EFFICIENCY GAINS IN COTTON PRICE FORECASTING USING DIFFERENT LEVELS OF DATA AGGREGATION

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INTRODUCTION

The forecasting efficiency gains obtained by building time series models in which the data are optimally aggregated have been studied from a theoretical perspective in numerous studies. However, an empirical study focused on the potential benefits of temporal disaggregation in commodity price forecasting has not been conducted. This is the case even though commodities markets are extremely important for the economic performance of the U.S. agricultural sector, where a slight difference in a prediction represents losses of million of dollars. One important commodity is cotton, which generated approximately $25.0 billion in annual revenue and was responsible for 200,000 jobs in 2008 (USDA, 2012).

OBJECTIVE

This study evaluates the efficiency gains in forecasting cotton cash prices using alternative ARMA models with varying levels of temporal aggregations (daily, weekly, monthly and annual). More specifically, it evaluates whether the disaggregated models can produce more accurate aggregated price predictions than the corresponding aggregated models. Likewise, this is the first study that incorporates the daily level of aggregation to evaluate the efficiency gain in forecasting.

DATASET

The dataset consisted of approximately 60 years of daily cotton prices (9,120 observations from 1972-2010) in which the prices were adjusted using the Consumer Price Index (CPI).

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