

Prospects and opportunities for exports of dairy products from India

ANJANI KUMAR¹, D C RAI² and KHYALI RAM CHOUDHARY³

National Centre for Agricultural Economics and Policy Research, Pusa, New Delhi, Delhi 110 012 India

Received: 23 March 2010; Accepted: 4 November 2010

ABSTRACT

The economic policy reforms triggered in India in 1991 were oriented towards liberalization and integration with the world economy. These policy initiatives of reforms and economic liberalization widened the market opportunities for international trade including the dairy products. In this context, this paper examines the issues of trade possibilities for India, in view of growing domestic consumption, augmented supply and growing international market for dairy products.

The study revealed that growth in Indian dairy sector has been impressive and if the existing growth rate can be sustained, India can pursue export of dairy products more vigorously. The projected demand scenarios for domestic requirement of dairy products lend credence to this optimism. It has been clearly brought out that the dairy production is competitive in comparison with other countries. India further has a geographical advantage to serve milk deficit areas in neighbouring countries. The demand for milk products in these deficit countries is expected to be growing. India needs to capitalize on these advantages by improving quality and hygiene standards of the dairy products and bringing more efficiency in milk production and processing. India needs to develop more competitiveness in products which are being imported in countries like Sri Lanka, Bangladesh and Nepal from other developed countries. For export to SAARC countries even some more liberal export policies may be explored.

Key words: Competitiveness, Dairy products, Export

The livestock sector is amongst the few growth sectors in rural India and its contribution to agricultural GDP has been consistently increasing, from 14% in 1980–81 to over 25% in 2006–07. Milk and milk products constitute a major share in the value of output from the livestock sector, in volume terms India is now the world's largest milk producer. Dairy's share of the total value from the livestock sector hovered around 65 to 70% during 1950–51 to 2007–08. Milk and milk products have emerged as the largest agricultural commodity category by value in recent years.

The economic policy reforms triggered in 1991 were oriented towards liberalization and integration with the world economy. The global demand for dairy products is also on rise and owing to various trade negotiations and autonomous domestic reforms in India, access to international markets for dairy products have improved particularly in the post-WTO period. Such developments offer tremendous opportunities to India to increase exports of dairy products and pose challenges to improve efficiency and sustain efficient milk production to thwart the upsurge in import of dairy products. In this context, this paper examines the trends

in growth of milk production, changing consumption profile of dairy products and the issues of trade possibilities for dairy products in India.

Growth in milk production

The goal of India's first Five-Year Plan in 1951, was to provide hygienic milk to the country's growing urban population. Initial government action in this regard consisted of promoting state-owned dairy plants to handle milk procurement, processing, and marketing. In 1959, the Delhi Milk Scheme (DMS) was set up to supply milk to the urban population of Delhi, and Key Village Scheme (KVS), Integrated Cattle Development Project (ICDP) and some other programmes were launched to improve breeding, feed and fodder availability, disease control, and milk production. The same policies and strategies continued in the Second Five-Year Plan. The Third Plan emphasized the need to develop dual-purpose animals for milk as well as draught use, crossbreeding of indigenous cattle was introduced during this plan.

During the 1960s, various state governments tried different strategies to develop dairying, including establishing dairies run by their own departments, setting up cattle colonies in urban areas and organizing milk schemes. Almost invariably, dairy processing plants were built in cities rather than in the

Present address: ¹Principal Scientist (e mail: anjani@ncap.res.in), ³Technical Officer.

²Associate Professor, Institute of Agricultural Sciences, BHU, Varanasi 2210 053.

milk sheds where milk was produced. Such urban orientation to milk production led to the establishment of cattle colonies in Mumbai, Kolkata and Chennai. The informal or unorganized sector consisting of milk vendors and contractors remained the dominant player. During the two decades between 1951 and 1970, the growth rate in milk production was barely 1% per annum, while per capita milk availability was stagnant and sometimes declined (Table 1).

