Bottom-up Institutional Change and Growth in China

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Introduction

The main driver of China's spectacular economic growth during the reform period from 1978-2007 is the total factor productivity (TFP) growth (Zhu, 2012; Zilibotti, 2017).

Numerous studies have attempted to identify the sources of its TFP growth:

* Improvement in factor allocation: capital (Song et al., 2011); labor (Tombe and Zhu, 2019; Hao et al., 2020)
* Internal and external trade liberalization (Brandt et al., 2017; Tombe and Zhu, 2019)

Yet, a large residual remains.

This paper examines the contribution from **bottom-up institutional change**.

The Reform Narratives

Conventional view: China's reforms were centrally planned and orchestrated from Beijing (Blanchard and Shleifer, 2001; Heilmann, 2008a,b).

Historical evidence: Many key reforms started locally - often without Beijing's approval or against its directives

Local experimentation and decentralized initiatives.

Examples: 1970s land reforms and 1990s privatization emerged from local initiatives (Xu, 2011, 2022).

Introduction

"After the Third Plenary Session of the Fifth National People's Congress, the central government put forward four principles to the local governments. They are as follows:

- *If the central government hasn't considered it, the local government can come up with ideas;*
- *if the central government hasn't given instructions, but the local government sees it fit, they can take action;*
- *if what the central government says doesn't suit the local situation, the local government can make flexible arrangements;*
- *if the central government makes a wrong decision, the local government can debate it."*

—Hu Yaobang, November 1980

This Paper:

Our study provides empirical evidence for this bottom-up narrative.

We document that bottom-up institutional innovations

- drove gradual yet transformative changes during the reform era;
- contributed to China's TFP growth and economic development.

Data: Local Events from Gazetteers

Source and Coverage

* In 1980's, the Chinese government continued the age-old tradition of compiling local gazetteers.
* More than 4,800 volumes of county- and prefecture-level gazetteers.
* Text from the chapter on "Chronicle of Events" ("大事记")

Event Data

* First round: >646,000 events in 2,515 counties/prefectures of 30 provinces, mostly covering 1976–1985.
* Second round: >1,190,000 events in 2,288 counties/prefectures of 30 provinces, mostly covering 1986–2005.
* A team of RAs spent two years visiting 10+ libraries/archives nationwide to scan and digitize the text data.

Content

* Cultural, economic, and political developments at the year-month level.
* Comprehensive chronicles of local developments through granular records of actual decisions and practices.

Main Advantage

Identifies *de facto* institutional innovations through observed economic activities rather than *de jure* policy documents

Tracks emergence and diffusion of new reform practices across localities over time

- Often before central government approval
- Before formalization into local/national laws and regulations

Uniquely suited for studying bottom-up reforms

Data: Reform Events at the Central Government Level

Reform Data (reformdata.org), a database maintained by the China Institute of Reform and Development (CIRD)

- 7,692 reform events documented over the period 1978-2018
- 25 critical policy reforms over 1978-2005
  - Sectors: urban v.s. rural; state v.s. private
  - Industries: agriculture, industry, real estate, finance, etc.
  - Domains: tax, labor market, pension, land use, migration, trade/FDI, technology, etc.

Methods to identify county-level events related to these policies:

- Keywords
- A supervised machine learning method

▸ Details

Reforms	Year when Central Govt. Gave Partial Consent (1)	Year when Central Govt. Endorsed Nationwide Reform (2)	Bottom-Up Reform Index (3)
Household Responsibility System (家庭联产承包制)	1980	1982	3.033
Privatization of SOEs (国企私有化)	1995	1997	1.888
Urban Credit Coorporative Development (城市信用社发展)	1986	1986	1.792
Developing Township and Village Enterprises (发展乡镇企业)	1979	1984	1.102
Setting Up A Modern Enterprise System (建立现代企业制度)	1993	1999	1.036
Rural Financial Reform (农村金融改革)	1980	1984	0.885
Importing Tech and Complete Sets of Equip (引进新技术和成套设备)	1978	1984	0.707
Hukou Reform (户籍制度改革)	1984	2001	0.671
Labor Contract System (劳动合同制)	1983	1994	0.605
Horizontal Economic Cooperation (横向经济联合)	1980	1986	0.285
Development of Private Economy (发展私营经济)	1988	1997	0.283
Urban Pension System Reform (城镇养老制度改革)	1983	1991	0.278
Transformation of SOEs into Shareholding Companies (企业股份制)	1984	1992	0.127
Land Use System Reform (土地使用制度改革)	1988	1992	-0.028
SOE Managerial Responsibility Contract (经营责任承包制)	1979	1987	-0.137
Development of Individual Economy (发展个体经济)	1979	1982	-0.444
Advancing Western Development (西部大开发)	1999	1999	-0.684
FDI and Special Economic Zones (外资，经济特区)	1980	1992	-0.783
Price Reform (价格改革)	1984	1992	-0.844
Housing Reform (住房制度改革)	1979	1998	-1.001
Bankruptcy Reform (破产制度改革)	1984	2006	-1.078
Wage System Reform (工资体制改革)	1978	1985	-1.119
Rural Tax and Fee Reform (农村税费改革)	1993	2004	-1.565
Substitution of Profit with Taxes (利改税)	1980	1983	-2.138
Tax Sharing Reform (分税制改革)	1992	1994	-2.874

