Tech-driven Comparative Advantage: Evidence from Solar Expansion in China

Hanming Fang, Penn and ABFER
Ming Li, CUHK Shenzhen
Zoe Yang Yang, CUHK and ABFER

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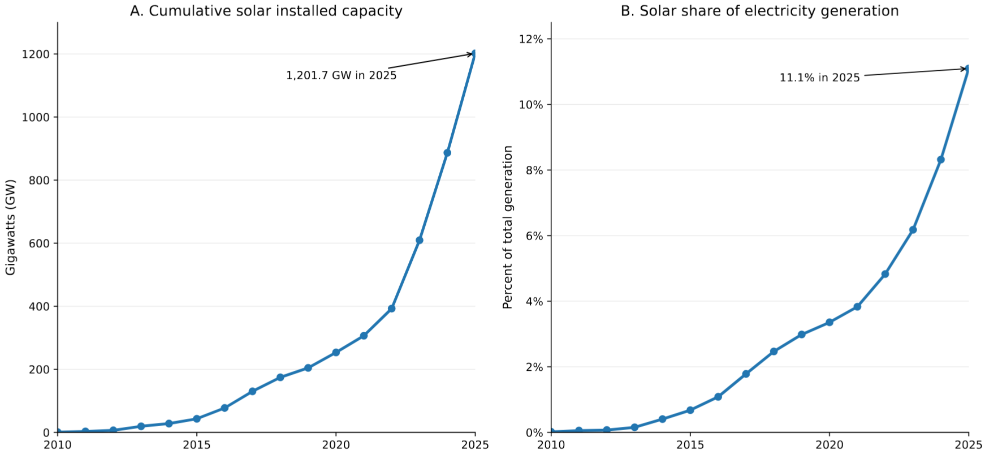
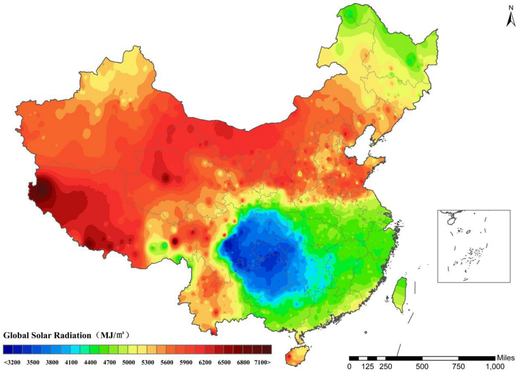
China's solar rise, 2010 2025



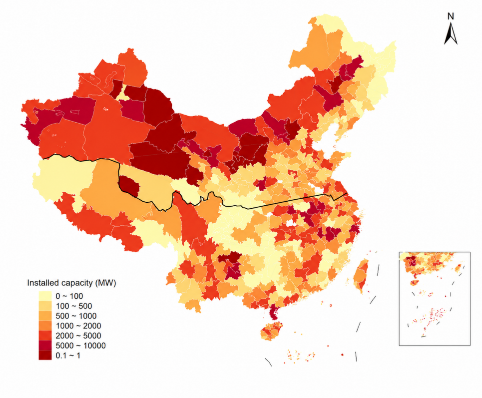
Sources: Installed capacity compiled from official NEA/NBS releases (2010–2025). Solar share from Our World in Data Energy Data (Ember-based for 2010–2024) and the 2025 NBS statistical communique.

▸ cost ▸ subsidy

High Solar Irradiance is Concentrated in China's Northwest



(a) Global Horizontal Irradiance (GHI)



(b) Total Installed Solar Capacity

▸ policy map

Motivation: Natural Endowment and Industrial Development

- As photovoltaic capacity expands, solar endowments may contribute to a local renewable-electricity advantage.
- Examples from electricity-intensive industries:
  - **Computing/Data centers, Gansu Qingyang and Ningxia Zhongwei:** green electricity and lower power costs have attracted 500+ digital-economy firms in Gansu, with major AI model services such as Qwen, Kimi, and DeepSeek deployed in western computing hubs; Zhongwei's 500 MW PV project directly supplies a data-center cluster.
  - **Low-carbon ethylene, Xinjiang Shangku:** a 1.3 GW PV project provides 0.2 billion kWh of clean electricity annually for a 1.2-million-ton ethylene project.
  - **Green hydrogen, Xinjiang Kuqa:** China's first 10,000-ton-scale PV-to-hydrogen project, supplying 20,000 tons/year of green hydrogen to Sinopec Tahe Refining.
  - **Green electrolytic aluminum, Gansu Baiyin:** over 290,000 tons of annual output and about 4 billion kWh of electricity demand; green power supports low-carbon aluminum production.

