Contents

List of Figures ...................................................... vi
List of Tables ....................................................... viii

Chapter 1  Introduction

Organization of the Report .......................................... I-3
Acknowledgments .................................................... I-4

Chapter 2  Organization and Characteristics of Cheese Industry

A.  Introduction ....................................................... II-1
B.  Cheese Imports and Exports .................................... II-3
C.  Cheese Consumption in U.S. .................................... II-3
D.  Seasonality of Production, Consumption, and Commercial Stocks .......... II-5
E.  Pricing of Milk at Farm Level .................................. II-7
F.  Cheese Pricing .................................................. II-10
G.  Organization of Cheese Subsector ................................ II-14
    Cheese Manufacturing ........................................... II-16
    Economic Markets for Cheese Manufacturers .................... II-21
    Cheese Converters: Processed Cheese ............................ II-21
    Converters and Marketers of Natural Cheese ..................... II-22
D. Spot Trading as Alternative to the NCE ........................................ IV-31
   NCE vs. Spot Sales of Kraft ..................................................... IV-37

E. Evidence of Trader Motives .................................................. IV-48
   Evidence of Kraft's Motives .................................................... IV-48
   Evidence of Other Leading Traders' Motives ................................ IV-51

F. Summary and Conclusions ..................................................... IV-63

Chapter 5  Trader Activity-Price Relationships

A. Introduction ............................................................................... V-1

B. Overview of Trader Activities ................................................ V-2

C. Trading Patterns of Various Traders .......................................... V-5
   Trading Activity of Kraft ......................................................... V-5
   Trading Patterns of Other Leading Traders ................................ V-9
      Seller-Trader Activity in Barrels ......................................... V-10
      Buyer-Trader Activity in Barrels ........................................... V-11
      Trader Activity in Blocks ..................................................... V-12

D. Trader Activity-Price Relationships ......................................... V-13
   Kraft Activity-Price Relationships .......................................... V-13
   Activity-Price Relationships of Leading Seller- and Buyer-Traders V-17

E. Trading to Signal Competitors and to Influence the Block-Barrel Spread V-20
   Trading to Signal Competitors ................................................. V-20
   Trading to Influence the Block-Barrel Price Spread ..................... V-22

F. Econometric Examination of Trader-Price Relationships ............... V-23
   The Economic Model .............................................................. V-24
   The Econometric Model .......................................................... V-26
   Variables, Data and Hypotheses .............................................. V-29
   Estimation and Results ............................................................ V-32
   WAP Prices .............................................................................. V-35

Appendix 5.A.
   Kraft's Trading Activity During 1986 and 1987 .......................... V-37
Chapter 6  Kraft Trading Activity During 1990-1992

A. Price Decline and Price Bottom, January-March 1990 .............................. VI-1
   The Price Decline ........................................... VI-3
   The Price Bottom ........................................... VI-7
   Summary of Kraft Conduct at Price Bottom ........................................ VI-8

B. Price Rise, Top and Decline, April 6-November 2, 1990 ......................... VI-15
   Summary of Kraft Conduct ....................................... VI-20

C. Price Cycle November 1990-February 1992 .......................................... VI-25
   The Price Bottom, November 1990-May 10, 1991 ............................... VI-25
   The Price Top and Subsequent Decline, September 1991-February 1992 ... VI-32
   Summary of Kraft Conduct ....................................... VI-32

   Overview of 1992 ............................................. VI-33
   Pricing Conduct Over Price Cycle ........................................ VI-35
   Summary of Kraft Conduct ....................................... VI-37

E. Relationship between NCE Prices and Kraft's Wholesale Prices .............. VI-38

F. Summary and Conclusions ............................................. VI-53

Chapter 7  Summary, Conclusions, and Policy Initiatives

A. Introduction ..................................................... VII-1

B. Cheese Pricing and the NCE ....................................... VII-2

C. Potential Problems of Thin Markets ...................................... VII-3

D. NCE Functions and Trader Motivations ................................ VII-5

E. Business Characteristics of Leading Traders ............................... VII-7

F. Spot Trading as an Alternative to the NCE ................................ VII-11

G. Trading Activity of Leading Traders, 1988-1993 ............................... VII-15

H. Kraft Trading Activity 1990-1992 ....................................... VII-18
I. Econometric Analysis ................................................................. VII-19

