

**STUDY ON WORLD TRADE IN LIVESTOCK AND
LIVESTOCK PRODUCTS OF INDIA**



**THESIS SUBMITTED TO THE
NATIONAL DAIRY RESEARCH INSTITUTE, KARNAL
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IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF**

**MASTER OF SCIENCE
IN
DAIRYING
(DAIRY ECONOMICS)**

**BY
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B.Sc (Agri.)**

**DIVISION OF DAIRY ECONOMICS, STATISTICS & MANAGEMENT
NATIONAL DAIRY RESEARCH INSTITUTE
(I.C.A.R)**

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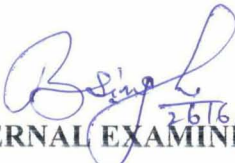
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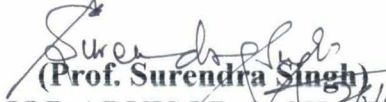
MASTER OF SCIENCE

IN

**DAIRYING
(DAIRY ECONOMICS)**

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This is to certify that the thesis entitled "**STUDY ON WORLD TRADE IN LIVESTOCK AND LIVESTOCK PRODUCTS OF INDIA**" submitted by **Mr. SNEHANGSHU GOSWAMI** towards the partial fulfillment of the requirement for the award of the degree of **MASTER OF SCIENCE in DAIRYING (DAIRY ECONOMICS)** of the National Dairy Research Institute (Deemed University), Karnal (Haryana), India, is a bonafide research work carried out by him under my supervision and guidance and no part of the thesis has been submitted for any other degree or diploma.

Dated: 12 June, 2007


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(Snehangshu Goswami)

ABSTRACT

ABSTRACT

The economic liberalization and signing of Agreement on Agriculture (AoA) are expected to boost up Indian livestock sector as India has vast resources of live stocks. The present study examined the directions, composition, growth and instability of Indian livestock and livestock products trade for the period of 1991 to 2005.

Exports of live animal, dairy and meat products were confined to the Southern and Western Asia but that of raw hides and skins, leather, wool and prepared meat products were concentrated towards Europe, America and Oceania. Indian imports of these products have been flowing mainly from the non-Asian countries. The export-import baskets of livestock products were dominated by few products, but diversification towards other products were also observed in the recent years. Concentrated or sweetened milk and cream, butter and other fat based products (dairy products); fresh and frozen meat of bovine animals (meat products); raw hides & skins and leather of bovine or equine and of sheep or goats (raw hides & skins and leather products); prepared meat products (other than sausages) were identified as potential livestock products for trade.

Meat and dairy products emerged as the most prospective livestock products having both a positive balance of trade and higher growth rates coupled with lesser degree of instability as compared to other products.

In the years to come, West Asia and southern Asia are expected to become major destinations for the dairy products whereas Europe and America have emerged as prospective markets for Indian meat products besides the Asian countries. Africa, America, Oceania and Europe are likely to remain preferred destinations for leather, wool, prepared meat and raw hides and skin products. Indian imports of most of the products are likely to continue to flow from Europe, America and Oceanian countries.

The overall performance of most of the livestock products have improved only during the recent years. Through increasing production of quality livestock products, India will be able to capture a larger share of the world market for livestock products.

अनुक्षेपण

आर्थिक संरालकरण एवं कृषि पर सहमति, साधन युक्त भारतीय पशु समुदाय क्षेत्र के व्यापार को बढ़ाने में महत्वपूर्ण है। वर्तमान अध्ययन भारतीय पशु समुदाय तथा पदार्थों के व्यापार की 1991 से 2005 तक दिशा, संगठन, वृद्धि तथा अस्थिरता को दर्शाता है।

जीवित पशुओं, डेरी एवं मांस उत्पादों का निर्यात दक्षिणी तथा पश्चिमी एशिया तक सीमित रहा, जबकि कच्चा चमड़ा, कमाया हुआ चमड़ा, ऊन तथा तैयार मांस नव निर्यात यूरोप, अमेरिका तथा ओशियन देशों की तरफ रहा। भारतीय आयात मुख्यता एशिया के अलावा देशों से ही रहा।

आयात-निर्यात कुछ पशु पदार्थों तक ही केन्द्रित था, परन्तु हाल ही के वर्षों में दूसरे पदार्थों की तरफ विविधिकरण देखा गया। कन्सनट्रेटड दूध, क्रीम, मक्खन तथा अन्य वसा आधारीत डेरी पदार्थों : ताजा तथा जमा हुआ मांस (मांस पदार्थ), गाय भैंस का कच्चा चमड़ा तथा भेड़या बकरी का तैयार चमड़ा (कमाया हुआ चमड़ा) : तैयार मांस पदार्थ (सोस के अलावा) ये सभी पदार्थ व्यापार में क्षमता रखने वाले पाये गये।

अन्य पदार्थों की तुलना में मांस तथा डेरी पदार्थ सकारात्मक संतुलित व्यापार तथा उच्च वृद्धि दर के साथ-साथ कम अस्थिरता वाले मुख्य पदार्थों के रूप में उभर कर आये।

आने वाले कुछ वर्षों में भारतीय डेरी पदार्थों के निर्यात के लिए पश्चिमी तथा दक्षिण एशिया जबकि मांस पदार्थों के निर्यात के लिए एशिया के अलावा, यूरोप तथा अमेरिका मुख्य बाजार के रूप में होने वाले हैं। तैयार चमड़ा, ऊन, तैयार मांस तथा कच्चे चमड़े के निर्यात के लिए अफ्रीका, ओसियानिया तथा यूरोप चुनिंदा बाजारों के रूप में रहने की उम्मीद है। भारत में लगभग सभी पशु पदार्थों का आयात यूरोप, अमेरिका तथा ओसियन देशों से जारी रहने की आशा है।

सम्मिलित रूप से सभी मुख्य पशु पदार्थों का व्यापार हाल ही में सुधरा है। उत्तम गुणों वाले पदार्थों का उत्पादन बढ़ाकर भारत पशु पदार्थों के विश्व व्यापार का बड़ा हिस्सा हासिल कर सकता है।

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ABBREVIATIONS

AoA	=	Agreement on Agriculture
BoT	=	Balance of Trade
CAGR	=	Compound Annual Growth Rate
COMTRADE	=	Commodity Trade Statistics Database
CV	=	Coefficient of Variation
DAHD	=	Department of Animal Husbandry and Dairying
FAO	=	Food and Agriculture Organisation
GDP	=	Gross Domestic Product
GoI	=	Government of India
HS	=	Harmonised System
II	=	Instability Index
OECD	=	Organisation for Economic Cooperation and Development
OLS	=	Ordinary Least Squares
OPEC	=	Organisation of Petroleum Exporting Countries
SAARC	=	South Asian Association for Regional Cooperation
SMP	=	Skim Milk Powder
ToT	=	Terms of Trade
WMP	=	Whole Milk Powder
WHO	=	World Health Organisation
WTO	=	World Trade Organisation

1. INTRODUCTION

1.1 BACKGROUND:

Foreign trade is said to be the engine of economic growth for a nation. This is so because foreign trade opens up the economy to a greater competitive world market for the domestic products which provides incentives to the producers and manufacturers for better production in terms of both quality and quantity at a lower cost to compete with the lower product-prices and superior quality in the international market. This again leads to more efficient utilization of scarce resources and large scale specialization which in turn increases income and consumption resulting into increase in out put and employment through the multiplier effect leading to overall growth of the economy as a whole.

The positive relationship between national income and foreign trade earnings is evident in case of most of the developed countries. India, however, could not gain much from foreign trade due to restrictive trade regime during the first forty years of Independence. During this period, the foreign trade-GDP ratio hovered around 15 per cent (Kapila, 2004). India's post-independence development strategy was one of national self-sufficiency, and stressed the importance of government regulation of the economy.

Cerra et al. (2000) characterized it as "both inward looking and highly interventionist, consisting of import protection, complex industrial licensing requirements, pervasive government intervention in financial intermediation and substantial public ownership of heavy industry." In particular, India's trade regime was amongst the most restrictive in Asia, with high nominal tariffs and non-tariff barriers, including a complex import licensing system, an "actual user" policy that restricted imports by intermediaries, restrictions of certain exports and imports to the public sector ("canalization"), phased manufacturing programs that mandated progressive import substitution. It was only during the second half of the 1980s, when the focus of India's development strategy gradually shifted toward export led growth that the

process of liberalization began. Import and industrial licensing were eased, and tariffs replaced some quantitative restrictions. (Cerra et. al., 2000).

Our share in world merchandise trade of 0.8% in 2002, abysmally low though it is, still represents a rise from a low of 0.41%, to which it had fallen in 1981 from a peak of 2.2% in 1948, largely due to our relentless pursuit for too long of a misguided inward-oriented development strategy of across-the-board import substitution. (Srinivasan, 2004).

During the last decade, India has been gradually but palpably shifting from its inward-oriented, state-led development strategy to a policy of active integration with the world economy. The first round of trade reforms (1991–95) was largely confined to the manufacturing sector. However, over the past three years noteworthy steps have been taken to broaden trade liberalization to cover trade in consumer goods and agricultural products (Athukorala,2006).But most products which are actually exported or which have export potential are subject to various kinds of ad hoc export controls to be announced in public notices.(Pursell and Gulati, 1993).

In historical perspective, the Agreement on Agriculture, negotiated in the Uruguay Round in 1994, is the most significant single package ever agreed for changes in the international trading regime for agricultural commodities. Reasonably well-defined constraints on import barriers, export subsidies and domestic support have been agreed at the international level and commitments have been accepted by majority of countries to reduce support and protection in agriculture in this agreement.

Trade reforms revised continuously and especially through EXIM policy announced for the period 1997-2001 and subsequent amendments have helped to reinforce the export production base, remove procedural irritants, and facilitate input availability besides focusing on quality and technological up gradation and improving competitiveness. (Bansil and Malhotra, 2006).

1.2 THE STUDY:

In India, livestock sector has emerged as an important source of rural employment and income in recent decades (Jha, 2004). It is an integral part of

the agricultural production system in India and plays a vital role in national economy as well as socio-economic developments of millions of rural households and a valuable source of animal protein for farm and non-farm families through the consumption of milk, dairy products, meat and eggs (Sharma, 2004). Most of the requirements of such products were met through imports during first two decades after independence. Various development programs initiated by the Government gave a boost to the production of livestock products.

India has the largest population of livestock in the world and stands 1st in buffalo and cattle production, 2nd in goat, 3rd in sheep and 7th in poultry production with a share of 57 per cent, 16.5 per cent, 16.2 per cent, and 5 per cent of the world population of the respective category. The livestock sector contributes 29.4 per cent to the agricultural GDP of the country and provides employment to 19 million people (11 million in principal status and 8 million in subsidiary status) which is about 5 per cent of the total workforce of the country.(FAO,2004 and Gol, 2005-06).

Before liberalization of the economy India was a net importer of livestock products. The share of livestock exports was only 0.88 per cent in total agricultural exports and 0.3 per cent in total merchandise exports of the country during 1974-76. The situation, however, went somewhat in favour of livestock sector after economic reforms in 1991 which encouraged exports of these products and in early 1990s India became a net exporter of livestock products. The signing of AoA further reinforced this liberal policy framework. Share of livestock products exports increased to 6.22 per cent in total agricultural exports and 1.05 per cent in total merchandise exports during late 1990s.

Against this back drop of more than a decade of economic liberalisation , the main issues which arise at present are: What are the major destinations of the livestock products of India? What is the composition of imports of these destinations from India? What are the changes in the trade flow over the time? What is the share of India's livestock products in these markets? What is the growth of these products in the new policy regime? Which products have consistent demand in the world market?

1.3 OBJECTIVES:

The present study has been undertaken to address some of these issues with the following specific objectives:

- i) To examine the direction and composition of livestock and livestock products trade.
- ii) To estimate the growth and instability of exports and imports of livestock products of India.

2. REVIEW OF LITERATURE

A brief review of earlier studies, that have relevance to the present study on world trade in livestock and livestock products of India, is presented under the following main headings:

2.1 Direction and composition of livestock products trade of India.

2.2 Trend in livestock products trade of India.

2.1 Direction and Composition of Livestock Products Trade of India.

Kumar and Singh (2000) examined the composition of exports and imports of livestock products of India taking them under five broad groups of live animals; meat and meat preparations; dairy products and eggs; hides and skins; and animal fats using FAO¹ trade data for the period of 1974 to 1994 and found that meat and meat preparations constituted about 88 per cent of the export earnings from livestock sector, followed by earnings from exports of live animals (5.22%), hides and skins(3.12%) dairy products and eggs (2.37%) and animal fats (1.2%). The dairy products which had a share of about 67.94 per cent in total livestock imports during 1974-76 declined to 28.21 per cent during 1992-94 while that of hides and skins remarkably increased from 1.07 per cent in 1974-76 to 65.15 per cent during 1992-94. The shares of meat preparations and animal fats showed fluctuations but constituted less than 1 per cent of total livestock imports during last two triennium i.e. 1989-91 and 1992-94. India was a net importer of livestock products till 1988. The scenario, however, changed drastically during the early 1990s and India continued to be net exporter of livestock products in the subsequent periods. They also found that the meat and meat preparations were mainly exported to Malaysia (29%), UAE (22%), Philippines (18%), Iran (4%) and

¹ Food and Agriculture Organisation (FAO)

Saudi Arabia (3%) while the leather products were imported by Germany (20%), USA (16%), Italy (14%) and UK (13%). The destinations for dairy and poultry products together were UAE (20%), Germany (11%) and Saudi Arabia (8%).

Sharma and Sharma (2000) indicated that the dairy export basket of India constituted of Skim Milk Powder (63.3%), Ghee and Butter Oil (11.7%), and Whole Milk Powder (7.3%) as the dominating products during 1996-98, and the trends in export of these products have been highly volatile during 1990-91 to 1997-98. Other products occupy very marginal share in the export basket and that too vary from year to year. India has recently started exporting some varieties of Cheese.