Snapshots of High-Profile Reform Policies and Bottom-Up Reform Index

Snapshots: Bottom-Up Reforms

Household Responsibility System (HRS)

China's economic reform started in the agricultural sector.

Over 1978-84, the previous "collective farming system" was gradually shifted to the "household-responsibility system."

* Households are responsible to remit a fixed amount (quota) of grain to the government, and can keep any additional output
* The institutional change was an important driver of agricultural productivity growth (McMillan et al., 1989; Lin, 1992)

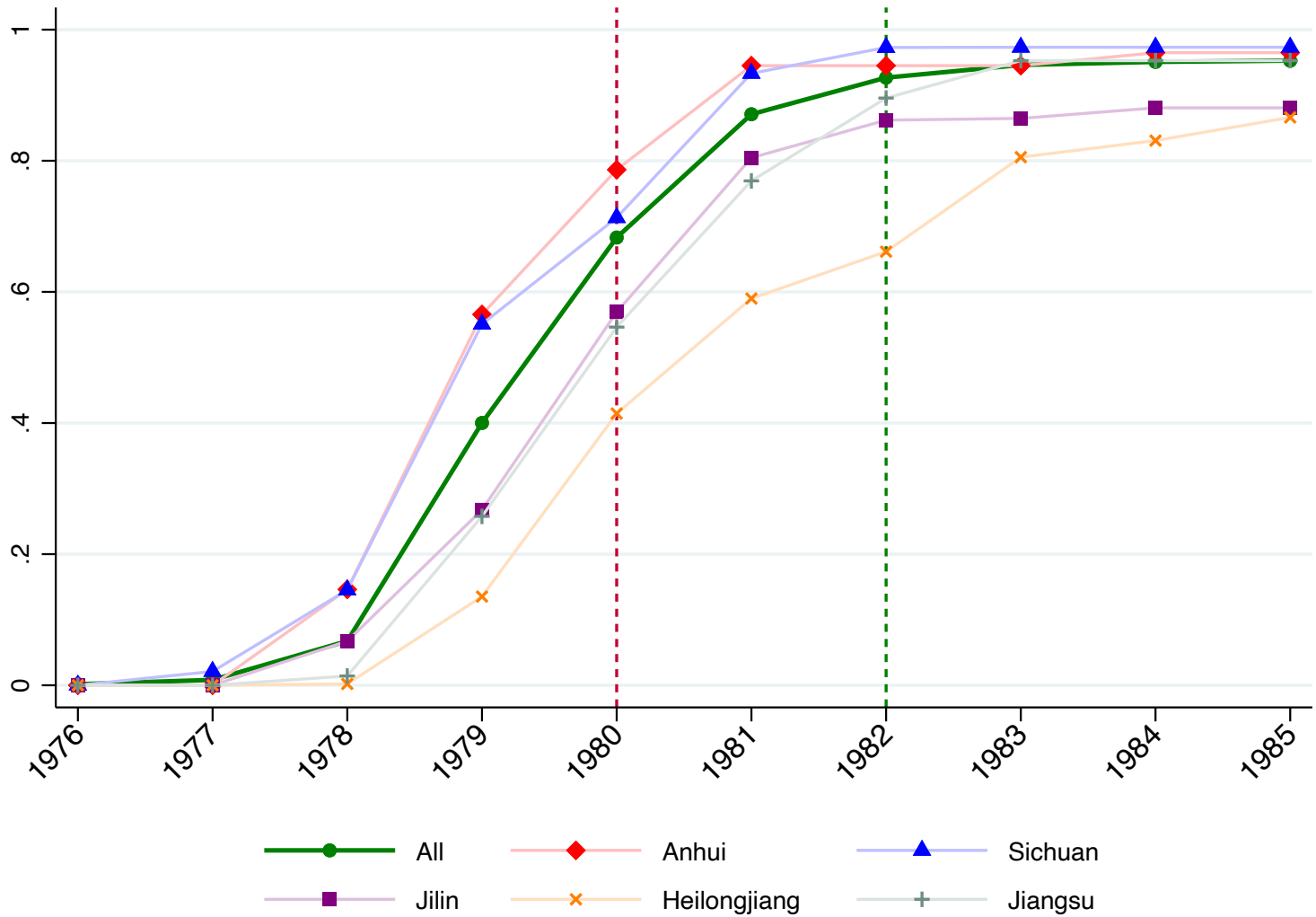
In the early stage, the institutional reform was officially banned by the central government

