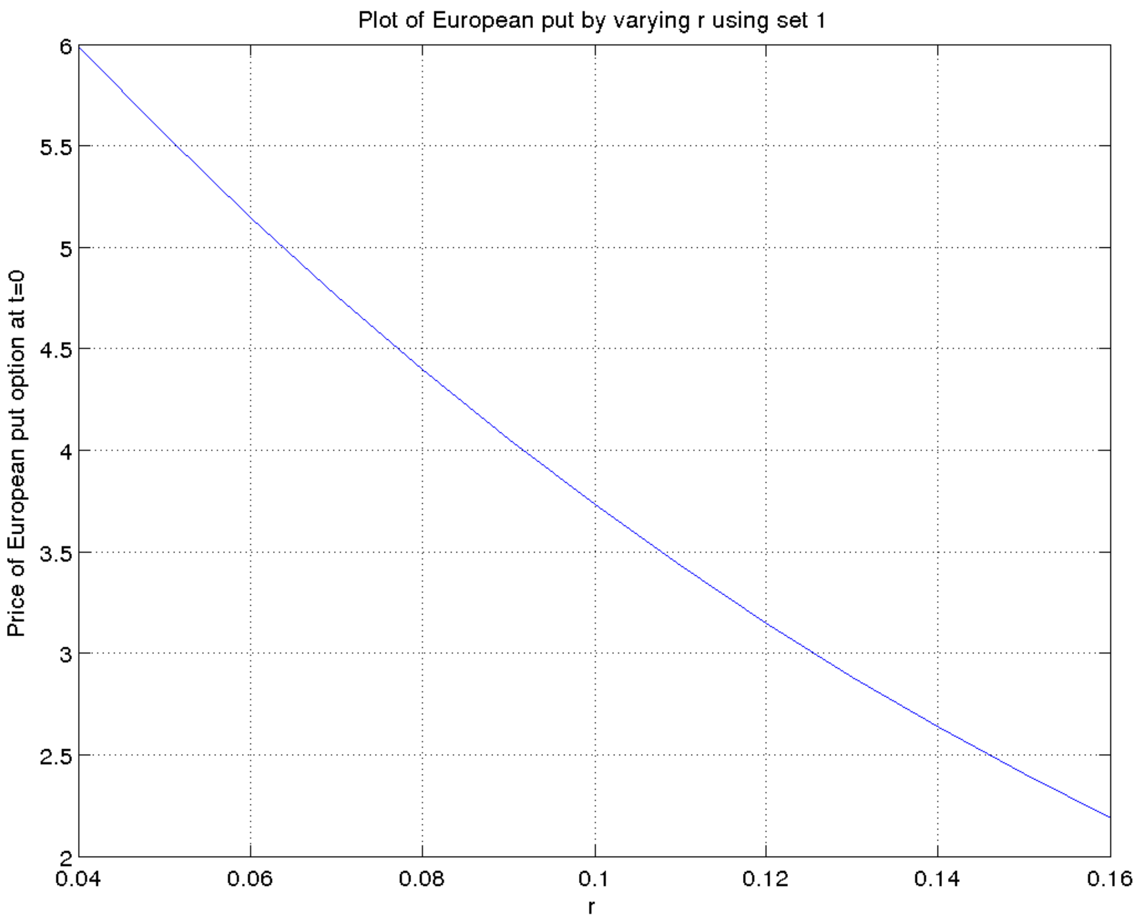

Plot of European put by varying K using set 1
Price of European put option at t=0
K
0
5
10
15
20
25
30
35
40
50
60
70
80
90
100
110
120
130
140
150


Plot of European put by varying K using set 2
Price of European put option at t=0
K
0
5
10
15
20
25
30
35
40
50
60
70
80
90
100
110
120
130
140
150

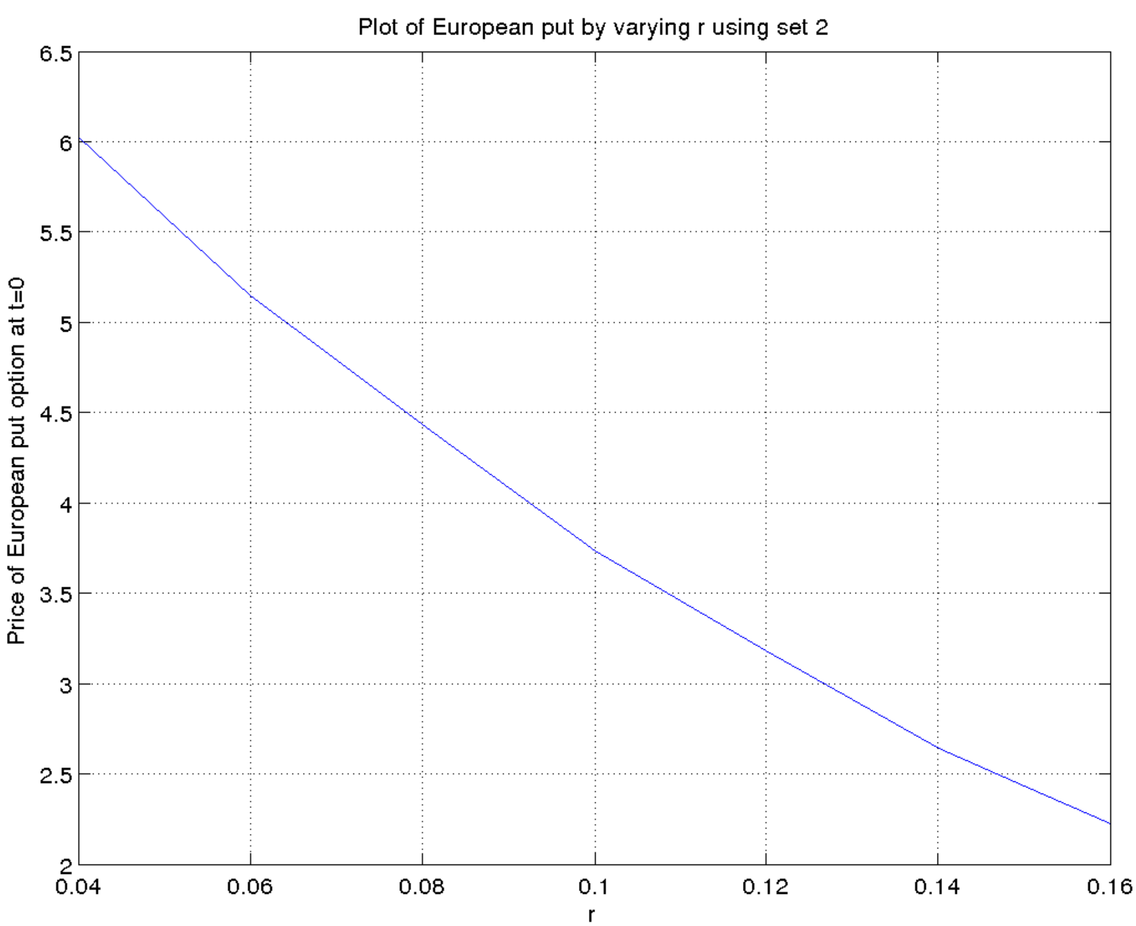


Plot of European call by varying r using set 1
Price of European call option at t=0
r
17
16
15
14
13
12
11
10
9
0.04
0.06
0.08
0.1
0.12
0.14
0.16

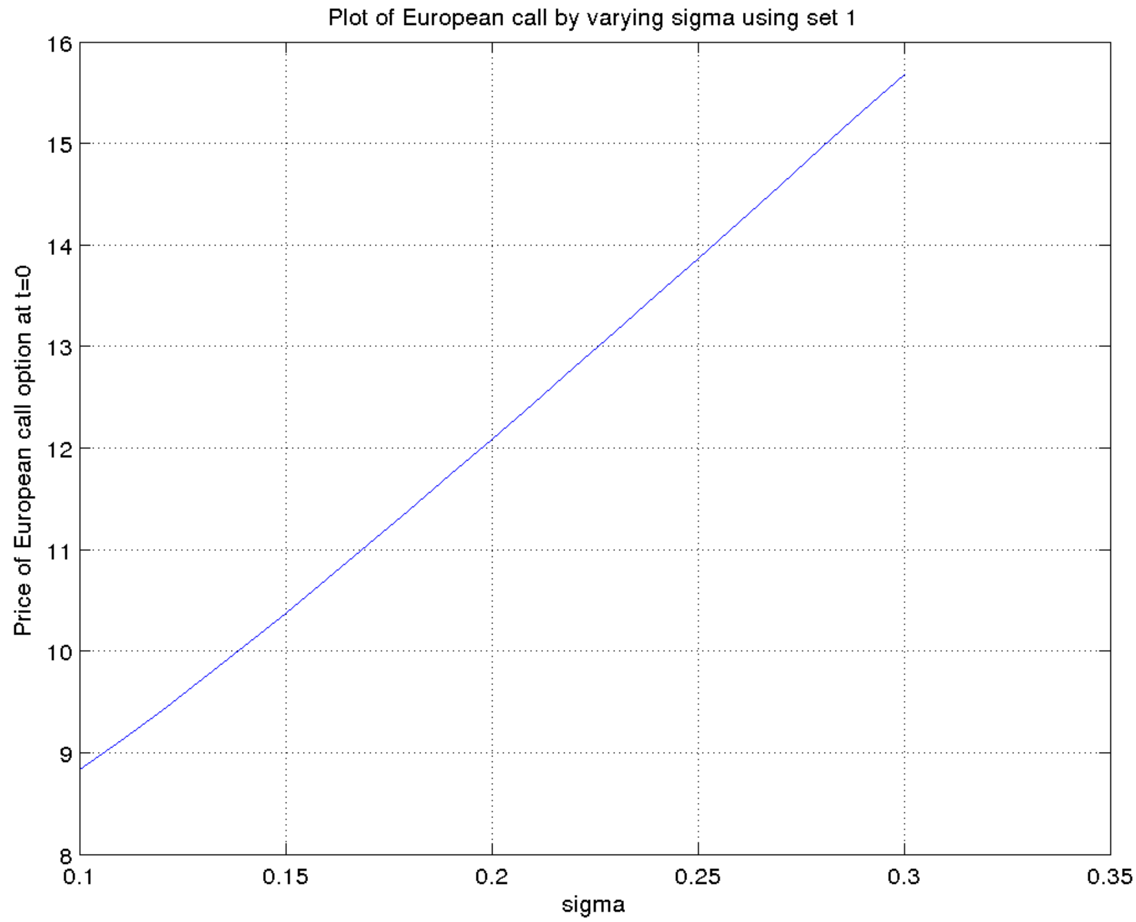

Plot of European call by varying r using set 2
Price of European call option at t=0
r
18
17
16
15
14
13
12
11
10
9
0.04
0.06
0.08
0.1
0.12
0.14
0.16

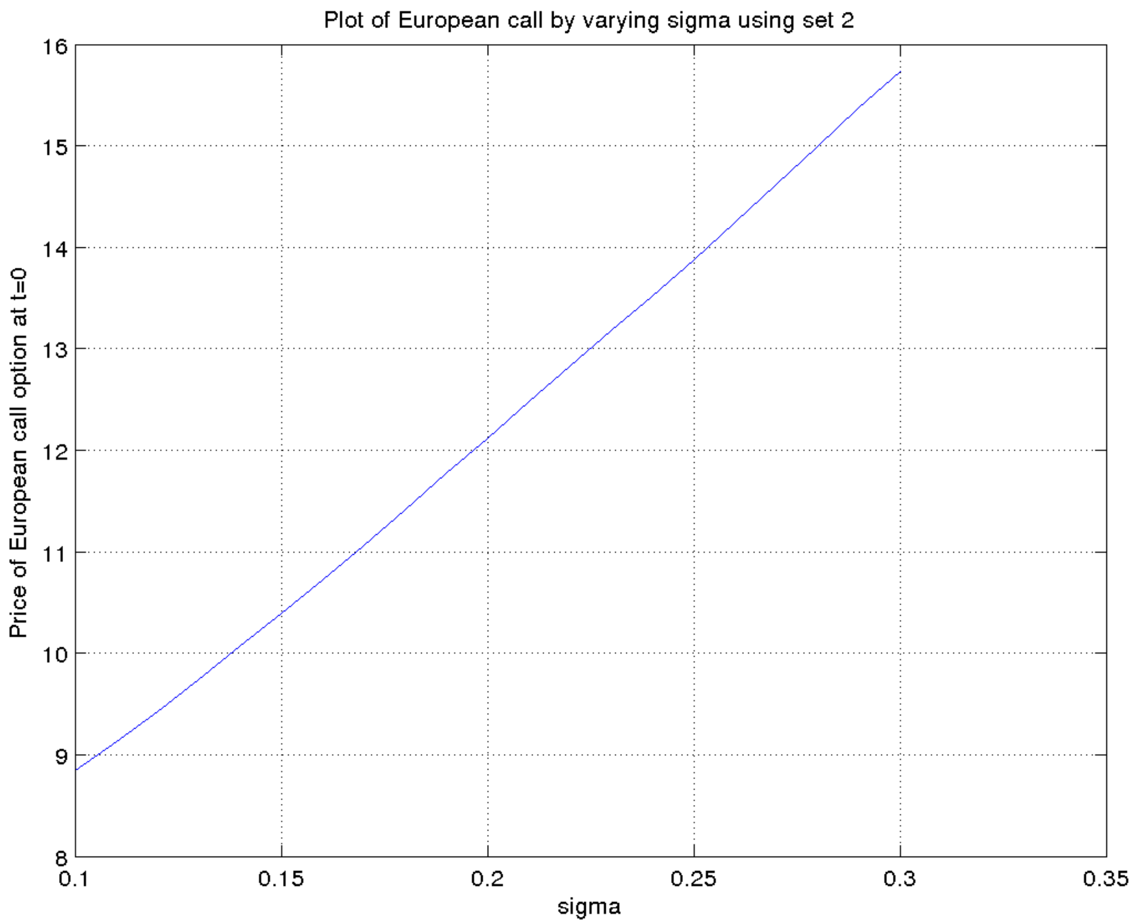


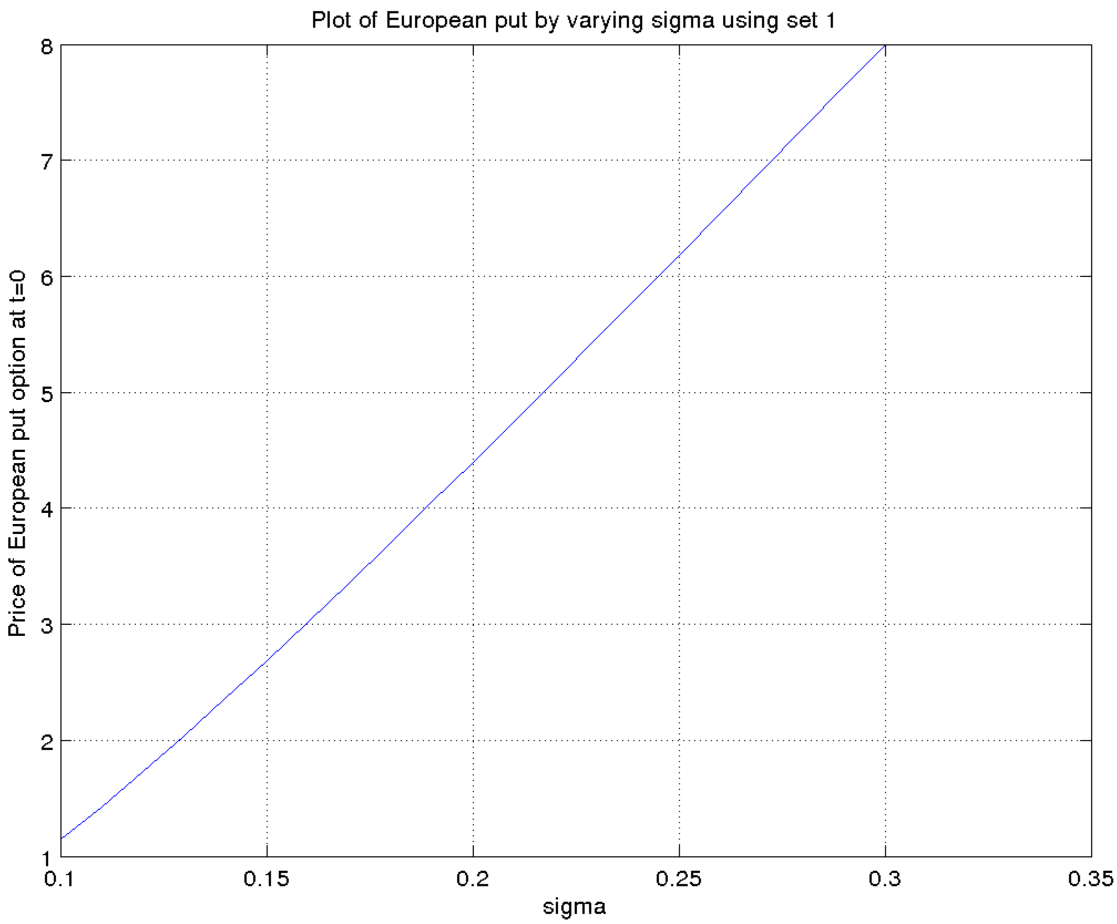
Plot of European put by varying r using set 1
Price of European put option at t=0
r
6
5.5
5
4.5
4
3.5
3
2.5
2
0.04
0.06
0.08
0.1
0.12
0.14
0.16

