FE542 Times Series with Applications in Finance

Project Report 1

Group 1

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Contents

1 Overview of the Asset Class and Companies

The chosen asset class for this project is the **technology industry**. This sector encompasses companies specializing in software, hardware, semiconductors, and related services. The analysis will focus on the following companies:

- Apple Inc. (AAPL)
- Adobe Inc. (ADBE)
- Advanced Micro Devices Inc. (AMD)
- eBay Inc. (EBAY)
- HP Inc. (HPQ)
- IBM Corporation (IBM)
- Juniper Networks Inc. (JNPR)
- Microsoft Corporation (MSFT)
- Oracle Corporation (ORCL)
- Qualcomm Inc. (QCOM)

2 R Script for Analysis

The R script used for the analysis is as follows:

```r
symbols <- c("AAPL", "ADBE", "AMD", "EBAY", "HPQ", "IBM", "JNPR",
   "MSFT", "ORCL", "QCOM")
getSymbols(symbols)
# AAPL Stock Price Plot
aapl_prices <- as.numeric(AAPL[, "AAPL.Close"])
aapl_dates <- index(AAPL)
plot(aapl_dates, aapl_prices,
     type = "l",
     main = "AAPL Stock Price",
     xlab = "Date",
     ylab = "Price",
     col = "blue")
# Repeat similar analysis for other stocks...
```

Listing 1: R Script for Stock Price Analysis

3 Properties of Time-Series

4 Visualization of Results

4.1 Histograms of Stock Prices

Histograms for the stock prices of selected companies are shown below:

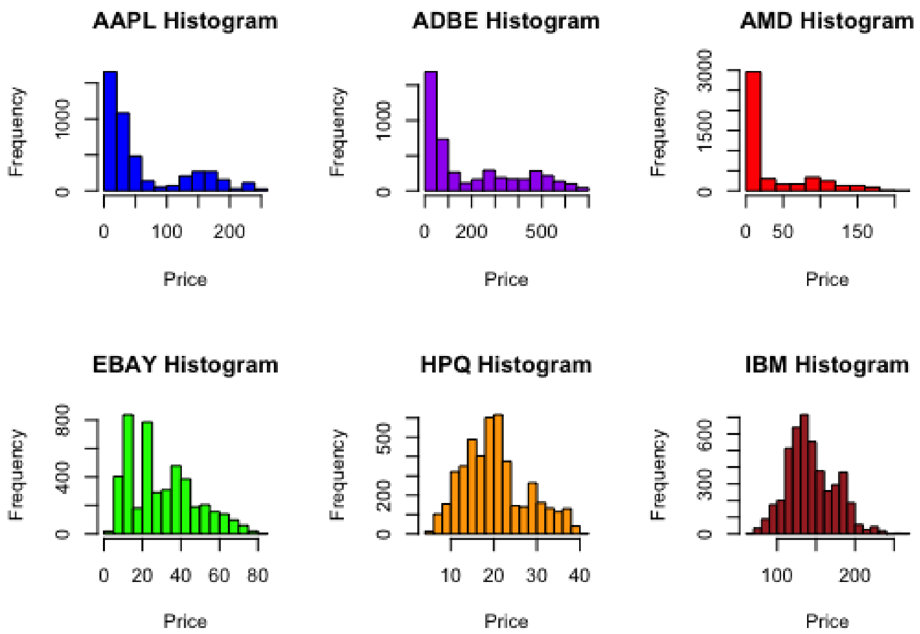

Figure 1: Histograms of Stock Prices for Selected Companies.

4.2 Log Returns for AAPL

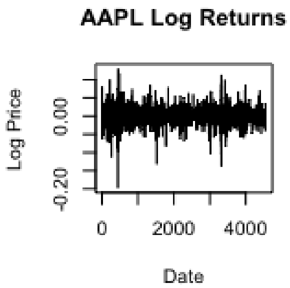

Figure 2: AAPL Log Returns Over Time.

5 Descriptive Statistics

Using the R script, the log returns for AAPL were calculated, and the following statistics were derived:

- Mean: 0.000951
- Variance: 0.000391
- Skewness: -0.3606
- Kurtosis: 6.6225

6 Conclusion

The analysis of the technology industry asset class was conducted using an R script. Key outputs include stock price trends, histograms, and log return statistics. Future work will involve applying time series models to forecast returns and assess volatility.