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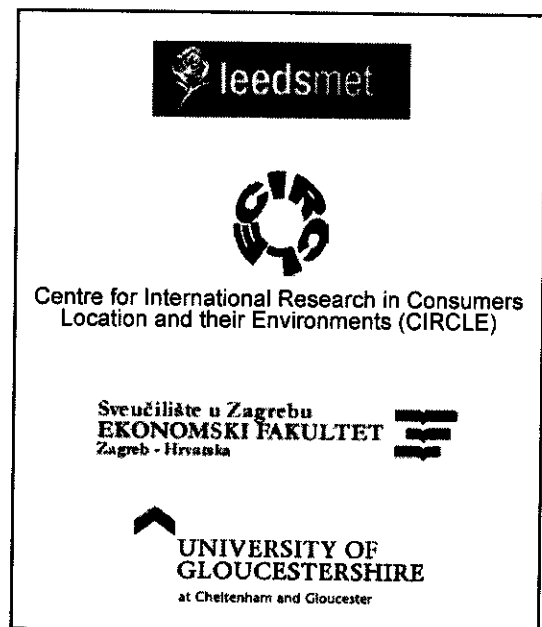
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# RECURRING PRICE WARS IN THE SAUDI DAIRY PRODUCTS INDUSTRY - A CASE STUDY

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## Abstract

*The rapid evolution of the Saudi Dairy Products Industry during the late 1970's, is a remarkable example of converting oil revenues into badly needed investments in an oil-based economy. The industry's success in terms of wide diversity and high quality products is remarkable. This case discusses how a success story was beset by mistakes at both industry and government levels leading to excess industry capacity and recurring price wars. The case is appropriate for students in applied microeconomic theory, managerial economics, agricultural economics, business policy, and public policy. This is a multi-focused case (oligopolistic industry with multiple industry leaders, a relatively large number of producers and the resulting cut-throat competition, in addition to contradictory government policies). Detailed Teaching Notes is available from the author.*

**KEY WORDS:** Dairy products, government subsidies, competition, price agreements, price wars.

## INTRODUCTION

Saudi Arabia is not known for richness in agricultural resources. Yet the evolution and success of the Saudi Dairy Products Industry in terms of size, high quality and wide diversity of products has been quite remarkable. However the observed success has not been without major troubles. As the industry expanded, competition intensified and recurring price wars erupted. How did that happen and what could have been done to prevent them?

The first modern dairy product company in Saudi Arabia, Almarai, was established in 1976, and was followed by Al Safi in 1979. Additional modern producers followed in subsequent years. The rapid development of the industry occurred

after the windfall increases in Saudi Arabia's oil revenues during the late 1970's and early 1980's. The development of the Dairy Products Industry exemplifies a remarkable success of converting oil revenues into badly needed investments. Prior to the establishment of the modern dairy products industry, most of Saudi Arabia's dairy products were imported. Fresh Saudi dairy products were available only on a very small scale and mainly in remote rural areas. Saudi entrepreneurship, supported by generous government subsidies, imported cows, new plants and foreign know-how created one of the finest dairy products industries in the world. Almarai was the first dairy farm in the world to win the ISO Certificate of Standards and Measurements. Now, most of the Saudi dairy producers have won that certificate<sup>1</sup>. In 1988, Al Safi was added to the Guinness Record of Standards as the largest integrated dairy farm in the world<sup>2</sup>.

Saudi dairy products now are available in almost every corner of the country and are being exported to neighboring countries of the Arabian Gulf, Syria, Lebanon and Yemen. The industry's exports have risen from 50,000 tons in 1995 to over 126,000 tons in 2003. According to Mr. Mohammad Anwar Jan, Chairman of the National Committee of Dairy Producers, the total production of specialized dairy farms has reached 2.3 million liters per day and the number of cows exceeded 150,000 heads in 2004.

## Industry Developments

When the two industry pioneers, Almarai and Al Safi, first started, they imported their Holstein and Friesian cows, plants and equipments. Animal feed was produced locally. The success of these two producers encouraged others to join the industry. They were attracted by the availability of generous

government subsidies. While the large producers had their own integrated facilities, some of their raw milk was acquired from small farms specializing in raw milk production only. All went well until the large firms (Almarai, Al Safi and NADEC) decided to be completely independent in terms of the production of raw milk supplies. It may have been thought that they could enjoy much larger economies of scale by having their own, much larger dairy farms. They expanded their herds and stopped buying from the small producers. The large producers offered very low prices to buy milk from the small producers. Unable to sell their products at a reasonable price, the small producers decided to expand their own operations and acquire full-scale facilities. In 1993, the retail price of a two-liter container was 8 Saudi Riyals (SR) while the farm price of raw milk was 2.7 Saudi Riyals. This was equivalent to a retail price of US \$8.60 per gallon while the farm price was US \$3.00 per gallon. (5)

Wide profit margins coupled with government subsidies encouraged further industry expansion. In 1995 the total production of specialized modern farms was estimated at 428 million liters. By 2000 it jumped to 709 million liters. This increase

amounted to an average annual growth rate in actual supply of 13.13%. The government's seventh 5-year Development Plan anticipated the annual growth rate of production of fresh dairy products at only 7.36% during the period 1994-1999 (see Tables A-1, A-2 and A-3). Also, see Table 1 for an annual breakdown of the Industry's cows and raw milk production. The actual growth rate in production was almost twice as high as the Government's projections.