The strategy for organized dairy development in India was conceived in the late 1960s after the National Dairy Development Board (NDDB) was founded in 1965, and rested on the Operation Flood Programme. During the 1970s, dairy commodity surpluses were building up in Europe, and the potential was recognized for using the European surpluses as an investment in the modernization of India's dairy industry. Revenues generated from sale of the reconstituted dairy products were then reinvested in dairy development activities. Dairy development through producers' cooperatives and milk production based on milk sheds in the rural areas, modelled on the successful experience of dairy cooperatives in Gujarat, became the cornerstone of the new dairy development policy. This policy initiative helped to turn the Indian dairy sector around and also led to several unarticulated spread effects.

The Indian dairy industry underwent substantial growth during the 1980s and 1990s; production of milk increased from 32 million tonnes in 1980–81 to above 100 million tonnes in 2006–07. Buffalo and cow are both important dairy species with a share of 54 and 41% respectively, in total milk output; goats account for most of the rest. Growth in total milk production however decelerated from 5.3% during 1980s to 4.26% during 1990s, and further decelerated to 3.73% during 2000–06. The deceleration was in both cow and buffalo milk production. This rapid and sustained growth in milk heralded the country into an era of self-sufficiency towards the late 1990s, and India emerged as the net exporter of dairy products. This has not only made India the number one milk producer in the world, but also represents sustained growth in the availability of milk and milk products for the burgeoning population of the country. The per capita

availability of the milk has also increased (about 245 g/day), this is still low as compared to most developed nations or the world average of 285 g/day, but is high compared to most developing countries.

Changing demand patterns for dairy products

Despite being the largest milk producer in the world, per capita availability and consumption of milk in India is still relatively low, although it is high by developing country standards. The per capita availability of milk, which declined during the 1950s and 1960s (from 124 g/day in 1950–51 to 121 g in 1973–74) expanded substantially during the 1980s and 1990s and reached about 245 g/day in 2006–07. Between 1983 and 1999–00, per capita annual milk consumption increased from 43 kg to about 74 kg and slightly declined to 72 kg in 2004–05 (Table 2). However, there is considerable variation in consumption of milk across income classes, and strong positive association between quantity of milk consumed and income level.

Several factors have contributed to the increased demand for milk and dairy products in the country, including the strong cultural significance of milk in the India where a large proportion of population is lacto-vegetarian. The demand for milk and dairy products is income elastic, and growth in per capita income is expected to increase demand for milk and milk products, and urbanization and changing food habits and lifestyles, have also reinforced growth in demand for dairy products. Further, per capita consumption of milk was 1.5 times higher among the urban households compared to rural households in 1999–00. Nevertheless, the per capita consumption of milk has been increasing faster in the rural areas and in 2004–05 the urban households were consuming only about 1.2 times than their rural counterparts. Between 1983 and 1999, consumption of milk increased by 71% in rural households and 43% in urban households. This suggests that apart from urbanization, sustained growth in rural income would fuel rapid growth in rural demand for livestock products. In 2004–05 milk and milk products accounted for 15.4% of the total household food consumption expenditure

Table 2. Per capita consumption of milk and share of consumer expenditure spent on milk and milk products (kg/capita/year)

Period	Milk production (million tonnes)	Milk availability (g/day)	CAGR (%)	
			Milk production	Milk availability
1950–51	17.0	124		
1960–61	20.0	124	1.64	0.0
1973–74	23.2	112	1.15	–1.01
1980–81	31.6	128	4.51	1.34
1990–91	53.9	173	5.68	3.10
2000–01	80.6	220	4.26	2.41
2006–07	100.9	245	3.73	1.85

Year	Rural	Urban	All
Per capita consumption (kg/capita/year)			
1983	37.0	55.5	43.0
1993–94	54.7	65.2	58.6
1999–00	63.3	90.7	73.5
2004–05	69.0	79.3	72.2
Share of milk and milk products in household food expenditure (%)			
1983	11.5	15.7	12.4
1993–94	15.0	17.9	16.0
1999–00	14.7	18.1	15.8
2004–05	15.4	18.6	16.5

Table 3. Income/expenditure elasticity of demand for milk and projected demand in India

	Rural	Urban	Demand for milk by 2020 (million tonnes)
Radhakrishna and Ravi (1992)	1.15	0.99	-
Gandhi and Mani (1995)	1.70	1.06	-
Kumar (1998)	-	-	126.0 - 182.8@
Saxena (2000)	1.96	1.32	85.7 [#]
Delgado <i>et al.</i> (2001)	-	-	132.0
Dastagiri (2001)	1.36	1.07	147.21
Ramesh Chand (2007)			141.5271.0
TIFAC: Food and Agriculture: Technology Vision 2020			

