Hedging Canadian Wheat using U.S. Futures Markets

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Introduction

• At the end of 2011 the government signed into law a bill which changed the Canadian Wheat Board's (CWB) role of sole buyer of wheat to a voluntary marketing option for Canadian wheat producers.
• Wheat futures contracts trade in various exchanges worldwide, most noticeably in the Minneapolis Grain Exchange (MGEX), the Kansas City Board of Trade (KCBT), and the Chicago Mercantile Exchange Group (CME).
• The relative performance of these contracts and their hedging effectiveness for Canadian market participants has not been fully explored.
• Because of their higher liquidity and longer history, U.S. wheat futures contracts are attractive for Canadian hedges.
• The U.S. wheat futures contracts are priced in U.S. dollars, which introduces an additional source of risk—currency risk (Frank, Brewin and Patiño 2011). The following graph shows how the currency changes over time.

Data (cont’d)

• Futures prices (FP) for U.S. markets and cash prices (CP) for the Canadian market for a 3-month forecast horizon, 2005-2011.

Wheat Canadian cash prices

Daily Price Contract (DPC) and FlexPro as producer payment options (PPOs) for the period 2005-2011.

Methods

Price risk decomposition

Producers make decisions based on price forecasts. The accuracy of the forecasts is assessed using the mean square error (Novak & Unterschultz 1996):

\[ MSE = \frac{\sum_{t=1}^{T} (NP_{t+j} - NP_{t+j})^2}{T} \]

where NP is the realized net price for period t+j, CP is the forecasted price for period t+j, T is the total number of periods, and t is the forecast horizon.

Hedging strategies

We study three different hedging strategies:

• Simple risk measures when hedging commodity.
• Hedging effectiveness for Canadian market participants has not been fully explored.
• Hedging wheat removes approximately 68%, 86% and 70% of the price risk for a 3-month hedging horizon using Chicago, Kansas and Minneapolis futures markets respectively.
• Combined wheat and currency hedging removes approximately 70%, 87% and 77% of the risk for a 3-month hedging horizon using Chicago, Kansas and Minneapolis futures markets respectively. The remaining price risk is due to the basis variability.
• Exposure to exchange rate risk has an effect on the decision to hedge commodity.

Conclusions

• Optimal commodity hedge ratios for wheat using U.S. futures contracts and a combined commodity-currency strategy:

References