Qn 3

Download the closing price of the Hong Kong stock 0002.HK (CLP Holdings Limited), 0005.HK (HSBC Holdings plc), 0011.HK (Hang Seng Bank) from 1st January 2016 to 31st January 2016.

1. Plot the three time series data in one graph.

(Use insert button →line chart →select line chat type)

b) Compute the Pearson coefficient between 0005 and 0011 using the Excel function Pearson.

c) Compute the Pearson coefficient between 0002 and 0005.

d) Discuss the meaning of the values of the Pearson coefficients computed in b) and c). What are the assumptions behind?

Pearson coefficient between 0005 and 0011 is greater than 0, which means the two sample data pairs are positively linear related. Pearson coefficient between 0002 and 0005 is greater than 0, which means the two sample data pairs are positively linear related.

Although the sample data pairs are correlated, they did not have causational relations. Which means, they are only one of the factors affects the sample data to each other, but not the one and only factor.

Qn 4

Plot the Poisson distribution with 𝜆 = 𝑛p and the binomial distribution (n, p) when n is large and p is small. (For example, use n = 2400, p = 0.001)

What do you observe? Does it agree with theoretical predictions? Why? Note:

The results of the Poisson distribution and the binomial distribution is almost the same.

Yes, it does. In theory, the Poisson distribution is an approximation for a binomial random variable with large n and small p. From the above result, it shows that, the Poisson distribution is an approximation for a binomial random variable when and . It has less than 1% difference when we calculate . After , the % difference will be larger than 1% and after , the % difference will be larger than 10%.