[#], Estimates for 2007–08; @, Estimates based on 4% growth in GDP (126.0), 5% growth (142.7) and 7% growth in GDP (182.8).

of rural households. This is slightly lower than that of urban households (18.6%). In rural areas, the share of dairy products increased from 11.5% in 1983 to 15.4% in 2004–05. In urban areas, however it increased 15.7 to 18.6% during this period.

Saxena (2000) showed that the income elasticity of demand for milk and milk products is higher (1.96 national level) in rural areas (ranging from 1.24 in Punjab to 2.92 in Orissa) than in urban areas (ranging from 0.99 in Punjab to 1.78 in Bihar). Further increases in per capita income and changing consumption patterns would lead to acceleration in demand for milk and other livestock products in India and thus would give a boost to this sector. The projected demand in 2020 for milk and milk products varied from 132 million tonnes to 271.0 million tonnes. But, majority of projections hover around 132 to 147 million tonnes. These projections suggest that if recent growth rate is sustained in domestic supply of dairy products there would be surplus available for export after meeting domestic demand. This may provide opportunities for the dairy farmers to reap benefits of the emerging opportunities of growing demand in the global markets.

Trade performance of dairy products

Despite being the largest producer of milk in the world, India is a very small player in the world market. India started exporting surplus dairy commodities in the 1990s. India was a net importer of dairy products till 2000 (Table 4). This scenario changed sharply after 2000 indicating the export potential of this sector as exports exceeded imports remarkably and the trade surplus for the dairy sector has been continuously increasing. The share of dairy export in the value of output from dairying was merely 0.01% in TE 1982, it increased to 0.4% in TE 2007. The share of dairy imports consistently declined over time, from 1.4% in TE 1982 to 0.04% in TE 2007. However, the exports of dairy products from India are negligible compared to both its own production and to international trade. The import and export of dairy products was regulated through the Agricultural and (APEDA) Processed Food Products Development Authority till early 1990s. However, in 2001 the government removed these restrictions and allowed free trade of most of the dairy products. These relatively small export figures clearly demonstrate that Indian exports are still in its infancy. However, increasing trends of dairy exports, expanding global markets and integration into global markets under WTO may create immense opportunities for increased dairy exports from India.

Composition of dairy trade

Dairy products include whole milk powder (WMP), skim milk powder (SMP), butter, cheese, curd and whey along with some other milk products. Earlier, butter, ghee and other fats and baby foods constituted the major share of exports of dairy products. In fact, the export of dairy products in TE 2007 was almost five times more than in TE 2000 (Table 5). Earlier among dairy products butter and other fats and baby food constituted the major export items of dairy products. The share of butter and other fats in the export basket of dairy products declined from 70% in TE 1982 to 16% in TE 2007. However, in the recent years skim milk powder emerged as the largest constituent of dairy products exports and accounted for 55% of the total exports of dairy products.

Table 4. Trade balance of dairy products export and imports in India

TE	Dairy export (million US\$)	Dairy import (million US\$)	Tradebalance	Total trade /VOP	Export/VOP	Import/VOP
1982	1.49	139.58	-138.09	1.42	0.01	1.40
1985	2.25	110.59	-108.34	0.92	0.02	0.90
1988	3.19	64.7	-61.51	0.46	0.02	0.44
1991	1.5	37.67	-36.17	0.22	0.01	0.21
1994	3.53	10.98	-7.45	0.09	0.02	0.07
1997	7.85	10	-2.15	0.09	0.04	0.05
2000	6.4	19.85	-13.45	0.12	0.03	0.09
2003	29.39	9.68	19.71	0.18	0.13	0.04
2007	115.68	10.4	105.28	0.43	0.39	0.04