Solar Plant Data

Chen et al. (2024) identify the distribution of solar plant from 2010-2022 with machine learning

▸ example

- Internal validation: Recall, Precision, F1-score: 95.12%, 97.07%, 96.08%
- Compares well with other machine-learning based methods in overlapping years ▸ comparison
  - Kruitwagen et al. (2021): global database
  - Wang et al. (2022): verification using historical map, 2015 and 2020.
  - Zhang et al. (2022); Feng et al. (2024): 2020 data only

Converting Satellite Image to Solar Capacity

- Conversion from satellite image to actual capacity is based on the estimation of the maximum capacity.

$$Capacity = \frac{Area}{LCF} \times 10MW \times GHI \times GSR \times PR \times (1 - SF)$$

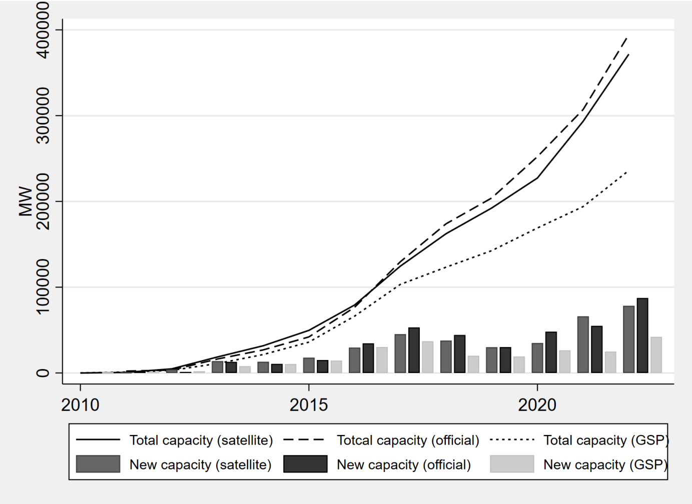
  - LCF: Land conversion factor
  - GHI: Solar irradiance
  - GSR:Generator of system ratio (0.8)
  - PR: performance ratio (0.8)
  - SF: Shading factor (0.05)
- Cross-sectional correlation between the estimated and actual PV installed capacity over 80%
- Yet, the conversion rate improves significantly over time due to technological improvements.

Adjusting the Conversion Rate

- Global Solar Power Tracker from Global Energy Monitor: gather information of energy projects from public and private data sources.
  - Trustworthy data source with official installed capacity, yet not comprehensive
- For each plant from satellite image, locate the nearest plot from GSPT, keep only closely matched ones
  - $<$1km
  - $+/-$ 1 year in installation time
  - no multiple matches
- Calibrate the conversion rate factor by comparing the imputed capacity from satellite image with the official registered capacity

$$InstalledCapacity_i = \sum_t \beta_t Capacity_{it} + \sum_t \gamma_t GHI_{it} + \epsilon_{it}$$

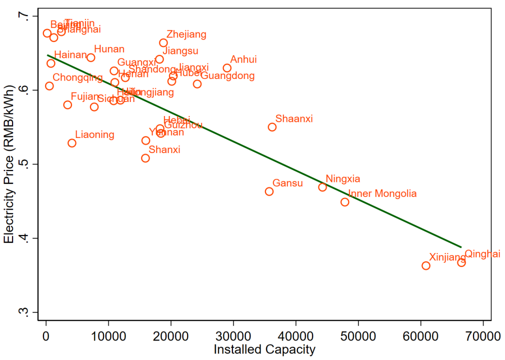
Evolution of Solar Power: Satellite vs. Official Stats vs. GSP



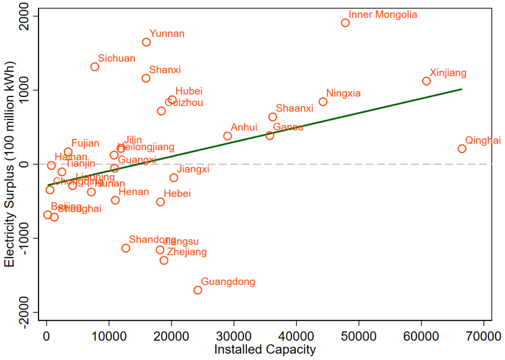
Other Data

- News
  - 199 official regional newspapers (2010-2022)
    - Electricity outage notice
    - Power shortage news report
  - LLM to code the cause, regional coverage, and duration of the power outage
- Regional electricity price (2013-2020)
  - provincial and city level documents
- Firm registration (2010-2022): entry and exit
- Annual report (2010-2022): performance
- VAT (2017-2018): industry level electricity usage intensity
- Policy, city-level controls, etc. (2010-2022)
- Global Horizontal Irradiance (GHI): WorldClim

Cheaper and Less Constrained Electricity in Solar Rich Region



(a) Electricity Price (2020)



(b) Electrity Surplus (2020)

Solar Capacity Reduces Electricity Outage

Dep. Variable	$\log(\#\text{Notice}_{it})$		$\log(\#\text{News}_{it})$	
$\log(\text{Capacity}_{it})$	-0.0196*	-0.0185*	-0.0150**	-0.0153**
	(0.0109)	(0.0110)	(0.00651)	(0.00672)
$\log(\text{GDP}_{it})$		0.177*		0.0939
		(0.105)		(0.0640)
$\log(\text{Population}_{it})$		-0.290		-0.191
		(0.204)		(0.125)
$\log(\text{Fiscal expenditure}_{it})$		-0.410***		-0.0204
		(0.118)		(0.0722)
$\log(\text{Consumption}_{it})$		-0.183***		-0.0492
		(0.0593)		(0.0362)
City, Year FE	Yes	Yes	Yes	Yes
Observations	4,082	3,965	4,082	3,965
R-squared	0.538	0.550	0.637	0.643