* The HRS was banned in the landmark meeting known as the Third Plenum of the 11th Central Committee of the CCP in Dec 1978.
* The *People's Daily* issued commentaries that opposed land reform attempts in March 1979.

Snapshots: Bottom-Up Reforms

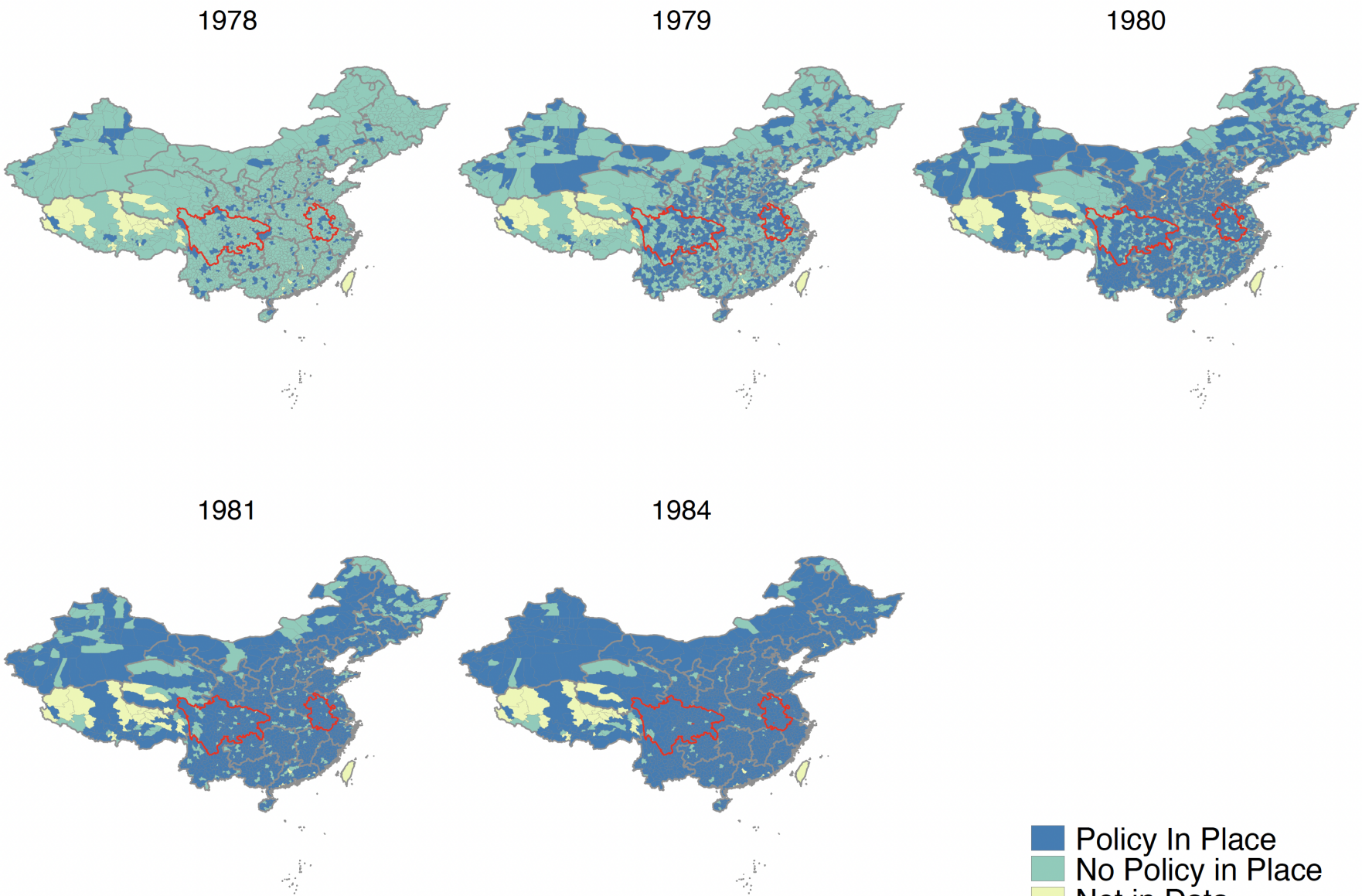
Household Responsibility System (HRS)

