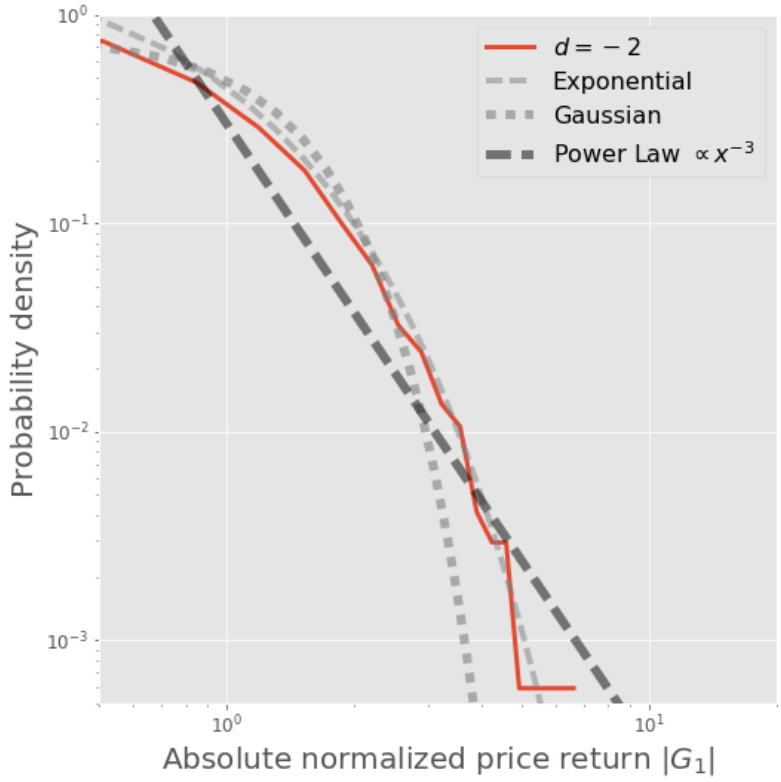
Problem (7-8)

Problem 7

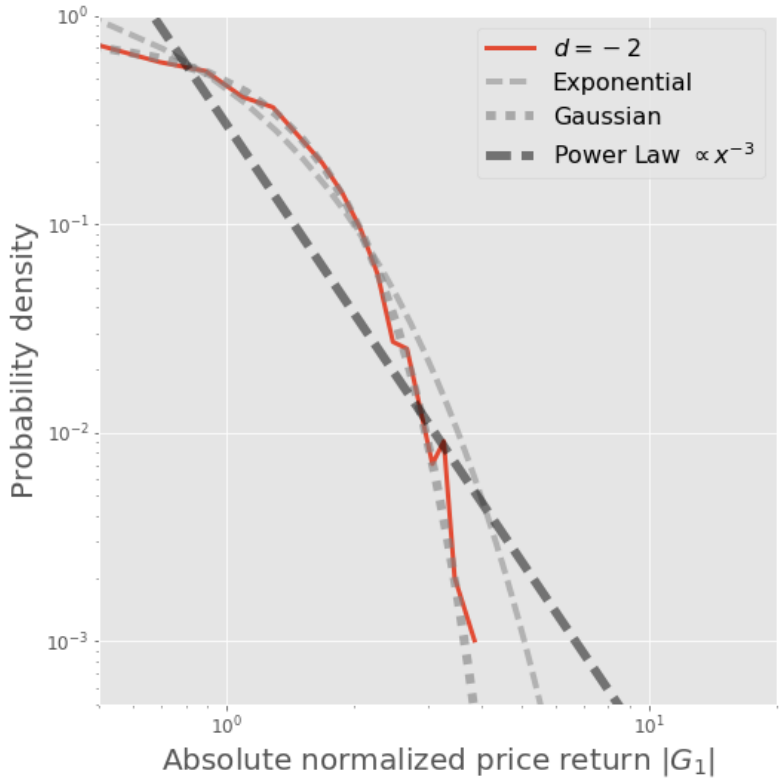
0.0/1.0 point (graded)

In the video, we showed how the price dynamics of the stochastic dealer model with memory (model 2) varied upon changing d (the parameter controlling the strength of the trend-following, or contrarian behavior). In particular, we performed simulations for $d = -2, -1.25, 0, +1.25, 2$, where the averages over the historic price changes where taken over the last $M = 10$ ticks. Using the code examples and data (model2_M10_5d.txt) introduced in the video, compute the probability distribution function for the absolute normalized price returns G_1 for the case when $d = -2$. Plot your data and compare with the Gaussian, exponential, and power-law distributions. Which of the following is the closest to what you obtained? Do you still have a power-law distribution ($\alpha = -3$), similar to the case when $d = 1.25$ and $M = 1$ (When generating the histogram, use $n = 20$ bins for comparison)?