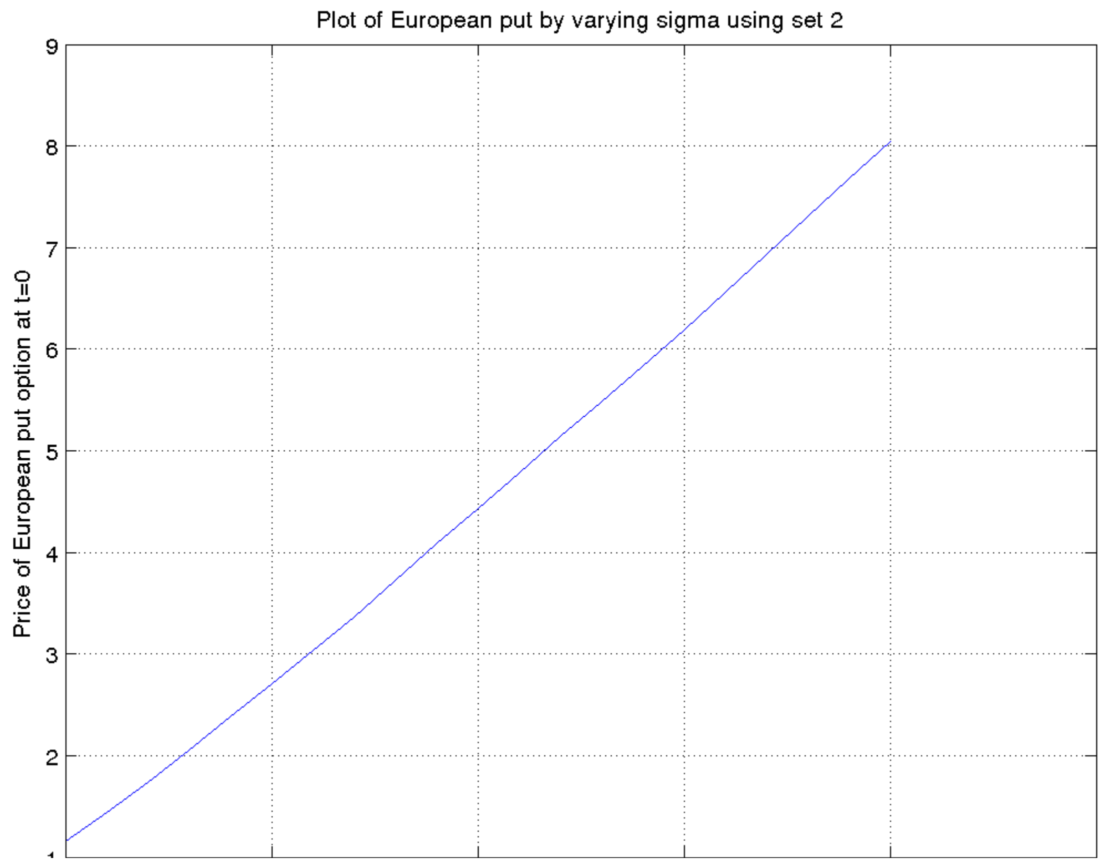


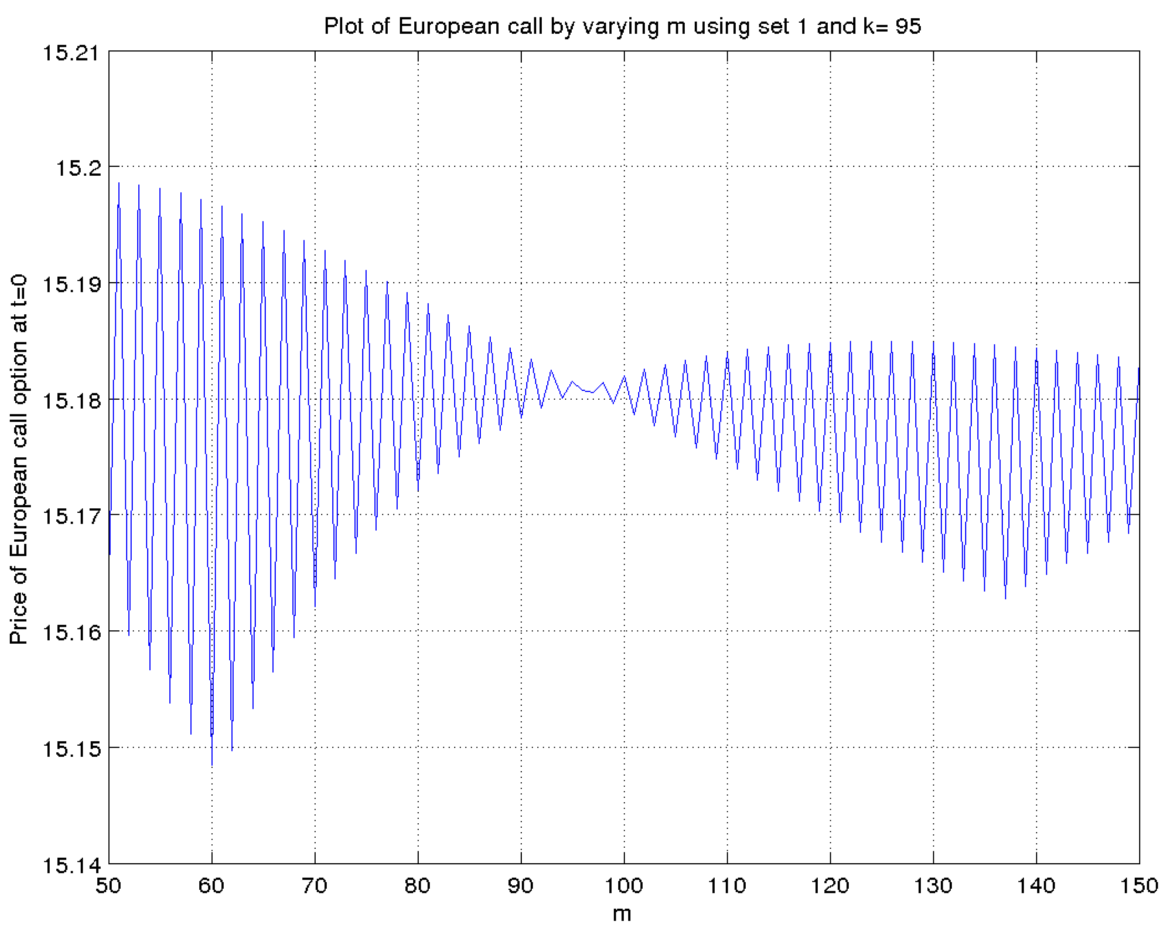
Plot of European put by varying r using set 2
Price of European put option at t=0
r
6.5
6
5.5
5
4.5
4
3.5
3
2.5
2
0.04
0.06
0.08
0.1
0.12
0.14
0.16

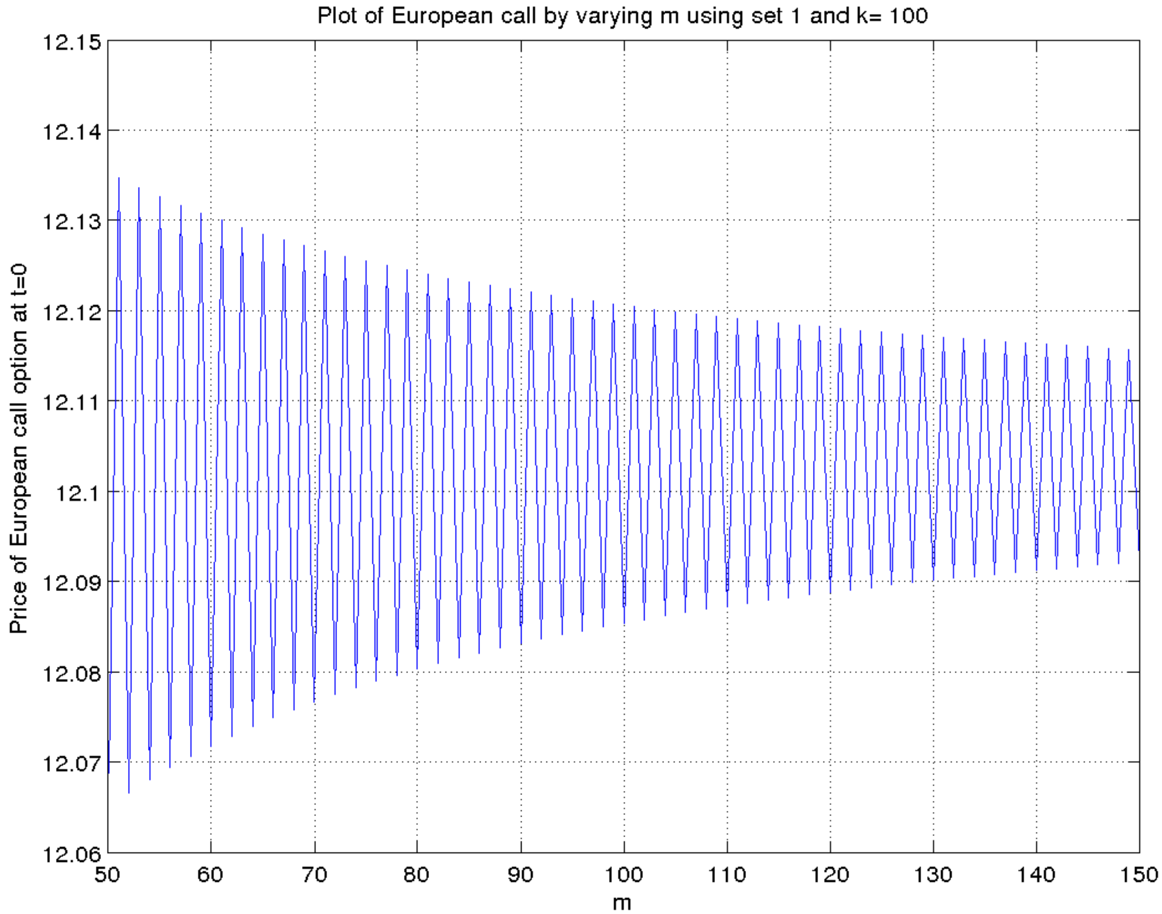

Plot of European call by varying sigma using set 1
Price of European call option at t=0
sigma
0.1
0.15
0.2
0.25
0.3
0.35
8
9
10
11
12
13
14
15
16

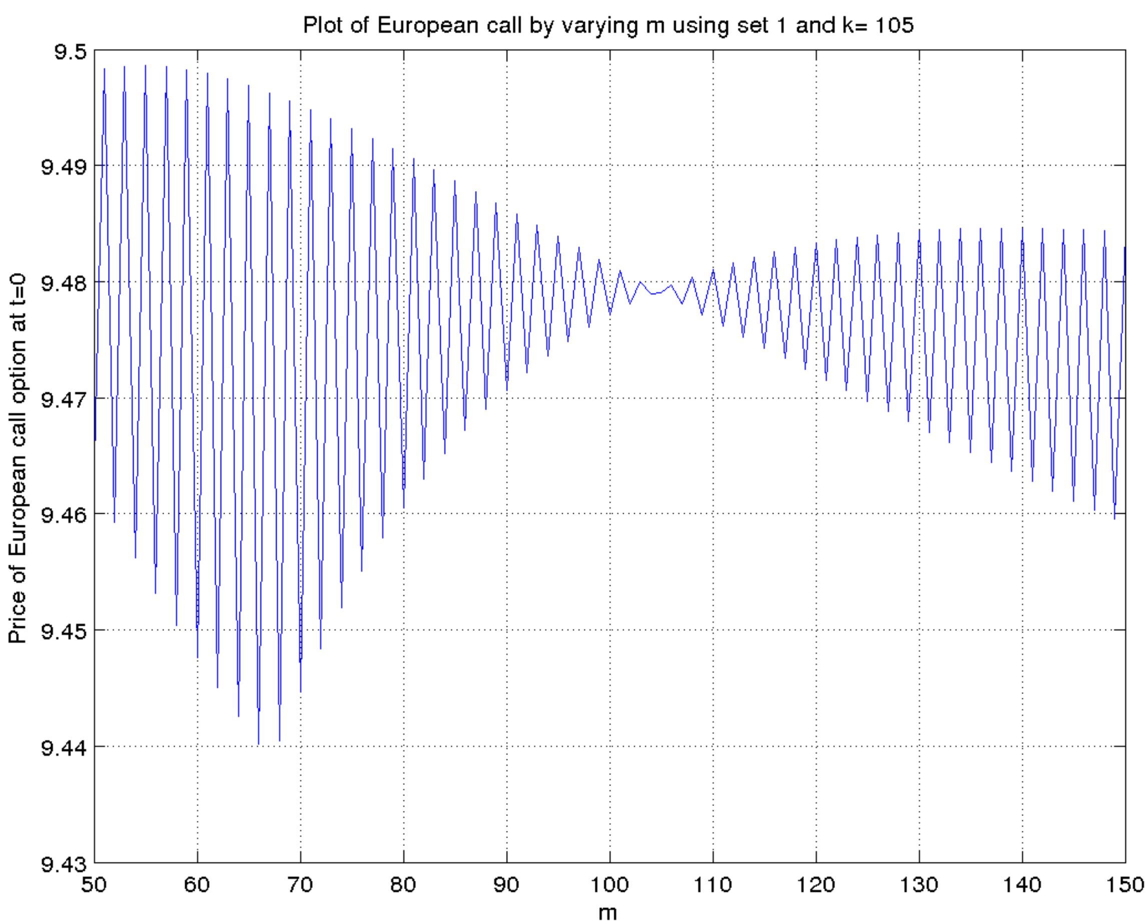

Plot of European call by varying sigma using set 2
Price of European call option at t=0
sigma
16
15
14
13
12
11
10
9
8
0.1
0.15
0.2
0.25
0.3
0.35

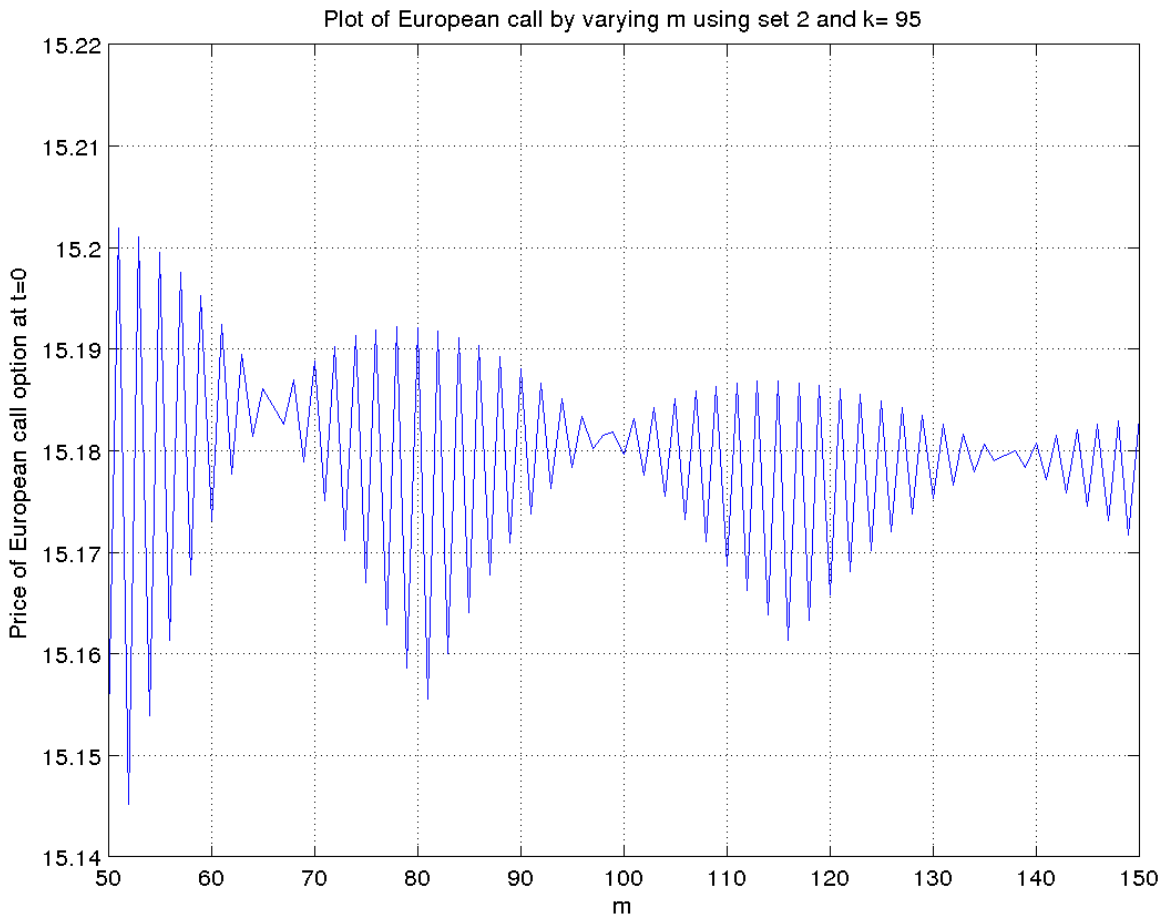

Plot of European put by varying sigma using set 1
Price of European put option at t=0
sigma
8
7
6
5
4
3
2
1
0.1
0.15
0.2
0.25
0.3
0.35

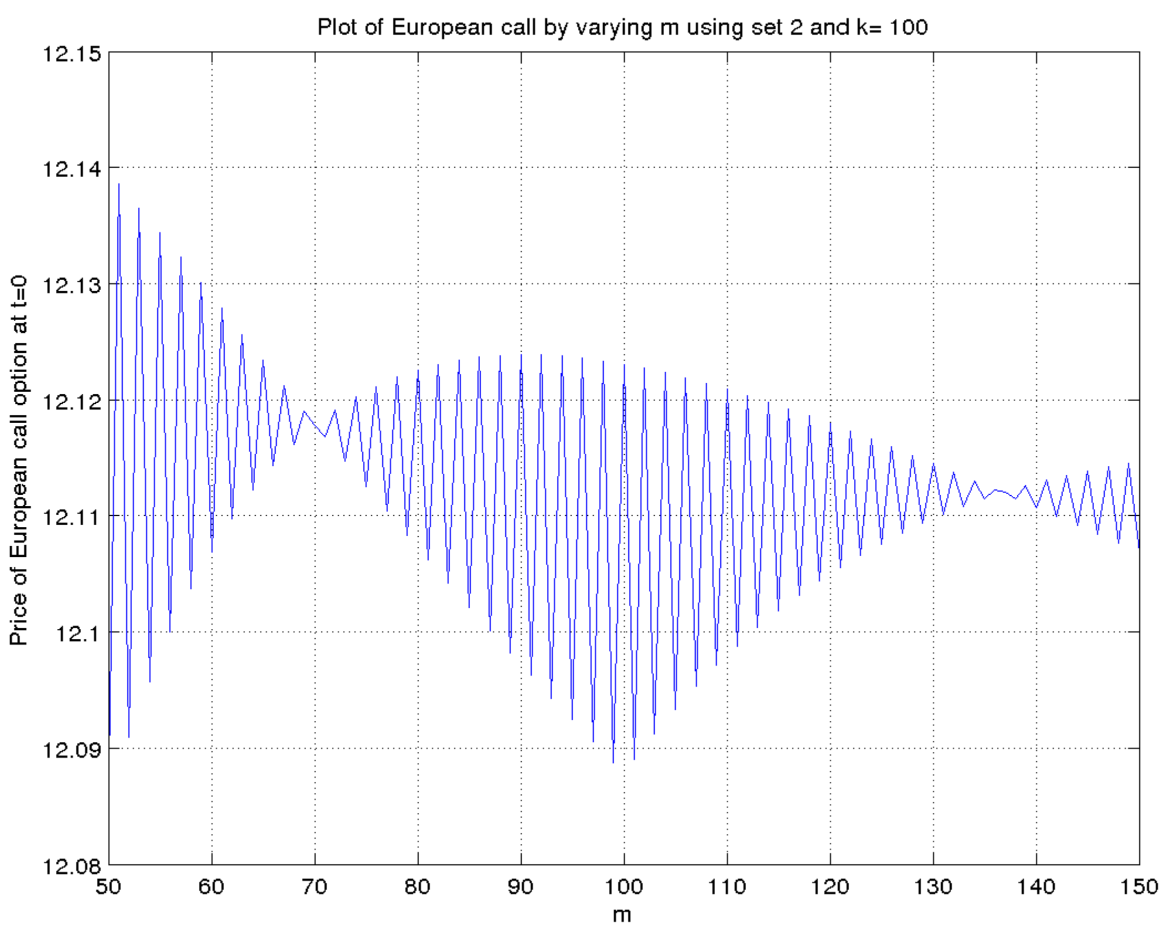

Plot of European put by varying sigma using set 2
Price of European put option at t=0
9
8
7
6
5
4
3
2

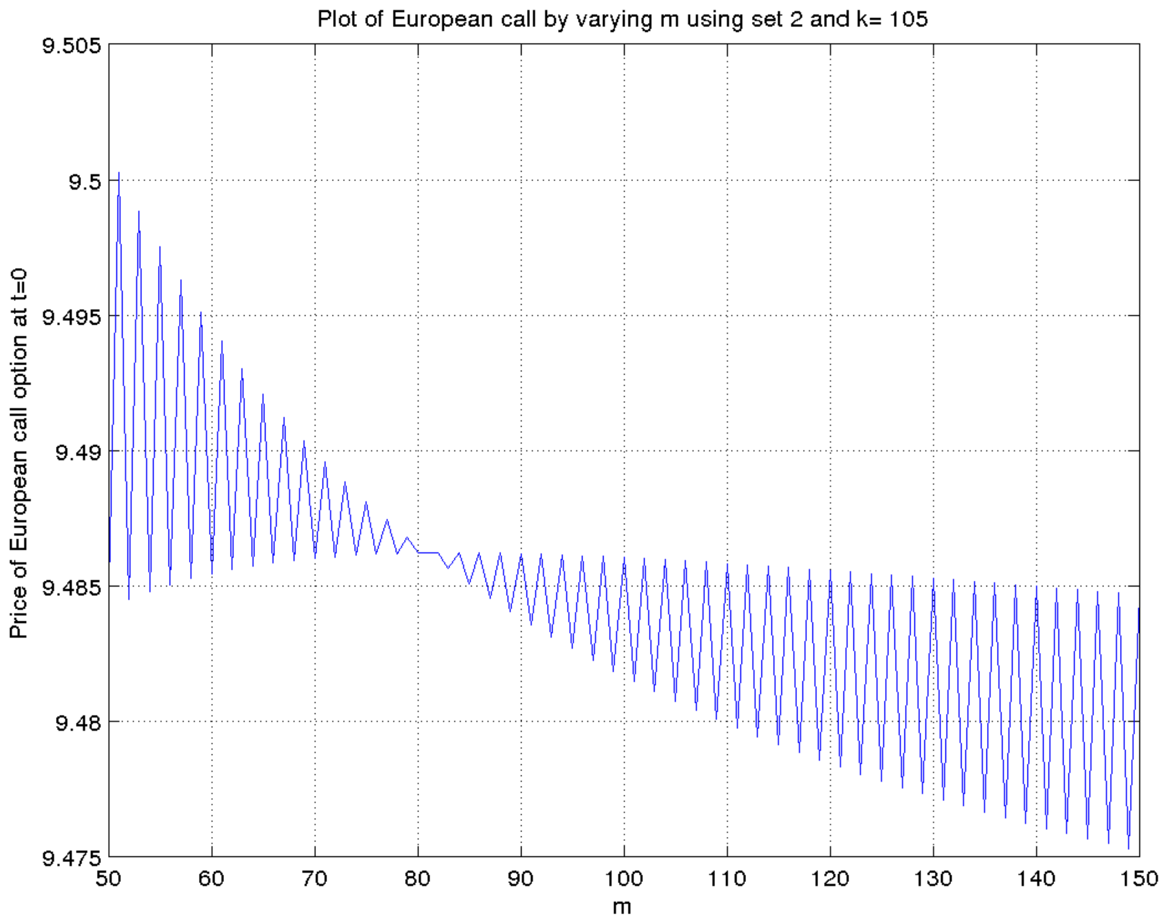

Plot of European call by varying m using set 1 and k= 95
Price of European call option at t=0
15.21
15.2
15.19
15.18
15.17
15.16
15.15
15.14
50
60
70
80
90
100
110
120
130
140
150
m