Baseline: Plant Installation and Firm Entry

Baseline model examines the relationship between city-level solar panel capacity and firm entry, with a standard TWFE model:

$$Y_{ijt} = \beta_0 + \beta_1 Capacity_{it} + \beta_2 Capacity_{it} SolarRegion_i + X_{it} + \delta_{ij} + \gamma_{jt} + \epsilon_{ijt}$$

- Y_{ijt}: # of new firm registration in city i, industry j, and year t (log)
- $Capacity_{it}$: Total solar panel capacity in city c, year t (log)
- $SolarRegion_i$: Inner Mongolia, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, Hebei

Heterogeneity by industry electricity usage intensity:

- $ElecIntensity_j$: Electricity input value share of industry j calculated from VAT data

Baseline: Plant Installation and Firm Entry ▸ By industry

Dep. Variable	log(# New Entry$_{ijt}$)				
	(1)	(2)	(3)	(4)	(5)
log(Capacity$_{it}$)	0.000779	-0.00741*	-0.00826**	-0.00523	-0.00828*
	(0.00351)	(0.00415)	(0.00370)	(0.00497)	(0.00443)
log(Capacity$_{it}$)*SolarRegion$_i$		0.0292***	0.0152***		
		(0.00602)	(0.00540)		
log(Capacity$_{it}$)*ElecIntensity$_j$			0.0211		0.0751***
			(0.0201)		(0.0251)
log(Capacity$_{it}$)*SolarRegion$_i$*ElecIntensity$_j$			0.346***		
			(0.0317)		
log(Capacity$_{it}$)*HighGHI$_i$				0.0110*	0.00778
				(0.00590)	(0.00531)
log(Capacity$_{it}$)*HighGHI$_i$*ElecIntensity$_j$					0.0786***
					(0.0290)
C-I, I-Y FE	Yes	Yes	Yes	Yes	Yes
Observations	1,611,181	1,611,181	1,611,181	1,611,181	1,611,181
R-squared	0.916	0.916	0.916	0.916	0.916

Instrumental Variable Strategy

Shift-share style instrumental policy:

- Share: GHI
- Shift: industrial policy in solar industry ▸ Policy

Dep. Variable	log(Capacity_{it})			
	(1)	(2)	(3)	(4)
$\text{SolarPolicy}_{i(t-2)}$	1.144**	1.019**		
	(0.550)	(0.502)		
$\text{SolarPolicy}_{i(t-2)}$*$\text{GHI}_i$	-0.000759**	-0.000667**		
	(0.000367)	(0.000332)		
#$\text{SolarPolicy}_{i(t-2)}$			0.473**	0.434**
			(0.212)	(0.203)
#$\text{SolarPolicy}_{i(t-2)}$*$\text{GHI}_i$			-0.000305**	-0.000278**
			(0.000138)	(0.000132)
Control	No	Yes	No	Yes
C,Y FE	Yes	Yes	Yes	Yes
Observations	3,685	3,597	3,685	3,597
R-squared	0.524	0.529	0.524	0.529

Instrumental Variable Strategy

Dep. Variable	log(# New Entry$_{ijt}$)				
	(1)	(2)	(3)	(4)	(5)
log($\hat{Capacity}_{it}$)	0.0693	-0.165	-0.175	-0.143	-0.142
	(0.104)	(0.122)	(0.112)	(0.128)	(0.119)
log($\hat{Capacity}_{it}$)*SolarRegion$_i$		0.527***	0.459**		
		(0.197)	(0.183)		
log($\hat{Capacity}_{it}$)*ElecIntensity$_j$			0.246		-0.0206
			(0.516)		(0.522)
log($\hat{Capacity}_{it}$)*SolarRegion$_i$*ElecIntensity$_j$			1.679**		
			(0.779)		
log($\hat{Capacity}_{it}$)*HighGHI$_i$				0.228***	0.156***
				(0.0354)	(0.0417)
log($\hat{Capacity}_{it}$)*HighGHI$_i$*ElecIntensity$_j$					1.784***
					(0.654)
C-I, I-Y FE	Yes	Yes	Yes	Yes	Yes
Observations	1,359,154	1,359,154	1,359,154	1,359,154	1,359,154
R-squared	0.919	0.919	0.919	0.919	0.919

Instrumental Variable

We employ the regional discontinuity in electricity price due to historical electricity region