Table 5. Average annual value and composition of exports of dairy products

Items	Annual value and composition of exports (US \$ million)								
	1982	1985	1988	1991	1994	1997	2000	2003	2007
Dairy products	1.49(1.83)	2.25(2.67)	3.19(3.92)	1.50(1.24)	3.53(2.62)	7.85(3.42)	6.40(2.51)	29.39(7.78)	115.68(13.69)
WMP	0.00(0.03)	0.00(0.22)	0.00(0.10)	0.09(5.82)	0.78(22.03)	1.01(12.90)	0.37(5.72)	2.54(8.62)	13.73(11.87)
SMP	0.05(3.07)	0.02(0.87)	0.21(6.72)	0.15(9.93)	0.90(25.43)	4.54(57.81)	2.73(42.59)	16.30(55.47)	64.14(55.45)
Butter and other fats	1.04(70.11)	1.67(74.33)	2.21(69.20)	0.93(61.65)	1.19(33.57)	1.95(24.89)	2.76(43.17)	7.52(25.59)	18.11(15.66)
Cheese and curd	0.03(1.70)	0.01(0.23)	0.00(0.01)	0.07(4.92)	0.01(0.23)	0.06(0.80)	0.23(3.65)	0.57(1.94)	4.98(4.31)
Baby foods	0.37(25.09)	0.55(24.34)	0.73(22.76)	0.10(6.95)	0.63(17.80)	0.19(2.45)	0.09(1.35)	1.25(4.25)	2.67(2.31)
Other (milk items)	0.00(0.00)	0.00(0.02)	0.04(1.21)	0.16(10.72)	0.03(0.93)	0.09(1.15)	0.23(3.52)	1.22(4.13)	12.04(10.41)

Source: Directorate General of Commercial Intelligence and Statistics, Monthly Statistics of the Foreign Trade of India, Ministry of Commerce and Industry, Government of India; Data refer to triennium ending average. Figures within the parentheses are percentages to the total.

Further, processed cheese products are slowly finding their way to export markets. The major impetus to exports of dairy products had come after the removal of quantitative restrictions, which facilitated the exporters to tap the emerging opportunities in the global market. Sincere efforts by the government and exporters to comply with sanitary and phyto-sanitary standards (SPS) also seemed to have promoted the export of these commodities.

The compound growth rates of different dairy products exhibited mixed trends (Table 7). During the span of about decades, dairy products registered a whopping increase in its exports (15.33% / annum). These growth trends reiterate that there is a potential to increase the export of these products if due attention is given to ensure their safety and quality by adopting sanitary and phyto-sanitary standards and increase efficiency particularly in dairy processing, which otherwise may make export of dairy products uncompetitive. The exports of these commodities have grown in double digits symbolizing that focus on these can help in earning more foreign exchange and strengthen the global standing of India in dairy trade.

The imports of dairy products sharply declined,

particularly during late eighties and thereafter (Table 6). SMP and butter and other fats were the major items of import basket of dairy products. Though its share declined to 35% in TE 2007 but it still remains the most important importable item among dairy products. SMP, which accounted for 49% of total dairy imports, declined to a negligible level of 0.01%.

In fact dairy product imports were largely food aid, canalized or exclusively channeled through the National Dairy Development Board (NDDB) to support cooperatives. Apart from reduction in food aid over time, the significant increase in milk production due to the success of Operation Flood Programme, had a favourable impact in reducing the imports of dairy products to a considerable extent (Kumar *et al.* 2001, Kumar *et al.* 2007). The imports of dairy products except products like cheese declined substantially and registered a significant negative growth. The share of cheese and curd was negligible in the dairy import in TE 1982 but its import grew consistently particularly after TE 2000 and accounted for 52% of total dairy import.

Destinations for trade are determined by several factors including geographical and political proximity, differences in comparative advantage, and degree of trade barriers. The

