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“Production risk, level of irrigation technology and agro-ecological factors. Evidence from potatoes family farmers in Chile”

Abstract

The adoption of modern irrigation can reduce farmers' exposure to drought risk and counteract productive disadvantages in zones with limiting environmental conditions. This paper uses data with national coverage from family potatoes farmers in Chile to examine how production risk and quality of environmental inputs affect the adoption of modern irrigation. As it is common in developing countries, a large fraction of rural households depends exclusively on rainfall for water supply. We propose two approaches to tackle this problem. First, we treat non-irrigators data as one more level of technology by the estimation of an ordered probit model. Alternatively, we estimate models with sample selection when analyzing the shift from traditional to modern technology. The results indicate that farmers with higher educational level, closer dependence to agriculture, larger proportion of land under secure tenure arrangements and credit access are more likely to adopt new technology. On the other hand, the results for production risk and agro-ecological conditions depend on the chosen approach. Whereas the results from the ordered probit confirm the virtues of irrigation technology as a risk decreasing-input and under adverse limiting environmental conditions, estimations from sample selection models show that modern technology seems to be perceived as a risk-increasing input and is more probable to be adopted in zones with more suitable environmental conditions for agriculture. Even though the direction of the association in the first case is in line with that observed in previous studies, we argue that lower diffusion and knowledge on modern technology as well as less opportunities for learning may be underlying these differences.