Kumar, Ali and Singh (2001) also studied the livestock products trade of India but for a different time period 1974-1998 using FAO trade data. They found that meat and meat preparations were exported mainly to UAE (25 per cent), Malaysia (23 per cent), Philippines (15 per cent), Iran 7 per cent) and Saudi Arabia (5per cent) while the main destinations for the dairy products were UAE(41 per cent), Nepal(17 per cent), USA (14 per cent), Bangladesh (10 per cent), etc. Though country wise trade showed temporal variations, the major trading partners by and large remained the same. The imports of hides and skins were mainly from Germany, Italy, New Zealand, UK, Indonesia, France, etc. The share of Indian meat and dairy products in total world exports increased while India's share in world import of live animals, meat and meat preparations remained negligible but that of dairy products declined sharply.

In another study conducted by Ali and Ahmed (2001) on the competitiveness of Indian meat industry for the period 1980-81 to 1998-99 meat was identified as an important item for exports in the livestock sector accounting for about 84 per cent in 1980-81, which increased to about 93 per cent during 1998-99. However, mere 4 per cent of the total meat production was exported in which major share was of buffalo and sheep meat. The poor phytosanitary conditions were considered to be major constraints in realizing the export

potential. The study also revealed that bovine meat alone accounted for 96.48 per cent of total meat exports followed by sheep (3.27%), goat (0.16%) and pig (0.06%). Out of the total bovine meat exports 98.51% was contributed by buffalo meat. Asian countries were the main importers of Indian meat products. Middle East alone consumed about 92.52 per cent of total meat exports of India.

In a recent study, Kumar (2004) reported that though India's share in world meat and meat preparations remained less than 1 per cent, India was a net exporter of these products and after liberalization our share in meat exports was gradually increasing. Among the exports of animal products, buffalo meat contributed biggest share followed by dairy and poultry products. Exports of boneless meat of bovine animals (frozen) had the highest value of 140 million US\$ during 2000-01. fresh boneless meat of bovine animals followed with a value of 54 million US\$ during that period. Other major meat products were meat of sheep, meat of bovine animals with bone, etc. which valued at around 7 million US\$. As regards to the destinations of these products, Malaysia, UAE, Philippines, Iran and Jordan were importing countries of meat of bovine animals of India while sheep and goat meat products were imported by the mid Asian countries like UAE, Saudi Arabia, Oman, Bahrain and Qatar.

While studying the Impact of trade liberalisation on Indian dairy industry, Rajarajan (2004) found that the trade revolves around 6 major products, viz. SMP, WMP, Butter, Ghee, Sweetened Milk and Condensed Milk. Using FAO trade data, he made a comparison of export-import basket in the trade of dairy products in the pre and post liberalisation period. The above mentioned top 6 items of the export basket remains all most common in both the period with only one change i.e. inclusion of Condensed Milk in place of Cheese and Curd.

Dairy products were mainly exported to SAARC(30%) and OPEC(32%) countries in the pre as well as post-liberalization period and exports to OECD countries increased at 17% of total dairy exports from India in post liberalization era.

OECD countries were the major sources of imports during 1980s but the share of this source declined from 54 per cent to 43.58 per cent during 1990s.

The imports from Asia-Oceania comprising mainly Australia and New Zealand had increased substantially to the level of 6.52 per cent in post-liberalisation era from 0.27 per cent in pre liberalization period. Imports had also started coming from SAARC and East European countries the share of which stood at 4.45 per cent and 3.36 per cent during 1992-2001 respectively. He also reported that the sources of imports were highly scattered and India had been importing from smaller countries as the share of the major trade blocks were only 52 per cent.

Jha (2004) has examined the composition of dairy trade as per Harmonised System of Nomenclature of Indian products. He found out that milk and cream not concentrated (HS 0401) is not an important item for either exports or imports as perishability and bulkiness of this sub-group of milk products restricts its trade. In contrast, the alternate form of milk products that is, milk concentrated, etc. (HS 0402) is an important item for exports as well as import. This subgroup contributes to more than two-thirds of the total exports of dairy products in the country. Yoghurt and buttermilk are placed together in HS 0403, a sub-group of dairy products, which is being exported in small amounts and import of this commodity is also negligible. Similarly, another sub-group (HS code 0404) consisting of whey and whey-based products are not important from the trade point of view, though this group of milk products is being exported and imported in small amounts. Another important tradable dairy product is butter and similar high-fat milk products like, butter oil, dairy spread which are placed in HS 0405. This group is more important from the import point of view constituting almost another half of the aggregate imports of dairy products in the country. This group is also important for exports and accounts for more than one-fourth of India's exports of milk products. In recent years, cheese has emerged as an important dairy item for imports. Cheese and curd are placed together in the product sub-group (HS 0406), though curd is not as important as cheese for trade in India.

Besides, the product portfolio, a few studies have also examined the destinations of India's exports. Sharma *et al.* (2000) identified Bangladesh (23.1%), UAE (15.4%), USA (15.6%) and Philippines (8.9%) as major destinations of Indian dairy exports.

In a more recent study on the export potential of Indian dairy industry in Asian countries, Hazra (2005) found that during 1991 to 2004 India exported dairy products to the world market worth US\$162.93 million, while the corresponding figure for Asia was US\$132.86 million. Among 105 countries in the world where India exported dairy products at least for one year during this period, only 40 were Asian countries, yet the percentage share of all Asian countries as a group was much more than the rest of the world export partners. The average shares of Asian countries during the period 1991 to 2004 are about 80 and 82 per cent in quantity and value terms, respectively. However, in the post-WTO period (1997-2004), there has been some diversification in the direction of India's export. The average share of Asian countries sharply fell from 85 per cent in quantity terms during the pre-WTO period to 75 per cent after the implementation of new world trade order. The decline in the share of Asian countries was particularly sharp in 1997 due to quantum jump in India's export to some developed non-Asian countries like USA and Germany. The total dairy export to USA that stood at 323636 kg in 1997 is more than sixty times of 1991's export quantity of 5130 kg. Similarly, for Germany the export quantity has jumped from mere 60 kg in 1991 to 52500 kg in 1997.

Among the Asian markets Bangladesh is the most important destination of India's exports with largest average share of about 38 per cent in India's total export quantity during the period. The second largest share is of UAE (28.94 per cent) followed by Nepal (6.59 per cent), Philippines (5.12 per cent), Sri Lanka (3.85 per cent) and Oman (3.03 per cent). The other countries with a share of more than 1 per cent are Bahrain (2.07), Singapore (1.67), Bhutan (1.56), Yemen (1.47), Kuwait (1.32) and Hong Kong (1.02). In the Indian sub-continent traditional products are the major items, like SMP, WMP, Butter, Ghee and Milk Food for Babies. Among three of four Gulf destinations, viz. UAE, Oman, and Kuwait largely fat based products are exported and Ghee is the predominant product among them while Singapore, South Korea and Philippines are the major South and East Asian destinations with SMP and Ghee are the major products of exports.

Concentrated or sweetened milk or cream based products and Butter or fat based products are the major product groups in Indian export basket at all-Asia level. The average combined share of these two product groups was over 90 per cent throughout the study period. Between these two important groups, the share of Concentrated or sweetened milk and cream based products has been more dominant in almost all the years.

Thimmappa et.al.(2005) while studying India's livestock products trade with Japan also substantiated that India exports buffalo meat to 102 countries. Malaysia, Philippines, U.A.E, Egypt, Jordan and Angola are the major importers. India exported US 167.85 thousand dollars worth of buffalo meat to Japan accounted 0.05 per cent of India's total buffalo exports during triennium ending 2003. The major countries to which sheep and goat meats were exported are U.A.E, Oman, Qatar, Malaysia and Saudi Arabia. India exported only 0.30 per cent of its total sheep and goat meat to Japan. Bangladesh, Germany, U.S.A, U.A.E, Nepal and Yemen are major export destination for dairy products. India exported processed meat mainly to Malaysia, China, Hong Kong, U.A.E, Bahrain, and Seychelles in 2003. Japan is also one of the major importers of India's processed meat and accounted 12.79 per cent of India's total processed meat during triennium ending 2003. This shows that developing nations are the major importers of most of the livestock products of India.

Irfan Allana (2005) is of the view that the good growth of the Indian Buffalo meat export industry from 1,67,291 metric tones (Free On Board value Rs.797 crores) in 1999-2000 to 3,43,817 metric tones (Free On Board value Rs.1647 crores) in 2003-2004 has largely been achieved through nurturing the traditional markets with good quality, competitively priced, frozen Buffalo meat. The traditional countries this buffalo meat is exported include, Malaysia, Philippines, Mauritius, UAE and Jordan. In last few years, there have been increasing sales to countries in Africa (including Gabon and Angola), some Common-Wealth Independent States countries and intermittent supplies to Iran and Egypt. In the last one year, newer markets which have emerged and are

growing include Afghanistan, Iraq, Jordan and Kuwait and most importantly Saudi Arabia.

A study conducted by EXIM bank of India (2006) brings out the fact that composition of Indian leather exports has undergone a radical change, from being a mere exporter of hides and skins to a status of value added leather products. Although, leather exports have increased in absolute terms, its share in total exports have declined in percentage terms from a high of 7.99% in 1990-91 to 2.89% in 2004-05. The main export markets for India are Germany, USA, Italy, UK and France. Due to the two bans imposed by Germany on imports from India, there was a lull in India's exports in 2002-03. Slowly and steadily, it picked up pace and stood at US\$ 326 million in 2004-05. Exports to USA, which was US\$ 343 million in 2000-01, dropped to US\$ 243 million in 2002-03 and was at US\$ 266 million in 2004-05.

2.2 Trends in Livestock Products Trade of India.

Kumar et.al. (2001) studied the trends, competitiveness and performance of livestock products trade of India taking FAO trade data for the period 1974 to 1998. They found that the annual export of livestock sector increased from US\$ 14 million in 1974-76 to US\$ 353 million in 1996-98. The exports of meat and meat preparations (from US\$ 12 million in 1974-76 to US\$ 323 million in 1996-98), dairy (from US\$ 0.15 million in 1974-76 to US\$ 3.9 million during 1996-98) showed remarkable increase during this period. The export of live animal grew until 1983-85 but thereafter declined gradually. There were wide fluctuations in the exports of hides and skins and animal fats.

The total imports of livestock sector in 1974-76 were around US\$ 57 million and kept fluctuating till 1988 but afterwards showed a declining trend and the value of imports of livestock sector during 1996-98 declined to US\$ 49 million. The imports of dairy products have sharply declined, particularly during the late eighties and the early nineties and its shares came down to 2 per cent (US\$0.9 million in absolute terms) in 1996-98 from 68 per cent in 1974-76 in total

livestock imports. There was, however, a quantum jump in the imports of hides and skins, where its share increased from a mere 1 per cent (US\$0.6 million) during 1974-76 to more than 95 per cent (US\$46 million) during 1996-98. Though the imports of meat and meat preparations were less than 1 per cent through out the period the share of live animals increased from 0.6 per cent (US\$0.3million) during 1974-76 to 8.54 per cent (US\$ 7.6 million) but later declined to 1.67 per cent (US\$ 0.8 million) of the total livestock imports.

A study of annual compound growth rate by them revealed that exports of dairy products showed 21 per cent growth rate while meat and meat preparations grew at 12 per cent per year during the entire period. Exports of live animal and hides and skins showed 4.06 per cent and 1.45 per cent growth rate during the entire period of 1974-1998. The imports of hides and skins grew annually to the extent of 25 per cent followed by live animals (10 per cent) but that of dairy products showed negative growth rate (-4.06 per cent).

Ahmad and Ali (2001) found that exports of meat products experienced significant annual growth rate 8.13 per cent per annum over the period 1980-1999. During the post liberalisation period the growth was more striking (11.69 per cent) than that of the pre liberalisation era (2.87 per cent). The exports of bovine meat which included beef and veal and buffalo meat showed 13.73 per cent growth rate during 1990-99 while goat meat grew by 28.52 per cent and pig meat by 23.8 per cent during 1990-1999.

As regards to exports in dairy products, in the first four years after WTO came into existence, the Indian dairy exports did not receive any 'big push' and no significant change occurred in the world market concentration as the share of major dairy players in the world trade of dairy products remained much the same (Sirohi and Mathur 2001). However, positive trends in the form of substantial increase in dairy exports from India have been witnessed during 1999-2002 (Sirohi, 2003).

Rajarajan (2004) studied the growth and instability in trade of six dairy products and found that annual average export of dairy products as a whole significantly increased during the 1992-2001 period over 1982-1991. All the

major products viz. butter, SMP, WMP, ghee, sweetened milk and condensed milk increased at 151, 120, 19, 145, 234 and 104 per cent respectively during 1992-2001. The year wise growth trend showed that exports were gradually increasing every year with more upward and consistent growth during 1992-2001. All major products followed similar trend except condensed milk whose exports in late 1990s declined drastically. The general temporal fluctuations were lower during 1990s as compared to 1980s.

The imports of dairy products declined significantly during the 1990s to the extent of 77 per cent for all dairy products. Except for condensed, all other products showed decline at varying proportions. Sweetened milk and SMP were the two products with highest decline (78%) followed by WMP, butter and ghee with 76%, 57%, and 44% fall respectively.

The exports of Indian dairy products increased at an annual compound growth rate of 16 per cent. The imports, on the other hand, registered a positive growth rate of 5.27 per cent during 1992-2001 due to high growth rate of butter (36.02%), ghee (36%) and condensed milk (12.60%) which out weighted the negative growth of SMP(-19.05%), WMP (-20.20%) and sweetened milk (-18.74%).

