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**Indian Dairy Industry: Current Status, Challenges and Issues under WTO  
Regime**



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**M Jayakrishna & A Rajasekaran**  
Senior Manager  
National Dairy Development Board (NDDB), Anand, Gujarat

Centre for WTO Studies (CWS)  
I.I.F.T  
New Delhi

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## **Introduction**

India is similar to many countries in Asia and Africa with regards to development status, climate, natural resource base, population, relative agriculture share in employment, infrastructure, etc. In spite of the size and growth of its human population and economy, India is perhaps the only country among these countries that has achieved and continues to maintain national self sufficiency in milk, with domestic demand being met entirely from domestic production.

As a tropical country with a hot and humid climate, which is not particularly conducive to milk production, growth in India's milk production is impressive as compared to major milk producing developed countries that benefit from a temperate climate. Further, this growth has been achieved with the help of millions of small farmers in India, with holdings of 3-4 animals as compared to a few thousand farmers with large herds in developed countries. However, it is important that India continues to encourage the growth of the dairy sector as it not only meets domestic consumption requirements but also provides livelihood opportunities for millions of rural households.

With this background, the main objectives of this paper are a) to review the structure and trend of production and trade in the dairy sector, b) examine some significant and relevant issues related with gains from trade liberalization in the dairy sector and its link to food security and finally c) to discuss the challenges arising from the emergent trade regime with respect to food security.

The paper used secondary information from domestic and international sources for the period 1970 to 2012. Domestic sources include various departments of Government of India for sectoral information and The Economic Times newspaper for product prices. Food and Agriculture Organization (FAO) is the only source used for relevant international data

for the analysis. The paper is a descriptive paper and used monthly and annual data sourced from the above sources.

Accordingly, the paper is divided into three main sections. Section 1 contains an overview of the relevant aspects of the dairy sector in the World and India. Section 2 contains an examination of a couple of issues involved in trade liberalisation and food security and summarises the inferences drawn, particularly with reference to the dairy sector. Section 3 discusses the challenges to the dairy sector arising from the emerging trade regime.

## **1.0 Dairy Sector in the World and India**

### **1.1 World dairy sector**

As per FAO statistics, milk production in the world is estimated to be about 767 million tonnes in 2012, of which about 54 (7%) in milk equivalent terms is traded. While there is an almost equal share of developed (49%) and developing countries (51%) in production of milk, developed countries have an overwhelming share of exports - 79% in global exports in milk equivalent terms as compared to a share of only about 21% for developing countries. Four countries/country groups namely the European Union, USA, New Zealand and Australia account for about 72% of the global exports of milk and milk products in terms of milk equivalent.

On the other hand, developing countries account for about 80% of imports in milk equivalent as compared to only 20% by developed countries. This clearly indicates that developing countries, as major importers of milk and milk products, are the most important markets for export of milk and milk products from developed countries and, in particular, the four major exporters. Production and trade of milk in major countries are presented in Table: 1 and 2.

### **1.2 Significance of dairy sector to India**

With an annual milk production of 127.9 million tonnes in 2011-12 (DAHDF, 2013), India is not only the largest milk producer, but also is one of the fastest growing and lowest cost milk producers in the world. Milk production in India has been growing at over 4% annually and its share in milk production in the world has increased from about 5% in 1970

to 17.4% in 2012. The per capita availability of milk has also increased to 281 grams per day, which is comparable with world's per capita availability of 279 grams per day for 2010. India's share in world's population of buffaloes and cattle is about 57% and 16% respectively (DAHDF, 2012).

The value of global milk production is estimated at about US \$252 billion for 2009, of which India alone accounts for about US \$40 billion. Milk is the single largest agricultural commodity in India, with an output value of about Rs 305,484 crore at current prices for 2011-12 (Rs 168,544 crore at 2004-05 prices) which is more than the combined value of paddy and wheat estimated at Rs 171,766 crore (Rs 90548 crore at 2004-05 prices) and Rs 110,000 crore (Rs 64735) respectively. Milk also accounts for more than 2/3rd of the value of livestock output, estimated at about Rs 459,051 crore for 2011-12 at current prices. India's private final consumption expenditure on milk and milk at current prices is estimated to be about Rs 332,728 crores for 2011-12 (CSO, 2013).

### **1.3 India's production and trade in milk and milk products**

India is largely self-sufficient with the estimated domestic production of 133.7 million tonnes for 2012 (FAO, 2013), being used within the country and is a net exporter, with exports amounting to only about 0.4 million tonnes in milk equivalent terms. Table 1 and Table 2 contain more details of estimated milk production, imports and exports for major countries or country groups during the year 2012.

As per FAO statistics, India's milk production has increased from 83.4 million tonnes to an estimated 133.7 million tonnes for 2012. In spite of the increase in human population, per capita availability (calculated from FAO's data on production, import, export and population) has also increased from about 213 gm per day to about 290 gm per day. Table 3 contains year-wise details on milk production, trade in milk equivalent and availability.

As per statistics of Directorate General of Commercial Intelligence and Statistics (DGCIS), India's imports of milk and milk products primarily include milk powders, milk fat, under Chapter 4 of International Trade Classification-Harmonized System (ITC-HS) and lactose under Chapter 17. Milk powders and milk fat are significant to the domestic dairy sector as these can supplement domestic availability of milk solids.