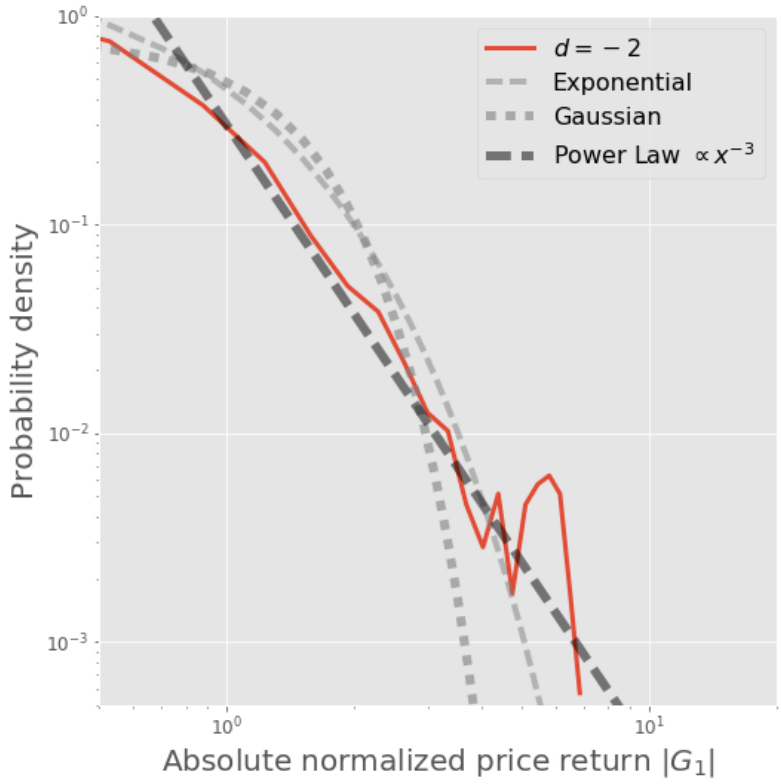
G51



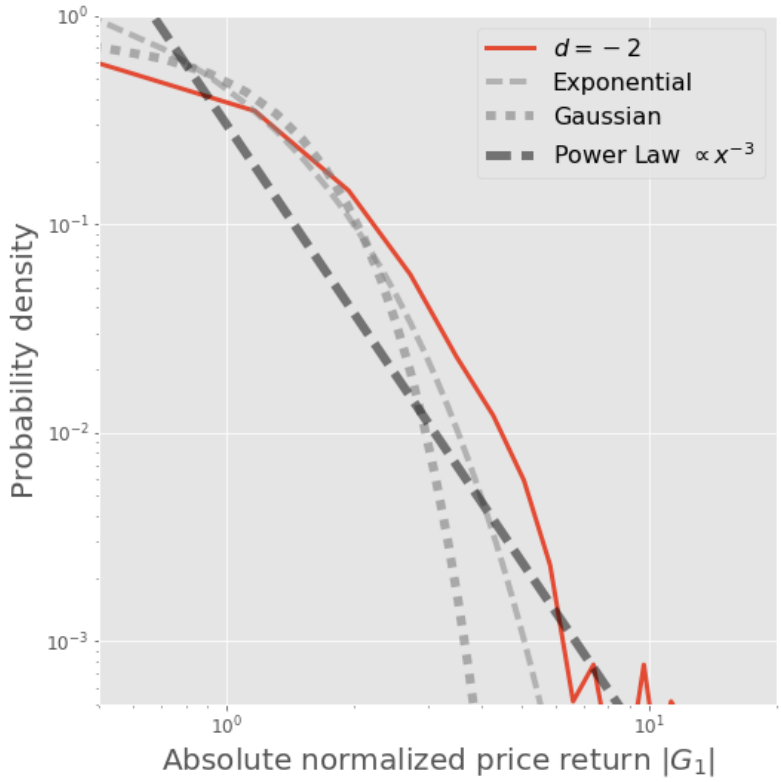
G52


$d = -2$
Exponential
Gaussian
Power Law $\propto x^{-3}$
Probability density
10^0
10^{-1}
10^{-2}
10^{-3}
10^0
10^1
Absolute normalized price return $|G_1|$