Shah (2004) studied the export potential of Indian livestock products using FAO trade data for the period 1982-96. He found that the exports of Indian livestock products has particularly increased after the late eighties period. However, the overall increase in export trade of various livestock products from India is found to be much higher in quantity terms than the value terms. As regards the export of live animals from India, a steady decline is noticed during the given period. During the mid-nineties, India exported 155543 tonnes of meat which constituted about 3.60 per cent of the annual average production of meat. As regards to milk and milk products, a real boost in their exports from India is noticed only after the early nineties period i.e. in the era of liberalization. While India exported about 364 metric tonnes of dry milk during the late eighties, her exports of the same increased to as high as 4,983 metric tonnes by the mid-nineties. Similarly, the condensed milk exports of India also increased from 29

metric tonnes during the late eighties to 145 metric tonnes by the mid- nineties. Share of India in fresh, chilled and frozen meat export is noticed to have grown considerably not only in Asia but in the World as well. Among various fresh, chilled and frozen meat, India's export has grown more sharply in the case of fresh sheep meat, both in Asia and in the World trade of the same.

Evidently, it follows that India has achieved considerable growth in exports in a number of livestock based commodities, especially during post economic liberalization period, but the estimates also show that such growth trends are not devoid of wide fluctuations. Export trade of milk and milk products, in particular, has fluctuated widely over the past decade (Kumar & Singh, 2000; Shah, 2004).

Rao et. al. (2005) reported that during overall period of 1983-2002 highest growth rate was observed in dry and skim whole cow milk (28.32 per cent per annum) followed by milk (25.39%). The major livestock exports according to share in total livestock exports like meat and meat preparations (67.27%) recorded 10.77 per cent annual compound growth rate during the same period. Exports of beef and beef preparations showed negative growth rate of -11.72 per cent during 1993-2002 but for overall period the growth rate was 9 per cent.

Highest export instability was also observed in case of milk, followed by dry & skim whole cow milk and wool while meat and meat preparations showed most stable performance.

As regards to imports of livestock products Rao et. al.(2005) studied three products viz. wool greasy, fine animal hair and hides and skins. Fine animal hair showed negative trend growth rate of -11.06 per cent with highest instability. Hides & skins and wool showed positive trend growth of 6.55 per cent per annum and 5.01 per cent with relatively lower instability in imports.

From the above discussion it follows that most of the earlier studies were mainly done at an aggregated level and destination wise studies for specific products are lacking. Though efforts were made by Rajarajan (2004) to study the direction, composition and trends in dairy products but he only studied trade relations with major trade blocks. Hazra (2005) used HS code classification at

much disaggregated level but only for dairy products and the Asian countries. It has been identified by Hazra (2005) that after the signing of AoA in 1994 there has been some diversification in dairy exports towards the non-Asian countries. Thus the studies analyzing the trends in quantum of livestock products trade are limited in their coverage in terms of products covered, period of the study and area. The present study is more comprehensive in its coverage and the details of the same are given in next chapter in methodology.

3. METHODOLOGY

The details of the methodology adopted for the analysis of data in the present study are provided under three subheads, the data, products and analytical framework in this chapter.

3.1 DATA:

The present study is solely based on secondary data on trade pertaining to the period 1991-2005. The data on exports of Indian livestock and livestock products and imports of the same products by India both, in quantity (Kg.) and value (US\$) terms, to and from each destination of the world taken from the electronic database of **Commodity Trade Statistics Division of United Nations (UN COMTRADE)** constitute the basis of the study.

The collected trade data were based on Harmonized System (HS) Codes at 4-digit level. The Harmonized Commodity Description and Coding System, generally referred to as “Harmonized System” or simply “HS” is a multipurpose international product nomenclature developed by the World Customs Organization (WCO). It comprises about 5,000 commodity groups; each identified by a four digit, six digit and eight digit codes, arranged in a legal and logical structure and is supported by well-defined rules to achieve uniform classification.

The system is used by more than 177 countries and economies as a basis for their Customs tariffs and for the collection of international trade statistics. Moreover 98 per cent of the merchandise in international trade is classified in terms of the HS.

Considering these facts, the present study opted for trade statistics based on HS. For the purpose of the study mainly agriculturally important livestock products were selected.

The secondary data collected for the selected products from the above source were tabulated and subjected to various statistical analyses to meet the specific objectives of the study.

3.2 PRODUCTS:

The products that were selected for the study come under six broad groups viz.

- i) Live animals
- ii) Dairy products
- iii) Meat and edible meat offal
- iv) Raw hides & skins
- v) Leather
- vi) Wool and animal hair
- vii) Meat preparations

While selecting the products emphasis was given to include the products which were agriculturally important and of farm animals related to the field of livestock and dairying. A detailed list of selected livestock and livestock products under HS-system is given in Appendix I.

3.3 ANALYTICAL FRAMEWORK:

The analytical framework used in the study is outlined below in two sub-sections as per the objectives of the study.

3.3.1 DIRECTION AND COMPOSITION OF TRADE:

To examine the direction of trade in livestock and livestock products of India percentage share of each destination of exports and sources of imports to India were worked out for the selected products under the broad groups. For this purpose the countries with which India had trade relations at least for one year in the entire period of study were grouped into following eight groups according to their geographical locations-

- i) **Africa** – Comprises of East Africa, Middle Africa, Northern Africa, Southern Africa, Western African countries.
- ii) **Europe** – Eastern Europe, Northern Europe, Southern Europe, Western European counties.

- iii) **Americas**- Comprises of USA, Canada, Brazil, Mexico, Chile and other American countries.
- iv) **Oceania**- Consisting of Australia, New Zealand, Melanesia, Micronesia, Polynesian countries.
- v) **Central and Eastern Asia**- Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, and China, Hong Kong SAR, Japan, Republic of Korea etc
- vi) **Southern Asia**- Bangladesh, Bhutan, Nepal, Pakistan, Sri Lanka, Afghanistan, Maldives, Iran.
- vii) **South East Asia**- Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Vietnam, Thailand, Singapore etc.
- viii) **Western Asia**- Bahrain, Cyprus, Jordan, Iraq, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, UAE, Turkey, Yemen etc.

The changes in the direction of exports and sources of imports were examined by working out the changes in the percentage shares of various destinations for exports and sources of imports. For this purpose the entire period of study constituted of five sub-periods viz.

- 1991-1993
- 1994-1996
- 1997-1999
- 2000-2002
- 2003-2005

To examine the composition of trade, tabular analysis using descriptive statistics were used. The shares of various products in the total exports and imports were calculated for each destination.

3.3.2 GROWTH TRENDS AND INSTABILITY IN TRADE:

The growth trends and instability in trade of the various livestock products were analyzed for each destination of exports and sources of imports. For this both tabular and regression analysis were done for the various livestock products.

a) Growth Trends:

The exponential growth function of the following form was fitted to work out Compound Annual Growth Rate (CAGR) of exports and imports.

$$Y = a b^t e^\varepsilon$$

Where,

Y= Variable (viz. trade quantity or value) for which growth rate is to be estimated

a= Constant term

b= Regression coefficient

t= Time variable (1,2,3, ...)

ε =Error term

The equation was estimated after transforming into,

$$\ln Y = \ln a + t \ln b + \varepsilon$$

Compound Annual Growth Rate 'r' was calculated as,

$$r = [\text{Antilog of } (b) - 1] * 100$$

b) Measurement of Instability:

The instability, i.e. year to year fluctuations in exports and imports were captured using coefficient of variation (CV) and by constructing Instability Index (II).

The coefficient of variation was calculated to study the variability in the trade in livestock products, using the following formula,

$$CV = \frac{\text{Standard Deviation}}{\text{Mean}} \times 100$$

Another method, comparatively rigorous than CV is calculation of Instability Index (II). It is based on the deviations between the observed and estimated values obtained by fitting exponential trend line with the help of

ordinary least squares (OLS) (Massell 1964, 1970; Kingston 1973, 1976; Hazra, 2005).

$$II = \left[\frac{\sum (X_t - \hat{X}_t)^2}{N} \right]^{1/2} \times 100$$

Where, X_t = Actual value of exports in the year t

\hat{X}_t = Estimated value of exports using the exponential trend method

N = Number of observations

Following the method adopted by Hazra, 2005 some modifications were done in the estimate of II to commensurate with the data set. Since, for certain countries, in some years India didn't trade any products, dropping those years for fitting an exponential trend line, would have lowered down the Instability Index of those particular countries.

As a remedy, the value zero has been assigned to those years for which the trade quantity was nil after taking logarithmic value (to the base e) of quantity and value. What it actually means that we are considering the quantity traded in those years as 1kg and the corresponding trade value as \$1 (as $\exp(0) = 1$). Now this does not harm too much as the quantity and value both are in absolute terms. Moreover, it takes all the years into consideration and tries to capture the better picture rather than dropping some years. This modified method has been put in use for countries for which in some years the quantity traded is zero.

c) Commodity Terms of Trade:

The commodity terms of trade also called net barter terms of trade uses price index for exports and imports. The movement in terms of trade shows the gains from international trade and hence terms of trade indices are of immense use in the study of international trade in commodities. (Mannur, 1995).

To examine the trends in terms of trade of the various livestock products the following formula was used.

$$N = \frac{X_p}{M_p} \times 100$$

Where,

N = commodity terms of trade,

X_p = Price index number of exports,

M_p = price index number of imports.

The price index number of exports and imports were constructed based on Laspeyer's index taking base as 1993. The export prices and import prices were obtained as following:

- i) Export Price (US\$ / Kg) = Export Value/ Export Quantity.
- ii) Import Price (US\$ / Kg) = Import Value/ Import Quantity.

By observing the changes in annual values of commodity terms of trade it can be said whether terms of trade are in favour of the country or not. If the TOT indices are more than the base year, i.e. above 100 then it is in favour of the nation and vice versa.

4. RESULTS AND DISCUSSION

This chapter discusses the results of the study under two broad heads viz. direction and composition of livestock products trade and growth and instability in livestock products trade.

4.1 Direction and Composition of Livestock Products Trade.

The direction and composition of livestock products trade were studied in terms of direction, changes in the direction, destination wise composition of exports and imports etc. for all the items under study for the period of 1991 to 2005.

4.1.1 (a) Direction of Trade:

Here attempts were made to identify the major destinations for exports and sources of imports of livestock products, the changes in the direction of export and import over time.

India's Livestock Trade:

India exported live animals ¹ worth 13.08 million US\$, dairy products worth 394.72 Million US\$, meat and edible meat offal ² worth 3,606.35 million US\$, prepared meat products³ worth 11.31 million US\$, raw hides and skins, other than fur skins ⁴ worth 5886.13 million US\$; Wool, animal hair, horsehair yarn and fabric thereof ⁵ worth 902.76 million US\$ to the world and imported live animals worth 12.51 million US\$, dairy products worth 202.19 million US\$, meat and edible meat offal worth 1.66 million US\$, prepared meat products worth 2.09 million US\$, raw hides and skins, other than fur skins worth 2513.22 million US\$, Wool, animal hair, horsehair yarn and fabric thereof worth 2517.85 million US\$ and during the period 1991 to 2005.

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1. Live animals – All products included in HS code 01.
 2. Meat and edible meat offal- All products included in HS code 02.
 3. Prepared meat products – Two products HS 1601 and HS 1602.
 4. Raw hides and skins, other than fur skins- All products included in HS code 41.
 5. Wool, animal hair, horsehair yarn and fabric thereof - All products included in HS code 51

All the exportable dairy products were taken for analysis, however in case of other livestock products emphasis was given on those product lines which either had a large share in the total exports or in the total imports in that group under the HS 2 digit classification or which are important from the view point of agriculture and dairying. Five meat products, three raw hides and skins products, three leather products, five wool products, three live animals and two prepared meat products were selected for the analysis. The details of these products are given in Appendix I.

Exports of selected live animal was 13.60 million US\$ and imports were of the worth 9.51 million US\$. The share of these products in total live animal (HS 01) was 43.75% in case of exports and that in case of imports was 76.05%.

During 1991-2005 total dairy exports was to the tune of 210.16 million kg in terms of quantity and 394.72 million US\$ in terms of value. India exported these dairy products in all the years during this period at aggregated level. Dairy imports were much less during the whole period which is about 123.76 million Kg in terms of quantity and 202.19 million US\$ in terms of value.

The total export of five selected meat products that India exported at least for one year during the period of study was 3283.03 million Kg valued at 3584.43 million US\$. This constituted 99.39 % of the total meat exports of the items included in HS 2 digit level classification (HS 02)¹ in terms of value. The imported quantity of these products together was 0.21 million Kg which is worth of 0.89 million US\$. The value share of these products in total imports of meat products in HS 02 was only 0.89%.

Export quantity of raw hides and skins was 6.78 million Kg worth of 18.38 million US\$ whereas imports were much high i.e. 211.01 million Kg in terms of quantity and 684.01 million US\$. It needs to be mentioned that India started exporting the selected three products in this group beginning at 1998 but imports were almost regular throughout the period.

The analysis of leather products exports and imports were done only in value terms in US\$ at current prices for all purpose. This was done because of non availability of data on leather trade in terms of quantity (Kg) for the whole

1. HS 02 – Meat and edible meat offal

period of study. The data on quantity traded of the selected leather products were given in square metre for the period of 1991 to 1995. For the rest of the period data on quantity traded was given in terms of Kg. Because of non availability of suitable conversion factor the whole data on quantity could not be Converted into a uniform unit. As there was not much change in the value of US\$ after 1991 analysis was done in current level prices for these products.

The total exports of these leather products during the period of 1991 to 2005 was 5753.03 million US\$ whereas imports were to the tune of 1590.63 million US\$ showing a wide gap between the exports and imports.

The value share of raw hides and skins and leather products taken together in total exports of HS 41¹ was 98.05% and that in total imports was 90.51 % for the whole period.

The total wool and animal hair exports from India during the study period were 102.74 million in value terms and 6.78 million Kg in quantity terms. The share of the selected products in total export value of HS 51² products was 11.38%. The other products in this group which were not selected were mostly processed products of wool or woven clothes, yarn etc. These wool and animal hair products have a value share of 92.14% in total imports of HS 51 products with a value of 2319.90 US\$. The total quantity imported during the entire period was 1009.41 million Kg.

Two prepared meat products were selected for study. The exports of these products was 11.31 million US\$ in terms of value and 5.91 million Kg in terms of quantity. The value of total imports of these products was 2.10 million US\$ while the quantity of imports was about 0.74 million Kg.

From the above discussion it can be summarized that the leather and meat products were the major items of exports followed by dairy products whereas wool and animal hair followed by leather were the major import items.