Data on imports over the last 10 years (2003-04 to 2012-13) given in Table 4 indicate that imports of milk powders and milk fat were significant in 2003-04 and 2009-10 to 2011-12. This significant level of imports followed two serious droughts in 2002-03 and 2009-10. Since 2008, a Tariff Rate Quota (TRQ) allowed import of 10,000 tonnes of milk powder at a basic customs duty of 5% as against the commitment of 15%.

To enhance domestic availability within the country, imports during 2010-11 to 2011-12 were facilitated by amending the TRQ in March 2010<sup>i</sup> to allow duty free access initially for import of 30,000 tonnes of milk powders and 15,000 tonnes of milk fat during 2010-11. The quota for milk powders was later increased to 50,000 tonnes for imports in 2011-12<sup>ii</sup>. With the improved availability of milk, the TRQ was restored to a level of 10,000 tonnes at a basic customs duty of 15% in November 2012<sup>iii</sup>, created as part of World Trade Organization (WTO).

Data on India's exports over the 10 year period ending in 2012-13 given in Table 5 indicate that milk powders, casein and milk fat are the major milk products in terms of quantity that have been exported by India. Exports have also been more than imports in many years over the same 10 year period. Within milk powders, Skimmed Milk Powder (SMP) (040210) accounts for the maximum exports.

A ban on exports for skim milk powder was first imposed from February to September 2007<sup>iv</sup>. In spite of the ban, the bulk of the exports of milk powders increased from the previous year in the flush season for milk production that usually occurs during the October to March period.

To ensure adequate availability of milk in the country, a ban on exports of all milk powders (0402.10, 0402.21 and 0402.29) and casein (3501.10) was notified in February 2011<sup>v</sup>. Subsequent to the improved availability of milk in the country, the ban was removed in a phased manner in May 2012 for casein<sup>vi</sup>, in June 2012<sup>vii</sup> for skim milk powder and in November 2012<sup>viii</sup> for other milk powders. Since the withdrawal of the export ban, exports of milk powders and casein increased substantially during 2012-13 reaching to the highest level in case of milk powders and the second highest level in case of casein, as compared to the previous 10 years.

Since February 2013, milk and milk products, including casein, butter fat and other milk fat products as well as cheese and curd are exempt from export bans or restrictions<sup>ix</sup>.

#### **1.4 Trends in price of SMP in India and world**

Data on domestic prices for SMP is published in The Economic Times based on the quotes received for a few manufacturers. Since 2001, there has been an upsurge in prices, due to a combination of higher international prices, drought and significant level of exports, which has been moderated by a combination of ban on exports and imports to augment domestic availability.

Subsequent to the drought of 2002-03 and high level of exports, the price of SMP increased to a high of about Rs 108 in Sep 2003 from previous years. Owing to lower availability in the country, imports of milk powder increased to augment the availability during 2003-04. Subsequently, exports of SMP increased during 2004-05 and 2005-06 due to which availability was again affected leading to the ban on exports in February 2007, which also coincided with one of the sharpest increases in international price of SMP. Subsequent to the drought of 2009-10 and the significant level of exports in previous years, prices of SMP in domestic markets when expressed in USD, were high as compared to the international price of SMP from Oceania for many months till the beginning of 2012-13.

Domestic price of SMP remained subdued during 2012-13 due to increased availability within the country, accompanied by a significant increase in exports which was the highest in the previous 10 years. At the same time, international prices started increasing by the beginning of 2013 and reached high levels. A combination of increased exports from India since 2012 with the consequential reduction in inventory and higher international prices seems to have resulted in a rebound in the domestic price of SMP in India by the end of September 2013.

Table 6 contains details of the month-wise average price of SMP as reported in Indian newspapers (The Economic Times) along with annual exports of SMP. Figure 1 charts the trend in domestic price of SMP calculated in USD per tonne along with the average price of

## **2.0 Trade and food security**

Having provided an overview of the structure and trend of production and trade in the dairy sector in the previous section, this section draws attention to the aspects related to trade and food security, which are of relevance to the dairy sector. The first aspect is from the angle of producer welfare, based on the argument that gains from trade liberalization can help in improving returns to labour, when they contribute to increased trade of goods that use labour more intensively. The second aspect is from the angle of both producer and consumer welfare, where the link between trade and price volatility is examined, as price volatility and levels can affect welfare of producers and consumers in different ways, particularly with respect to food security.

### **2.1 Trade liberalization**

There have been differing views on the link between trade reforms and food security, which is linked to the argument that gains from trade liberalization improve economic outcomes, in particular, at the national level. FAO's Commodities and Trade division brought out a report (FAO, 2003) as an outcome of the project on "Trade and Food Security (FNPP/GLO/001/NET-01)". The report reviewed the arguments for trade liberalization and stated that the premises arising from Ricardian "conventional" or "neo-classical theory" which suggests that differences in productivity and opportunity costs of production between countries provide the reasons for why countries should engage in trade.

