Stock Price and Investor Information Availability
Sang Hoang • School of Social Science, Humanities and Arts • University of California, Merced

Question
Do changes in stock prices occur as a result of investor accessing information?

Literature Review

• Bijl & Kringhaug & Molnár & Sandvik (2016): Analyzed Google Trends as a predictor of stock returns. Their data covers between 2008 to 2013 and found that high Google search volume leads to more negative returns.

• Da & Engelberg & Gao (2011): Examined Google Trends (Search Volume Index (SVI)) on a sample of Russell 3000 stocks from 2004 to 2008 weekly and found an increase in SVI forecasts the stock prices to be higher 2 weeks after.

Method

• Examined interest and stock prices from January 1, 2008 to October 10, 2018.

• Organized and merged data sets including the Search Volume Index of companies in the S&P 500 and their monthly stock prices.

• Ran a time series regression analysis on changes in monthly closing stock prices in relation to changes in web searches from the SVI.

Data

• Web search data regarding companies in the S&P 500 index retrieved from Google’s Trends, also known as Search Volume Index (SVI)

• Web search: integers, between 0 to 100, represent search interest relative to the highest point on the chart for the given region and time.

• Monthly stock prices were retrieved from the University of Pennsylvania’s Wharton Research Data Services (WRDS).

Table 1: Variables Lag 1-2

<table>
<thead>
<tr>
<th>Variables</th>
<th>Lag 2-3</th>
<th>Lag 3-4</th>
<th>Lag 4-5</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Websearchdl2</td>
<td>0.08**</td>
<td></td>
<td></td>
<td>0.02</td>
</tr>
<tr>
<td>Websearchdl3</td>
<td></td>
<td>0.09**</td>
<td>-0.16</td>
<td></td>
</tr>
<tr>
<td>Websearchdl4</td>
<td></td>
<td></td>
<td>0.08**</td>
<td>-14***</td>
</tr>
<tr>
<td>Websearchdl5</td>
<td></td>
<td></td>
<td></td>
<td>-0.01</td>
</tr>
<tr>
<td>Constant</td>
<td>0.18</td>
<td>0.18</td>
<td>0.14</td>
<td>0.14</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.0004</td>
<td>0.0005</td>
<td>0.0003</td>
<td>0</td>
</tr>
<tr>
<td>N</td>
<td>12135</td>
<td>12037</td>
<td>11939</td>
<td>11841</td>
</tr>
</tbody>
</table>

R-Squared

N

*P<0.10, **P<0.05, ***P<0.01

Results

• Figure 1:
  - A 3 standard deviation increase in web searches leads to a .48 dollar decrease in stock prices 2 months out, controlling all attributes of the firm.
  - A 3 standard deviation increase in web searches leads to a .41 dollar decrease in stock prices 3 months out, controlling all attributes of the firm.

• Figure 2 shows the percent of firms which had monthly closing prices under $400 USD, removing all outliers.

Conclusions

• Significant correlation between web searches and a firm’s stock prices 2-4 months after a change.

• Specific firms such as Alphabet and Berkshire Hathaway were taken out of the sample due to their high closing prices.

• The implications of this study confirm that Google Trends can predict stock returns.

• Research limited in that:
  - Certain firms in the S&P 500 had insufficient data, anomalies, or was not found in the Search Volume Index.

References