Share of Population Living in Counties That Have the HRS in Place



Snapshots: Bottom-Up Reforms

Household Responsibility System (HRS)



Snapshots: Top-Down Reforms

1994 Tax-Sharing Reform

Prior to the reform, China implemented a "fiscal responsibility system" whereby local govts only paid a fixed amount of fiscal tax to the central govt every year.

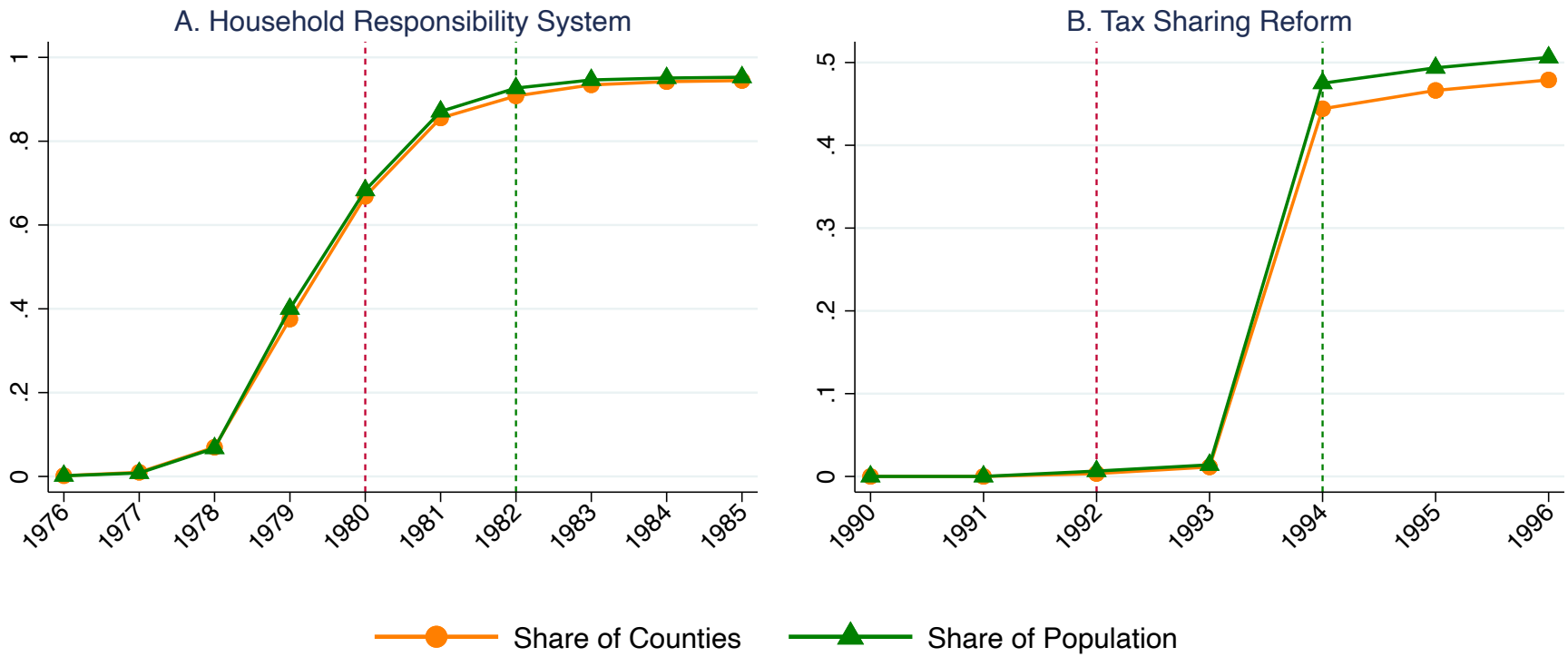
* The central govt obtained only 22% of the fiscal revenues while the local govts kept the rest.