J. Conclusions .................................................................................. VII-21

K. Public and Private Initiatives to Improve Price Discovery ................ VII-33
   The Problem of Trading Against Interest ..................................... VII-34
   Prohibiting Trading Against Interest .......................................... VII-36
   Trading Limits ............................................................................. VII-37
   Alternative Basis for Formula Pricing Cheese ................................. VII-38
   Price Report for Direct Spot Transactions .................................... VII-39
   Electronic Marketing Systems ..................................................... VII-41
   Public and Private Actions to Improve Market Information .............. VII-43
   Futures Trading in Cheese ............................................................. VII-45

Appendix 7.A
   Thin Market/Formula Pricing Problems in Other Agricultural Commodities .... VII-48

About the Authors
List of Figures

2.1. Utilization of Milk: United States, Selected Years ................................ II-2
2.2. Total Cheese Production by States, 1992 ........................................... II-2
2.3. Natural Cheese Production in the U.S. .............................................. II-2
2.4. Seasonal Variation in Total Cheese Production, 1988-1993 .................. II-6
2.5. Seasonal Variation in Retail Sales of All Cheese, 1982-1991 .............. II-6
2.6. Seasonal Variation in Commercial Disappearance of Total Cheese, 1988-1993 .................. II-6
2.7. Seasonal Variation in End-of-Month Commercial Stocks of All Cheese, 1988-1993 ......................................................... II-6
2.8. NCE and CCC Block Cheese Prices .................................................. II-12
2.9. CCC Stocks of Natural Cheese ......................................................... II-12
2.10. Seasonal Variation in NCE Block Prices, 1988-93 Average ............. II-13
2.11. Organization of the Cheese Subsector ............................................ II-17
3.1. Barrel and Block Sales on NCE, 1989-93 ....................................... III-20
4.1. NCE Block Trading, August 24, 1990 ............................................. IV-59
5.1a,b,c. Kraft Activity on NCE, July 1988-June 1993 ............................. V-6-8
A-5.1a-5.1e. NCE Barrel Activity of Leading Traders, July 1988-June 1993 ........ V-49-53
A-5.2a-5.2e. NCE Block Activity of Leading Traders, July 1988-June 1993 ........ V-54-58
    CCC Stocks of Natural Cheese, 1988-1993 ............................... VI-9
6.4. Kraft Net Price of Processed Cheese, NCE Barrel Price and
6.5. Kraft Net Price of Natural Cheese, NCE Block Price and
6.6. U.S. Retail Price of Natural Cheese, NCE Block Price and Retail Price-NCE
    Price Margin ......................................................... VI-50
A6.2. Kraft, Borden, and Private Label Brands of American Cheese,
    Average Retail Price and Price Gaps, 1988-1992 ......................... VI-80
List of Tables

2.1. Natural and Processed Cheese Produced and Marketed in the U.S., 1987 & 1992 ... II-20
2.2. Leading Manufacturers of Natural Cheese .................................................. II-23
2.3. Leading Processors/Marketers of Processed Cheese Products .................... II-23
2.4. Leading Marketers of Natural Cheese .......................................................... II-23
2.5. Estimate of Cheese Usage by Channel, 1993 (Mil. Of Lbs., Natural Equivalents ... II-27
2.6. Supermarket Sales by Type of Cheese, U.S., 1992 ........................................ II-31
2.7. Dollar Market Shares of Leading Cheese Brands and Companies, U.S.
    Supermarket Cheese Sales, 1992 ............................................................... II-31
A2.1 Cheese Imports and Exports as Percent of Total Cheese Production, 1980-1995 ... II-39
3.2. Frequency of Price Changes Associated with Various Types
    of Trading Activity, 1988-1993 ................................................................. III-22
3.3. Seller Concentration on the National Cheese Exchange, 1974-1993
    Barrel and Block Sales ................................................................. III-27
3.4. Buyer Concentration on the National Cheese Exchange, 1974-1993
    Barrel and Block Purchases ............................................................. III-28
A3.1. Number of Cheese Companies and Share of Value of
    Shipments by Leading Cheese Manufacturers, 1947-1987 ..................... III-30
A3.2. Number of Cheese Plants in Wisconsin and United States, 1850-1992 .................................................. III-31

A3.3a. Seller Concentration on the National Cheese Exchange, 1974-1993, Barrel Sales .................................. III-32

A3.3b. Seller Concentration on the National Cheese Exchange, 1974-1993, Block Sales .................................. III-33

A3.4a. Buyer Concentration on the National Cheese Exchange, 1974-1993, Barrel Purchases ........................III-34

A3.4b. Buyer Concentration on the National Cheese Exchange, 1974-1993, Block Purchases ........................III-35

