Twitter mood predicts stock price

Hao Gao
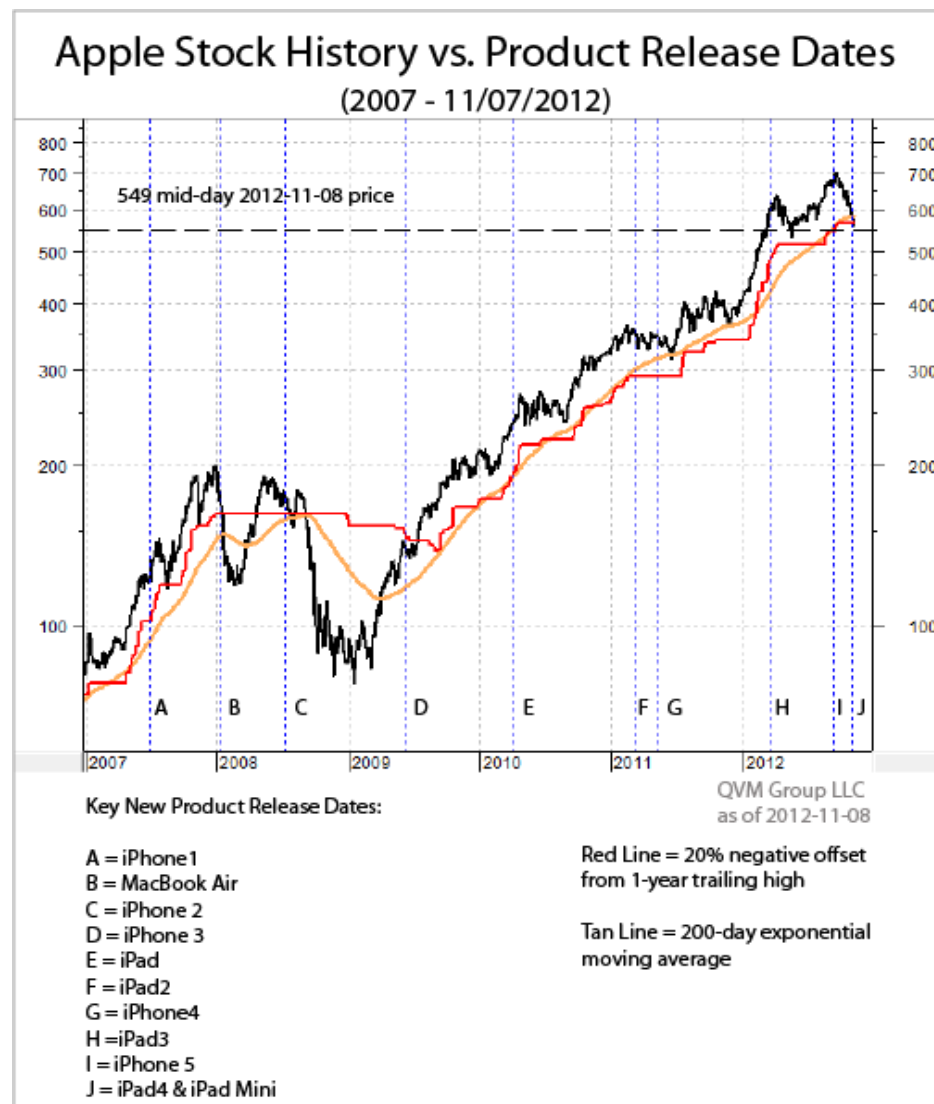
An Shi

10/08/2013

Introduction

- Every big event of certain company will affect its stock price.
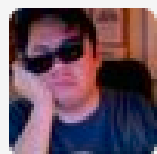 - New product releasing
  - Financial statement

http://www.nasdaq.com/article/apple-stock-price-vs-key-product-release-dates-beginning-1983-cm188501

Apple Stock History vs. Product Release Dates
(2007 - 11/07/2012)

549 mid-day 2012-11-08 price

QVM Group LLC
as of 2012-11-08

Key New Product Release Dates:

A = iPhone1
B = MacBook Air
C = iPhone 2
D = iPhone 3
E = iPad
F = iPad2
G = iPhone4
H = iPad3
I = iPhone 5
J = iPad4 & iPad Mini

Red Line = 20% negative offset from 1-year trailing high

Tan Line = 200-day exponential moving average

Introduction

- People will have different reactions towards these effects.