The report also suggests that the Heckscher-Ohlin (H-O) theorem is the most widely accepted explanation of the pattern of trade, which is based on the differences in the factor endowments of countries and factor requirements of different requirements of goods. It also suggests that the lower cost of factor endowments such as capital and labour, relative to each other in a country is the basis for comparative advantage between countries and trade occurs when a country abundant in a factor, say labour, exports goods that uses more of labour and vice versa. The theory also assumes that outputs of the production process moves across countries through trade rather than movement of factors, as mobility of factors such as labour or land is constrained. In theory, the welfare outcome of this model could be poverty

reduction for labour-abundant developing countries when increased trade results in increased wages to labour arising out of increased demand for labour. Increased wages could therefore indicate increased income and reduced level of food insecurity.

It has been nearly two decades since the WTO was set up and the multilateral agreement on agriculture imposed commitments on all member countries to engage in trade reforms, which included reforms in market access as well as support/subsidies for production and exports. It should be reasonable to assume that this period would be sufficiently long for the structure and patterns of trade to change to determine whether there are gains from trade arising from comparative advantage.

Milk production is a labour intensive activity. As it is a perishable commodity, milk is often converted to various kinds of milk powders and other kinds of value added products. SMP has a shelf life that can extend up to 2 years if packed and stored under recommended conditions and is often used to even out seasonal variations in milk production, as well as traded in significant amounts. Unlike other preserved milk products such as cheese, SMP can be reconstituted into milk and used as an ingredient for other milk products, indicating that it is a good example of a tradable good that can substitute domestic production of the primary good, which in this case is milk.

As per the theory in H-O theorem, countries that are relatively abundant in labour, such as many developing countries, should gain through increased trade of a tradable commodity such as SMP, which is the output of a labour-abundant activity such as milk. We examined whether the structure of trade among countries has changed to indicate such gains from trade.

We compared the volume of exports of SMP between 2001 and 2011. Four countries/country groups - namely European Union (EU), United States of America (USA), New Zealand (NZ) and Australia (Oz) on a combined basis accounted for both the maximum quantity as well as share in total exports of SMP from data available in website of FAO Statistics. Exports of EU excluded intra EU trade.

These countries do not have a relative abundance of labour if we consider the number of farms engaged in milk production. The number of farms are only about 632,000 in EU<sup>x</sup>for



2012/13 (European Commission, 2013), 58,000 in USA for 2012 (USDA, 2013), 6770 in Australia for 2012 (Dairy Australia, 2012) and 11,798 in New Zealand<sup>xi</sup> for 2011-12 (DairyNZ, 2012). On the other hand, the number of milk producers in India is nearly 70 million, if we use the results from National Sample Survey Organization's (NSSO) survey which indicates that nearly 48% of rural households keep milch animals.

Yet the combined export volume and combined share in total exports of SMP for EU, USA, New Zealand and Australia increased during the period 2001 to 2011. Their combined exports of SMP increased by about 535 thousand tonnes from about 795 thousand tonnes in 2001 to 1330 thousand tonnes in 2011. Similarly, their combined share increased by about 6% from about 80% to 86%. Admittedly, the choice of final year may not be entirely representative, if we take into account the increased exports from India in 2012 and in the first part of 2013. However, as data is not yet fully available for 2012 and 2013, this paper restricts its analysis for the latest year available with FAO, presented in Table: 7.

This limited analysis indicates that gains from trade have not accrued as per the reasoning in the argument for trade on the basis of comparative advantage. One of the implicit assumptions in the reasoning of comparative advantage is that factors are not easily substitutable, which is not always true in the real world. Labour is substituted by capital in the form of increased mechanization of operations, which is what has led to the sustained dominance of countries in exports of SMP despite having a small number of farms producing all of the milk.

Another possible explanation for trade liberalization not resulting in gains from trade could be the impact of agricultural policies, particularly for the member countries of the Organization for Economic Co-operation and Development (OECD). Reports from OECD's own researchers (Brooks, 2012) suggest that these policies were seen to have damaged trade from developing countries in three ways: a) restricted market access through high tariffs on agricultural products, typically several times above those levied on industrial goods, b) "dumping" of surpluses accumulated as an effect of elevated domestic prices with the use of export subsidies undermining local production in developing countries, and c) suppressed

prices on world markets due to enhanced production stimulated by price supports and subsidies, lowering returns to developing country farmers.

Arguably, there seem to be other explanations for a lower share in world exports of milk powders from labour-abundant countries such as India. Firstly, while many developing countries including India may produce large quantities of milk, the share of the organised processing sector, which produces tradable goods such as SMP, in the total milk sold by producers, is relatively small to meet an increasing share of growing global demand.

Secondly, the increasing level of concerns related to human and animal health imply that developing countries need to ensure that their food safety and veterinary health systems provide the required degree of assurance to importing countries. In some instances, the right of countries to impose certain measures provided by the precautionary principle embedded in the Agreement on Sanitary and Phytosanitary measures (SPS) may constrain trade from developing countries, such as India. Therefore, there would be difficulties in meeting such requirements, considering the difficulties in ensuring that millions of small farm holders adopt the required protocols and are subject to an inspection programme for assurance.

Thirdly, many developing countries such as India are also concerned with meeting their own food requirements and exports are seen by many as only a means to find additional markets when there is a surplus. Aggressively increasing exports, especially when domestic demand is increasing, could strain the demand supply balance leading to a pressure on prices. In case of the dairy sector, imposition of exports bans and providing duty free access as short-term measures by India reflect the concerns in meeting domestic consumption requirements as well as ensuring that prices are affordable.

