

Reading China:

Predicting Policy Change with Machine Learning

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US-China Business Council

The views expressed here are those of the authors and do not represent the views of AEI, Bates White, or their other employees.

Predicting policy change: why?

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- Manipulated data and opaque system make prediction difficult.

Predicting policy change: why?

- China's industrialization: product of gov't direction.
- Manipulated data and opaque system make prediction difficult... until now.

Policy Change Index (PCI) for China:

- *leading* indicator of policy moves;
- quarterly, 1951 – present.

Predicting policy change: why?

Implications on current events:

- US-China trade fight;
- China's capital flight and growth slowdown.

1. PCI for China

2. Implications on current events

3. Next steps

Predicting policy change: how?

Build a machine learning algorithm to

- “read” the *People's Daily*;
- detect structural changes in its priorities.



Official newspaper, 1946-present

Source of predictive power

The Leninist tradition:

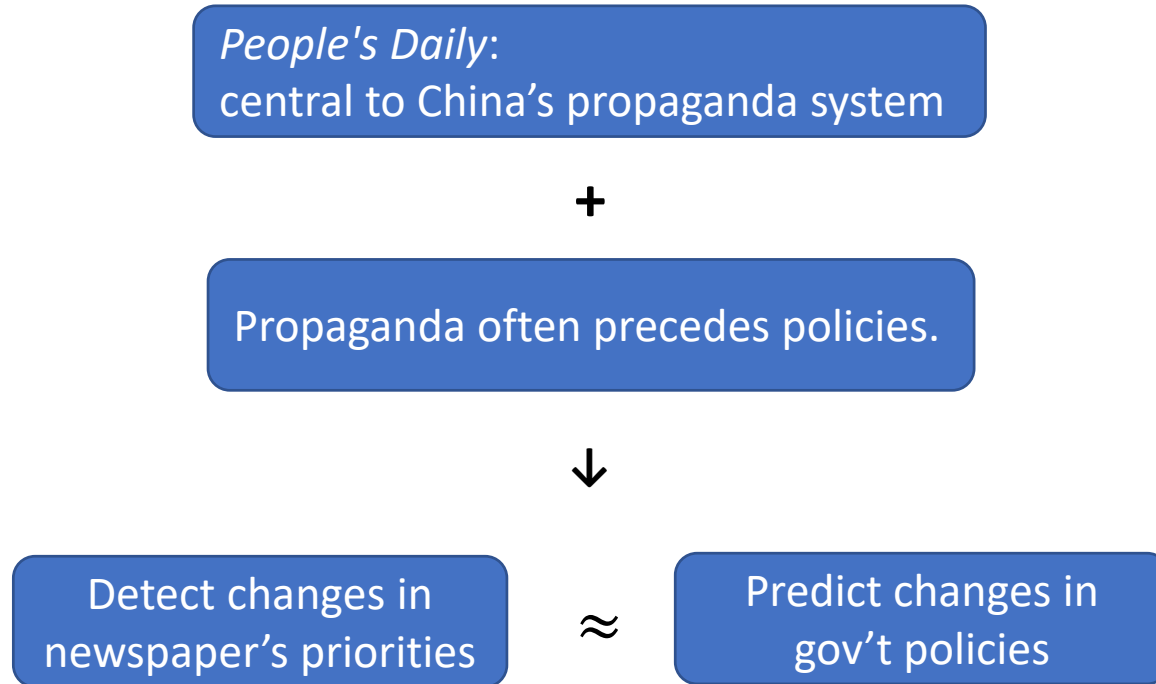
- “[T]he whole task of the Communists is to be able to **convince** the backward elements.”
- Necessary “to transform the press... into a serious organ for the **economic education** of the mass of the population.”

Source of predictive power

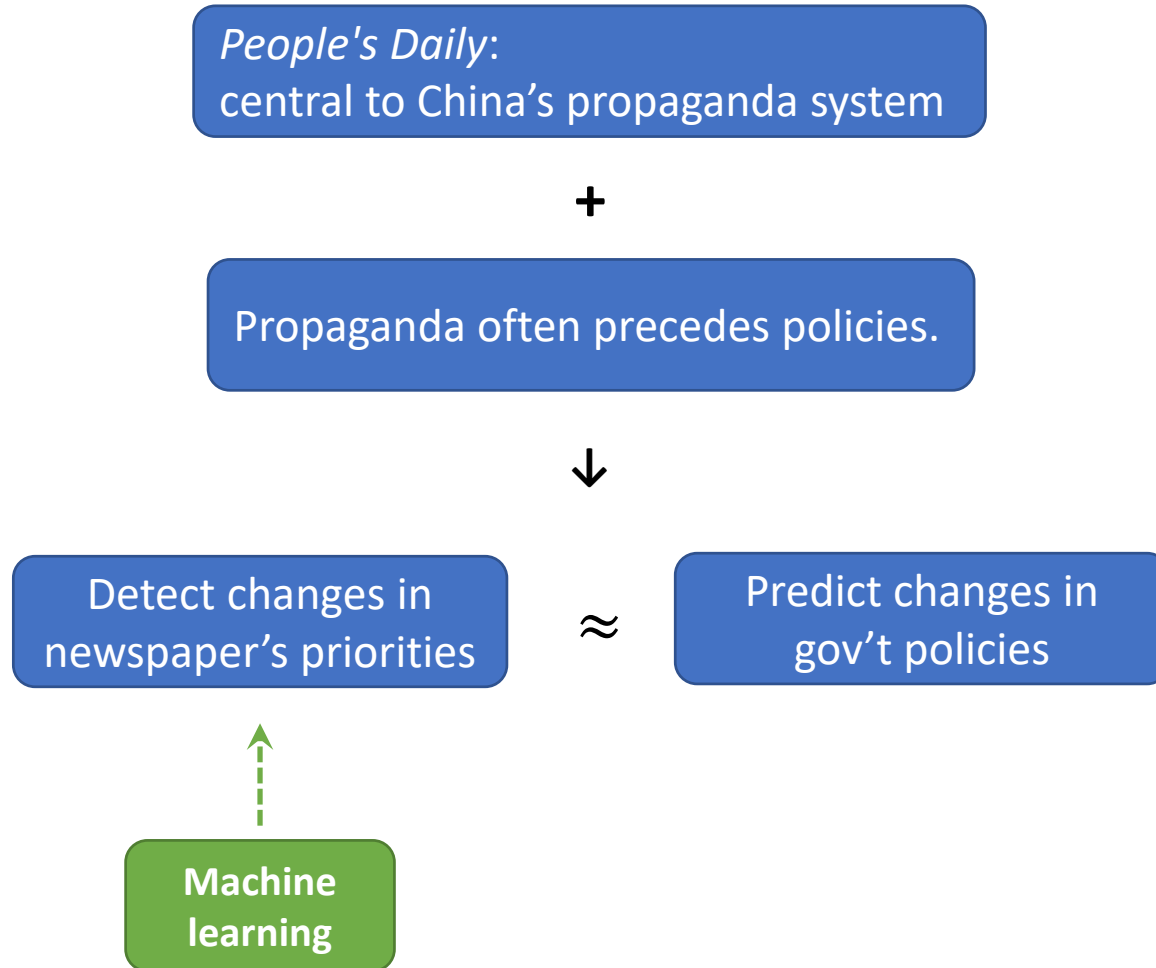
The Leninist tradition, in Xi Jinping's words:

- The media should “uphold the **correct orientation** of public opinion in all aspects and at all stages.”

