Arrival of Young Talents: Send-down Movement and Rural Education in China

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Motivation

- From 1962 to 1979, the Chinese government mandated the temporary resettlement of roughly 18 million urban youth to rural areas.
- Mo Yan, the 2012 Nobel Laureates in Literature, said during a speech in memorial of the 50th anniversary of the Sent-Down Youth movement
  - "*When faced with difficulty, unfairness, and suffering, most of the 17 million educated-youth made a marvellous contribution to the countryside and nation. . . . Those sent-down youth's achievement in bringing urban civilization and culture to the countryside shall be recorded in history.*"
- There is a large literature on the "suffering" of the SDYs. Much less known is about their "contribution."

Human-capital Spillovers

- Human-capital spillovers
  - Skill possessed by one agent may raise the productivity of others whom they interact (Lucas 1988).
  - Large public investment in education is rationalized by the positive externality of human capital.
- The policy question: how does the spillovers of better-educated immigrants affect the local incumbents?
  - College Volunteers to the West Program (大学生支援西部计划)
  - Recent "War for the Talents" among Chinese cities
  - Caps of H-1B visas in U.S.
- Identification challenge:

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- Identification challenge: self-selection; spatial equilibrium; demand for labor

The Send-down "Experiment"

- The resettlement is mandatory and the destination is determined by the government, not the SDYs.
  - to overcome the self-selection
- Migration is highly restrictive in China at that time because of the household registration system (*hukou*).
  - to overcome the issue of spatial equilibrium
- China was a planned economy during the 1960s and 1970s. Therefore, there was literally no "labor market" during the send-down period.
  - to overcome the effect through the labor market

What We Do?

- Manually compiled a county-level data set from over 3,000 book-length local gazetteers on the number of SDYs received by each county.
- Combined with the individual-level population census data.
- We evaluate the effects on educational achievement of the locals and explore possible mechanisms of the spillovers.
- Identification comes from two sources:
  - different counties receive different numbers of SDYs
  - residents of different cohorts are exposed differently

What We Find?

- Exposure to the better-educated SDYs increased the educational achievement of the rural residents.
- Heterogeneity.
  - SDYs from further away have larger spillovers.
  - Larger effects for girls and less developed counties.
- Three types of spillovers:
  - Direction instruction: increase in the supply of teachers.
  - Value and ideology: hold more positive attitude towards education.
  - Persistency effects on future generations even after SDYs left the countryside.

Related Literature

- Human-capital spillovers. (Rauch 1993; Acemoglu and Angrist 2001; Moretti 2004; Ciccone and Peri 2006; Iranzo and Peri 2009)
- The relocation of scientists.
  - Germany Nazi (Waldinger 2010;Waldinger 2012; Moser, Voena, and Waldinger 2014)
  - Soviet mathematicians after its collapse (Borjas and Doran 2012)
- Send-down movement.
  - On SDYs themselves: marriage, education, income, transfer, beliefs and values, financial behavior (Meng and Gregory 2002; Li, Rosenzweig, and Zhang 2010; Zhou 2014; Gong, Lu, and Xie 2015; Song and Zheng 2016; Fan 2017)
  - On the locality that received them: migration (Kinnan, Wang, and Wang 2017), trust (Xing and Zhou 2017), regional growth (Yuan 2017)

