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# Capitalizing Gains from Dairy Trade: Excavating the Market Potential

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## Abstract

After recording a huge negative trade balance of dairy products during 1980s, India has evolved as net exporter in dairy trade during the last three decades. Exports of dairy products increased almost 200 times since early 1980s to later half of new millennium whereas value of imports decreased by 7 times by this period. The export perceived vast changes in composition as well as destination over the study period. The present study analyses the temporal changes in composition and direction of Indian dairy exports at most disaggregate level in light of several policy interventions during last three decades and identify the potential sources of gains thereof. The study is based on the secondary data from various sources on several variables, the major being dairy trade statistics from DGCI&S and ministry of commerce for 1980-81 to 2009-10. Compositional analyses of export basket indicates that India has multiplied its product portfolio from traditional dairy products like concentrated and sweetened milk and cream and fat based products to value added dairy products like cheese and curds, whey based products, yogurt and other acidified dairy products. Harfindahl index of geographical concentration indicates that the country has continuously diversified trade destinations over the last three decades. New trade partners have emerged in African Countries apart from conventional partners from Asian and European countries. In light of the empirical evidences, the study concludes that generation of more exportable surplus through improved breeding and feeding programmes is the key to amplify the foreign exchange earnings from dairy sector. Policy and research emphasis should be on development of efficient milk value chain to boost trade. To improve the bargaining power of the country, on the quality front, India should improve its image as a reliable and consistent supplier of safe and quality dairy products conforming to the international standards. A comprehensive strategy for producing quality and safe dairy products should be formulated with legal backdrop. Harmonization of BIS (Bureau of Indian Standards) quality standards with that of international quality standards will go a long way in materializing the export potential of Indian products into foreign currency.

**Keywords:** Dairy exports, trend, composition, diversification, harfindahl index

The first four decades since the commencement of development planning in India, there was near stagnation in the foreign trade. The inward looking economic policy, import substitution and very slow progress on the export front was responsible for this impasse. India's trade performance has, indeed been quite disappointing in relation to both its potential and needs. With negligible share in world exports, huge trade deficits, weakening position of traditional exports and with no commendable achievement in accessing new markets, India's export performance has been considered very poor particularly in comparison with the export performance of many developing countries (Srinivasan, 2005).

From the 'Golden Summer' of 1991, India embarked upon liberal policy framework which was further reinforced with the signing of Uruguay Round Agreement on Agriculture (AoA) in 1994. The expectations of gains from enforcement of AoA have been particularly high for the dairy products, as India has

low cost of milk production and the world dairy markets have been distorted for decades on account of heavy subsidies in the OECD countries. Although, India the top milk producing country in the world has negligible share in global dairy trade, recent empirical evidence indicates that despite of continuance of distortions in the world dairy markets; there has been a sharp rise in exports of dairy products from the country. Indian dairy exports have increased from US$ 2.65 million in TE 1993 to US$ 24.52 million in TE 2003 and further to US$ 154.83 in TE 2008 (Table 1). During the same period the growth of imports has been slower from US$ 9.76 million in TE 1993 to US$ 15.14 milion in TE 2008, resulting in India becoming a net exporter of dairy products (Sirohi, 2012).

In the directional front, Asian countries have been the most important destination of the Indian dairy exports (Hazra, 2007). Based on recent aggregate trade patterns and their likely future, research studies have brought out that Asia is and will remain a large net importer of dairy products (Dong, 2005; Podbury *et al*. 1995; Rae, 1997; Rutherford, 1999). Many Asian countries suffer from one or more factors hindering their competitiveness in dairy trade (tropical climate, land and feed scarcity, labour cost, transaction/transportation costs). These handicaps explain their net dependence on world dairy markets. This fact is likely to remain valid in the future even if Asia dairy production becomes much more productive (Dong, 2005). Hence, in the times to come, the Asian countries will continue to be important destinations of Indian dairy products besides the burgeoning domestic market. India could be a competitive exporter under world prices that would prevail if Asia liberalized its dairy trade (Peng and Cox, 2005; Rakotoarisoa and Gulati, 2005). If all countries liberalized their dairy markets, China as well as India would export to world markets with the higher world prices that would prevail under global free trade. The competitiveness ranking found by Peng and Cox (2005) places India at the top, followed by China and other south Asia region. India could experience significant exports of milk powder to Indonesia, Malaysia, the Philippines, and Thailand, which are large importers of the product. In view of these, an effort has been made in this study to examine the capitalizing gains from dairy trade.

## Database and Methodology

Destination wise dairy export statistics in quantity and value (in US$), to each country were collected from Director General of Foreign Trade, India (DGFT), United Nation's Commodity Trade Statistics (UNCOMTRADE) and WITS-TRAINS from 1980-81 to 2009-10. However, from 1980-81 to 1985-86 products were classified according to "Standard Industrial Trade Classification" (SITC) and from 1986-87 onwards, Harmonized System (HS) classification was introduced which was followed by most of the countries in the world till date. Hence from 1986-87 onwards, data were based on Harmonized System Codes at 4/6/8 digit level as per the requirement.

