

Welfare Effects of Water Variability in Agriculture. Insights from a Multimarket Model

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Water 2015, 7(6), 2908-2923

Abstract

The purpose of this research is to assess the welfare effects of climate change on the Chilean agricultural sector, with special focus on changes in water availability. The productive impacts of climate change on the agricultural sector are well analyzed at both a global and national level. There is, however, a lack of evidence about the aggregated impacts, considering both demand and supply. This study tries to fill this gap by using a multimarket model, specifically designed for the Chilean agricultural sector. According to our results, changes in water availability will have modest welfare impacts, with an average decrease of total surplus of 4.3%, minor price changes (around -1%), and no significant impacts on total agricultural land. Despite the small aggregated effects, it is expected that climate change will have uneven consequences across regions and activities. For instance, even though the southern zone (zone 3) shows the smallest income changes -14% (average), the impacts within the zone range from 1% to 52% decrease in agricultural net income. This situation suggests large distributional consequences of climate change for the Chilean agricultural sector.

Keywords: agricultural multimarket model; climate change; agriculture; water resources; uncertainty