Outline

1 Introduction

2 The Send-Down Movement

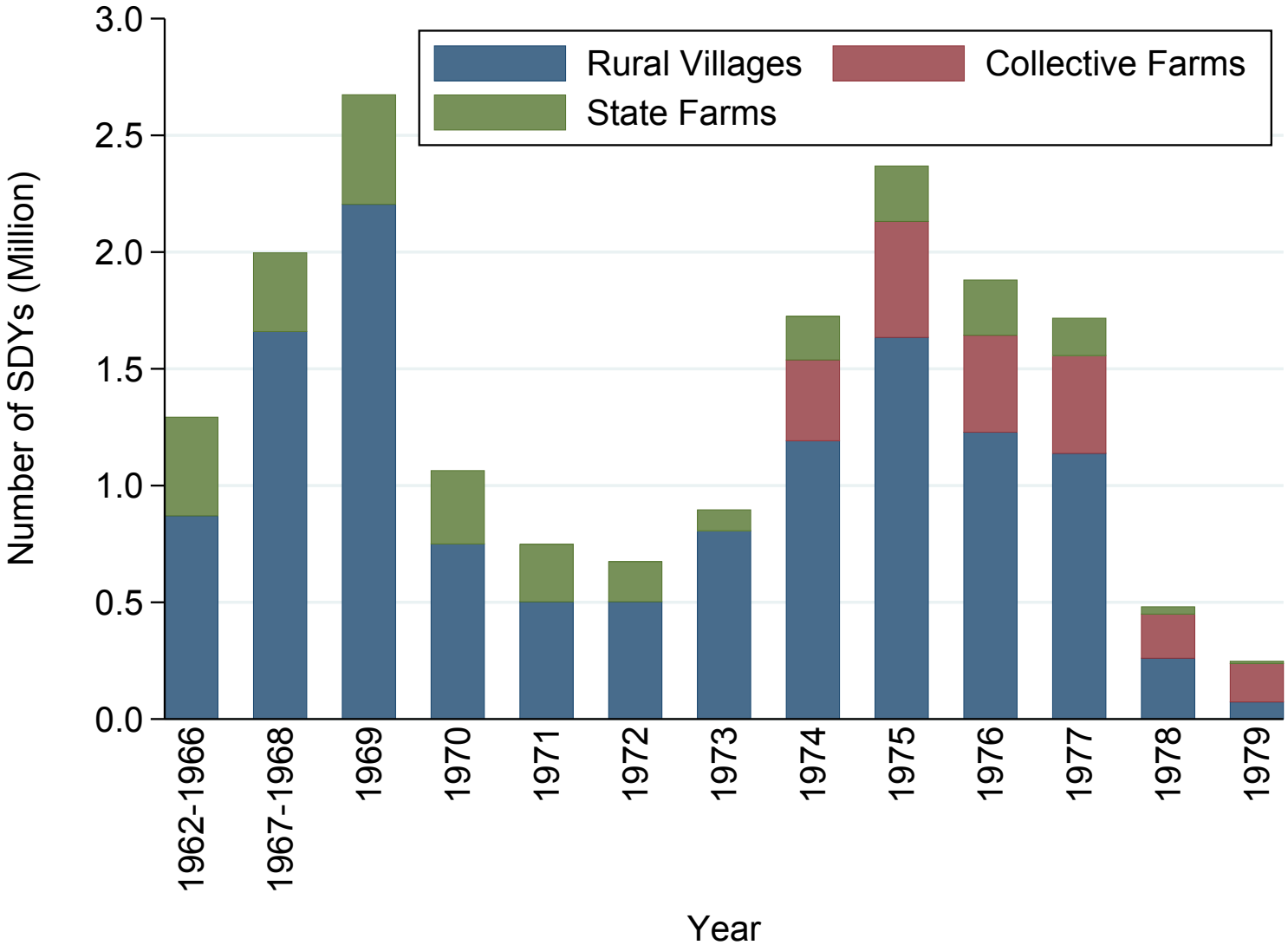
3 Data

4 Main Results

5 Mechanisms of Spillovers

6 Conclusion

Number of Sent-Down-Youth by Resettlement, 1962–1979



- Small-scale movement before 1966, 1.29 million
- Mandatory Mass Send-down (1968–1977):
  - 1966, Cultural Revolution
    - No more employment—the industry output decreased 13.8% in 1967, 4.2% in 1968.
    - No entrance to a higher school—college entrance exam was suspended since 1966.
  - First peak: 1969
    - Red Guards chaos.
    - "Three old classes" (*laosanjie*): middle school graduates of 1966, 1967, 1968.
  - Second peak: 1974
    - National Work Conference on the Educated Youth in 1973.
- After Chairman Mao's decease in 1976, the program gradually came to an end.
  - Officially canceled in September 1980

人民日报

1968年12月23日 星期一

毛主席语录

一切可以到农村中去工作的这样的知识分子，应当高兴地到那里去。农村是一个广阔的天地，在那里是可以大有作为的。

毛主席最新指示

知识青年到农村去，接受贫下中农的再教育，很有必要。要说服城里干部和其他人，把自己初中、高中、大学毕业的子女，送到乡下去，来一个动员。各地农村的同志应当欢迎他们去。

全国城乡一片欢腾庆祝毛主席最新指示发表

亿万军民热烈响应毛主席伟大号召
掀起了知识青年到农村去的新高潮

广大革命群众敲锣打鼓，集会游行，各级革委会立即制订落实措施，大批知识青年兴高采烈地奔赴农村

Mao's Instruction

1. To the urban youths: "*It is very necessary for the urban educated youth to go to the countryside to be re-educated by the poor farmers!*"
   "知识青年到农村去，接受贫下中农的再教育，很有必要。"

2. To youths' family: "*We must persuade the cadres and others to send their sons and daughters who have graduated from middle school and university to the countryside. Let's mobilise!*"
   "要说服城里干部和其他人，把自己初中、高中、大学毕业的子女，送到乡下去，来一个动员。"

3. To rural villages: "*The comrades in the countryside should welcome them.*"
   "各地农村的同志应当欢迎他们去。"

Coercive Elements (Urban Youth)

- Most urban youths were reluctant to go.
  - The living conditions and social welfare were much better in urban areas.
- But were forced to . . .
  - "Red classes"—supposed to respond to the call from Chairman Mao.
  - "Black classes"—no opportunities of schooling and employment in urban areas anyway. Hope to "cleanse" their background during the movement.

Coercive Elements (Rural Villages)

- At the early stage of the movement, the locals in the countryside often refused to accept those educated youths.
  - The SDYs were viewed as a burden.
- Things changed with Mao's instruction in December 1968
  - "The comrades in the countryside SHOULD welcome them."
  - Accepting SDYs became an important political task.
- The movement was organized by the central government (Office of Educated Youth), not by local government.

SDYs Settlement

- Border
  - Heilongjiang, Yunnan, Xinjiang
- Grain producing provinces
  - Anhui, Sichuan, Jiangsu, Hunan
- The old liberated provinces
  - Shannxi (Beijing)
  - Jiangxi (Shanghai)

1973年习近平（左二）与北京知青雷平生（左一）、陶海亭（左三）、雷裕生（左四）在延川合影。

Urban Youths in the Countryside

- Interact with local people
  - to rural village (*chadui*), 72%
  - to collective farms, 11%
  - to state farms, 16%
- technical jobs v.s. manual jobs
  - No agricultural experience.
  - Accountants, work-point recorders, counselors, agricultural technicians, bare-foot doctors, community school teachers.
  - From 1962 to 1972, about 11.7%.
  - Huaide County in Jilin, 7,000 SDYs were taking technical jobs, accounting for 70% of total SDYs in that county.
- By doing non-traditional jobs, they exerted externalities onto the local residents by bringing new technique, knowledge, and ideology from urban China.

