High-Frequency Financial Econometrics: Project 1

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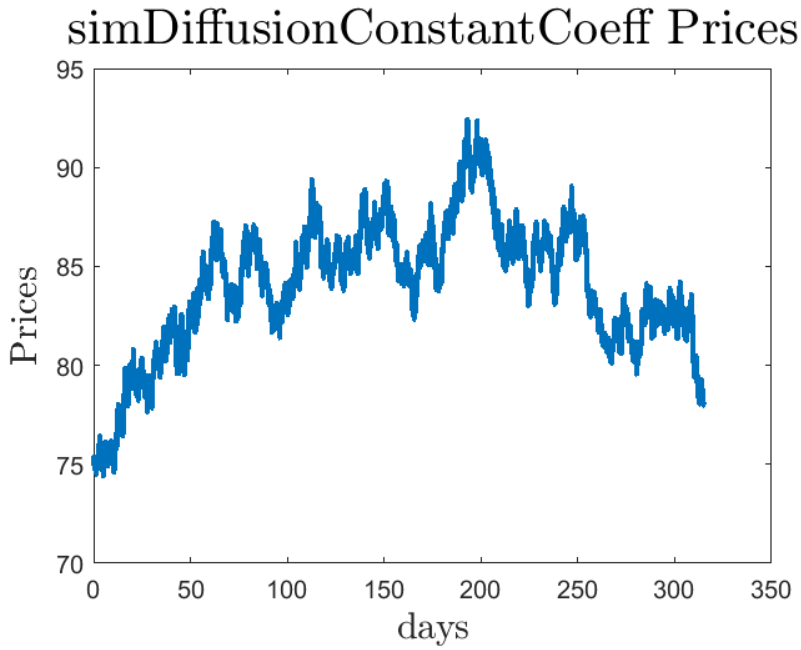
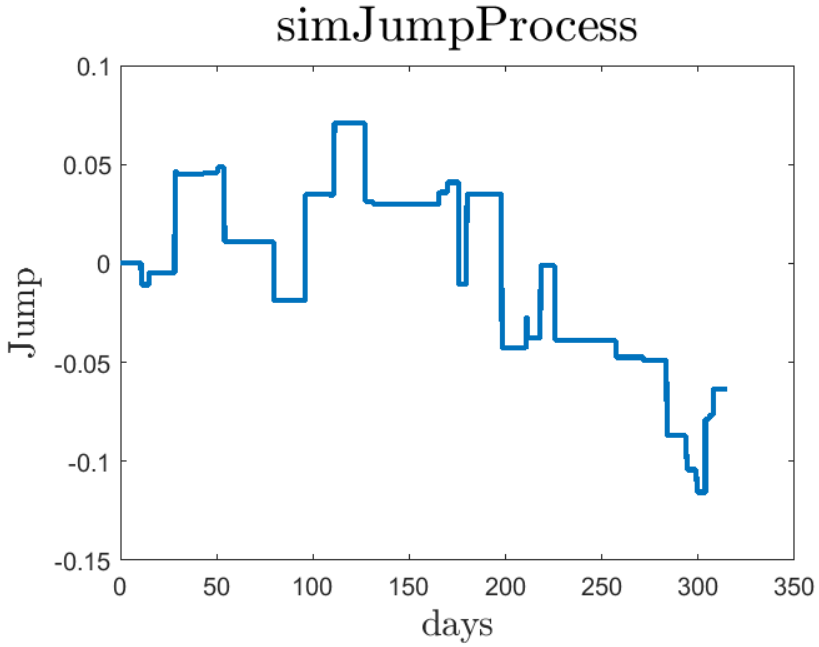
0.1 Exercise 1