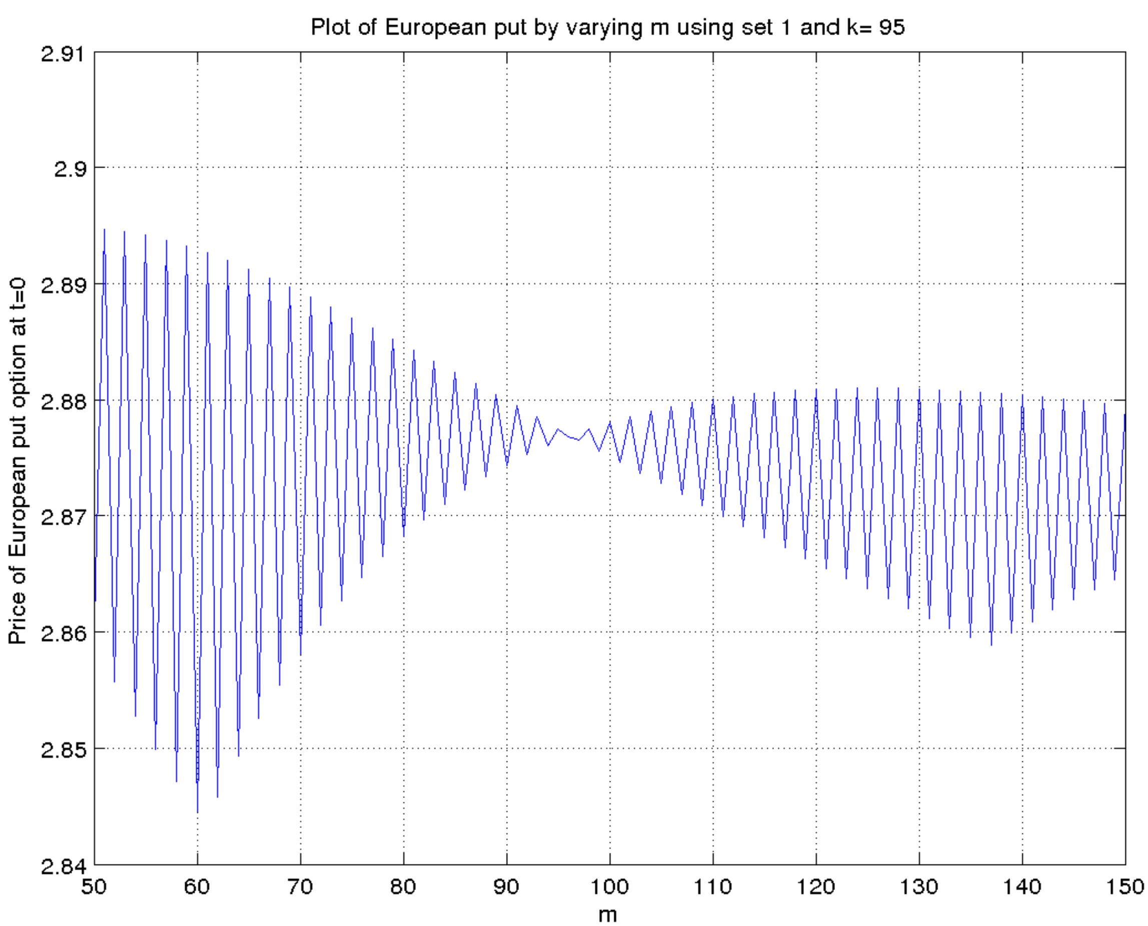

Plot of European call by varying m using set 1 and k= 100
Price of European call option at t=0
12.15
12.14
12.13
12.12
12.11
12.1
12.09
12.08
12.07
12.06
50
60
70
80
90
100
110
120
130
140
150
m

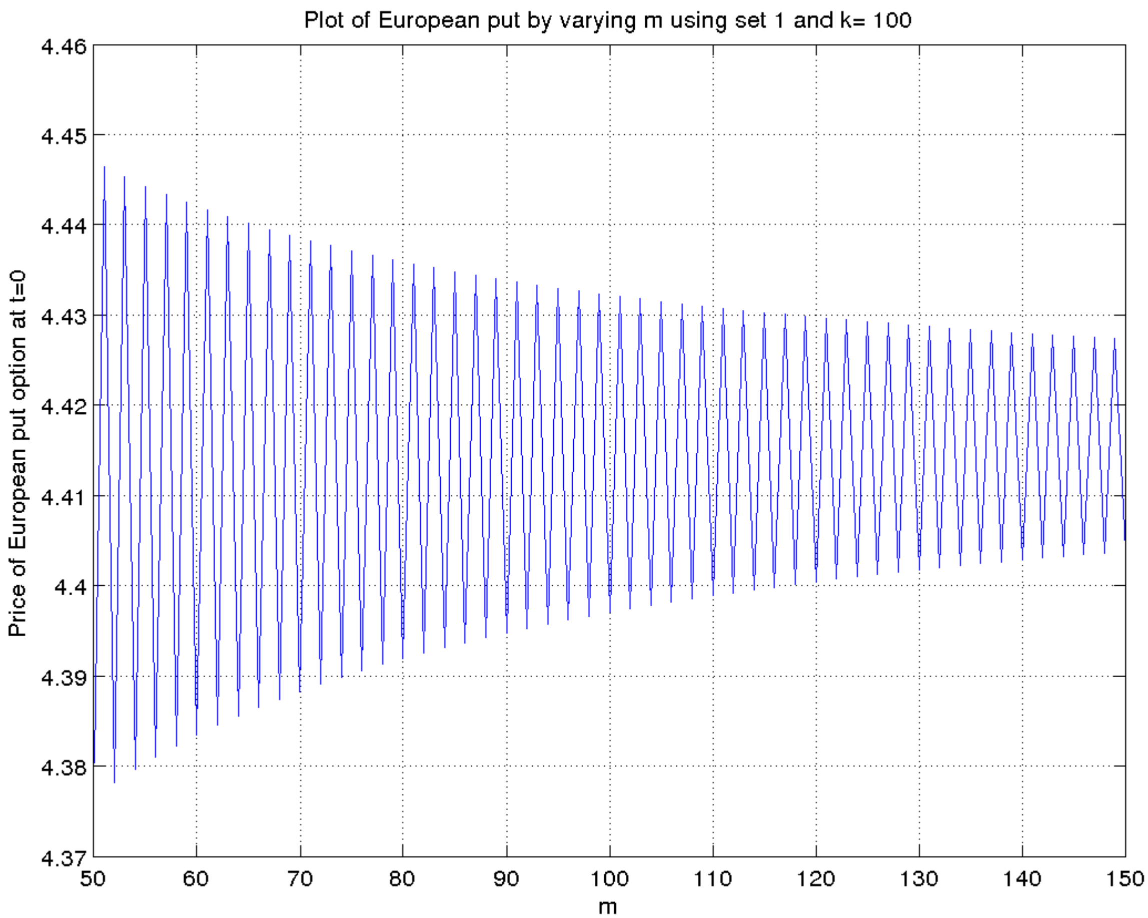

Plot of European call by varying m using set 1 and k= 105
Price of European call option at t=0
9.5
9.49
9.48
9.47
9.46
9.45
9.44
9.43
50
60
70
80
90
100
110
120
130
140
150
m

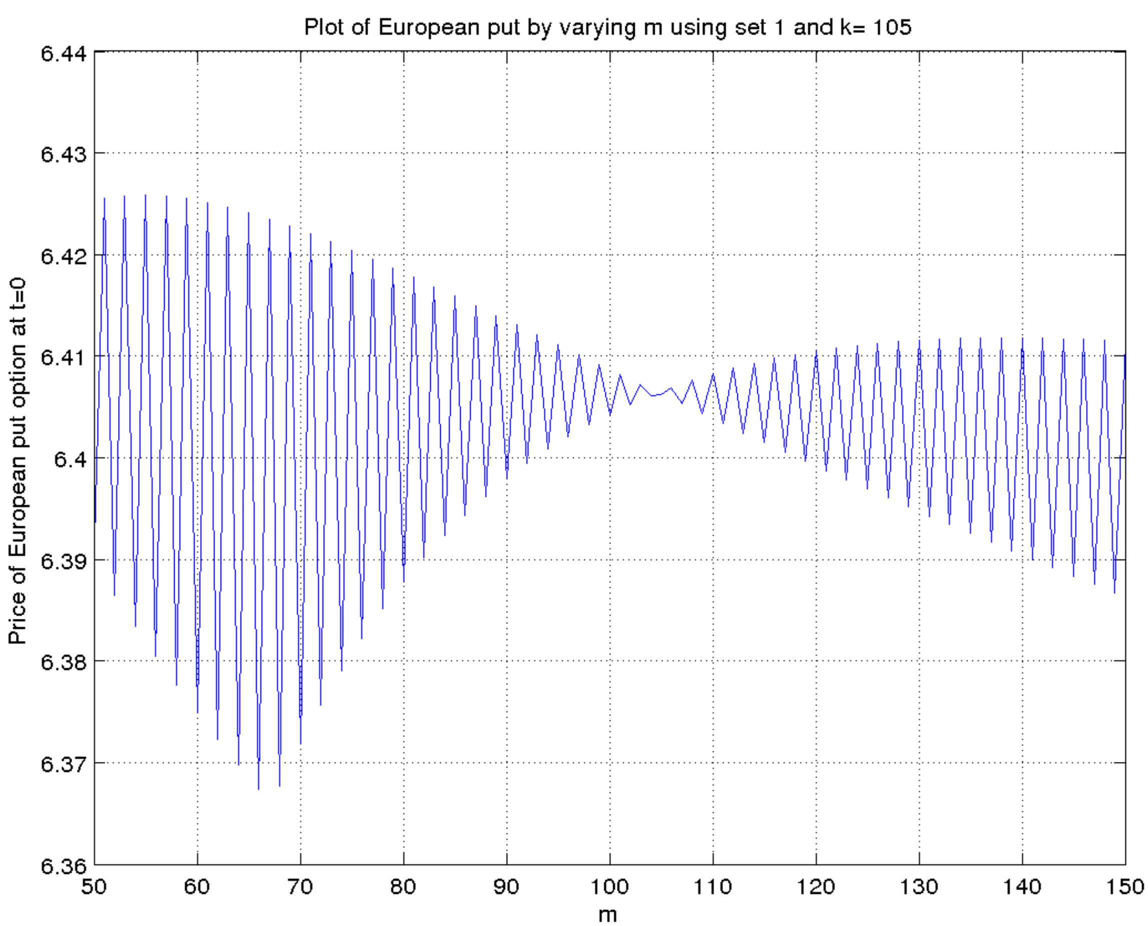

Plot of European call by varying m using set 2 and k= 95
Price of European call option at t=0
m
15.22
15.21
15.2
15.19
15.18
15.17
15.16
15.15
15.14
50
60
70
80
90
100
110
120
130
140
150

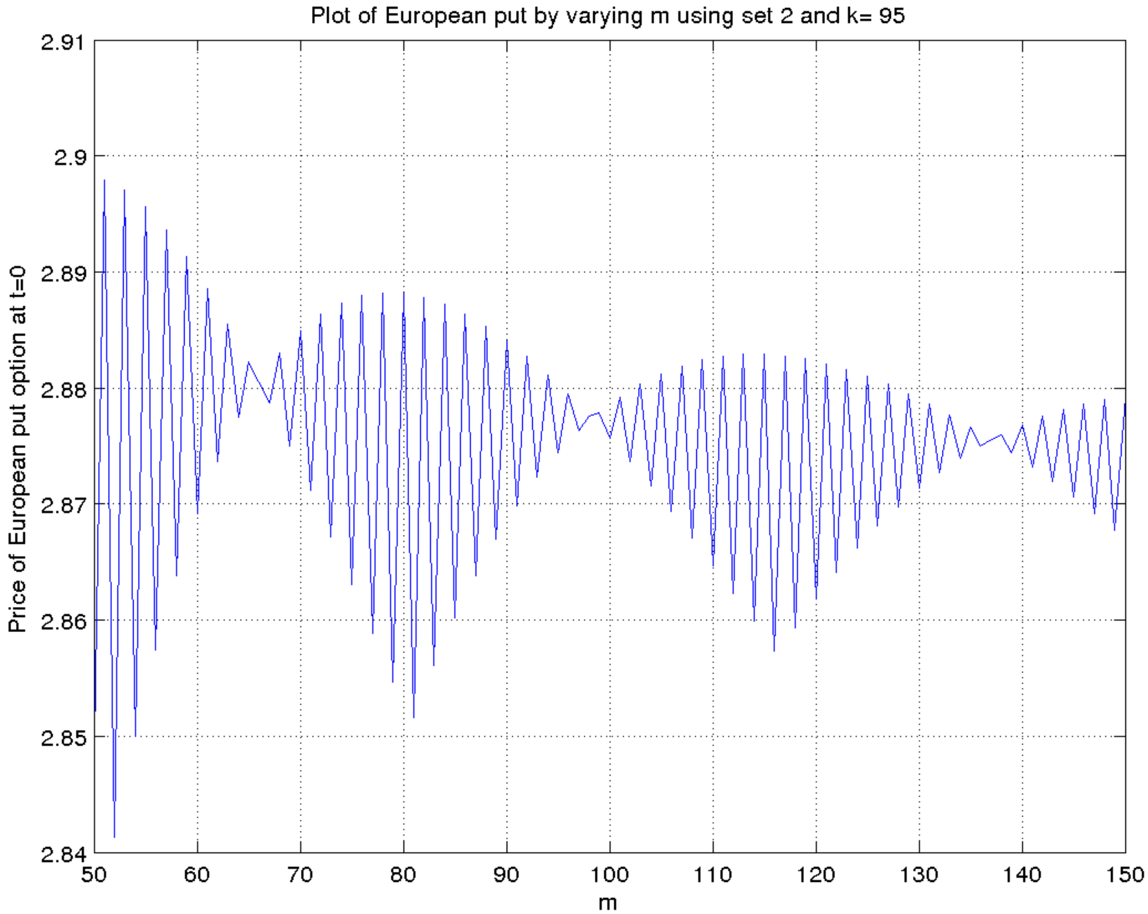

Plot of European call by varying m using set 2 and k= 100
Price of European call option at t=0
m
12.15
12.14
12.13
12.12
12.11
12.1
12.09
12.08
50
60
70
80
90
100
110
120
130
140
150

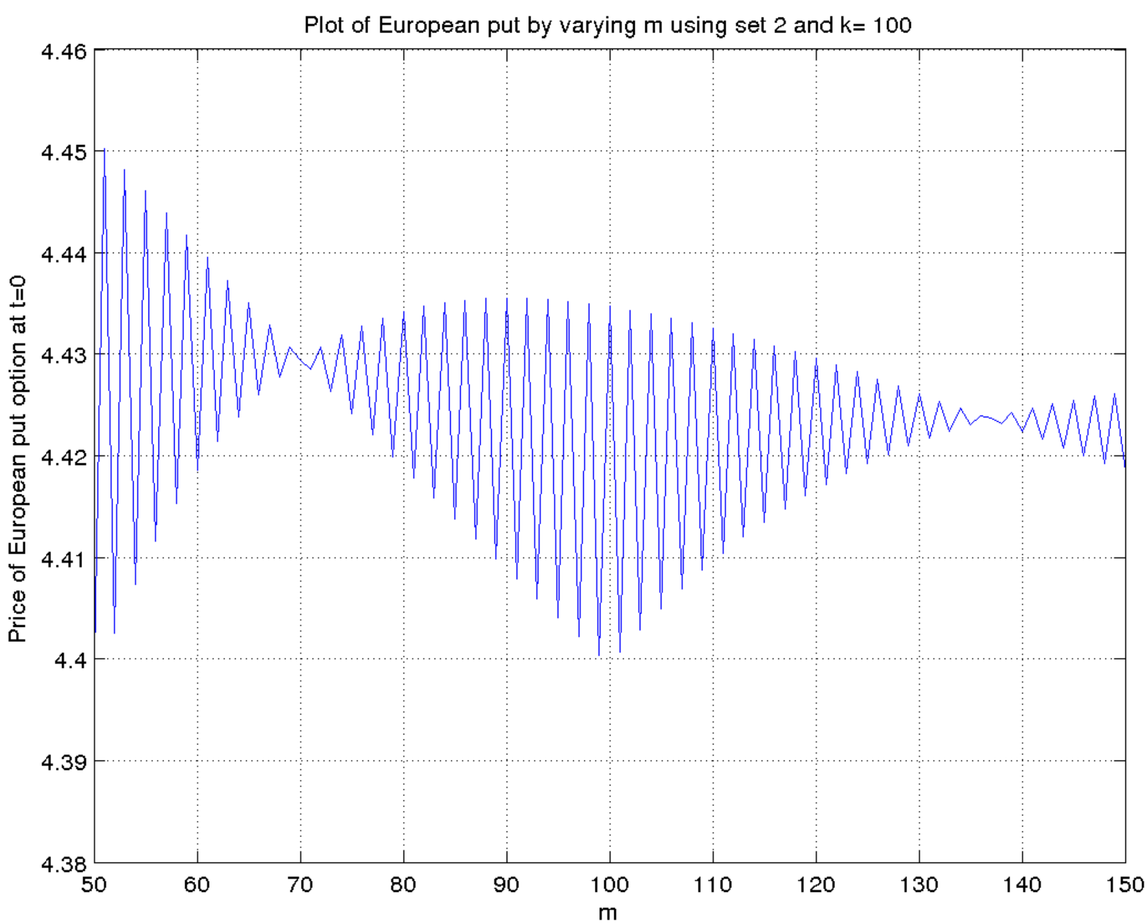

Plot of European call by varying m using set 2 and k= 105
Price of European call option at t=0
9.505
9.5
9.495
9.49
9.485
9.48
9.475
50
60
70
80
90
100
110
120
130
140
150
m