## **2.2 Price volatility and levels**

An alternative idea linking trade and food security is from the perspective of nations and consumers. The rapid rise in prices of food commodities in 2007 resulted in G20 to request joint efforts from major international bodies like the FAO and OECD related to trade, finance, development and food, to develop responses for addressing price volatility, especially as it seemed to threaten the food security of many countries.

The Interagency Report on Price Volatility (FAO, OECD et al, 2011) feels that instability in the aggregate world output of an agricultural product is less than that of an individual country, as shocks tend to be specific to individual regions of the globe and partly cancel out on a worldwide level. The report goes on to argue that as trade has the potential to even out supply fluctuations across the globe and reduce market volatility, the trend followed by countries to try to insulate themselves from international markets needs to be reversed.

It also argues that trade is an essential element of food security and not all countries should aspire to supplying their own needs, as doing so would be excessively costly and will reduce choice and quality, without providing the reliability needed to achieve food security. There is also an implied argument that trade would be all the more important as an impact of climate change could worsen conditions for agricultural production.

There are however critics of such a view on trade and food security. In a recent paper, Wise and Murphy (Murphy, 2012) argue that trade liberalization is not required for ensuring trade security, as they feel that domestic food production of developing countries has been weakened by several decades of policies that include agricultural trade liberalization, disinvestment in agriculture, and the shrinking of state roles and responsibilities for agriculture and food under structural adjustment programs.

On price volatility, the Interagency Report (FAO, OECD et al, 2011) acknowledged that price volatility was significant since 2006, even though there was ambiguity on whether volatility was significant as compared to historical levels. The report also observed that volatility in domestic and global markets could be different and the extent to which global prices are transmitted to domestic markets depends on the extent of integration with global markets.

Further trade policy instruments such as taxes/duties on imports or exports as well as non tariff barriers and domestic policies such as subsidies for production could all influence the extent to which domestic and global prices behave in relation to each other. It was also felt that countries with an insular orientation could stimulate instability in international markets, especially if they are major players in production or consumption.

In an attempt to answer the question whether there was greater volatility in domestic or international markets, a paper examined volatility in market prices (international and EU prices) of butter and SMP, which was analyzed by calculating two indicators. (Tothova, 2011)

The first indicator was the percentage of price observations lying outside the 20% tunnel around the price trend. The second indicator was the co-efficient of variation as a ratio of standard deviation over mean as a measure of dispersion of data points.

It was observed that there was greater volatility in international prices on both these indicators for both butter and SMP, as compared to the level of volatility in EU prices. The summary of the results for milk products is given in Table 8.

Considering that the EU is a significant player in the global dairy sector on account of its share in production and trade as well as the significant use of trade barriers, price support and subsidies, this seems to support the argument made in the interagency report that countries that are insulated can inject instability into world markets even as their own markets are less affected by such instability.

A report on dealing with price volatility (NZX Agrifax, 2010) observes that even small changes in global milk production have a magnified effect on the global supply of dairy products and goes on to quote an estimate of a 14% shortage or surplus in global trade due to a 1% change in milk production.

A paper on price volatility of agricultural commodities observed that the average volatility in recent years (2006-10) for butter and whole milk powder was found to be more than the average volatility of the whole period as compared to the whole period or the nineties. (Huchet-Bourdon, 2011)

To summarize, the two key issues concerning the link between trade and food security are the gains from trade from trade liberalization and the risks to food security from increased price volatility. In the case of a key traded milk product such as SMP, gains from trade in terms of increased export volumes has not accrued to labour abundant countries for a product that is the output of a labour intensive activity. Rather, labour scarce countries have

continued to account for a major share and even increased their share, albeit for a variety of reasons.

As far as the risks to food security from high level of prices and increased volatility, there are sufficient grounds to believe that the levels of volatility have increased in recent years. While major international bodies argue that increased trade could reduce high level of prices and volatility, there are some who do not agree to that view.

### **3.0 Challenges to dairy sector from emerging trade regime**

The link between trade and food security is complex and the effects are different for different categories and levels. While trade policies are decided at a national level, the effects are felt at the individual level depending on whether the individual is a producer or a consumer, and a little more complex if a producer is also a net consumer.

The two key challenges that arise are: a) balancing the interests of producers and consumers, and b) balancing the interests of the nation versus sector.

#### **3.1 Balancing the interests of producers and consumers**

The argument for increased trade is often made that such increased trade benefits producer through higher prices for their produce. While producers benefit from high prices as long as they are able to secure such high prices for their produce, they are adversely affected when prices dip. Such fluctuations in income can affect their food security. On the other hand, high domestic prices fuelled by global trade and price trends can erode the ability of consumers to even maintain their existing levels of consumption and increase the level of food insecurity.

While about half of the India's rural population own milch animals, a much larger proportion of consumers, both rural and urban, purchase milk. As per 66th round of the NSSO, 85% of the population in urban areas and 76 % in rural areas consume milk at home.

At the same time, the ability to purchase and consume milk is limited in a large proportion of households who have little or no access to milk and milk products. According to NSSO data for 2009-10, about 60% of both urban households and rural households report consumption expenditure that is lower than the average monthly expenditure on milk and

milk products estimated at about Rs. 380/- for rural households and about Rs. 560/- for urban households.