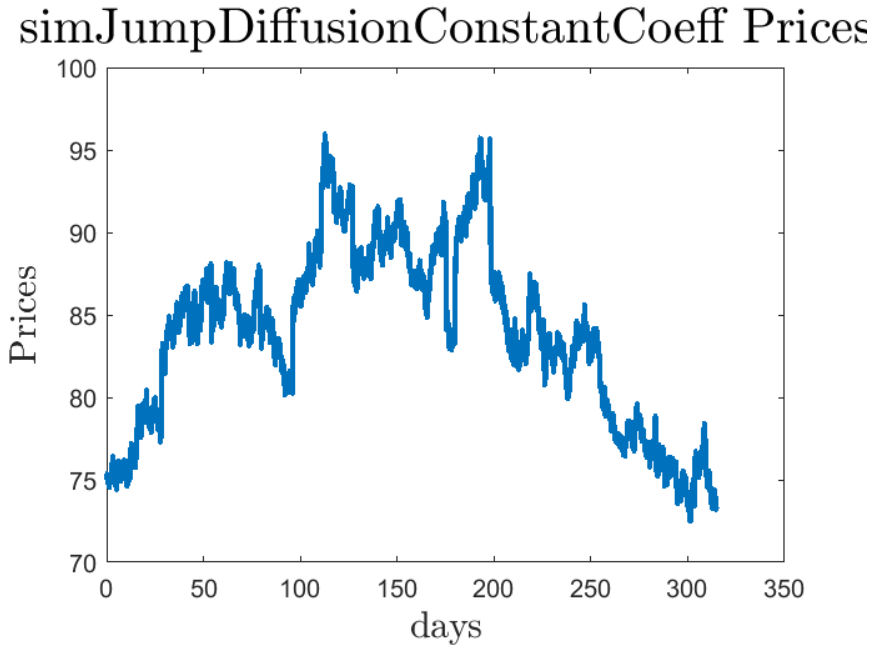
0.1.1 A



0.1.2 B

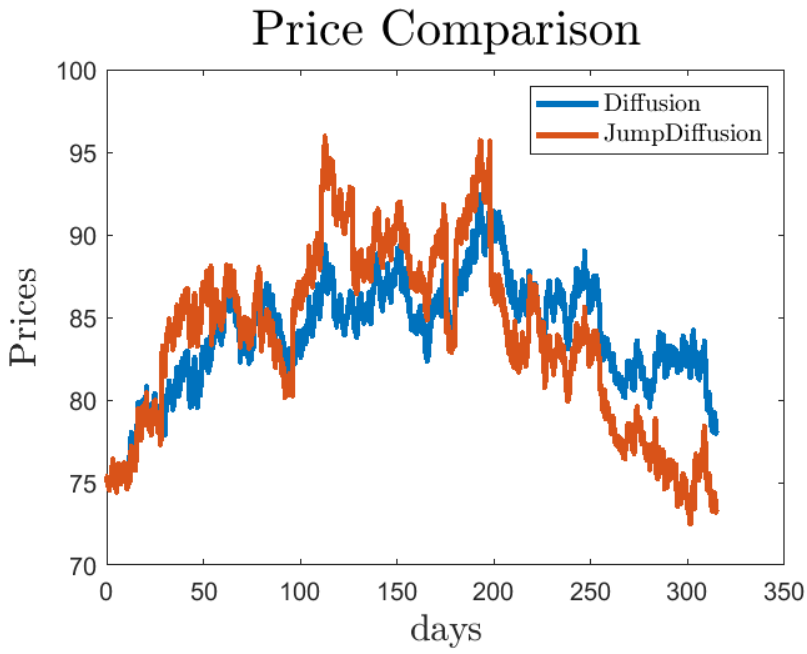


0.1.3 C



The simulated prices over this one year and three months range nearly from 73 to 96 and at most times the prices are over 75. From the plot, we can tell that the volatility of the prices doesn't change a lot at most times but there are few jumps which greatly affect the prices, either go up or go down.

0.1.4 D

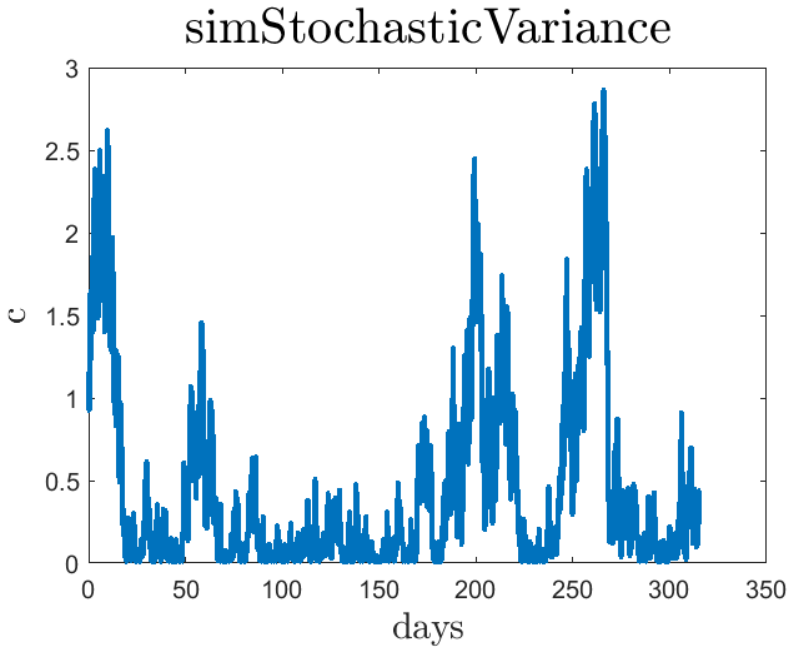


Although at the most times the volatility of two prices are same, adding jump part makes prices "jumps" randomly and makes the range of prices larger. To be specific, the prices simulated by only diffusion never

