Power to the Rooftops: Clean Energy, Pollution and Local Development – VERY PRELIMINARY

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Motivation

- Solar power is cheap, but adoption rates often seem low
- Many governments incentivize households to adopt & use more solar ("demand policies")
- What is the impact of such policies on:
  - Adoption and generation of solar power
  - Energy consumption
  - Pollution (e.g., through households using less fossil fuel for heating, etc.)
  - Local economic development
- Welfare costs and benefits of such policies

Chinese Context

- China is a massive player in production of solar PVs, but also in solar usage and generation (two-thirds world's additions to solar capacity in 2024)
- Many supply side solar policies towards production and innovation (Banares-Sanchez et al., 2026)
- Demand-side policies first focused on utility-scale (e.g. Golden Sun 2009-11), but increasingly on distributed (households, firms and public sector)
  - About half of all newly installed Chinese solar capacity in 2025 was distributed, not utility-scale
- We focus on **Whole County PV Program (WCPV)**
  - Announced and started in 2021, focused on residential rooftop solar installation (but also firm and public sector rooftops)
  - 676 treated counties (out of 1,300) in 332 cities (out of 358)
  - Huge program estimated to cost up to $130bn

Contribution

- **Two Main Datasets**
  1. Annual panel dataset of all Chinese counties treated and untreated 2017 to 2023
  2. Household-level panel data in three provinces 2020 to 2022 with rich daily information on power capacity, generation, consumption, etc. from private company with monopoly franchise in these areas. For now, aggregate to county-quarter level.

- **Two Complementary Empirical Approaches**
  1. SDID (and TWFE)
  2. Border spatial discontinuity design

Preview of Main Findings

- **Solar Installation:** treated counties experience $\sim$34% increase in stock of household solar capacity
- **Electricity:** Electricity consumption only rises by a small amount in county
- **Environment:** $PM_{2.5}$ falls by 2% (over 4m extra life years). Also Nitrogen Dioxide (NO_2) & ozone (O_3) reductions.
- **Local development:** GDP rises by $\sim$1%
- **Border design:** Confirms wider SDID results - treatment effect of solar adoption at treated county borders

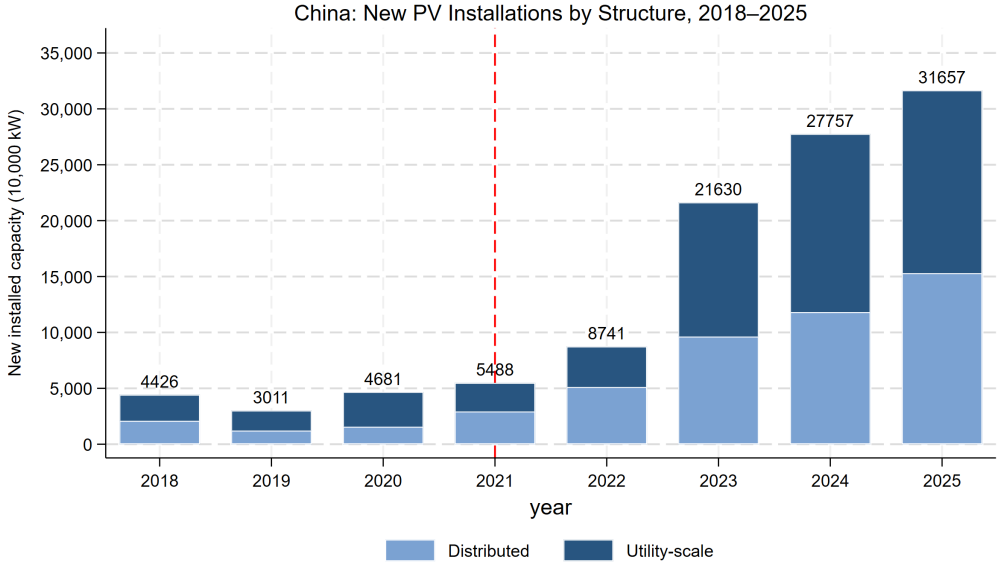
Some Existing Literature

- **Impact of demand policies** on solar generation (e.g., like rooftop subsidies) [O'Shaughnessy et al., 2023, De Groote et al., 2016, Borenstein and Davis, 2016, Borenstein, 2012]
- **Determinants of solar adoption** [Bollinger and Gillingham, 2012, Graziano and Gillingham, 2015, Rode and Müller, 2020, La Nauze, 2023]
- **Impact of solar adoption** on electricity consumption & other outcomes [Qiu et al., 2019, Beppler et al., 2023, Boccard and Gautier, 2021, Burkhardt et al., 2023]
- **Impact of Whole County PV Policy** [Zuo, 2026, Lifei et al, 2024]

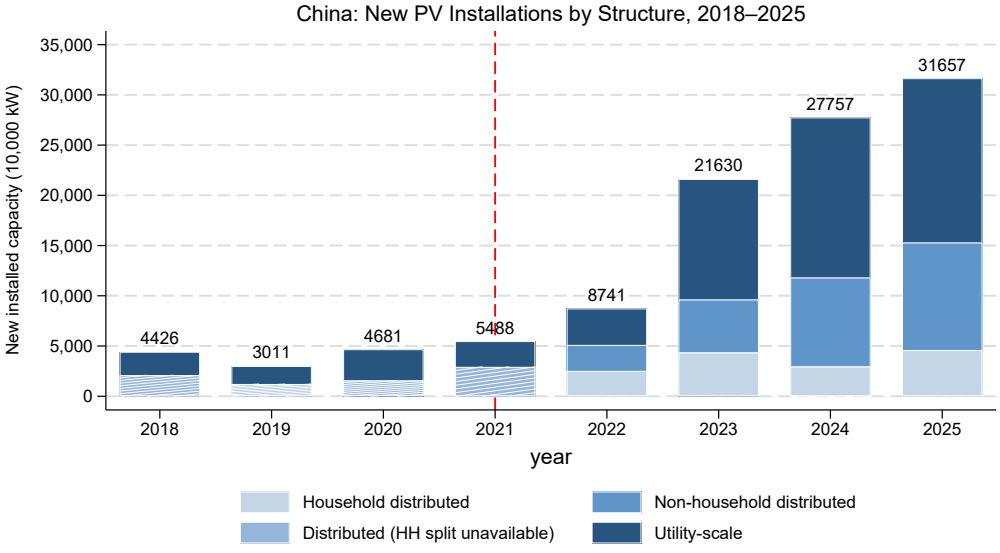
Roadmap

1. **Context, Data, and Facts**
2. Empirical Design
3. Results
4. Welfare Analysis and Conclusion

The Boom in Solar Installation (Flow) and the Increase of Distributed Solar

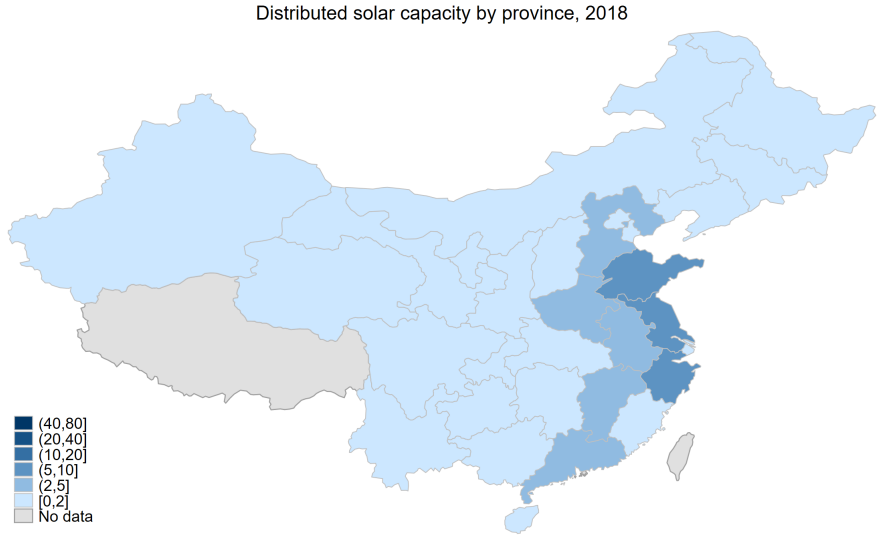


The Boom in Solar Installation (Flow) and the Increase of Distributed Solar



2018-2021: household distributed PV is unavailable separately, so distributed PV is shown with diagonal hatching.