To know the extent of diversification of destinations of dairy exports over the study period, "Herfindahl Index of Geographical Concentration" index was used. The Herfindahl index of geographical concentration for country A's exports is the sum of the squares of the export shares of each country of destination in the total world exports of the country i, i.e.: H = i = 1n(XiXi)2, where i = 1… n countries of destination (or source). Percentage contribution of each continents and countries both in

**Table 1: Value of Indian dairy trade**

| Dairy Products at HS 4 digits | Average value in US $ million | | |
|---|---|---|---|
| | TE 1993 | TE 2003 | TE 2008 |
| **Exports** | | | |
| Milk and Cream, not concentrated nor with added sugar | — | 0.05 | 2.78 |
| Milk and Cream, concentrated or containing added sugar | 1.55 | 18.90 | 115.97 |
| Buttermilk, curdled milk and cream, yogurt etc. | 0.02 | 0.04 | 4.00 |
| Whey; products consisting of natural milk constituents | 0.01 | 0.53 | 7.36 |
| Butter and other fats; Dairy spreads. | 1.05 | 4.78 | 20.59 |
| Cheese and Curd | 0.02 | 0.22 | 4.13 |
| **Imports** | | | |
| Milk and Cream, not concentrated nor with added sugar | 0.11 | 0.03 | 0.06 |
| Milk and Cream, concentrated or containing added sugar | 6.44 | 1.06 | 1.96 |
| Buttermilk, curdled milk and cream, yogurt etc. | — | 0.05 | 0.22 |
| Whey; products consisting of natural milk constituents | 0.32 | 0.66 | 3.37 |
| Butter and other fats; Dairy spreads. | 2.84 | 7.03 | 6.03 |
| Cheese and Curd | 0.05 | 1.21 | 3.50 |

**Source:** Sirohi (2012)

quantity and value of exports were measured over the study period to find out the relative importance of each destination. Mean quantity of exports were analysed to find out the temporal changes in destinations of dairy trade.

## Results and Discussion

The country's dairy trade (both imports as well as exports) have exhibited highly fluctuating trends over the past three decades (Fig. 1). The fluctuations are mainly attributable to inconsistent dairy production and price movements in international dairy markets (Joshi, 2013). Traditionally the country was a net importer of dairy products and exports was almost negligible in this segment (Fig. 1). The positive effect of "Operation Flood" programme, launched in 1970 to overcome the shortage of milk and milk products in the country was manifested on dairy trade also and by 1990-91, the net trade balance that was largely negative throughout the 80's became almost negligible. In the decade of 90's two important economic events took place that could have a bearing on international trade i.e. the liberalization of Indian economy and implementation of 'Agreement on Agriculture' (AoA) under WTO. However the entire decade both exports and imports kept edging each other with net trade balance ranging from +2.44 million US$ (1994-95) to -30.36 million US$ (1999-00). Exports increased fairly rapidly in subsequent decade ranging from 12.57 million US$ in TE 2001 to 171.26 million US$ in TE 2010 resulting India to become a net exporter of dairy products.

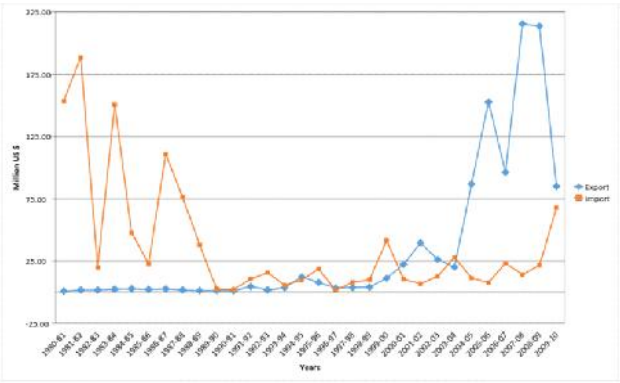


**Fig. 1:** Trends in value of exports and imports of Indian dairy products

The country exported all the six major product lines as lied under HS 4 digit classification (Annexure 1) at least for a single year during the study period. The share of two major product groups viz.; concentrated and sweetened milk and cream (HS 0402) and butter and other fat based products (HS 0405) dominated the exports throughout the study period (Fig. 2). The initial share of sweetened milk and cream (HS 0402) was as high as 86% in the first quinquennium (1990-91 to 1995-96) dropped to 67% in the last quinquennium (2005-06 to 2009-10) and on the contrary the initial share of butter and other fat derivatives (HS 0405) was 14% in the first quinquennium (1990-91 to 1995-96) remained same throughout the study period.