The government's forecast for demand for the period 1999-2004 reflects an average annual growth rate of only 3.4% (see Table A-2). The industry's forecast for the growth of demand for the same period however was 7% (see Table A-7). It should be mentioned here however that the industry's forecast is about demand for both fresh and non-fresh (powdered milk, combined with water) dairy products. In terms of actual demand for the period 1995-1999, the industry's estimates were between 3 to 6% annual growth rate (see Table A-5). Whatever the correct forecast for demand was, it was obvious that it was far less than both forecasted and actual growth in supply

**TABLE 1 RAW MILK PRODUCTION (IN THOUSANDS OF TONS) 1991 – 2002**

Year	Total Output	Traditional Producers		Specialized Producers			
		% of total	Quantity Produced	% of total	Quantity Produced	No. of Projects	No. of Milking Cows
1991	520	45	238	55	284	37	44025
1992	548	43	238	57	310	38	47638
1993	587	41	238	59	349	35	48258
1994	633	37	237	63	396	36	53730
1995	698	39	270	61	428	38	57366
1996	749	40	296	60	453	32	58943
1997	815	37	305	63	510	33	65263
1998	883	34	302	66	581	35	73369
1999	936	36	336	64	600	34	77994
2000	1039	32	330	68	702	34	N.A
2001	1067	31	329	69	738	34	N.A
2002	1139*	27.5	313	72.5	826	34	75200**

Source: Saudi Arabian Ministry of Agriculture, Annual Reports.

\*Preliminary

\*\*National Dairy Products Board

**TABLE 2 AVERAGE COW PRODUCTIVITY & NUMBER OF MILKING COWS IN SPECIALIZED FARMS**

Dairy Units	Average milk production per cow per year (in tons)	Number of milking cows as of early 1995
Al Marai (Al Kharj & other centers)	11.0	14,000
Al Ban Al Hana (Al Ghat)	8.5	1,000
Al Safi ((Al Kharj))	8.3	13,000
Nada (Hofuf)	8.0	3,750
Abnaee (Al Kharj)	8.0	1,200
Al Bandarleh (Al Kharj)	7.5	2,100
Al Reef (Durma)	7.5	600
Al Azizla (Dham)	7.4	1,000
NADEC (Haradh)	7.2	5,000
Al Searah (Tabuk)	7.2	1,000
Al Ateeq (Hofuf)	7.1	650
Al Majdiah (Tebrak)	7.0	680
Al Thukeem (Hail)	6.0	750

Source: Saudi Commerce & Economic Review, No. 35, March 1997.

The average physical productivity of a cow in specialized farms in Saudi Arabia has been among the highest in the world. In 1995 the Saudi average cow productivity reached 7.5 tons per year. As a matter of fact, Almarai, the largest Saudi producer, achieved an average of 11.0 tons per cow, per year. See Table 2 for a breakdown of producers' output and number of cows for the year 1995. The table shows the relative importance of the major producers as of that year.

In 1997 the average physical productivity of a cow in specialized farms in Saudi Arabia was estimated at 6.4 tons per year, compared to a world average of 2 tons. The Saudi record was equivalent to the record of the Netherlands and almost doubles the record of New Zealand. The U.S.A achieved the highest productivity level with 7 tons. The statistics of 1999, however, show that average cow productivity in Saudi Arabia reached 7.735 tons, compared to 7.412 tons in the U.S.A., 7.425 tons in South Africa and 5.547 tons in Europe, and only 3.295 tons in New Zealand (Asharq-Al Awsat, No. 7937, August 21, 2000). In spite of the fact that no cost figures have ever been released by individual firms, the remarkable physical productivities must have translated into significant economies of scale that encouraged both the businessmen and the Government to expand the industry.

## Government Finances

The Dairy Industry gets government financing from two government agencies – the Agricultural Bank and the Saudi Industrial Development Fund (SIDF). The Bank extends both non-refundable subsidies and zero-interest loans to help with the farm operations, cow purchases, transportation, farm machinery, and imported animal feed. In certain cases the Bank may also extend loans to build dairy factories. In most cases, however dairy factories are financed by the SIDF. The Fund finances 50 percent of the total cost, and loans range between SR 1million to SR 400 million. Depending on the cost of evaluating the loan application, the Fund charges 5-6 percent of the approved loan. The cost of the loan is deducted up front from the first loan-installment extended. Data on the breakdown of equity and private-banking financing are never published for most dairy firms, since most of them are privately owned.

The SIDF data, however, show that the Fund has extended 84 loans for or total of SR1785 million (US \$476) to dairy projects from 1975 to 2005 (see Table 3). The table shows that for 2001, the approved loans were less than SR38 million. Loans jumped to SR187 million and SR382 million during the following two years. This represents a very surprising development, as if the Fund had not heard about the recurring price wars in the dairy industry. Every application for a license or loan

was required to be supplemented by a feasibility study conducted by a consultant.

In spite of experienced difficulties, the overall dairy industry seemed to be sufficiently profitable to warrant additional loans. Some sources in the private banking industry informally reported that the return on equity of some big producers was as high as 24 percent. This was matched only by the banking industry in Saudi Arabia. It seemed that the banking industry was not the only industry that was "milking" the Saudi consumer. The absence of coordination among government agencies on the one hand, and the lack of economic costing of a very scarce natural resource (water) on the other, have led to the rapid expansion of the industry both in terms of total volume of output and in terms of total producers. The high profitability of dairies was a sign of a large gap between private

and social costs. A major contributor to this gap, in addition to direct subsidies, has been the absence of a comprehensive government policy regarding water extraction and use in particular and industrial policy in general.

Water is a very scarce resource in Saudi Arabia. Farmers need to get a license from the Government to dig water wells, but no fees are imposed on water usage afterwards. It has been estimated that the production of one liter of milk in Saudi Arabia requires 1,000 liters of water on average. When water is obtained almost free, it is never included in the calculations of the producers' costs (Saudi Commerce, No. 35, March, 1997, p.30). As the growth rate of productive capacity outpaced the growth rate of demand, price wars among producers became inevitable.