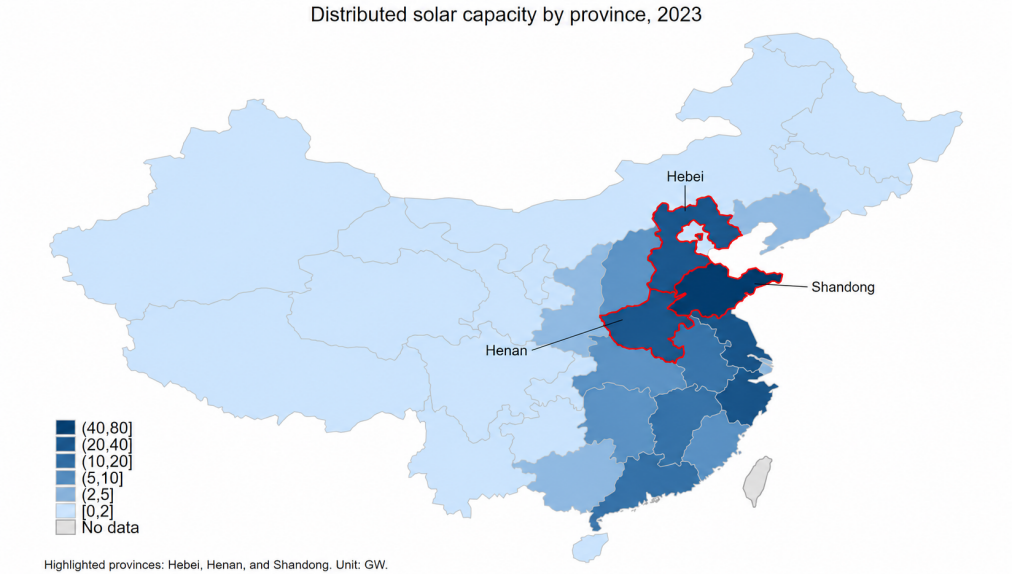
Solar Capacity (Stock) by Province



Unit: GW. This map shows cumulative installed capacity stock, not annual installation flow.

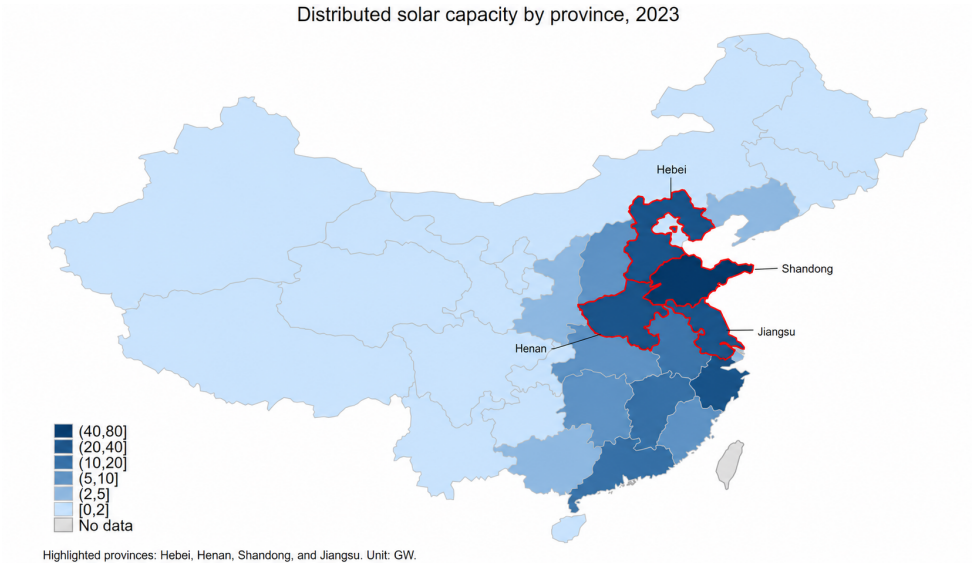
▸ Bar Chart

Solar Capacity (Stock) by Province



Bar Chart

Solar Capacity (Stock) by Province



Bar Chart

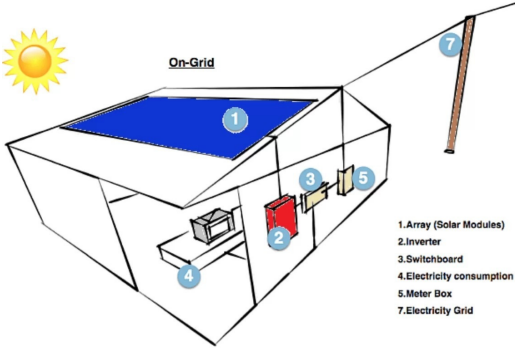
Household Rooftop Solar Power: The Whole County PV Program

- June 20, 2021, Department of Energy announced "Pilot Plan for the Development of Rooftop Distributed Photovoltaic in the Whole County"
- **Approach:**
  - Cities identify 2-3 counties & submit policy plan to their Provincial govt. who review, consolidate & then submits to Department of Energy for final approval
  - Mandatory criteria for county selection include:
    1. "Power absorption capacity" (i.e., sunshine);
    2. "Substantial Rooftop resource base" (e.g., favors rural houses over apartments)
    3. "Good grid connection network"
  - All plans must eventually achieve adoption targets (solar to cover 20% of all rural roofs; 30% of all industrial plants, etc.)
  - Cities have much flexibility over what policy mix to propose
- September 14, 2021, final list of 676 counties announced
- In progress: classifying the types & generosity of different subsidies to households & firms (example below)

▸ Policy Selection

On-Grid Solar Power Systems

- On-Grid Solar Power Systems:
- Grid-connected systems linked to the public energy grid, running on microinverters or solar inverters
- Surplus solar energy exported to the grid, compensated with a feed-in tariff (FiT) or credits
  - when solar power generated $<$ consumption: self use (自发自用)
  - when solar power generated $>$ consumption: surplus sold (余电上网)



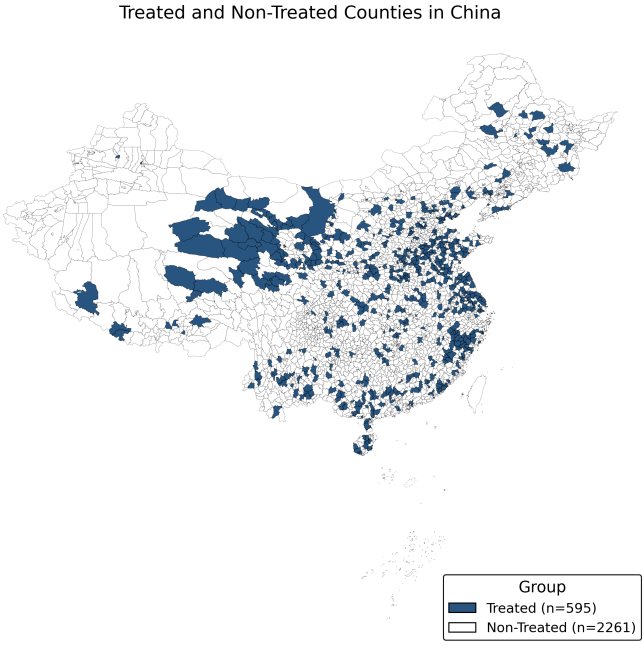
Monetary Value of Solar Power Generation from policy: An Example Subsidy

- *Notice of the People's Government Office of Haiyan County on Issuing the Implementation Plan for the Whole-County Rooftop Distributed PV Development Pilot*
  - For household PV projects connected to grid 2022 and 2023: guaranteed feed-in-tariff 0.4 yuan/kWh & one-time subsidy of 200 RMB/kW with cap of 2,000 RMB

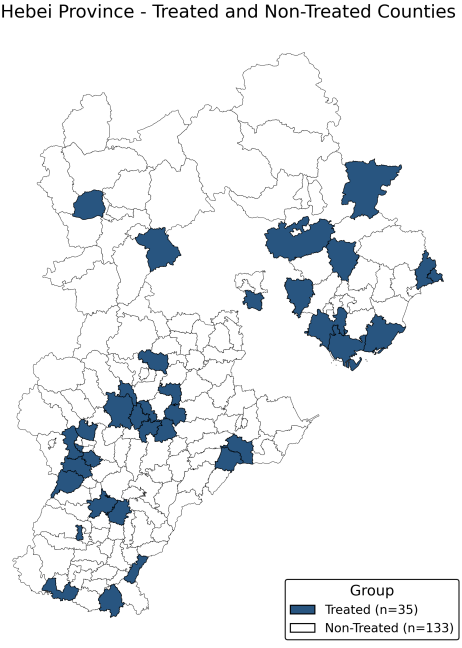
- *Consider average household in Haiyan*. 20kW solar capacity potential = 17,600 kWh annually. Assume 10% self-use.
  - **Electricity savings from self-use**: With electricity price of 0.6 yuan/kWh saving = 10% $\times$ 17,600 $\times$ 0.6 = **1,105 RMB**
  - **Surplus electricity sold to grid**: With feed-in-tariff at 0.4 yuan/kWh, income = 90% $\times$ 17,600 $\times$ 0.4 = **6,336 RMB**
  - **Installation subsidy** 20 kW $\times$ 200 RMB, so capped at **2,000 RMB**.
  - **Benefit** 1,105 + 6,336 = **7,441 RMB** per year plus one-off **2,000 RMB**
  - Compares to average cost of installing rooftop solar of **75,000 RMB**

