Reading China: Predicting Policy Change with Machine Learning

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The views expressed here are solely those of our own and do not represent the views of the American Enterprise Institute, Bates White Economic Consulting, or their other employees.
PCI: the first *quantitative* indicator of China’s policy priorities.

- Runs from 1951 Q1 to 2018 Q3.
- Is a leading indicator.
- Can be updated in the future.
How to predict policy change?

• “Read” the *People's Daily* with machine learning.

  Official newspaper, 1946-2018

  (Artificial) neural networks

• Detect changes in how the newspaper prioritizes issues.
Source of predictive power

*People's Daily*: nerve center of China’s propaganda system

Propaganda often precedes policies.

Detecting propaganda change ≈ Predicting policy change
Detecting propaganda change

Front page

proxy of Priorities (of the newspapers)

proxy of Future policies (of the gov’t)

Imagine an avid reader of the People’s Daily who

1. reads recent articles;
2. forms a paradigm about front-page content;
3. tests the paradigm on new articles.
Methodology: overview

A “context-free” method—it does not require an understanding of the Chinese context.
Methodology: modelling

\[ x \]: each article as an observation.

\[ f \]: a complicated function.

\[ y = f(x) \]
Result: PCI—with ground truth
Understanding substance of change

<table>
<thead>
<tr>
<th>Front page?</th>
<th>Classified on front page?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>✓ false positives</td>
</tr>
<tr>
<td>Yes</td>
<td>true</td>
</tr>
</tbody>
</table>

• Content of *mis*-classified articles has policy substance.
Potential Applications
App 1: PCI of other countries

Predicting other (ex-)Communist regimes’ policies:

• USSR’s Pravda
• GDR (East Germany)’s Neues Deutschland
• DPRK (North Korea)’s Rodong Sinmun
• Cuba’s Granma
• Vietnam’s Nhân Dân
App 2: Measuring centralization

Measuring degree of centralization in China:

- Replicate the same analysis on regional official newspapers.
- Compare $PCI_{Central}$, $PCI_{Region\,1}$, $PCI_{Region\,2}$, ...
- Conforming to $PCI_{Central} \rightarrow$ Toeing the party line
App 3: Measuring media bias

Measuring media bias in the US:

• Replicate the same analysis on US newspapers.
• Compare "PCI\textsubscript{WaPo}, "PCI\textsubscript{NYT}, "PCI\textsubscript{WSJ}, ...
• Divergence among "PCI"s \rightarrow Polarization in media
App 4: Predicting vote change

Predicting vote change in legislation:

• *People’s Daily* articles → *Legislators’ public statements*

• Page numbers of articles → *Legislators’ names*

• What if Sen. A’s statement is mistaken as Sen. B’s?

Source of predictive power:

• Political necessity to justify vote changes by making different statements *in advance.*
App 5: Predicting ideology change

Predicting changes in judges’ ideological leaning:

- *People’s Daily* articles → Judges’ judicial opinions
- Page numbers of articles → Judges’ names
- What if Judge C’s opinion is mistaken as Judge D’s?

Source of predictive power:

- Changes in ideological leaning tend to be gradual yet long-lasting.
Takeaways

• The first index to predict China’s “next big things.”

• A new way to uncover hidden patterns from trivial labels.

• A wide range of potential applications.
Interested in DIY?

- Website: www.policychangeindex.com
- Research paper: www.policychangeindex.com/Reading_China.pdf
- Source code: www.github.com/open-source-economics/PCI

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Questions?