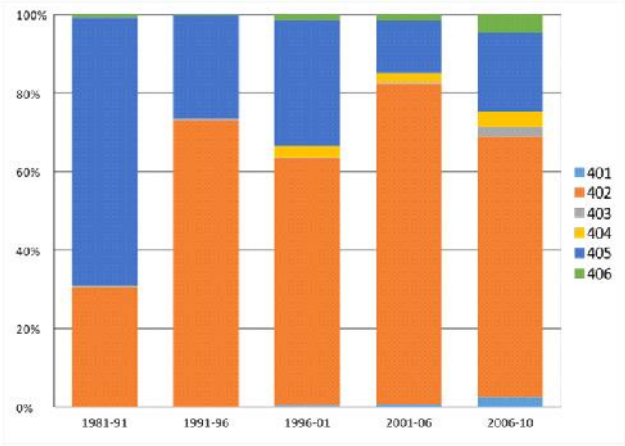


**Fig. 2:** Composition of export basket

After implementation of new world trade order (in 1995-96), some diversification in Indian dairy export basket has been observed. The initial average combined share of concentrated and sweetened milk and cream (HS 0402) and butter and other fat based products (HS 0405) of 98% during early two quinquennium (1980-81 to 1995-96) dropped to 95% during early WTO (1995-96 to 2000-01) and post WTO (2000-01 to 2005-06) era and further to 88% during the global financial crisis (2005-06 to 2009-10). After liberalization of country's economic policies, the exports in the minor groups (HS 0401, HS 0403, HS 0404 and HS 0406) started in small amounts. The initial combined share of the minor groups was less than one percent during pre-liberalization period (1980-81 to 1990-91) improved to 12% during global financial crisis period (2005-06 to 2009-10). The major improvement among the minor groups was observed in case of whey based products (HS 0404) and cheese and curd (HS 0406). Whey based products (HS 0404) exported in less than 1% during the first quinquennium (1990-91 to 1995-96) picked up to 4% in last quinquennium (2005-06 to 2009-10). Similarly exports of Cheese and Curd (HS 0406) picked from a mere 0.11% in first quinquennium (1990-91 to 1995-96) to hefty 3.14% in last quinquennium (2005-06 to 2009-10). The other groups; viz. unsweetened milk and cream (HS 0401) and fermented milk products (HS 0403) also exported with its combined share around 9% in the last quinquennium.

The future of these non-conventional dairy products seems to be encouraging and considering the changing demand pattern of dairy products worldwide, the country should consider for further diversification of the product portfolio to grab a lion's share in the world market.

On the basis of frequency and average quantity of exports, total 32 dairy product lines under HS 8 digit classification (Annexure 1) were classified in two broad groups; regular products and new products (Table 2). Those products, which were exported consistently in all the quinquennium, were classified as regular products and those which were mainly exported in the last two quinquennium, were classified under new products.

It is evident from the results that 16 out of total 32 product lines were exported consistently from the nation. As expected prominent products among them from two major groups are viz.; sweetened and concentrated milk and cream (HS 0402) and butter and other fat derivatives (HS 0405), especially skimmed milk powder (HS 04021010), milk and cream with less than 1% fat (HS 04021090), butter (HS 04051000), melted butter (ghee, HS 04059020) etc. Skimmed milk powder (HS 04021010) was exported in highest quantity in almost all the sub periods with average export ranging from 45% (2005-06