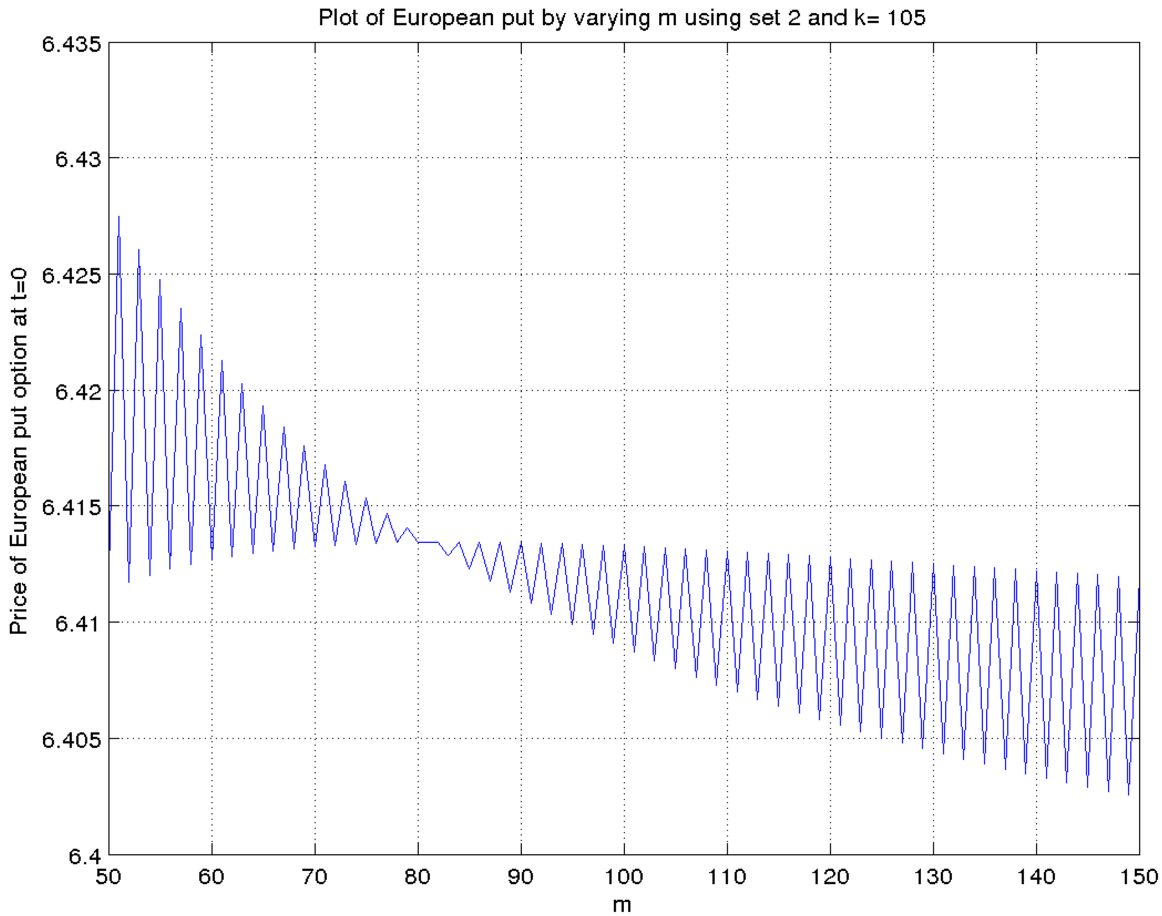

Plot of European put by varying m using set 1 and k= 95
Price of European put option at t=0
2.91
2.9
2.89
2.88
2.87
2.86
2.85
2.84
50
60
70
80
90
100
110
120
130
140
150
m


Plot of European put by varying m using set 1 and k= 100
Price of European put option at t=0
4.46
4.45
4.44
4.43
4.42
4.41
4.4
4.39
4.38
4.37
50
60
70
80
90
100
110
120
130
140
150
m


Plot of European put by varying m using set 1 and k= 105
Price of European put option at t=0
6.44
6.43
6.42
6.41
6.4
6.39
6.38
6.37
6.36
50
60
70
80
90
100
110
120
130
140
150
m


Plot of European put by varying m using set 2 and k= 95
Price of European put option at t=0
m
2.91
2.9
2.89
2.88
2.87
2.86
2.85
2.84
50
60
70
80
90
100
110
120
130
140
150


Plot of European put by varying m using set 2 and k= 100
Price of European put option at t=0
m
4.46
4.45
4.44
4.43
4.42
4.41
4.4
4.39
4.38
50
60
70
80
90
100
110
120
130
140
150

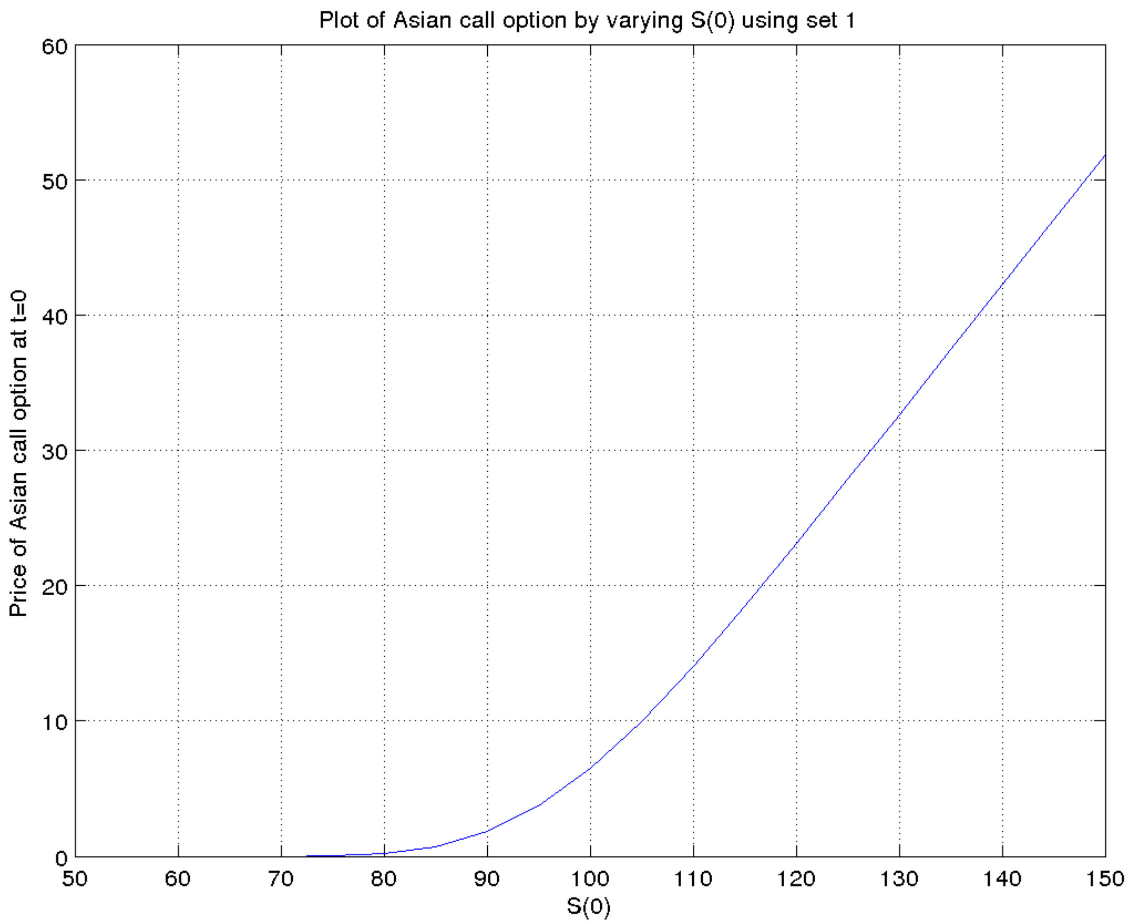


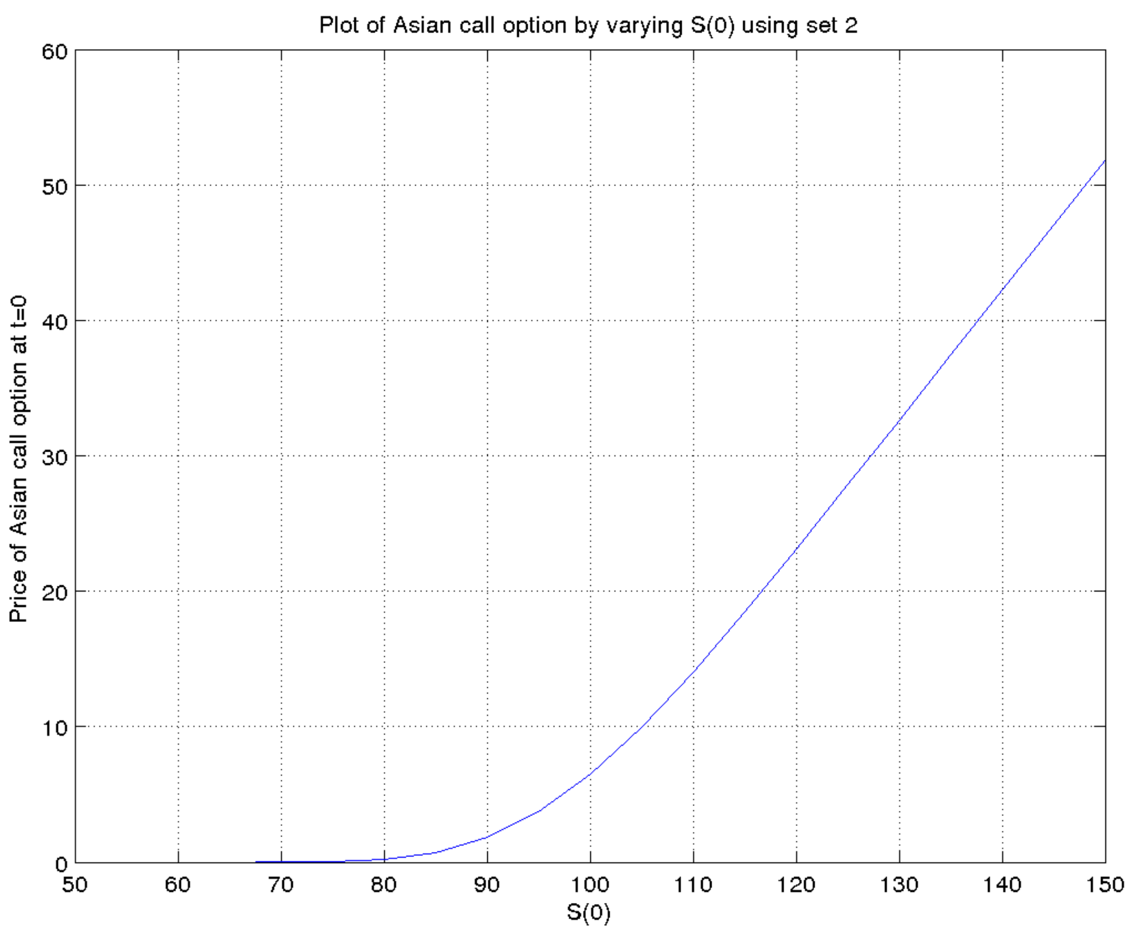
2:

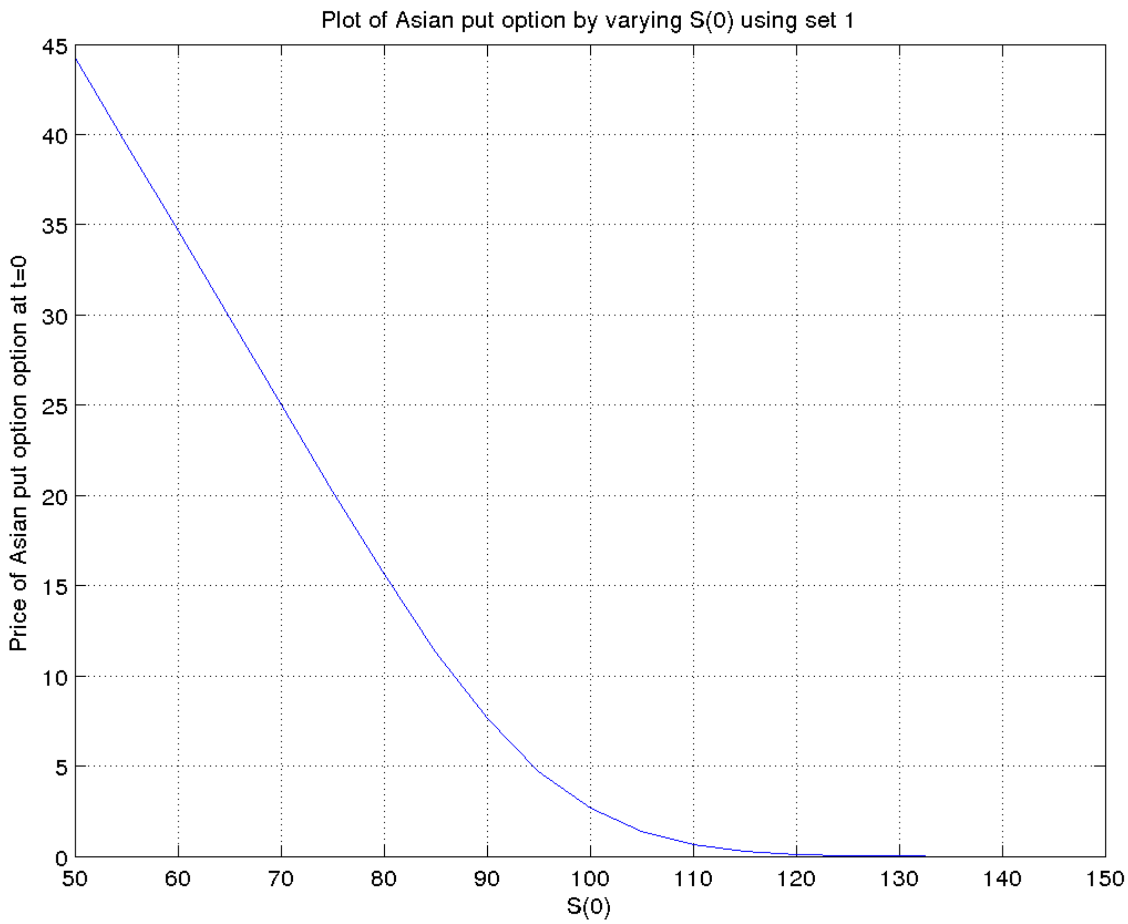
Observation:

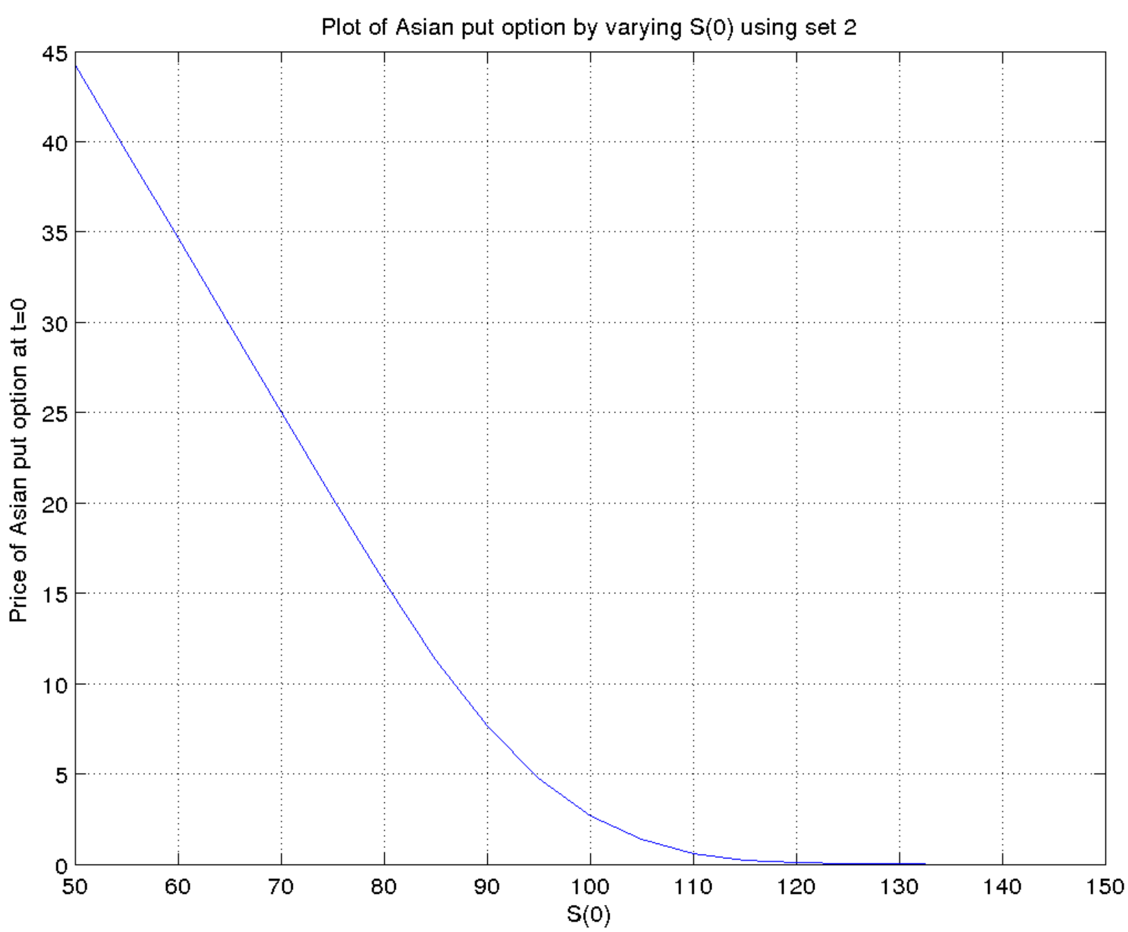
For set 1 The value of Asian call option at t=0 taking m=10 is 6.47600305.
For set 1 The value of Asian put option at t=0 taking m=10 is 2.67794559.
For set 2 The value of Asian call option at t=0 taking m=10 is 6.49002938.
For set 2 The value of Asian put option at t=0 taking m=10 is 2.69197192.

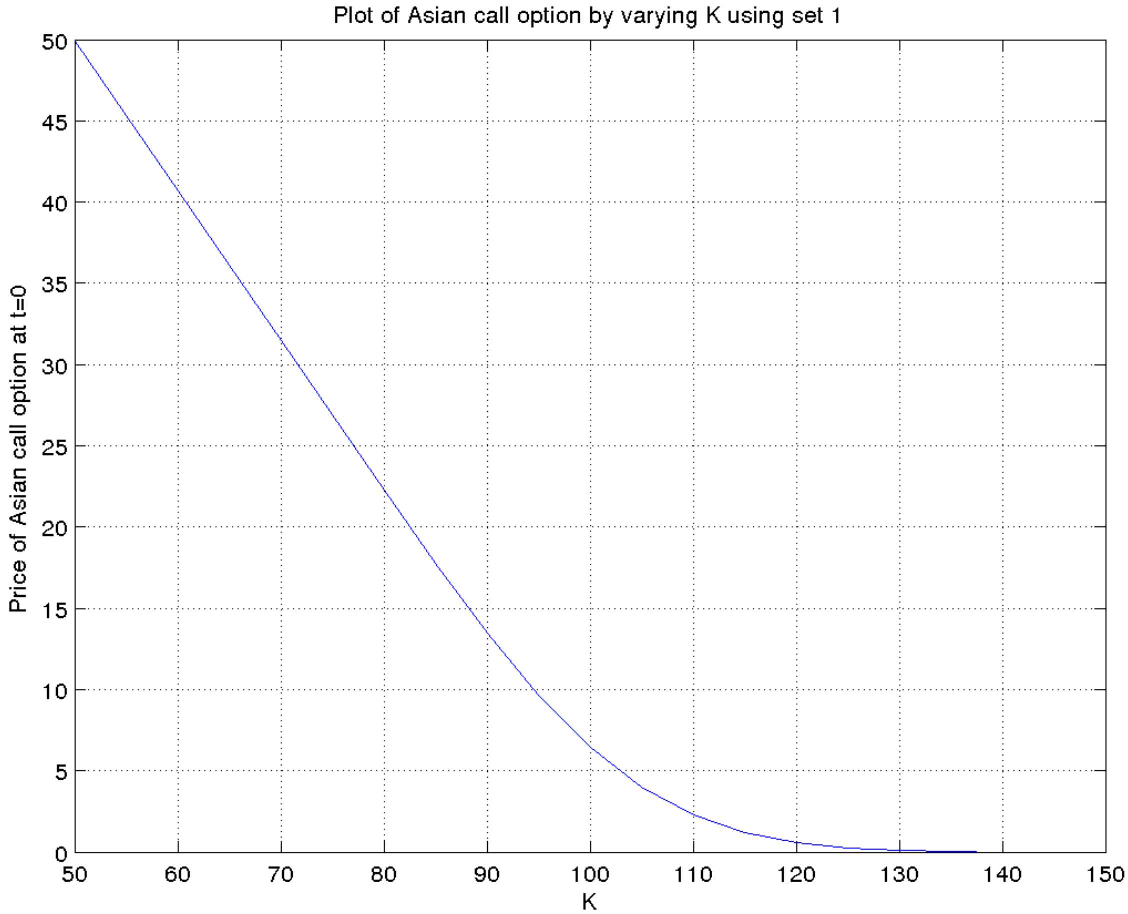
Graph:

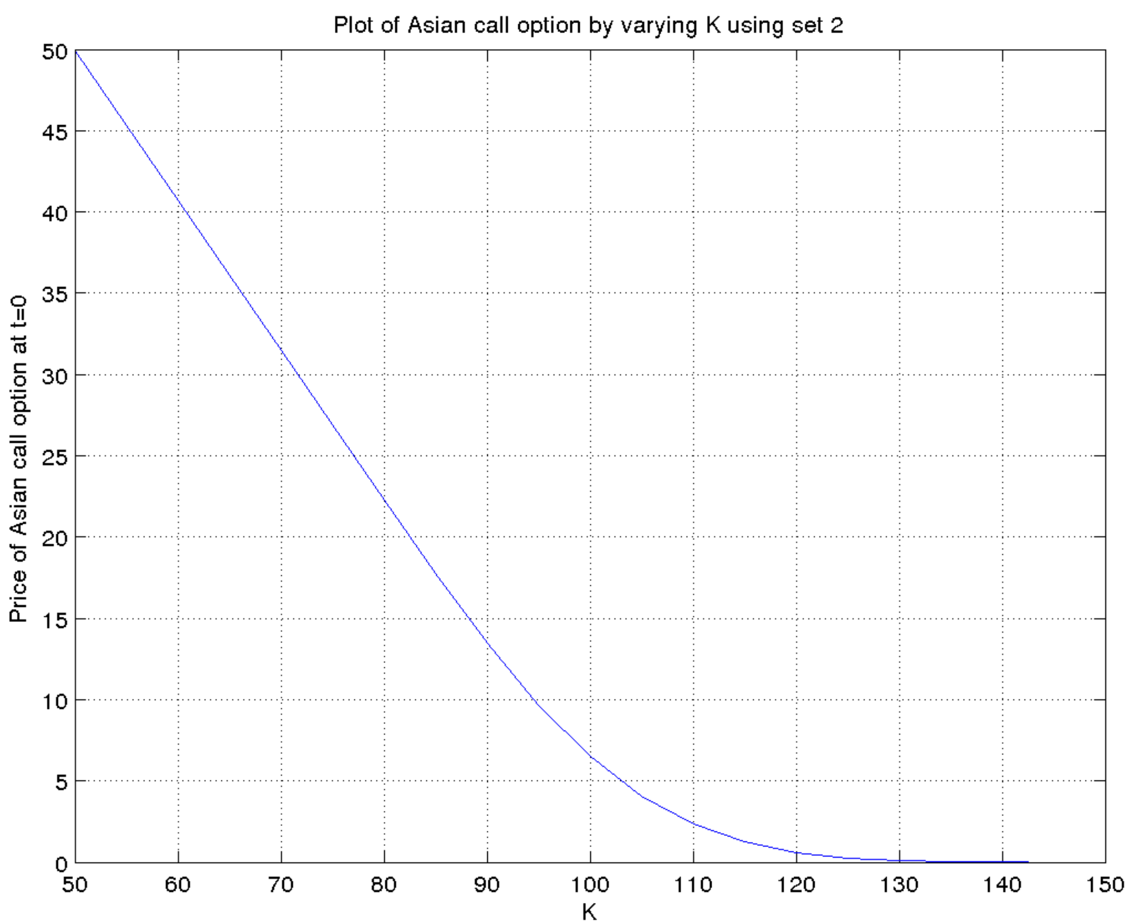

Plot of Asian call option by varying S(0) using set 1
Price of Asian call option at t=0
S(0)
0
10
20
30
40
50
60
50
60
70
80
90
100
110
120
130
140
150

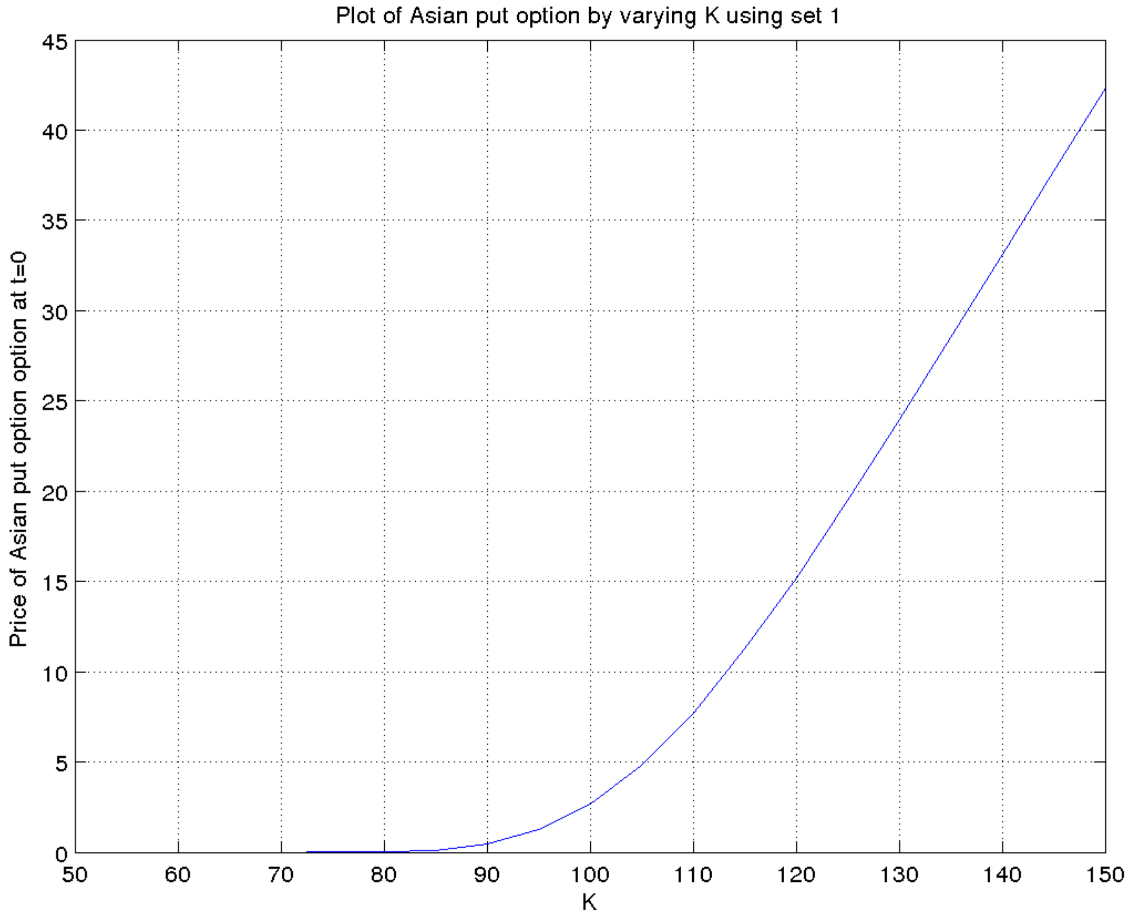

Plot of Asian call option by varying S(0) using set 2
Price of Asian call option at t=0
S(0)
0
10
20
30
40
50
60
50
60
70
80
90
100
110
120
130
140
150

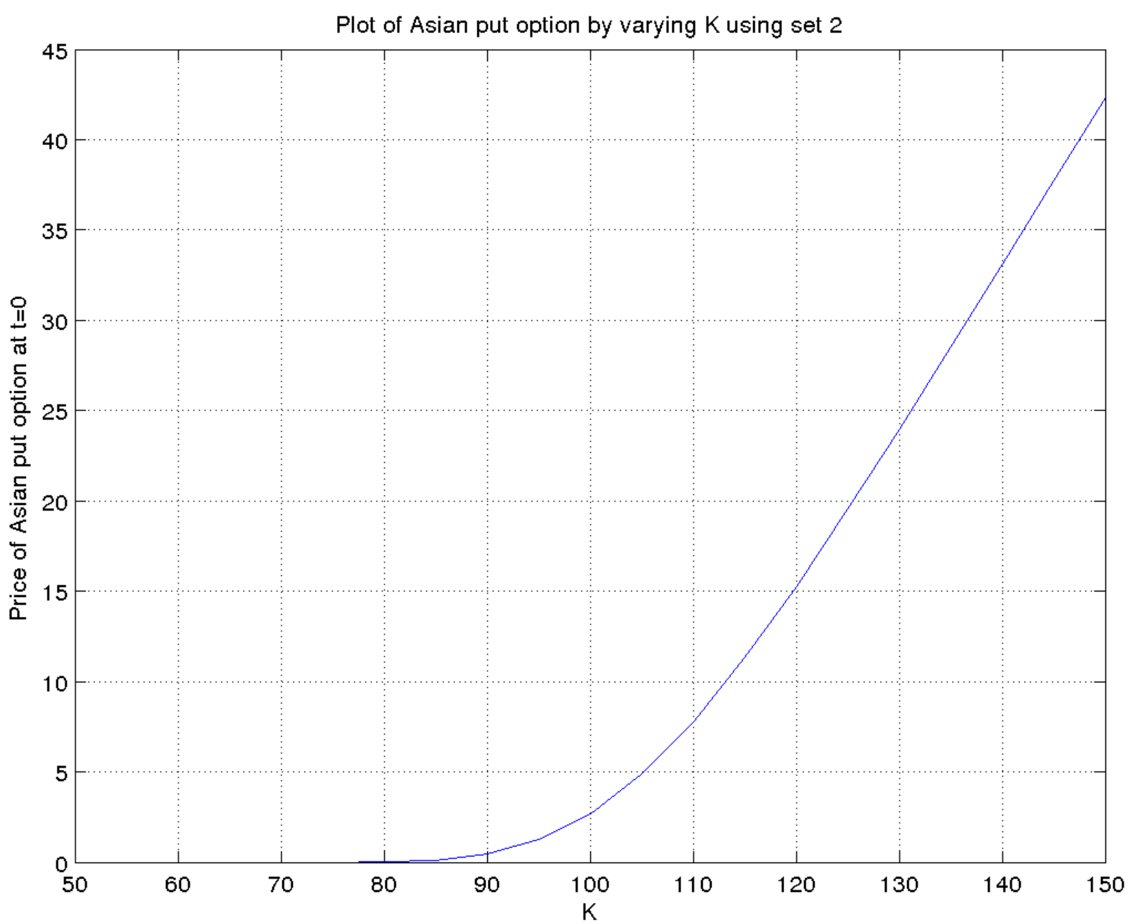

Plot of Asian put option by varying S(0) using set 1
Price of Asian put option option at t=0
S(0)
0
5
10
15
20
25
30
35
40
45
50
60
70
80
90
100
110
120
130
140
150

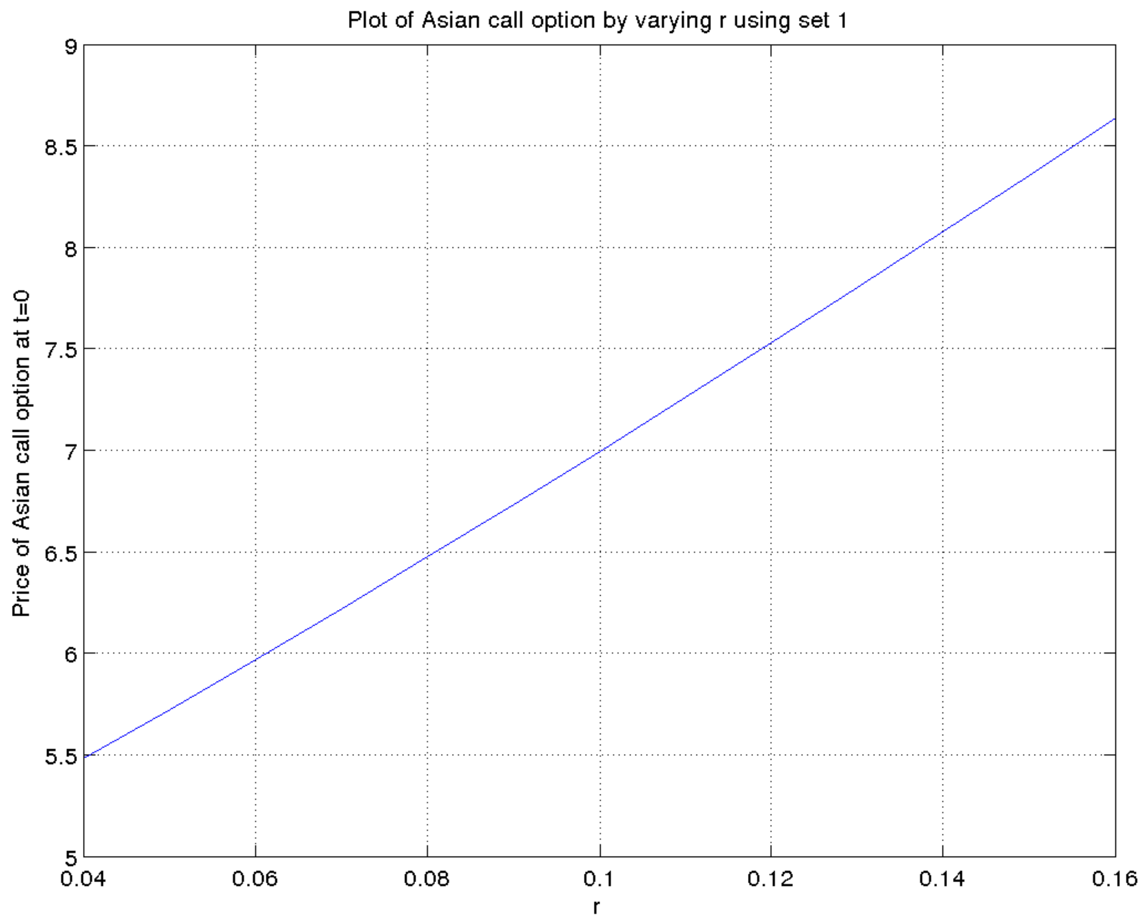

Plot of Asian put option by varying S(0) using set 2
Price of Asian put option option at t=0
S(0)
0
5
10
15
20
25
30
35
40
45
50
60
70
80
90
100
110
120
130
140
150

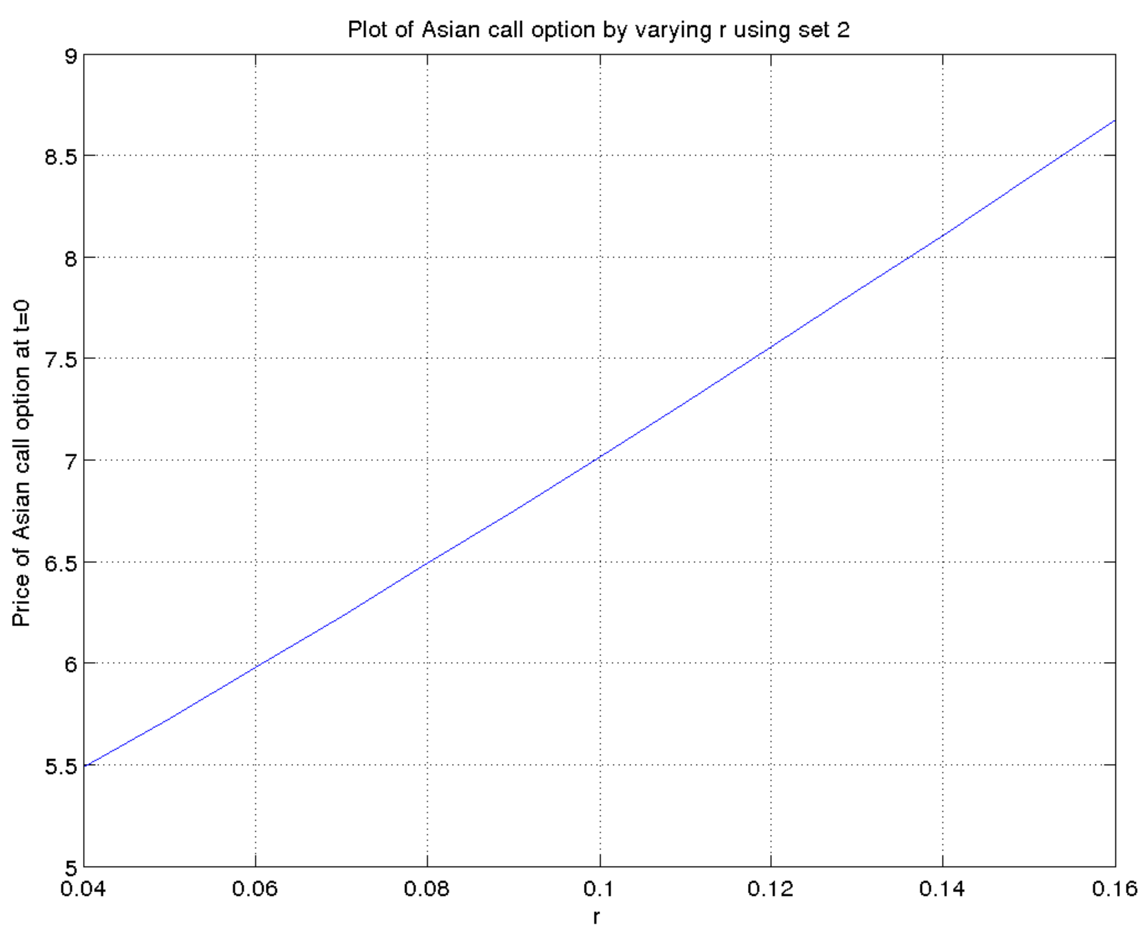

Plot of Asian call option by varying K using set 1
Price of Asian call option at t=0
K
0
5
10
15
20
25
30
35
40
45
50
60
70
80
90
100
110
120
130
140
150

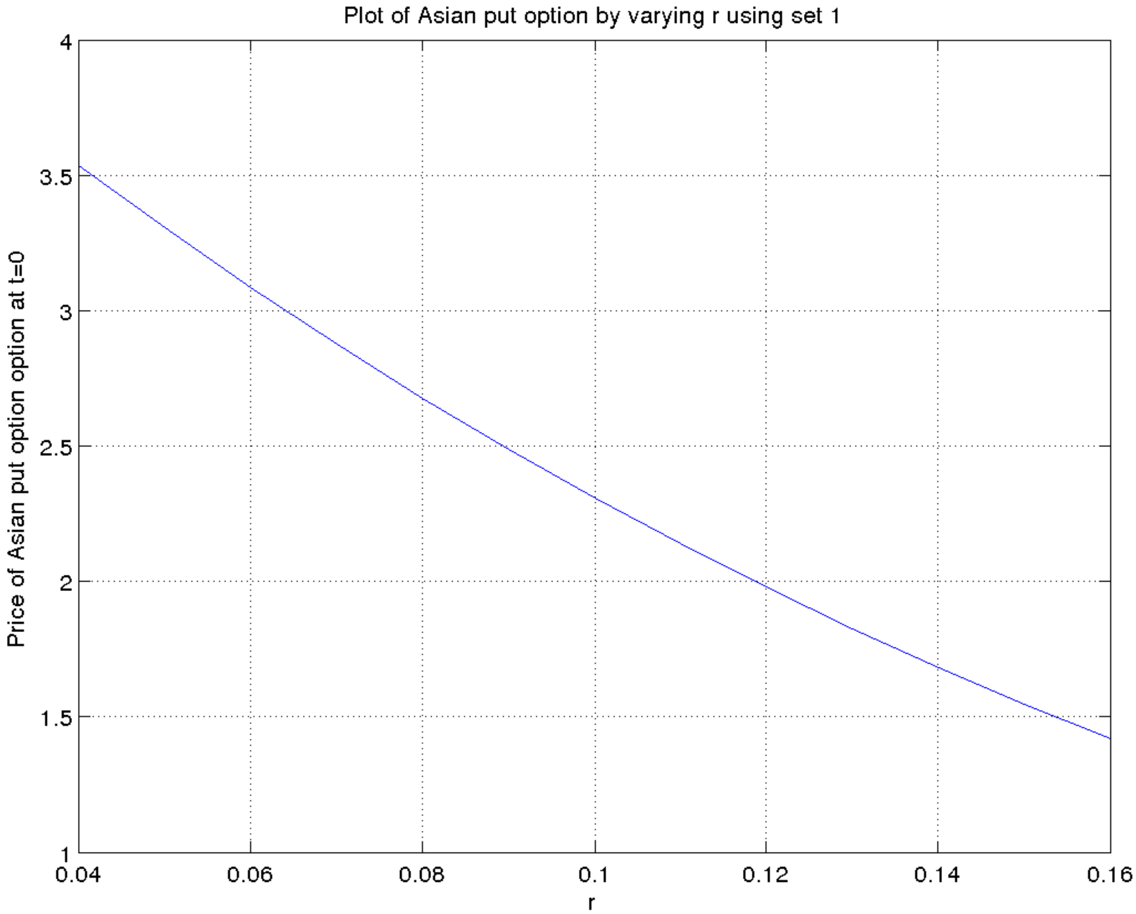

Plot of Asian call option by varying K using set 2
Price of Asian call option at t=0
K
0
5
10
15
20
25
30
35
40
45
50
60
70
80
90
100
110
120
130
140
150