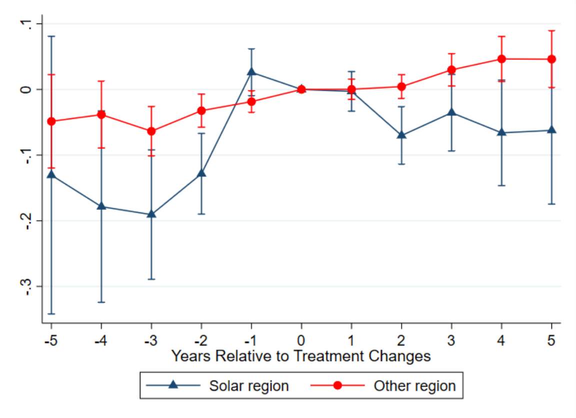
- provincial border creates sharp price difference
- yet radiation is very similar
- use adjacent city pairs (ik) but with different prices or policy exposures, control for ik and kt FE

Instrumental Variable

	First Stage	Second Stage		
Dep. Var	$\log(\text{Capacity}_{it})$	$\log(\#\text{ New Entry}_{ijt})$		
IV1: ElecPrice_{it}	0.0998***			
	(0.00961)			
IV2:$\text{SolarPolicy}_{i(t-2)}$	0.209***			
	(0.00116)			
$\log(\text{Capacity}_{it})$		0.134***	-0.0460***	-0.0341***
		(0.00571)	(0.00120)	(0.00105)
$\log(\text{Capacity}_{it})$*$\text{SolarRegion}_i$			0.386***	0.235***
			(0.00568)	(0.00543)
$\log(\text{Capacity}_{it})$*$\text{ElecIntensity}_j$				0.122
				(0.0823)
$\log(\text{Capacity}_{it})$*$\text{SolarRegion}_i$*$\text{ElecIntensity}_j$				1.827**
				(0.819)
C(ik)-I, C(k)-I-Y FE	Yes	Yes	Yes	Yes
Observations	4,137,600	4,134,708	4,134,708	4,134,708

Dynamic Effects under Staggered and Continuous Treatment

To account for the staggered implementation, we apply the extended framework of CSDID for robust inference De Chaisemartin and d'Haultfoeuille (2024), which allows for continuous treatment.



City-pair Specification

To confirm the electricity channel, we employ an alternative empirical specification to examine how is investment flow affected by the original and destination cities' energy condition.

$$Y_{odt} = \beta_0 + \beta_1 Capacity_{dt} + \beta_2 Capacity_{dt} X_{ot} + \delta_{od} + \gamma_{ot} + \epsilon_{odt}$$

- X_{ot} is one of:
  - The origin cities' solar capacity
  - The origin cities' outage frequency
  - The origin cities' electricity price

Mechanism: Investor Electricity Shortage

Dep. Variable	log(# New Investment)$_{odt}$			
	(1)	(2)	(3)	(4)
log(Capacity$_{dt}$)	0.0158***	0.0223***	0.00652	-0.129
	(0.00256)	(0.00477)	(0.00800)	(0.0967)
log(Capacity$_{dt}$)*log(Capacity$_{ot}$)		-0.00392*		
		(0.00204)		
log(Capacity$_{dt}$)*Outage$_{o}$			0.00241	
			(0.00202)	
log(Capacity$_{dt}$)*log(ElecPrice$_{ot}$)				0.0222*
				(0.0100)
ij, jt FE	Yes	Yes	Yes	Yes
Observations	1,211,753	1,193,889	1,108,019	969,461

Mechanism: Origin City Electricity Shortage

Dep. Variable	log(# New Investment)$_{odt}$		
	(1)	(2)	(3)
log(Capacity$_{dt}$)	0.0218***	0.0121	0.100
	(0.00507)	(0.00839)	(0.116)
log(Capacity$_{dt}$)*log(Capacity$_{ot}$)	-0.00206		
	(0.00220)		
log(Capacity$_{dt}$)*SolarRegion$_{d}$	0.00286	-0.0702***	-1.118***
	(0.00552)	(0.0156)	(0.159)
log(Capacity$_{ot}$)*SolarRegion$_{d}$	0.00185		
	(0.00596)		
log(Capacity$_{dt}$)*log(Capacity$_{ot}$)*SolarRegion$_{d}$	-0.0153***		
	(0.00293)		
log(Capacity$_{dt}$)*Outage$_{o}$		0.00180	
		(0.00213)	
log(Capacity$_{dt}$)*Outage$_{o}$*SolarRegion$_{d}$		0.00990***	
		(0.00368)	
log(Capacity$_{dt}$)*log(ElecPrice$_{ot}$)			-0.0132
			(0.0179)
log(ElecPrice$_{ot}$)*SoarRegion$_{d}$			-0.277***
			(0.0653)
log(Capacity$_{dt}$)*log(ElecPrice$_{ot}$)*SolarRegion$_{d}$			0.173***
			(0.0249)
od, ot FE	Yes	Yes	Yes
Observations	1,193,889	1,108,019	969,461

The Confounding Effect of Industrial Policies

A potential confounding channel is whether there are complementary industrial policies targeting the energy-intensive industries at the same time.