**Table 2: Nature of exported dairy products (000'kgs.)**

| Code | Description | Average quantity of Exports | | | |
|---|---|---|---|---|---|
| | | 91-96 | 97-01 | 02-06 | 07-10 |
| **Regular Products** | | | | | |
| **HS 0402; Concentrated and Sweetened Milk and Cream** | | | | | |
| 4021010 | Skimmed milk | 1664.79 | 1914.52 | 16849.05 | 27018.37 |
| 4021090 | Other milk and cream in powder, granule or solid form (fat<1.5%) | 163.48 | 792.98 | 3336.85 | 5327.94 |
| 4022910 | Whole Milk (fat>1.5%) | 260.97 | 113.26 | 2403.63 | 3974.52 |
| 4022990 | Others (e.g. milk cream) | 314.36 | 280.01 | 1037.88 | 847.18 |
| 4021020 | Milk Food for Babies (fat <1.5%) | 79.16 | 89.31 | 753.37 | 582.43 |
| 4022920 | Milk for Babies (fat >1.5%) | 27.76 | 21.62 | 173.30 | 231.50 |
| 4029990 | Others | 31.98 | 120.69 | 275.33 | 218.02 |
| 4029910 | Whole Milk (fat<1.5%) | 31.01 | 24.62 | 48.33 | 74.68 |
| 4029920 | Condensed Milk | 1.50 | 3.45 | 37.74 | 11.18 |
| **HS 0405; Butter and Other Fats and Oils Derived from Milk** | | | | | |
| 4051000 | Butter | 26.26 | 142.99 | 890.36 | 3533.31 |
| 4059020 | Melted Butter (Ghee) | 419.89 | 654.58 | 1829.80 | 3493.00 |
| **Others;** | | | | | |
| 4039090 | Others (curdled milk, cream kephir etc.) | 4.33 | 9.66 | 91.38 | 863.83 |
| 4061000 | Fresh cheese(incl. whey cheese) not fermented and Curd | 2.22 | 13.96 | 94.73 | 671.72 |
| 4049000 | Products other than whey consisting of natural milk constituents | 1.08 | 52.55 | 289.28 | 500.75 |
| 4039010 | Butter Milk | 6.27 | 9.23 | 6.34 | 15.90 |
| 4062000 | Grated or powdered cheese of all kinds | 0.33 | 1.48 | 3.91 | 5.88 |
| **Newer Product** | | | | | |
| **HS 0404; Whey and whey based products all types** | | | | | |
| 4041020 | Whey, dry, blocks and powdered | 0.00 | 26.90 | 83.46 | 1402.92 |
| 4041010 | Whey, Concentrated Evaporated Condensed (liquid/semi liquid) | 0.42 | 70.40 | 530.49 | 661.78 |
| 4041090 | Other whey | 0.00 | 0.00 | 30.60 | 140.55 |
| **HS 0406; Cheese and Curd** | | | | | |
| 4063000 | Processed cheese | 0.00 | 2.83 | 29.05 | 698.90 |
| 4069000 | Other Cheese | 0.55 | 22.53 | 262.08 | 472.61 |
| 4064000 | Blue Veined Cheese | 0.37 | 0.00 | 1.19 | 2.64 |
| **Others;** | | | | | |
| 4012000 | Milk and cream (fat>1%) | 0.00 | 0.00 | 377.24 | 5469.27 |
| 4059010 | Butter oil | 0.00 | 28.51 | 200.18 | 1302.74 |
| 4022100 | Milk and Cream unsweetened (fat> 1.5%) | 0.41 | 90.51 | 563.48 | 1025.52 |
| 4059090 | Others | 0.00 | 144.48 | 149.83 | 227.39 |
| 4011000 | Milk and Cream (fat<1%) | 0.00 | 18.64 | 42.53 | 129.63 |
| 4013000 | Milk and cream (fat>3%) | 0.24 | 0.38 | 98.58 | 118.05 |
| 4029190 | Others (unsweetened) | 0.00 | 0.00 | 15.58 | 28.54 |
| 4029110 | Condensed milk | 0.00 | 0.00 | 27.56 | 12.30 |
| 4052000 | Dairy spreads | 0.00 | 1.21 | 1.94 | 6.98 |
| 4031000 | Yogurt | 0.00 | 3.39 | 0.27 | 3.04 |

to 2009-10) to 55% (1990-91 to 1995-96) of the total exports. Milk and cream (<1.5% fat) (HS 04021090) followed skimmed milk in terms of export quantity and average exports ranging from 5% (1990-91 to 1995-96) picked up to 17% in the subsequent quinquennium (1995-96 to 2000-01) and further dropped to 9% during the last quinquennium (2005-06 to 2009-10). However the actual quantity of export consistently increased over the period. However the shares of other products in concentrated and sweetened milk products (HS 0402) group like Whole milk (fat >1.5%) (HS 04022910), Milk food for babies (HS 04021020), Condensed milk (040229920) also exported regularly throughout all the quinquennium but their average share of exports hovered below 10%. Two specific product lines (Butter; HS 04051000 and Melted butter; HS 04059020) from Butter and other fat based product group (HS 0405) were exported regularly from the nation. The share of butter (HS 04051000) was only 0.86% of the total exports during first quinquennium (1990-91 to 1995-96) and the share jumped to 6% during the last quinquennium (2005-06 to 2009-10) with overall share of 5% during the study period. The actual quantity of exports also increased from 26000 kg to hefty 3315 kg growing about 36% per annum during the study period. Melted butter (Ghee; 04059020) was also a dominant product in the Indian dairy export basket. The product consistently exported in all the quinquennium with average share in export ranging from 6% (2005-06 to 2009-10) to 14% (during 1990-91 to 1995-96). Though the share in total export decreased over the years but the actual quantity of exports increased with an average growth rate of 18% per annum during the study period. (1990-91 to 2009-10). There are few products in fermented milk products (HS 0403), Whey based products (HS 0404) and Cheese and Curd (HS 0406) those were also exported in some quantity throughout the study period but overall their share hovered around below 10%.

