

Do industrial policies that promote clean energy offer a ray of hope increasing a country's economic growth and welfare whilst simultaneously reducing carbon emissions? We study the impact of Chinese solar subsidies whose implementation by cities coincided with a dramatic fall in global solar prices. We construct new panel data on city-level solar policies, patenting and output. Using synthetic-difference-in-differences between 2004-2020, we find that production and innovation subsidies were more effective than demand-side (installation) subsidies in generating large and persistent increases in local innovation, firm numbers, output and exports. However, demand policies most strongly reduce local pollution. We build and estimate a spatial general equilibrium model with endogenous innovation, heterogeneous productivity across firms and place that takes into account business stealing and knowledge spillovers. Structural quantification of this model shows that: (i) the local effects remain substantial at the aggregate level; (ii) policy explains almost two-fifths of the price decline of solar panels and a third of the increase in Chinese innovation; (iii) solar industrial policies increased Chinese welfare by 1% to 2.3%, and policy benefit is 60% higher than the cost; and (iv) although all subsidy types increase aggregate welfare, innovation subsidies are by far the most cost-effective.