Practical Use of News in Equity Trading Strategies

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Our Company

- **SemLab**
  - Semantic laboratory
  - Incorporated in 2000
  - Profitable growth (2003)
  - R&D 12 FTEs
  - Information discovery and decision support
  - Domain: Healthcare and financial services
  - Partners: EC R&D academia and SMEs
  - Flag ship products: ViewerPro, MediTra
Our Technology

- **ViewerPro**:  
  - Semantic analysis of news to determine current events and their impact on the value of securities.
  - Any textual news source (archive or streaming).
  - Marketed to traders, portfolio managers and algo trading to determine value and risk.
How is ViewerPro used

- Newsreader
- Filter
- Input to trade decisions
- Input to risk assessment
ViewerPro key values

- **Our clients have full control**
  - To express the events of interest
  - To express the portfolio
  - To create detection patterns
  - To locally host and maintain the system

- **Why?**
  - Focussed to the client’s needs
  - Secure (nothing leaves the building)
News and Trade

- **What is news**
  - Facts / opinions
  - Known / unknown
  - Expected / unexpected

- **News has impact**
  - On what?

- **How to use this to gain advantage**
  - Quicker
  - Comprehensive
  - Objective
Literature

- Liang, Xun and Chen, Rong-Chang. s.l., *Mining Stock News in Cyberworld Based on Natural Language Processing and Neural Networks*. : IEEE - Neural Networks and Brain, 2005.

...
Some results

- Benchmarking to manually classified news
  - Easy
    - 3 year data, 84821 messages, 82% recall, 96% precision
- Benchmarking to excess returns
  - Less Easy, because
    - Depends on event type
    - Depends on time frame
    - Depends on...
  - Nonetheless, significant results for some events in month after occurrence...
    - 3 year data, 5 event types, 1633 occurrences (total 9207), <1% significance vs. excess return difference of approx 2%
News and Risk

- **Risk control**
  - Market risk prediction

- **What do we need to predict**
  - Distribution of possible losses
  - “Abnormal” market conditions
  - Volatility

- **Predict the future using induction**
  - Correlation vs. causality

- **Not different from “ordinary” trading**
  - Clairvoyant trader…
Main question

- How to incorporate News analytics into Risk Measures
  - Preferably quantitatively
  - Preferably using know metrics

- EU project – NORM
  - “To enhance market risk assessment metrics by using semantically analysed news-based information. This will compensate for inflexibility of existing models with regard to strong market fluctuations or market instability and enable more dynamic, more reliable market risk estimation.”
  - 2.1 M euro’s – 30 month duration
News and Market Volatility

- Possibly an easy metric
- Doesn’t address polarity

- We use it ourselves…
BASE METALS HIGHLIGHTS: Top Stories Of The Day

Source: DowJones

**Anglo American**: 3Q Copper Output 168,500 Tons, +13.4% On Yr

LONDON (Dow Jones)--**Anglo American PLC** (AAL.LN) said Thursday that third quarter copper production increased 13.4% to 168,500 metric tons, compared with the third quarter of 2008, due to higher throughput and recoveries at Los Bronces and improved grades, recoveries and performance at Collahuasi.

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**Anglo American** To Divest Assets, Rejigs Management Structure

LONDON (Dow Jones)--Global diversified miner **Anglo American PLC** (AAL.LN) Thursday said it planned to sell off a handful of "non-core" businesses and would reorganize its management structure as it looks to streamline operations and focus on a core portfolio of commodities.
<table>
<thead>
<tr>
<th>%</th>
<th>Sentence</th>
<th>Date</th>
<th>Use</th>
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<tbody>
<tr>
<td>1.74%</td>
<td>The company, majority-owned by U.K. mining concern Anglo American PLC (AAL.LN), said it remained ‘Cautiously optimistic’ in its ability to redirect as necessary exports to China. the world's largest iron ore buyer.</td>
<td>22/10/09 12:13</td>
<td></td>
</tr>
<tr>
<td>1.34%</td>
<td>0807 GMT [Dow Jones] Anglo American (AAL.LN) streamlines its corporate structure, names assets up for disposal and changes management, moves likely to be well-received by investors, says Liberum Capital.</td>
<td>22/10/09 12:11</td>
<td></td>
</tr>
<tr>
<td>1.23%</td>
<td>&quot;Xstrata (XTA.LN) has 6 months before it can rebid, and Anglo will likely show a renewed sense of urgency through this time and will likely pull out all the stops to win shareholders over.</td>
<td>22/10/09 12:11</td>
<td></td>
</tr>
<tr>
<td>1.15%</td>
<td>1011 GMT [Dow Jones] Lonmin (LMI.LN) achieves its headline target of platinum sales;</td>
<td>22/10/09 12:11</td>
<td></td>
</tr>
<tr>
<td>1.15%</td>
<td>Thinks Ferguson has been an asset to Lonmin, but with plenty of time to fill his position, does not see this news as negative.</td>
<td>22/10/09 12:11</td>
<td></td>
</tr>
<tr>
<td>1.15%</td>
<td>Lonmin says it continues to face industry-related challenges, including South African inflation and wage</td>
<td>22/10/09 12:11</td>
<td></td>
</tr>
</tbody>
</table>
Detected event candidates

... remained cautiously optimistic...

... streamlined its corporate structure ...
Understanding ViewerPro

- **What does ViewerPro do:**
  - ViewerPro allows you to “read the news automatically”
    - you can define your sources
    - define the equities of interest
    - define the events you would like to capture

- **What does ViewerPro NOT do:**
  - ViewerPro does not tell you how to *interpret* the news

- **Why:**
  - depends on your portfolio
  - depends on your trading strategy
  - depends on …
Step 1: Define Purpose of backtesting

- You have requested a resultset produced by ViewerPro
  - Specifications
    - Euro Stoxx 50
    - Dow Jones NewsWire June 1st 2008 – May 31th 2009 (1 year data)
    - SemLab default events

- How does news analytics improve my trading decisions?
Step 2: Define benchmark criteria

- What do you expect from ViewerPro news analytics?

- Example:
  “I want to continuously check the news for unexpected negative events concerning my portfolio, that might implore me to modify my positions.”

  For this I need to know if ViewerPro’s negative events are reliable enough to be used in my trading strategy.

  Preferably quantify your acceptance criteria:

  I need them to be at least X% reliable: i.e. X% of the ViewerPro’s negative events should actually lead to value loss when applied in my strategy..
Step 3: Design Test set-up

**Bad example**

- How are we going to test this?
  - By correlating event occurrence with equity price changes

- Hypothesis
  - Bad news causes the prizes to drop
  - (Good news causes a price increase)

- Input
  - Market data
  - Event occurrences
Step 3: Design Test set-up (continued)

- This will not work.

- Why?
  - Your actual hypothesis was: Bad news causes the prizes to drop and good news causes a price increase regardless of all other information.
  - But news is (just) one of many factors driving market prices. (albeit a very important one..)
**Better example**

- How are we going to test this?
  By correlating unexpected positive events with price changes.

- Hypothesis
  For a poorly performing company, Good news will have a significant effect on prices.

**Input**
- Market prices (open close or intra day..)
- Market expectation (pick the indicator of your choice)
- Event occurrence (good news) (revenue exceeds expectation)
Step 3: Design Test set-up (continued)

Using ViewerPro (and this simple strategy) we can predict with about 70% confidence that the closing price will be higher than the opening price for a poorly performing equity if an “revenue exceeds expectation” event comes in.

(And we can do this automatically for any type of information in the news !)
End

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  - vreijling@semlab.nl

- Thank you..