Source of predictive power



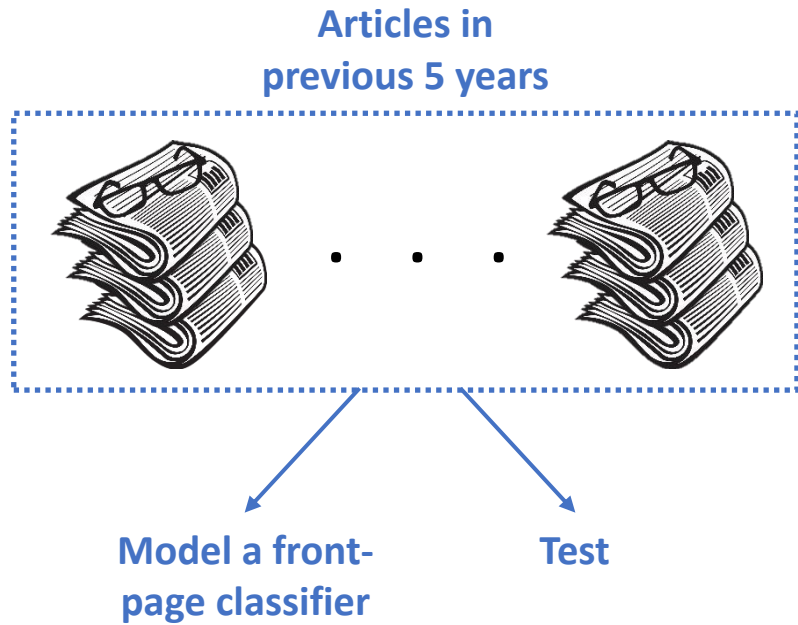
Source of predictive power



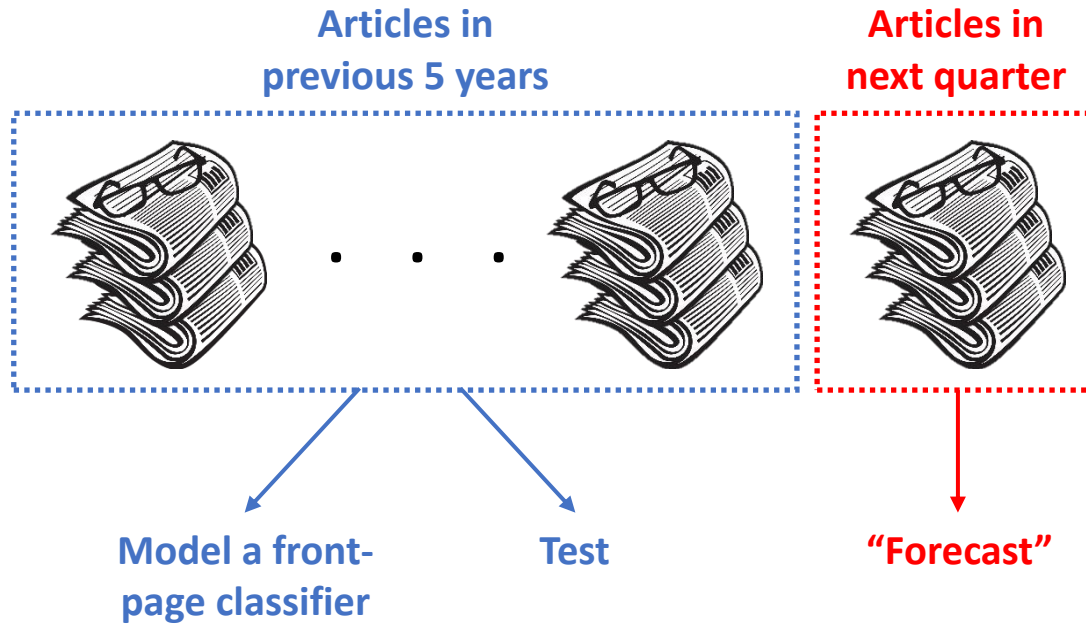
Method

An algorithm that classifies **front-page** articles
by “reverse-engineering” the editor’s mind.

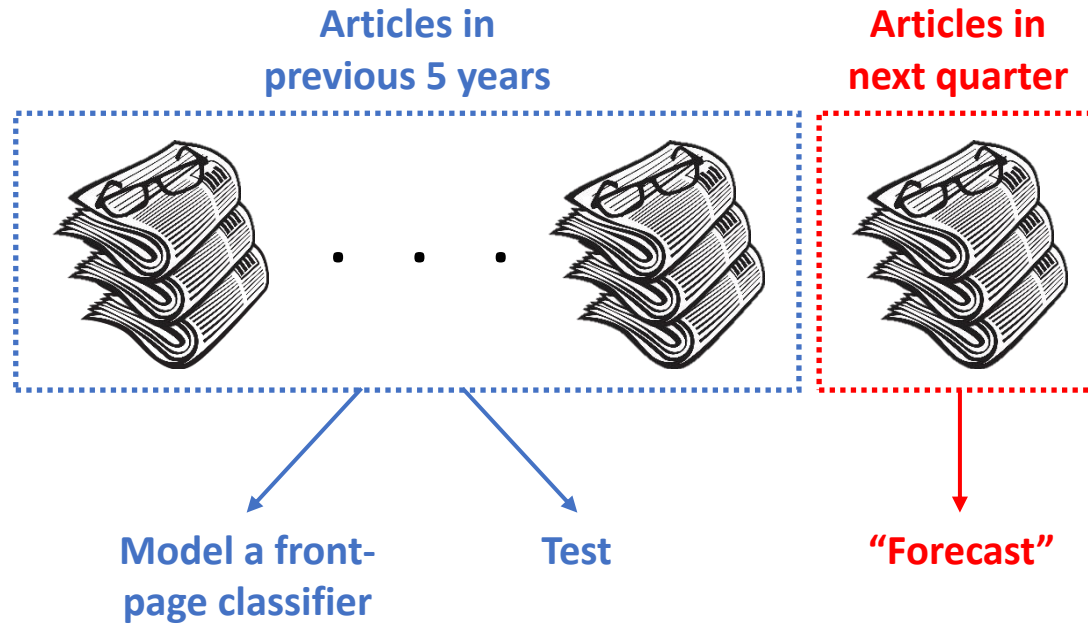
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Method



