Reading China:
Predicting Policy Change with Machine Learning

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November 17, 2018
MAPOR annual conference

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.
Policy Change Index (PCI) for China

The first *leading* indicator of China’s policy changes.

- Covers 1951 Q1 – 2018 Q3.
- Can be updated in the future.
How to predict policy changes?

Build a machine learning algorithm to

• “read” the People's Daily;
• detect changes in how it prioritizes policy issues.
Source of predictive power

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

Propaganda often precedes policies.

Detect changes in newspaper’s priorities

Predict changes in gov’t policies
Source of predictive power

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

Propaganda often precedes policies.

Detect changes in newspaper’s priorities ≈ Predict changes in gov’t policies

Front page?
Methodology

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

Articles in previous 5 years

Modeling

Testing

Articles in next quarter

“Forecasting”

PCI = Testing performance − “Forecasting” performance
Methodology

Articles in previous 5 years → Modeling → Testing

Articles in next quarter → "Forecasting"

PCI = Testing performance - "Forecasting" performance

"Language-free" — it does not require the reading of the Chinese text.
Methodology: modelling

\( \mathbf{x} \): each article as an observation.

\( f \): a complicated function.

\[ y = f(\mathbf{x}) \]
Methodology: modelling

\[ \mathbf{x} : \text{each article as an observation.} \]

\[ f : \text{a complicated function.} \]

\[ y = f(\mathbf{x}) \]
Results
Result: PCI
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>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

- Content of *mis*-classified articles has policy substance.
Potential applications
App 1: PCls for 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 1: PCIs for other countries

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PCI Cuba is in the works!
Measuring media bias in the US:

- Replicate the same analysis on US newspapers.
- Compare $PCI_{WaPo}$, $PCI_{NYT}$, $PCI_{WSJ}$, ...
- Divergence among $PCI$'s $\rightarrow$ Polarization in media
Other apps

Omitted here. See our research paper.
Takeaways

• A “crystal ball” to predict China’s next moves.

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

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

- Website: policychangeindex.com (newsletter sign-up)
- Research paper: policychangeindex.com/Reading_China.pdf
- Source code: github.com/open-source-economics/PCI

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Questions?