4.1. Trades on NCE by Primary Type of Business, 1980 to 1987 ................................................................. IV-9

4.2. Trades on NCE by Primary Type of Business, 1988 to 1993 ................................................................. IV-10


4.4. Comparison of Prices Kraft Received for Spot Sales with NCE Prices, 1989-1992 ....................................... IV-42-43

A4.1a. Trades on NCE by Primary Type of Business, 1980 to 1987, Barrels .................................................. IV-66

A4.1b. Trades on NCE by Primary Type of Business, 1980 to 1987, Blocks .................................................. IV-67

A4.2a. Trades on NCE by Primary Type of Business, 1988 to 1993, Barrels .................................................. IV-68

A4.2b. Trades on NCE by Primary Type of Business, 1988 to 1993, Blocks .................................................. IV-69


5.1. Types of Trading Activity by Leading Traders of Barrel and Block Cheese on the NCE, 1988-1993 .......................................................... V-3

5.2. Price Behavior During Trading Days Kraft was Active and not Active on NCE, 1988-1993 .......................................................... V-15

5.3. Price Behavior During Trading Days Kraft was Active and not Active on NCE, 1988-1993 .......................................................... V-16

5.4. Price Behavior on Days in Which at Least One of the Leading Traders in Each Group was Active, 1988-1993 .......................................................... V-19

5.5. Estimated Relationship Between Trader Activity Variables and NCE Prices .......................................................... V-33

A5.1a. Types of Trading Activity by Leading Traders of Barrel Cheese on the NCE, 1988-1993 .......................................................... V-40

A5.1b. Types of Trading Activity by Leading Traders of Block Cheese on the NCE, 1988-1993 .......................................................... V-41

A5.2. Price Behavior on Days in Which at Least One of the Leading Traders in Each Group was Active, 1988-1993 .......................................................... V-42

A5.3. Price Behavior in Days Kraft, Borden and Alpine Lace Were Active in NCE Trading, 1988-1993 .......................................................... V-43

A5.4. Price Behavior in Days Beatrice, Mid-Am, Schreiber and AMPI Were Active in NCE Trading, 1988-1992 .......................................................... V-44

A5.5. Estimates of Factors Affecting Monthly NCE Barrel Prices, 1988-1993 .......................................................... V-45


6.2. Kraft Reported Retail Cheese Sales and Estimated Lost Retail Sales, 1989-1992 .......................................................... VI-49
A6.1. Kraft Bulk Cheese Inventory, Receipts, Usage, and Sales ........................................ VI-58


A6.3. End-of-Month Commercial Stocks of American Cheese and CCC Stocks of Natural (Blocks and Barrels) Cheese, 1980-89 ..................... VI-60

A6.4a. Kraft Share of Retail Cheese Sales, by Type, 1988-1992 ................................. VI-61

A6.4b. Kraft Share of Retail Cheese Sales, by Type, 1988-1992 ................................. VI-62

A6.4c. Kraft Brand Retail Cheese Sales, by Type, 1988-1992 ................................. VI-63
(Sales in Millions of Pounds)

A6.4d. Kraft Brand Retail Cheese Sales, by Type, 1988-1992 ................................. VI-64
(Sales in Millions of Dollars)

A6.5a. Private Label Brands Share of Total Retail Cheese Sales, by Type, 1988-1992 (Share of Pounds Sold) .................................. VI-65

A6.5b. Private Label Brands Share of Total Retail Cheese Sales, by Type, 1988-1992 (Share of Dollar Sales) .................................. VI-66

A6.5c. Total Retail Sales of Private Label Cheese Brands, by Type, 1988-1992 (Millions of Pounds) ........................................ VI-67

A6.5d. Total Retail Sales of Private Label Cheese Brands, by Type, 1988-1992 (Millions of Dollars) ........................................ VI-68

A6.6a. Total Retail Cheese Sales by Type, 1988-1992 (Millions of Pounds) ................ VI-69

A6.6b. Total Retail Cheese Sales by Type, 1988-1992 (Millions of Dollars) ................ VI-70


A6.8. Average Retail Price Per Pound of Kraft, Borden, and Private Label Brand American Cheese .................................................. VI-73

A6.9a. Market Shares of Company Brand Sales of Processed Cheeses .................... VI-74

A6.9b. Market Shares of Company Brand Sales of Natural Cheeses ....................... VI-75
A6.9c. Market Shares of Company Brand Sales of Cream Cheese ................................ VI-76

A6.10. Average Retail Prices of Kraft and Private Label Brands .................................. VI-77