陕西省第一口沼气池

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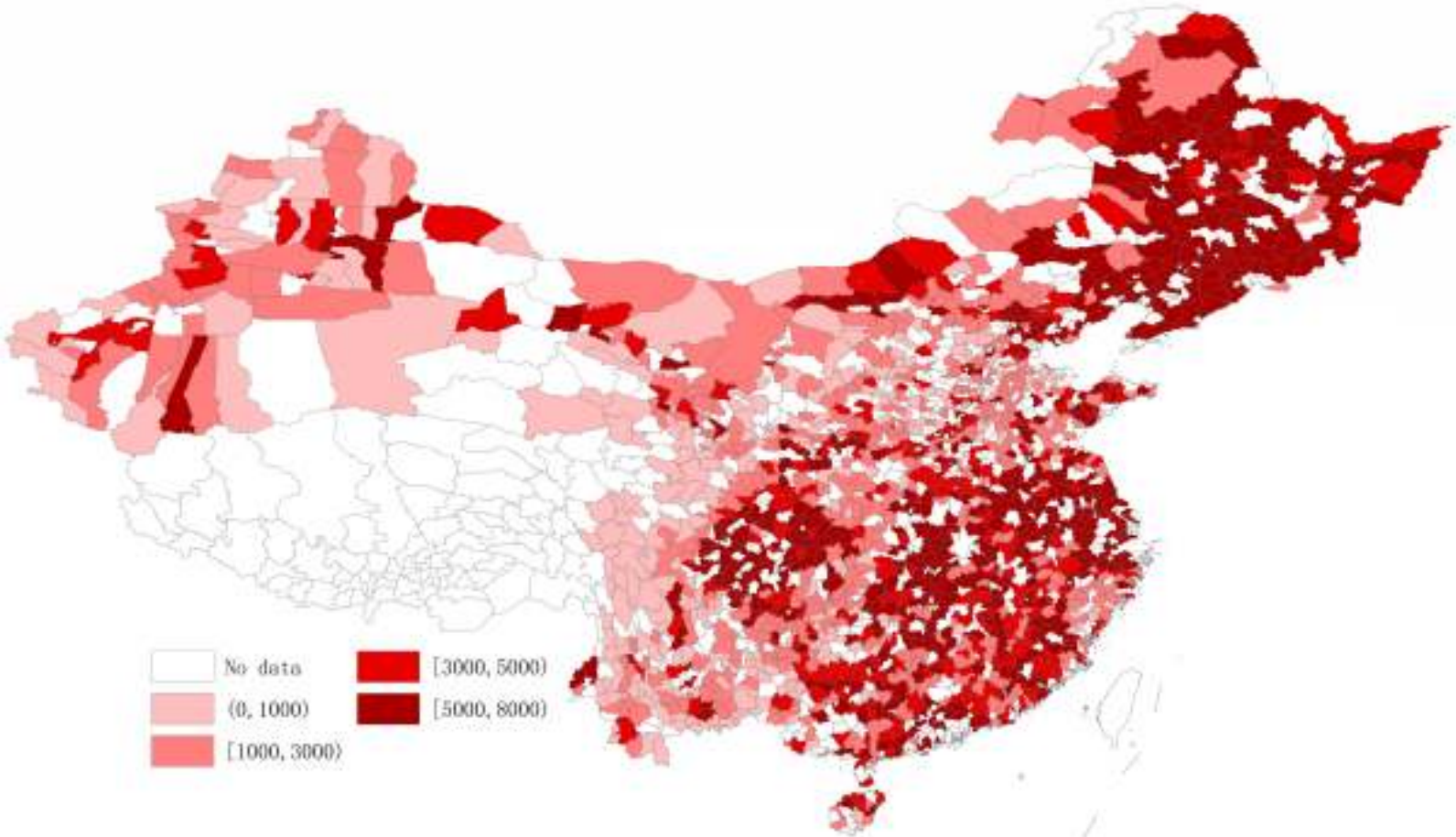
Data on SDYs

- 3,153 local gazetteers for 2,877 county-level divisions
- Jin and Jin (2015): Send-Down Movement Historical Data Collection

- Number of SDYs from 1968 to 1977 in each county Data Quality
  - Local gazetteer of Taihu county in Anhui province published in 1995 documented that
    "*From 1968 to 1977, we received 3,697 educated-youth from Shanghai, Hebei, Anqing, and urban area within the county. Among them, 366 are from Shanghai, 1,596 are from Anqing, 1,498 are local, 237 are from Hefei and other places.*"
  - "1968-1977年先后共接收上海、合肥、安庆和本县城镇上山下乡知青3697人（其中上海市知青366人、安庆市知青1596人、本县知青1498 人、合肥市和其他地区转来的知青237 人）"
    ——《太湖县志》1995年版
- Focus on less developed areas
  - 2,865 county-level divisions → drop 52 counties/districts in Beijing, Tianjin, Shanghai → drop 819 city-governed districts (*shixiaqu*)
  - Find SDY-related information for 1,715 out of the remaining 1,994 counties (86%).

