Measuring the effect of improved irrigation technologies on irrigated agriculture. A study case in Central Chile


Abstract

Irrigated agriculture is the primary sector demanding water resources in the world. Given that, improved irrigation technologies could play a crucial role in enhancing water use efficiency. This paper uses causal inference estimators to evaluate the effect of these technologies on irrigators at the farm level in two irrigated valleys in Central Chile. Doubly robust estimators were employed to address the selection bias of the adoption of improved irrigation technologies. The results show first a low level of technology adoption, with only 18% of irrigators adopting irrigation, where access to credits and education plays a crucial role in their adoption. Despite this low rate, the estimates show consistently positive and significant impacts on adopters in terms of annual margins and land use. As a result, our research calls for attention towards focusing programs and policy targeting on reducing entry barriers and broadening the adoption of irrigation technologies, allowing to reduce the gap in terms of economic wellbeing and the long-term sustainability and adaptation to climate change of irrigated areas.

Keywords

Efficient irrigation technologies; Causal inference; Doubly robust estimators; Irrigated agriculture; Central Chile.