- whether firms are attracted by solar energy or industrial policies (that may involve subsidies, low cost land, etc.)
- We control for industrial policies in each industry using the industrial policy data from Fang et al. (2024), and also examine the complementary effect between industrial policy and solar energy

Complements the Effect of Industrial Policies

Dep. Variable	log(# New Entry)$_{it}$			
log(Capacity$_{it}$+1)	0.00381***	0.00278***	0.00357***	0.00233***
	(0.000358)	(0.000367)	(0.000378)	(0.000411)
Policy$_{ijt}$	0.0345***	0.00960***	0.00272	0.0105***
	(0.00177)	(0.00269)	(0.00273)	(0.00294)
log(Capacity$_{it}$+1)*Policy$_{ijt}$		0.00597***	0.00763***	0.00655***
		(0.000485)	(0.000493)	(0.000545)
log(Capacity$_{it}$+1)*SolarRegion$_{i}$				0.00373***
				(0.000513)
Policy$_{ijt}$*SolarRegion$_{i}$				-0.0673***
				(0.00800)
log(Capacity$_{it}$+1)*Policy$_{ijt}$*SolarRegion$_{i}$				0.00997***
				(0.00133)
Controls	Yes	Yes	Yes	
City-by-Industry FE	Yes	Yes	Yes	Yes
Industry-by-Year FE	Yes	Yes	Yes	Yes
Observations	1,448,160	1,448,160	1,409,370	1,409,370
R-squared	0.900	0.900	0.900	0.900

Placebo: When Solar Capacity is for UHV Transmission

A potential confounding factor is the role of energy transmission: Some solar plants were built for the "west-east electricity transmission project" rather than for local use.

- We examine the heterogeneous effect for cities where a UHV line started ▸ detail

UHV Transmission Mitigates the Effect

Dep. Variable	log(# New Entry$_{ijt}$)		
	(1)	(2)	(3)
log(Capacity$_{it}$)	0.00711***	0.00131**	-0.00577***
	(0.000957)	(0.000580)	(0.00111)
log(Capacity$_{it}$)*UHV$_i$		-0.00713***	-0.0218***
		(0.00207)	(0.00310)
log(Capacity$_{it}$)*ElecIntensity$_j$			0.435***
			(0.0233)
log(Capacity$_{it}$)*ElecIntensity$_j$*UHV$_i$			-0.235***
			(0.0527)
C-I, I-Y FE	Yes	Yes	Yes
Observations	413,936	413,936	410,088
R-squared	0.923	0.923	0.923

Other Competing/Complementary Mechanisms

- Robustness: excluding firms on the solar supply chain
- Regionally spillover to neighboring cities in the same province ▸ table
- Vertically spillover to upstream and downstream industries of electricity intensive industries ▸ table

Economic Consequences for Firm Entry and Performance

Panel A: Intensive Margin

Dep. Variable	ROE_{fijt}			$\log(\text{Revenue})_{fijt}$		
Sample	All	Solar Region	Other Region	All	Solar Region	Other Region
$\log(\text{Capacity}_{it})$	0.000294***	-0.000288	0.000272***	0.0184***	0.0295***	0.0184***
	(8.26e-05)	(0.000267)	(8.71e-05)	(0.000291)	(0.00101)	(0.000305)
$\log(\text{Capacity}_{it})\times$Electricity	0.0266***	0.00667	0.0287***	0.147***	0.0481***	0.155***
	(0.00127)	(0.00420)	(0.00134)	(0.00528)	(0.0185)	(0.00552)
Firm, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	60,570,541	3,747,587	56,822,954	85,095,198	4,999,333	80,095,865
R-squared	0.368	0.370	0.368	0.711	0.693	0.712

Panel B: Extensive Margin

Dep. Variable	ROE_{fijt}			$\log(\text{Revenue})_{fijt}$		
Sample	All	Solar Region	Other Region	All	Solar Region	Other Region
$\log(\text{Capacity}_{it})$	-0.00218***	-0.000581**	-0.00242***	0.00913***	-0.0219***	0.0193***
	(8.44e-05)	(0.000264)	(8.55e-05)	(0.000381)	(0.00132)	(0.000398)
Entrant	-0.0385***	-0.0363***	-0.0401***	-1.301***	-1.605***	-1.400***
	(0.000400)	(0.00131)	(0.000402)	(0.00175)	(0.00621)	(0.00180)
$\log(\text{Capacity}_{it})\times$Entrant	0.0162***	0.00604***	0.0173***	0.0210***	0.0643***	0.0120***
	(7.06e-05)	(0.000225)	(7.10e-05)	(0.000279)	(0.000948)	(0.000287)
City-by-industry, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	63,834,696	4,288,437	63,514,402	87,955,058	5,621,416	87,496,330
R-squared	0.020	0.009	0.012	0.149	0.055	0.090