Number of Received Sent-Down-Youth in Each County



Individual Level Data

- 1% sample of 1990 census: educational achievement
  - Cover all the counties
  - Old enough to finish education
  - Migration still in limited scope (China's mass migration started in the 1990s)
- CFPS 2010: attitudes and values
  - Some individual-level information about SDYs
- 0.1% sample of 2010 census: persistent effect on the second generation

Measuring Years of Education

- Highest level of education + Completion status
- Primary school
  - Y_Edu = 6, if the status is graduated
  - Y_Edu = 3, for other status
- Junior middle school
  - Y_Edu = 9, if the status is graduated
  - Y_Edu = 7, for other status

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Empirical Specification

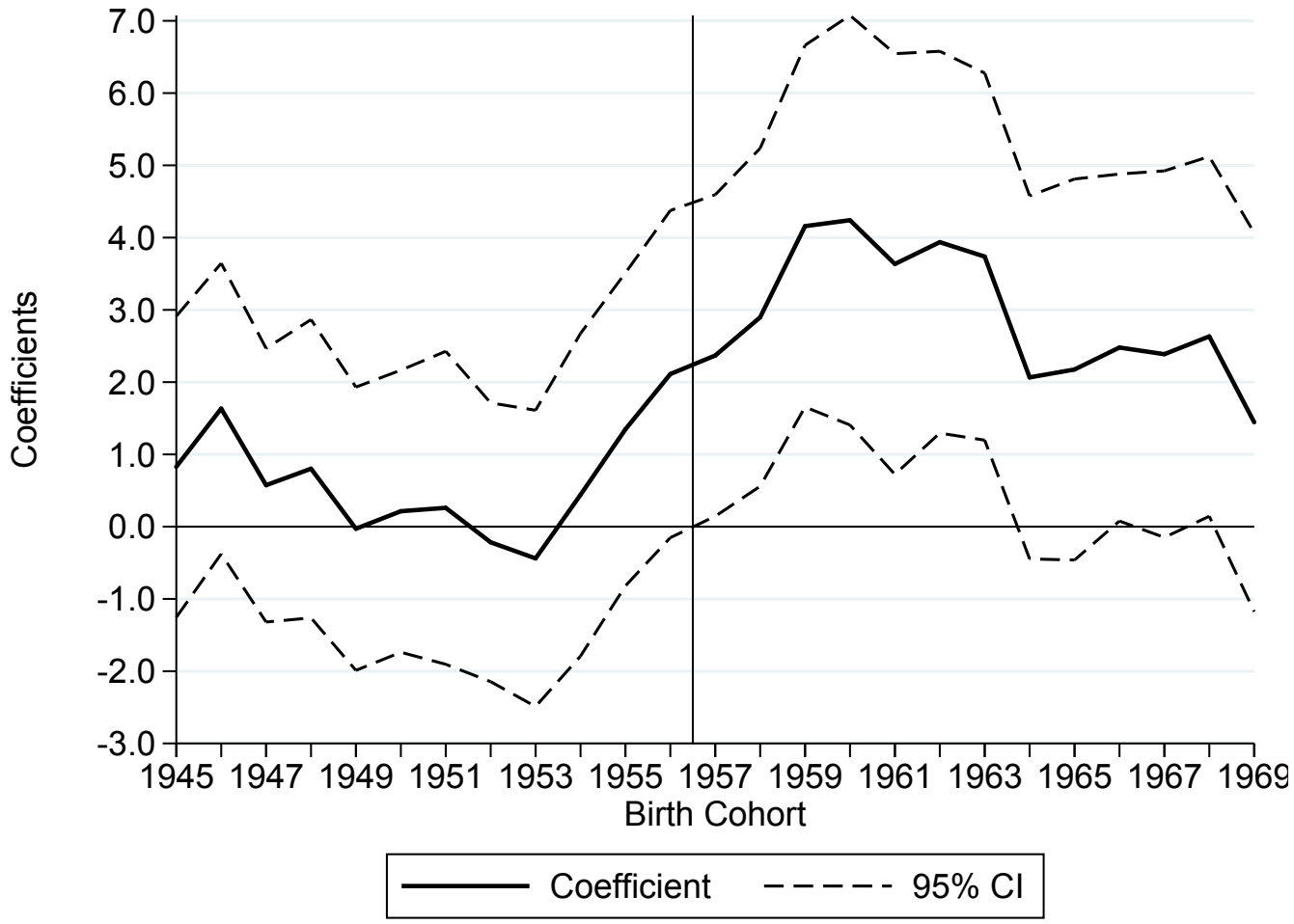
Cohort based DID:

$$\text{Y_Edu}_{i,g,c,p} = \beta_0 + \beta_1 \%\text{SDY}_{c,p} \times I\left(1957 \leq g \leq 1969\right) + \beta_2 X_{i,g,c,p} + \lambda_c + \mu_{g,p} + \varepsilon_{i,g,c,p}$$

- % SDY: Received SDYs scaled by county population in 1964.
- $I = 1$ for the cohort born between 1957 and 1969.
  - 1957 cohort is 5^{th} grade when the SDYs came in 1968.
  - 1969 cohort is 2^{nd} grade when the SDYs left in 1977.
- 1944–1956 cohort as control group (lower-bound estimate if also affected).
- Standard errors clustered at the county level.