Half of the dairy product lines (16 out of 32) was mainly exported during the last two quinquennium and termed as newer products. As expected, products in Whey (HS 0404) and Cheese and Curd (HS 0406) specifically Whey dried and powdered (HS 04041020), Concentrated and Evaporated Whey (HS 04041010), Processed Cheese (HS 04063000), other cheese (HS 04069000) were prominent in the category. The share of these products in the export basket was particularly high during the last quinquennium (2005-06 to 2009-10). Apart from these two major group exported there some products from other groups like milk and cream (fat >1%; HS 04012000), Butter oil (HS 04059010), Unsweetened milk and cream (HS 04022100) etc. The export of milk and cream (HS 04012000) was particularly sharp during the last quinquennium (2005-06 to 2009-10) with 10% share of the total export. It will be of keen interest to find whether the country continues diversifying its export basket and exports of the newer products rise in the future.

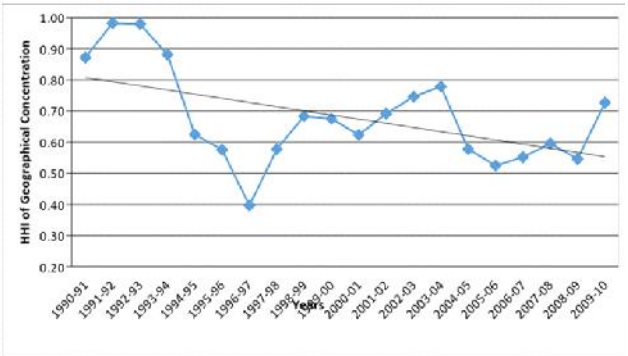


**Fig. 3:** HHI of geographical concentration in value of exports

In the last three decades the country exported a total of 1011 million US$ of dairy products and most of these products destined towards Asian countries. The value of exports towards Asia was 744 million US$ during the study period which accounted for about 74% of the total exports. Harfindahl index of geographical concentration in value of exports (Fig. 3) depicts that over the years there were some diversification in the export destinations. Though the major share was occupied by Asian countries throughout the study period, the share was dropped in the latter years. The share of Asian countries in total value of exports was around 90% during liberalization phase (1990-91 to 1995-96) and dropped to become 70% of the total export value during last quinquennium (2005-06 to 2009-10). The decline in the share of Asian countries was particularly sharp in 1997 (Fig 3) due to quantum jump in India's exports to some developed non-Asian countries like USA and Germany.

The total dairy exports to USA that stood at about 324 thousand kgs. in 1997 was more than 60 times greater than 1991's export quantity of 5 thousand kgs. Similarly for Germany, the export quantity had jumped from a mere 60 kgs. in 1991 to hefty 52 thousand kgs. in 1997. This jump was sporadic as the share declined in the later period. In the meantime the exports towards least developed continents like Africa rose from 0.08 million US$ during 1990-91 to 1995-96 (first quinquennium) to 37 million US $ during 2005-06 to 2009-10 (last quinquennium). The path of diversification in value of exports captured through trend in 'Harfindahl index of geographical concentration' (Figure 3) for the overall study period. The declining trend

indicates an overall diversification of export destinations.

Looking into the share of continents for exports in overall and in different quinquennium; the study revealed that Asian countries were the major destination of Indian dairy products throughout the study period with overall share of 80% in both value and quantity (Table 3). However the share decreased from 90% in first quinquennium to around 72% in last quinquennium. The other major markets were Africa and North America with average share of 10% and 5% in overall study period. The combined share of these three major markets was around 95% left little scope for the remaining three continents viz; Europe, Oceania and South America.

A further look into the figures of value and quantity shares of these major markets depicts that overall the difference between value share and quantity share in all these markets were marginal with slightly higher share in value in Asian and African markets and lower share for North American countries. However the value share was higher in Asia in the first quinquennium and gradually it became less than quantity share during the last quinquennium (Table 3). Our country is losing bargaining power in Asian markets and it is a matter of concern as Asia remains our major market for dairy exports and we are now getting fewer prices in dairy exports. On the contrary an initial lower value share in African and North American continents improved during the last quinquennium and value share was marginally higher than quantity share during this period. This shows our improvement in bargaining power to these continents and a diversification of dairy export to these continents may help to fetch better prices of dairy products in the coming years too.

Attempts have also been made to classify export destinations into five broad categories viz.; Incessant Market, New Market, Emerging Market, Erratic Market and Unclassified Market (little or insufficient information for classification) on the basis of frequency and quantum of exports in the four quinquennium. The study found that neighbouring Asian, particularly South Asian countries were incessant markets for Indian dairy products. The country had exported a considerable amount of dairy products to all its neighbours including Bangladesh, Nepal, Sri Lanka, and also to other Asian countries like UAE, Singapore, and Philippines in all the sub periods. These countries were enlisted as incessant markets for India. It is interesting to find that 9 countries from the top ten incessant markets were from Asia (Table 4). The only non-Asian country included in the top ten lists was USA. Exports to all these Asian countries increased considerably during implementation of WTO (1995-96) and thereafter. The major products (covering at least 85% or more of total exports) exported to these countries were identified in the subsequent section (table 5). India consistently exported dairy products USA over the study period and major products exported were Melted Butter (Ghee), Butter, Curdled milk, Cheese etc.