- Substantial reduction in pay-back time, mainly through being now able to sell electricity to grid

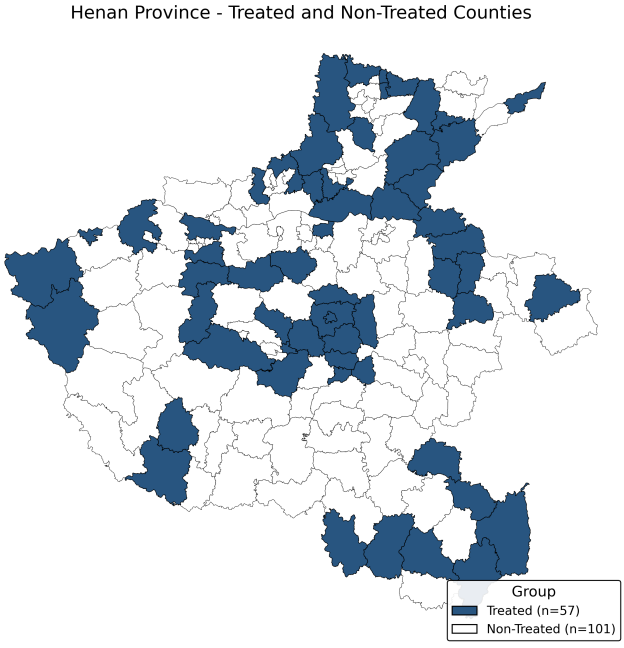
Whole County PV Program in China



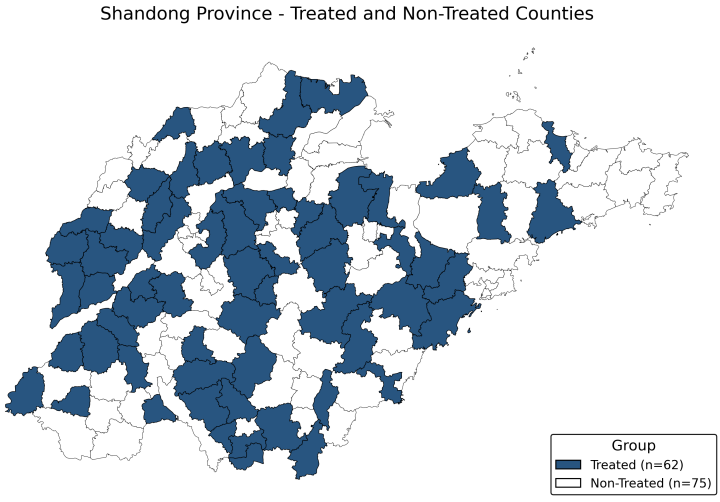
Whole County PV Program in Hebei Province



Whole County PV Program in Henan Province



Whole County PV Program in Shandong Province



Differences between treated and non-treated counties (Whole China Sample)

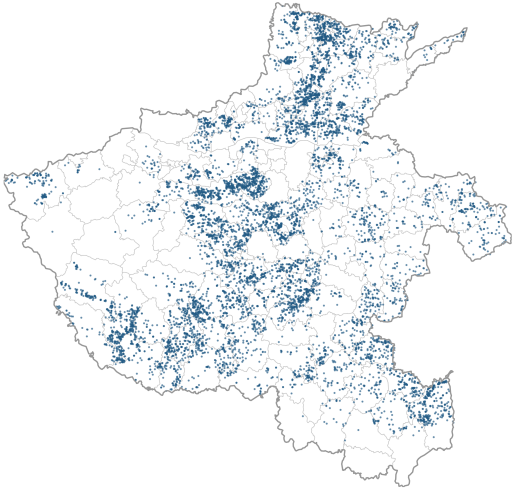
Variable (log)	**Treated − Control**
Annual sunlight hours	0.015^{***}
	(0.006)
GDP	0.044
	(0.037)
Rural population	0.104^{***}
	(0.033)
Population density	-0.048
	(0.049)
Fiscal revenue	0.024
	(0.042)
Industrial value added	0.075
	(0.047)
Total electricity consumption	-0.008
	(0.043)
Residential electricity	-0.028
	(0.028)

Notes: Each row is a separate regression of the log outcome on a treatment indicator with province and year fixed effects. Standard errors clustered at county level in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

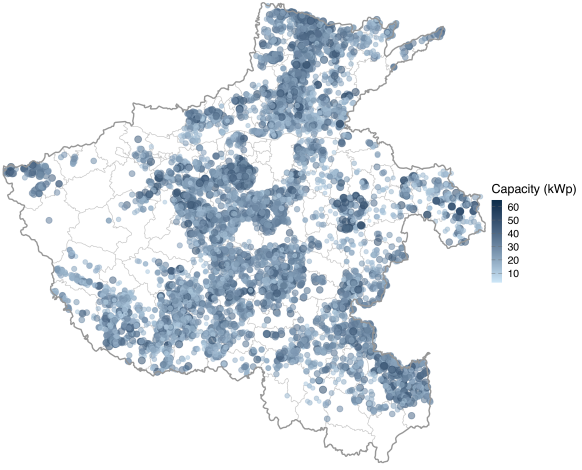
Data

- **Whole of China dataset.** County-level annual outcomes, 2017-2023:
  - *Energy:* Solar capacity (not broken down by into utility vs. distributed, etc.) from satellite imaging.
  - *Pollution:* $PM_{2.5}$, NO_2 and O_3 from satellite imaging
  - *Economic Development:* GDP, population, industrial revenue, value added and firm numbers; energy consumption from admin data
- **Three province dataset.** Household level aggregated to county by quarter, 2020Q1 – 2022Q4.
  - Full solar installation data from the largest rooftop solar provider in China. A representative sample of **30,000 households** observed at daily frequency
  - Focus on household capacity installed, but also have generation, consumption, extensive margin, etc.
- **In process:**
  - Jiangsu Province country level distributed solar 2018Q1 – 2025Q1 (and likely others)
  - firm and public sector generation of solar.

The Distribution of Rooftop Solar Panels

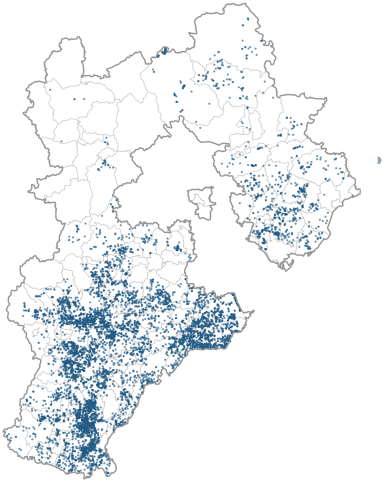


(a) Henan Province Solar Installations

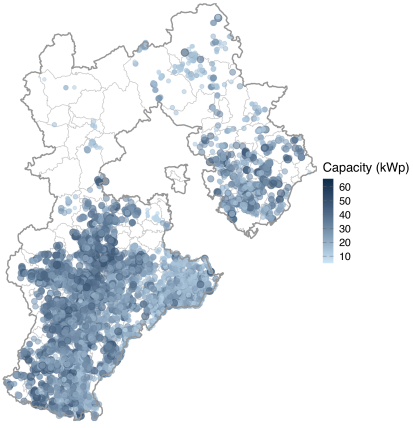


(b) Henan Province Solar Capacity

The Distribution of Rooftop Solar Panels

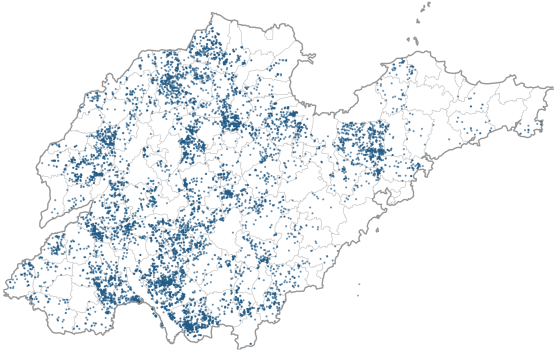


(a) Hebei Province Solar Installations

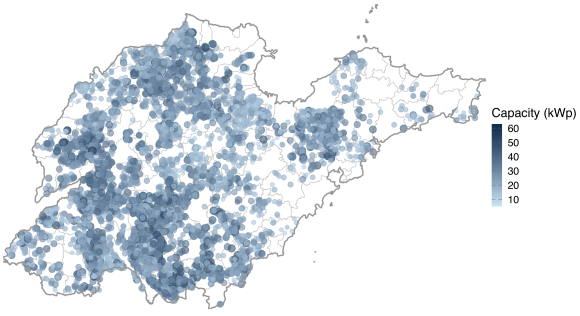


(b) Hebei Province Solar Capacity

The Distribution of Rooftop Solar Panels



(a) Shandong Province Solar Installations



(b) Shandong Province Solar Capacity

Roadmap

1. Context, Data, and Facts
2. **Empirical Design**
3. Results
4. Conclusion

Empirical Specification (Three-Provinces Dataset)

$$\text{Outcome}_{ct} = \alpha_c + \delta_t + \sum_{\tau \in [-7,4], \tau \neq -1} \beta_\tau \left(\text{Gov Solar}_c \cdot \mathbf{1}\{\text{Quarters after Program} = \tau\}\right) + \epsilon_{ct}$$

- Outcome_{ct} in county c at time t
- Gov Solar_c: indicator for counties covered by the Whole County PV program
- Quarters after Program $= \tau_t$: τ quarters before or after county c enrolled in September 2021
- α_c: county fixed effects
- δ_t: quarter-year fixed effects
- Standard errors clustered at the county level
- Main specification SDID from Arkhangelsky (2021), contrast with TWFE.