Tests of Common-Trend

$$\text{Y_Edu}_{i,g,c,p} = \beta_0 + \sum_{\gamma=1945}^{1969} \beta_{1,\gamma} \%\text{SDY}_{c,p} \times I\left(g = \gamma\right) + \beta_2 X_{i,g,c,p} + \lambda_c + \mu_{g,p} + \varepsilon_{i,g,c,p}$$



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Effect on Local Incumbents' Educational Attainment

Dependent Variables	Years of Education					
	Rural	Rural'	Rural'	Urban	Urban'	Urban'
	(1)	(2)	(3)	(4)	(5)	(6)
Share of Total received SDYs	2.226***	2.010**		0.0901	0.685	
*Affected Cohort (1957–1969)	(0.771)	(0.905)		(0.424)	(0.566)	
Share of Inflow SDYs			2.210**			0.430
*Affected Cohort (1957–1969)			(1.027)			(0.515)
Share of Local SDYs			1.699			1.903
*Affected Cohort (1957–1969)			(1.651)			(1.952)
Male	1.916***	1.936***	1.936***	0.714***	0.756***	0.756***
	(0.0289)	(0.0345)	(0.0345)	(0.0279)	(0.0346)	(0.0346)
Han Ethnic	0.135**	0.0805	0.0804	-0.0474	-0.103	-0.103
	(0.0579)	(0.0726)	(0.0726)	(0.0840)	(0.0996)	(0.0997)
Observations	2,768,635	2,024,554	2,024,554	415,058	294,857	294,857
R-squared	0.297	0.294	0.294	0.215	0.229	0.229
County FE	✓	✓	✓	✓	✓	✓
Province-cohort FE	✓	✓	✓	✓	✓	✓

Robustness: different cohort bandwidth; junior high education also affected; stricter restriction on migration

Economic Significance and Robustness

- Average density of SDYs is 1.84%. Increase the education of the affected cohorts by 0.041 years.
  - Comparable to the effect of the Compulsory Education Law in U.S. (Angrist and Keueger 1991; Acemoglu and Angrist 2001; Lleras-Muney 2005)
  - Lower-bound estimates.
  - The movement never targeted at improving rural education.
- 9.43 ($= 230 \times 0.041$) million increase in person-years of schooling in rural China.
- The Cultural Revolution decreased 13.8 ($48.1 \times 2.87 \times (-0.1)$) million person-years of schooling in urban China.
  - Meng and Zhao (2016): 48.1 million urban population affected; average 2.81 years of interrupted education; one year interruption leads to 0.1 decline in final years of schooling.

Heterogeneity Analysis

Dependent Variables	Complete Primary	Complete Junior High	Years of Education			
Sub-sample			Male	Female	Less Urbanized Counties	More Urbanized Counties
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A:						
Share of Total received SDYs	0.335***	0.630***	1.003	3.496***	4.411**	1.574*
*Affected Cohort (Born 1957–1969)	(0.0995)	(0.128)	(0.611)	(1.051)	(1.814)	(0.856)
Observations	2,768,635	2,768,635	1,400,672	1,367,959	1,504,040	1,253,113
R-squared	0.257	0.211	0.199	0.317	0.307	0.286
Panel B:						
Share of Inflow SDYs	0.152	0.706***	1.706*	2.418*	3.081	2.115*
*Affected Cohort (Born 1957–1969)	(0.144)	(0.174)	(0.878)	(1.452)	(2.582)	(1.118)
Share of Local SDYs	0.659***	0.628**	0.740	3.063	12.31**	0.406
*Affected Cohort (Born 1957–1969)	(0.209)	(0.254)	(1.394)	(2.161)	(5.513)	(1.591)
Observations	2,024,554	2,024,554	1,023,941	1,000,612	1,071,247	943,618
R-squared	0.254	0.209	0.193	0.313	0.301	0.286
Individual Controls	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓
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Possible Endogeneity

- Reverse causality? Local governments that are more eager to raise local education took the opportunity of the movement and actively asked for more SDYs.
- Anecdotal evidence: local government had little control over the flow of SDYs.
- Statistical evidence
  - (province level) no corresponding increase in educational expenditures.
  - (county level) increase of teachers in community schools, not in public schools.

SDYs and the Growth of Educational Expenditures (Province Level)

Dependent Variables	Δ Edu. Expenditures as a Share of GDP	Δ Edu. Expenditures as a Share of Fiscal Expenditures	Δ Primary Teachers per ten thousand	Δ Secondary Teachers per ten thousand
	(1)	(2)	(3)	(4)
Share of Total received SDYs	0.007	-0.027	0.962	20.783**
	(0.007)	(0.045)	(23.133)	(8.928)
Δ Share of Non-agricultural Population	0.023	0.409**	55.597	65.496
	(0.034)	(0.207)	(90.238)	(41.547)
Δ Share of Secondary Industry in GDP	-0.011**	-0.122***	10.074	-6.529
	(0.005)	(0.032)	(15.588)	(6.679)
Δ Share of Tertiary Industry in GDP	0.002	-0.158	-6.001	-11.874
	(0.016)	(0.124)	(37.583)	(19.701)
Δ GDP per capita	-0.114***	-0.207***	-29.664	-3.261
	(0.014)	(0.078)	(34.203)	(14.962)
Observations	226	226	183	196
R-squared	0.727	0.798	0.137	0.532
Year FE	✓	✓	✓	✓

Two Historical Events as Confounding Factors

- Cultural Revolution (1966–1976)
  - One purpose of the rustication movement is to discharge Red Guards.
  - The Cultural Revolution severely disturbed government functioning.
  - Following Bai and Wu (2017), we define the local severity of the Cultural Revolution as the number of victims scaled by the county population in 1964.
    - Data: China Political Events Dataset, 1966–1971. Provided by Andrew G. Walder.
- Great Famine (1959–1961)
  - Grain producing areas better secure the food needs of SDYs.
  - Areas more severely impacted by the famine may lack young labors.
  - Following Meng, Qian, and Yared (2015), we define the local severity of the famine as the ratio of cohort size of 1959–1961 over that of 1956–1958.