**TABLE 3 LOANS EXTENDED BY SIDF TO DAIRY PRODUCTS INDUSTRY**

Fiscal Year	No. of loans	Approved Loans Thousands of SR
1974	-	-
1975	2	13,200
1976	-	-
1977	3	58,877
1978	6	63,451
1979	6	52,000
1980	7	67,592
1981	2	19,500
1982	3	18,400
1983	1	7,847
1984	2	5,400
1985	-	-
1986	2	21,300
1987	2	12,875
1988	1	9,500
1989	2	14,000
1990	1	50,000
1991	4	115,260
1992	3	72,750
1993	5	37,600
1994	5	267,244
1995	3	45,950
1996	7	122,150
1997	1	13,000
1998	3	30,000
1999	2	25,200
2000	1	35,000
2001	3	37,860
2002	4	186,750
2003	3	382,130
<b>Total</b>	<b>84</b>	<b>1,704,636</b>

Source: Saudi Industrial Development Fund (SIDF), through personal correspondence, 2004.

Note: Not all loans are for dairy products. From 1999 on, some loans were for juices and tomato paste production.

### Recurring Price Wars

As the number of producers increased and as the industry became larger, excess product inventories resulted and products returns went up. The intra-industry growth rates were not, however, evenly distributed. The largest four producers (Al-Safi, Almarai, NADEC and NADA) maintained a combined market share of more than 70 percent of the fresh dairy output over the years. See Tables 4-6 for an industry output and sales breakdown.

Increases in consumer demand were insufficient to absorb the mounting inventory levels. International comparisons show that per capita consumption in Saudi Arabia for several dairy products are comparatively very low (see Table A-6).

Producers were forced to lower retail prices and make concessions to retailing grocery stores. Unlike the practices in some countries, notably in the U.S.A., grocery stores in Saudi Arabia do not buy dairy products for their own account, and do not and sell them under their own brand name. Dairy products in Saudi Arabia always carry the logos of the producers. For a grocery store to carry the products, the producer has to pay a percentage fee of the retail sales price to the store owner. The stores also charge rent for the shelf

space made available for dairy products. The rent varies according to the size of the grocery store. Furthermore, any unsold inventories are returned to the producer. The risk of excess inventories is always born by the producer. This explains why grocery stores in Saudi Arabia never offered price discounts to consumers. This fact and the producers' attempts to protect their margins (by trying to resist price discounts) led to very rigid dairy market conditions resulting in sudden and sharp price changes whenever the competition intensified.

In December 1999 (coinciding with Ramadan, the holy Muslim fasting month), the first price war started as one of the major producers was accused of offering grocery stores larger discounts (undisclosed) on products and higher rent for shelf space. Other major producers felt that they were losing shelf space and sales. A second major producer announced price reductions to end users that ranged between 25 to 40 percent. It took two months for the original discounting producer responded. Tables 5 and 6 show the relative importance of each producer in terms of value of sales and in terms of market shares in year 2000. Table 7 below shows the prices for the major products before and during the first price war.

TABLE 4 FRESH DAIRY OPERATIONS, END OF 1999

	Company	Estimated milking Cows (1999)	Estimated Raw milk prod for Processing (tons)	Remarks
1	Al-Seerah	950	6,500	
2	Astra	200	1,500	
3	Taif	no cows	N/A	buying milk from others
4	Nejran Dairies	400	3,000	
6	Jawzee	100	700	
6	Almaral <sup>a</sup>	18,000	189,000	
7	Al Seif <sup>a</sup>	12,500	130,000	
8	Al-Aziziah	2,500	14,000	
9	NADEC <sup>a</sup>	12,000	100,000	
10	Al Zaid	500	3,000	selling to Almaral
11	Ministry of Agriculture	700	4,500	
12	Abnee	3,000	25,000	
13	Alomeir	1,200	7,000	selling to Almaral
14	Al Jauf	500	3,000	
16	Al Jedan	1,000	6,000	
16	Al Mazrah	4,000	25,000	
17	Dar Al Sheik	750	5,000	
18	Al Tukhaim	600	2,000	
19	Al Hana	1,000	6,000	
20	Al Qaseim	no cows	N/A	buying milk from others
21	Ismail	400	2,800	selling to NADEC
22	Al Ghadir	700	4,500	selling to NADEC mostly
23	Al Khabrah	250	1,500	
24	Al Gazrah	600	3,000	
25	Al Suwaidi	500	2,000	
26	Shaghdah, Hail	500	2,000	
27	National Dairy	1,500	9,000	
28	NADA	5,750	53,000	
29	Al Reif	800	5,000	
30	Shadco	1,500	9,000	
	<b>Total</b>	<b>72,400</b>	<b>623,000</b>	

Source: IMES, GCC Dairy Products, Saudi Arabia 2000 pp. 43-47



**TABLE 5 VALUE OF SALES & MARKET SHARE OF EVERY COMPANY FOR THE ENTIRE INDUSTRY (FRESH & COMBINED DAIRIES) FOR THE YEAR 2000**

Company	Sales (million riyals)	Market Share
Al Marai	1000	20.4
SDAFCO	900	18.4
Al Safi Danon	600	12.26
NADEC	458	9.35
Halawni		
Brothers	400	8.17
NADA	320	6.6
Al Rabia	300	6.12
Jamjoom		
Foremost	270	5.52
Najdiah	100	2
Modern Dairies	100	2
Arayyan	96	1.96
Array	90	1.84
Al Azzilya	70	1.43
Talf	48	0.98
Al Mazraa	40	0.82
Al-Hana	30	0.61
Arreef	22	0.45
Najran Dairies	16	0.33
Riyadh Dairies	10	0.2
Badr Dairies	10	0.2
Al-Kharj Dairies	8.1	0.17
Al-Safwa Dairies	7.1	0.14
Al-Khabra Dairies	2.5	0.05
<b>Total</b>	<b>4897.718</b>	<b>100</b>

Ref: Al-Asfoor, Abdallah, An Economic Analysis for the Marketing System of the Dairy Industry in Kingdom of Saudi Arabia, MS Thesis, King Saudi University, 2003, p. 73.