Roadmap

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3. **Results: DID**
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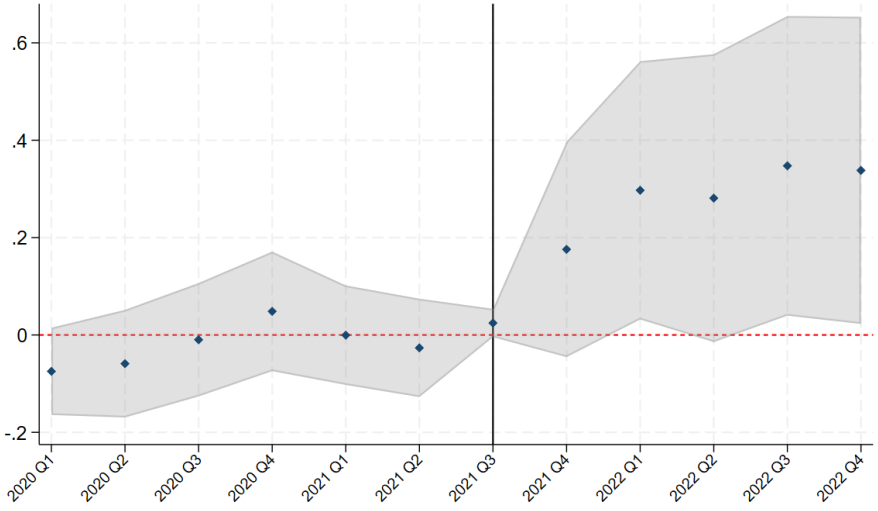
log(Household solar capacity): Three Provinces sample



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

Level Flow Jiangsu

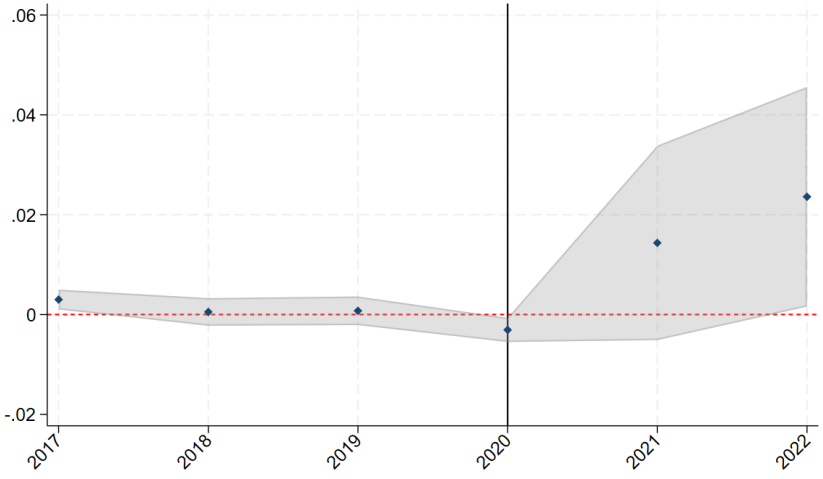
log(Household Solar capacity): Three Provinces Sample

	TWFE	*SDID*
Panel A: Log Solar Capacity (Stock)	0.35*	0.29*
	(0.20)	(0.17)
Observations	5,520	5,520
Panel B: Solar Capacity in kW (Stock)	323.09**	154.91*
	(132.57)	(89.28)
Observations	5,520	5,520

Notes: Standard errors in parentheses, clustered at the county level. All specifications include county and time fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. We use the inverse hyperbolic sine transformation when the log outcome has zeros.

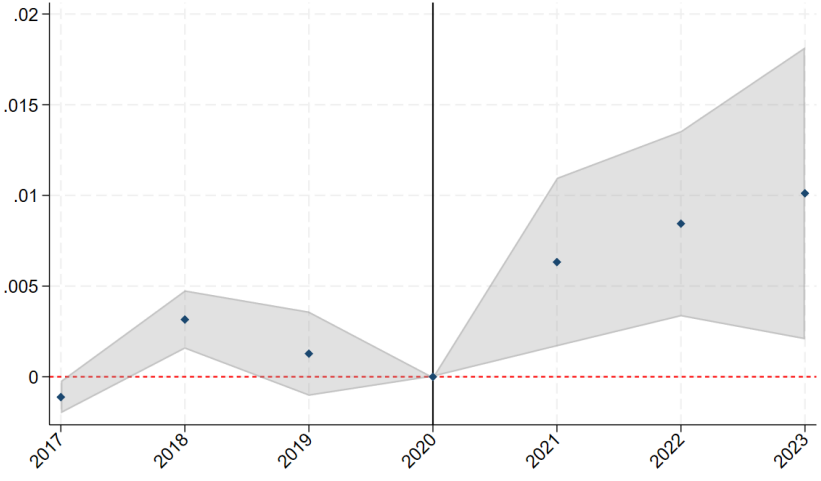
Flow

log(Solar Capacity): Whole of China Sample from Satellite



Notes: The figure shows the synthetic difference-in-differences estimates for log solar capacity. Treatment effects lower because this also includes utility scale and non-household capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

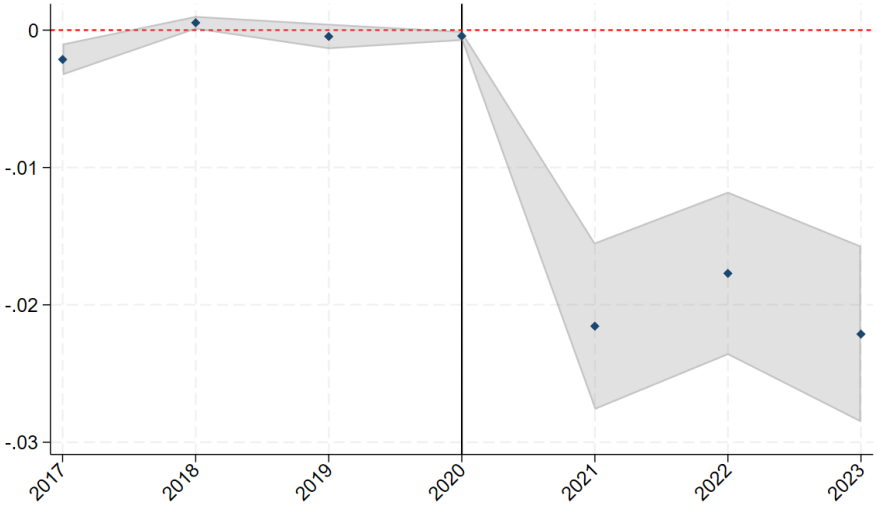
log(Total Electricity Consumption): Whole of China Sample



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

▸ Household Electricity Consumption

log(PM2.5): Whole of China Sample from Satellite



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

log(Pollution): Whole of China Sample from Satellite

	PM2.5		NO2		O3	
	TWFE	*SDID*	*TWFE*	*SDID*	*TWFE*	*SDID*
	-0.016^{***}	-0.020^{***}	-0.021^{***}	-0.025^{***}	-0.007^{***}	-0.008^{***}
	(0.003)	(0.003)	(0.005)	(0.005)	(0.002)	(0.002)
Observations	17,829	17,829	17,766	17,766	17,668	17,668

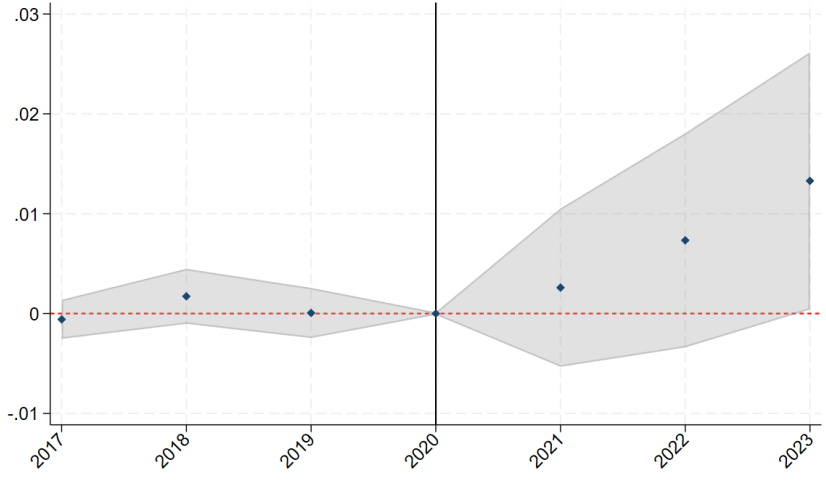
Notes: Standard errors in parentheses, clustered at the county level. All specifications include county and time fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Environmental Benefits: Back-of-Envelope Calculations