Clean Economic Development in Solar-rich Regions

Dep. Variable	$\log(GDP_{it})$		$PM25_{it}$		$SO2_{it}$	
$\log(Capacity_{it})$	0.00955***	0.00780***	0.0724***	0.0980***	0.0144	0.0194
	(0.00234)	(0.00265)	(0.0263)	(0.0307)	(0.0114)	(0.0133)
$\log(Capacity_{it})$*$SolarRegion_i$		0.00797		-0.0965		-0.0190
		(0.00566)		(0.0594)		(0.0258)
$\log(Population_{it})$	0.237***	0.239***	-0.0186	0.00204	-0.0155	-0.0115
	(0.0394)	(0.0394)	(0.818)	(0.817)	(0.355)	(0.356)
City, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,230	3,230	2,512	2,512	2,512	2,512
R-squared	0.988	0.988	0.998	0.998	0.998	0.998

Literature

Electricity and firm productivity

- Davis and Hausman (2016); Borenstein et al. (2023); Fisher-Vanden et al. (2015); Abeberese (2017); Allcott et al. (2016); Colmer et al. (2024)

Solar energy adoption and its effect

- Fabra et al. (2024); De Groote and Verboven (2019); Bollinger et al. (2024); Chen and Chu (2024); Banares-Sanchez et al. (2026)

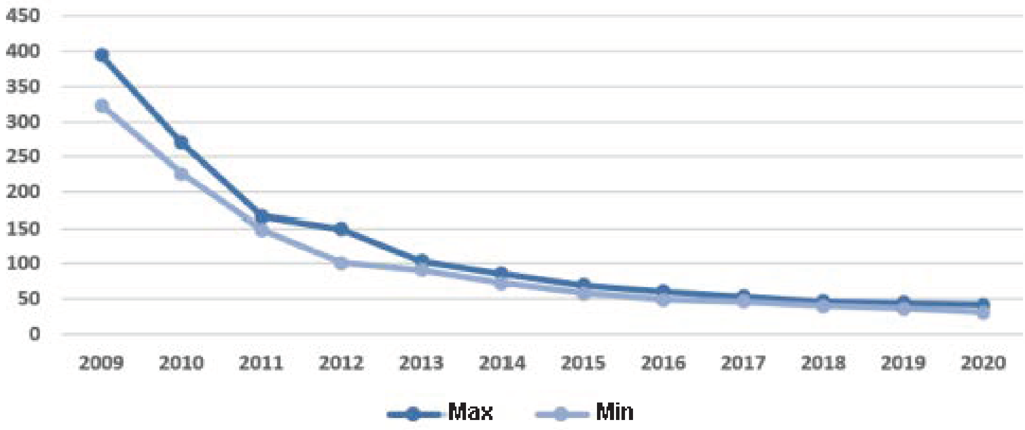
Infrastructure & Place-based policy

- Ashenfarb (2024); Fang et al. (2025)

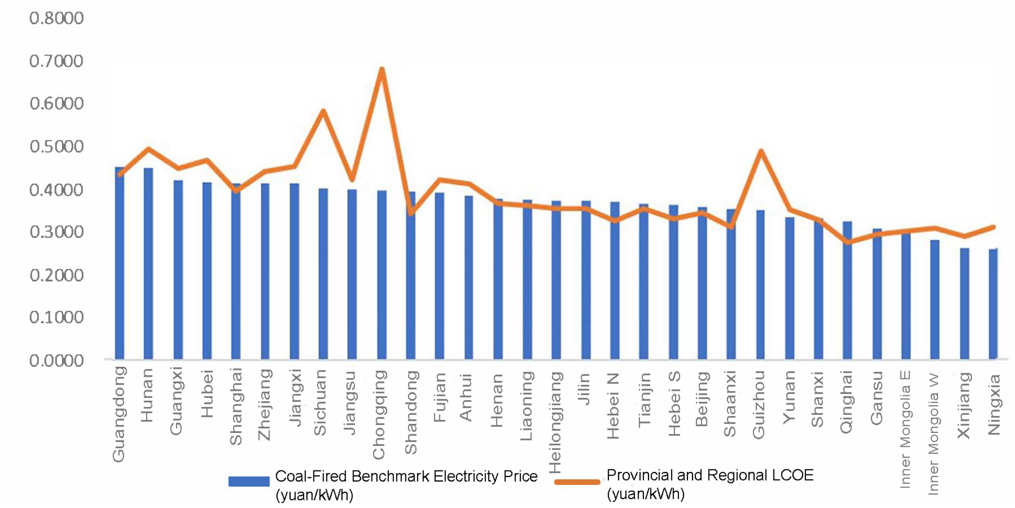
Conclusion

- We study the effect of solar panel installation on the regional distribution of new firm entries, with a special focus on the less developed north-west regions.
- Solar energy attracts more firms to the northwest, especially electricity-intensive manufacturing firms.
- Robustness checks rule out alternative explanations and find a complementary effect with industrial policies.
- Solar energy improves firm performance and lowers energy costs.
- Implication: New energy technology serves as an important force in rebalancing regional development.