India found some new markets especially during the last two quinquennium (2000-01 to 2009-10) and was termed as new markets. Countries like Egypt, China, Afghanistan, Pakistan, and Saudi Arabia come under this category. The exports to these countries increased particularly during post WTO (2000-01 to 2005-06) and global financial crisis (2005-06 to 2009-10) period. The exports of dairy products in earlier periods were either nil or negligible for these countries.

The destinations of newer dairy products were mainly towards some African countries and other small Asian countries. These countries are referred as emerging markets. It will be of much interest to find whether the country continues its export to these countries in the future also. Three countries (Russia,

**Table 3: Share of continents in exports (%)**

| Continents | | Overall | 1990-91 to 1995-96 | 1995-96 to 2000-01 | 2000-01 to 2005-06 | 2005-06 to 2009-10 |
|---|---|---|---|---|---|---|
| ASIA | Value | 79.79 | 89.10 | 73.60 | 79.09 | 72.73 |
| | Quantity | 79.14 | 87.06 | 71.04 | 79.21 | 75.07 |
| Africa | Value | 9.96 | 1.45 | 5.55 | 13.89 | 22.67 |
| | Quantity | 9.88 | 1.51 | 5.94 | 14.75 | 21.07 |
| North America | Value | 5.22 | 2.03 | 11.71 | 4.76 | 2.52 |
| | Quantity | 5.52 | 2.12 | 13.70 | 3.45 | 2.06 |
| Europe | Value | 4.66 | 7.29 | 9.10 | 2.09 | 0.92 |
| | Quantity | 5.10 | 9.11 | 9.27 | 2.45 | 0.76 |
| Oceania | Value | 0.28 | 0.12 | 0.00 | 0.13 | 0.86 |
| | Quantity | 0.27 | 0.19 | 0.01 | 0.10 | 0.75 |
| South America | Value | 0.07 | 0.00 | 0.04 | 0.03 | 0.21 |
| | Quantity | 0.07 | 0.00 | 0.04 | 0.03 | 0.19 |

**Table 4: Average quantity of exports and nature of top world markets (000'kgs.)**

| Sl. No. | Country | Sub-periods | | | | Nature of Market |
|---|---|---|---|---|---|---|
| | | 1991-96 | 1997-01 | 2002-06 | 2007-10 | |
| 1 | UAE | 662.99 | 838.35 | 4204.87 | 7535.00 | Incessant |
| 2 | Bangladesh | 961.26 | 1707.13 | 8250.42 | 6678.16 | Incessant |
| 3 | Singapore | 45.25 | 58.49 | 1016.14 | 4694.60 | Incessant |
| 4 | Nepal | 78.44 | 163.35 | 1430.65 | 2238.54 | Incessant |
| 5 | Philippines | 287.79 | 121.73 | 383.63 | 2027.72 | Incessant |
| 6 | Oman | 53.84 | 200.25 | 878.09 | 988.12 | Incessant |
| 7 | Sri Lanka | 156.58 | 86.10 | 644.74 | 844.69 | Incessant |
| 8 | USA | 64.15 | 433.30 | 830.56 | 639.49 | Incessant |
| 9 | Kuwait | 26.75 | 54.66 | 296.85 | 552.71 | Incessant |
| 10 | Hong Kong | 0.57 | 51.91 | 54.10 | 489.00 | Incessant |
| 11 | Egypt | 0.00 | 13.19 | 2177.39 | 5222.82 | New Market |
| 12 | China | 0.00 | 41.52 | 1048.95 | 2701.19 | New Market |
| 13 | Algeria | 0.00 | 0.00 | 1996.03 | 2400.00 | New Market |
| 14 | Saudi Arabia | 2.00 | 25.57 | 800.44 | 1936.85 | New Market |
| 15 | Thailand | 13.67 | 5.34 | 482.81 | 1856.31 | New Market |
| 16 | Morocco | 0.00 | 0.00 | 1307.93 | 1434.40 | New Market |
| 17 | Syria | 0.00 | 0.00 | 400.02 | 1163.57 | New Market |
| 18 | Afghanistan | 3.28 | 0.52 | 473.81 | 1123.14 | New Market |
| 19 | Pakistan | 0.28 | 1.69 | 944.63 | 777.47 | New Market |
| 20 | Iraq | 0.84 | 0.00 | 0.00 | 900.03 | Emerging |
| 21 | Brunei | 0.00 | 0.00 | 0.23 | 105.87 | Emerging |
| 22 | Suriname | 0.00 | 0.00 | 3.20 | 64.92 | Emerging |
| 23 | Chile | 0.01 | 0.00 | 0.00 | 60.80 | Emerging |
| 24 | Panama | 0.00 | 0.00 | 0.00 | 58.69 | Emerging |
| 25 | Mauritania | 0.00 | 0.00 | 16.00 | 21.06 | Emerging |
| 26 | Guinea | 0.00 | 0.00 | 0.01 | 20.04 | Emerging |
| 26 | Turkmenistan | 0.00 | 0.00 | 2.80 | 10.50 | Emerging |
| 27 | Albania | 0.00 | 0.00 | 0.00 | 8.68 | Emerging |
| 28 | Togo | 0.00 | 0.00 | 2.01 | 6.30 | Emerging |
| 29 | Georgia | 0.00 | 0.00 | 0.02 | 60.79 | Emerging |
| 30 | Tunisia | 0.00 | 0.00 | 6.80 | 23.32 | Emerging |
| 31 | Burkina Faso | 0.00 | 0.00 | 2.50 | 18.50 | Emerging |
| 31 | Russia | 32.93 | 10.48 | 0.00 | 8.59 | Erratic |
| 32 | Somalia | 0.50 | 0.00 | 0.00 | 7.16 | Erratic |
| 33 | Mexico | 3.28 | 37.60 | 0.00 | 0.08 | Erratic |
| 34 | Brazil | 0.00 | 0.00 | 2.00 | 0.05 | Unclassified |
| 35 | Cyprus | 0.00 | 0.00 | 3.20 | 0.04 | Unclassified |
| 36 | Ukraine | 0.00 | 1.96 | 0.00 | 0.00 | Unclassified |
| 37 | Namibia | 0.00 | 1.00 | 0.06 | 0.00 | Unclassified |

