

```

% UOCallMC.m
function [C,CI,NCrossed] =
UOCallMC(S0,X,r,T,sigma,Sb,NSteps,NRepl)
% Generate asset paths
Payoff = zeros(NRepl,1);
NCrossed = 0;
Path=AssetPaths1(S0,r,sigma,T,NSteps,1);
for i=1:NRepl
    Path=AssetPaths1(S0,r,sigma,T,NSteps,1);
    crossed = any(Path >= Sb+40);
    if crossed == 0
        Payoff(i) = max(0, Path(NSteps+1)-X);
    else
        Payoff(i) = 0;
        NCrossed = NCrossed + 1;
    end
end
[C,aux,CI] = normfit( exp(-r*T) * Payoff);

UOCallMC =

    3.6145

CI1 =

    3.5936
    3.6353

NCrossed1 =

    12170

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```

% UOCallMCCond.m
function [Cuo,CI,NCrossed] =
UOCallMCCond(S0,X,r,T,sigma,Sb,NSteps,NRepl)
dt = T/NSteps;
[Call,Put] = blsprice(S0,X,r,T,sigma);
% Generate asset paths and payoffs for the down and in
option
NCrossed = 0;
Payoff = zeros(NRepl,1);
Times = zeros(NRepl,1);
StockVals = zeros(NRepl,1);
for i=1:NRepl
    Path=AssetPaths1(S0,r,sigma,T,NSteps,1);
    tcrossed = min(find( Path <= Sb ));
    if not(isempty(tcrossed))
        NCrossed = NCrossed + 1;
        Times(NCrossed) = (tcrossed-1) * dt;
        StockVals(NCrossed) = Path(tcrossed);
    end
end
if (NCrossed > 0)
    [Caux, Paux] = blsprice(StockVals(1:NCrossed),X,r,T-
Times(1:NCrossed),sigma);
    Payoff(1:NCrossed) = exp(-r*Times(1:NCrossed)) .*
Caux;
end
[Cuo, aux, CI] = normfit(Call - Payoff);

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>> CompUOCallMCCond
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UOCallMCCond =
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```
2.7984
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CI2 =
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```
2.7925
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```
2.8043
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NCrossed2 =
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149680
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