SPATIAL ARBITRAGE IN THE WESTERN CANADIAN CANOLA MARKET

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The purpose of this research poster is to examine whether there is evidence of spatial cointegration between spot prices offered by elevators and the futures price for the crop years 1998 through 2005. The ability to arbitrage the physical commodity across space is indicative of a long run relationship between the spot and the futures price. This research tests for a long run relationship using threshold cointegration. The results provide insight about the linkages between spot prices across markets and can be used to identify locations that do not follow a long run relationship, which may be an indication of a lack of ability to arbitrage. This finding is important because a lack of ability to arbitrage may present elevators with the opportunity to exert market power.

The first step in the empirical methodology is to determine the first order of integration of the spot and futures price series. This is necessary because the definition of cointegration stipulates that if two I(d) series, Yt and Xt, are cointegrated if they are tied together by a long run relationship such as Yt = δ0 + δ1Xt + δ2εt, where εt is I(d-1). If the series are not integrated of the same order then, by definition, they are not cointegrated.

If the series are found to be cointegrated of the same order a threshold autoregressive (TAR) process is estimated for spot futures-spot price pairs following a novel approach proposed by Mann (2012) and Sephton and Mann (2013). The empirical methodology allows between zero and three thresholds and endogenously selects the optimal number using an information criteria approach loosely following Gonzalo and Pitarakis (2002). The thresholds divide the observations into different regimes based on the size of the basis. After selecting the optimal number of thresholds the null hypothesis of non-cointegration is tested using the sup-Wald test proposed by Seo (2008).

Monte Carlo simulations by Mann (2012) and Sephton and Mann (2013) provide evidence that the methodology performs well with respect to selecting the number of thresholds and has good size and power properties that are robust to the specific data generating process.

The sketch in the upper right hand corner presents hypothetical results for the TAR process. Please ask us to use this sketch to explain threshold cointegration and describe the nitty gritty details behind the methodology!

Please ask us to elaborate on the policy implications and discuss our future research plans!