Cultural Revolution & Great Famine

Dependent Variables	Years of Education			
	(1)	(2)	(3)	(4)
Share of Total received SDYs	2.932***	2.926***	2.930***	1.892**
*Affected Cohort (1957–1969)	(0.865)	(0.866)	(0.865)	(0.780)
Local severity of **Cultural Revolution**		0.0856		
*Affected Cohort (1954–1968)		(0.484)		
Local severity of **Cultural Revolution**			-0.726**	
*Affected Cohort (1954–1961)			(0.290)	
Local severity of **Great Famine**				-0.529***
*Affected Cohort (1957–1969)				(0.0838)
Observations	2,386,593	2,386,593	2,386,593	2,768,635
R-squared	0.299	0.299	0.299	0.297
Information on Cultural Revolution	✓	✓	✓	
Individual Controls	✓	✓	✓	✓
County FE	✓	✓	✓	✓
Province-cohort FE	✓	✓	✓	✓

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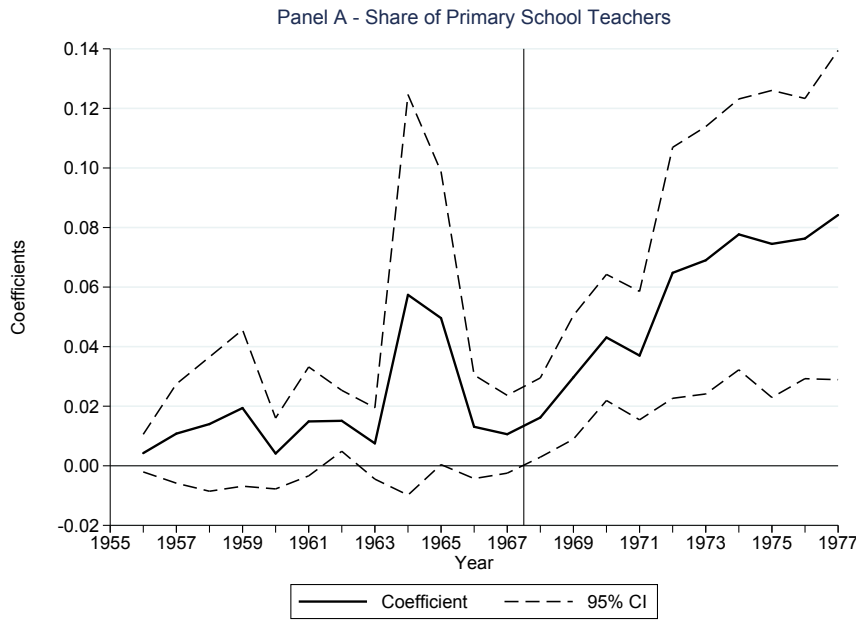
Spillovers I: Direct Instruction

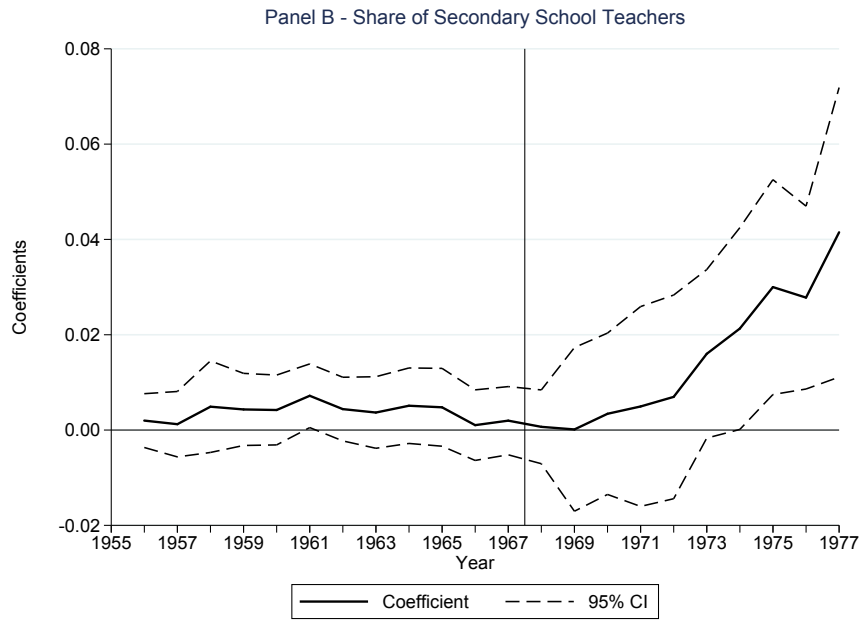
- SDYs share their knowledge with the locals via working as teachers.
- Ample anecdotal evidence
  - Xiaodong Liao: set up the first primary school in the village.
  - Mo Yan: "*Many current local cadres were students of zhiqing in those days.*"
  - Gu (2009): "*Working as community school teachers (or substitute teachers) is an important experience of many educated youths. They dedicated themselves to the cause of education in rural China, especially in the remote areas.*"
- Analogous to Hornung (2014)
  - Persecuted French Huguenots immigration in 1685 increased firm productivity in Prussia.
  - Huguenot artisans instructing native apprentices and workers.