The review of structure and trends in trade of SMP indicates that the gains from trade are yet to be realised by labour abundant countries like India in a significant manner for a product that is the result of a labour intensive activity. While expert opinion seems to be in favour of trade liberalization to address price volatility and levels, there is some evidence to suggest that an insular approach reduces the effects of volatility at least in some countries. Using bans and providing duty free access on a temporary basis seems to indicate that governments are responding either in anticipation of or as a result of expressed consumer concerns on volatile and/or high prices. In both the cases, a tradeoff is required to be made in favour of either producers or consumers. The challenge is in trying to find a middle path that could help in balancing the interests of producers and consumers, without adversely affecting the interests of the other.

### **3.2 Balancing sectoral and national interests**

Enhancing and securing a country's economic interests often involve a range of international agreements that could range in scope from a trade and/or investment to a comprehensive economic cooperation agreement, which could cover a large number of sectors (verticals) and areas of cooperation (horizontal). Trade negotiations at various levels – bilateral, plurilateral or multilateral involve a strategy of give and take in order to conclude the agreements. However in the process, it could mean that there are demands from negotiating partners that could adversely affect the interests of a particular sector.

With the Doha round of negotiations for the WTO agreements yet to be concluded, the need to stimulate economic growth through enhanced trade and investment has led to India being involved in negotiations on a number of bilateral/plurilateral/regional free trade/economic cooperation agreements. For the dairy sector, the significant ones are the ones underway with major milk product exporting countries such as the ones with the EU, New Zealand and Australia.

At the national level, the economic interests that are being pursued by India in the proposed Bilateral Trade and Investment Agreement (BTIA) with EU includes jobs and

growth in general and favourable changes in regulations such as data security and movement of professionals, which are likely to benefit some key sectors of India (PIB, 2013). On the other hand, producer cooperatives have been arguing that the BTIA is not in the interest of milk producers, as there will be no level playing field, as Indian milk producers will not have protection against the subsidized exports. Further the demands to provide protection for geographical indications in India will prevent Indian dairies from producing products such as cheeses. At the same time there will not be any significant benefit from any reciprocal concessions, as Indian dairies would find it difficult to meet the stringent SPS regulations. (Down to Earth, 2013), (TNN, 2013). Similarly, the Free Trade Agreement (FTA) with New Zealand also poses a challenge in balancing a country's overall interests with the interests of India's dairy sector. (PIB, 2011)

Trade policy measures are instruments that can either promote exports or defend against imports, to pursue national interests. To help understand the kind of orientation a country is adopting with respect to pursuing its national interests, it can be useful to use a matrix with its orientation on import and export on two sides as given below. An attempt has been made to identify the trade orientation for major dairying countries that are significant in terms of production, trade or both.

		<b>Imports</b>		
		Positive (Low level of tariffs)	Neutral	Negative (High tariff and non-tariff barriers)
<b>Exports</b>	Positive (Export subsidies)			EU, US
	Neutral	Importing countries like members of ASEAN	NZ, Australia, India	
	Negative (Export duties)			

For the dairy sector, EU and US have an orientation that is negative for imports, on account of significant trade barriers trade (tariff and non tariff) and positive for exports on account of use of price support and subsidies for production and trade. On the other hand, New Zealand and Australia have a neutral policy on both exports and imports.

Even though there have been temporary instances of export bans or duty free access to address short term cyclical trends, India's long term trade orientation for the dairy sector can best be described as neutral for both import and exports, as it does not have any significant barriers to import as well as any subsidies for exports.

Considering that milk in India is produced by millions of smallholder producers, it cannot assume an orientation that is positive for imports, as surges in import can adversely affect the incentive for domestic production and thereby affect the self-sufficiency status that has been achieved and maintained.

It would therefore be advisable to not provide trade liberalization under the FTA being pursued with major dairy exporters such as the EU, New Zealand and Australia. However there would be challenges in balancing the need to promote the country's overall economic interests, with the need to ensure that Indian dairy sector's interests are not adversely affected

#### **4.0 Conclusion:**

India's milk production has grown impressively, contributing significantly to the national economy, with the help of millions of small farmers in India, in spite of the constraints of a hot and humid climate and a small holder production system as compared to developed countries who have had the benefit of a temperate climate and mechanized large farm production system.

While developed countries continue to remain dominant in exports with a 79% share, developing countries continue to serve as markets for developed countries, with 80% share of global imports, with concentration of export shares of 72 % for only four countries - European Union, USA, New Zealand and Australia.

Liberalization on the domestic (industrial delicensing) and external fronts (trade and investment liberalization) poses significant challenges to the growth of the dairy sector. Even



after liberalization, India continues to remain self-sufficient, with domestic consumption requirements being met almost entirely from local production, exports and imports accounting for a small share as compared to milk production. To address domestic availability concerns arising from the droughts in 2002-03 and 2009-10, a combination of export bans and increased access through quotas, has been resorted to on a temporary basis to address availability and price related concerns.