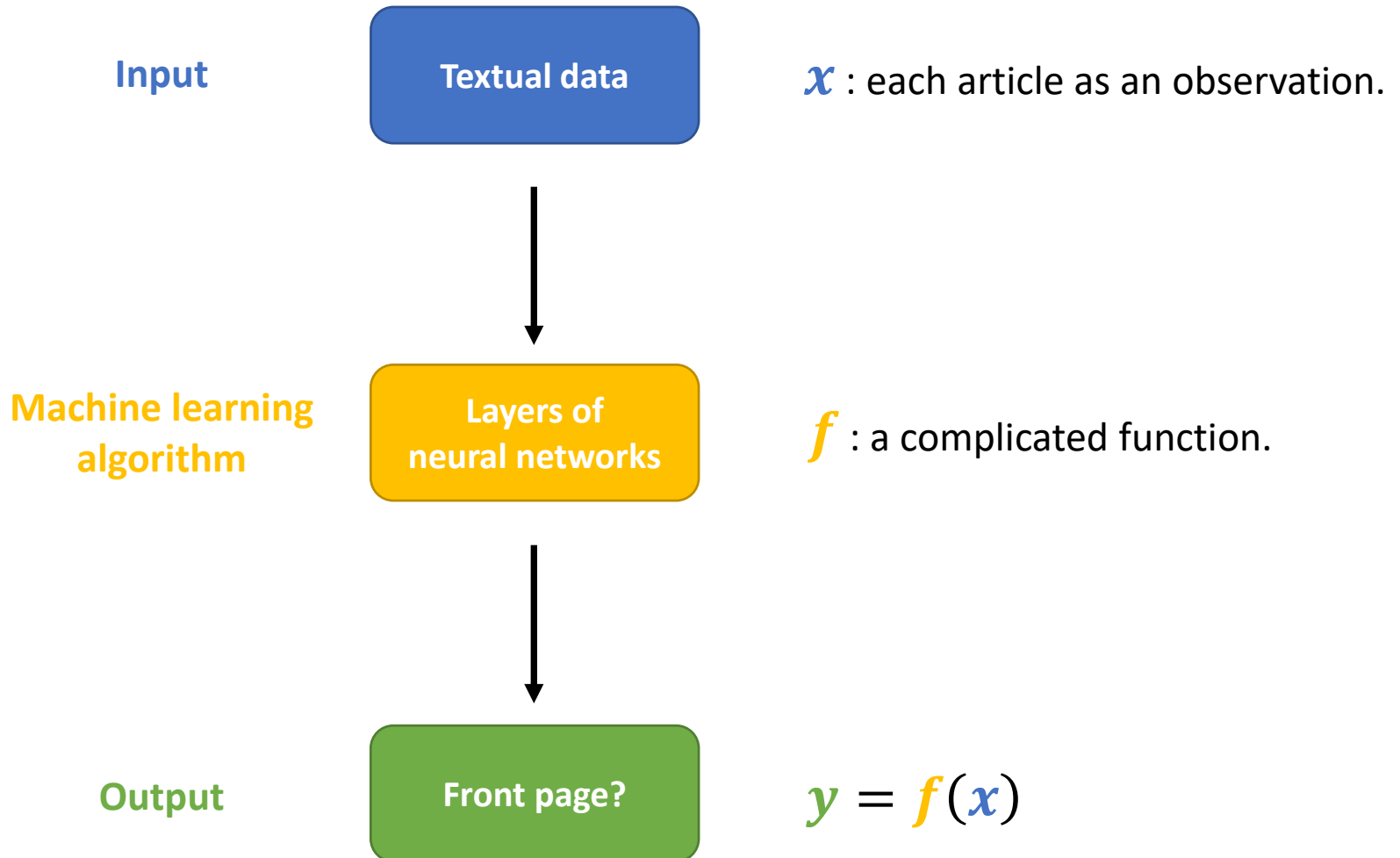
Method



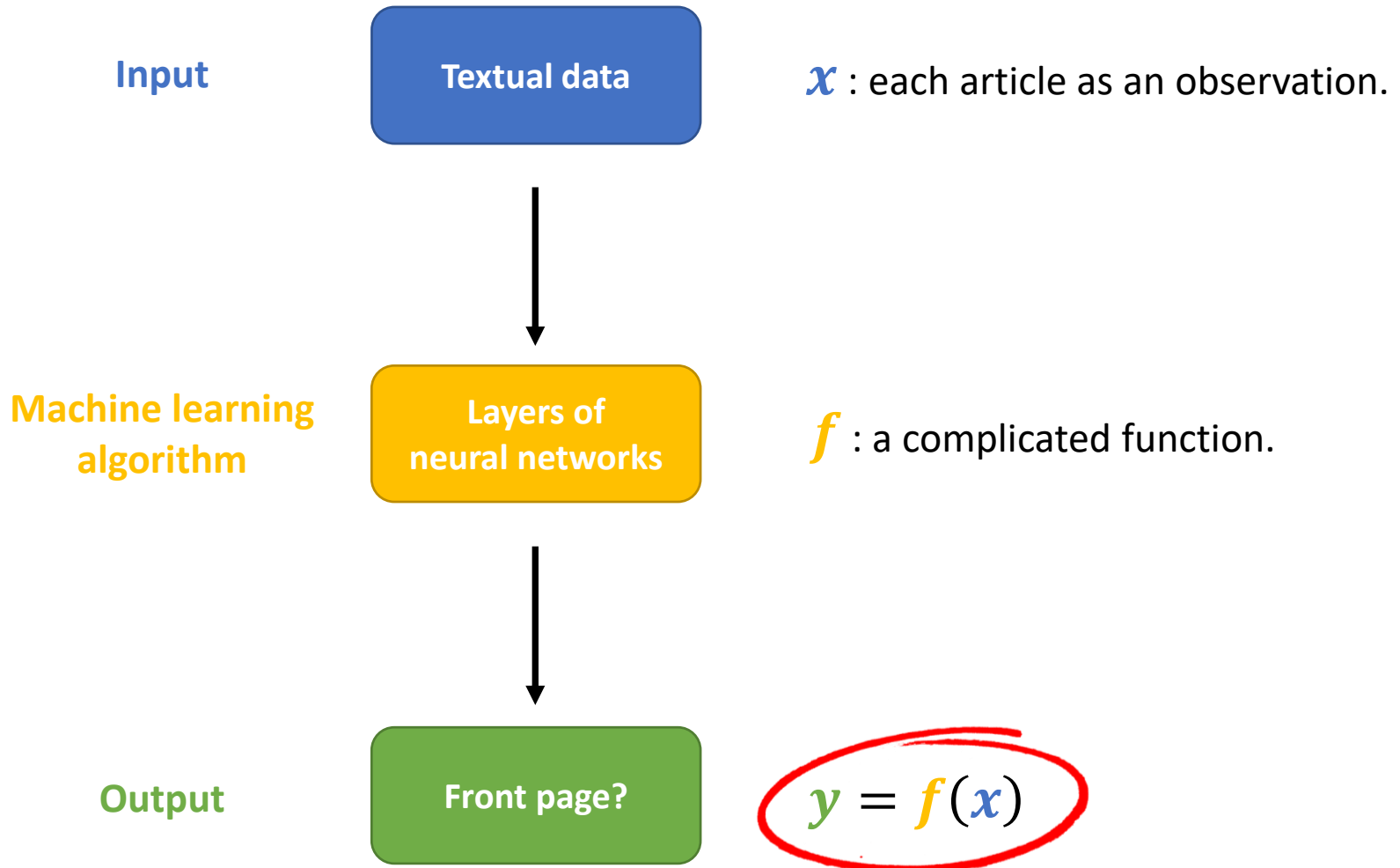
$$\text{Policy Change Index} = \left| \text{Test performance} - \text{"Forecast" performance} \right|$$