Share of Teachers and SDYs

Take county-year information on numbers of primary/secondary school teachers from local gazetteers.

$$\%\text{Teachers}_{t,c,p} = \beta_0 + \sum_{\gamma=1956}^{1977} \beta_{1,\gamma} \%\text{SDY}_{c,p} \times I\left(g = \gamma\right) + \lambda_c + \mu_{t,p} + \varepsilon_{t,c,p}$$





SDY and Number of Teachers, 1955–1977

School Types	Both Public and Community		Public	Community
	(1)	(2)	(3)	(4)
Panel A: Share of Primary School Teachers as the Dependent Variable				
Share of Total received SDYs*Post 1968	0.043***		0.005	0.054**
	(0.009)		(0.010)	(0.024)
Share of Inflow SDYs*Post 1968		0.024***		
		(0.008)		
Share of Local SDYs*Post 1968		0.052***		
		(0.016)		
Observations	6,521	4,469	1,795	1,536
R-squared	0.841	0.874	0.833	0.881
Number of Counties	481	341	149	139
Panel B: Share of Secondary School Teachers as the Dependent Variable				
Share of Total received SDYs*Post 1968	0.014**		0.013	0.022*
	(0.006)		(0.020)	(0.012)
Share of Inflow SDYs*Post 1968		0.022***		
		(0.006)		
Share of Local SDYs*Post 1968		-0.001		
		(0.013)		
Observations	6,294	4,413	1,215	561
R-squared	0.803	0.834	0.742	0.821
Number of Counties	487	353	105	85
County FE	✓	✓	✓	✓
Province-year FE	✓	✓	✓	✓

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Spillovers II: New Information and Norms

- SDYs brought not only new knowledge, but also new information that may reshapes norms, values or attitudes in the locality.
  - Media coverage is especially low in rural China back then. SDYs were an important source of new information.
  - Jensen and Oster (2009): cable television $\rightarrow$ discriminative attitudes towards women
  - Kearney and Levine (2015): *16 and Pregnant* $\rightarrow$ teen birth rates

- Match county-level data to CFPS (1=strongly disagree, 5=strongly agree)
  - More education, more chances of success.
  - Children from higher SES families achieve higher.
  - Children from poorer families achieve lower.

Effect on Attitude Toward Education (CFPS 2010)

Dependent Variables	Do you agree with following statements? 1 = strongly disagree, 5 = strongly agree					
	More education, more chances of success.		Children from higher SES families achieve higher.		Children from poorer families achieve lower.	
	(1)	(2)	(3)	(4)	(5)	(6)
Share of Total received SDYs	0.931	0.949	-2.710**	-2.358*	-4.139*	-3.617*
*Affected Cohort (1957–1969)	(1.801)	(1.808)	(1.360)	(1.333)	(2.124)	(2.152)
Years of Education		-0.002		-0.026***		-0.045***
		(0.003)		(0.004)		(0.004)
log(income)		0.005		-0.016		-0.026**
		(0.008)		(0.012)		(0.012)
Observations	6,350	6,350	6,040	6,040	6,318	6,318
R-squared	0.134	0.134	0.147	0.154	0.156	0.176
Individual Controls	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓
Province-cohort FE	✓	✓	✓	✓	✓	✓

Spillovers III: Persistency

Dependent Variables	Beyond Junior High (conditional on Junior High Graduate)	Teacher as an Occupation		Second Genderation's Years of Education
Data	Census 1990	Census 1990		Census 2010
	(1)	(2)	(3)	(4)
Share of Total received SDYs	0.348***	0.0372***	0.0272***	2.967***
*Affected Cohort (1957–1969)	(0.0787)	(0.0108)	(0.0105)	(0.622)
Years of Education			0.00450***	
			(8.36e-05)	
Observations	1,110,936	2,768,635	2,768,635	112,278
R-squared	0.073	0.005	0.024	0.669
Individual Controls	✓	✓	✓	✓
County FE	✓	✓	✓	✓
Province-cohort FE	✓	✓	✓	✓

Conclusion

- From 1962 to 1979, the Chinese government mandated the temporary resettlement of 17.7 million urban youths to rural areas.
- We examine how the arrival of urban youths affect local residents, especially rural children in schooling age.
- Strong positive effect on years of education.
- Channels of spillovers
  - Direction instruction.
  - Value and ideology.
  - Persistent effect even after the leave of SDYs.

Thanks for Listening!