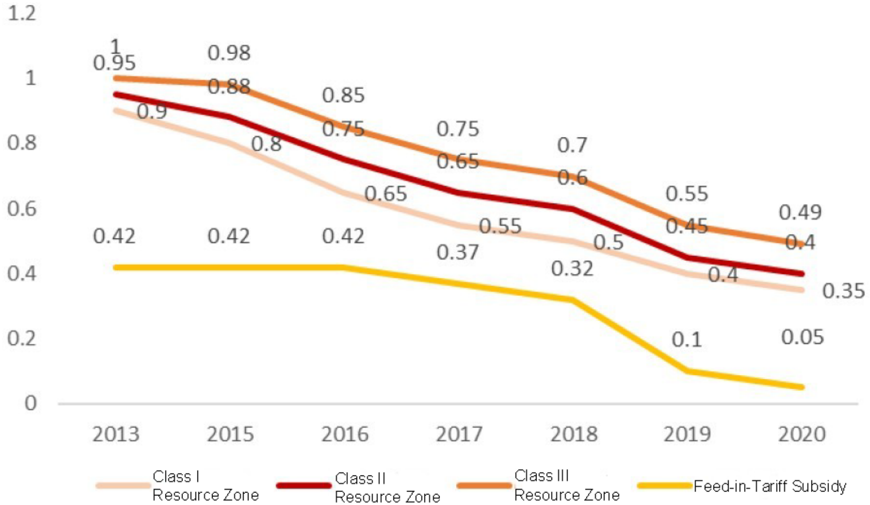
The global LCOE of Solar Photovoltaics ▸ Back



Solar Cost Distribution ‣ Back

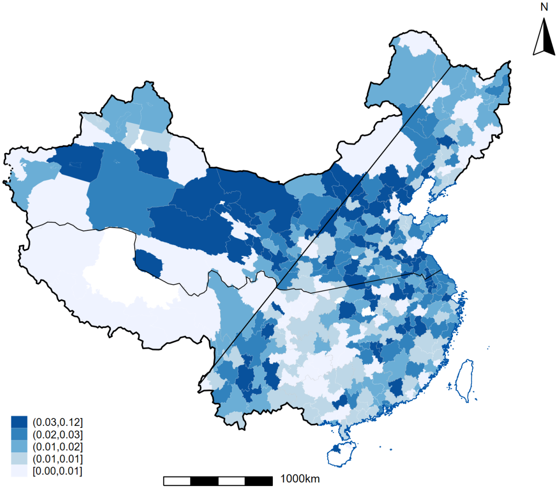


Annual Feed-in Tariffs and Subsidy Levels for Solar PV Power Generation in China, 2013–2020 ▸ Back



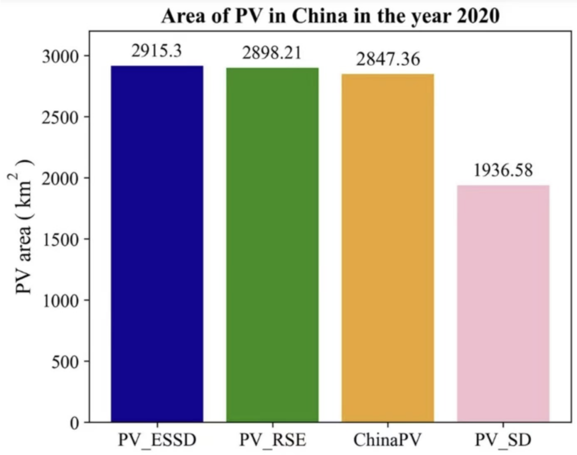
Regional Distribution of Solar Policies

Back



Satellite Image: An Example ▸ Back

Data Comparison ▸ Back



Entry By Industry ▸ Back

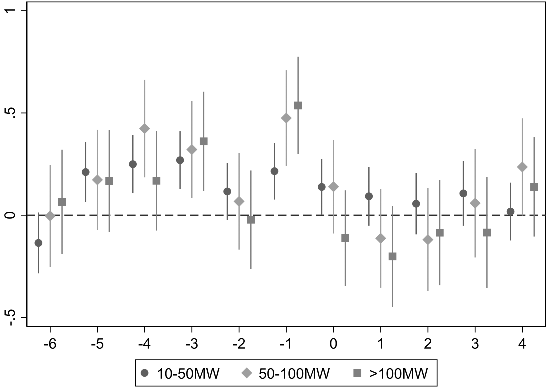
	Agriculture	Mining	Manufacturing	Energy supply	Construction
log(Capacity+1)	-0.0113***	-0.00238***	-0.00380***	0.0167***	0.00606***
	(0.00157)	(0.000812)	(0.000447)	(0.00252)	(0.00200)
log(Capacity+1)*SolarRegion	0.0171***	0.00498***	0.0124***	-0.0208***	0.0115***
	(0.00199)	(0.00103)	(0.000565)	(0.00319)	(0.00253)
Observations	100,464	82,992	764,400	30,576	61,152