**TABLE 6 VALUE OF SALES & MARKET SHARES SPECIALIZED FRESH DAIRY PRODUCERS FOR THE YEAR 2000**

Company	Value of Sales (million Riyals)	Market Share (%)
Almarai	1000	36
Al Safi Danon	600	21.6
NADEC	458.018	16.15
NADA	320	11.3
Najdiah	100	3.6
Arayyan	96	3.4
Al Azzilya	70	2.5
Al Mazraa	40	1.42
Al-Hana	30	1.08
Al-Raei	22	0.8
Najran Dairies	16	0.6
Al-Riyadh Dairies	10	0.36
Al-Kharj Dairies	8.1	0.3
Al-Safwa Dairies	7.102	0.25
Al-Khabra Dairies	2.5	0.09
<b>Total</b>	<b>2779.718</b>	<b>100</b>

Ref. Al-Ashfoor, Abdullah, 2003, p.63.

**TABLE 7 RETAIL & WHOLE SALE PRICES DURING & AFTER FIRST PRICE WAR**

SIZE	Retail Price during price war*	Retail Price according to agreement	Wholesale Price (lowest to Grocery Stores)	Commission to wholesalers **
1 gallon	10	12	11.8	6.25 %
3 liter	9	10	9.4	6.25 %
2 liter	6	7	6.58	6.25 %
1 liter	3	4	3.78	6.25 %
0.5 liter	2	2	1.89	6.25 %
200 ml.	NA	1	0.94	6.25 %
180 grm/zabedk(Yogurt)	NA	1	0.94	6.25 %
400 grm/zabedk(Yogurt)	NA	2	1.89	6.25 %

Source: The General Agreement to organize the Production & Marketing of Fresh Dairy Products, Fresh Dairy Board, Saudi Arabia, May 15, 2000

\*Asharg Al-Awsat, May 2000

\*\* These figures may not be accurate, but this was the agreement.

The discounting of prices continued until May 15, 2000, when twenty-four producers, under the patronage of the Ministry of Agriculture, signed an agreement to reduce competition between the twenty-four producers. The agreement covered not only wholesale and retail prices, but included guidelines for promotional activities in terms of physical size, duration, new markets, new products and new entrants to the industry.

The agreement provided the terms to resolve the problem of shelf space competition. Every producer was allowed to rent shelf space in up to 500 outlets for three months after signing the agreement. After three months rent should be paid only to 'class A' outlets (outlets that are no less than 500 m<sup>2</sup>). The agreement fixed limits for total rent and other promotions as a percentage of total sales to an outlet. Producers were classified into four groups on a sliding scale in terms of their daily productive capacity, where rent payments and other promotions decreased with increasing production capacity. Payments for sales commission were not part of rent and promotions payments (see Table 8).

Surprisingly, no price war was ever reported between the producers of fresh products on the one hand, and the producers of recombined products on the other. The latter group of producers was never called to be part of any agreement! This is something to ponder! (See the Teaching Notes)

### The Problem of Excess Raw Milk Inventory

The producers agreed to purchase the excess inventory of raw milk from raw milk producers who were not engaged in any processing activities. This obligation would last for three years (the signed agreement was for two years!). In return, the raw milk producers pledged to limit their production during that period. The purchase price was between SR1.3 to SR1.4 per liter. The signatories also pledged to stop importing cows for one year.

### Long- Life Milk

While the agreement outlined wholesale prices for different sizes of containers of long life milk, retail prices were not mentioned. The wholesale prices were to be revised six months later. The signatories pledged not to engage in any direct or indirect harmful activities to each other. Two weeks after the agreement was signed, some firms started to cheat on long-term milk prices. Some firms also violated the rent agreement for shelf space. These violations started a second price war. Industry sources are not clear as to how this second price war was resolved. It seems that the parties reached a verbal gentlemen agreement to abide by the agreement signed before.

**TABLE 8 PRODUCTION CAPACITY & MAXIMUM ALLOWABLE PROMOTIONS PER PRODUCER**

Tons/day	Maximum Promotions and of sales (%)
<50	15%
50-100	12%
100-150	8%
>150	6%

**TABLE 9 Retail PRICES OF MAJOR DAIRY PRODUCTS BEFORE & AFTER THE THIRD PRICE WAR**

Container Size	Price before 3rd war*	Price after 3rd war**	Percentage Change
3 liters	SR 10.00	SR 8.00	10%
2 liters	SR 7.00	SR 6.00	14.30%
1 liter	SR 4.00	SR 3.00	25%

\*Ref.: Dairy Producers Agreement, \*\* Asharq Al-Awsat, No. 8256, July 6, 2001

Note: The 2 liter milk container is the major product item for all companies. Eventually the prices of major producers Al-Marai, Al Safi, NADEC, Nada, & Najdiah bottomed down to SR6.00 per container and for the remaining producers at SR5.00.

### AlSafi-Danone Agreement

In spite of increasing difficulties, it looked like the Saudi Dairy Industry remained attractive, not only to local investors, but to foreign ones too. In June 1998, Al Safi offered to sell to Danone (a French company and one of the largest dairy producers in the world) part of its manufacturing, marketing and distribution facilities. Al Safi's cow-farms were not included in the offer. Danone was interested in the proposal as Al Safi was, and still is, one of the largest dairy producers in one of the most lucrative, expanding markets in the world. Among AlSafi's attractive features were a strong brand name, a livestock of 32,000 cows, diversified dairy products that were sold through 20 thousand outlets, and annual sales that had reached SR600 million (\$160 million) by the end of 2000. In November 2000, an agreement was signed and Danone paid SR500 million (\$133 million) for a 50.1percent share in Al Safi.