PCI $\gg 0 \Rightarrow$ Structural difference in the newspaper's priorities

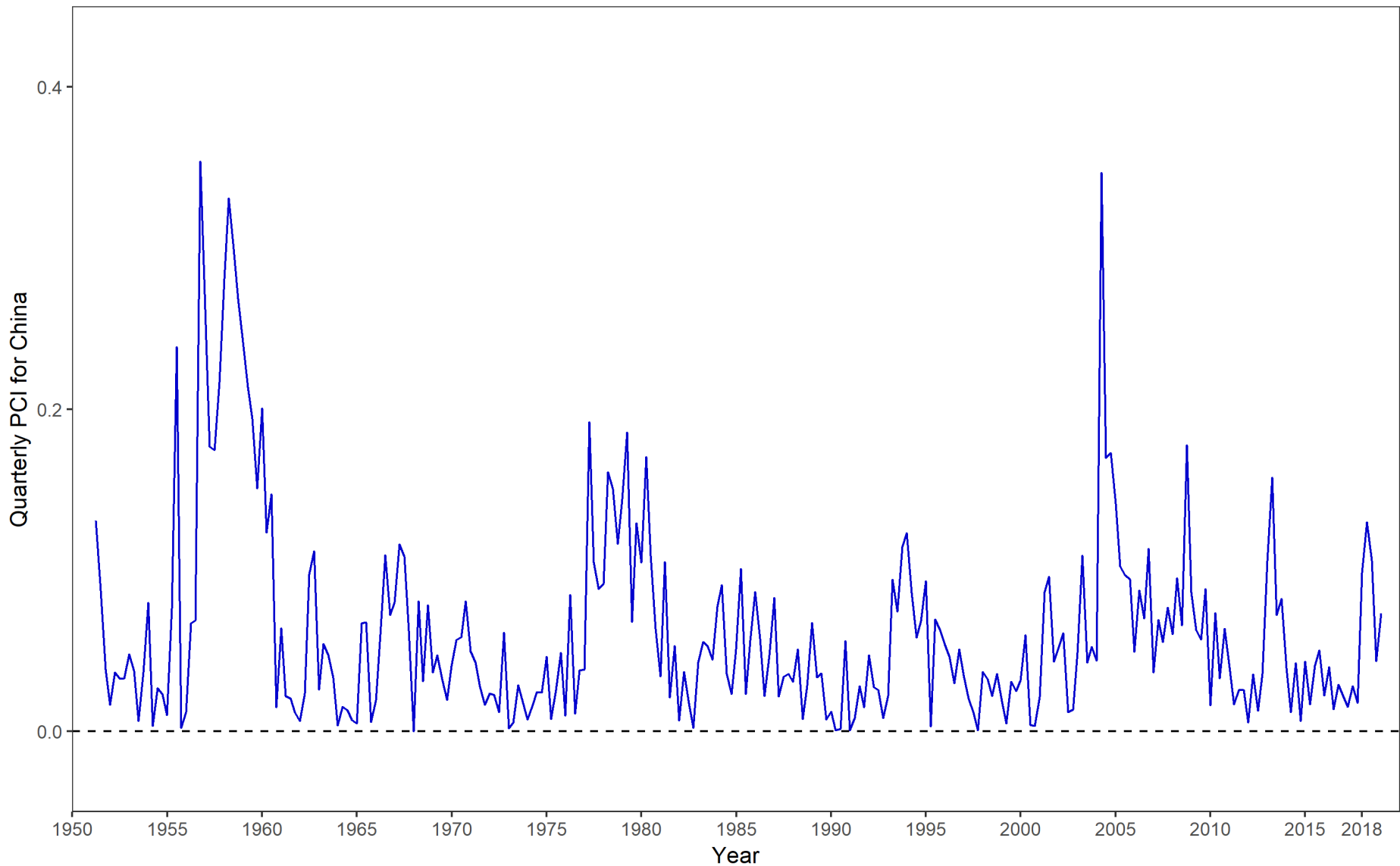
Method: modeling



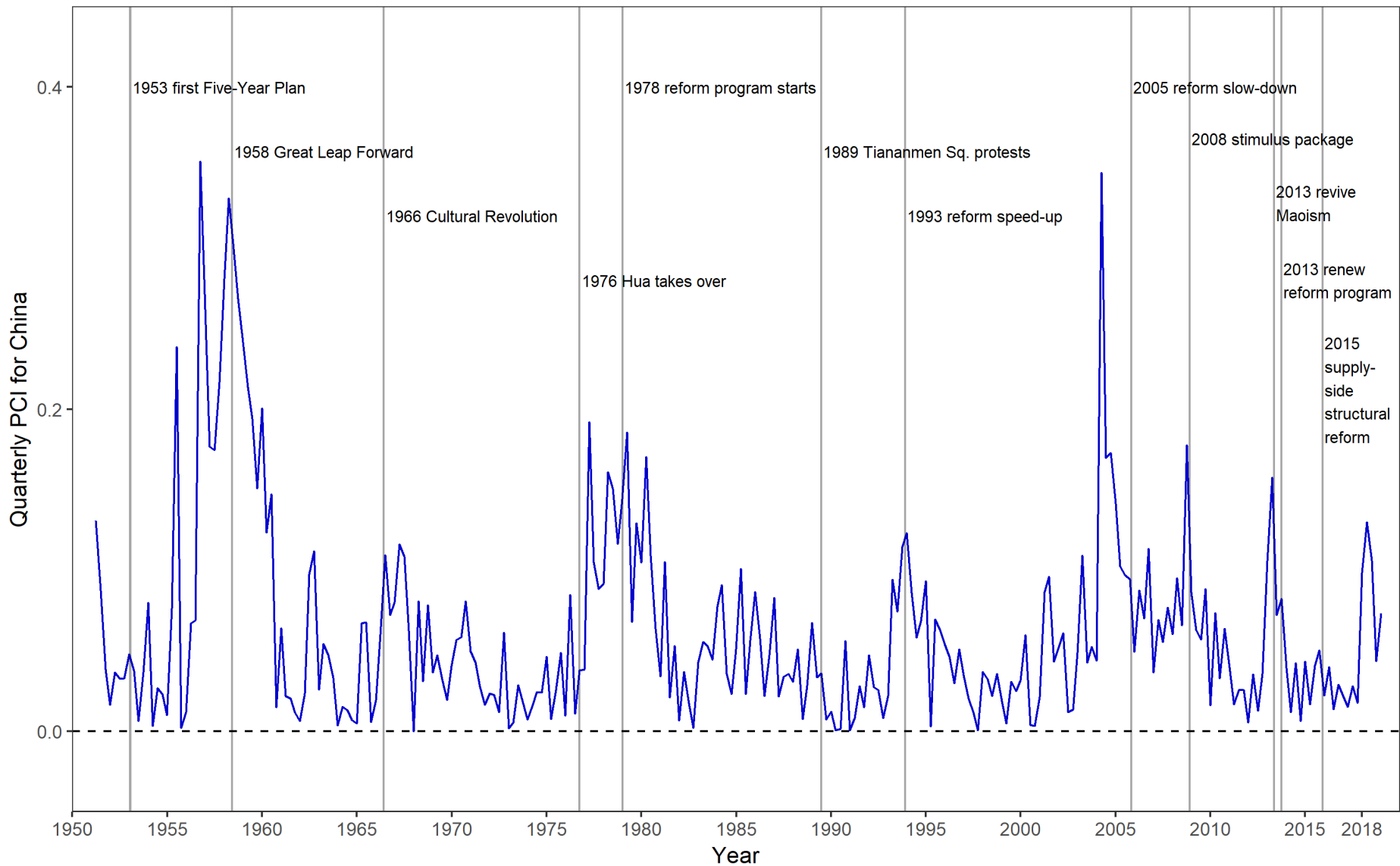
Method: modeling



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.