Direction of Exports and Sources of Imports:

To identify the major markets for Indian livestock products and sources of imports the different countries with which India had trade relations in the

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1. HS 41- Raw hides and skins, other than fur skins
 2. HS 51- Wool, animal hair, horsehair yarn and fabric thereof

selected livestock products were grouped into eight groups. These eight country groups are viz. Africa, America, Central and Eastern Asia, Europe, Oceania, South Asia, South East Asia and West Asia. It needs to be mentioned that the classification adopted was derived from the classification of the world for the purpose of trade related studies used by United Nations Commodity Trade Statistics (**COMTRADE**) Division. There are some destinations of exports as well as sources of imports which are not included in this classification. Moreover, in the collected data of livestock trade, some of the areas were not reported and they were classified as “areas, nes” i.e. areas not elsewhere specified. The Asian countries which were not specified in the data, were reported as “Other Asia, nes” i.e. other Asia, not elsewhere specified. Since destination wise data on trade and total trade data were collected separately for the analysis in order to bring out the trade scenario both at aggregated world level and at country level there are some unspecified destinations of exports and sources of imports in the results.

Trade in Live Animals:

The analysis of live animals exports and imports were done in terms of values (US\$) of exports and imports because of non availability of data in quantity terms for certain years and products. Three live animals under the HS 4 digit classification were selected for analysis. It was found that South Asian countries like Bangladesh, Nepal etc were the largest importer of the selected live animals with 87.72% share in the total export value followed by West Asian countries mainly UAE with a value share 9.96% (**Table 1.a**). American countries and European countries have a marginal share in the total live animal exports.

South Asia is also the major source of live animal imports. The share of this source of imports in value terms is 97.79%. the only other source of imports of the selected live animals is America (value share 2.20%).

Dairy Trade:

India exported dairy products to all the destinations during the period 1991 to 2005. South Asian countries like Nepal, Philippines, Sri Lanka and Bangladesh were the largest customers of Indian dairy products with a share of

31.31% in total export value and 35.05 % in total export quantity of dairy products (**Table1.a**). This was followed by the West Asian countries like U.A.E.,

**Table 1.a : Country Wise Average Share in Live Animal and Dairy Trade
(Per Cent)**

Countries	Live Animals		Dairy Products			
	Exports	Imports	Exports		Imports	
	Value	Value	Value	Quantity	Value	Quantity
Africa	-	-	15.92	15.73	0.01	0.01
America	1.48	2.20	5.22	3.74	10.87	9.13
C. E. Asia*	-	-	0.62	0.88	0.02	0.02
Europe	0.83	-	3.06	3.84	47.60	43.41
Oceania	-	-	0.18	0.13	33.84	37.43
Southern Asia	87.72	97.80	31.31	35.05	4.19	6.53
S. E. Asia**	-	-	6.89	7.62	0.68	0.72
West Asia	9.96	-	29.09	25.32	0.01	0.01

* Central and Eastern Asia

** South East Asia

Oman, Yemen, Qatar, Saudi Arabia, Bahrain etc, with a value share of 29.09% and quantity share of 25.32%. African countries were the third important destinations of Indian dairy products with 15.92% value share and 15.73% quantity share. South East Asian countries had a 6.89% value share and 7.62% quantity share in total dairy exports. Oceanian countries like Australia and New Zealand etc had the least share of 0.18% in value terms and 0.13 % in quantity terms.

Major sources of imports of dairy products were the European countries like Germany, Luxembourg, Switzerland with a value share of 47.60% and quantity share of 43.41% followed by Oceania (value share 33.84%, quantity share 37.43%) and American countries (value share 10.87%, quantity share 9.13%).among the Asian countries South Asian countries were the major sources (value share 4.19%, quantity share 6.53%).

The Asian countries are the major destinations of dairy exports because of the less stringent sanitary and phytosanitary measures adopted by these countries as compared to the developed countries.

Meat Trade:

Meat products were also exported in all the years. **Table1.b** gives the average share of various destinations in total meat exports. The destination

wise average share in the total exports of selected five meat products from India reveals a striking feature that in value terms the largest market for these meat products are the West Asian countries with a value share of 40.74% of

**Table 1 .b : Country Wise Average Share in Meat products Trade
(Per Cent)**

Countries	Exports		Imports	
	Value	Quantity	Value	Quantity
Africa	9.97	10.17	-	-
America	0.46	0.48	6.01	3.46
C. E. Asia*	0.73	0.76	1.12	0.88
Europe	2.22	2.60	57.74	65.88
Oceania	0.03	0.03	14.54	14.28
Southern Asia	3.27	3.51	0.44	2.28
S. E. Asia**	39.55	40.46	13.37	8.28
West Asia	40.74	38.75	6.78	4.94

* Central and Eastern Asia

** South East Asia

the total meat exports but in quantity terms (38.75%) it is after South East Asian countries. South East Asian countries (40.46%) are the major importers of Indian meat products in quantity terms but in value terms it is second (39.55%) only after the West Asian countries. The other important importers are the African countries (value share 9.97%, quantity share 10.17%) followed by South Asia (value share 3.27%, quantity share 3.51%) and Europe (value share 2.22%, quantity share 2.60%). America, Central Eastern Asia and Oceania have less than 1% share both in terms of value and quantity.

Like dairy products the European countries are also the major sources of India's meat imports. The European countries have a value share of 57.74% and quantity share of 65.88% in total meat imports by India. This is followed by Oceania (value share 14.54%, quantity share 14.28%), South East Asia (value share 13.37%, quantity share 8.28%), West Asia (value share 6.78%, quantity share 4.94%) and America (value share 6.01%, quantity share 3.46%). Central Eastern Asia (value share 1.12%, quantity share 0.88%) and South Asia (value share 0.44%, quantity share 2.28%) have negligible share in total meat imports by India. India, however, did not import any of the selected meat products during the period 1991 to 2005 from Africa.

Trade in Raw Hides and Skins:

In case of raw hides and skins also the European countries are the major importers with a value share of 74.83% and quantity share of 66.16% in total exports from India followed by South East Asian countries with much less share of 5.74% in value terms and 4.05% in quantity terms (**Table 1.c**). Among other destinations Central and Eastern Asia (value share 4.07%) and West Asia (value share 3.93%) are the major countries. India also imports a large share of raw hides and skins (value share 40.84%) from the European countries followed by Oceania (value share 16.66%), Africa (14.67%) and West Asia (12.43%).

Table 1 (c) : Country Wise Average Share in Raw Hides and Skins Products Trade

(Per Cent)

Countries	Exports		Imports	
	Value	Quantity	Value	Quantity
Africa	2.51	4.73	14.67	13.69
America	3.15	3.62	5.49	5.95
C. E. Asia*	4.07	8.98	0.49	0.76
Europe	74.83	66.16	40.84	42.77
Oceania	1.43	0.68	16.66	11.32
Southern Asia	2.17	7.13	3.32	6.52
S. E. Asia**	5.74	4.05	2.50	2.70
West Asia	3.93	3.51	12.43	11.04

* Central and Eastern Asia

** South East Asia

Trade in Leather Products:

European countries are again the largest importers as well as exporters of leather products to India with a value share of 71.51% and 44.10% respectively. South East Asia (7.90%) and America (7.73%) have almost equal share in leather exports from India (**Table 1.d**). The American countries (22.48%) are next to Europe in exporting leather products to India.

Trade in Wool and Animal Hair:

Five products were selected for analysis under the HS 51 chapter. It can be observed from **table 1.d** that though European countries like Germany,

United Kingdom, France etc. import the largest share of these products in value terms (value share 34.09%) but Oceanian countries like Australia, New Zealand are the major importers in quantity terms (31.97% share) but the value share of Oceania is very low , only 3.73%. Central and Eastern Asia is next to Europe in terms of value share in total exports (17.74%) followed by South Asia (value share 10.31%) and West Asia(value share 9.65%).

**Table 1 (d) : Country Wise Average Share in Leather and Wool Trade
(Per Cent)**

Countries	Leather Products		Wool Products			
	Exports	Imports	Exports		Imports	
	Value	Value	Value	Quantity	Value	Quantity
Africa	1.45	6.66	8.09	5.14	0.74	1.50
America	7.73	22.48	4.56	3.56	6.34	5.73
C. E. Asia*	5.48	1.98	17.74	9.04	0.35	0.95
Europe	71.54	44.10	34.09	23.62	10.16	19.91
Oceania	2.20	5.71	3.73	31.97	68.84	46.50
Southern Asia	0.45	4.75	10.31	4.95	2.22	5.46
S. E. Asia**	7.90	3.76	0.33	0.40	0.29	0.30
West Asia	2.27	9.59	9.65	9.27	4.18	10.52

* Central and Eastern Asia

** South East Asia

Oceania is the largest source for the wool and hair imports of India having 68.854% share in total value and 46.50% share in total quantity of imports followed by Europe (10.16% value share, 19.91% quantity share). Other major sources are America (value share 6.34%, quantity share 5.73%), West Asia (value share 4.18%, quantity share 10.52%) and South Asian countries (value share 2.22%, quantity share 5.46%). Africa and South East Asia has a less than 1% share in the total value of imports of these products.

Trade in Prepared Meat Products:

Two prepared meat products viz. sausages of meat, edible offal or blood and prepared meat products other than sausages of meat, edible offal or blood

were taken for analysis. It can be observed from **table 1.e** that the share of West Asian countries (49.16%) is the largest in total prepared meat products

Countries	Exports		Imports	
	Value	Quantity	Value	Quantity
Africa	20.82	16.33	3.59	5.61
America	3.57	3.16	6.53	14.43
C. E. Asia*	0.20	0.14	0.89	0.35
Europe	11.44	7.50	60.04	61.54
Oceania	0.04	0.02	12.52	7.25
Southern Asia	1.67	6.47	9.68	2.27
S. E. Asia**	12.88	17.45	6.55	7.96
West Asia	49.16	48.78	-	-

* Central and Eastern Asia
 ** South East Asia

export from India followed by the African countries (20.82%) and South East Asian countries (12.88%). India, however, imports the lion's share of its imported prepared meat from Europe (60.04%) and Oceania (12.52%) other countries have less than 10% share in Indian imports of these products.

4.1.1.(b) Changes in Direction of Trade:

The changes in the direction of trade (exports and imports) were studied taking three year average share of the various countries in total trade in value terms. The whole period of study was divided into five equal sub periods viz. 1991-93 (I), 1994-96 (II), 1997-99 (III), 2000-02 (IV), 2003-05 (V). The average share of various countries in total trade in these periods was taken to see the change in their shares of Indian livestock products trade.

India exported live animals to America and Africa only in one sub period during the period of study. During 1997-99 America was the single importer of Indian live animals. The share of South Asia increased to a great extent in total

live animal exports of India. The share of this destination was only 5.71% during 1991-93 which increased to 94.64% during 2000-02 and 98.81% during 2003-05. The share of West Asia, however, declined to 0.57% during 2003-05 from 94.28% during 1991-93.

There were only two sources of imports of the selected live animals. South Asia held the largest share in total imports in all the periods (**Table 2.a**).

Dairy exports to South Asian countries declined from 45.12% value share in 1991-93 to 24.84% during 1994-96 and again increased to 39.21% in 1997-99 and later declined gradually to become 29.45% during 2003-05 (**Table 2.b**). In case of non Asian countries like Africa and America the shares in total exports of dairy products increased from less than 1% during 1991-93 to 21.20% and 5.38% during 2003-05 respectively in value terms with some fluctuations in the three sub periods in between. Share of Oceania in total dairy exports remained very low in all the sub periods where as that of West Asia declined gradually. European countries were the top most sources of imports during 1991-93 with a value share 75.75% which declined to 39.22% in the next sub period and again increased to 40.30% during 1997-99 and lastly increased to 54.52% in the last sub period. Imports from America declined to a large extent from 21.41% during 1991-93 to 2.59% during 1997-99 and maintained below 2% in the next sub period. However there was a large increase in the share of this source of imports during the most recent sub period i.e. 2003-05 to 13.32%. Imports from Oceania increased rapidly from 0.14% during 1991-93 to 32.75% in 1994-96, 51.77% during 1997-99 and 66.64% during 2000-02 which declined to 15.62% in the last sub period. The share of Asian countries in total imports has remained low in all the sub periods.

West Asian countries remained the top most importers of Indian meat products in almost all the sub periods (**Table 2.c**). However the share of these destinations in total exports declined from 55.88% during 1991-93 to 30.35% during 2000-02 and again increased to 42.06% during the last sub period. Exports to South East Asian countries declined in the post WTO period after a small increase in shares from 40.76% in 1991-93 to 47.71% in 1994-96.

Table 2(a): Changes in Direction of Live Animal Trade Across Country Groups
(percentage share in value of trade)

Countries	1991-93		1994-96		1997-99		2000-02		2003-05	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Africa	-	-	-	-	-	-	2.70	-	-	-
America	-	-	-	-	98.98	8.52	-	0.36	-	4.07
Europe	-	-	11.07	-	-	-	2.63	-	0.61	-
South Asia	5.71	99.33	19.92	100.00	-	91.45	94.64	99.30	98.81	95.50
West Asia	94.28	-	69.00	-	-	-	-	-	0.56	-

Table 2(b): Changes in Direction of Dairy Trade Across Country Groups
(percentage share in value of trade)

Countries	1991-93		1994-96		1997-99		2000-02		2003-05	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Africa	0.62	-	0.46	-	3.30	-	9.81	-	21.20	0.07
America	0.33	21.41	5.94	20.56	11.38	2.59	3.85	1.66	5.38	13.32
C.E. Asia*	-	-	0.01	-	0.17	0.05	1.64	0.01	0.37	0.03
Europe	0.40	75.75	20.30	39.22	5.15	40.30	2.61	27.05	1.57	54.52
Oceania	0.12	0.14	-	32.75	0.00	51.77	0.08	66.64	0.24	15.62
South Asia	45.12	2.48	24.84	3.34	39.21	2.08	34.78	2.18	29.45	10.01
S.E. Asia**	0.61	0.22	14.48	0.21	5.94	1.25	5.01	0.91	7.21	0.46
West Asia	39.77	-	32.01	-	32.70	-	36.63	-	25.38	0.07

* Central and Eastern Asia

** South East Asia

The share of this destination showed a declining trend during the last three sub periods. The shares of Africa, America Central Eastern Asia and Europe in total exports of Indian meat products showed an increasing trend during this period in value terms.