G53


$d = -2$
Exponential
Gaussian
Power Law $\propto x^{-3}$
Probability density
10^0
10^{-1}
10^{-2}
10^{-3}
10^0
10^1
Absolute normalized price return $|G_1|$

G54



- G51
- G52
- G53
- G54

Submit You have used 0 of 2 attempts

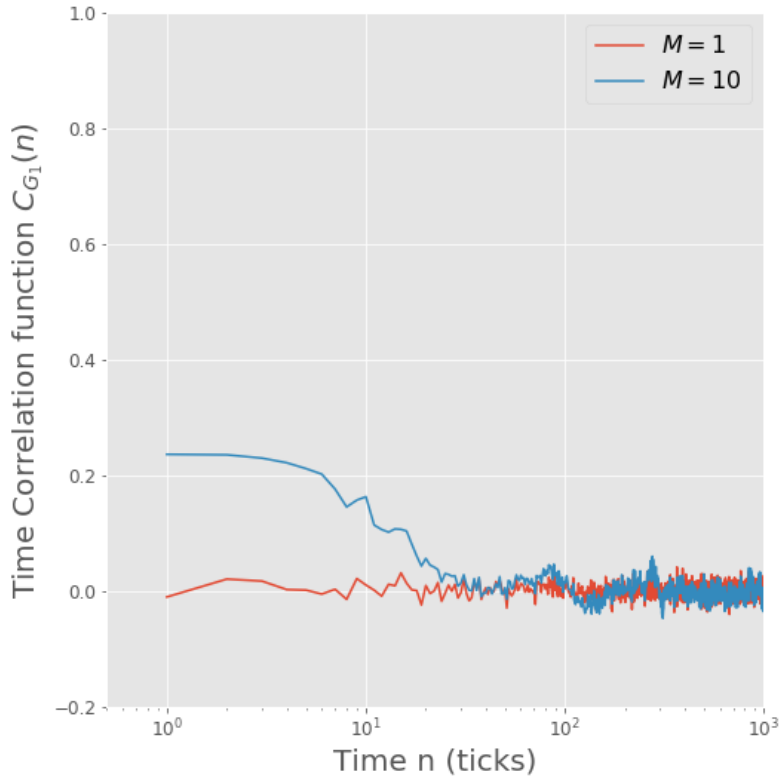
Problem 8

0.0/1.0 point (graded)

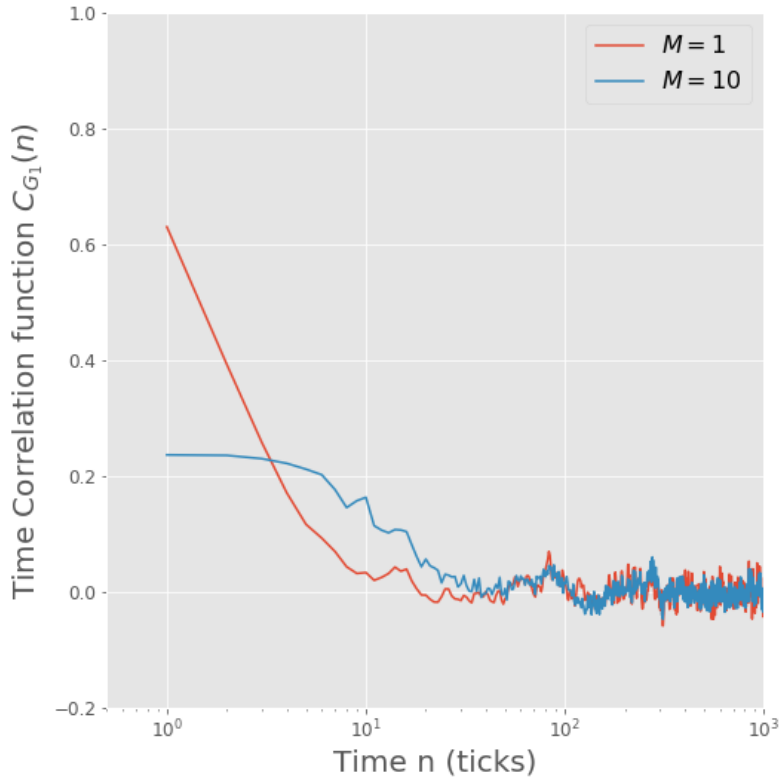
Using the code examples and data introduced in the video, compare the correlation function $C_{G_1}(n)$ for the 1-tick return G_1 of the model with memory (model 2), for the cases when the trend parameter d and memory time M are $d = 1.25, M = 1$ (model2.txt) and $d = 1.25, M = 10$ (model2_M10_5d.txt). Plot the data on a log-log scale. Which of the following is closest to what you

observed?