The central government initiated a fiscal and taxation system reform in 1992, assigning several regions as experiment sites across the country.

The reform reclassified the central tax, the local tax, and the shared tax, which enabled more tax sources for central govt.

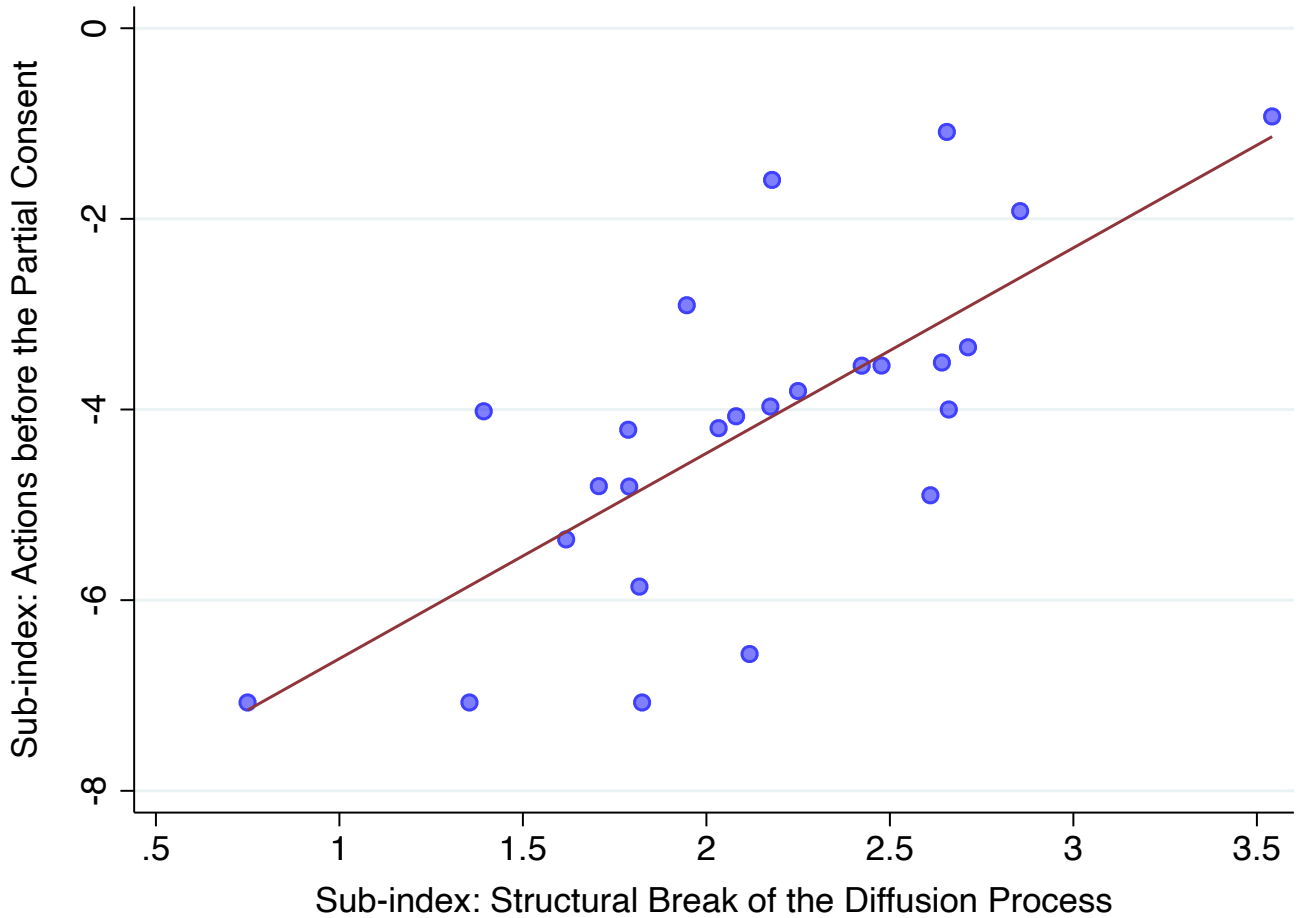
The tax-sharing reform was finally implemented in Jan 1994.