### The Third Price War

It did not take too long for a third dairy price war to erupt. Some major producers accused others of unfair competition by offering cash payments to shelf operators in large grocery stores, by paying very high rent for shelf space, to the disadvantage of competitors. The agreement signed in May 2000 was considered to be no longer in force. On July 5, 2001, Al Marai declared unilateral price reductions on the major products (milk and laban) that ranged from 10 to 25 percent. Within one week the other producers responded and matched Almarai's prices. Table 9 presents prices before and after the third price war.

The Ministry of Agriculture refused to interfere this time. Apparently, it gave up any hope that producers would respect the agreements they sign. The producers asked for help from the Council of the Union of Saudi Chambers of Commerce. A consulting firm was hired to study the problem. Several meetings took place without any resulting agreement.

**TABLE 10 DISAGGREGATED MILK PRODUCTION AND TOTAL NUMBER OF MILKING COWS BY COMPANY FOR THE YEAR 2002**

First: Specialized producers & processors

	Company	Average daily milking cows	Total year 2002 prod. (Tons)
1	Almarai	19500	318000
2	Al Safi	15000	195000
3	NADEC	9120	96000
4	Nada	6210	63000
5	Naylah	3000	26190
6	Al-mazraa	2500	21800
7	Al-Aziza	1850	18000
8	Al-Rayyan	1620	12500
9	Al-Hana	1500	10600
10	Al-Riyadh	1150	9125
11	Al-Salwah	800	6500
12	Al-Rafif	1037	8652
13	Al-Kharj	1100	7300
14	Al-Sawah	1050	7100
15	Kharran	450	3500
16	Riyad Al-habra	310	1850
17	Akra	220	1650
	<b>Total</b>	<b>66275</b>	<b>787169</b>

Second: Raw milk farms selling to producers

1	Al-Sharqiyah	1650	9750
2	Al-Aumriah	1300	8000
3	Al-Majediyah	900	6205
4	Al-Qadour	1200	9125
5	Al-Zaid	975	7800
6	Al-Faw	650	3250
7	Al-Shughail	850	6200
8	Al-Tulhaim	1400	12400
	<b>Total</b>	<b>8925</b>	<b>62730</b>
	<b>Grand Total</b>	<b>75200</b>	<b>829899</b>

Notes: Daily milked cows are 75-80% of total milk cows, the remaining are considered to be dry cows.

- Production is related to total milking cows, not just actually milked.

- Milking cows are cows that can give milk, i.e. after excluding baby & male cows. They are about 50% of total cows on a farm.

Source: National Dairy Products Board.

### The Threat of a Yet Another Price War

The industry's product diversification into juices did not seem to solve its problems for too long. In April 2005, the Eastern Province witnessed a limited price war in the 2-liter size natural juices as some producers reduced their price from SR8 to SR6. Since the producers of these juices are the same as the producers of dairy products, industry sources anticipated that this might spill over into a price war of dairy products. A verbal gentleman agreement was reached a year before to keep the two-liter natural juices prices at SR8, all over Saudi Arabia except in the Capital, Riyadh, where it could be sold for SR6, since most producers are concentrated in Riyadh Province. The producers agreed to stop all promotional activities by the beginning of 2005, but it looks like that the

industry's woes are far from over (Al-Eqtisadiyah, No. 4201, April 12, 2005). The industry was far from being restive however. It is still composed of a heterogeneous combination of a few very large producers, and a relatively large number of very small ones. Excess capacity and surplus output of milk is still looming large. The competition for shelf space is still persistent. Furthermore, the Government was increasingly unhappy about the unwise use of water resources.

In spite of the fact that the first price war started in 1999, and in spite of increasing competitive pressures, it has been taking both the companies and the Government a very long time to decide and act upon the next steps. What could have and should have been done about the existing dilemmas?!

## Questions for Discussions:

1. What is the best description of the market structure of the Saudi Dairy Products Industry and how has it been affecting the industry? Compare this to the usual textbook cases.
2. Why hasn't collusion among producers succeeded? (Here the professor may want to remind students of six general factors that help to strengthen collusions)
3. What mistakes at the industry level led to recurring price wars?
4. What mistakes at the Government level contributed to dairy price wars?
5. What should happen at the industry level to deal with the current situation?
6. What should the Government do?

## APPENDIX

TABLE A-1 ACTUAL PRODUCTION OF SOME BASIC FOODS IN THE SIXTH DEVELOPMENT PLAN (1994-1999)

(Thousand of Tons)	1994	1999	Change %
Wheat	2846	1834	-30.7
Barley	2010	500	-75.1
Red Meats	150	160	6.7
White Meats	361	526	45.7
Egg	127	139	9.4
Fresh Dairies	633	866	36.8
Vegetables	2291	2757	20.3
Fruits	988	1244	25.9
Fish	52	56	7.7

Source: The Saudi Government's Seventh 5-year plan, Ministry of Planning

TABLE A-2 ESTIMATED DEMAND ON SOME BASIC FOODS IN THE 7th DEVELOPMENT PLAN (1999-2004)

	1999	2004
Wheat	1834	2147
Red Meat	370	433
White Meat	682	798
Egg	122	143
Dairies	823	963
Vegetables	3361	3934
Fruits	1931	2260
Fish	94	110

Source: The Saudi Government's Seventh 5-year plan, Ministry of Planning

**TABLE A-3 (ESTIMATED) SUPPLY OF BASIC FOODS (1999-2004)**

	1999	2004	Average Annual growth rate
Red Meats	160	168	1.0
white meats	528	773	8.0
Egg	139	161	3.0
Dairies	806	1004	3.0
Vegetables	275	3196	3.0
Fruits	1244	1514	4.0
Fish	56	62	2.0