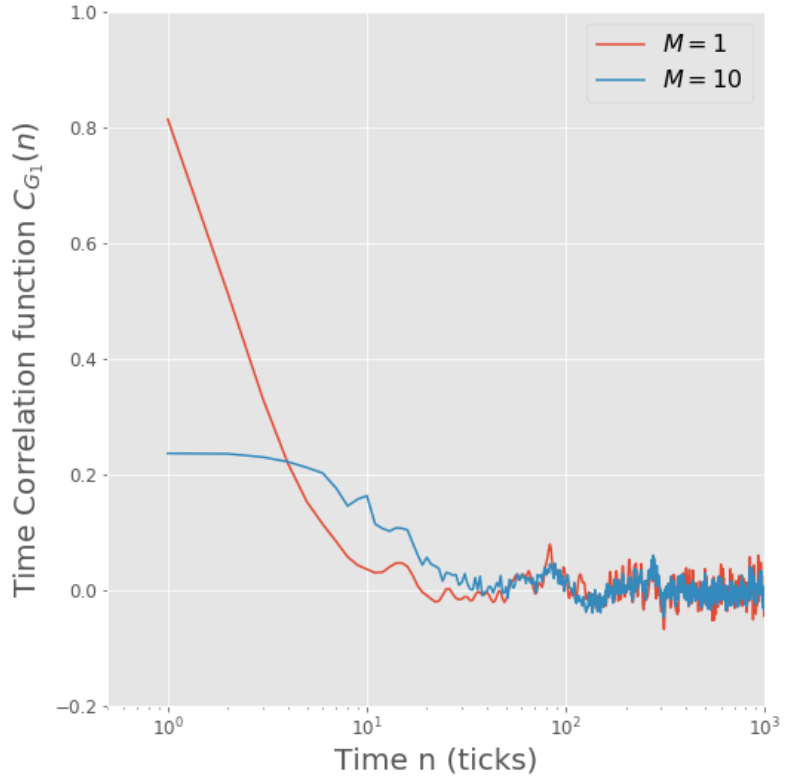
G61



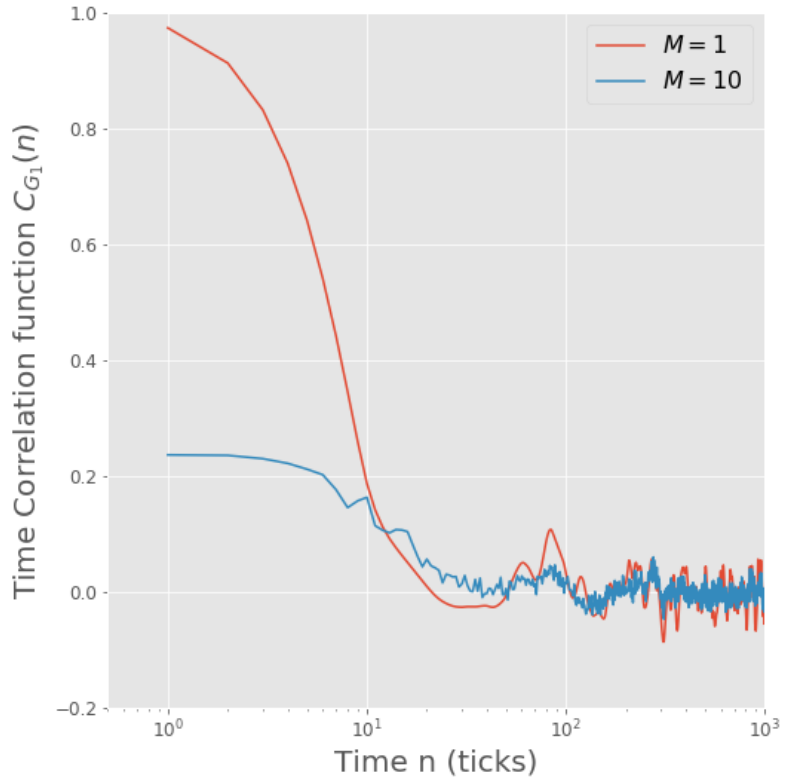
G62



G63


$M = 1$
$M = 10$
Time Correlation function $C_{G_1}(n)$
Time n (ticks)

G64


$M = 1$
$M = 10$
Time Correlation function $C_{G_1}(n)$
Time n (ticks)

- G61
- G62
- G63
- G64

Submit You have used 0 of 2 attempts