

# 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.*

# Policy Change Index (PCI) of China

PCI: the first *quantitative* indicator of China's policy priorities.

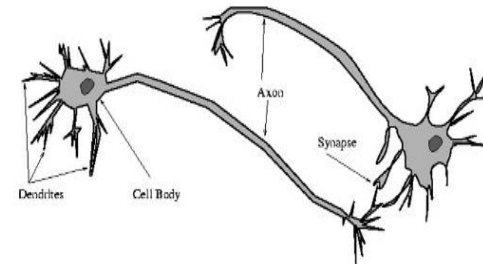
- Runs from 1951 Q1 to 2018 Q3.
- Is a leading indicator.
- Can be updated in the future.

# 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

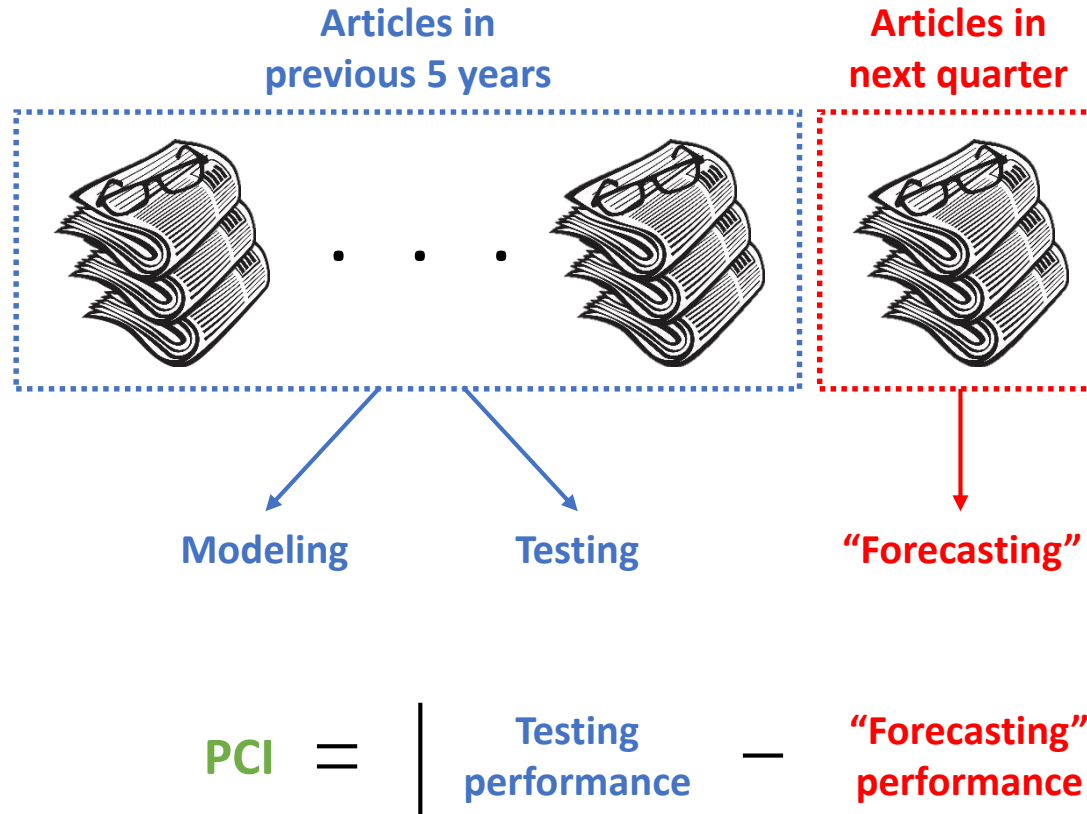
$\xrightarrow{\text{proxy of}}$  Priorities (of the newspapers)

$\xrightarrow{\text{proxy of}}$  Future policies (of the gov't)