Table 6. Average annual value and composition of imports of dairy products

Items	Annual value and composition of imports (US \$ million)								
	1982	1985	1988	1991	1994	1997	2000	2003	2007
Dairy products	139.58 (99.52)	110.59 (99.44)	64.70 (96.90)	37.67 (93.62)	10.98 (85.06)	10.00 (69.56)	19.85 (70.71)	9.68 (43.85)	10.40 (45.57)
WMP	1.51(1.08)	0.42(0.38)	0.15(0.23)	0.12(0.31)	0.08(0.69)	0.26(2.62)	0.12(0.62)	0.10(0.99)	0.19(1.83)
SMP	68.07 (48.77)	70.14 (63.42)	26.44 (40.87)	28.64 (76.02)	6.58 (59.93)	1.41 (14.14)	8.63 (43.46)	0.30 (3.12)	0.01(0.10)
Butter and other fats	69.06 (49.48)	38.85 (35.13)	37.70 (58.27)	7.73 (20.53)	3.44 (31.32)	7.75 (77.53)	9.85 (49.64)	7.09 (73.18)	3.60 (34.62)
Cheese and curd	0.10(0.07)	1.04(0.94)	0.09(0.14)	0.13(0.33)	0.07(0.63)	0.25(2.54)	0.47(2.35)	1.86(19.17)	5.38(51.73)
Baby foods	0.83(0.60)	0.14(0.12)	0.19(0.29)	0.27(0.71)	0.17(1.53)	0.07(0.68)	0.57(2.85)	0.31(3.17)	0.13(1.25)
Other (milk items)	0.00(0.00)	0.00(0.00)	0.14(0.21)	0.79(2.09)	0.65(5.90)	0.25(2.49)	0.21(1.07)	0.04(0.38)	1.09(10.48)

Source: same as in Table 2. Data refer to triennium ending average. Figures within the parentheses are percentages to the total.

Table 7. Compound annual growth rates of exports and imports of dairy products

Items	CAGR (%)							
	1980–90	1991–00	2001–07	1980–07	1980–90	1991–00	2001–07	1980–07
Dairy products	4.87	12.78	36.02	16.19	–10.3	12.6	2.7	–9.61
WMP	0.00	0.00	38.74	0.00	–29.8	0	15.4	0
SMP	44.97	26.10	44.79	40.42	–7.0	7.3	–37.3	–23.8
Butter and other Fats	5.15	14.69	19.75	10.02	–29.2	45.7	–19.1	–8.19
Cheese and curd	0.00	0.00	70.64	0.00	5.4	39.3	35.07	15.7
Baby foods	–5.56	–14.11	21.56	5.21	–4.0	9.6	–70.2	–16.6
Other (milk items)	0.00	0.00	39.14	0.00	0	0	126.2	0

share of SAARC countries in India's export of dairy products was 45% in TE 1982, which rose to 50% in TE 1991 (Table 8). Thereafter it declined gradually and reached to 28% in TE 2007. Nepal which accounted for 40% of India's export of dairy products in TE 1982, declined to a meagre 4% in TE 2007. The share of Bangladesh also declined from 32% in TE 2000 to 15% in TE 2007. Other SAARC countries were not importing significant proportion of India's dairy export. The cause for decline of SAARC countries in India's dairy export needs to be thoroughly investigated and the possible options must be explored to enhance its export to these countries.

Competitiveness of Indian dairy sector

The indicators for export competitiveness for dairy products suggest that the Indian dairy industry has been protected from the distorted world prices. The value of Nominal Protection Coefficients (NPCs) hovered around 1.02

Table 8. Share of dairy products export in SAARC countries

Countries	1982	1991	2000	2007
Sri Lanka	5.17	3.86	1.67	2.06
Nepal	39.55	5.92	5.63	4.41
Pakistan	0.00	0.00	0.05	3.73
Bhutan	0.00	2.62	0.10	0.71
Afghanistan	0.00	0.69	0.00	1.86
Maldives	0.00	0.00	0.00	0.04
Bangladesh	0.00	36.91	31.77	15.43
SAARC	44.72	50.00	39.22	28.24

to 1.25 for SMP and 1.15 to 1.27 for WMP (Table 9). The NPCs for SMP and WMP were 0.72 and 0.83, respectively, in 2007 due to high spurt in international prices of these commodities. The price increase for these commodities in 2007 was relatively less as compared to world market. However, these figures do not inspire much confidence for India to record significant export of these commodities under the existing world prices. India can emerge as significant exporter by subsidizing its own exports to compete with other exporters or negotiate in the WTO for substantial reduction in subsidies by the major exporters of WMP and SMP