**Table 5: Incessant markets and major products of export**

| Sl. No. | Country | Major Products Exported |
|---|---|---|
| 1 | UAE | Skimmed Milk (34%), Melted Butter (Ghee) (25%), Milk and cream (fat>1%) (11%), Whole Milk (8%), Butter (4%), Unsweetened milk and cream (fat>1.5%) (4%) |
| 2 | Bangladesh | Skimmed Milk (68%), Milk cream (15%), Whole Milk (5%) |
| 3 | Singapore | Milk and cream (fat>1%) (66%), Skimmed Milk (15%), Melted Butter (Ghee) (6%), Fresh cheese (4%) |
| 4 | Nepal | Skimmed Milk (34%), Milk Food for Babies (10%), Milk cream (9%), Whole Milk (7%), Butter (7%), Milk for Babies (7%) |
| 5 | Philippines | Skimmed Milk (66%), Milk and cream (fat>1%) (10%), Butter oil (8%), Whole Milk (5%), Melted Butter (Ghee) (3%) |
| 6 | Oman | Skimmed Milk (23%), Whole Milk (19%), Unsweetened milk and cream (fat>1.5%) (15%), Melted Butter (Ghee) (12%), Butter (5%), Milk and cream (fat>1%) (4%) |
| 7 | Sri Lanka | Skimmed Milk (59%), Whole Milk (9%), Melted Butter (Ghee) (5%), Milk Food for Babies (5%), Curdled milk (4%), Other Cheese (3%), Unsweetened milk and cream (fat>1.5%) (2%) |
| 8 | USA | Melted Butter (Ghee) (33%), Milk cream (14%), Butter (10%), Concentrated and evaporated whey (8%), Natural milk constituents (6%),Curdled milk (5%), Processed cheese (4%) |
| 9 | Kuwait | Melted Butter (Ghee) (46%), Skimmed Milk (9%), Butter (8%), Whole milk (8%), Fresh cheese (7%), Processed cheese (6%) |
| 10 | Hong Kong | Milk and cream (fat>1%) (37%), Skimmed Milk (16%), Melted Butter (Ghee) (16%), Butter (16%), Fresh cheese (5%) |

Somalia and Mexico) were found having no significant trade pattern and have been classified as erratic markets. Sporadic exports were found in some years to some countries which destinations cannot be classified with this irregular trade pattern and have been termed as unclassified markets (Table 4).

It emerges from the above discussion that from post WTO period (2000-01 to 2005-06), India found some new markets and diversified its export portfolio towards south Asian and African countries. It is good sign since India has made moderate progress in finding new markets in developing countries outside Asia.

## Conclusion

The trend in exports of dairy products showed high volatility due to several reasons such as, frequent policy changes and ban on exports of certain dairy products, fragile price and quality competitiveness, etc. The interference in the market mechanisms through such policy interventions damages the reputation of the country as a consistent supplier of dairy products. There should be continuity in the export policy of dairy products in the country. In order to minimize such interventions, it is imperative that supply of value added dairy products is increased in India to generate more exportable surplus. This is possible only through systematic and planned efforts so that increase milk procurement by the organized sector. The 'National Dairy Plan' (NDP) initiated by NDDB and Government of India envisaged to increase milk production by 6 million ton annually by the next 15 years through improved breeding and feeding program. Increased milk production also necessitates an improved milk value chain is made for better processing and marketing of the produce. NDP also targets to increase cooperative procurement to 20% from current 16% and the targeted steps in NDP are a movement in right direction.