Luis Pangilinan @lpotr4   10 Sep
My only failed expectation was a capacity bump from 64 to 126GB — iPhone 5s and iPhone 5c event: What we didn't get. j.mp/15Ozmui
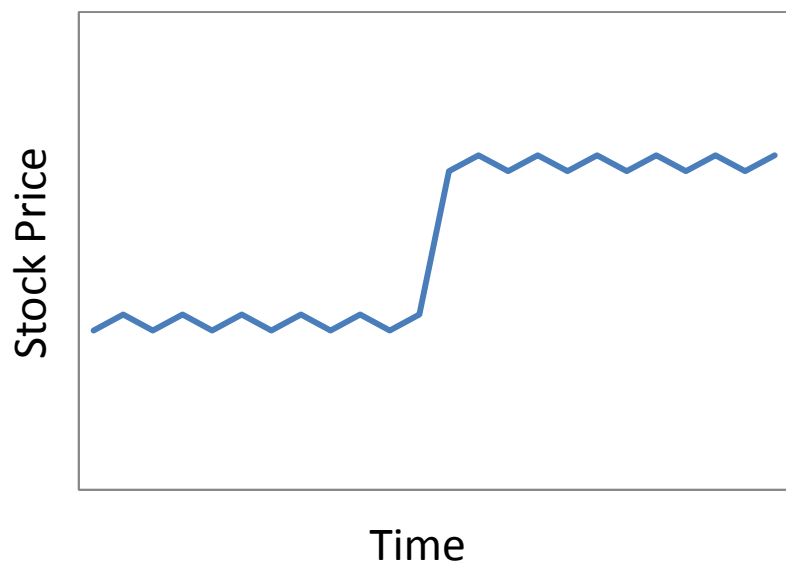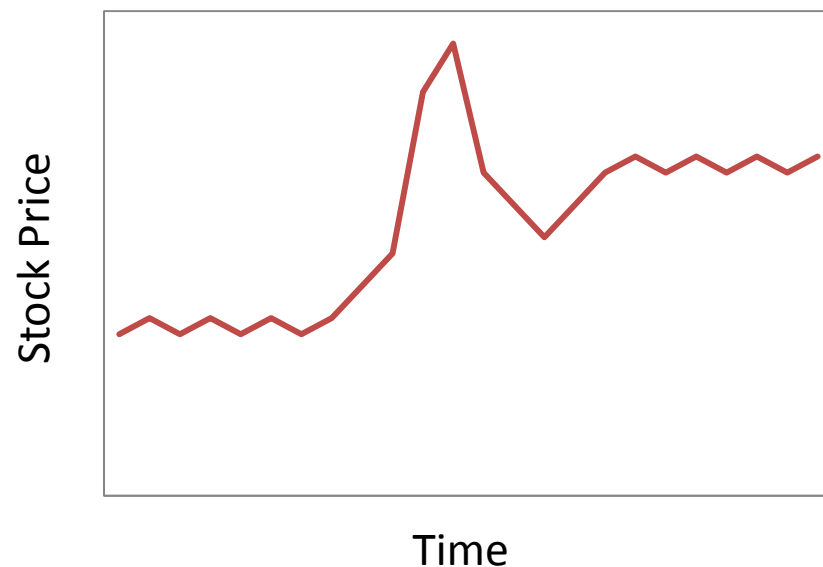📄 View summary   ← Reply   ↻ Retweet   ★ Favorite   ••• More

Introduction

- These reactions will affect the stock price, so the price will be different from its acutal value.

Actual value

Observed value

Hypothesis

- Event study

- People's reactions(or sentiment) can be studied from social media, such as Twitter.

- There will be a correlation between the reaction and stock price.

Method

- Opinion Finder
  - Positive vs negative mood

- Google-Profile of Mood States (GPOMS)
  - Six dimensions: Calm, Alert, Sure, Vital, Kind, and Happy

- Granger Causality Analysis
  - Linear regression

- Fuzzy Neural Network
  - Machine learning, non-linear regression

Data

- Events
  - From company websites, wikipedia…
- Tweets from 09/2009 to 05/2010
  - From Aron Culotta
- Stock price of certain company between above dates
  - Daily price from Yahoo finance
  - Realtime data from Daily TAQ

Timeline

- Collect the events.

- Collect the stock market data.

- Get and filter tweets.

- Prepare the model and the algorithm.

- Calculate the mood scores using OF and or GPOMS.

- Find the correlation of people's mood and stock price.