Google Stock Performance after Earning Report

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1 Introduction

Each public company files a report quarterly to its shareholders to state its performance, which is called Quarterly Earning Report (Hereinafter ER). After ER is published, stock price will fluctuate accordingly. The rise and fall of stocks actually respond to whether the shareholders are satisfied with each ER.

In this project, we are interested in how likely Google’s stock price increases after its ER. We use Bayesian Data Analysis method to build three Bayesian models based on three different priors, one is Jeffreys Prior, one is based on knowledge and experience, and the last one is derived from Facebook data. Then we use these three models to predict recent outcome and analyze performance. In addition, we compare variances and HPD of prior and posterior, and use two discrepancy methods to check our model performance.

2 Data Description

We want to track Google stock performance right after its ER and collect its ER related data and stock price data from Q4 2016 to Q3 2021. We use the closing price of second day’s after ER minus the closing price of the ER announced day. If values are positive, which mean the stock price goes up, then we denote the corresponding data in our dataset as 1, otherwise denote them as 0. Finally we get a dataset including 20 observations, which possible values are 1 or 0. We split the 20 observations into two parts: 19 observations are used to build likelihood while the latest one is for prediction.

Figure 1: Post-ER Goog Stock Perform (Q4 2016 Q2 2021)