Imagine an avid reader of the *People's Daily* who

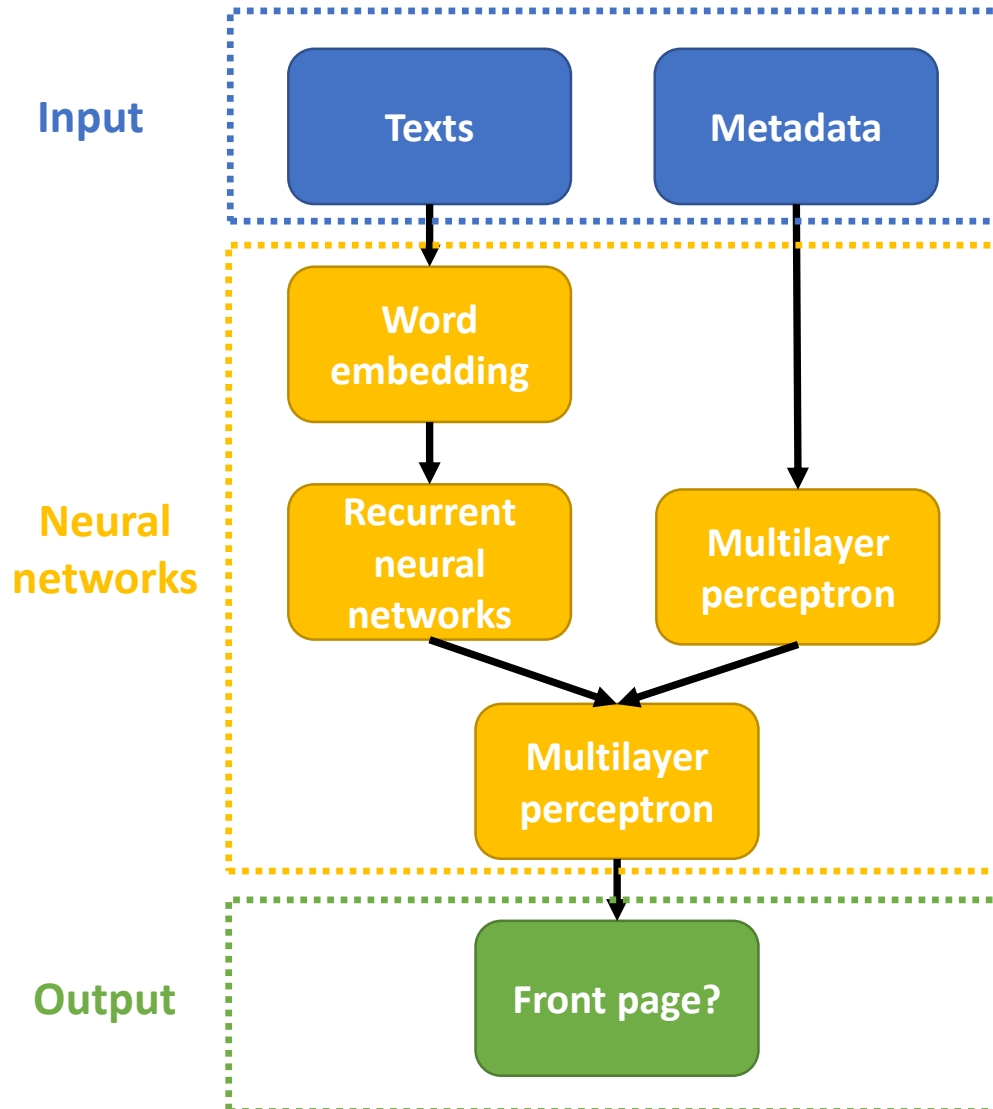
1. reads recent articles;
2. forms a paradigm about front-page content;
3. tests the paradigm on new articles.