- **$PM_{2.5}$ Reduction**
  1. Policy impact $\Rightarrow -0.68$ $\mu g/m^3$ $PM_{2.5}$ (from 33.98 to 33.30 $\mu g/m^3$)
  2. Other study finds 10 $\mu g/m^3$ reduction $\sim$ 0.18 life-years gained $\Rightarrow$ **$+0.012$ life-years per person**
  3. $\times$ 350M people (676 WCP counties) $=$ **4.3M person-years**

▸ $PM_{2.5}$ detail ▸ Carbon detail

Log(GDP): Whole of China Sample from Satellite



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

▸ Manufacturing value added ▸ Revenue of large manufacturing firm revenue ▸ Number of large manufacturing firm revenue ▸ Fiscal expenditure

Roadmap

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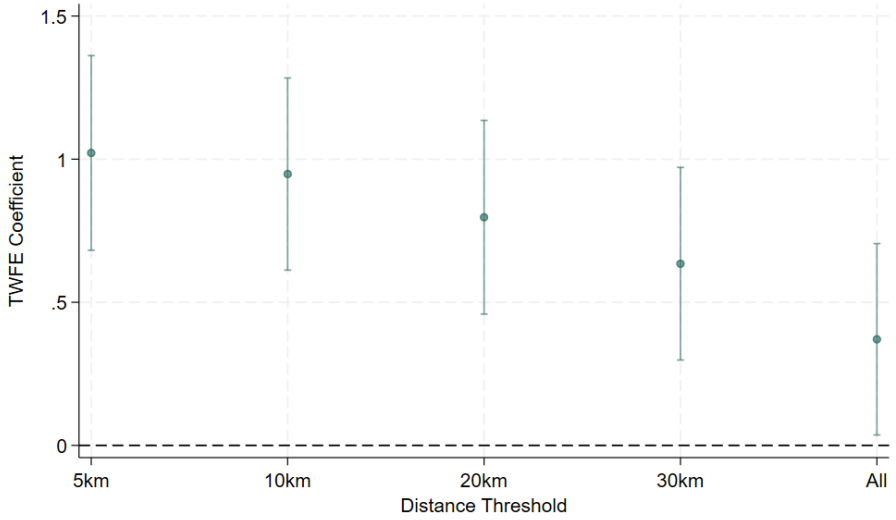
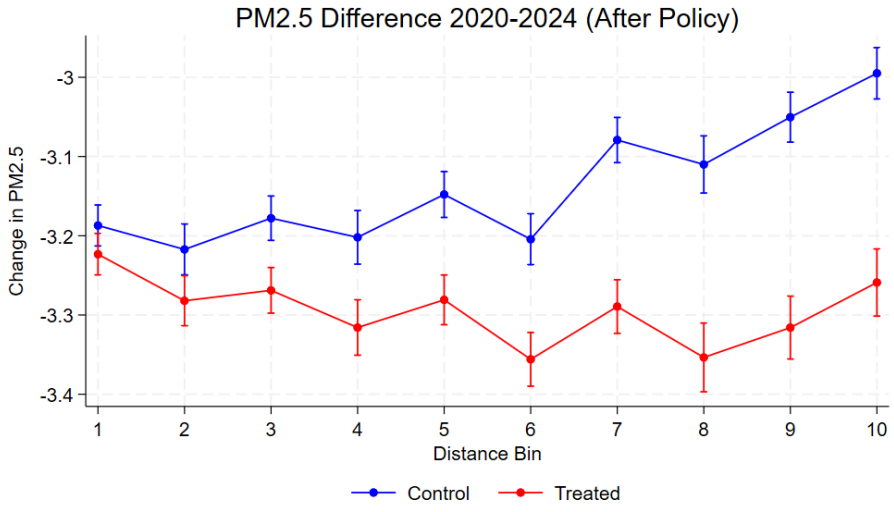
4. Conclusion

log(Household Solar Capacity) installation: Near the Border in Three Provinces Sample



Notes: These are TWFE coefficients on log(Solar Capacity) in households using Three County Sample. "5km" indicates a treatment effect for households 5km or less from the border (comparing treated with untreated contiguous counties on the other side of the border within 5km). "10km" indicates all households within 10km

Border Design: PM2.5 (After Policy): Whole of China Sample



PM25 Pre-Policy

Roadmap

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Conclusions

Main Preliminary Findings: Whole County PV Program seems to have accelerated solar adoption & reduced pollution

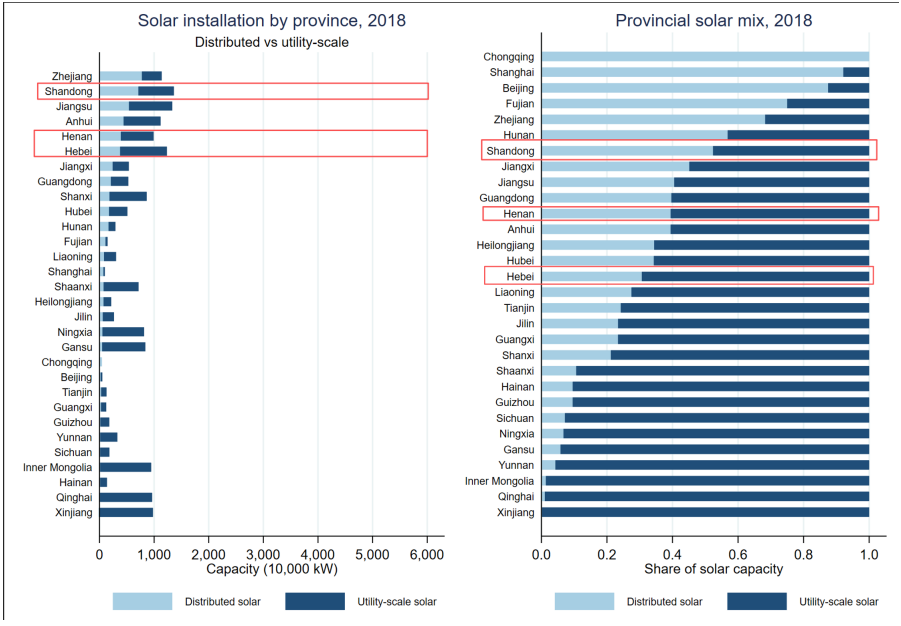
- **Energy:** ∼34% increase in household solar capacity stock; electricity consumption rises
- **Environment:** $PM_{2.5}$ down 2% (as well as other pollutants)
- **Economy:** GDP higher

Some Next Steps:

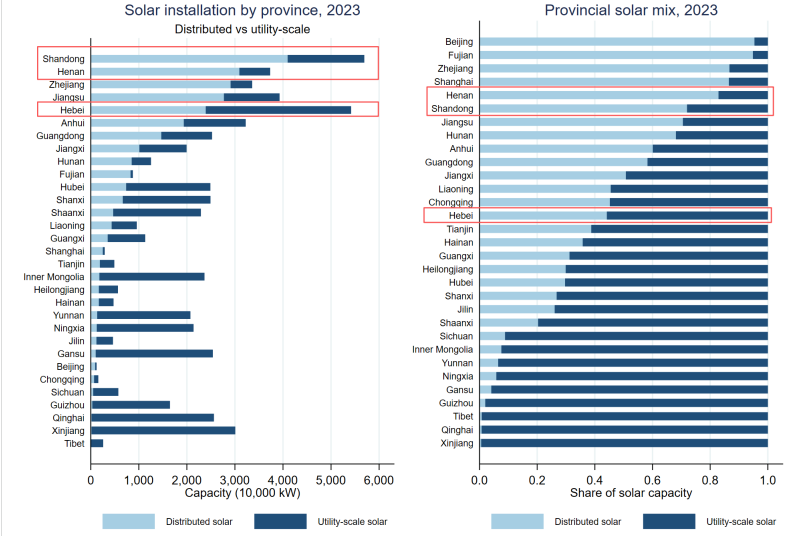
- Estimating cost of policies (e.g., from policy texts; admin sources; model based, etc.)
- Spillover effects: prices; peer effects; fiscal externalities; grid transmission, etc.
- Extend distributed solar installation data beyond the 3 provinces sample
- More on firm and public sector distributed solar data and policies
- Link to growth of Chinese solar industry (improve demand side of "Ray of Hope")
- Heterogeneity of impact across households (e.g., by income levels, etc.); grid capacity constraints

Thank You!