Source: The Saudi Government's, Seventh 5-year plan, Ministry of Planning

TABLE A-4 PRICE LIST FOR ALL CUSTOMERS

Description	Pack Size	Whole Sale	Retail Sale
Milk	1/1 Ltrs	2.75 SR	3.00 SR
Milk	1/2 Ltrs	1.88 SR	2.00 SR
Milk	1/4 Ltrs	1.15 SR	1.25 SR
Milk	1/5 Ltrs	0.94 SR	1.00 SR
Milk	2 Ltrs	4.5 SR	5.00 SR
Low Fat Milk	1/4 Ltrs	1.15 SR	1.25 SR
Low Fat Milk	1/5 Ltrs	0.94 SR	1.00 SR
Low Fat Milk	1/1 Ltrs	2.75 SR	3.00 SR
Laban	1/1 Ltrs	2.75 SR	3.00 SR
Laban	1/2 Ltrs	1.88 SR	2.00 SR
Laban	1/4 Ltrs	1.15 SR	1.25 SR
Laban	1/5 Ltrs	0.94 SR	1.00 SR
Laban	2 Ltrs	4.7 SR	5.00 SR*
Low Fat Laban	1/4 Ltrs	1.15 SR	1.25 SR
Low Fat Laban	1/5 Ltrs	0.94 SR	1.00 SR
Low Fat Laban	1/1 Ltrs	2.75 SR	3.00 SR
Shannan	1/1 Ltrs	2.75 SR	3.00 SR
Khasifa	1/1 Ltrs	2.75 SR	3.00 SR
Yoghurt	180 Gms	0.94 SR	1.00 SR
Yoghurt	400 Gms	1.88 SR	2.00 SR
Low Fat Yoghurt	400 Gms	1.88 SR	2.00 SR
Low Fat Yoghurt	180 Gms	0.94 SR	1.00 SR
B.F. Cream	150 Gms	2.5 SR	3.00 SR
B.F. Cream	50 Gms	0.95 SR	1.00 SR
Labneh	500 Gms	4.5 SR	5.00 SR
Labneh	80 Gms	0.95 SR	1.00 SR
Labneh	10 Kg	90 SR	
Mahalabia	150 Gms	0.9 SR	1.00 SR
Raw Cream	1.5 Kg	27 SR	
Ghee	1 Kg	22 SR	25.00 SR
White Cheese	2 Kg	25 SR	24.00 SR
White Cheese	10 Kg	125 SR	
Romi Cheese	1 Kg	15 SR	
Akawi Cheese	1 Kg	15SR	
Raw milk	1/1 Ltrs		
School Milk Chocolate	200 Mbx24	17 SR	23.00 SR
School Milk Strawberry	200 Mbx24	17 SR	23.00 SR
School Milk Banana	200 Mbx24	17 SR	23.00 SR
School Milk Plain	200 Mbx24	17 SR	21.00 SR
Long Life Milk	12x1 Ltrs	32 SR	34.00 SR
Long Life Milk	200 Mbx24	17 SR	21.00 SR
Low Fat Long Life Milk	12x1 Ltrs	32 SR	34.00 SR
Low Fat Long Life Milk	200 Mbx24	17 SR	21.00 SR

Source: Al-Aziziah Dairy Products Company, 26-04-2003

\*Al Marai, Al Safi, NADEC, NADA, &amp; Najdiah sale price is SR6.00. Other producers sale prices is SR5.00

**TABLE A-5 SAUDI ARABIA: ESTIMATED CONSUMPTION OF DAIRY PRODUCTS, 1995-1999 (TONS)**

Sector	1995	1996	1997	1998	1999	Retail Value (SR million)
Milk	289,875	271,200	289,550	308,850	334,500	1,365
of which:						
- long life	191,375	201,200	214,080	231,850	253,710	975
- short life	67,000	70,000	75,490	78,000	80,790	390
Laban	218,710	223,980	226,200	246,300	262,790	1,175
Yoghurt	58,250	62,800	68,850	71,350	77,100	460
Labneh	3,050	3,300	3,500	4,000	4,325	80
Cream	17,850	17,125	17,450	17,450	17,450	380
of which:						
- local (non-canned)	3,180	3,150	3,200	3,850	3,975	105
- canned	14,200	13,475	13,450	13,100	13,000	245
- other imports	500	500	500	500	475	10
Evaporated milk	48,000	49,000	51,800	63,000	64,500	345
Condensed milk	1,280	1,425	1,800	1,750	2,000	25
Retail milk powder	44,000	44,000	44,000	43,000	43,750	885
Retail butter	11,100	10,250	10,300	10,000	9,800	195
Butter ghee	4,985	4,150	3,950	3,800	3,100	68
Cheese	86,825	88,550	87,800	89,800	72,400	1,725
of which:						
- processed:	32,975	32,975	31,900	32,900	33,000	885
imported	3,850	5,200	7,100	8,500	10,900	275
local	22,485	20,675	19,685	18,900	17,895	270
-white:	1,915	2,800	3,705	4,200	4,805	70
imported						
local						
-natural mature	4,700	5,000	5,400	5,700	6,200	245
Ice cream	18,000	18,000	18,000	18,000	18,000	0
Grand total	748,825	771,980	800,800	848,900	899,875	7,058
Volume growth	0%	3%	4%	6%	8%	

Source: IMES, (International Marketing & Economic Services)

March 2000, UK, pp. 17-18

www.imes.co.uk

**TABLE A-6 SAUDI ARABIA: INTERNATIONAL COMPARISONS OF CONSUMPTION OF SELECTED DAIRY PRODUCTS (KG PER CAPITA)**

Country	Liquid Milk	Yoghurt	Butter	Cheese
Germany	67	14	7	21
France	75	18	8	24
Netherlands	104	20	3	17
UK	118	6	3	10
Denmark	99	14	2	16
US	95	5	2	14
Saudi Arabia <sup>1</sup>	30	4	1	4

Source: ADC, IMES, 2000, p. 86

1: Saudi Arabian figures refer to 1999. For liquid milk the figures include laban, and for butter include butter ghee. Data for other countries mostly refer to 1997/8.



