hw_payoff_correlation

February 13, 2019

Our objective is to investigate the correlations of the payoffs between - stock, - european call, - geometric asian call, - arithmetic asian call.

```
In [22]: #paras are given here
         S0 = 100.0
         K = 110.0
         r=0.0475
         sigma = 0.20
         T = 1.
         num_step = 4
```

- Implement the following pseudocode with num_step = 4 and num_paths = 100

pseudocode. bsm_option_payoff_generators(num_step, num_paths) - generate (num_paths) many gbm paths, each path is produced from exact smapling with (num_step) time steps - for each path, compute corresponding payoff of the following contract seperately: - stock, - european call, - geometric asian call, - arithmetic asian call.

- plot the following three figures with format string 'ro' in your plot arguments:
  - aac vs. stk
  - aac vs. ec
  - aac vs. gac
- which asset is most highly correlated to aac?
- Based on your observation, can you improve OMC computation of aac?