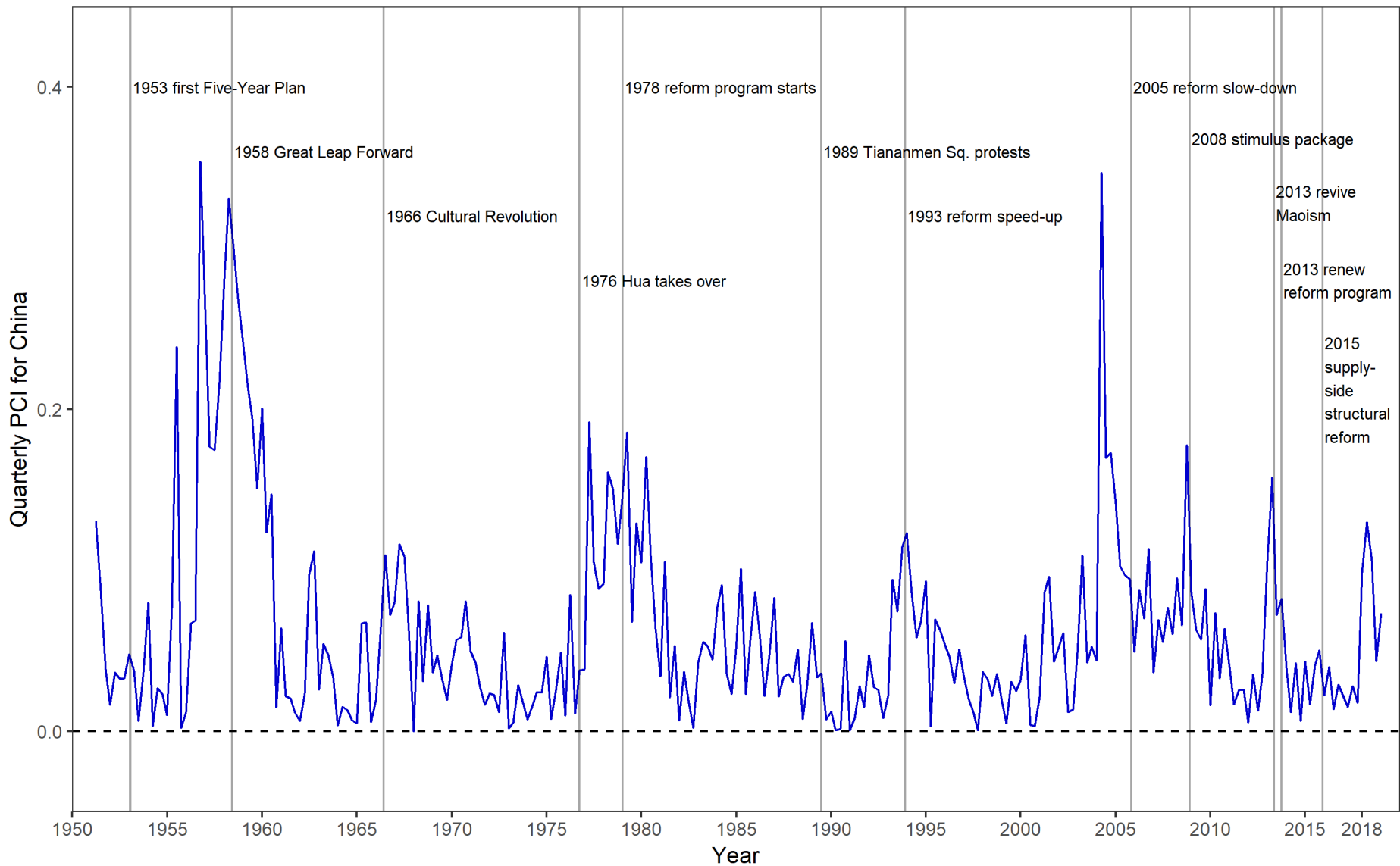
1. PCI for China

2. Implications on current events

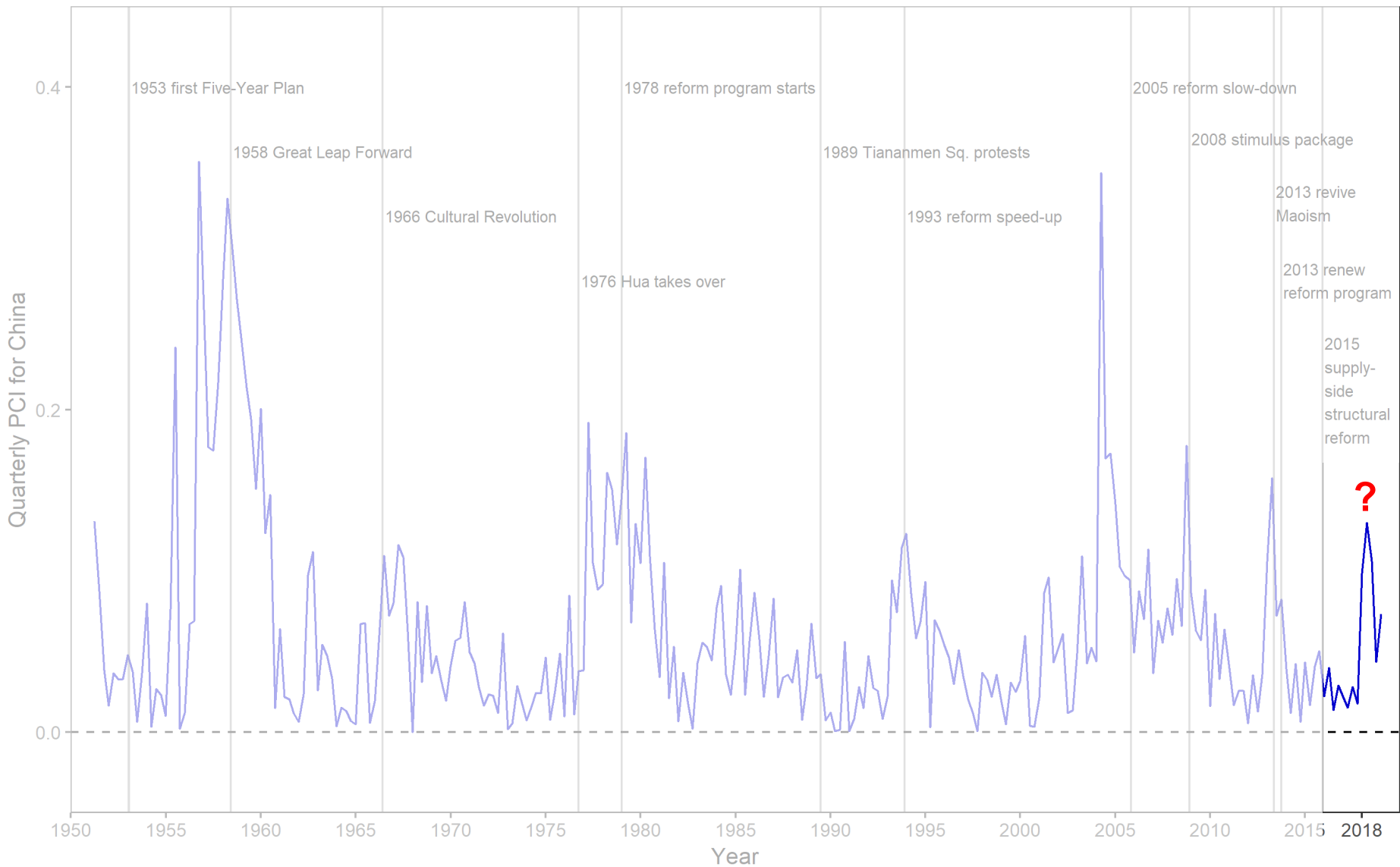
3. Next steps

What does it mean for the US-China trade fight?

Result: PCI — with ground truth

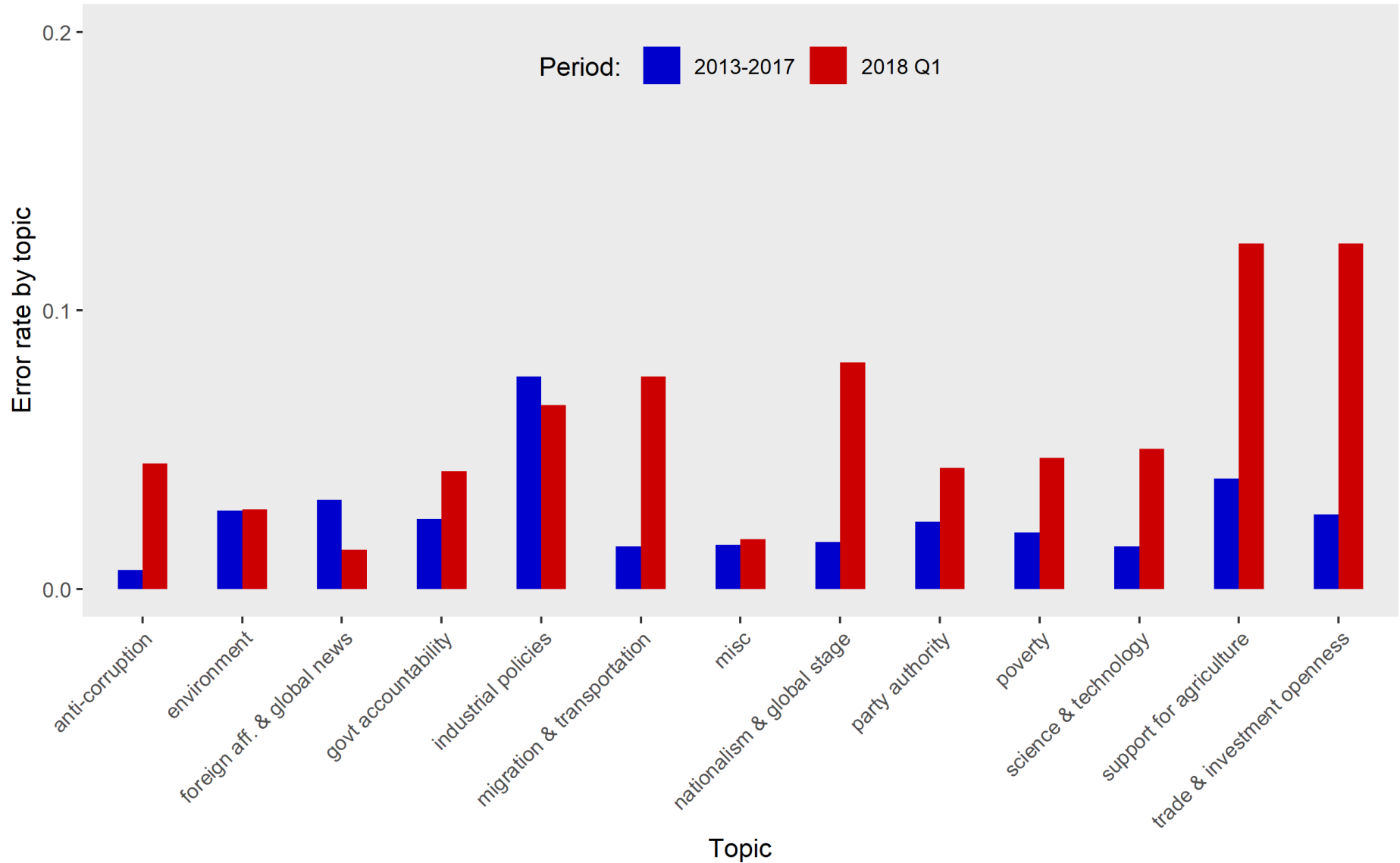


Result: PCI — going forward



The 2018 Q1 uptick

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The 2018 Q1 uptick represents:

- internally: strengthening party authority;
- externally: nationalism and global leadership;
- populist policies to boost political support.

