Price Discovery and Price Transparency in the U.S. Cheese Industry

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Motivation

The private Exchange spot cheese market
- Chicago Mercantile Exchange (CME): 1997 - present
Performs a primary price discovery function in the U.S. cheese industry

The Exchange spot cheese prices affect cheese prices and milk prices
- Are used as reference prices in cheese contracts
- More than 90% of cheese produced in the country is sold under contracts
- Have been influencing prices paid for milk used in cheese manufacturing
- Class III milk price within the Federal Milk Marketing Orders (FMMOs)

Research Objectives

1. To analyze the conduct and performance of the Exchange spot cheese market during three FMMOs milk pricing regimes (1980s – present)
   - To evaluate patterns of trading activities in cheddar cheese block and barrel markets (actual sales, unfilled bids and uncovered offers)
   - To evaluate the price behavior of cheddar block and cheddar barrel (wholesale level) and to compare to the behavior of Class III milk price
2. To analyze the performance of natural cheddar cheese segment
   - To focus on the behavior of Class III milk price, wholesale cheddar cheese price, retail natural cheddar cheese price and related margins

Private Exchange Spot Cheese Market: NCE and CME

Two styles of cheddar cheese are traded
- Cheddar sold in 500 pound barrels (is used in further processing)
- Cheddar sold in 40 pound blocks (is used to make cut/wrapped cheeses)

A thin (low volume) market, is concentrated and transactions are infrequent
- Less than one percent of cheese produced in the country is traded

1997: Spot cheese market was moved from NCE to CME
- NCE: weekly trade and identities of traders are known
- CME: daily trade and trading is anonymous

Spot prices are affected by actual sales, unfilled bids and uncovered offers

Closing price rule: closing price at the end of the trading session is
- The last actual sale price or
- Last unfilled bid, if it is higher than the last actual sale price or
- Last uncovered offer, if it is lower than the last actual sale price

Federal Milk Marketing Orders: Class III Milk Pricing

FMMOs determine the minimum prices for Grade A milk
- Regulated milk handlers have to pay based on the final use of milk
- Since 2000: there are four milk Classes (classified milk pricing principle)

- M-W price is based on unregulated Grade B milk price paid in WI and MN

Basic Formula Price regime
- Basic formula pricing

Multiple Component Pricing regime
- Multiple component pricing (2000 – present); MCP regime

A series of price formulas: cheese price is a key determinant
- USDA survey based wholesale prices of cheddar block and cheddar barrel

Data and Methodology

USDA Agricultural Marketing Service: Dairy Market Statistics Annual Summaries
- Exchange spot prices for cheddar barrel and block ($/pound)
- Exchange actual sales, unfilled bids and uncovered offers (carloads)
- Class III milk price ($/cwt), Milk Marketing Order Statistics Database

US Bureau of Labor Statistics: Retail cheddar cheese (natural) price ($/pound)

Methodology: An analysis of the level and volatility of the analyzed variables
- During three FMMOs milk pricing regimes: M-W price, BFP and MCP
- The averages and coefficients of variation (CV) are calculated

The Exchange Spot Cheese Market Trading Activities

Cheddar Cheese Sold in 40 pound Blocks: Closing Prices, Actual Sales, Unfilled Bids and Uncovered Offers (1983-2015)

Wholesale Margin and Retail Margin (1991-2014)

Discussion: Exchange Spot Cheese Market

Exchange spot cheese market remains a low volume market
- Less than 3% of yearly cheddar cheese production is traded
Exchange spot cheese market reacted to changes in FMMOs milk pricing
- The pattern of trading activity changed (more active trading)
- When cheese prices started being used in milk pricing
- BFP regime (June 1995) and MCP regime (January 2000)

Closing prices are affected by actual sales, unfilled bids and uncovered offers

Since January 2000 the average yearly share of actual sales in total trading activity is 56% and the share of unfilled bids and uncovered offers is 44%

Discussion: Natural Cheddar Cheese Segment

Exchange spot cheddar cheese price and Class III milk price
- Increases in the average prices are small in magnitude
- Increases in the variance of cheese and milk prices are dramatic

Wholesale cheddar block margin at the first-handler level
- The average wholesale margin decreases from 7.6% in M-W price regime to 4.5% in MCP regime
- The wholesale margin volatility increases dramatically, almost 7 times

Retail natural cheddar cheese margin
- The average retail margin remains at approximately the same level 63.3% in M-W price regime and 66.5% in MCP regime
- The retail margin volatility increases almost 2 times