The imports from European countries showed an increasing trend in the total imports of meat products of India. The share of this source of import was 10.65% in value terms and 38.44% in quantity terms during 1994-96 which increased to 66.39% in value terms and 77.32% in quantity terms during the last sub period. South East Asia which had the largest share in meat imports during 1991-93 declined to 9.36% in the next sub period and again increased during 1997-99 and later gradually declined. The shares of other sources like America, West Asia and Oceania showed a declining trend in the import share in value terms.

Indian exports of raw hides and skins are mainly concentrated to the European countries (**Table 2.d**). The export of these to the European countries has increased to a very large extent in 2003-05 (V) which is to the tune of 76.94% after a slight decline during 2000-02 (IV). For all other destinations, their shares in total value of exports of these products have declined over the periods except a slight increase in case of the West Asian countries. There have not been many changes in the direction of imports of these products. The import from Oceania has, however, declined.

Similar results are also found in case of leather exports. Concentration of markets is greater towards the non-Asian countries though some increase in shares is observed in case of the South East Asian and Central & Eastern markets (**Table 2.e**). America, Europe and West Asia remained the major sources of imports of these leather products in all the sub-periods but American share in total imports of these products has declined from 26.20% in sub-period I (1991-93) to 16.05% in sub-period V (2003-05). The movement of concentration is found towards the European and West Asian countries with 40.23% and 16.53% shares in total value of imports respectively in the last sub-period (2003-05).

Table 2(c): Changes in Direction of Meat Trade Across Country Groups
(percentage share in value of trade)

Countries	1991-93		1994-96		1997-99		2000-02		2003-05	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Africa	2.19	-	2.80	-	3.70	-	18.71	-	11.57	-
America	0.13	-	1.06	44.61	0.39	-	0.54	-	0.28	6.26
C.E. Asia*	-	-	0.02	-	0.02	-	0.09	-	1.86	1.76
Europe	0.13	-	2.65	10.65	1.21	33.82	1.98	58.91	3.11	66.39
Oceania	-	22.05	-	35.38	0.02	19.35	0.02	6.35	0.04	14.99
South Asia	0.49	-	2.11	-	5.52	-	3.63	1.64	3.13	-
S.E. Asia**	40.76	42.48	47.71	9.36	43.51	43.98	42.60	14.87	32.58	7.94
West Asia	55.88	33.65	42.46	-	43.55	1.32	30.35	15.60	42.06	2.66

* Central and Eastern Asia

** South East Asia

Table 2(d): Changes in Direction of Raw Hides And Skins Trade Across Country Groups
(percentage share in value of trade)

Countries	1991-93		1994-96		1997-99		2000-02		2003-05	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Africa	-	9.31	-	10.34	-	9.26	5.05	20.41	2.11	18.95
America	-	2.80	-	7.55	-	7.25	5.28	4.72	2.73	4.01
C.E. Asia*	-	1.01	-	0.43	-	0.45	0.76	0.65	4.64	0.17
Europe	-	30.24	-	39.22	65.27	44.33	61.91	41.02	76.94	42.84
Oceania	-	39.14	-	25.24	33.18	10.90	0.11	11.20	1.40	9.28
South Asia	-	4.37	-	3.40	-	3.41	10.85	3.79	0.75	2.12
S.E. Asia**	-	0.90	-	0.94	-	3.07	13.24	2.47	4.44	4.23
West Asia	-	5.87	-	7.95	-	12.78	1.55	15.00	4.35	16.63

* Central and Eastern Asia

** South East Asia

Table 2(e): Changes in Direction of Leather Trade Across Country Groups
(percentage share in value of trade)

Countries	1991-93		1994-96		1997-99		2000-02		2003-05	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Africa	0.40	3.44	0.50	3.05	1.96	1.93	1.72	7.78	2.63	10.70
America	9.38	26.20	9.33	28.58	7.73	27.04	6.84	18.62	5.92	16.05
C.E. Asia*	2.58	1.93	3.23	2.90	2.35	1.84	9.07	2.12	10.76	1.59
Europe	73.83	35.16	75.76	38.58	77.16	54.01	70.27	48.01	62.42	40.23
Oceania	3.47	7.24	2.51	6.31	2.38	5.16	1.45	4.96	1.12	5.63
South Asia	1.27	7.96	0.19	4.98	0.13	2.85	0.37	4.30	0.30	4.21
S.E. Asia**	7.35	2.50	6.16	4.75	5.27	3.61	7.90	3.37	11.90	4.03
West Asia	1.34	5.56	2.13	4.23	2.19	2.90	1.88	8.82	3.67	16.53

* Central and Eastern Asia

** South East Asia

Table 2(f): Changes in Direction of Wool Trade Across Country Groups
(percentage share in value of trade)

Countries	1991-93		1994-96		1997-99		2000-02		2003-05	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Africa	0.33	0.30	1.70	0.33	4.97	0.52	17.30	1.03	6.51	1.27
America	4.22	12.26	6.17	10.48	9.61	2.52	3.41	3.88	3.59	3.90
C.E. Asia*	14.43	0.22	4.94	0.54	4.01	0.64	27.37	0.22	18.99	0.16
Europe	28.97	9.67	26.30	10.60	41.33	7.42	21.24	9.60	39.63	12.40
Oceania	15.62	70.47	20.30	64.89	7.30	76.71	0.93	74.58	0.55	61.69
South Asia	-	3.35	0.31	1.13	0.14	3.03	7.88	1.48	16.58	2.41
S.E. Asia**	0.07	0.07	1.27	0.52	0.29	0.22	0.75	0.23	0.07	0.30
West Asia	5.68	0.76	14.90	3.17	14.33	4.63	15.70	5.06	5.46	6.08

* Central and Eastern Asia

** South East Asia

**Table 2(g): Changes in Direction of Prepared Meat Trade Across Country Groups
(percentage share in value of trade)**

Countries	1991-93		1994-96		1997-99		2000-02		2003-05	
	Export	Import	Export	Import	Export	Import	Export	Import	Export	Import
Africa	19.42	-	26.21	-	25.94	-	26.81	4.23	9.73	3.44
America	0.08	-	11.40	22.78	1.33	-	0.70	7.59	2.10	3.85
C.E. Asia*	-	-	-	-	-	-	-	-	0.69	2.00
Europe	4.10	71.72	11.23	75.43	-	99.25	-	54.34	28.91	62.56
Oceania	-	-	0.12	-	-	-	-	21.98	0.05	4.12
South Asia	-	-	-	-	-	-	0.61	4.72	5.51	16.54
S.E. Asia**	8.38	27.65	5.27	0.79	0.92	-	47.97	6.84	15.36	6.70
West Asia	67.56	-	45.27	-	71.46	-	23.52	-	36.95	-

* Central and Eastern Asia

** South East Asia

In case of wool and hair Europe remained the top most destination of Indian exports except during 2000-02 (**Table 2.f**). Exports to Oceania showed sharp decline after 1994-96 while exports to America increased slowly over the five sub periods. Among the Asian destinations West Asia and Central Eastern Asia were the largest importers of Indian wool products while the share of South East Asia remained very low.

Oceania is the single largest source of wool imports by India followed by Europe in all the sub periods. However, the share of Oceania in total wool imports declined from 70.47% in 1991-93 to 61.69% during 2003-05 in value terms. American sources for the wool products showed a declining trend over the period in their shares. No particular trend is present for imports from other sources.

Changes in directions of exports of prepared meat products are observed to be towards the European and West Asian countries in the recent years (**Table 2.g**). But exports to European countries have been very instable over the five sub-periods. However, Europe has been the major source of imports of these products in all the sub-periods. Shares of all other countries show a declining trend except for Southern Asia.

4.1.2. COMPOSITION OF LIVESTOCK TRADE:

In this section efforts have been made to analyse the composition of Indian livestock trade and to identify the major products exported and imported at HS 4 digit classification. A total of 27 products were selected for analysis of livestock trade of India at HS 4 digit level. The nomenclatures of these products are given in tables below.

Table 3.a : HS Product Groups of Live Animals at HS 4 Digit Level

HS-Product Groups	<i>Nomenclature</i>
0102	<i>Bovine animals, live cows, bulls , heifers</i>
0103	<i>Swine live</i>
0104	<i>Sheep and goats live</i>

Table 3.b: HS Product Groups of Dairy Products at HS 4 digit Level

HS-Product Groups	<i>Nomenclature</i>
0401	<i>Milk and Cream, not concentrated nor containing added sugar or other sweetening matter</i>
0402	<i>Milk and Cream, concentrated or containing added sugar or other sweetening matter</i>
0403	<i>Butter milk, curdled milk and cream, yogurt, kephir and other fermented or 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</i>
0404	<i>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</i>
0405	<i>Butter and other fats and oils derived from milk, Dairy spreads</i>
0406	<i>Cheese and Curd</i>

Table 3.c : HS Product Groups of Meat Products at HS 4 digit Level

S-Product Groups	<i>Nomenclature</i>
0201	<i>Meat of bovine animals, fresh or chilled, beef, veal</i>
0202	<i>Meat of bovine animals ,frozen beef, veal</i>
0203	<i>Meat of swine, fresh ,chilled or froze pork, ham</i>
0204	<i>Meat of sheep or goats, fresh, chilled or frozen, lamb</i>
0206	<i>Edible offal, bovine, swine ,sheep, goat</i>

Table3.d: HS Product Groups of Raw Hides and Skins at HS 4 Digit Level

HS-Product Groups	Nomenclature
4101	<i>Raw hides, skins of bovine or equine animals (not tanned parchment dressed or further prepared).</i>
4102	<i>Raw hides, skins of sheep or lambs (not tanned parchment dressed or further prepared).</i>
4103	<i>Raw hides, skins of animals(not bovine, equine, sheep, lamb) and not tanned parchment dressed or further prepared.</i>

Table 3.e: HS Product Groups of Leather Products at HS 4 Digit Level

HS-Product Groups	Nomenclature
4104	<i>Leather of bovine or equine (no hair)</i>
4105	<i>Leather of sheep or lamb skin (no wool)</i>
4106	<i>Leather of goat or kid skin(no hair)</i>

Table 3.f : HS Product Groups of Prepared Meat Products at HS 4 Digit Level

HS-Product Groups	Nomenclature
1601	<i>Sausages or similar products of meat, meat offal, blood</i>
1602	<i>Other prepared or preserved meat, meat offal and blood</i>

Table 3.g : HS Product Groups of Wool and Hair Products at HS 4 Digit Level

HS-Product Groups	Nomenclature
5101	<i>Wool not carded or combed.</i>
5102	<i>Fine or coarse animal hair, not carded or combed.</i>
5103	<i>Waste of wool or of fine/coarse animal hair including yarn waste, not garneted stocks.</i>
5104	<i>Garneted stocks of wool, fine or coarse animal hair.</i>
5105	<i>Wool and amp. Fine or coarse animal hair, carded and amp., combed</i>

4.1.2. (a) Major Products at World Level: Live Animals:

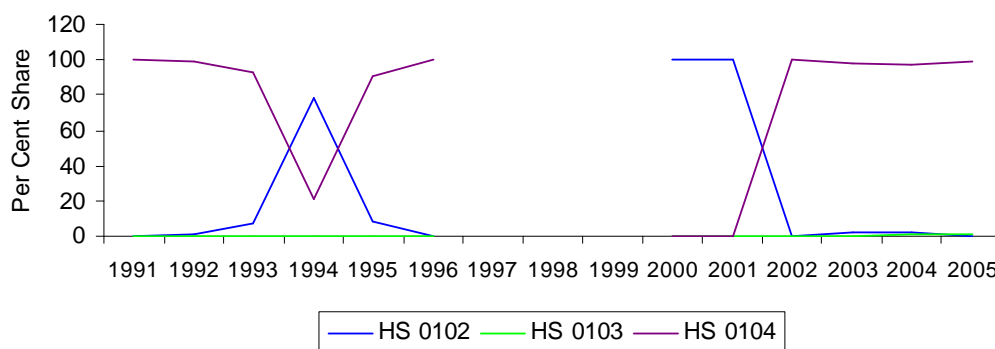
Among the live animals the share of sheep and live goats (HS0104) was the largest in total live animal exports. The live bovine animal (HS 0102) exports were very high in 1994, 2000 and 2001. The share of live swine (HS 0103) was negligible during the entire period **(Figure 1.a)**.

Live bovine animal and live sheep and goats were the major items of imports in this group. The share of live sheep and goats increased from 31.55% in 1991 to 50.23% in 2001 and later declined while that of live bovine animals declined till 1999 to 4.95% from 68.45% in 1991 but later increased to 71.31% in 2005. HS 0103 was imported till 2002 and later stopped **(Figure 1.b)**.