Link between trade and food security are the gains from trade from trade liberalization and the risks to food security from increased price volatility and high price levels. In case of a key traded milk product such as SMP, gains from trade in terms of increased export volumes has not accrued to labour abundant countries for a product that is the output of a labour intensive activity. Rather, labour scarce countries have continued to account for a major share and even increase their share, albeit for a variety of reasons. As far as the risks to food security from high level of prices and increased volatility, there are sufficient grounds to believe that the levels of volatility have increased in recent years. While major international bodies argue that increased trade could reduce high level of prices and volatility even though some who do not agree to that view, there also seems to be some evidence which suggests that insular countries have lower volatility.

The challenges to the dairy sector from the emerging trade regime are primarily on: a) how to balance the interests of producers and consumers, and b) how to balance the sectoral and national interests.

Even though increased trade could benefit producers through higher prices for their produce, they can be adversely affected when prices dip. On the other hand, high prices fuelled by increased trade, especially when exportable surpluses are limited can erode the ability of consumers to even maintain their existing levels of consumption and increase the level of food insecurity. The challenge is in trying to find a middle path that could help in balancing the interests of producers and consumers, without adversely affecting the interests of the other.

While a country's overall interests may be served better by concluding trade agreements with dairy exporting countries like the EU, New Zealand, etc., interests of milk

producers would be adversely affected if the demands of the partners on dairy sector are agreed to.

India's long term trade orientation for dairy products is neutral on both exports and imports, with limited barriers to import as well as no subsidies for exports. Considering that milk in India is produced by millions of small holder producers, it cannot assume an orientation that is positive for imports, as surges in import can adversely affect the incentive for domestic production and thereby affect the self-sufficiency status that has been achieved and maintained so far. However, there would be challenges in balancing the need to promote the country's overall economic interests, with the need to ensure that the interests of the Indian dairy sector are not adversely affected.

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**Table 1 – Milk production and trade in world and major countries, 2012**

Country/country group	Milk Production ( Million tonnes)	Imports in milk equivalent ( million tonnes)	Exports in milk equivalent ( million tones)
<b>WORLD</b>	<b>767.407</b>	<b>53.618</b>	<b>53.667</b>
Developing	389.182	43.119	11.285
Developed countries	378.225	10.499	42.38
European Union	156.4	0.9	12.5
United States of America	90.9	1.4	5.2
New Zealand	19.7	0.1	17.5
Australia	9.5	0.6	3.2
<b>Total of above 4</b>	<b>276.5</b>	<b>3.0</b>	<b>38.4</b>
<b>India</b>	<b>133.7</b>	<b>0.2</b>	<b>0.4</b>

Source: FAO

**Table 2 – Share in milk production and trade in milk equivalent terms**

Section 1 :	Milk Production (percent)	Imports in milk equivalent (percent)	Exports in milk equivalent(percent)
WORLD	100	100	100
Developing	51	80	21
Developed countries	49	20	79
European Union	20	2	23
United States of America	12	3	10
New Zealand	3	0	33
Australia	1	1	6
Total	36	6	72
India	17	0	1

Source: Calculated by author using FAO data

**Table 3 – India’s milk production and per capita availability**

<b>Year</b>	<b>Milk production</b>	<b>Imports in milk equivalent in million tonnes</b>	<b>Exports in milk equivalent in million tonnes</b>	<b>Total Availability (Production+ imports less exports) in million tonnes</b>	<b>Population in million</b>	<b>Per capita availability (Gm per person per day)</b>
2001	83.4	0.04	0.20	83.25	1071	213
2002	84.8	0.08	0.16	84.67	1089	213
2003	86.7	0.12	0.09	86.69	1106	215
2004	91.1	0.05	0.36	90.74	1123	221
2005	95.6	0.02	0.63	95.01	1140	228
2006	100.3	0.09	0.36	100.00	1157	237
2007	107.9	0.02	0.55	107.41	1174	251
2008	111.4	0.06	0.53	110.95	1191	255
2009	115.9	0.23	0.27	115.82	1208	263
2010	121.8	0.39	0.33	121.90	1225	273
2011	127.3	0.37	0.15	127.51	1241	281
2012 (estim)	133.7	0.16	0.41	133.45	1258	291

Source: FAO Statistics. Total availability and per capita availability calculated from data on FAO’s data on production, imports, export and population

**Table 4 Import of milk and milk products**

<b>Product category</b>	<b>03-04</b>	<b>04-05</b>	<b>05-06</b>	<b>06-07</b>	<b>07-08</b>	<b>08-09</b>	<b>09-10</b>	<b>10-11</b>	<b>11-12</b>	<b>12-13</b>
Milk and cream not concentrated (0401)	208	2	164	60	39	1003	156	45	99	83
Milk and cream concentrated in powder or granules (0402.10,21,29)	9283	387	174	256	549	799	3852	30561	49683	562
Other concentrated milk and cream (0402.91,99)	256	92	358	533	251	124	314	366	841	105
Yoghurt/fermented milk (0403)	29	109	908	2118	143	255	470	213	104	88
Whey and whey products (0404)	1771	1626	65	138	1003	1057	3483	5900	12351	4503
Butter, butteroil and ghee (0405)	4741	3934	969	9051	973	5067	22042	15830	6632	783
Cheese (0406)	549	385	486	381	758	712	1058	1420	992	1296
Casein products (3501)	330	398	140	215	150	136	113	150	133	121
Lactose (1702.11,19)	16694	12540	9464	11362	8953	12942	21913	22581	24762	18843
Milk Albumins (3502.20)	2	0	9	132	90	93	37	81	681	581
<b>Total of above products</b>	<b>33863</b>	<b>19473</b>	<b>12737</b>	<b>24246</b>	<b>12908</b>	<b>22190</b>	<b>53438</b>	<b>77147</b>	<b>96276</b>	<b>26965</b>

