The Technical Efficiency of Wine Grape Growers in the Murray–Darling Basin in Australia

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Draft only – not for citation

Australian wine grape growers have faced difficult market conditions in recent years, with reductions in grape prices and increases in irrigation water prices having a significant effect on farm profitability. The need for these farmers to be as efficient as possible has never been greater. In this exploratory study we use a subset of the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) irrigation survey, consisting of four years of unbalanced panel data on 135 wine grape growers (214 observations in total) from the Murray and Murrumbidgee River basins in Australia (from 2006/07 to 2009/10), to estimate production frontiers and estimate the efficiency levels of the individual farmers.

Maximum likelihood methods are used to estimate translog stochastic frontier production frontiers. Mean technical efficiency is estimated to be 79 percent, with the many farms achieving well below this level facing tough times ahead if grape prices do not improve. A mean scale economies estimate of 1.07 is obtained, indicating that further farm amalgamations may be warranted. Finally, shadow price estimates for irrigation water are found to be (on average) above market prices, suggesting that current irrigation practices may need to be reassessed. However, this result is likely influenced by the presence of drought during the sample years.

Keywords: wine grape production, irrigation, technical efficiency, scale economies, shadow prices

* The content of this paper reflects the views of the authors and should not be interpreted as representing the views of ABARES.