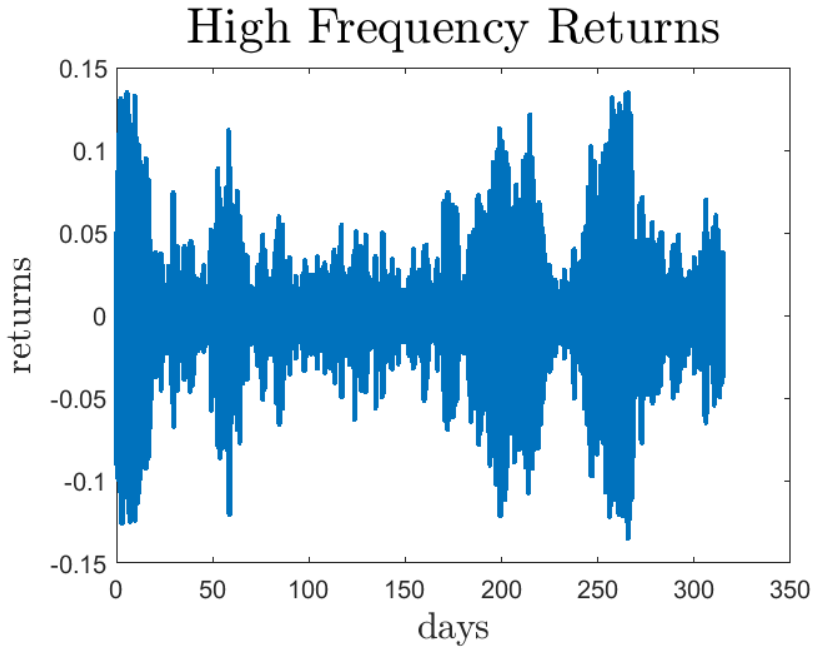
lower than 75 and never higher than 95 but the prices simulated by two parts both go higher than 95 and go lower than 75.

0.2 Excercise 2

0.2.1 A

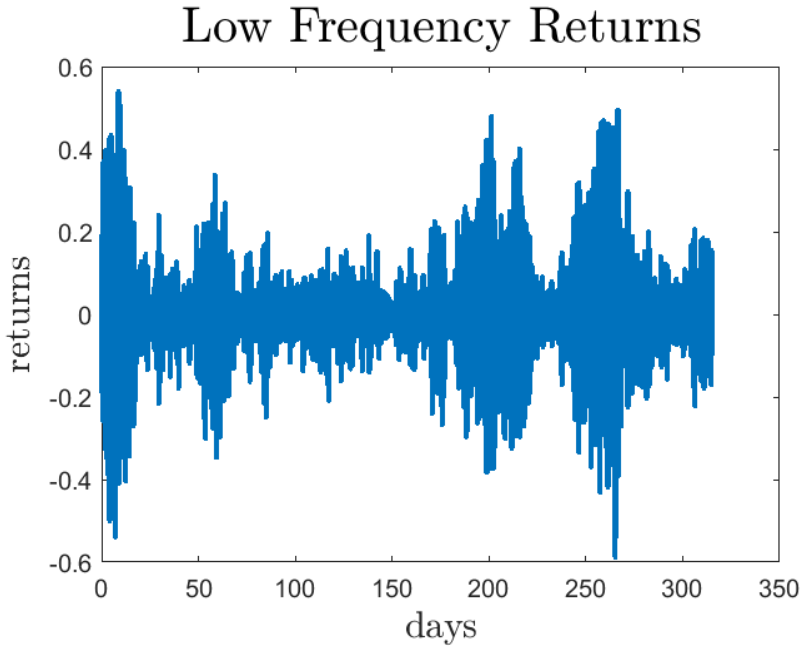


0.2.2 B



The pattern is when the simulated stochastic variance c is high, the volatility of returns is high. Also, when the simulated stochastic variance c is low, the volatility of returns is low.

0.2.3 C



Although the scale of low frequency returns is different from the high frequency one due to the time period difference, the volatility pattern remains in the 5-min data.