Ensuring the input side, the diversification in export basket can further stimulate the gains from trade. The potential market of Indian dairy products (Asian countries) is dominated by youth under 35 years of age and this generation is fond of value added and functional dairy products rather than traditional products. Export diversification towards value added dairy products like cheese, yogurt, curds and functional foods like probiotic dairy products will help to enhance country's export potential. Moreover, indigenous dairy products, particularly a large variety of *Channa* and *Khoa* based sweets are commercialized by the traditional sweet manufacturers (Halwais) and creameries, yet their market is predominantly localized due to short shelf life of products, improper packaging, non-conformity with the consumer safety standards, etc. The availability of a few "branded" indigenous products (like, buttermilk, sweets) from Amul, Haldiram and others, is extremely limited to selected urban centers. This calls for exploring innovative models for commercializing existing and new milk based products, beyond the boundaries of their place of origin. The research and experimentation efforts to develop the technologies for all levels of dairy sector – production, procurement, processing, manufacturing, should be designed in the way so that latest technologies are used and the efficiency of the traditional system is also improved.

Finally, to improve the bargaining power of the country, on the quality front, India should improve its image as a reliable and consistent supplier of safe and quality dairy products conforming to the international standards enforced by the Codex Alimentarius Commission of FAO and WHO, through creating required infrastructure including cold chain in milk procurement and processing. A comprehensive strategy for producing quality and safe dairy products should be formulated with legal backdrop. In fact, India has too many food laws and too many ministries to implement them. This hinders efforts to maintain parity between national and international standards in the post-WTO era. As a result, India's exports fall short to continue escalation. Harmonization of BIS (Bureau of Indian Standards) quality standards with that of international quality standards will go a long way in materializing the export potential of Indian products into foreign currency.

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## Annexure : Nomenclature of HS Codes

### Chapter 4: Dairy products; bird's egg, natural honey, edible products of animal origin, not elsewhere specified or included.

### First six codes at HS- 4 digit level are relevant for dairy products and they are listed below:

| HS Product Group | Nomenclature |
|---|---|
| 0401 | Milk and Cream, not concentrated nor containing added sugar or other sweetening matter |
| 04011000 | Of a fat content, by weight, not exceeding 1% |
| 04012000 | Of a fat content, by weight, exceeding 1% but not exceeding 6% |
| 04013000 | Of a fat content, by weight, exceeding 6% |
| 0402 | Milk and Cream, concentrated or containing added sugar or other sweetening matter |
| 040210 | In powder, granules, or other solid forms, of a fat content, by weight, not exceeding 1.5% |
| 04021010 | Skimmed Milk |
| 04021020 | Milk food for babies |
| 04021090 | Other |
| 040221 | In powder, granules, or other solid forms, of a fat content, by weight, exceeding 1.5% |
| 04022100 | Not containing added sugar or other sweetening matter |
| 040229 | Other |
| 04022910 | Whole milk |
| 04022920 | Milk for babies |
| 04022990 | Other |
| 040291 | Not containing added sugar or other sweetening matter |
| 04029110 | Condensed Milk |
| 04029190 | Other |
| 040299 | Other |
| 04029910 | Whole milk |
| 04029920 | Condensed milk |
| 04029990 | Other |

| HS Product Group | Nomenclature |
|---|---|
| 0403 | Butter milk, curdled milk and cream, yogurt, kephir and other fermented of acidified milk and cream, whether or not concentrated or containing added sugar or other sweetening matter or flavored or containing added fruit, nuts and cocoa |
| 04031000 | Yogurt |
| 040390 | Other |
| 04039010 | Butter Milk |
| 04039090 | Other |
| 0404 | Whey, whether or not concentrated or containing added sugar or other sweetening matter, products consisting of natural milk constitutes, whether or not containing added sugar or other Sweetening matter not elsewhere specified or included |
| 040410 | Whey and modified whey, whether or not condensed or containing sugar or other sweetening matter |
| 04041010 | Whey, concentrated, evaporated or condensed, liquid or semi-solid |
| 04041020 | Whey, dry, blocks and powdered |
| 04041090 | Other |
| 04049000 | Other |
| 0405 | Butter and other fats and oils derived from milk, Dairy products |
| 04051000 | Butter |
| 04052000 | Dairy Spread |
| 040590 | Other |
| 04059010 | Butter Oil |
| 04059020 | Ghee |
| 04059090 | Other |
| 0406 | Cheese and Curd |
| 04061000 | Fresh(Unripened & uncured) Cheese, including whey cheese & curd |
| 04062000 | Grated or powdered cheese, of all kinds |
| 04063000 | Processed cheese not grated or powdered |
| 04064000 | Blue-veined cheese |
| 04069000 | Other cheese |