**Table 5 India's export of milk and milk products**

<b>Product category</b>	<b>03-04</b>	<b>04-05</b>	<b>05-06</b>	<b>06-07</b>	<b>07-08</b>	<b>08-09</b>	<b>09-10</b>	<b>10-11</b>	<b>11-12</b>	<b>12-13</b>
Milk and cream not concentrated (0401)	103	524	2354	4908	7405	8354	5564	3201	14615	4886
Milk and cream concentrated in powder or granules (0402.10,21,29)	6371	38997	62067	32896	41223	38929	20136	17143	375	71979
Other concentrated milk and cream (0402.91,99)	414	511	429	288	260	534	216	260	144	59
Yoghurt/fermented milk (0403)	261	98	159	633	3275	212	135	347	160	264
Whey and whey products (0404)	214	1722	2094	2272	5904	2070	689	1189	115	610
Butter, butteroil and ghee (0405)	1846	3651	7421	3711	9505	17208	4972	12785	7841	6500
Cheese (0406)	383	303	1027	876	1844	2839	2673	2510	2389	3526
Casein products (3501)	4223	9792	10903	8443	15206	8388	8301	10583	839	13651
Lactose (1702.11,19)	4885	1149	3684	471	3209	2352	2169	1647	2048	1554
Milk Albumins (3502.20)	0	95	109	150	0	3	0	0	0	1
<b>Total of above products</b>	<b>18699</b>	<b>56841</b>	<b>90247</b>	<b>54650</b>	<b>87831</b>	<b>80890</b>	<b>44853</b>	<b>49666</b>	<b>28526</b>	<b>103030</b>

**Table 6 – Monthly average price of SMP in India and India’s annual exports of SMP**

Year	Monthly average price of SMP calculated from daily prices published in Indian newspapers - Rs/ kg -													Export of SMP in Tonnes
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Average	
2001-02	70	75	77	73	67	61	59	58	56	60	60	60	65	14429
2002-03	64	71	68	67	68	61	58	57	61	67	69	69	65	11987
2003-04	77	76	78	81	98	108	97	85	87	92	94	93	89	4026
2004-05	92	88	80	86	79	67	70	71	74	78	76	81	79	26563
2005-06	92	97	96	92	89	87	82	83	82	91	96	98	90	40463
2006-07	103	106	103	106	116	118	125	101	112	124	114	117	112	26045
2007-08	130	139	146	140	128	119	135	131	127	129	128	133	132	32050
2008-09	133	139	141	134	137	140	139	129	119	124	124	122	132	24361
2009-10	128	136	139	143	142	136	128	132	135	140	148	142	137	12174
2010-11	148	154	163	154	149	158	163	161	161	165	166	173	160	11345
2011-12	187	210	205	202	209	212	202	195	184	182	172	169	194	10
2012-13	173	167	180	179	170	167	162	163	172	173	169	174	171	69634
2013-14	192	203	206	207	219	240							211	52,000 (till Sep 13)