Snapshots: Bottom-Up v.s. Top-Down Reforms



- The formation and dissemination processes of reforms vary by:
  - the degree to which local governments initiate the reform experiments;
  - the extent to which the top-down directive influences the reform diffusion.

Bottom-Up Reform Index

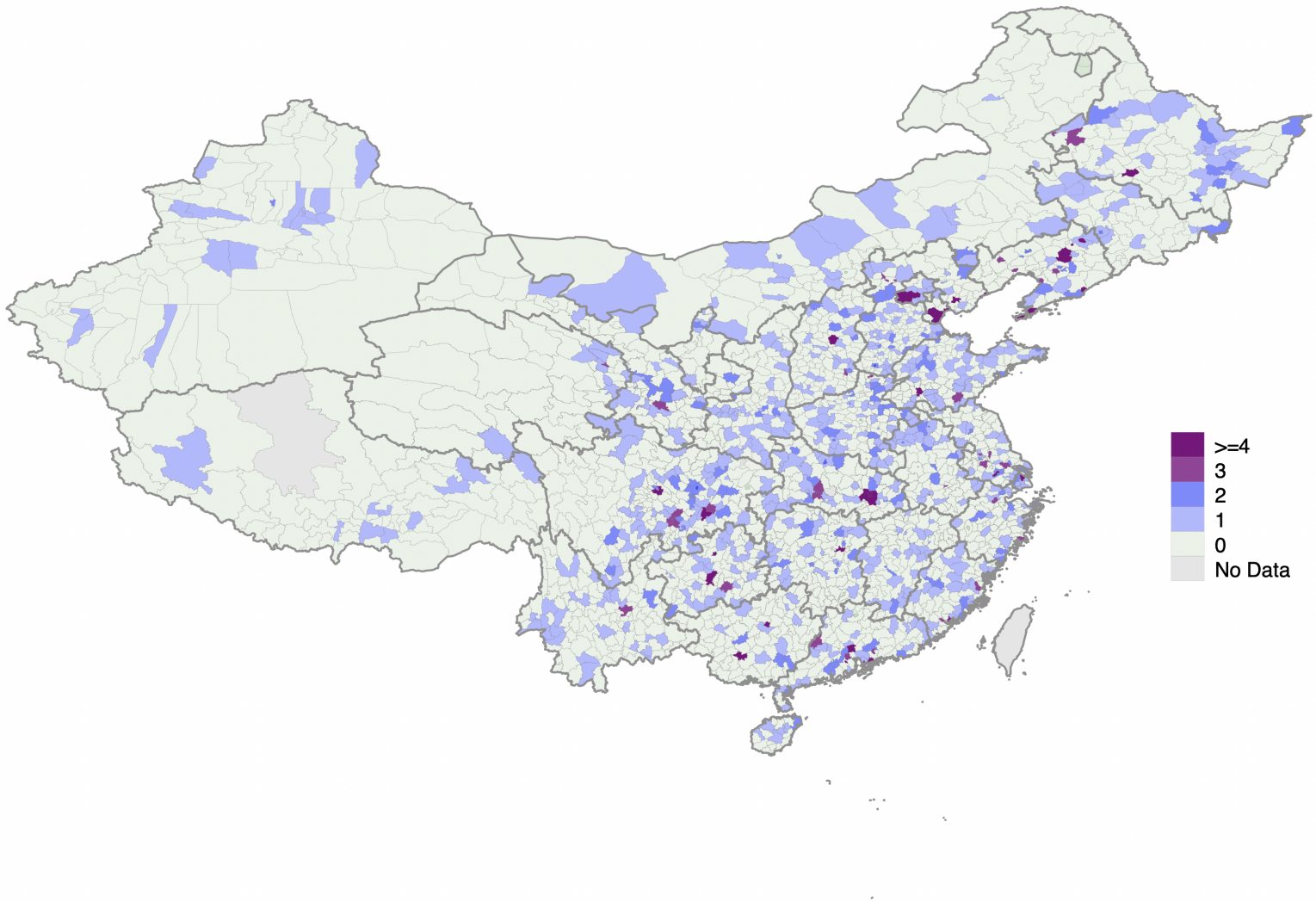


- Actions before Central Government's Partial Consent
- Structural Break of the Diffusion Process
- *Bottom-Up Index*$_q$: the principal component of the sub-indices

Policy Innovators and Spatial Distribution

▸ Map Hetero.