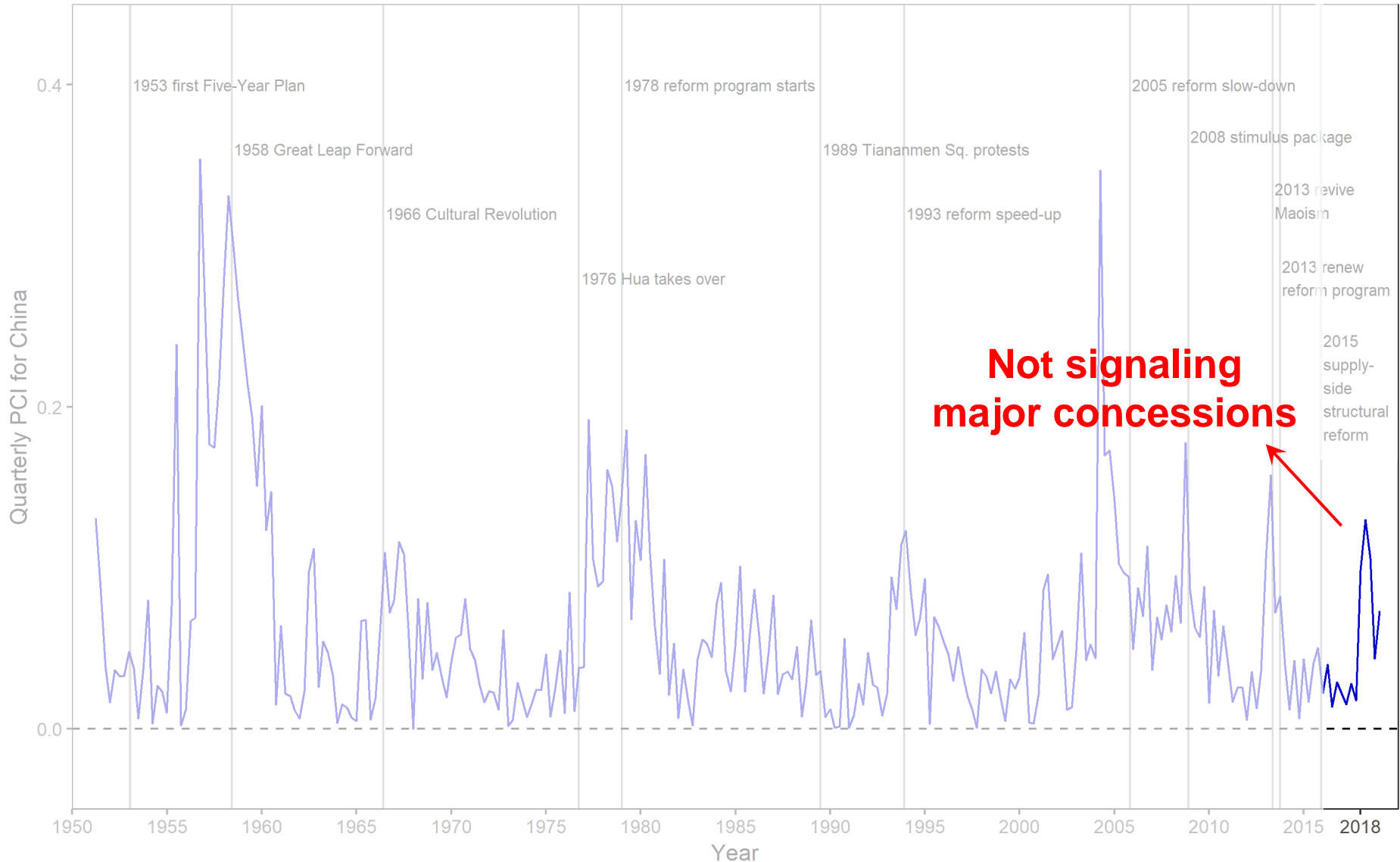
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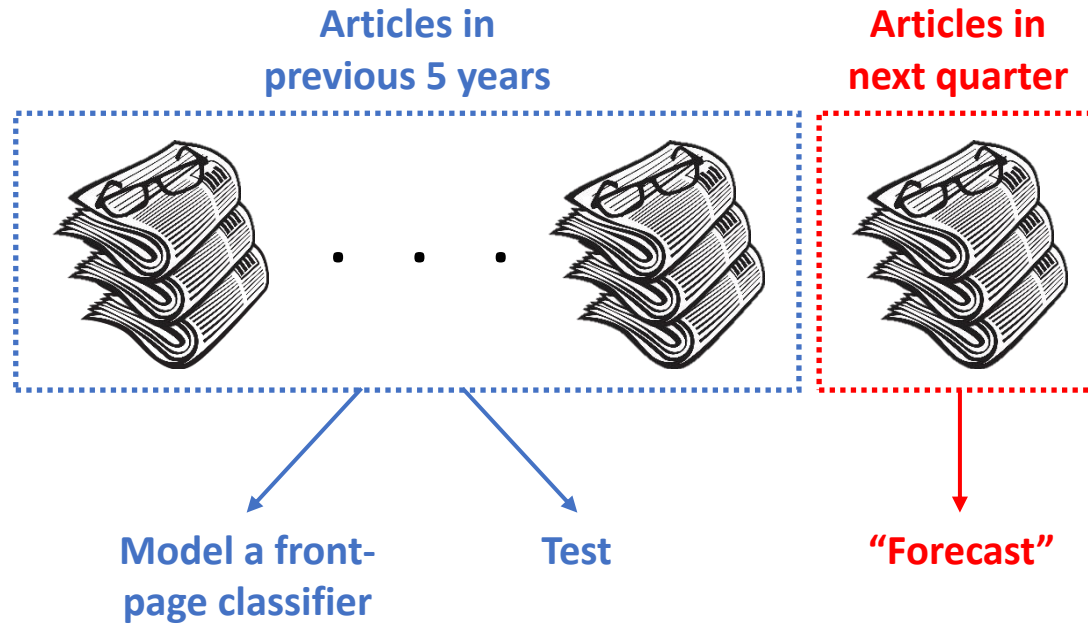
⇒ Curb your enthusiasm for the trade talks.

Result: PCI — going forward



What does it mean for the Chinese economy?