Solar Installation by Province in 2018



Solar Installation by Province in 2023



Solar Energy Programs in China

- Government participation in solar industry
  - Golden Sun Demonstration Project (2009–2011): 金太阳示范工程
  - Demand-side driven
  - Subsidy based on production capacity: targeted large-scale projects with 500 MW capacity, estimated 10 billion yuan
  - Actual: 300 MW, 200 MW, 700 MW in 2009–2011 respectively
  - Massive subsidies, 50–70% of total investment (on-grid and off-grid)
- Potential impact:
  - substantial production expansion
  - increase in firm entry in the solar industry
  - expansion of the supply chain network: silicon material, PV modules, system installation
  - technology upgrading and innovation
  - training of skilled technicians

Back

Development Modes for Household PV Projects

- Mode I: Rooftop Leasing
  - Households provide rooftops and receive fixed returns
  - Fixed return based on roof area: 20 yuan/m^2 per year; or revenue sharing based on power generation, with households receiving no less than 20%
- Mode II: Household Self-construction
  - The banks provide the capital, while enterprises are responsible for construction and maintenance
  - Households retain all revenue, with initial earnings prioritized for loan repayment and maintenance costs; the remainder accrues as personal income

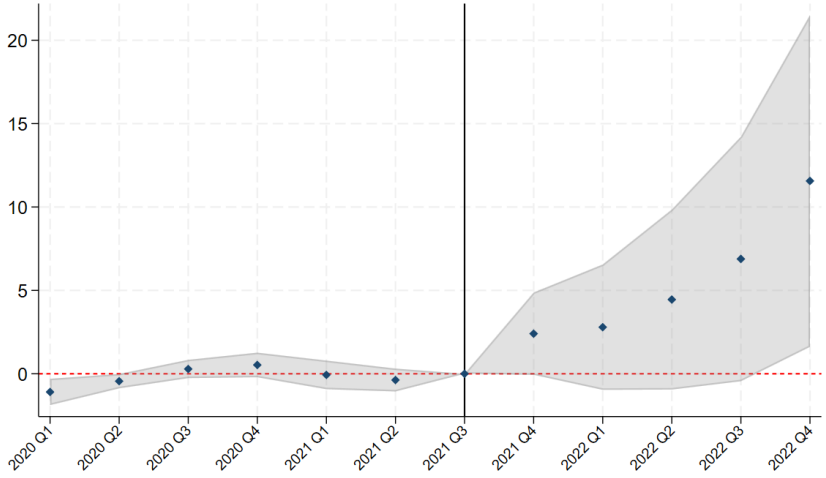
Scenario Analysis: Annual Income

- **Parameters**: Rooftop area $120\,m^2$; Installation cost $70,000$ CNY; Annual effective sunshine $1,100$ hours; Generation efficiency 0.8.
- **Economic Assumptions**: Household size of 4; Per capita electricity consumption 900 kWh/year; Grid-connected price 0.38 CNY/kWh; Household electricity price 0.6 CNY/kWh; Installation subsidy 0.2 CNY/W; Generation subsidy 0.2 CNY/kWh (duration: 3 years)

Table: Annual Revenue Scenarios for a 20 kW Household PV System (yuan)

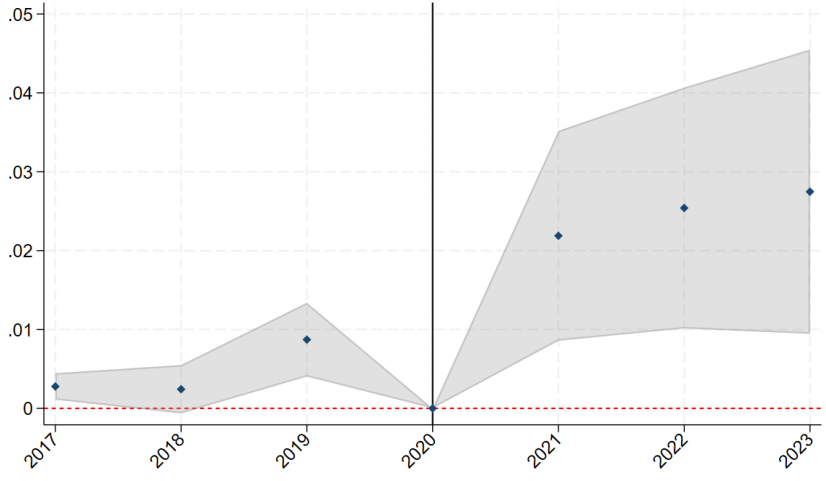
Mode	Scenario Description	Annual Income
Mode I	Fixed rent income	2,400.0
Mode I	Revenue sharing (Enterprise keeps investment subsidy)	1,337.6
Mode I	Revenue sharing (Shared generation subsidy: Y1-3 / Post-Y3)	2,041.6 / 1,337.6
Mode II	Self-investment with one-time investment subsidy	7,480.0
Mode II	Self-investment with generation subsidy (Y1-3 / Post-Y3)	11,000.0 / 7,480.0
Mode II	Self-investment without any subsidies	7,480.0

Number of Household Solar Installation: Three Provinces sample



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

Log(Manufacturing Value Added): Whole of China Sample from Satellite



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

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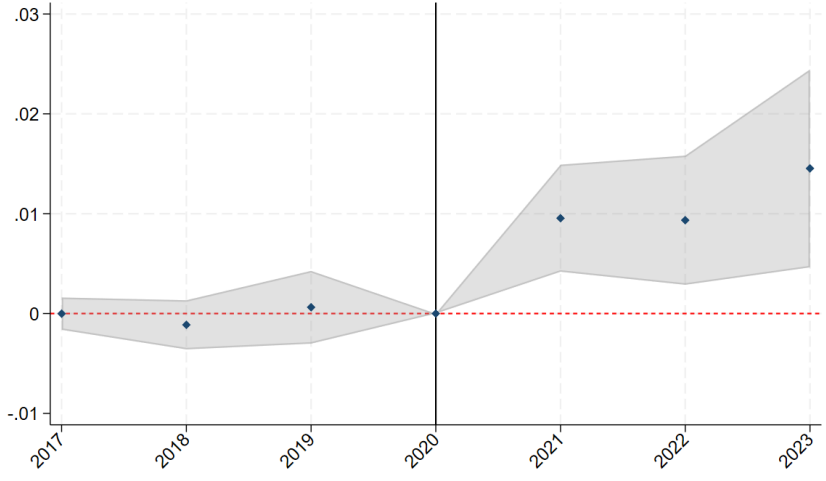
log(Revenue) of Large Manufacturing firm: Whole of China Sample



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

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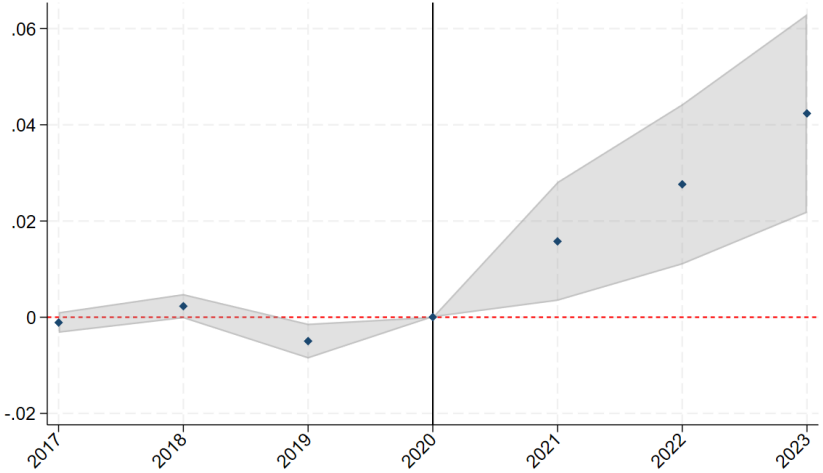
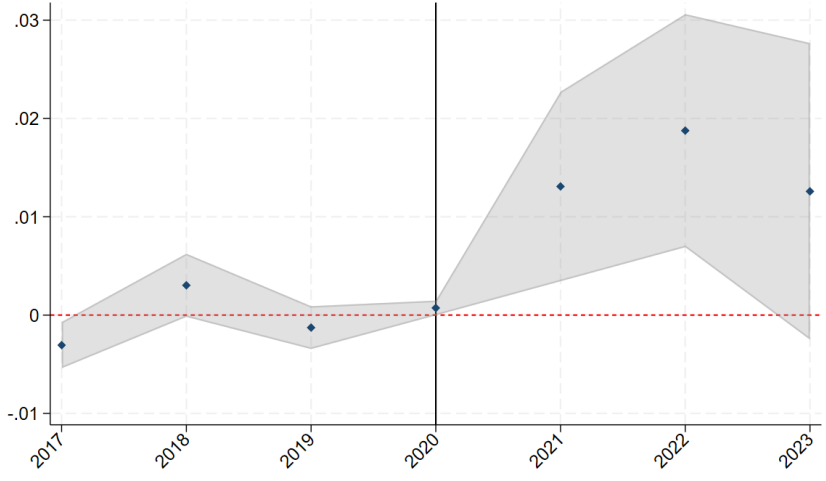
log(Number) of Large Manufacturing firm: Whole of China Sample from Satellite