Table 9. Nominal protection coefficients of dairy products

Period/Item	Exportable hypotheses			Importable hypotheses		
	Butter	WMP	SMP	Butter	WMP	SMP
TE 1996	1.87	1.16	1.06	1.79	1.13	1.04
TE 1999	2.15	1.27	1.25	2.02	1.21	1.18
TE 2002	2.59	1.16	1.02	2.37	1.11	0.98
TE 2005	2.14	1.26	1.14	2.03	1.23	1.11
TE 2007	1.77	1.15	1.02	1.72	1.14	1.01

(Rakotoarisoa and Gulati 2006). But the possibility of export of butter does not exist. The NPC for butter was 1.98 in TE 1993 and reached to 2.59 in TE 2002 and then depicted a declining trend went down to 1.77 in TE 2007. This implies that butter prices have been possibly more protected than of SMP and WMP or the world market prices for butter are heavily subsidized.

Growth in Indian dairy sector was impressive and if the existing growth rate is sustained, India can pursue export of dairy products more vigorously. The projected demand scenarios for domestic requirement of dairy products lend credence to this optimism. It is obvious that the dairy production is competitive in comparison with other countries. India further has a geographical advantage to serve milk deficit areas in neighbouring countries. The demand for milk products in these deficit countries is expected to be growing. India needs to capitalize on these advantages by improving quality and hygiene standards of the dairy products and bringing more efficiency in the milk production and processing. India needs to develop more competitiveness in products which are being imported in countries like Sri Lanka, Bangladesh and Nepal from other developed countries. For export to SAARC countries even some more liberal export policies may be explored.

REFERENCES

- Christopher L. Delgado, Mark W. Rosegrant and Siet Meijer. 2001. Livestock to 2020: The Revolution Continues. *Annual meeting of the International Agricultural Trade Research Consortium (IATRC)*. January 18–19, 2001. Auckland, New Zealand.

- Dastagiri M B. 2001. Demand for livestock products in India: Current Status and Projections for 2020. *Agricultural Economics Research Review (Conference Proceedings)*. pp-176-182.
- Delgado C, Rosegrant M, Steinfeld H Ehuj S and Courbois C. 1999. Livestock to 2020: The next food revolution. *Food, Agriculture, and the Environment* Discussion Paper 28. Washington, DC: International Food Policy Research Institute.
- Kumar Anjani, Jabir Ali and Harbir Singh. 2001. Trade in livestock products in India: trends, performance and competitiveness. *Indian Journal of Agricultural Economics* **56**: 653-67.
- Kumar Anjani, Steven J Stall, Singh N P and Singh Dhiraj K. 2007. Livestock sector trade of India: Surging momentum in the new liberalised regime. *Indian Journal of Agricultural Economics* **62**(3): 395-410.
- Kumar P and Birthal P S. 2004. Changes in consumption and demand for livestock and poultry products in India. *Indian Journal of Agricultural Marketing* **18**(3): 110-23.
- Kumar Praduman. 1998. Food Demand and Supply Projections for India. *Agricultural Economics Policy*. Paper 98-01, Division of Agricultural Economics, Indian Agricultural Research Institute, New Delhi.
- Manitra Rakotoarisoa and Gulati Ashok. 2006. Competitiveness and trade potential of India's Dairy Industry. *Food Policy* **31**: 216-27.
- Radhakrishna R and Ravi C. 1992. Effects of growth, relative price and preference of food and nutrition. *Indian Economic Review* **27** (Special Number): 303-23.
- Saxena Rakesh. 2000. Dynamics of demand for milk in this millennium. *XXXth Dairy Industry Conference*. December 8-9, 2001, pp 32-47. Kolkata.
- Sevela M. 2002. Gravity type model of Czech agricultural export. *Agricultural Economics* **48**: 463-66.
- Sharma V P, Delgado C, Staal S and Singh R V. 2003. Policy, Technical and Environmental Determinants and Implications of the Scaling-Up of Milk Production in India. (*vide* Delgado C, Narrod C A, Tiongco M M. 2003. Policy, Technical and Environmental Determinants and Implications of the Scaling-Up of Livestock Production in Four Fast-Growing Developing Countries: A Synthesis. Final Research Report of IFPRI-FAO Project on Livestock Industrialization, Trade and Social-Health-Environment Impacts in Developing Countries. IFPRI, Washington D C. 2003.