Method



$$\text{Policy Change Index} = \left| \text{Test performance} - \text{“Forecast” performance} \right|$$

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Taking apart the PCI

$$\text{Policy Change Index} = \left| \begin{array}{c} \text{Test} \\ \text{performance} \end{array} \right| - \left| \begin{array}{c} \text{"Forecast"} \\ \text{performance} \end{array} \right|$$

Taking apart the PCI

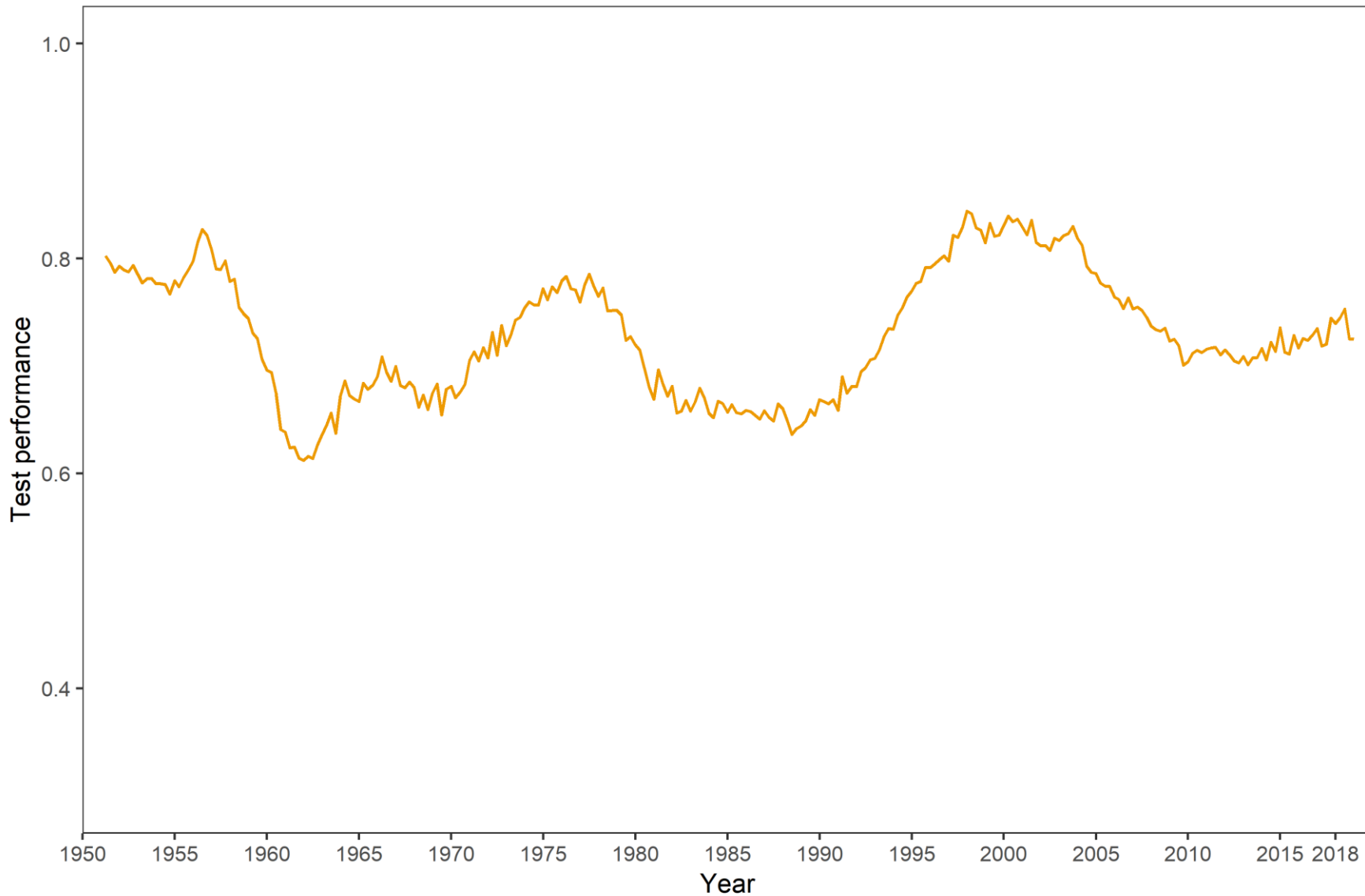
Test performance

⇒ Clarity of the newspaper's (current) priorities

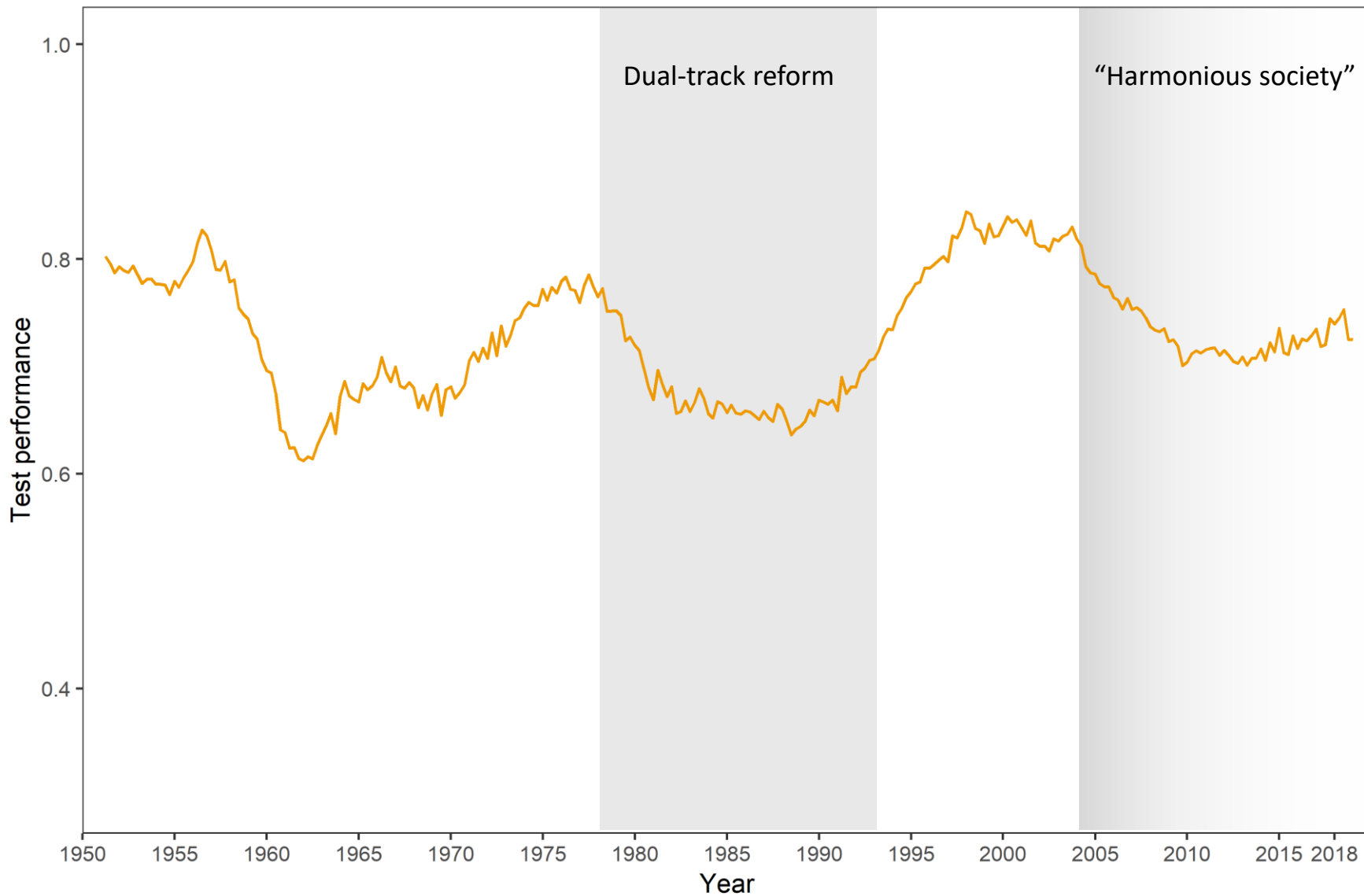
⇒ Clarity of the government's (current) policies

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Test performance



Test performance



Conflicting agendas

Dual-track reform, 1978 – 1993

- allowing private businesses and markets while
- maintaining state sector and central planning.