- PolicyInnovator$_{i,q}$=1 if county i belongs to the first 3 percent of the counties that adopt the policy q



Local Institutional Innovation and Economic Growth

Empirical Model

$$\Delta \ln y_{p\tau} = \alpha \textit{Policy Innovator}_{p\tau} + \beta \textit{Policy Follower}_{p\tau} + X'_{p0}\gamma_\tau + D_p + D_\tau + u_{p\tau}$$

- $\Delta \ln y_{pt}$: Growth in log GDP per worker (log capital per worker, or log TFP) in province t over a three-year period $t-2$ to t.
- $\textit{Innovation}_{i,q,\tau} = \sum_{\iota=t-3}^{t-1} \textit{Innovator}_{i,q,\iota}$ if county i innovates reform policy q during the period from $t-3$ to $t-1$. Aggregation to the province level:

$$\textit{Policy Innovator}_{p\tau} = \sum_{i \in p} \sum_{q} \frac{\textit{Pop}_{i0}}{\textit{Pop}_{p0}} \textit{Innovation}_{i,q,\tau}$$

- $\textit{Adoption}_{i,q,\tau} = \sum_{\iota=t-3}^{t-1} \textit{Follower}_{i,q,\iota}$ if county i adopts reform policy q during the period from $t-3$ to $t-1$. Aggregation to the province level:

$$\textit{Policy Follower}_{p\tau} = \sum_{i \in p} \sum_{q} \frac{\textit{Pop}_{i0}}{\textit{Pop}_{p0}} \textit{Adoption}_{i,q,\tau}$$

- Eight stacked differences: 1980-1983, 1983-1986, ..., 2001-2004

Empirical Results

Dependent Variable:	$\Delta \ln$ *GDP per worker*$_{p\tau}$ (1)	$\Delta \ln$ *GDP per worker*$_{p\tau}$ (2)	$\Delta \ln$ *TFP*$_{p\tau}$ ($\alpha = 0.5$) (3)	Δ*Investment Rate*$_{p\tau}$ (4)
Policy Innovator$_{p\tau}$	**0.0878*** **	0.0608**	0.0595**	0.0458*
	(0.0317)	(0.0287)	(0.0280)	(0.0229)
Policy Follower$_{p\tau}$	0.0077	0.0170**	0.0175**	-0.0384***
	(0.0105)	(0.0083)	(0.0080)	(0.0098)
$\Delta \ln$ *Capital per worker*$_{p\tau}$		0.4764***		
		(0.0592)		
Province Baseline Characteristics×Period	Y	Y	Y	Y
Province	Y	Y	Y	Y
Year	Y	Y	Y	Y
Observations	232	232	232	232
R-squared	0.7230	0.8007	0.7324	0.6354

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Dependent Variable:	$\Delta \ln GDP$ per $worker_{p\tau}$ (1)	$\Delta \ln GDP$ per $worker_{p\tau}$ (2)	$\Delta \ln TFP_{p\tau}$ ($\alpha = 0.5$) (3)	$\Delta Investment$ $Rate_{p\tau}$ (4)
$Policy\ Innovator_{p\tau}$	0.0434	0.0267	0.0251	0.0749**
	(0.0348)	(0.0349)	(0.0349)	(0.0288)
$Bottom\text{-}Up\ Policy\ Innovator_{p\tau}$	**0.0838*** **	0.0654**	0.0636**	-0.0497**
	(0.0297)	(0.0262)	(0.0260)	(0.0238)
$Policy\ Follower_{p\tau}$	0.0095	0.0175*	0.0182**	-0.0372***
	(0.0105)	(0.0085)	(0.0084)	(0.0083)
$Bottom\text{-}Up\ Policy\ Follower_{p\tau}$	**0.0303** **	0.0201**	0.0191*	-0.0021
	(0.0132)	(0.0095)	(0.0094)	(0.0102)
$\Delta \ln Capital\ per\ worker_{p\tau}$		0.4561***		
		(0.0518)		
Province Baseline Characteristics×Period	Y	Y	Y	Y
Province	Y	Y	Y	Y
Year	Y	Y	Y	Y
Observations	232	232	232	232
R-squared	0.7691	0.8305	0.7691	0.6350

▸ Pre-trend ▸ IPS ▸ Robustness

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		(0.0518)		
Province Baseline Characteristics×Period	Y	Y	Y	Y
Province	Y	Y	Y	Y
Year	Y	Y	Y	Y
Observations	232	232	232	232
R-squared	0.7691	0.8305	0.7691	0.6350