TABLE A-7 SAUDI ARABIA:DAIRY PRODUCTS CONSUMPTION FORCAST1999- 2004 (TONS)

Sector	1999		2004		INDEX 1999=100
	Product Weight	LME	Product Weight	LME	
<b>Milk</b>	<b>334,500</b>	<b>334,500</b>	<b>395,000</b>	<b>395,000</b>	<b>118</b>
of which:					
-long-life	253,710	253,710	295,000	295,000	116
-short life	80,790	80,790	100,000	100,000	124
Laban	262,750	262,750	300,000	300,000	114
Yoghurt	77,100	77,100	95,000	95,000	123
Labneh	4,325	8,650	5,250	10,500	121
Cream	17,450	122,150	18,250	127,750	105
of which:					
-local (non-canned)	3,975	27,825	4,750	33,250	119
-canned	13,000	91,000	13,000	91,000	100
-other imports	475	3,325	500	3,500	105
Evaporated milk	54,500	136,250	57,500	143,750	108
Condensed milk	2,000	5,000	2,500	6,250	125
Retail milk powder	43,750	350,000	40,000	320,000	91
Retail butter	9,900	225,400	9,000	207,000	92
Butter ghee	3,100	80,800	3,250	84,500	105
Cheese	72,400	900,700	88,100	998,000	111
of which:					
-processed:	33,000	462,000	34,400	481,600	104
imported	10,500	147,000	15,000	210,000	143
local	17,895	178,950	15,000	150,000	84
-white:	4,805	38,440	8,000	64,000	166
imported					
local					
-natural mature	6,200	74,400	7,700	92,400	124
Ice cream	18,000	18,000	20,000	20,000	111
<b>Grand total</b>	<b>800,075</b>	<b>2,857,100</b>	<b>1,025,000</b>	<b>2,077,000</b>	<b>107</b>

Source: IMES estimates, March 2000

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### ENDNOTES

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2. Industries, No.14, February 2004, A quarterly magazine published by The Council of Saudi Chambers of Commerce.
3. Industries, No.14, February 2004, A quarterly magazine published by The Council of Saudi Chambers of Commerce.
4. Industries, No.14, February 2004, A quarterly magazine published by The Council of Saudi Chambers of Commerce.
5. Field, John D. "Milking Cows in the desert is big business", World Agriculture, 1993. Published by Sterling Publications Limited, London, UK.
6. Pillai P.K. "Productive Efficiency of Dairy Farms in Saudi Arabia Reaches top World Standards" , Saudi Commerce & Economy No. 35, March 1997.
7. This case is written for students in applied microeconomic theory, managerial economics, agricultural economics, business policy, and public policy courses. As such it leaves some analytical issues for students to ponder.

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## Recurring Price Wars in the Saudi Dairy Products Industry

### Teaching Notes

Summary: The rapid evolution of the Saudi Dairy Products Industry out of nothing is a remarkable example of a country's converting oil revenues into some badly needed investments. The industry's success in terms of the high quality and wide diversity of products is very remarkable indeed. The industry's success, however, carried in it the elements of current difficulties, manifested by recurring price wars among producers. This case

discusses how the unguarded elements of success were beset by mistakes at both the industry's and Government's levels.

Target Audience: Students in applied microeconomic theory, managerial economics, agricultural economics, business policy, and public policy.

Teaching Approach & Strategy: Students should review material in their principles of economics textbooks on imperfect competition, especially on oligopoly. They should also review ideas on externalities and public goods.

### Teaching objectives

Students are to find out:

I. Industries and market structures evolve over time. They are not "born" as one complete "creature". Also, market leadership and the ability to survive are to be won, not to be given.

II. What errors in judgment at the industry level have led to current difficulties. These were manifested by:

1) Severing the relationship between large manufacturers and small dependent raw, milk producers while there are no major market barriers. The drawbacks of such a decision that unfolded later on show that excessive self- interest could be both privately and socially harmful in the long run.

2) The very important issue here for both investors and consultants is to be able to ask and answer good and relevant questions regarding an industry, such as the potential growth rate of demand, ease of entry and exit ... etc. Investors might have wanted to seek another opinion, just like a patient pondering going through a major surgery may want to seek the opinion of another doctor!

III. When the market is a buyer's one, no colluding agreements among producers will hold for too long, just like what happened in the international oil market in the mid 1980's and late 1990's. OPEC members in that period kept cheating each other. Two peculiar observations are to be made about producers' collusion in this case. First, unlike the textbook case of colluding firms, there were no ceilings on total industry output, nor any production quotas to industry members. The only

physical constraint was imposed on the very small raw milk producers, and a one-year moratorium on cows imports for all firms. Producers wanted "to eat their cake and have it too". They were trying to prevent prices from collapsing without doing much on quantities produced!! Second, no price war was ever reported between the producers of fresh products on the one hand, and the producers of recombined products on the other. The latter group of producers was never called to be part of any agreement! It looks like the producers of fresh products either thought their products to be very differentiated from recombined products, thought that the total number of firms is already too large to include others, or both. It is important to remember, however, that the differentiation between the two branches of the industry is not limited to the nature of products produced, but also to the nature of the investments required. Producers of recombined milk did not have to invest in establishing farms to raise cows and grow animal feed. The labor and capital requirements for them was thus much less. The constraints and opportunities of the two groups are thus (very) different.

IV. Some errors at the public (Government) policy level. These were manifested in the following practices:

- 1) An excessively paternalistic policy manifested by generous subsidies offered by multiple Government agencies that do not seem to coordinate their policies.
- 2) The absence of a comprehensive Government policy regarding a very scarce natural resource in the Country – water. This is a very, very good case to appreciate the difference between private and social costs and the repercussions there upon!