Dairy Products:

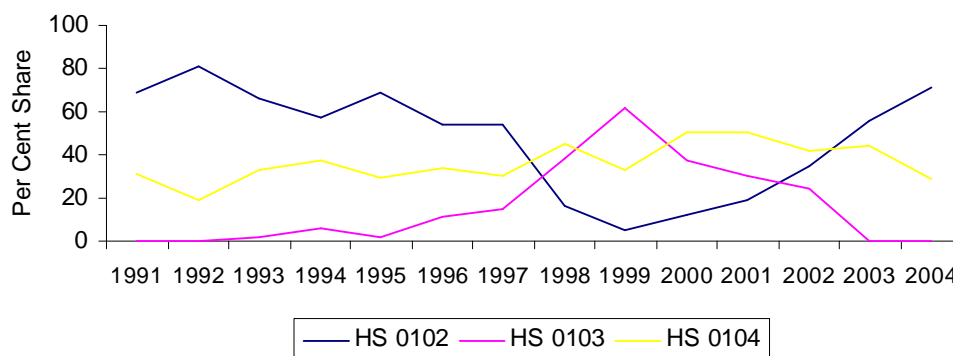
During 1991 to 2005 India has exported all the dairy products at least for one year. Year wise share of various dairy products **(Figure 1.c)** clearly reveals that over the years HS 0402 (Concentrated or sweetened milk or cream based products) and HS 0405 (Butter or fat based products) are the major product groups in Indian export basket at world level. The average combined share of these two product groups was over 85 per cent throughout the study period. Between these two important products, the share of Concentrated or sweetened milk and cream based products has been more dominant in almost all the years except in 1998. Some diversification in exports of dairy products was observed only after 1995 which also coincide with the signing of WTO agreement. Before 1996 the combined share of HS 0402 and HS 0405 was to the tune of 99 per cent but in 1996 it declined to 92 per cent and later remained between 90 to 95 per cent. The share of other four products in this group has increased after 1995. Whey and other milk products (HS 0404) and cheese and curd (HS 0406) products were the major products among the other products. The combined share of these products was below 1 per cent till 1995 and thereafter there was a quantum jump in the exports of these products in 1996 (combined share 7.20 per cent). Thereafter in 1999 the combined share of these products went down to 1.75 per cent and in later periods remained around 3-7%. In recent years whey based products were dominant over the other products among the four minor dairy products.

Figure 1.a: Year Wise Product Share in Total Live Animal Exports



* HS 0102- Bovine Live Animal, HS 0103- Swine Live , HS 0104 - Live Sheep And Goats

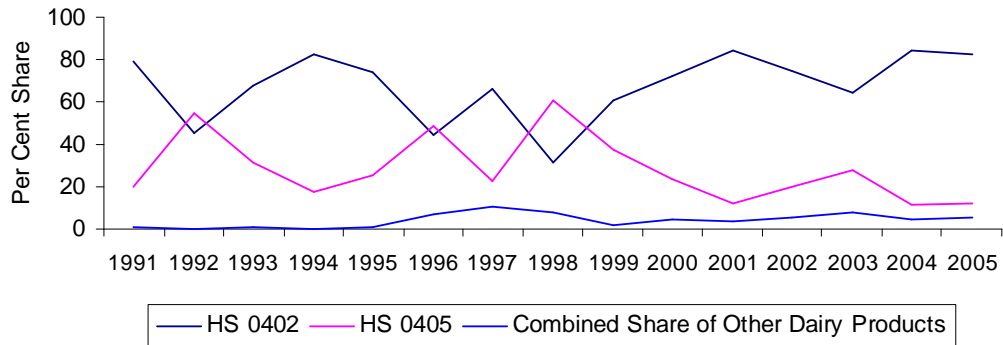
Figure 1.b: Year Wise Product Share in Total Live Animal Imports



* HS 0102- Bovine Live Animal, HS 0103- Swine Live , HS 0104 - Live Sheep And Goats

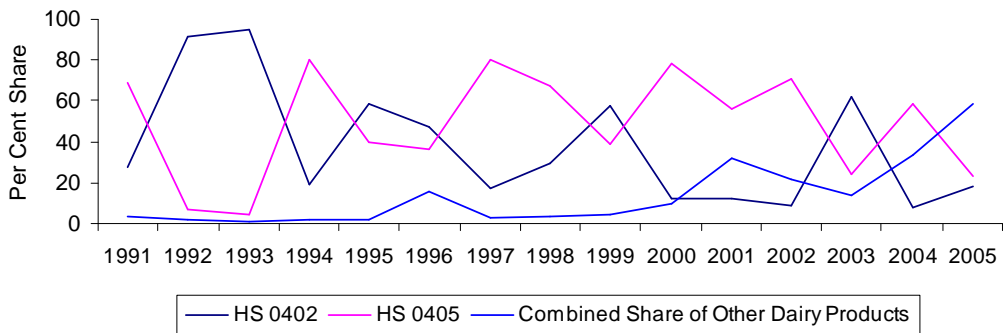
The same products HS 0402 and HS 0405 were also the dominant products in case of imports of dairy products (**Figure 1.d**). However, the combined share of these two products declined during the late 1990s from above 95 percent during the early 1990s. In the recent years the combined share of these products revolved around 65 to 80 percent. Only in 2003 the combined share of these two products was 85.94%.among these two products butter and fat based products (HS 0405) were dominant over the concentrated or sweetened milk products (HS 0402) in most of the years. The combined share of other products in total dairy imports remained less than 5 percent till 1995 after which there was a quantum jump in the shares of these products in1996 (15.79%) which later declined to 9.28% in 2000 and again increased to 31.84% in 2001 and remained over 30% in the subsequent years. Cheese and

Figure 1.c: Year Wise Share of Dominant Products in Total Dairy Exports



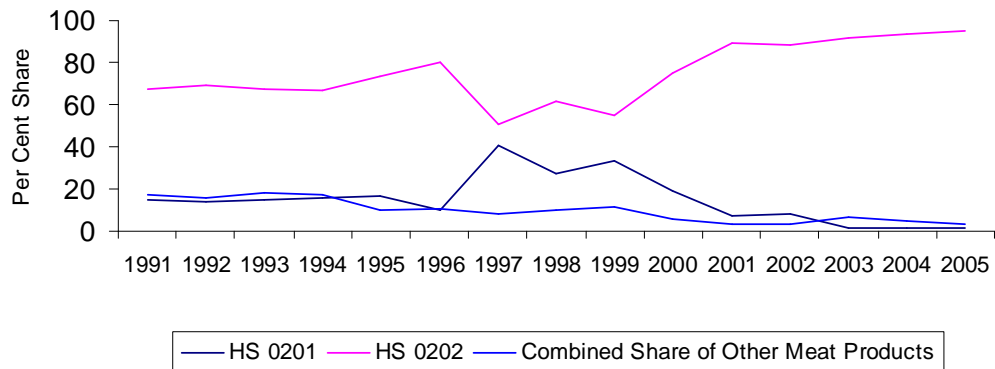
* HS 0402- Conc. or Sweetened Milk & Cream, HS 0405 – Butter & fat Based Products

Figure 1.d: Year Wise Share of Dominant Products in Total Dairy Imports



* HS 0402- Conc. Or Sweetened Milk & Cream, HS 0405 – Butter & fat Based Products

Figure 1.e: Year Wise Share of Dominant Products in Total Meat Exports



* HS 0201 – Fresh Meat of Bovine Animal, HS 0202- Frozen Meat of Bovine animal

curd products (HS 0406) were more dominant among these four products followed by imports of whey based products.

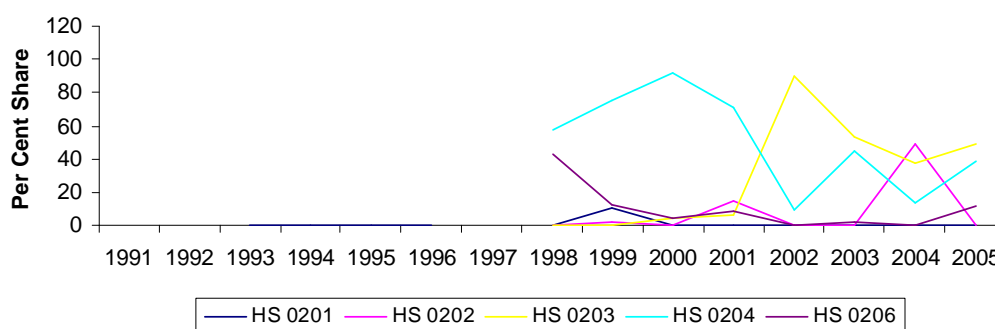
From the above discussions it can be inferred that the dairy trade was diversified in the post WTO periods which is also supported by the findings of Hazra, 2005.

Meat Products:

Among the meat products the fresh meat of bovine animals (HS 0201) and frozen meat of bovine animals (HS 0202) were most dominant items of meat exports in all the years (**Figure 1.e**). There is an increasing trend in the combined share of these two products which remained between 82 to 97% during the entire period. The shares of these products have especially increased after 2000 and remained above 94% thereafter with the exception of 92.97% in 2003. The exports of other meat products declined over time consistently. The share of these products which was above 15% during the pre-WTO period hovered around 2 to 5 % during 2000 to 2005 with exception of 2003 in which year the share of the other three meat products in total exports was 7.02%.

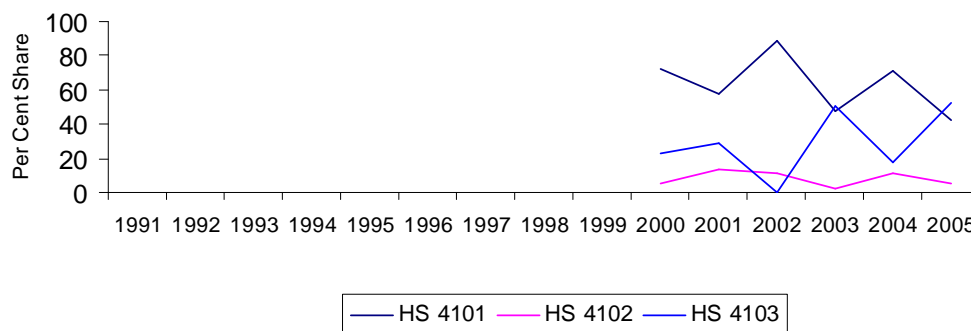
Meat of sheep or goat (HS 0204) and edible offal of bovine, swine, sheep or goat (HS 0206) were the major items of imports of meat products (**Figure 1.f**). The imports of meat products were regular after 1998. Among these two products meat of sheep or goat was the major item of imports. The combined share of other three products was more than the share of these two products during the recent years.

Figure 1.f: Year Wise Product Share in Total Meat Imports



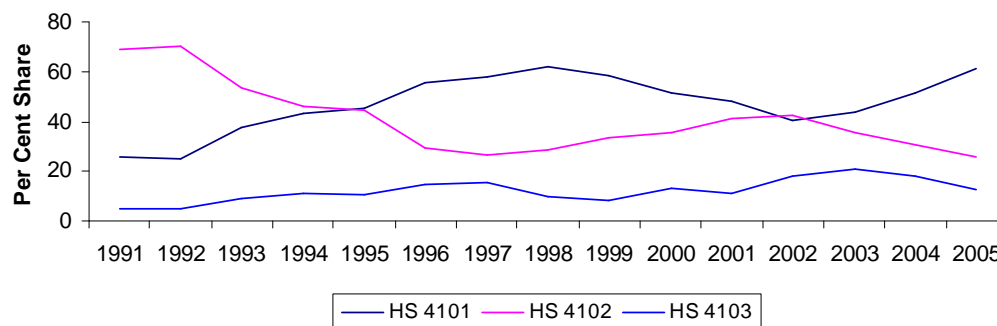
*HS 0201- Fresh bovine meat, HS 0202- Frozen Bovine Meat, HS 0203- Meat of Swine, HS -0204- Sheep or Goat Meat, HS 0206- Edible Meat Offal.

Figure 1.g: Year Wise Product Share in Total Hides and Skins Export



*HS 4101- Raw Hides and Skins of Bovine or Equine , HS 4102- Raw hides and Skins of Sheep or Goat, HS 4103- other Raw Hides and Skins

Figure 1.h: Year Wise Product Share in Total Hides and Skins Import



*HS 4101- Raw Hides and Skins of Bovine or Equine , HS 4102- Raw hides and Skins of Sheep or Goat, HS 4103- other Raw Hides and Skins

Raw Hides and Skins:

India started exporting the raw hides and skins only after 1998. among the three products selected for the study raw hides and skins of bovine or equine animal (HS 4101) was the dominant product followed by raw hides and skins of animals other than bovine, equine, sheep or lamb (HS 4103). However the share of HS 4101 products declined to 42.33% in 2005 from 72.66% in 2000. The share of HS 4103 products showed an increasing trend (**Figure 1.g**).

Among the imported items in this group raw hides and skins of bovine or equine animal (HS 4101) and raw hides and skins of sheep or lamb were the major items of imports (**Figure 1.h**) . HS 4101 products showed an increasing

trend with some minor fluctuations during 2001 to 2003 and after that increased to 61.27% in 2005. The share of HS 4102 increased till 1998 to 35.20% from 68.89 % in 1991 and thereafter increased for neat two years and again declined to 26.04% in 2005. The share of raw hides and skins of animals other than bovine, equine, sheep or lamb (HS 4103) revolved around 12 to 17% during the recent years.

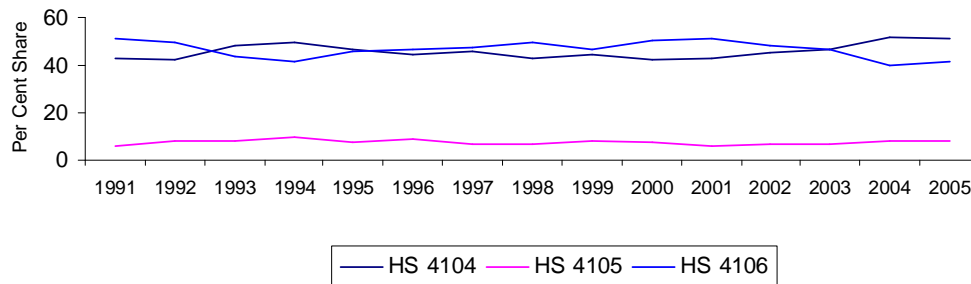
Leather Products:

Leather of Bovine or equine (HS 4104) and leather of goat and kid skin (HS 4106) are the dominant products in this group (**Figure 1.i**). The share of these two products almost remained stagnant during the entire study period around 42 per cent. Among these three products HS 4106 was more dominant in almost all the years. HS 4104 was the major item of import followed HS 4105. The share of HS 4104 was above 70% in all the years. Imports of HS 4105 showed a declining trend where as that of HS 4106 showed an increasing trend (**Figure 1.j**).