# Methodology: overview



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

# Methodology: modelling

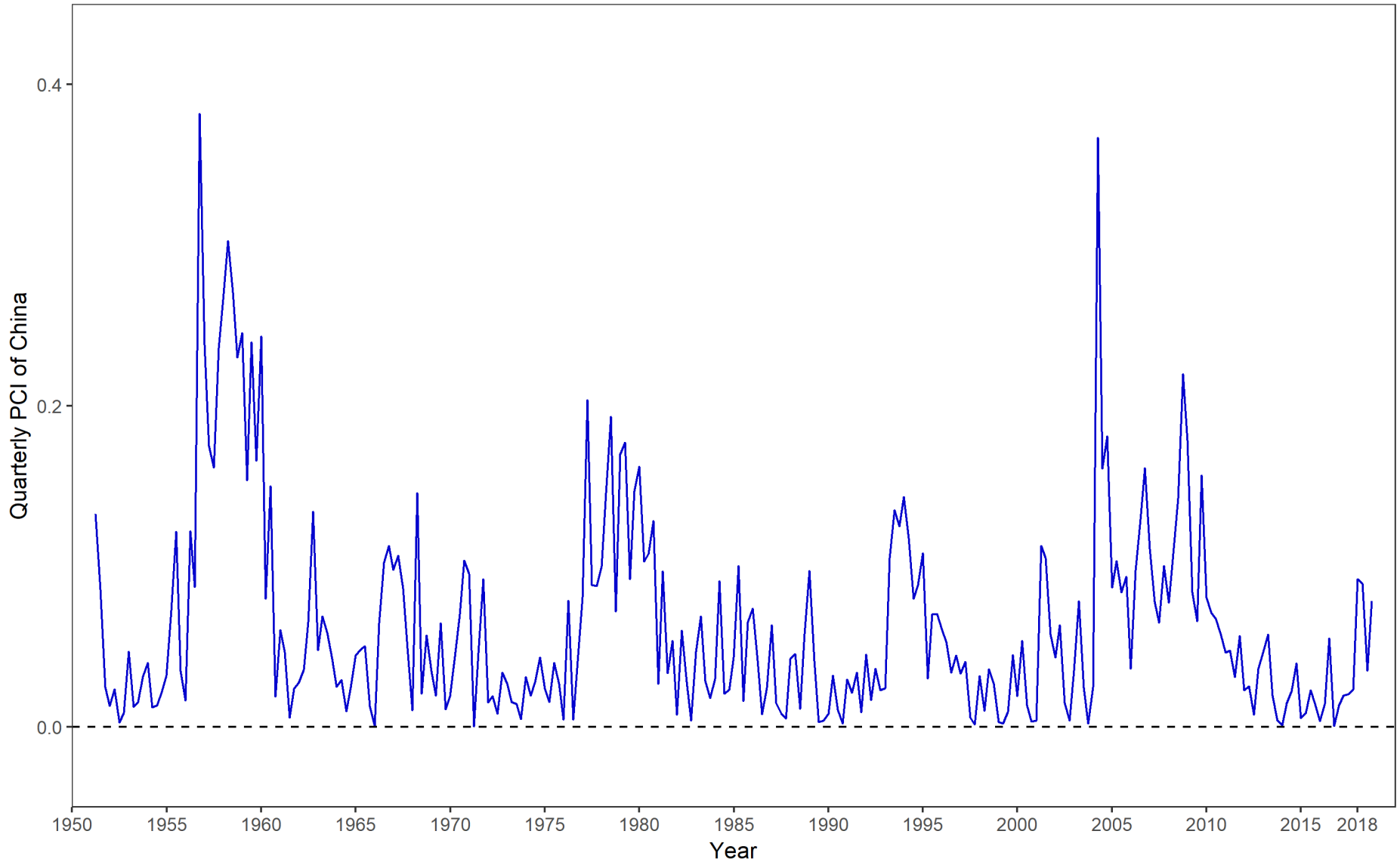


$x$  : each article as an observation.

$f$  : a complicated function.