“Harmonious society,” 2005 –

- using populist policies to alleviate inequalities while
- (partially) maintaining economic reform

Conflicting agendas

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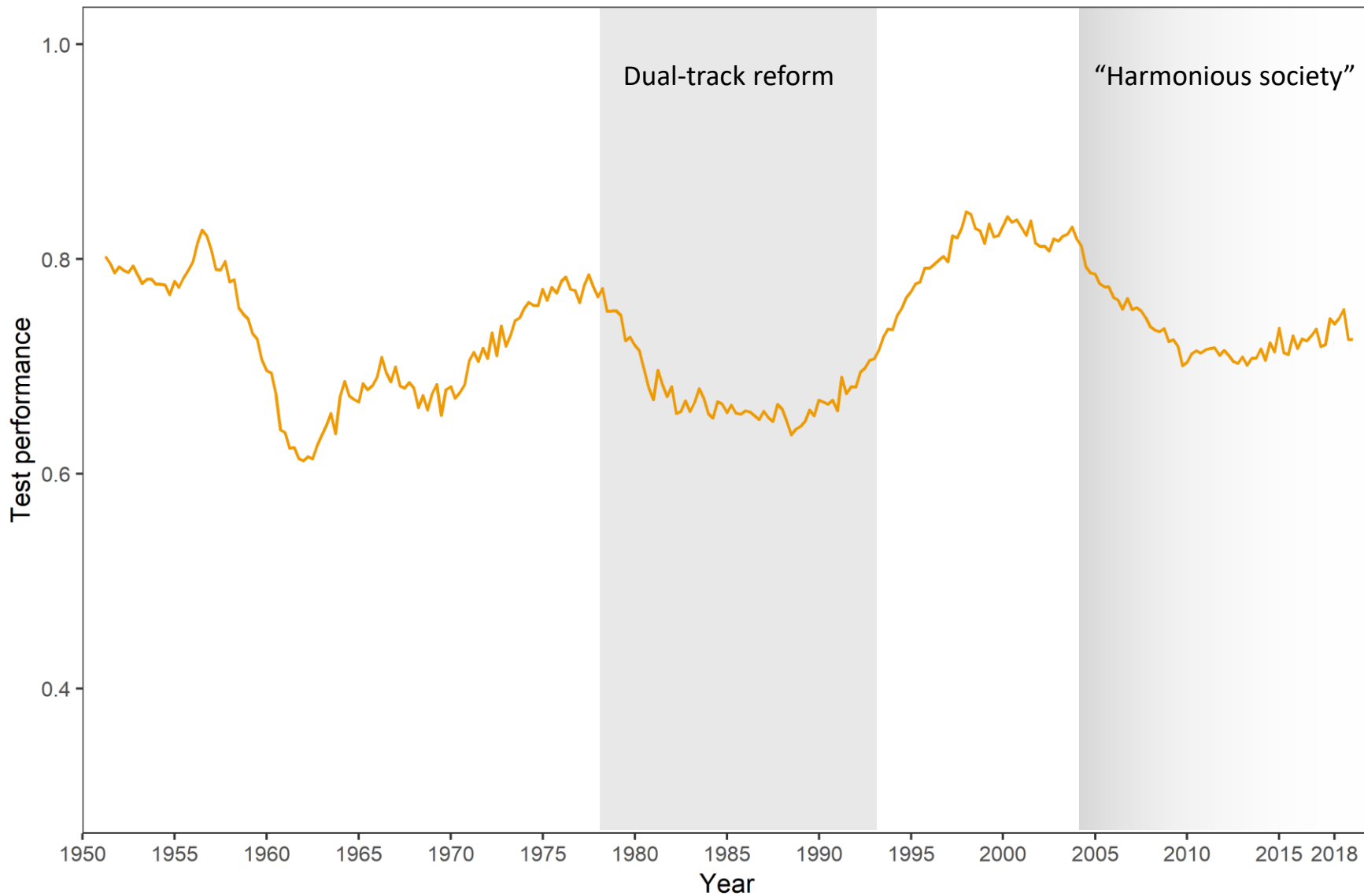
- allowing private businesses and markets while
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“Harmonious society,” 2005 – present

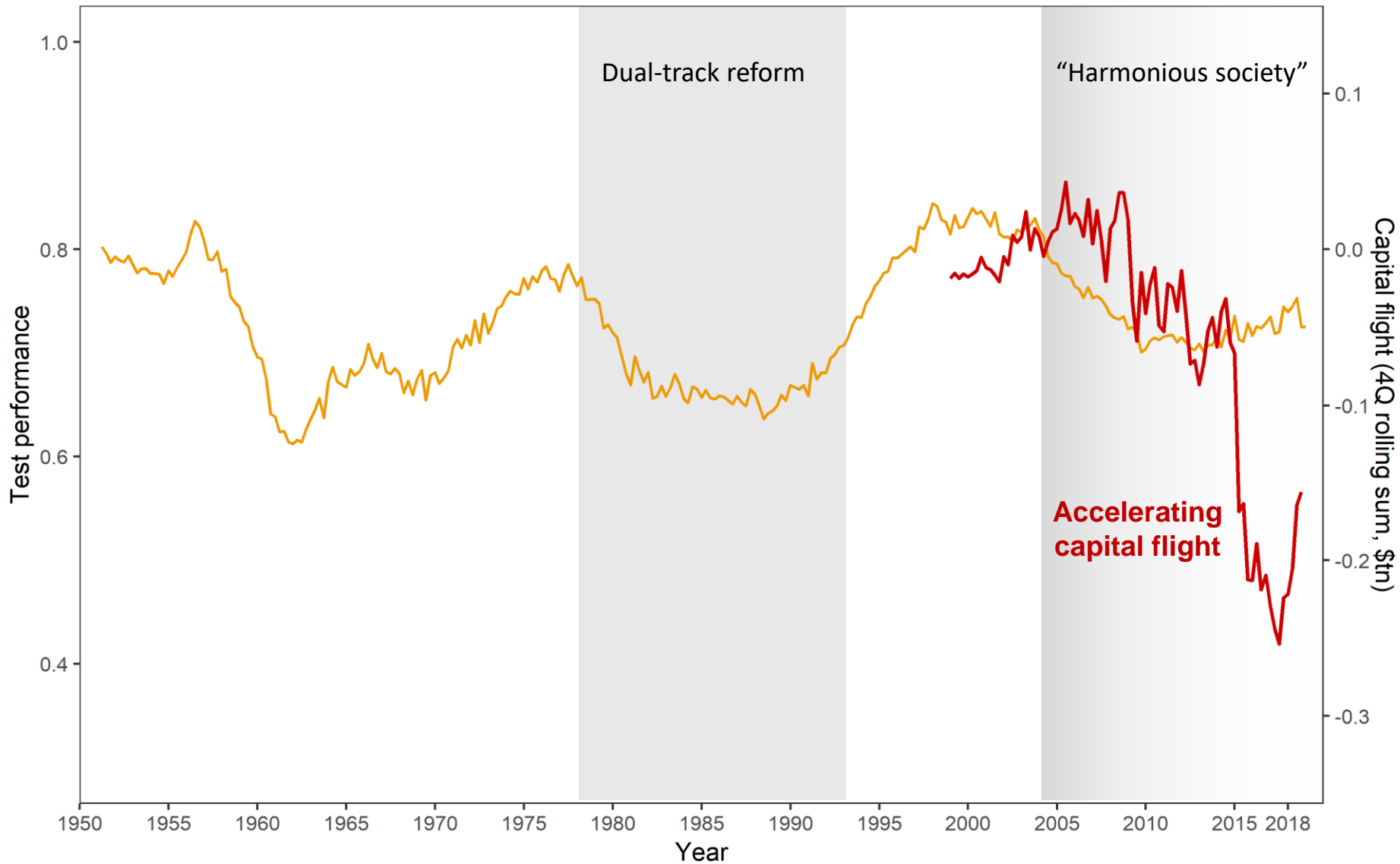
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Xi Jinping’s agenda: “harmonious society” 2.0

Test performance



Test performance & capital flight



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More on PCI-China

Two projects:

- text summarization — what words/sentences cause misclassification?
- regional and local PCIs for China, their development implications, etc. (joint w/ W. Cheung).

More PCIs

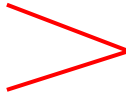
PCIs for other (ex-)Communist regimes, using:

- Soviet Union's *Pravda*
- East Germany's *Neues Deutschland*
- Cuba's *Granma*
- North Korea's *Rodong Sinmun*
- Vietnam's *Nhân Dân*

More PCIs

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Work in progress
(joint w/ E. Melly)

Beyond PCIs

Applicability well beyond newspapers and page numbers.

Interested in DIY?

- Website: policychangeindex.com (newsletter sign-up)
- Source code: github.com/PSLmodels/PCI

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Questions?