Wool and Hair Products:

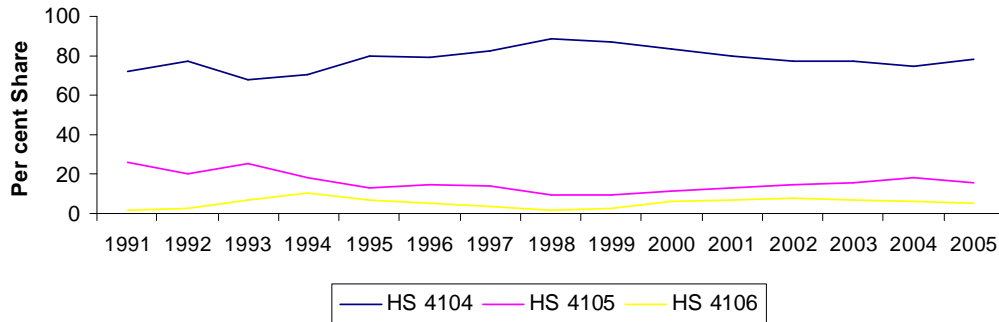
Fine or coarse animal hair (HS 5102) and other wool or fine/coarse animal hair (HS 5105) were the dominant products of exports in this group (**Figure 1.k**). The share of HS 5105 increased after 1996 and remained stagnant just below 90% during 2003 to 2005 after a gradual increase to 92.26% in 2002. The share of the other product i.e. HS 5102 declined from 60.73% in 1991 to 0.58% in 2005 gradually. There was drastic reduction in the

Figure 1.i: Year Wise Product Share in Total Leather Export



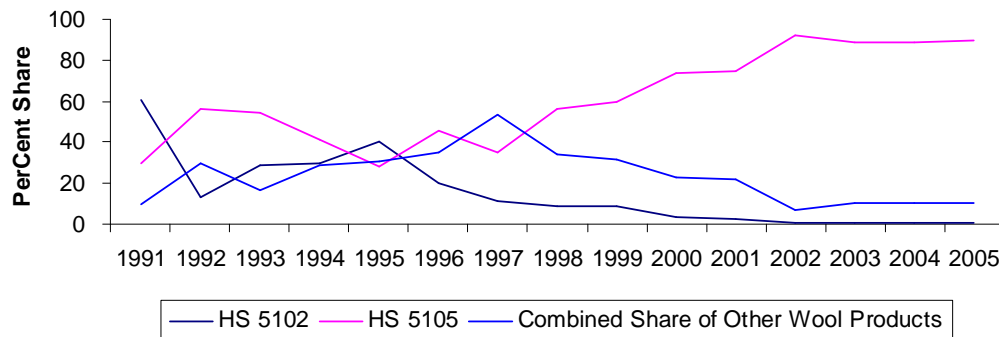
*HS 4104- Leather of Bovine or Equine, HS 4105- Leather of Sheep or Lamb, HS 4106- Leather of Goat or Kid Skin

Figure 1.j: Year Wise Product Share in Total Value of Leather Import



*HS 4104- Leather of Bovine or Equine, HS 4105- Leather of Sheep or Lamb, HS 4106- Leather of Goat or Kid Skin

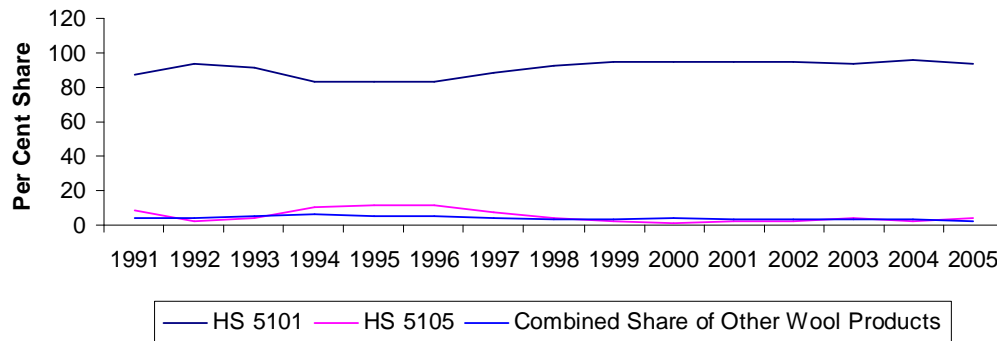
Figure 1.k: Year Wise Product Share in Total Value of Wool & Hair Export



*HS 5102- Fine or Coarse Animal Hair, HS 5105- Other Wool and Animal Hair

share of this product after 1991. The combined share of other three wool products hovered around 20 to 50 per cent during mid and late 1990s and thereafter declined. Wool not carded or combed (HS 5101) was the most dominant product of imports in this group (**Figure 1.I**). The share of this product declined from 86.91% in 1991 to 83.08% in 1996 and there after remained around 92 to 95 per cent in total wool imports. The share of other products declined gradually over the period.

Figure 1. l: Year Wise Product Share in Total Value of Wool & Hair Import



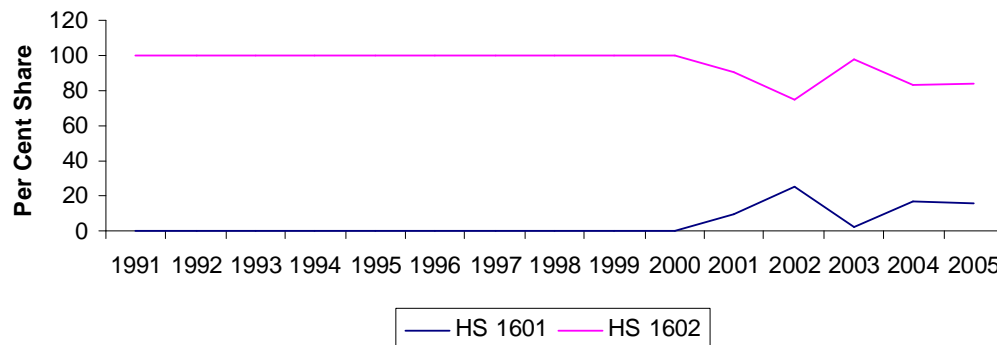
*HS 5101- Wool, not Carded or Combed, HS 5105- Other Wool and Animal Hair

Meat Preparations:

Other prepared or preserved meat, meat offal and blood (HS 1602) are the major product of exports in this group (**Figure 1.m**). However the share of these products declined from 90.15% in 2001 to 83.91% in 2005. The other product sausages or similar products of meat, meat offal or blood (HS1601) were exported in 1996 for the first time and again from 2001 to 2005. The share of this product was about 16% in 2004 and 2005.

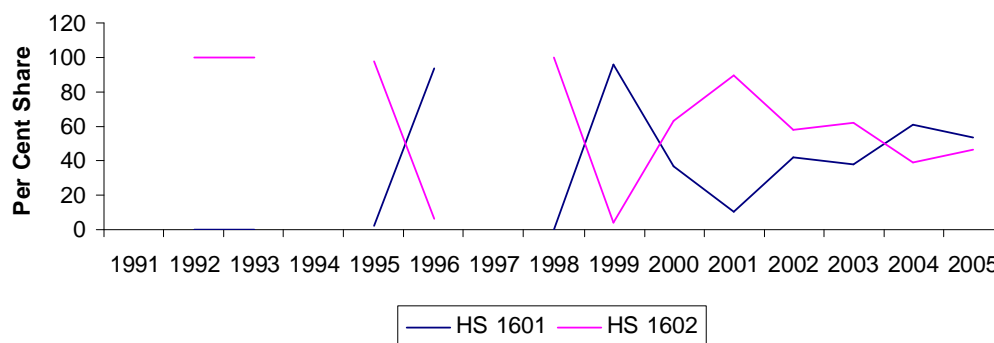
HS 1602 was the dominant product of imports during the early 1990s and later the share of this product declined to 46.45% in 2005 as the imports of the other product started to increase (**Figure 1.n**).

Figure 1.m: Year Wise Product Share in Total Value of Prepared Meat Export



* HS 1601- Sausages of Meat, offal or blood; HS 1602- Prepared Meat other than Sausages

Figure 1.n: Year Wise Product Share in Total Value of Prepared Meat Import



* HS 1601- Sausages of Meat, offal or blood; HS 1602- Prepared Meat other than Sausages

4.1.2. (b) Destination Wise Composition of Livestock Trade:

After the overall composition of livestock trade of India in the previous section, attempts are made to study the destination wise composition of livestock trade. The product composition may vary destination wise due to the geographical locations, transportation cost involved, the culture, food habit and trade relations with India.

In case of live animals, Africa solely imports live bovine animals (HS 0102) from India (**Table 2.a**). Live sheep and goats (HS 0104) are the major items of exports to America (100%), Europe (99.43%), South Asia (97.09%) and West Asia (99.87%). The other product line live swine (HS 0103) has negligible share in almost all the destinations. India imports live animals from America and South Asia. Imports of live animals from America constitutes of HS 0103(62.42%) and HS 0103(37.58%) and that from South Asia are HS 0102(55.13%), HS 0104(33.54%) and 0103(11.32%) in total imports of live animals from these sources.

The destination wise composition of dairy exports is given in **Table 4.a**. It follows from the table that in almost all the destinations concentrated or sweetened milk and cream (HS 0402) and butter and other fat based products (HS 0405) are the major items of exports. Next to these two products cheese and curd (HS 0406) are the major products. However in case of Central Eastern Asia whey based products (HS 0404) are among the major imported items after HS 0402. In Africa, HS 0402 accounts for 87.72% of the total dairy

exports followed by HS 0405 (10.16%). The composition of dairy exports in major destination of West Asia shows that HS 0402 accounts for 62.25 % followed by HS 0405 (35.76%) while in case of South Asia HS 0402 accounts for 95.57% and that in South East Asia 80.56%. Share of cheese and curd (HS 0406) imports from Africa is 74.45% and that of whey based products is 25.55%. India imports mainly HS 0402 (74.10%), HS 0405 (12.77%), HS 0404(7.49%) products from Europe. In case of imports from South Asia HS 0405 (67.73%) and HS 0406 (23.48%) constitute the major items of dairy products imports. India imports all the six dairy products from Europe, Oceania and South Asia .

Table 4.b. Shows that meat of frozen bovine animals (HS 0202) is the major export items in meat exports to Africa (91.86%), Central Eastern Asia (98.70%), South Asia (94.44%) and Oceania (93.71%). Among the other products the destination wise shares of fresh meat of bovine animals (HS 0201) is the major item except in Central Eastern Asia (0.19%), America (6.75%) and West Asia (7.50%). Among the items of imports meat of swine, fresh or chilled or frozen pork, ham (HS 0203), meat of sheep or goats, fresh, chilled or frozen (HS 0204) and edible offal of bovine, swine, sheep or goat (HS 0206) are the major items of imports.

**Table 4 (a) : Country Wise Average Share in Live Animal and Dairy Trade
(Per Cent)**

Countries	Live Animals		Dairy Products			
	Exports	Imports	Exports		Imports	
	Value	Value	Value	Quantity	Value	Quantity
Africa	-	-	15.92	15.73	0.01	0.01
America	1.48	2.20	5.22	3.74	10.87	9.13
C. E. Asia*	-	-	0.62	0.88	0.02	0.02
Europe	0.83	-	3.06	3.84	47.60	43.41
Oceania	-	-	0.18	0.13	33.84	37.43
South Asia	87.72	97.80	31.31	35.05	4.19	6.53
S. E. Asia**	-	-	6.89	7.62	0.68	0.72
West Asia	9.96	-	29.09	25.32	0.01	0.01

* Central and Eastern Asia

** South East Asia

**Table 4 (b) : Country Wise Average Share in Meat products Trade
(Per Cent)**

Countries	Exports		Imports	
	Value	Quantity	Value	Quantity
Africa	9.97	10.17	-	-
America	0.46	0.48	6.01	3.46
C. E. Asia*	0.73	0.76	1.12	0.88
Europe	2.22	2.60	57.74	65.88
Oceania	0.03	0.03	14.54	14.28
South Asia	3.27	3.51	0.44	2.28
S. E. Asia**	39.55	40.46	13.37	8.28
West Asia	40.74	38.75	6.78	4.94

* Central and Eastern Asia

** South East Asia

Among the raw hides and skins products raw hides and skins of bovine or equine animals (HS 4101) is the major product for exports to Africa (87.89%), Southern Asia (79.09%), Europe (55.05%) and America (41.75%) whereas raw hides and skins of sheep or lambs (HS4102) is the major item of export to Oceania (69.49%) but in case of exports to West Asia and Central and Eastern Asia, raw hides and skins of animals other than bovine, equine, sheep, or lamb (HS 4103) is the major product with a value share of 86.40% and 58.82% respectively in the country's total hides and skins imports from India (**Table4.c**). Raw hides and skins of bovine or equine animals is also the major item of import from America (78.53%), Europe (69.33%), Southern Asia (66.33%) and South East Asia (65.36%). Raw hides and skins of sheep constitute the major items of imports only from Africa (52.04%), Oceania (59.71%) and West Asia (54.92%). Other raw hides and skins (4103) is not very important item of import as its share is very less as compared to other products in this group from most of the countries.

Leather of bovine or equine animals (HS 4104) is the most important product of Indian leather exports as well as imports. It is followed by leather of goat or kid skin (HS 4106).leather of sheep or lamb skin is the least important product for both export and import in this group (**Table 4.d**).