	Sales	Transportation	Hotelling	IT	Finance
log(Capacity+1)	-0.0152***	-0.00420***	-0.00224	0.0121***	0.00195
	(0.00189)	(0.00155)	(0.00301)	(0.00216)	(0.00119)
log(Capacity+1)*SolarRegion	0.0336***	0.00596***	0.0111***	-0.00323	0.00487***
	(0.00240)	(0.00196)	(0.00380)	(0.00273)	(0.00150)
Observations	78,624	87,360	30,576	52,416	91,728

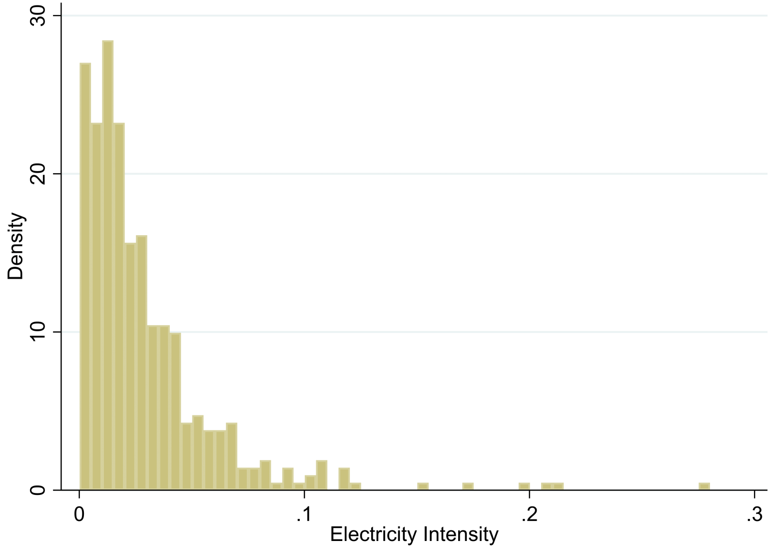
	Real estate	Commercial service	RD	Environment	Life service
log(Capacity+1)	-0.00830***	-0.00101	0.0152***	0.00507***	-0.00106
	(0.00313)	(0.00219)	(0.00173)	(0.00152)	(0.00190)
log(Capacity+1)*SolarRegion	0.0225***	0.0144***	-0.00324	-0.00358*	0.0143***
	(0.00396)	(0.00277)	(0.00219)	(0.00193)	(0.00240)
Observations	21,840	48,048	74,256	52,416	65,520

Solar Installation Response to Solar Policy ‣ Back

$$Station_{it} = \sum_{l=-6}^{6} SolarPolicy_{i(t+l)}$$



Electricity Usage Intensity ▸ Back



UHV Transmission ▸ Back

图 31：全国投运及在建特高压线路

资料来源：国家电网，发改委，安信证券研究中心

Regional Spillover ‣ back

Dep. Variable	log(# New Entry)$_{ijt}$			
Model	(1)	(2)	(3)	(4)
log(Capacity$_{it}$)	0.000537*	0.00133***	-0.000932***	-0.000178
	(0.000297)	(0.000303)	(0.000333)	(0.000339)
log(NeighborCapacity$_{it}$)	0.00295***	0.00423***	0.00280***	0.00407***
	(0.000379)	(0.000383)	(0.000403)	(0.000408)
log(Capacity$_{it}$)*SolarRegion			0.00468***	0.00467***
			(0.000630)	(0.000643)
log(NeighborCapacity$_{it}$)*SolarRegion			0.00387***	0.00406***
			(0.000620)	(0.000636)
Controls	Yes	Yes	Yes	Yes
City-by-Industry FE	Yes	Yes	Yes	Yes
Industry-by-Year FE	Yes	Yes	Yes	Yes
Observations	1,854,593	1,815,372	1,854,593	1,815,372
R-squared	0.922	0.923	0.922	0.923

Vertical Spillover

back

Dep. Variable	log(# New Entry)$_{ijt}$			
Sample	All	Manufacturing	Mining	Service
Model	(1)	(2)	(3)	(4)
$\log(\text{Capacity}_{it})$	-0.00436***	0.00825	-0.0509	-0.0149*
	(0.00120)	(0.00590)	(0.0501)	(0.00796)
$\log(\text{Capacity}_{it}) \times$ Electricity	0.0875***	0.395**	-0.800*	-0.0972
	(0.0183)	(0.187)	(0.483)	(0.121)
$\log(\text{Capacity}_{it}) \times$ UpElectricity	0.0594***	0.0188	-0.290	0.778***
	(0.0127)	(0.0443)	(0.602)	(0.267)
$\log(\text{Capacity}_{it}) \times$ DownElectricity	0.00447	-0.280	3.731*	-0.0298
	(0.00989)	(0.208)	(2.097)	(0.0312)
City-by-Industry FE	Yes	Yes	Yes	Yes
Industry-by-Year FE	Yes	Yes	Yes	Yes
Observations	340,704	27,898	4,810	26,936
R-squared	0.936	0.918	0.789	0.946