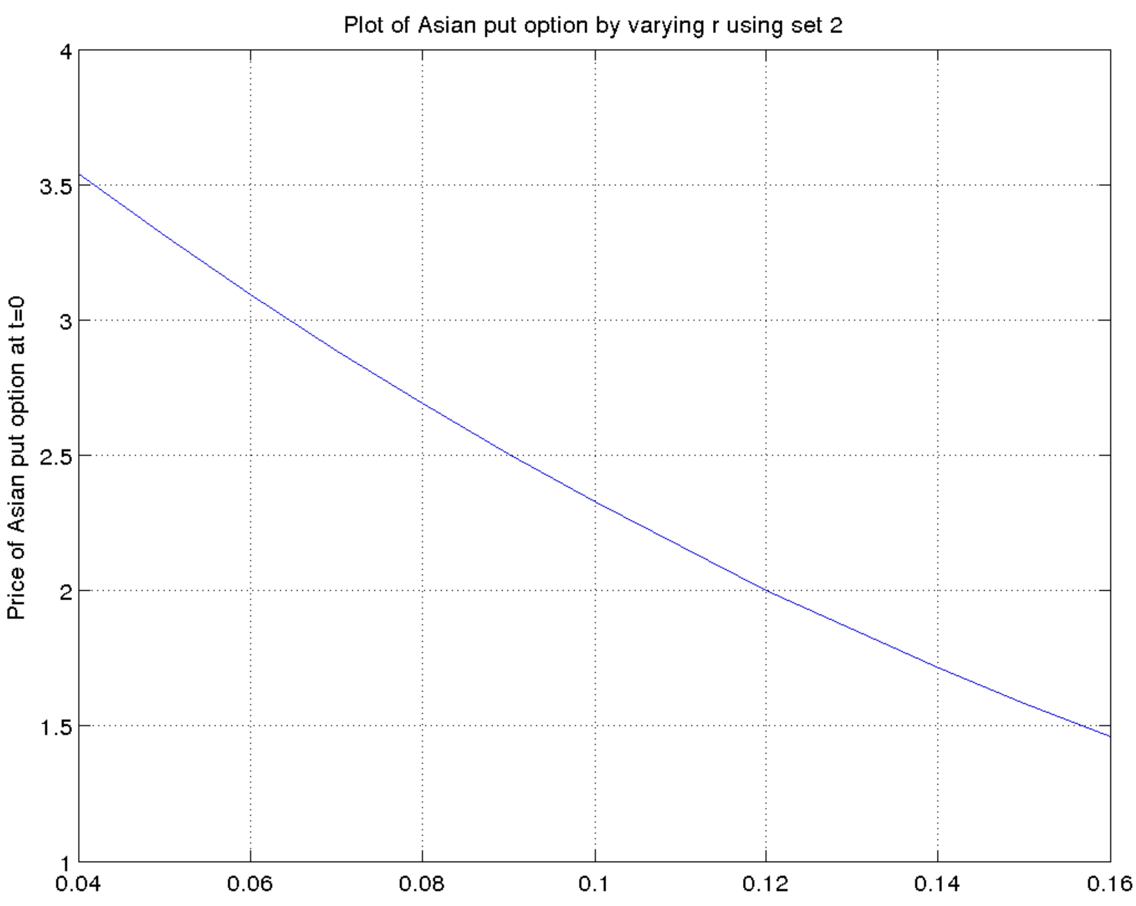

Plot of Asian put option by varying K using set 1
Price of Asian put option option at t=0
K
0
5
10
15
20
25
30
35
40
45
50
60
70
80
90
100
110
120
130
140
150

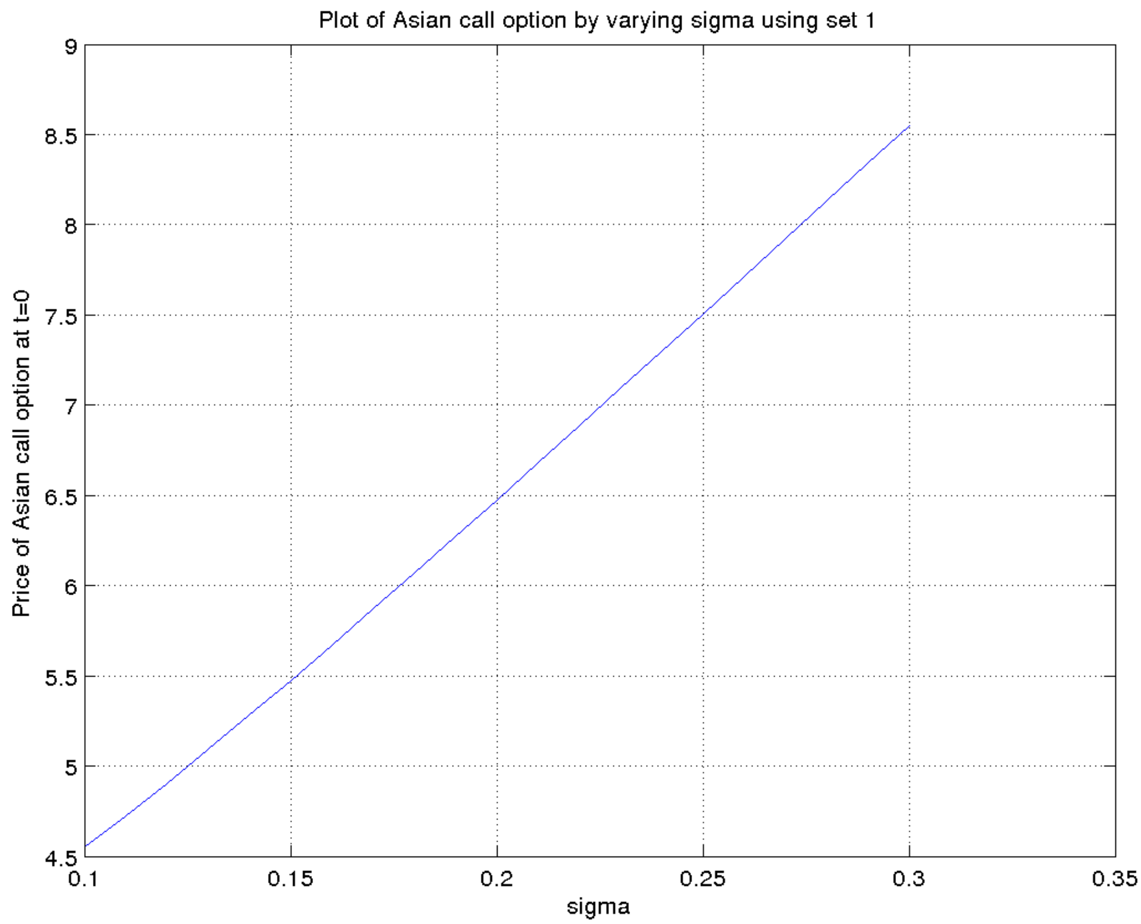

Plot of Asian put option by varying K using set 2
Price of Asian put option option at t=0
K
0
5
10
15
20
25
30
35
40
45
50
60
70
80
90
100
110
120
130
140
150

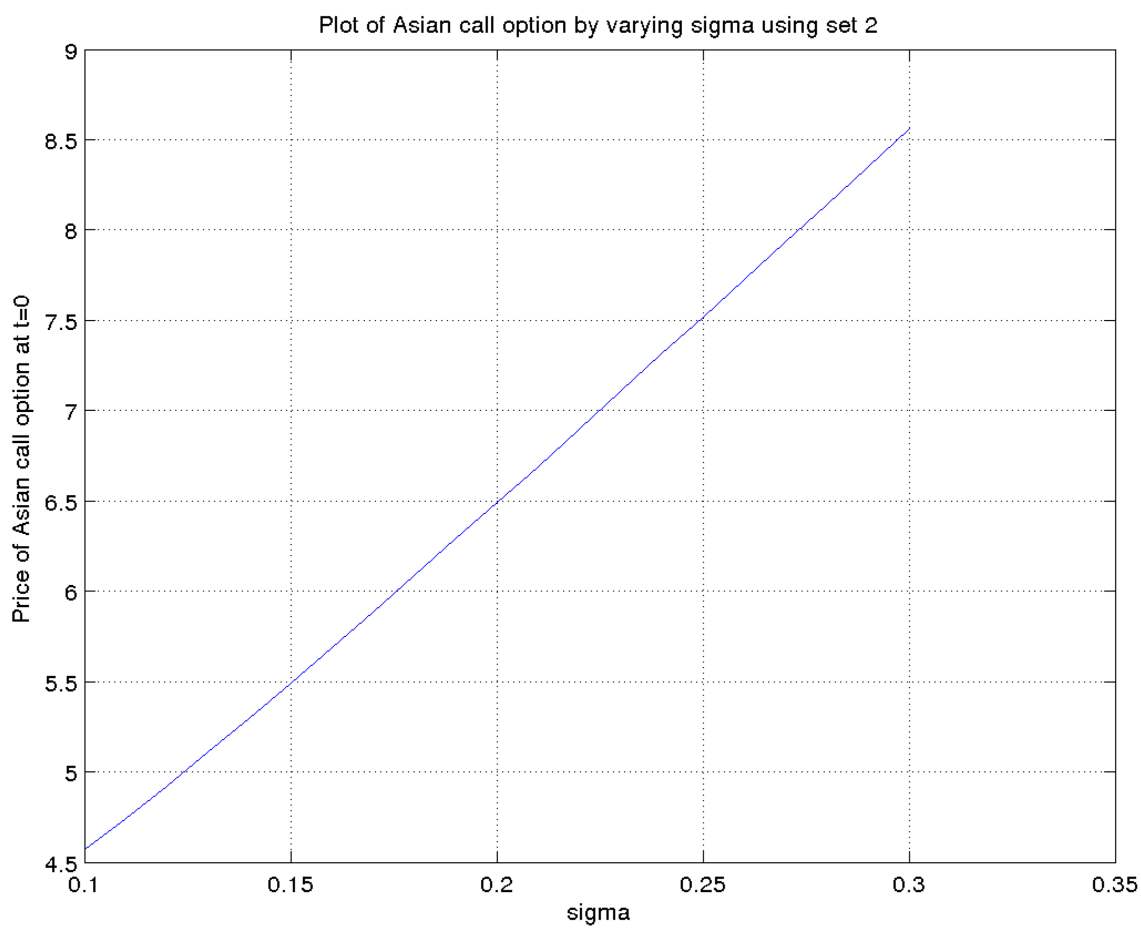

Plot of Asian call option by varying r using set 1
Price of Asian call option at t=0
r
9
8.5
8
7.5
7
6.5
6
5.5
5
0.04
0.06
0.08
0.1
0.12
0.14
0.16

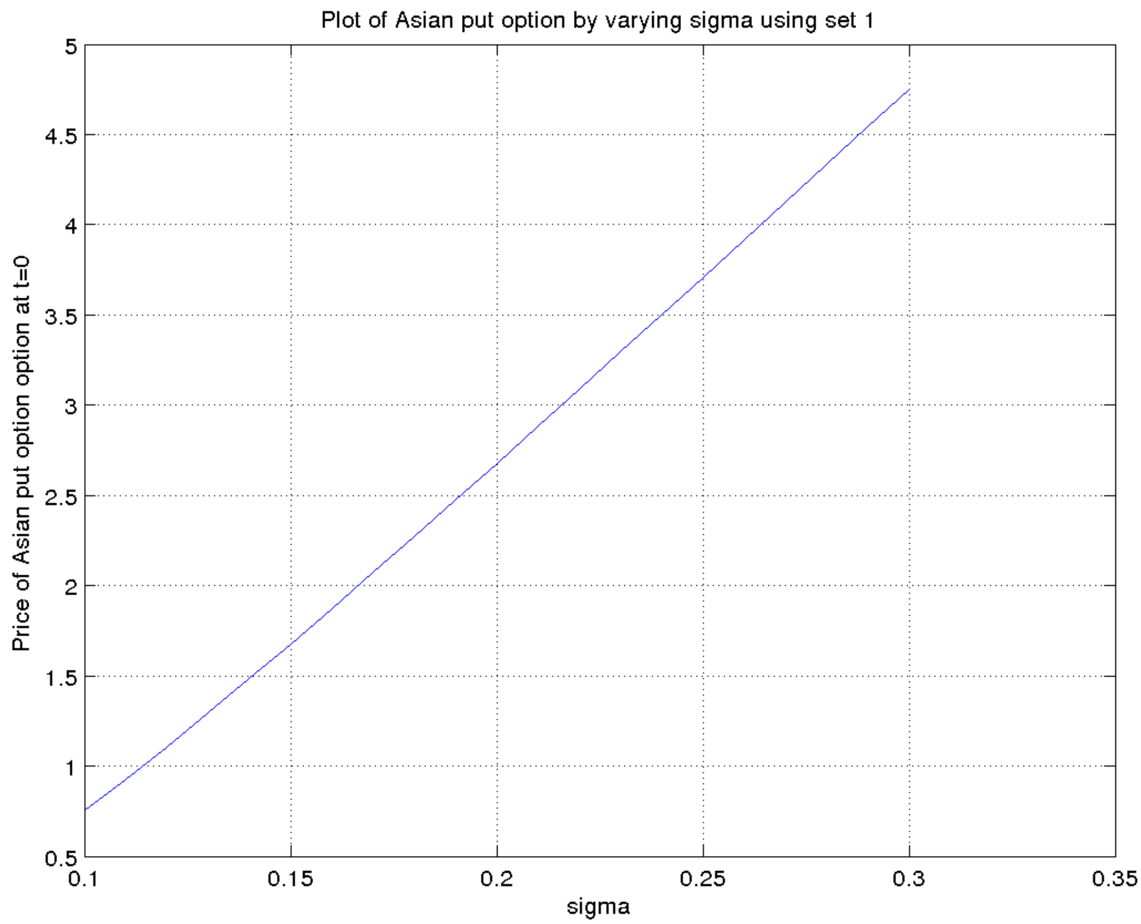

Plot of Asian call option by varying r using set 2
Price of Asian call option at t=0
r
9
8.5
8
7.5
7
6.5
6
5.5
5
0.04
0.06
0.08
0.1
0.12
0.14
0.16

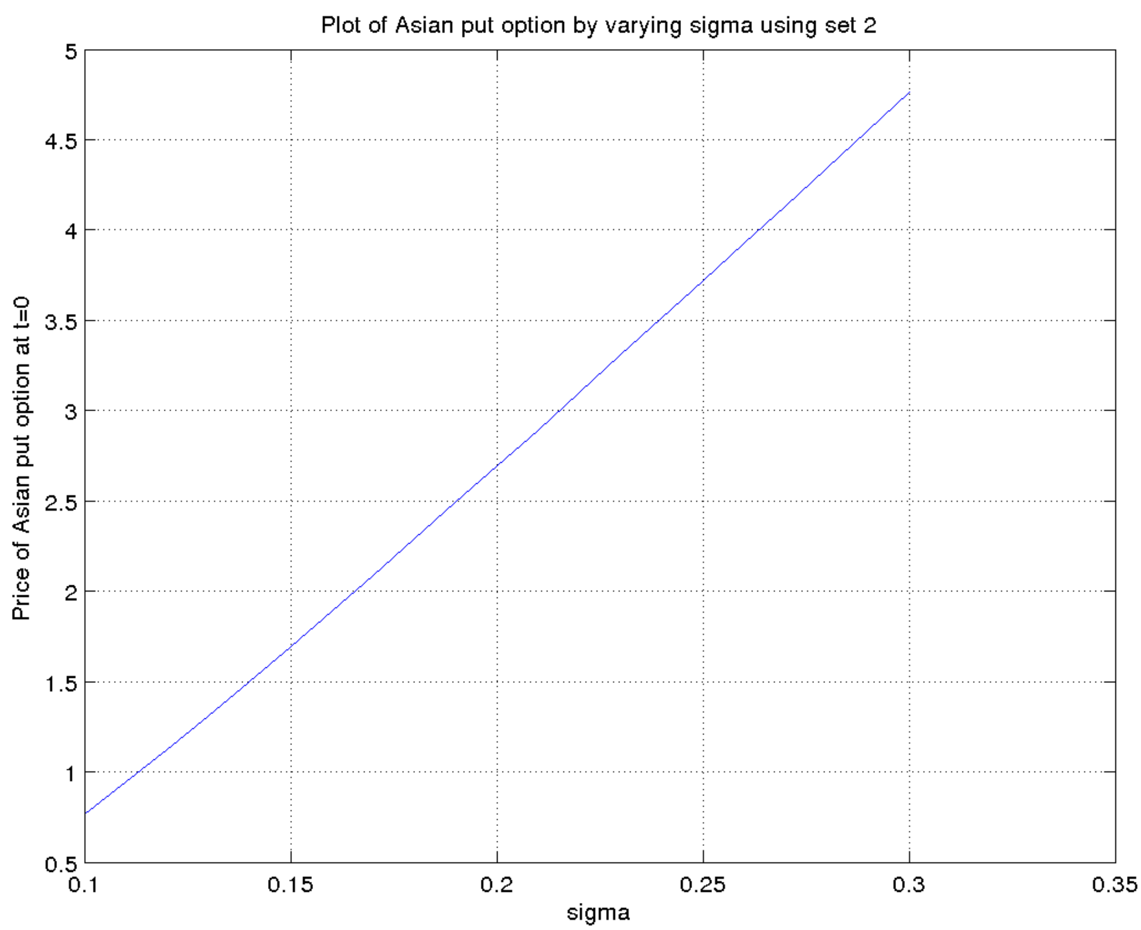

Plot of Asian put option by varying r using set 1
Price of Asian put option option at t=0
r
4
3.5
3
2.5
2
1.5
1
0.04
0.06
0.08
0.1
0.12
0.14
0.16

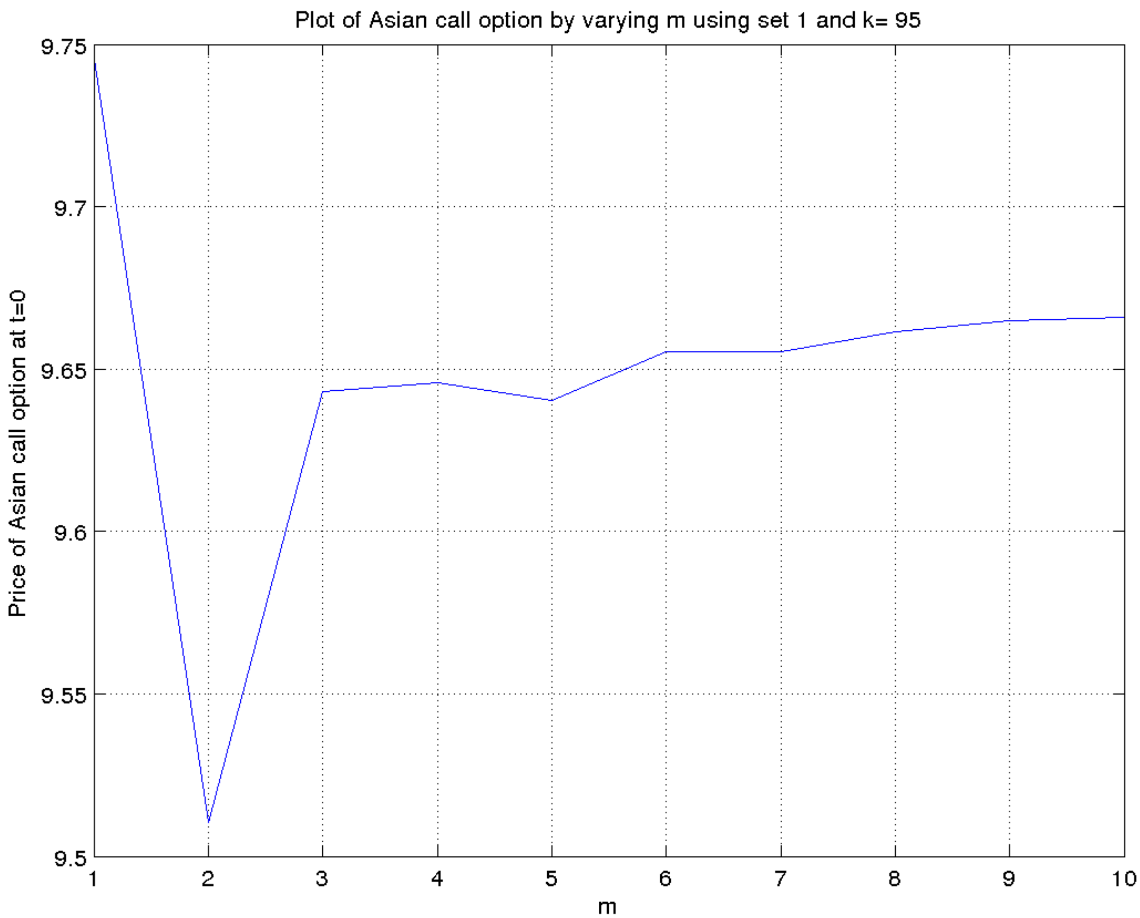

Plot of Asian put option by varying r using set 2
Price of Asian put option at t=0
r
4
3.5
3
2.5
2
1.5
1
0.04
0.06
0.08
0.1
0.12
0.14
0.16