If you have any comment or suggestion

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Data Quality

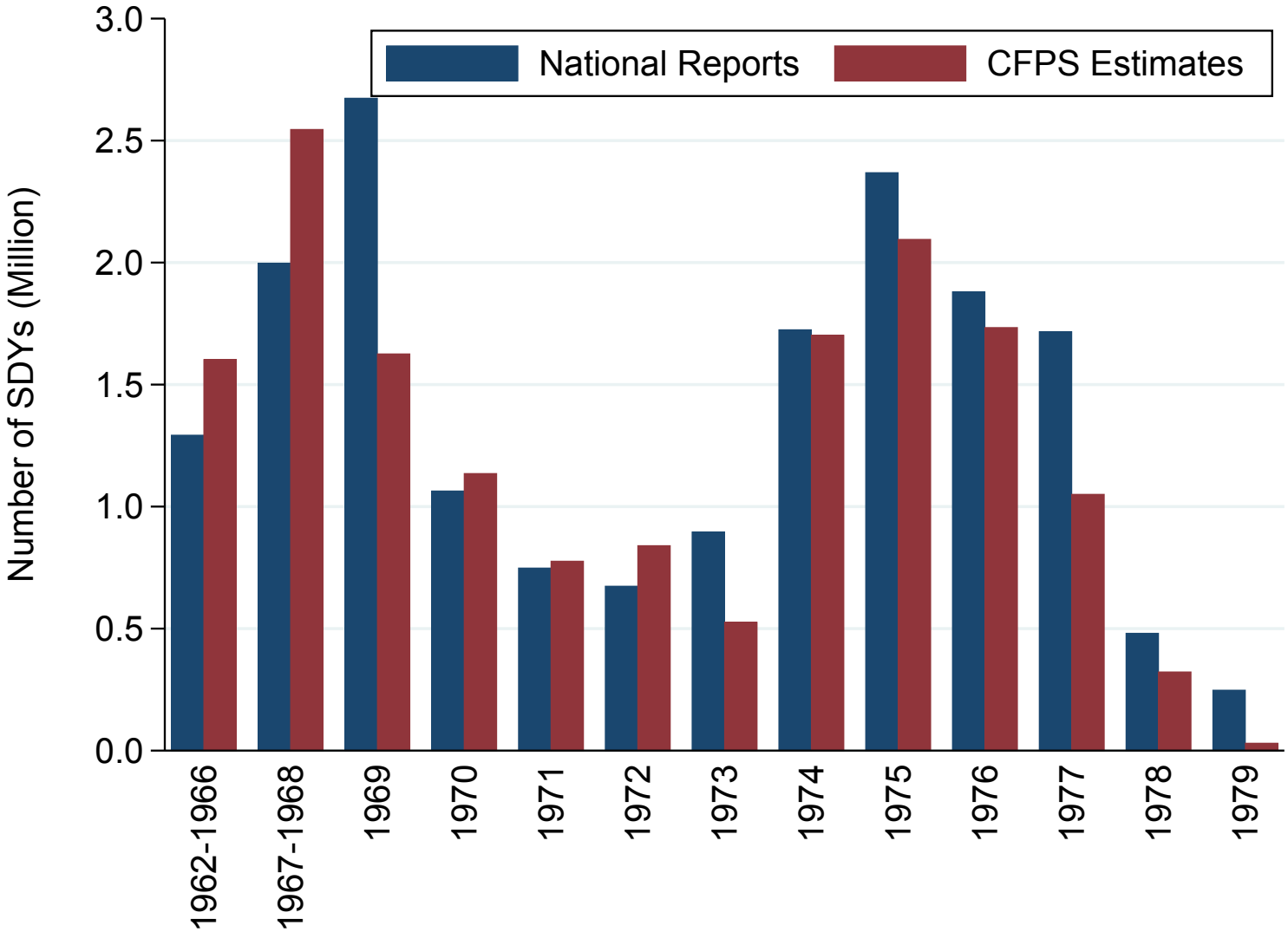
Accuracy of the records in local gazetteers?

- Walder (2003): number of victims during the Cultural Revolution suffers from serious underreporting issues.

But we believe records on SDYs are generally trustworthy,

1. Send-down movement is not as sensitive as the Great Famine and the Cultural Revolution in China.
   - No (nationally) official statistics on the fatalities during the Great Famine and the Cultural Revolution.
   - Plenties of reports on send-down movement.
2. Because accepting SDYs was an important political task, local government usually kept a record.

National Report v.s. CFPS 2010



County-aggregate v.s. National Report

Province	SDY Received (Thousand)		
	County Aggregate 1968–1977	National Report 1962–1979	Ratio (%)
Beijing	-	384.2	-
Tianjin	-	193.6	-
Hebei	280.1	510.5	54.9
Shanxi	135.8	312.9	43.4
Inner Mongolia	306.5	299.3	102.4
Liaoning	1256.2	2018.0	62.3
Jilin	657.4	1052.6	62.5
Heilongjiang	509.6	1922.2	26.5
Shanghai	-	532.3	-
Jiangsu	575.3	861.2	66.8
Zhejiang	436.8	595.9	73.3
Anhui	498.3	725.5	68.7
Fujian	319.7	372.3	85.9
Jiangxi	399.7	622.5	64.2
Shandong	389.6	492.7	79.1
Henan	448.9	673.0	66.7
Hubei	635.1	878.6	72.3
Hunan	563.1	635.8	88.6
Guangdong	554.0	973.2	56.9
Guangxi	277.0	434.8	63.7
Sichuan	1284.6	1427.4	90.0
Guizhou	156.5	224.1	69.8
Yunnan	177.8	339.1	52.4
Tibet	-	3.4	-
Shaanxi	373.1	490.3	76.1
Gansu	164.8	264.3	62.3
Qinghai	33.1	51.0	64.9
Ningxia	21.3	57.5	37.1
Xinjiang	174.8	416.6	42.0
Total	6170.6	10895.7	56.6

Robustness Checks

Dependent Variables	Years of Education				
Robustness	Different Bandwidth			Junior High Affected	Stayed in the County/Prefecture for at Least 5 Years
	N=9	N=6	N=3	N=12	N=12
	(1)	(2)	(3)	(4)	(5)
Share of Total received SDYs	2.551***	3.041***	2.443***	2.533***	2.140***
*Affected Cohort (1957–1957+N)	(0.759)	(0.731)	(0.658)	(0.789)	(0.778)
Observations	2,107,440	1,421,382	779,793	3,093,485	2,744,250
R-squared	0.298	0.297	0.279	0.327	0.298
Individual Controls	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓
Province-cohort FE	✓	✓	✓	✓	✓