V. Market adjustment under the pressure of competition could be a rather long and painful process: The first price war started in 1999, yet major adjustment decisions on exiting the industry by some small producers, mergers among the small ones, or acquisitions by the big of the small are taking a long period of time to embark upon.

Some suggested solutions: Very briefly

- 1) Application of some program like food stamps for the poor to lift some of the excess supply from the market. Donations by producers shall be tax-deductible. The fact that per capita consumption of dairy products in Saudi Arabia

is very low, compared to consumption in other countries (see table A-6), may imply that income assistance programs may help to raise consumption of these products.

- 2) Firms need to ponder seriously painful solutions such as exits, mergers and/or acquisitions. The behavior of the "big brothers" in the past of refusing to buy from small raw milk producers was a major cause of the problem. Now the "big brothers" could be part of the solution.
- 3) Dairy manufacturers must install water recycling equipments to reduce water consumption by the industry and to reduce the divergence between private and social costs in water consumption.
- 4) The Government needs to come up with a comprehensive water policy, including the imposition of a severance tax on the extraction of water.
- 5) Government agencies need to review and coordinate their subsidization policies. Any further subsidies to the Dairy Industry may need to come to a halt for quite sometime.

Questions for Discussions:

1. What is the best description of the market structure of the Saudi Dairy Products Industry and how has it been affecting the industry's outcome? Compare this to the usual textbook cases.
2. Why hasn't collusion among producers succeeded? (Here the professor may want to remind students of six general factors that help to strengthen collusions)
3. What mistakes at the industry level led to recurring price wars?
4. What mistakes at the Government level contributed to dairy price wars?
5. What should happen at the industry level to deal with the current situation?
6. What should the Government do?

## Industry & Government Responses

Some small producers (Al-Azizia, Najdiah, Al-Hana, Almazra'a, and Al-Riyyad) started negotiations for mergers, which never culminated into anything. The small producers were mainly family owned companies.

Some of the major producers like Al Safi and Almarai opted for converting some of their production capacities either into bottling of fruit-juices imported in large containers from other countries, or introducing new blends of milk and juices. Al Marai built a factory of cheddar cheese at a cost of SR90 (\$24) million, with an intended capacity of 50,000 tons per year. NADEC opted for building cow and animal feed farms in Sudan, where water is much more plentiful. Milk is shipped to, and processed in their factories in Saudi Arabia.

Al Qaseem, a small producer, opted to exit completely from the production of dairy products into water bottling. The excess productive capacities on the one hand, and the rising prices of some inputs on the other, have driven three producers of raw milk (Al-Saliheyya, Al-Shagdali, and Al-Tokharim) into bankruptcy. The selling price of raw milk went down from SR1.6/liter to SR1.2, and prices of animal feed increased by 41 percent. (Al-Eqtisadiyah, No. 4005, September 28, 2004). Almarai negotiated in 2004, buying some farms of raw milk producers. This was in spite of the fact that the company itself closed down some of its own smaller farms in 1999-2000. The industry ruled out converting liquid milk into powdered milk. The reason given was that every one kilogram of powdered milk required 11 liters of liquid milk. Imported powder milk was found to be cheaper

Surprisingly, industry agreements never included a clearly -stated upper industry output, nor any detailed production quotas for member firms. This contrary to the usual textbook- colluding practices!!

One solution that may help curb the excess supply of dairy products is for the Industry to convince the Government that dairy producers should be allowed to pay all, or at least some of their tax dues in kind. This requires designing a system similar to the food stamps program in the USA. Poor people can collect from grocery stores dairy products for free. The program could reduce product returns, reduce waste, generate further demand for dairy

products, and reduce pressure on the cash flow of producers.

It should be mentioned here that only very lately (in 2004 -2005) there has been a change in Government's agricultural policy in an effort to economize on very scarce water resources. The Government reduced subsidies for wheat production and the allowed acreage of animal feed, prevented exports of animals feed. Farmers are called upon to install meters on water wells, and encouraged to recycle water. However it is not clear to what extent these measures have been actually implemented. There has been a report that the Government is studying revising upward the fees for agricultural water consumption. Furthermore, the change in the Government's commercial policy, has added more pressure on the industry as the Government reduced the general tariff on imports from 12% down to 5% in a country that imports between 50-60 percent of its dairy products consumption.

## Epilogue

AlMarai Company achieved the highest profits in its history during the first half of 2005, announced the chairman, Prince Sultan Ibn Mohammed Ibn Saud Al-Kabir, on the eve of the first general assembly of the partners after the IPO – the transfer assembly --. Net profits for the mid-year 2005 was SR178.3 million, an increase of 2 percent from the same period last year.

Prince Sultan emphasized that the company is keen on continuing to achieve higher growth and expansion in its productivity and marketing. "Achieving this high net profit was a result of increase in sales and production efficiency as well as increase in our cattle's production rate which is considered among the highest in the world," he said.

The company saw an increase in its sales during the first half of 2005 reaching SR994.8 million, an increase of 9.7 percent compared to the same period in 2004. Total profits increased by 8.8 percent reaching SR395 million. The increase in total profits was less than the increase in sales due to the increase in production costs as a result of higher prices of the raw material and the decrease in the price of US dollar.

It was also due to the expansion plans of the company that includes establishing a new model

factory, expanding the farms and production units, and developing distribution and sales capacity thus increasing the company's assets to SR1221 million, an increase of 11.3 percent.

"The company received loans to implement the expansion project, which is about to be completed, some from the government and the other is commercial loans from a number of banks in accordance with Shariah laws," said Prince Sultan\*.

\* Article originally published by Arab News 31-Jul-05