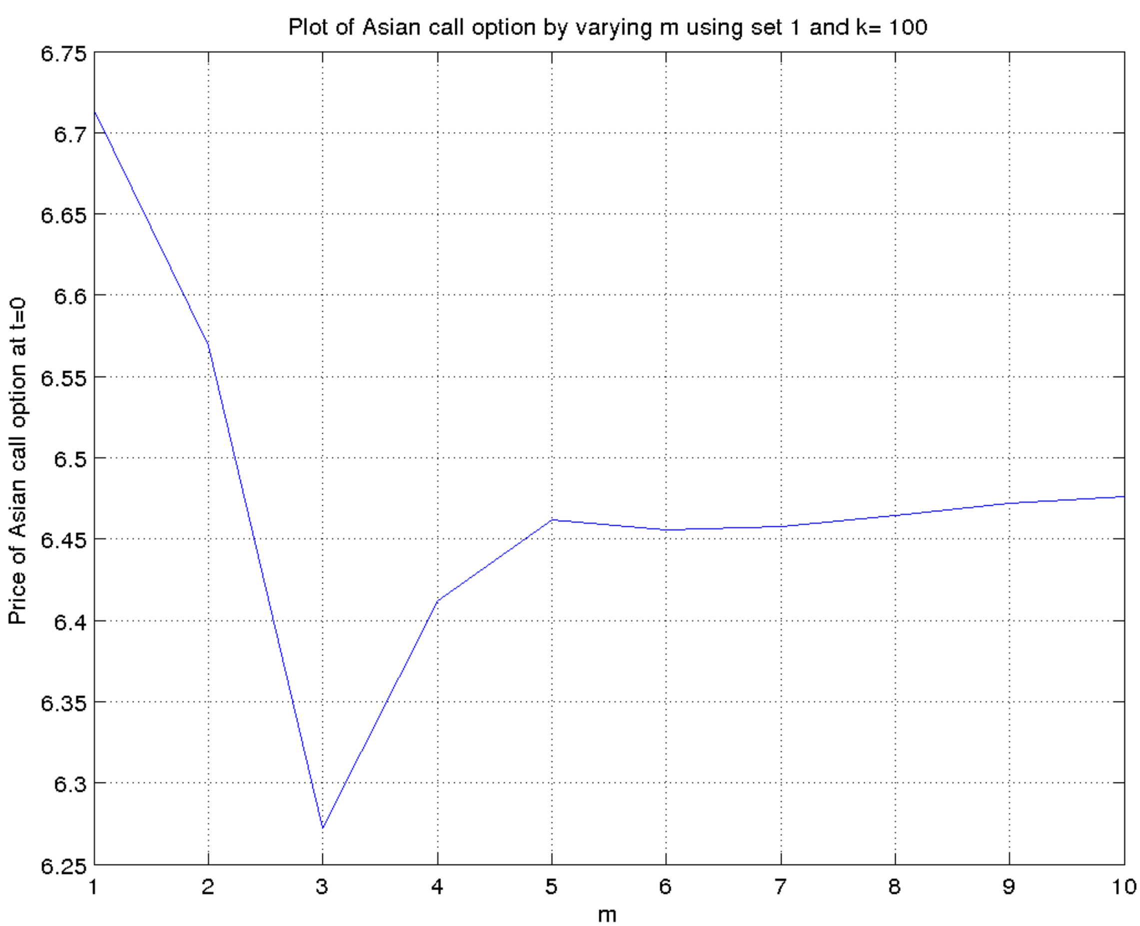

Plot of Asian call option by varying sigma using set 1
Price of Asian call option at t=0
sigma
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
0.1
0.15
0.2
0.25
0.3
0.35

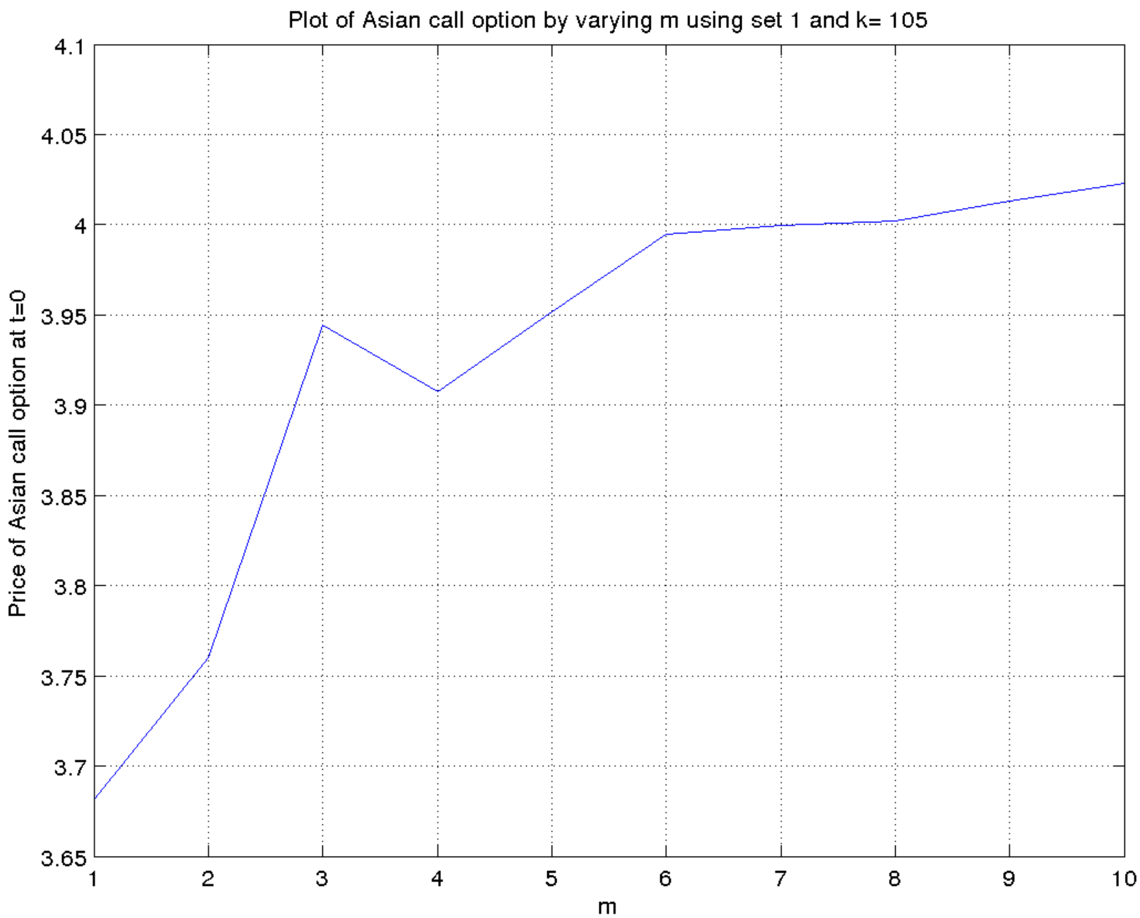

Plot of Asian call option by varying sigma using set 2
Price of Asian call option at t=0
sigma
9
8.5
8
7.5
7
6.5
6
5.5
5
4.5
0.1
0.15
0.2
0.25
0.3
0.35

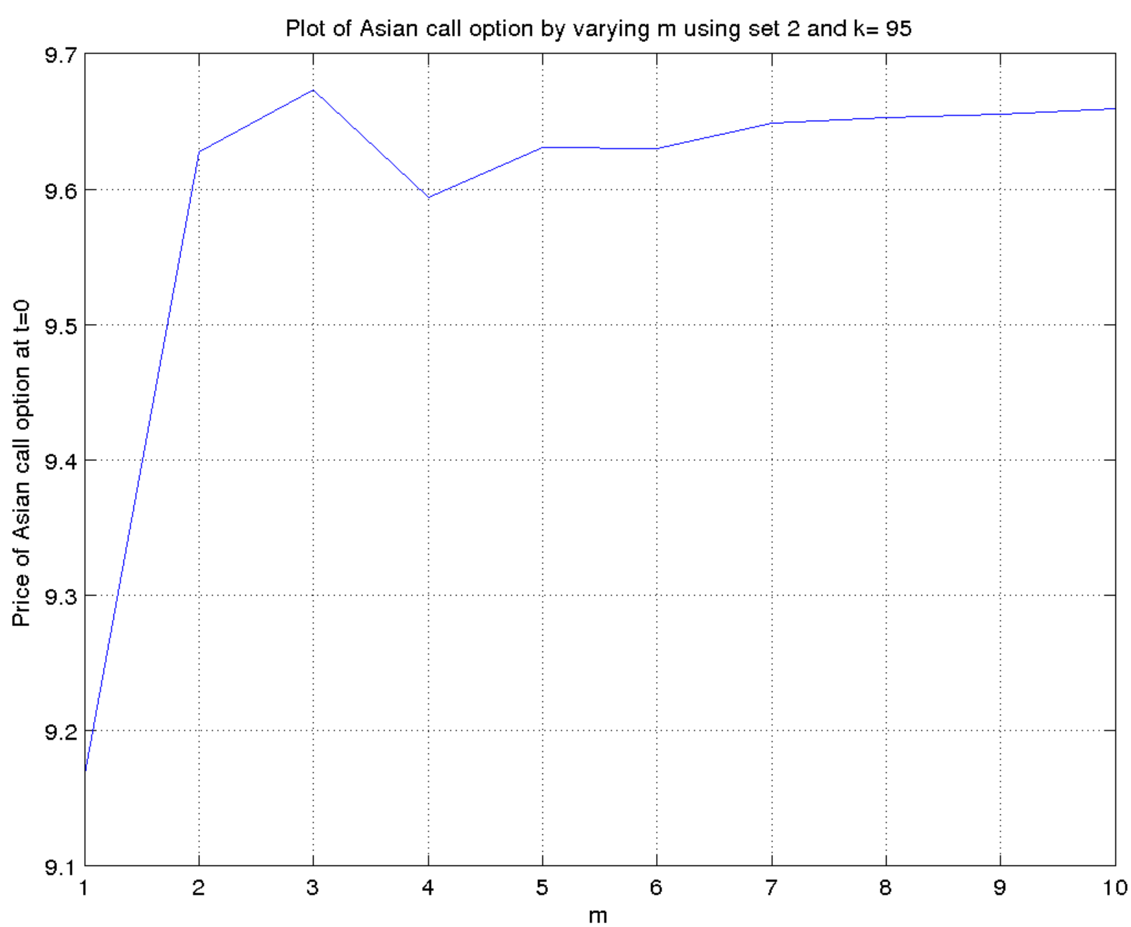

Plot of Asian put option by varying sigma using set 1
Price of Asian put option at t=0
sigma
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
0.1
0.15
0.2
0.25
0.3
0.35

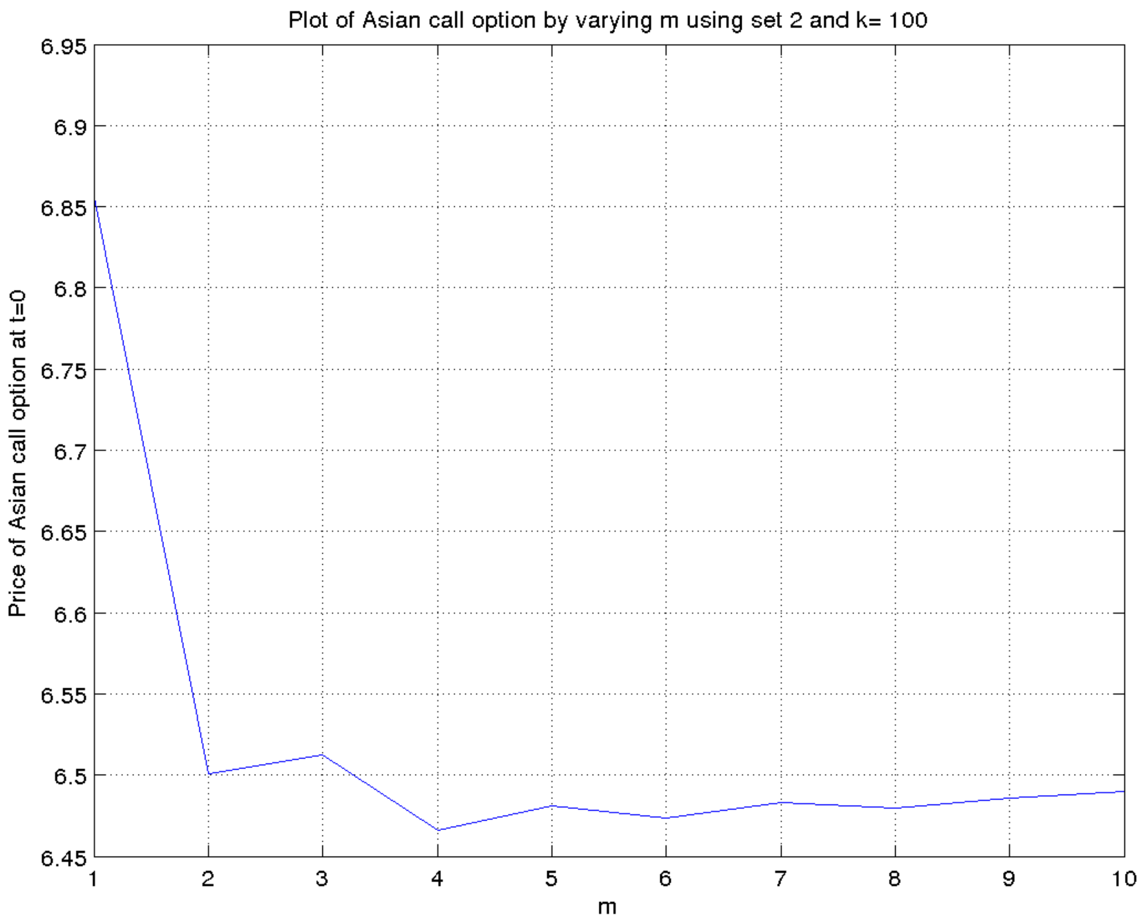

Plot of Asian put option by varying sigma using set 2
Price of Asian put option at t=0
sigma
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
0.1
0.15
0.2
0.25
0.3
0.35

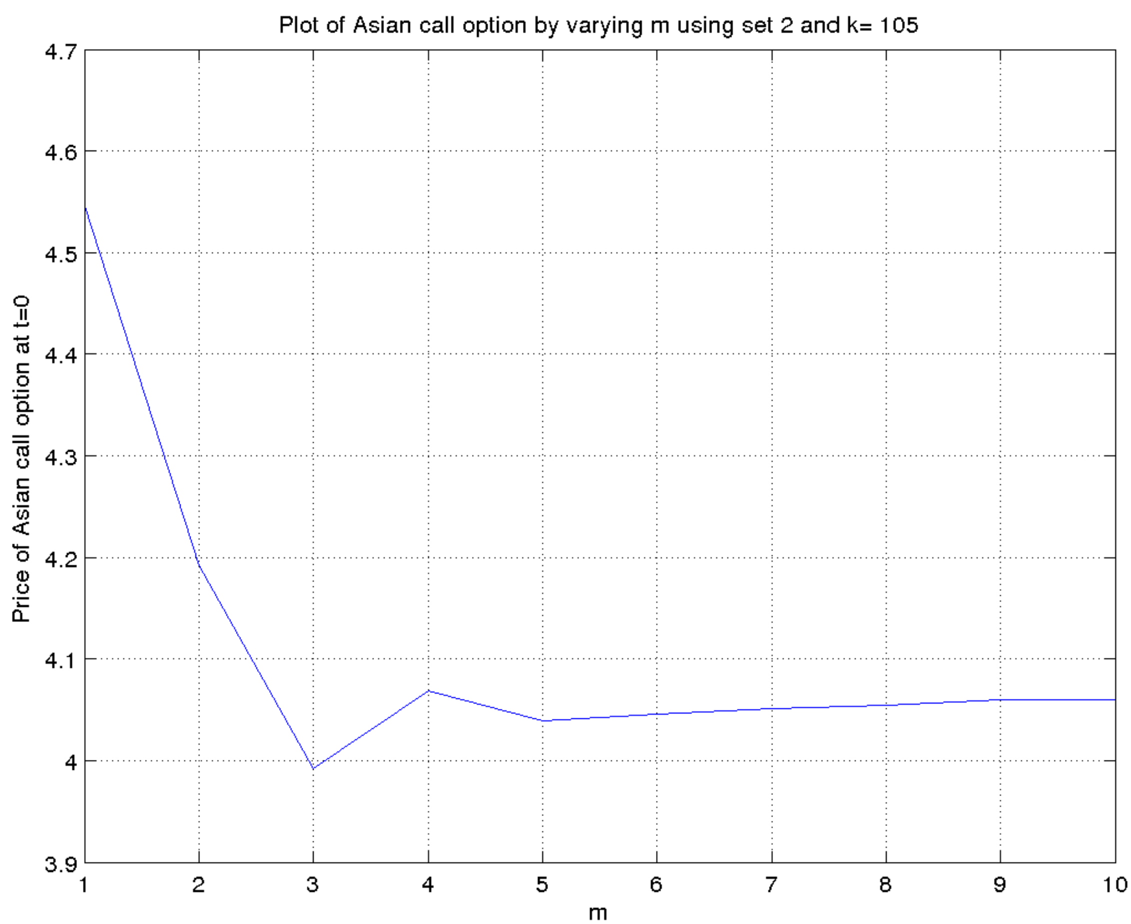

Plot of Asian call option by varying m using set 1 and k= 95
Price of Asian call option at t=0
m
9.75
9.7
9.65
9.6
9.55
9.5
1
2
3
4
5
6
7
8
9
10

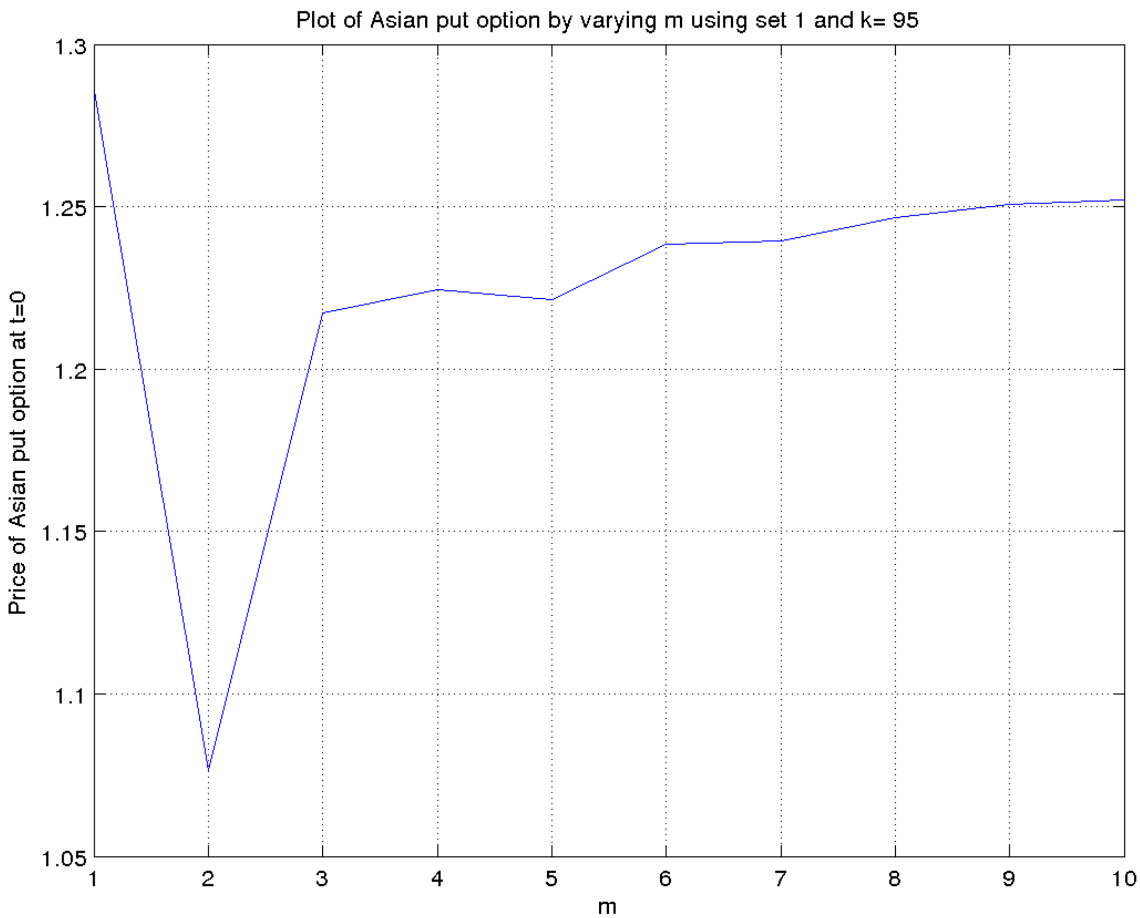

Plot of Asian call option by varying m using set 1 and k= 100
Price of Asian call option at t=0
m
6.75
6.7
6.65
6.6
6.55
6.5
6.45
6.4
6.35
6.3
6.25
1
2
3
4
5
6
7
8
9
10