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

log(Fiscal Expenditure): Whole of China Sample from Satellite



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

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Spatial Analysis

Binned Scatter Approach:

$$E[\Delta Y_i | \text{Treat}_i, \text{Bin}_d] \text{ for } d = 1, 2, \ldots, 10 \tag{1}$$

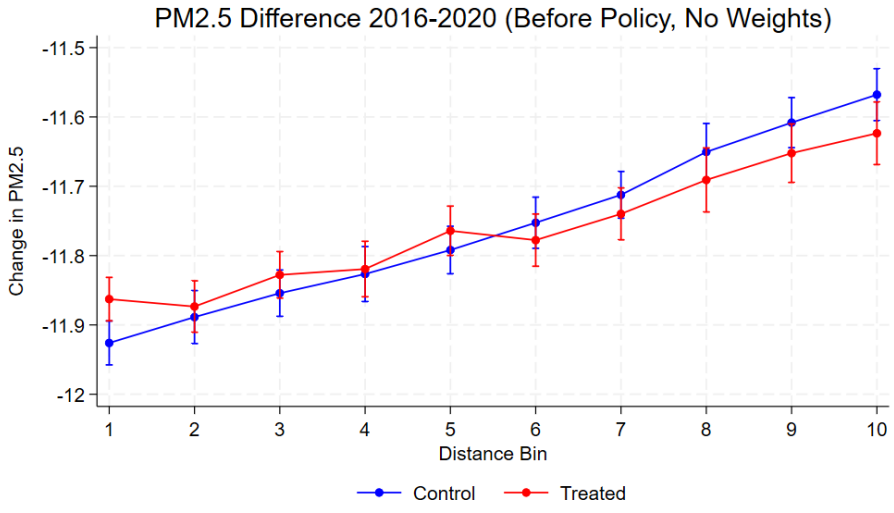
where bins represent 1km intervals: Bin 1 = (0.5km, 1.5km], ..., Bin 10 = (9.5km, 10.5km]

Two specifications:

1. **Unweighted:** Simple means within each bin-treatment cell
2. **Entropy balancing:** Reweighted so treated and control pixels have identical baseline pollution distributions within each distance bin

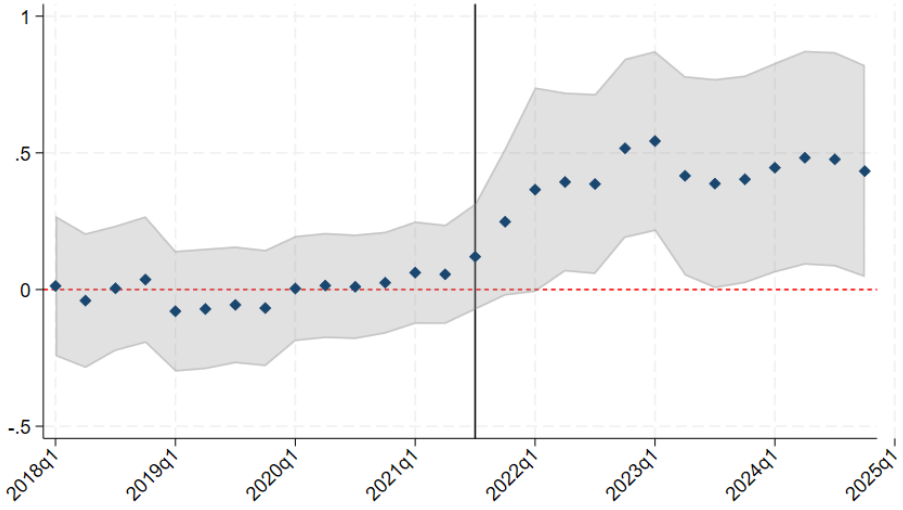
Visual test: Parallel trends in pre-period $\Rightarrow$ No differential pre-trends. Divergence in post-period $\Rightarrow$ Treatment effect

Spatial Analysis: PM2.5 (Before Policy) in China



See weighted results Back

log(Distributed Solar Capacity): Jiangsu Province



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

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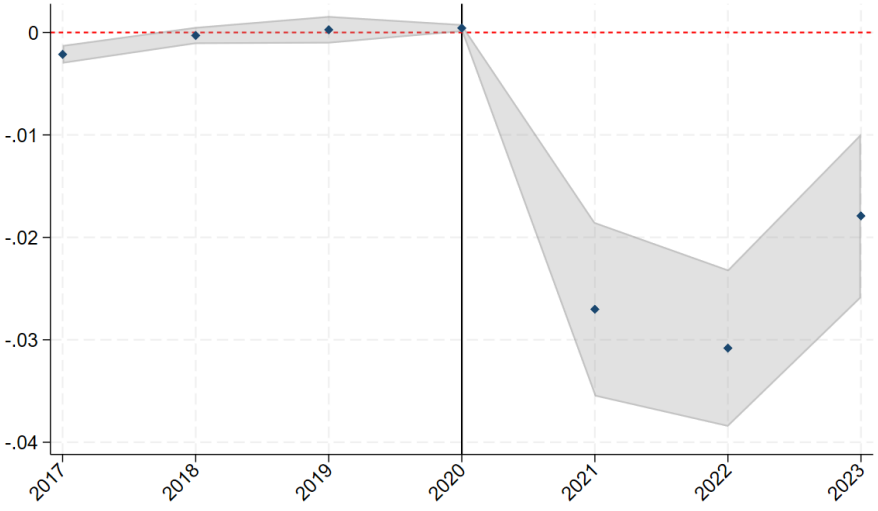
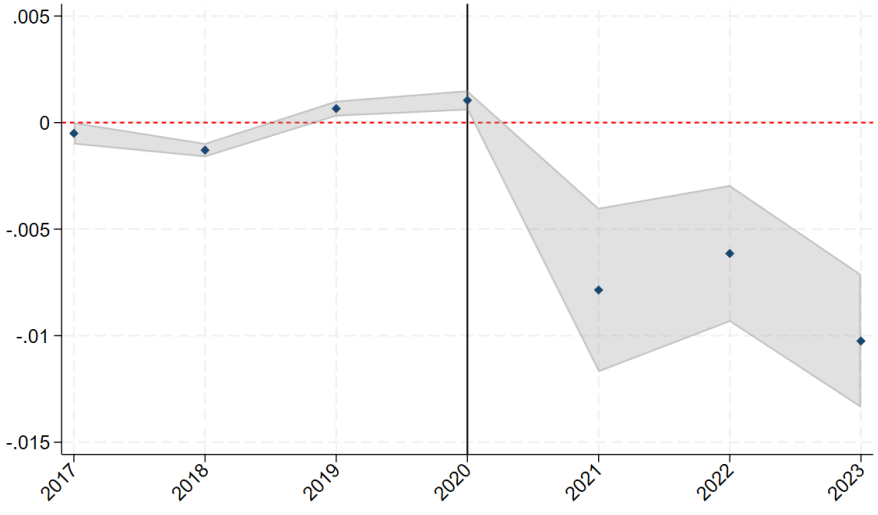
log(NO2): Whole of China Sample from Satellite



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

log(O3): Whole of China Sample from Satellite



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

Policy Selection: How Were the 676 Pilot Counties Selected?

