Cross-hedging international milk-derived products

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Abstract

Hedging is particularly challenging in the case of assets for which a fully developed derivative market does not exist or when there is insufficient liquidity to execute hedging trades. In this situation cross-hedging using futures on other highly correlated assets is the main risk management tool (see Adams 2012 for jet-fuel, Rahman 2001 for cotton-seed meal, Franken 2003 for ethanol).

The analysis of cross-hedging of exposure to milk-derived products is important for at least three reasons. First, in recent years food prices have become significantly more volatile (see Roache 2010, Wright 2011). Thus finding an efficient way of hedging has become very important from the perspective of market participants. Second, the international milk-derived product market is segmented, seasonal, and exposed to foreign currency fluctuations. Previous studies on the effectiveness of cross-hedging have analyzed global non-segmented markets. Third, cross-hedging of exposure to milk-derived products is important in the context of the NZ economy. A dollar change in the milk-solids price results in an approximate $NZ 100,000 gain or loss for dairy owner-operators and sharemilkers (see Dairy NZ Economic Surveys). For example, from 2007/2008 to 2008/2009, the milk-solids price dropped from NZD 7.37 to NZD 5.21. In aggregate, this amounted to over a billion dollar loss for the NZ economy.

In this paper we report three significant results. First, New Zealand Milk products are a distinct commodity group with low correlation to all tradable commodities, presenting excellent diversification opportunities but making hedging difficult. Second, NZX whole milk powder (WMP) futures are inefficient in hedging WMP spot prices with only 40% efficiency. In comparison, jet-fuel hedging efficiency is 75%, stock index hedging efficiency is 91%, and soybean direct hedging efficiency is 92% . Last, USA NonFat Dry Milk Futures are very inefficient at hedging skim milk powder (SMP) at 18%, despite virtually identical commodity specifications. This is due to market segmentation caused by US Government market intervention policies that set floor prices and sell accumulated inventory when prices rise.

References

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