Plot of Asian call option by varying m using set 1 and k= 105
Price of Asian call option at t=0
m
4.1
4.05
4
3.95
3.9
3.85
3.8
3.75
3.7
3.65
1
2
3
4
5
6
7
8
9
10

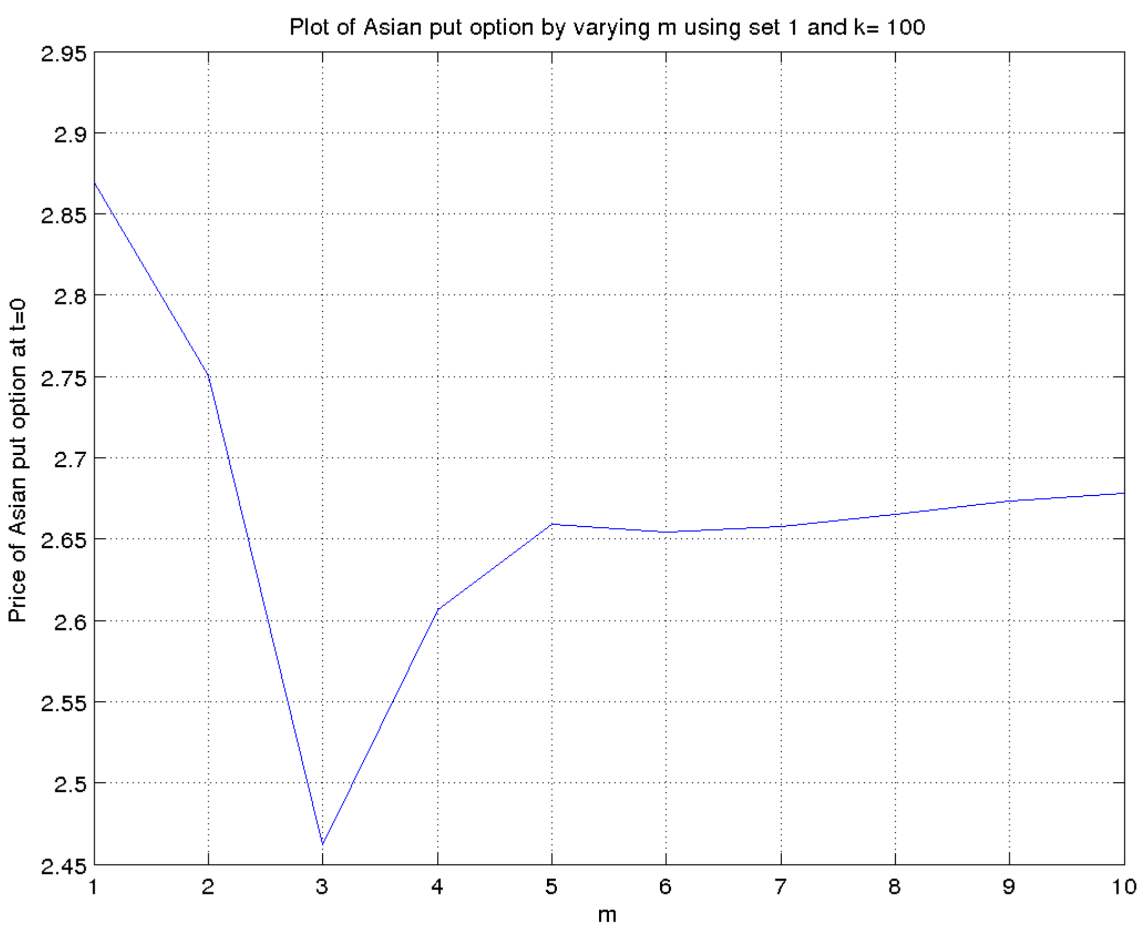

Plot of Asian call option by varying m using set 2 and k= 95
Price of Asian call option at t=0
m
9.7
9.6
9.5
9.4
9.3
9.2
9.1
1
2
3
4
5
6
7
8
9
10


Plot of Asian call option by varying m using set 2 and k= 100
Price of Asian call option at t=0
6.95
6.9
6.85
6.8
6.75
6.7
6.65
6.6
6.55
6.5
6.45
1
2
3
4
5
6
7
8
9
10
m

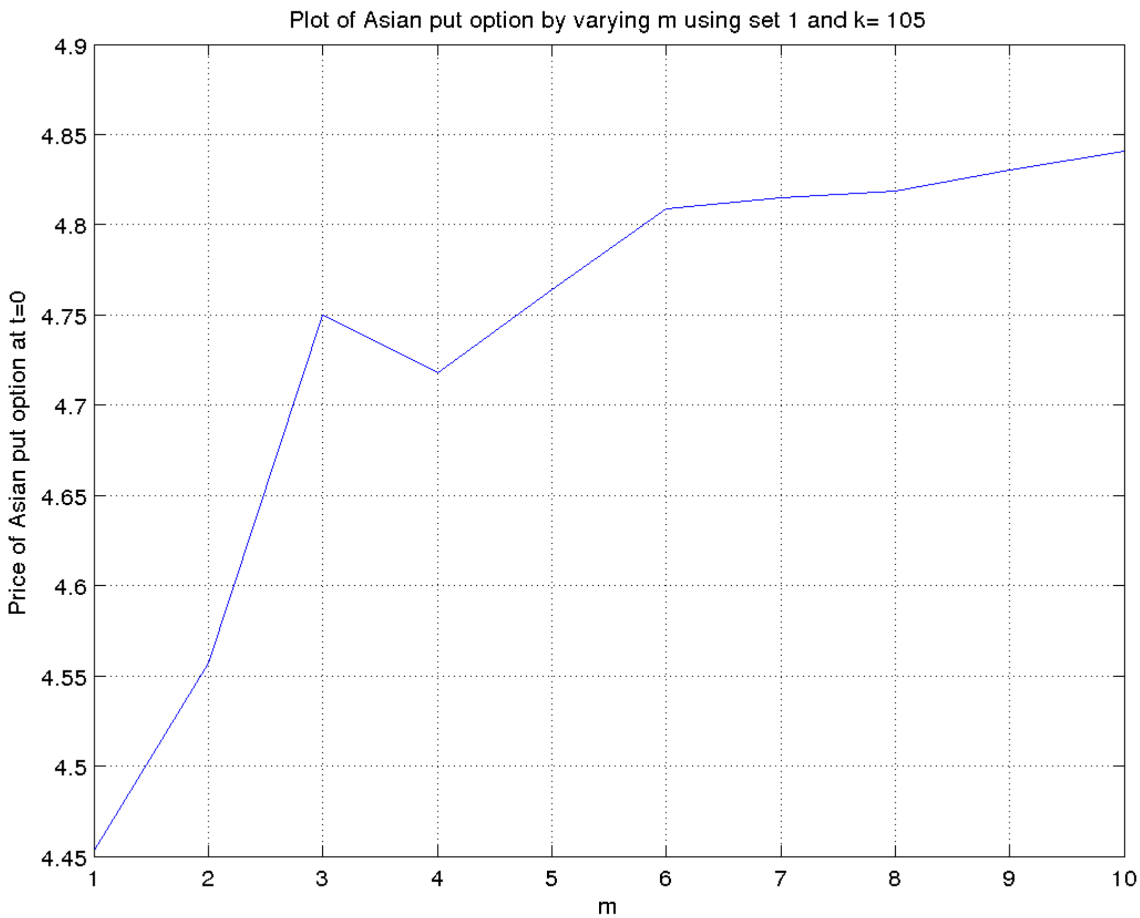

Plot of Asian call option by varying m using set 2 and k= 105
Price of Asian call option at t=0
4.7
4.6
4.5
4.4
4.3
4.2
4.1
4
3.9
1
2
3
4
5
6
7
8
9
10
m

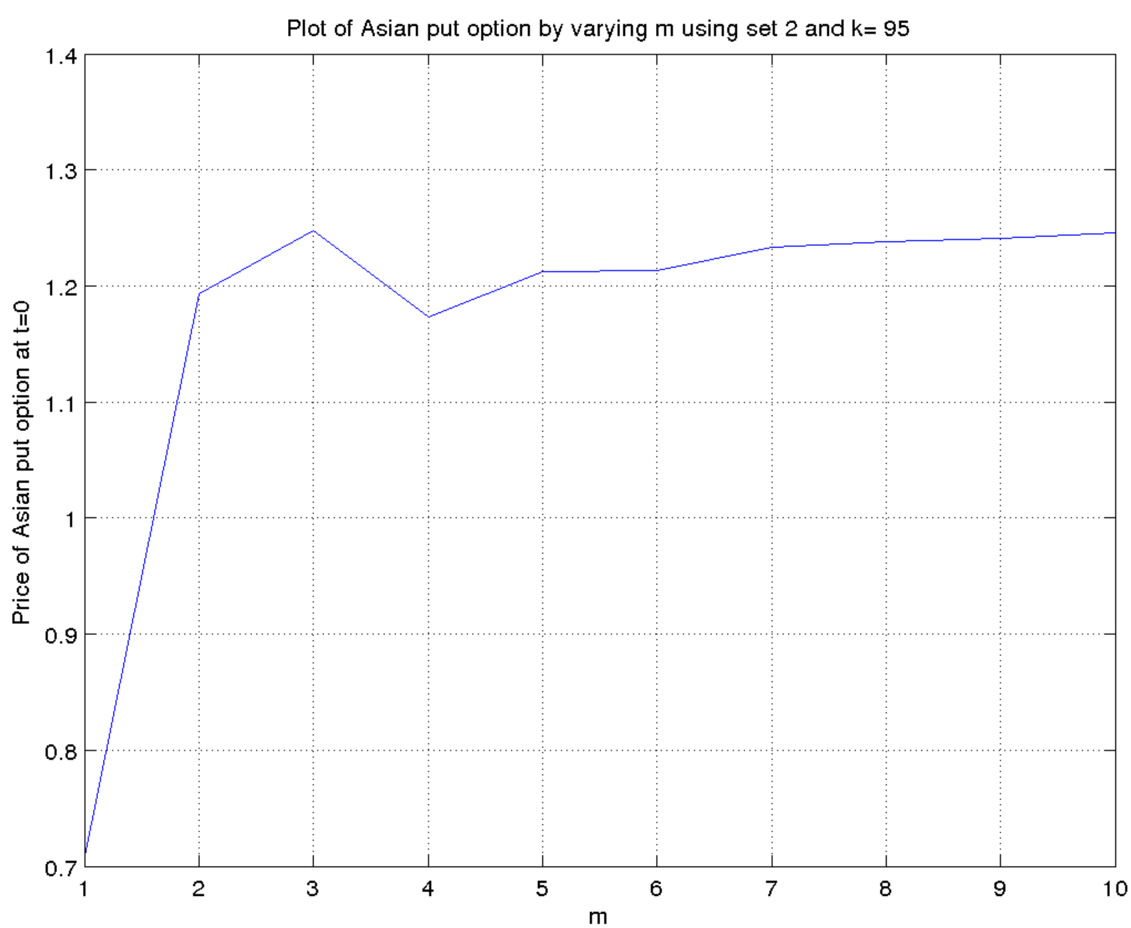


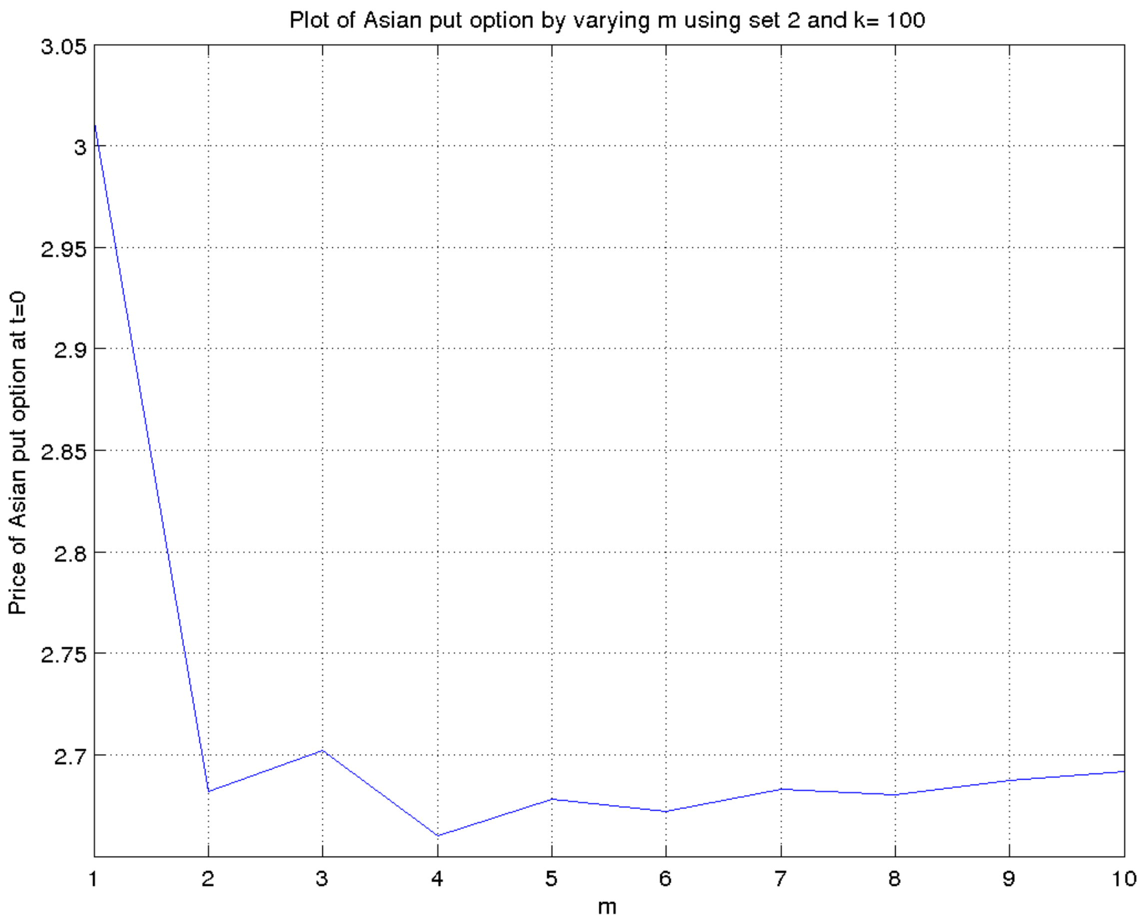
Plot of Asian put option by varying m using set 1 and k= 95
Price of Asian put option at t=0
m
1.3
1.25
1.2
1.15
1.1
1.05
1
2
3
4
5
6
7
8
9
10

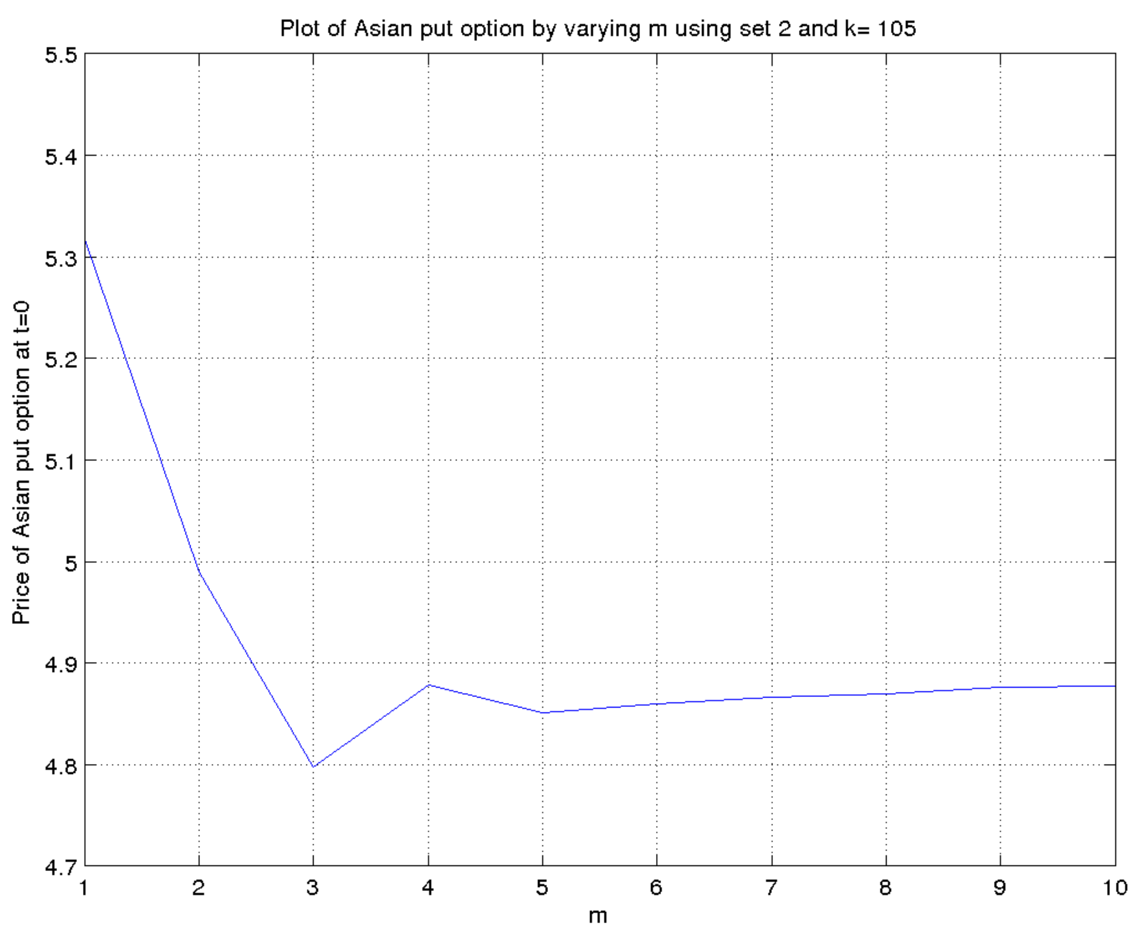


Plot of Asian put option by varying m using set 1 and k= 100
Price of Asian put option at t=0
m
2.95
2.9
2.85
2.8
2.75
2.7
2.65
2.6
2.55
2.5
2.45
1
2
3
4
5
6
7
8
9
10


Plot of Asian put option by varying m using set 1 and k= 105
Price of Asian put option at t=0
m
4.9
4.85
4.8
4.75
4.7
4.65
4.6
4.55
4.5
4.45
1
2
3
4
5
6
7
8
9
10


Plot of Asian put option by varying m using set 2 and k= 95
Price of Asian put option at t=0
m
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
1
2
3
4
5
6
7
8
9
10


Plot of Asian put option by varying m using set 2 and k= 100
Price of Asian put option at t=0
m
3.05
3
2.95
2.9
2.85
2.8
2.75
2.7
1
2
3
4
5
6
7
8
9
10


Plot of Asian put option by varying m using set 2 and k= 105
Price of Asian put option at t=0
m
5.5
5.4
5.3
5.2
5.1
5
4.9
4.8
4.7
1
2
3
4
5
6
7
8
9
10