- **Bottom-up, province-organized process** — NEA did not centrally pick counties
  1. NEA issued national call for applications to provinces (June 2021)
  2. Provinces instructed cities to identify eligible counties and submit plans
  3. Each city selects **2–3 representative counties** (选择2到3个有代表性的县/区)
  4. Province consolidates, reviews, and submits to NEA
  5. NEA publishes the national list via document 国能综通新能〔2021〕84号
- **Two explicit eligibility criteria**
  1. **Substantial rooftop resource base** (具备较大规模开发利用屋顶资源)
  2. **Good grid connection and power absorption capacity** (电网接入和消纳条件良好)

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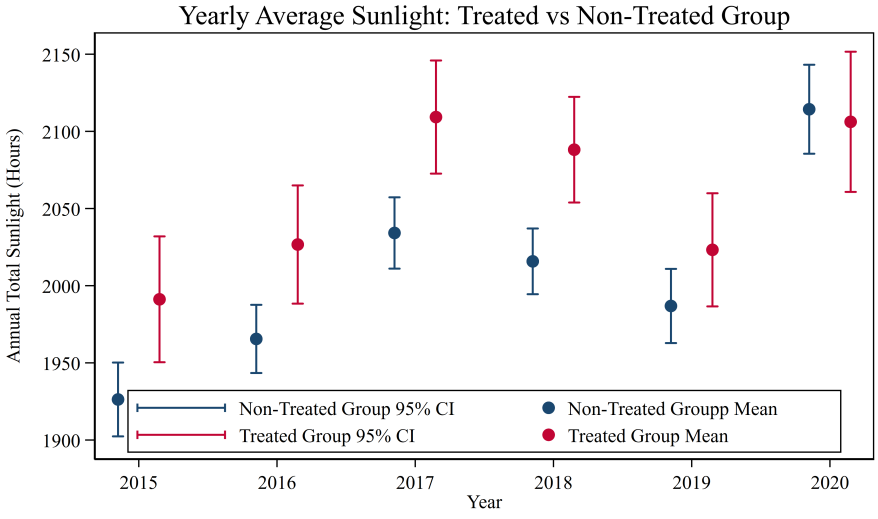
Sunshine as a Determinant of Policy Adoption



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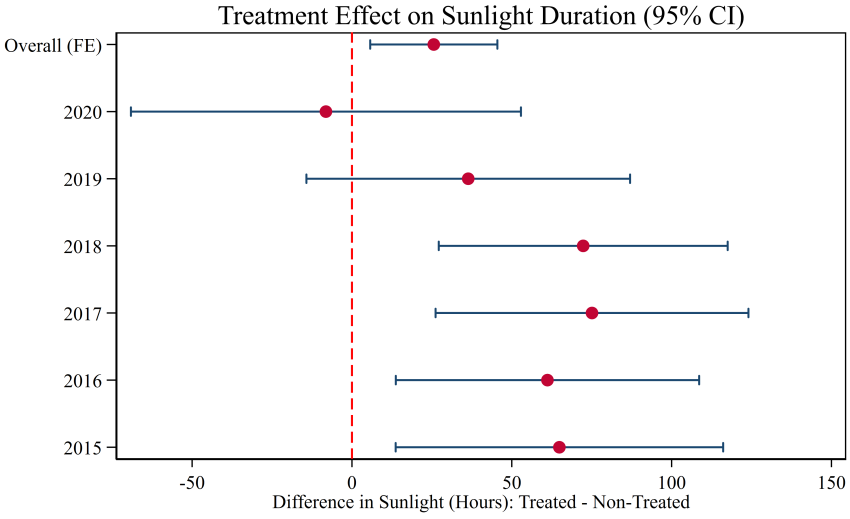
Sunshine as a Determinant of Policy Adoption



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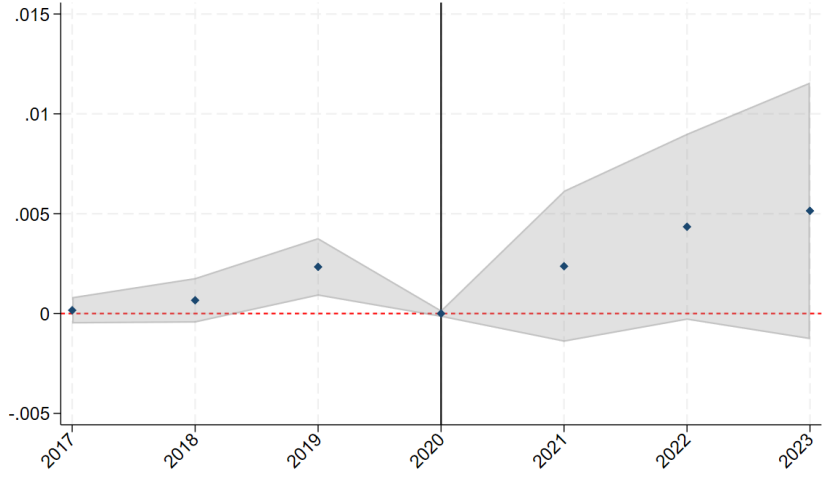
log(Household Electricity Consumption): Whole of China Sample



Notes: The figure shows the synthetic difference-in-differences estimates for log household solar capacity. Shaded areas represent 90% confidence intervals with standard errors clustered at the county level.

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log(Electricity Consumption): Whole of China Sample

	Total		Household	
	TWFE	*SDID*	*TWFE*	*SDID*
	0.017**	0.008***	0.011*	0.004*
	(0.008)	(0.003)	(0.006)	(0.002)
Observations	16,912	16,912	16,912	16,912

Notes: Standard errors in parentheses, clustered at the county level. All specifications include county and time fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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$PM_{2.5}$ Reduction: Back-of-Envelope Calculation

- **Step 1 — $PM_{2.5}$ reduction.** Our estimates imply the WCP program reduced annual average $PM_{2.5}$ by 2%, which is **0.68 $\mu g/m^3$** (from 33.98 to 33.30 $\mu g/m^3$).
- **Step 2 — Life expectancy gained per person.** 10 $\mu g/m^3$ reduction in $PM_{2.5}$ is associated with **0.18 years** of life expectancy gained for Chinese residents. A 0.68 $\mu g/m^3$ drop therefore implies $0.68/10 \times 0.18 \approx$ **0.012 years** per person.
- **Step 3 — Total life-years gained.** The 676 WCP counties cover an estimated **350 million people**. Aggregate life-years gained: $0.012 \times 350\text{M} \approx$ **4.3 million person-years**.
- **Step 4 — Monetary value.** Using a Value of Statistical Life of CNY 4.76 million, and converting to a Value of Statistical Life Year (VSLY) over 39 remaining life-years: VSLY $\approx$ **CNY 122,000/year**.
  - Central estimate: $4.3\text{M} \times 122{,}000 \approx$ **CNY 523 billion** $\approx$ **$ 78 billion**

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Carbon Reduction: Back-of-Envelope Calculation

- **Step 1 — Additional PV capacity.**
  - China's distributed PV baseline $\approx$ 76.0 GW in 2020.
  - The 676 WCP counties account for $\approx$ 25% of China's total population; assuming proportional deployment, they held $\approx$**19 GW** pre-policy.
  - Our DiD estimate implies a **34% increase** in PV capacity among treated counties, yielding $\Delta\text{capacity} = 19 \text{ GW} \times 0.34 \approx$ **6.5 GW**.
- **Step 2 — Annual electricity generation.**
  - China's average solar capacity factor $\approx$ 14.7% (China NEA, 2023).
  - Annual hours in a year $= 8{,}760$.
  - 6.5 GW $\times$ 14.7% $\times$ $8{,}760$ hrs $\approx$ **8.4 TWh per year**.
- **Step 3 — CO_2 avoided.**
  - China's grid emission factor $\approx$ 0.581 tCO_2/MWh (Statista, 2023; consistent with IEA and China MEE estimates).
  - Each TWh of solar displaces $1{,}000$ MWh $\times$ $0.581 = 581$ tonnes CO_2.
  - 8.4 TWh $\times$ 0.581 tCO_2/MWh $\approx$ **4.9 million tonnes CO_2** per year.
- **Step 4 — Monetary value (Social Cost of Carbon).**
  - \$185/tCO_2 (Rennert et al. 2022, S*Nature*)
  - \$190/tCO_2 (EPA, 2023)
  - The implied **climate benefit is approximately \$1 billion per year**.

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Descriptives Between Treated and Control - no year or province dummies

Table: National Level Pre-Treatment (2018-2020) Descriptive Statistics

Variable	**Level**		**Log**	
	Control	**Treatment**	**Control**	**Treatment**
GDP (10,000 RMB)	2,705,900	3,367,643	13.43	13.73
Per Capita GDP (RMB)	72,598	67,444	9.96	10.01
Industrial Value Added (10,000 RMB)	1,281,581	1,391,950	12.31	12.49
Public Fiscal Expenditure (10,000 RMB)	429,319	527,912	11.60	11.76
Public Fiscal Revenue (10,000 RMB)	184,539	237,334	10.36	10.64
Total Electricity Consumption (10,000 kWh)	191,807	248,414	11.47	11.49
Residential Electricity Consumption (10,000 kWh)	30,237	33,887	9.70	9.70

Difference between treated and non-treated group, with province and year fixed effect

Table: National Level Pre-treatment (2018-2020) Difference Test

Variable	Level	Log
GDP (10,000 RMB)	-243979	0.047
	(170570)	(0.04)
Per Capita GDP (RMB)	-14290*	-0.052
	(5744)	(0.03)
Industrial Value Added (10,000 RMB)	-50065	0.019
	(140178)	(0.05)
Public Fiscal Expenditure (10,000 RMB)	14855	0.069**
	(23312)	(0.02)
Public Fiscal Revenue (10,000 RMB)	-40697*	0.024
	(17844)	(0.04)
Total Electricity Consumption (10,000 kWh)	901	-0.014
	(14067)	(0.04)
Residential Electricity Consumption (10,000 kWh)	-354	-0.027
	(1703)	(0.03)

▸ Sunshine Difference

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