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% Knock-In Barrier Option
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% Mar 20002

function MCBARRIERIN(initial,exercise,barrier,up,down,periods,interest,runs)

% enter interest as percentage, don't add 1

clc

printf("Group B-Barrier in Call calculation.\n")
printf("Prepared for/Antonio Rivela.\n")
printf("IE Business School Nov 2009.\n")
printf("-----\n")

piup=(exp(interest)-down)/(up-down)

pidown=1-piup

temp=0

for index=1:runs

pricepath=1:periods+1;

for i=2:periods+1;

pricepath(1)=initial;

pathprob=1;

if rand>pidown

pricepath(i)=pricepath(i-1).*up;

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else

pricepath(i)=pricepath(i-1).*down;

endif

endfor

if max(pricepath)>barrier

callpayoff=max(pricepath( periods+1)-exercise,0);

else

callpayoff=0;

endif

temp=temp+callpayoff;

endfor

totaltemp=temp

Barrierin_Call_Value_continuos=temp.*exp(-interest.*periods)./runs

Barrierin_Call_Value_discrete=(temp./(1+interest).^periods)./runs

end
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