Normal version

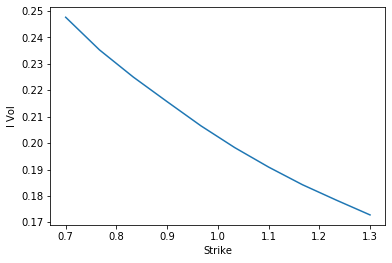
theta = 0.05; kappa = 0.3; sigma = 0.1; rho = -0.6; v0 = 0.04

sigma\_lv = 1.0; beta\_lv = 0.5; # slv params

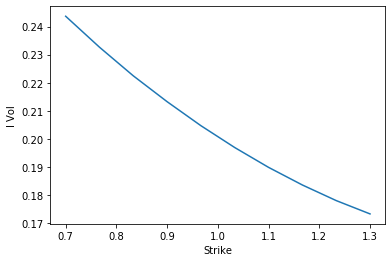
MC

array([0.2476634 , 0.23529714, 0.22501058, 0.21569121, 0.20653645,

0.19828964, 0.1909262 , 0.18425003, 0.17842426, 0.17280506])



FD ADI



array([0.24366825, 0.23264675, 0.22245735, 0.21325299, 0.20470284,

0.19692816, 0.18987371, 0.18360071, 0.17805278, 0.17330829])

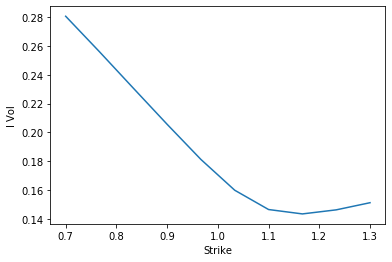
theta = 0.05; kappa = 0.3; sigma = 0.5; rho = -0.6; v0 = 0.04

sigma\_lv = 1.0; beta\_lv = 0.5; # slv params

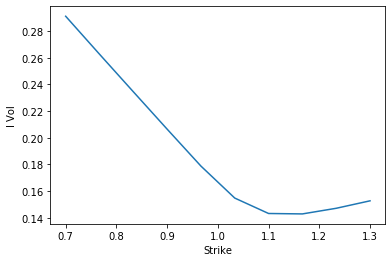
MC

array([0.28069186, 0.25600892, 0.23073069, 0.20560856, 0.18116193,

0.15977438, 0.14637802, 0.14332994, 0.14615682, 0.15111873])



ADI



array([0.2911965 , 0.26272553, 0.23454562, 0.20648644, 0.17875119,

0.15475196, 0.1431815 , 0.14286219, 0.14709008, 0.15268852])

When ADI is stable:

tri\_xx\_new.diag\_1

Out[15]:

array([ 0. , 0. , 0. , ..., 30.61949703,

29.80117217, 0.77521565])  
tri\_xx\_new.diag\_2

Out[16]:

array([ 0. , 0. , 0. , ..., -60.42061983,

-58.80584167, -0.77521565])

**from** scipy.sparse.linalg **import** eigs

sci\_tri **=** sparse.diags([tri\_1\_new.diag\_1,tri\_1\_new.diag\_2,tri\_1\_new.diag\_3],[**-**1,0,1])

vals, vecs **=** eigs(sci\_tri, k**=**500)

In [15]:

vals[0]**/**vals[**-**1]

Out[15]:

(3.1459499660401407+0j)

In [16]:

Unsatable

**from** scipy.sparse.linalg **import** eigs

sci\_tri **=** sparse.diags([tri\_1\_new.diag\_1,tri\_1\_new.diag\_2,tri\_1\_new.diag\_3],[**-**1,0,1])

vals, vecs **=** eigs(sci\_tri, k**=**500)

In [15]:

vals[0]**/**vals[**-**1]

Out[15]:

(3.6975124141748656+0j)

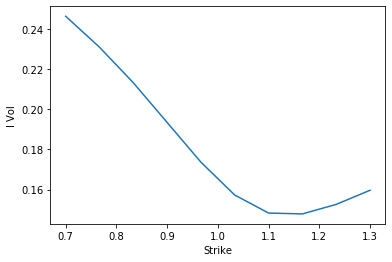
theta = 0.05; kappa = 0.3; sigma = 0.5; rho = -0.6; v0 = 0.04

sigma\_lv = 1.0; beta\_lv = 1.5; # slv params

MC

array([0.24645125, 0.23100668, 0.21328614, 0.19346674, 0.17364967,

0.15725628, 0.14828494, 0.14784793, 0.15260564, 0.15965081])



ADI

array([0.25329763, 0.23432865, 0.21420963, 0.19276723, 0.17104174,

0.15267192, 0.1461841 , 0.14870526, 0.15541602, 0.16356043])

