

Hedging Adverse Bioclimatic Conditions Employing a Short Condor Position

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Abstract

Weather derivatives are a relatively new form of financial security that can provide firms with the ability to hedge against the impact of weather related risks to their activities. Participants in the energy industry have employed standardized weather contracts trading on organized exchanges since 1999 and the interest in non-standardized contracts for specialized weather related risks is growing at an increasing rate. The purpose of this paper is to examine the potential use of weather derivatives to hedge against the risks faced in wine production as measured by bioclimatic indices. As an example of a potential application we examine the behavior of the Winkler and Huglin indices for the Niagara region of the province of Ontario, Canada's largest wine producing region, to determine an appropriate design of a weather derivatives contract to hedge vineyard production. After examining the stochastic properties of the two bioclimatic indices we employ monte carlo simulation to derive a range of benchmark prices for a "short condor" hedge based upon the assumption of a mixed jump-diffusion process for the April through September cumulative Huglin index values. The results show that valuable hedging opportunities can be provided by such contracts. (JEL Classification: G13, G32, Q14, Q51, Q54)

