Battle of Online and Offline Consumption: Comparative Analysis of Amazon and Walmart Stocks

Cai Yuzhu, Li Hongchi, Ning Xu, Xue Zheng

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1 Introduction

2 Data Processing

Our research focuses on the daily log return of stocks of Amazon and Walmart. Start from January 3th, 2010 to December 30th, 2016. The sample size is 1761 and all of data are pulled from Wind Financial Terminal, which is the most widely used financial data system in China like Bloomberg Terminal in the U.S.. The formula we use to calculate the log return is

$$r_t = ln(\frac{p_t}{p_{t-1}}) \times 100\%$$

where p_t is the close price in day t and p_{t-1} is the close price in day t-1.

The descriptive statistics and time plot are shown as Table 1 and Firgure 1.

Table 1: Descriptive Statistics

(a) Amazon Stock

Year	Sample	Mean(%)	Sd(%)
2010	251	0.1179	2.0591
2011	252	-0.0155	2.4337
2012	250	0.1484	1.9656
2013	252	0.1839	1.6947
2014	252	-0.0995	2.0677
2015	252	0.3089	2.0582
2016	252	0.0412	1.8682
2010-2016	1761	0.0978	2.0323

(b) Walmart Stock

Year	Sample	Mean(%)	Sd(%)
2010	251	0.0068	0.8782
2011	252	0.0515	1.0469
2012	250	0.0627	1.0309
2013	252	0.0662	0.7749
2014	252	0.0445	0.8367
2015	252	-0.1229	1.3191
2016	252	0.0590	1.2030
2010-2016	1761	0.0239	1.0297

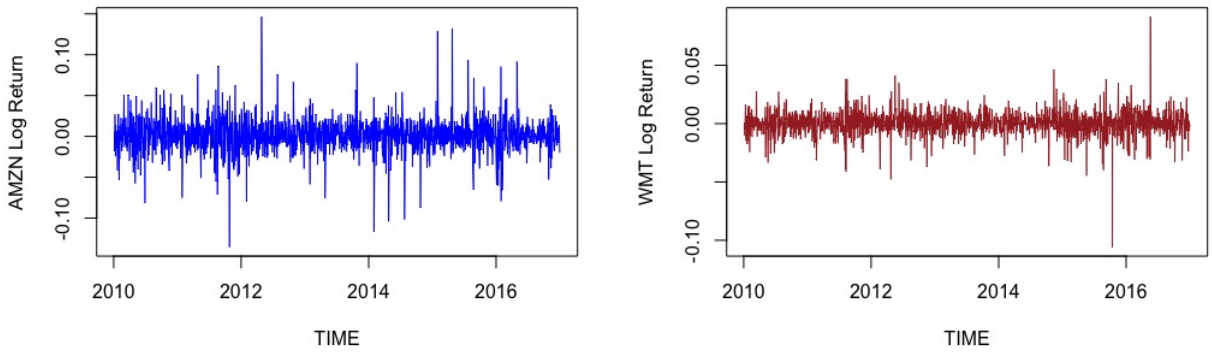

Figure 1: Timeplots of Amazon (Blue) and Walmart (Red) Stocks

3 Model Establishment

3.1 Model Specification

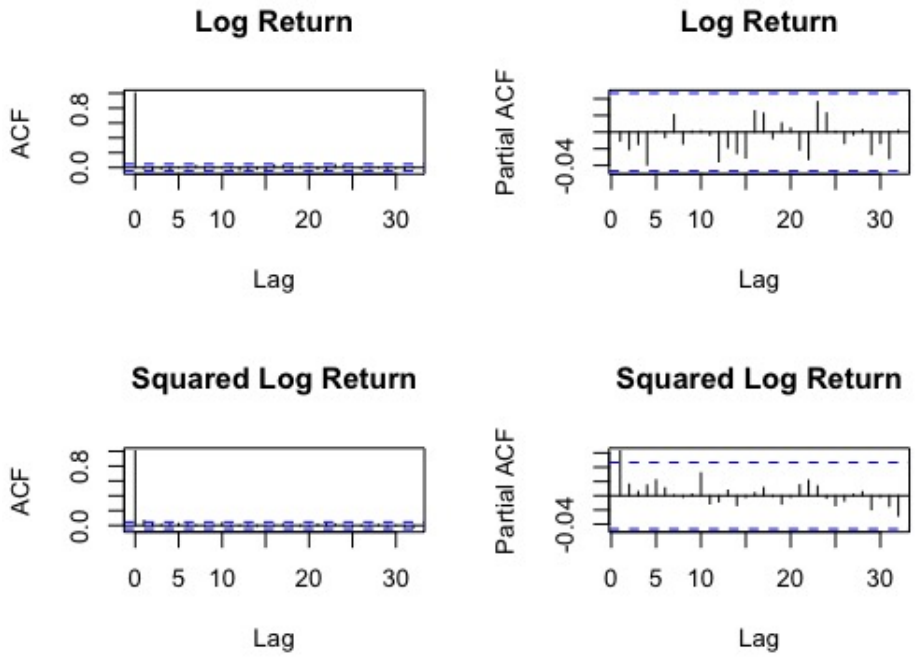

Figure 2: ACF and PACF of Amazon Stock

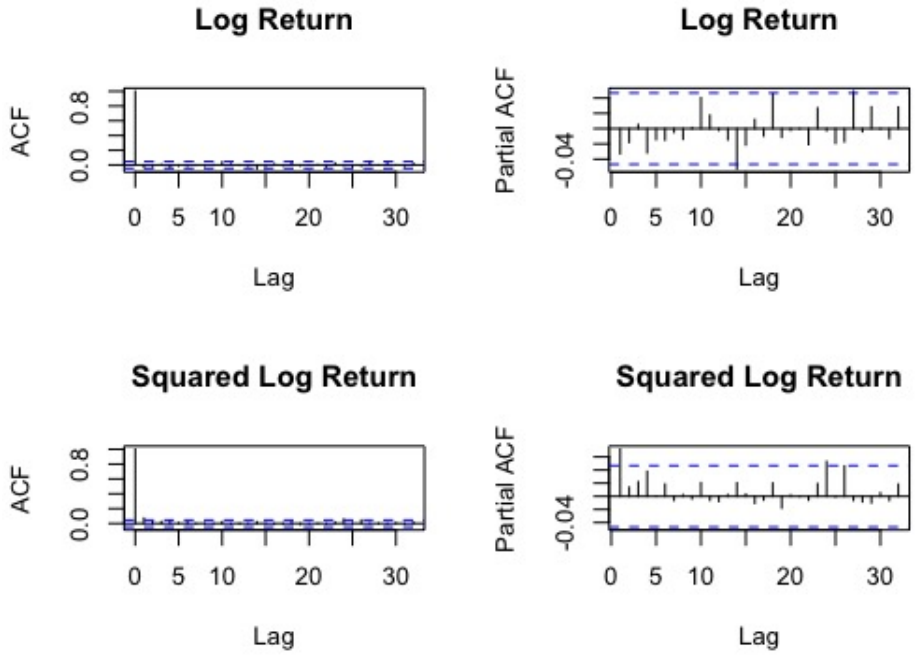

Figure 3: ACF and PACF of Walmart Stock

3.2 Mean Equation

3.3 Volatility Equation

4 Estimation

5 Model Checking

6 Prediction

7 Conclusion

8 Appendix

References

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