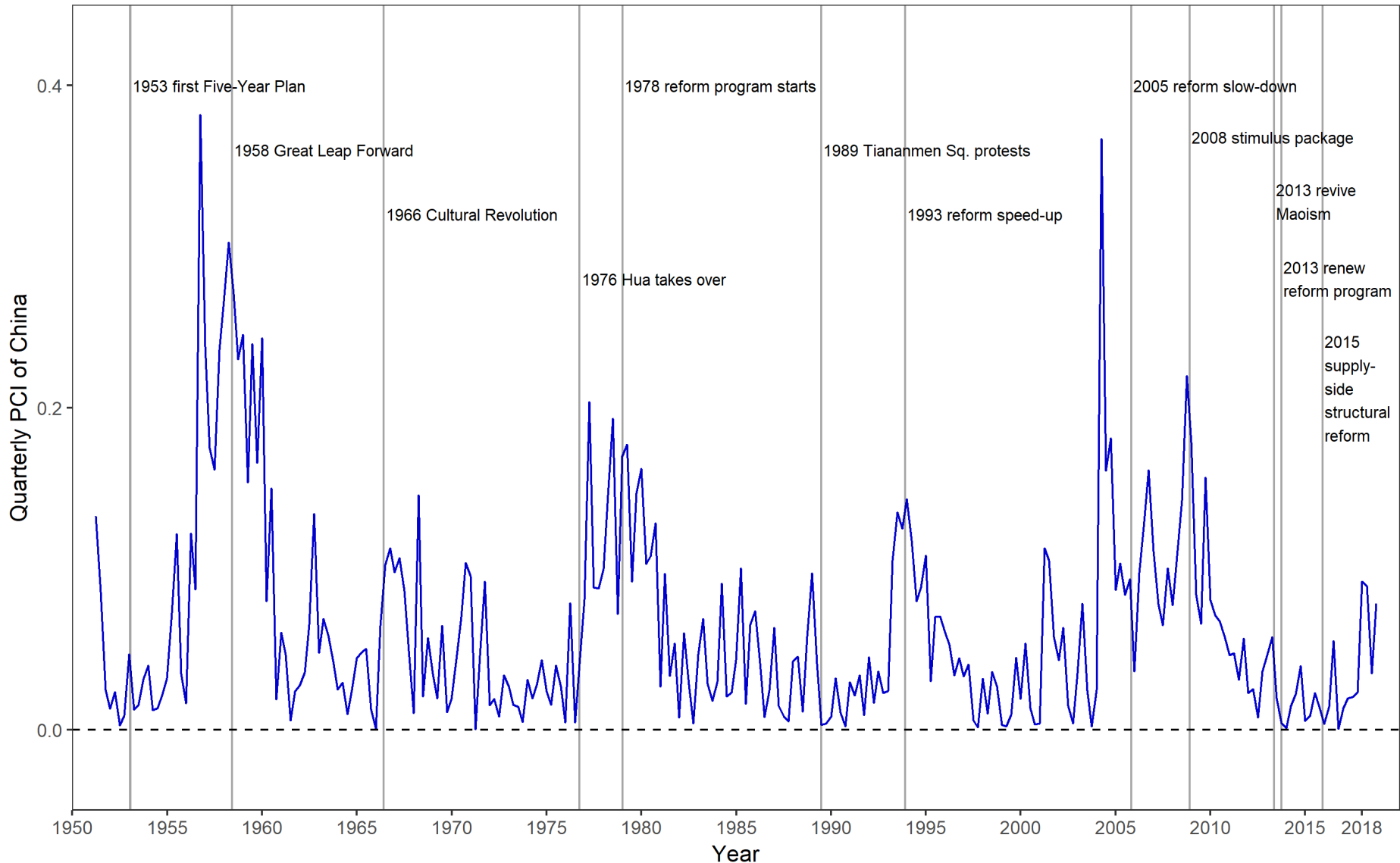
$$y = f(x)$$

# Result: PCI





# Result: PCI—with ground truth



# Understanding substance of change

		Classified on front page?	
		No	Yes
Front page?	No	√	false positives
	Yes	false negatives	√

- 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  $PCI_{Central}$   $\rightsquigarrow$  Toeing the party line

# App 3: Measuring media bias

Measuring media bias in the US:

- Replicate the same analysis on US newspapers.
- Compare " $PCI$ "<sub>WaPo</sub>, " $PCI$ "<sub>NYT</sub>, " $PCI$ "<sub>WSJ</sub>, ...
- Divergence among " $PCI$ "s  $\rightarrow$  Polarization in media

# 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](http://www.policychangeindex.com)
- Research paper: [www.policychangeindex.com/Reading\\_China.pdf](http://www.policychangeindex.com/Reading_China.pdf)
- Source code: [www.github.com/open-source-economics/PCI](http://www.github.com/open-source-economics/PCI)

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**Questions?**