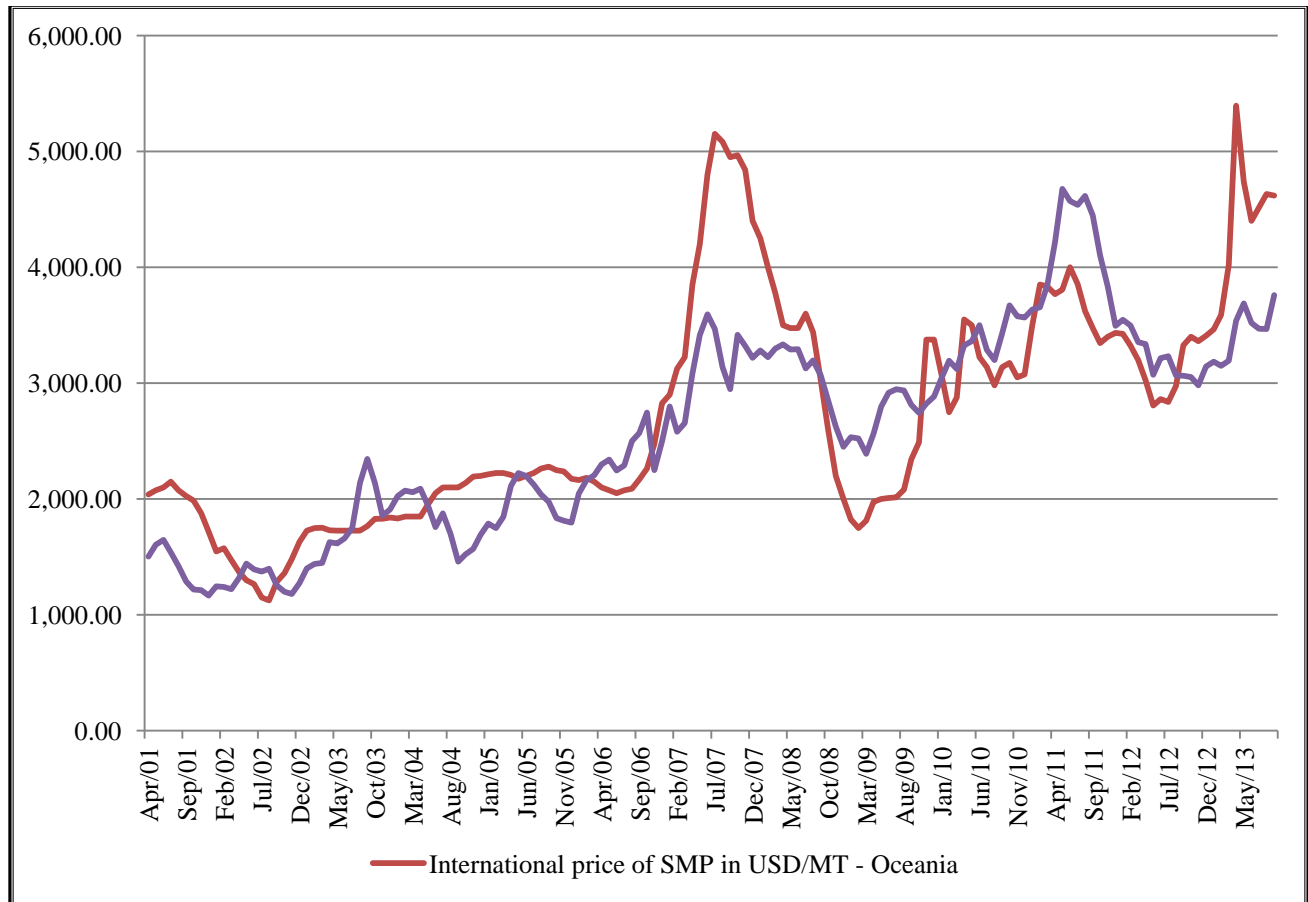
**Table 7 – Export of SMP in 2001 and 2011 – Quantities in tonnes**

Item	Year	EU28 (excluding intra EU trade)	USA	NZ	Oz	Total of 4	Others	Total
Export in MT	2001	300047	96213	218183	180561	795004	199228	994232
	2011	520896	436230	246113	126701	1329940	219240	1549180
Export share	2001	30%	10%	22%	18%	80%	20%	100%
	2011	34%	28%	16%	8%	86%	14%	100%
Change in quantity		220849	340017	27930	-53860	534936	20012	554948
Change in share		3%	18%	-6%	-10%	6%	-6%	

**Table 8 – Indicators of volatility in prices of milk products in World and EU (Tothova, 2011)**

Indicator	World prices			EU prices		
	01/97–10/10	01/97–11/03	12/03–10/10	01/97–10/10	01/97–11/03	12/03–10/10
% of observations lying outside 20% tunnel						
Butter	80.00	85.54	74.39	25.30	0.00	50.60
SMP	72.29	79.52	65.06	28.92	16.87	40.96
Coefficient of variation						
Butter	46.56	16.93	35.72	10.55	3.47	12.84
SMP	39.63	17.66	33.03	14.39	8.35	18.31

**Figure 1 – Domestic price of SMP in India and International price of SMP from Oceania<sup>xii</sup>**



<sup>i</sup> See Notification No. 33/2010-Customs dated 12th March, 2010 of Department of Revenue, Ministry Of Finance, Government Of India

<sup>ii</sup> See Notification No. 78 /2011 – Customs dated 19th August, 2011 of Department of Revenue, Ministry Of Finance, Government Of India

<sup>iii</sup> See Notification No. 59/2012-Customs dated 21st November, 2012 of Department of Revenue, Ministry of Finance, Government Of India

<sup>iv</sup> See Notification No. 45 (RE-2006)/2004-2009 dated 9th February, 2007 of Department of Commerce, Ministry of Commerce & Industry Government of India

<sup>v</sup> See Notification No 25 (RE – 2010)/2009-2014 dated 24th February, 2011 of Department of Commerce, Ministry of Commerce & Industry Government of India

<sup>vi</sup> See Notification No 112 (RE – 2010)/2009-2014 dated 1st May, 2012 of Department of Commerce, Ministry of Commerce & Industry Government of India

<sup>vii</sup> See Notification No 2 (RE – 2012)/2009-2014 New Delhi dated 8 June, 2012 of Department of Commerce, Ministry of Commerce & Industry Government of India

<sup>viii</sup> See Notification No. 25 (RE – 2012)/2009-2014 dated : 22nd November, 2012 of Department of Commerce, Ministry of Commerce & Industry Government of India

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<sup>ix</sup> See Notification No 31 (RE - 2012)/2009-2014 dated 4th February 2013 of Department of Commerce, Ministry of Commerce & Industry Government of India

<sup>x</sup>The number of farms in EU represents the number of active producers holding delivery quotas for 2012-13 as per a press release of the European Commission in October 2013.

<sup>xi</sup>The number of dairy farms is represented as the number of herds as reported by DairyNZ.

<sup>xii</sup> Price of SMP- Domestic Price in India ( converted from INR/kg using RBI Exchange Rate) & International Price of Oceania – USD/MT)

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