▸ Pre-trend ▸ IPS ▸ Robustness

Prefecture-Level Evidence: Firm Entry

Dependent Variable:	*Entries of Private Firms per Capita*$_{j\tau}$			*Entries of SOEs&COEs per Capita*$_{j\tau}$		
	(1)	(2)	(3)	(4)	(5)	(6)
Policy Innovator$_{j\tau}$	0.3155***	0.3569***	0.0395*	0.0429	0.0389	-0.0418
	(0.1120)	(0.1002)	(0.0217)	(0.0413)	(0.0431)	(0.0517)
Bottom-Up Policy Innovator$_{j\tau}$		0.1452**	**0.0337****		-0.0559**	**-0.0484***
		(0.0680)	(0.0170)		(0.0223)	(0.0263)
Policy Follower$_{j\tau}$	0.0340**	0.0374**	0.0038	0.0095*	0.0115**	0.0025
	(0.0139)	(0.0147)	(0.0031)	(0.0051)	(0.0052)	(0.0025)
Bottom-Up Policy Follower$_{j\tau}$		0.0157*	**0.0053***		0.0117**	**0.0079****
		(0.0080)	(0.0029)		(0.0048)	(0.0038)
Prefecture Baseline Characteristics×Period	Y	Y	Y	Y	Y	Y
Province×Period	Y	Y	Y	Y	Y	Y
Prefecture	N	N	Y	N	N	Y
Observations	2,608	2,608	2,608	2,608	2,608	2,608

- Data: The Business Registry Database

County-Level Evidence: Structural Transformation

Dependent Variable:	Δ ln *Share Agri*$_{i\tau}$			
Sample:	82-90,90-00,00-05		82-90,90-00	
	(1)	(2)	(3)	(4)
Policy Innovator$_{i\tau}$	-0.0551**	-0.0544**	-0.0550**	-0.0544**
	(0.0230)	(0.0219)	(0.0229)	(0.0217)
Bottom-Up Policy Innovator$_{i\tau}$		**-0.0185***		**-0.0193***
		(0.0095)		(0.0098)
Policy Follower$_{i\tau}$	0.0022**	0.0018*	0.0020	0.0016
	(0.0010)	(0.0011)	(0.0020)	(0.0021)
Bottom-Up Policy Follower$_{i\tau}$		**-0.0031**		**-0.0051***
		(0.0021)		(0.0029)
County Baseline Characteristics×Period	Y	Y	Y	Y
Province×Period	Y	Y	Y	Y
Observations	6,806	6,806	4,539	4,539
R-squared	0.2872	0.2879	0.1798	0.1814

- Data: Population Censuses 1982, 1990, 2000 and 2010

Who Were the Local Reform Innovators?

Remote counties, located farther from railway networks, often became innovators due to lower political oversight.

Areas with fewer visits from top leaders tended to experiment more, using limited visibility as space for local reform trials.

Political and geographic peripherality provided the room for bold experimentation and institutional creativity.

How Did the Reforms Diffuse Across Regions?

Reforms spread through two main channels: *exposure* (proximity to early adopters) and *suitability* (similarity to them in local characteristics).

Counties located near or resembling early adopters were more likely to implement new reforms.

Bottom-up reforms diffused selectively, guided by local suitability rather than central mandates.

Centrally sponsored reforms spread more abruptly after official endorsement, often overlooking local conditions.

Suitability-based diffusion improved policy fit and helped generate larger productivity gains.

Literature

Institution and economic development:(North, 1990; Acemoglu, Johnson, and Robinson, 2001)

Policy experimentation in China: institutional setup and political logic (Qian, et al., 2006; Heilmann, 2007; Heilmann, 2008; Xu, 2011), and potential biases in policy learnings (Wang and Yang, 2022)

Policy diffusion across time and space: cross-country (Buera et al., 2011) and cross-region within the U.S. (Bernecker et al., 2021; DellaVigna and Kim, 2022)

Quantitative models and empirical studies on the creation and diffusion of ideas: Kortum (1997); Buera and Oberfield (2020); Bloom et al. (2023)

Centralized v.s. Decentralized systems: Lange (1936); Von Hayek (1945); Aghion et al. (2021)

Concluding Remarks

Many think that a strong central government and its willingness to reform through experimentation is the key to China's economic success.

In contrast, we argue that it's the bottom-up innovations of farmers, entrepreneurs, and low-level government officials that are the key to China's growth miracle.