Can Twitter Proxy the Investors’ Sentiment? 
The Case for the Technology Sector

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CS846 Short Paper Presentation - Vineet John
Index

- Purpose & background
- Scope of Study
- Methods used
- Observations & Conclusions
- Future prospects
Stock Market Factors

Important: Overall investor sentiment

Proxy: Twitter content (publicly-available)
Purpose & why Twitter in particular?
Scope of Study

- 1 sector - Technology
- 2 months - Period of analysis
- 3 tech firms - Apple, Facebook & Google
Sources

DATA SIFT

Bloomberg
## Magnitude of data

<table>
<thead>
<tr>
<th>Company</th>
<th>No. of tweets analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>88000</td>
</tr>
<tr>
<td>Facebook</td>
<td>44000</td>
</tr>
<tr>
<td>Google</td>
<td>32000</td>
</tr>
</tbody>
</table>
## Base Metrics

A table showing the base metrics:

<table>
<thead>
<tr>
<th>Score type</th>
<th>Entity</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sentiment score</td>
<td>Tweet</td>
<td>-20 to +20 (higher = positive sentiment)</td>
</tr>
<tr>
<td>Klout score</td>
<td>User</td>
<td>0 to 100 (higher = more influence)</td>
</tr>
</tbody>
</table>
Derived Metrics

- Sentiment Mean
- Sentiment Ratio
- Bull-Bear Sentiment
- Bull-Bear Sentiment Ratio
- Twitter Volume
- Bull-Bear Volume
- Bull-Bear Volume Ratio
- Twitter Volume 5-minutes Moving Average
- Twitter Sentiment 5-minutes Moving Average
Mathematical model

Stepwise regression
## Prediction Techniques Used

<table>
<thead>
<tr>
<th>Metric</th>
<th>Technique for prediction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Price</td>
<td>Ordinary least squares (OLS)</td>
</tr>
<tr>
<td>Stock Trend</td>
<td>Linear probability model (LPM)</td>
</tr>
</tbody>
</table>

* Multiple regression used to identify which features are relevant
Constraints applied

Trust

Individual opinion
Observations

- **Sentiment:** Not too useful in predicting price, but useful in predicting trend.
- **Volume:** Useful for both price and trend prediction.
- **Klout score:** Important feature for prediction, although the magnitude of impact is rather low.
- **Positive trumps negative:** Magnitude of the effect of a negative tweet is lower than the effect of a positive tweet in the other direction.
Conclusions

- Social media is still one of the most innovative methods to gain financial insights.
- Linear regression is a lot better suited to this task of insight aggregation than complex regressions.
What’s next?

Longer durations of study

Conditions affecting IPOs
References

Research Papers:

Images:
● Wikimedia.org
● Pixabay.com