Table 4 (c) : Country Wise Average Share in Raw Hides and Skins Products Trade

(Per Cent)

Countries	Exports		Imports	
	Value	Quantity	Value	Quantity
Africa	2.51	4.73	14.67	13.69
America	3.15	3.62	5.49	5.95
C. E. Asia*	4.07	8.98	0.49	0.76
Europe	74.83	66.16	40.84	42.77
Oceania	1.43	0.68	16.66	11.32
South Asia	2.17	7.13	3.32	6.52
S. E. Asia**	5.74	4.05	2.50	2.70
West Asia	3.93	3.51	12.43	11.04

* Central and Eastern Asia

** South East Asia

Table 4 (d) : Country Wise Average Share in Leather and Wool Trade

(Per Cent)

Countries	Leather Products		Wool Products			
	Exports	Imports	Exports		Imports	
	Value	Value	Value	Quantity	Value	Quantity
Africa	1.45	6.66	8.09	5.14	0.74	1.50
America	7.73	22.48	4.56	3.56	6.34	5.73
C. E. Asia*	5.48	1.98	17.74	9.04	0.35	0.95
Europe	71.54	44.10	34.09	23.62	10.16	19.91
Oceania	2.20	5.71	3.73	31.97	68.84	46.50
South Asia	0.45	4.75	10.31	4.95	2.22	5.46
S. E. Asia**	7.90	3.76	0.33	0.40	0.29	0.30
West Asia	2.27	9.59	9.65	9.27	4.18	10.52

* Central and Eastern Asia

** South East Asia

Other wool and fine or coarse animal hair (HS 5105) is the major product of wool and hair exports (**Table 4.d**) from India to almost all the destinations except to America (34.28%) and Oceania (3.03%). Among all the destinations America (42.29%) has the highest share of wool carded or combed (HS 5101) from India in its total imports of the wool and hair imports from India. Fine or coarse animal hair (HS 5102) has negligible share in almost all the destinations except for Oceania (80.52%). Among the various wool and hair products that India imports from different countries imports of wool, not carded or combed (HS 5101) constitutes the major item in terms of value. The share of this product in total imports from different countries is above 70% for all

most all the countries except for South East Asia (39.96%). The share of garneted stock of wool is negligible in the country wise imports of wool and animal hair.

It can be seen from **table 4.e.** that for exports and imports of prepared meat products, other prepared products of meat, edible offal or blood (HS1602) is the most important item in this group. Sausages of meat, edible offal or blood ha 44.75% and 44.50% share in total imports of these items from Southern Asia and South East Asia respectively.

Table 4 (e) : Country Wise Average Share in Prepared Meat Products Trade (Per Cent)

Countries	Exports		Imports	
	Value	Quantity	Value	Quantity
Africa	20.82	16.33	3.59	5.61
America	3.57	3.16	6.53	14.43
C. E. Asia*	0.20	0.14	0.89	0.35
Europe	11.44	7.50	60.04	61.54
Oceania	0.04	0.02	12.52	7.25
South Asia	1.67	6.47	9.68	2.27
S. E. Asia**	12.88	17.45	6.55	7.96
West Asia	49.16	48.78	-	-

* Central and Eastern Asia

** South East Asia

Thus it follows from the above discussion that, among the various livestock products, the leather products were the major products in terms of export earnings followed by the meat products. Live animal and prepared meat products constituted a very small share in the total livestock product trade of India. Wool products were the major items of imports. Exports were flowing towards Southern Asia, West Asia, Europe and America for most of the products during the entire period of study. There was not much diversification in the composition of trade. However, during the recent years some new products began to figure in the export baskets of Indian livestock products.

4.2. GROWTH AND INSTABILITY IN LIVESTOCK PRODUCTS TRADE:

The growth in livestock products trade were analysed through the study of trends in export and import quantities, balance of trade, terms of trade and

compound annual growth rate . The instability in trade of the livestock products were studied through the coefficient of variation and instability index.

4.2.1. TRENDS IN LIVESTOCK TRADE:

Year wise trend in exports and imports of various products were worked out to examine the trend and annual fluctuations in their trade.

Exports in live animals showed an increasing trend from 2002 onwards. Prior to that the exports were negligible except in the year 1993 and 1998. The imports, however, steadily declined after 1992. In the recent years the exports surpassed the imports in live animal trade (**Figure 2.a**).

The year wise trend in export and import quantities of dairy products is given in the **figure 2.b**. It can be inferred that exports were less instable as compared to the imports. Although there were some fluctuations in the export quantities, the trend in exports were increasing in the recent years. Meat products trade was the most stable among all the livestock products trade. The exports steadily increased from 1991 onwards. The imports were negligible as compared to the exports in these products (**figure 2.c**).

India started exporting raw hides and skins from 1998. Since then the export quantities increased steadily. The imports of these products increased till 2001 but declined later (**figure 2.d**).

Total leather trade (in value terms) was somewhat stable during the entire period of study with exports always exceeding imports (**Figure 2.e**). The fluctuations in leather exports were mainly due to the instability in exports of leather of sheep or lamb skin (HS-4105). During the entire period of 1990s the export value fluctuated between 200 million US\$ and 400 million US\$. The exports increased to 600 million US\$ in 2004 steadily from the year 1999 but declined in 2005 at levels below the imports. Imports in these products were stable and increased since 1991.

Total Wool and animal hair trade does not show much instability in both exports and imports. However the import quantities are increasing over the years with exports remaining much below (**Figure 2.f**). All the products showed a high degree of instability in both exports and imports.

Figure 2.a: Year Wise Growth and Instability in Trade of Total Live Animals.

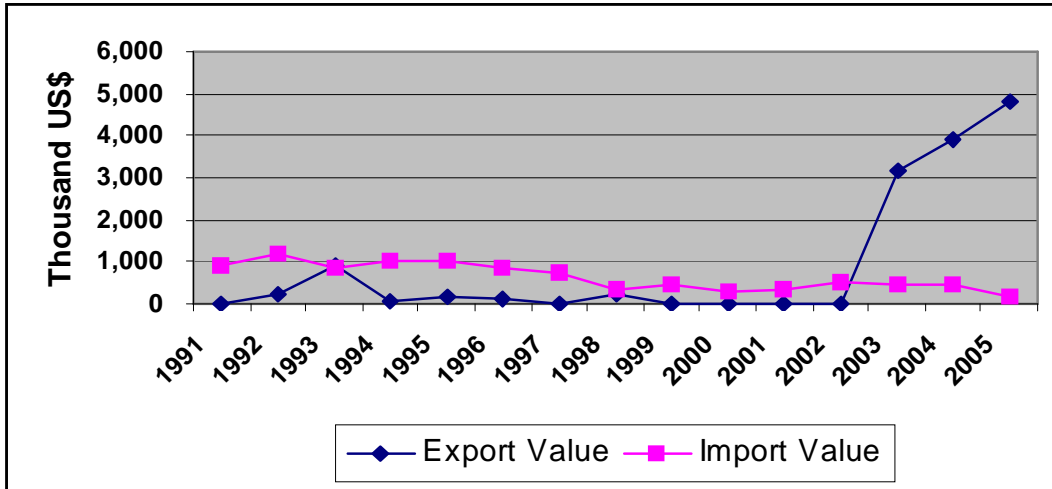


Figure 2.b : Year Wise growth and instability in Total dairy trade

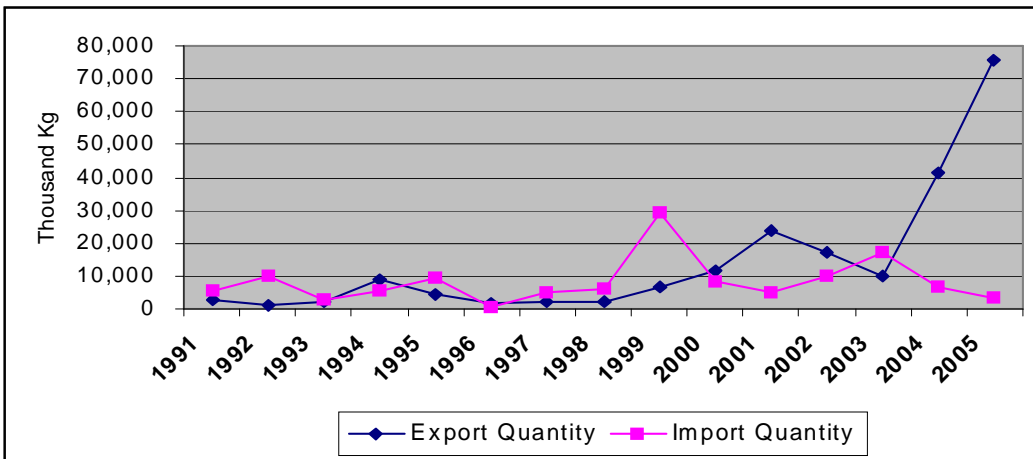


Figure 2.c : Year Wise Growth and Instability in Trade of Total Meat products:

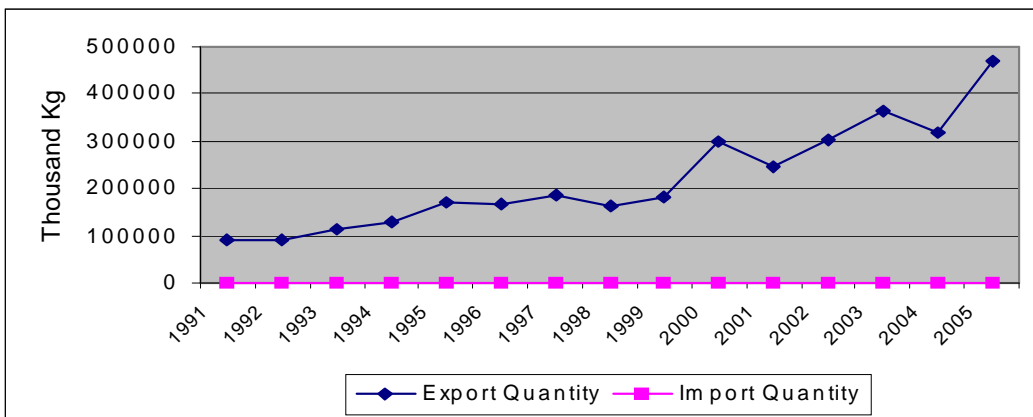


Figure 2.d: Year Wise Growth and Instability in Trade of Total Raw Hides and Skins.

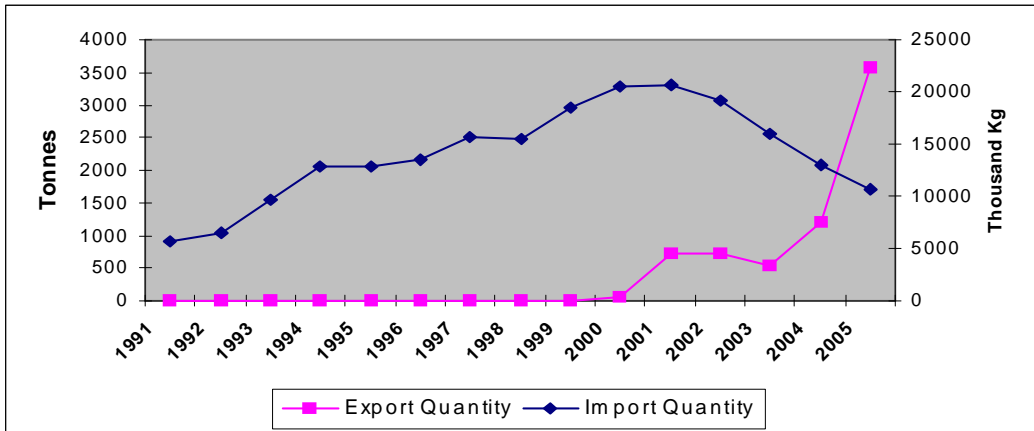


Figure 2.e: Year Wise Growth and Instability in Trade of Total Leather Products.

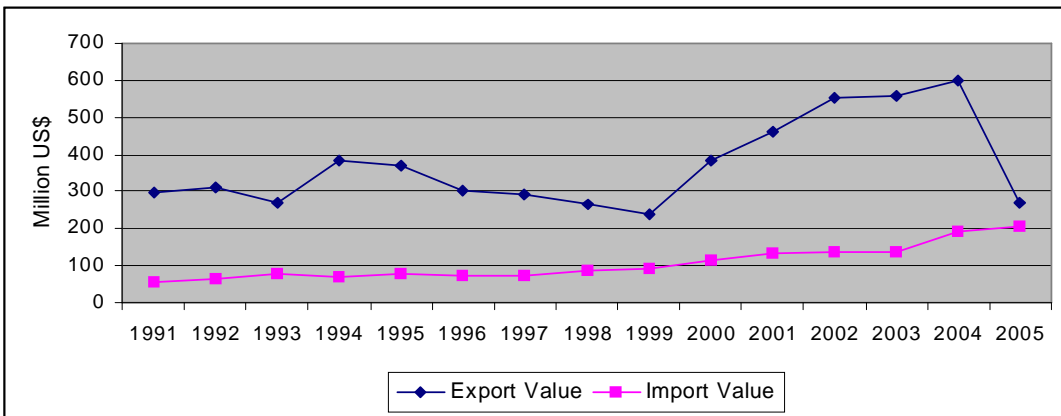


Figure 2.f: Year Wise Growth and Instability in Trade of Total Wool Products.

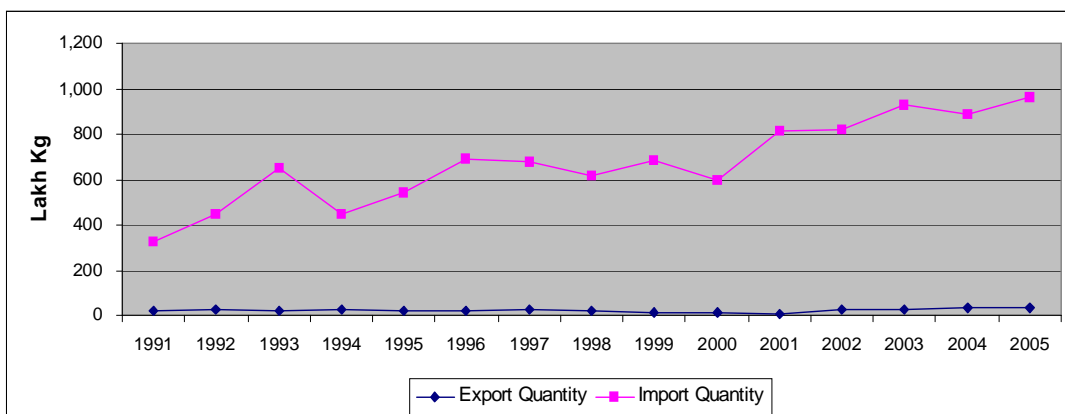
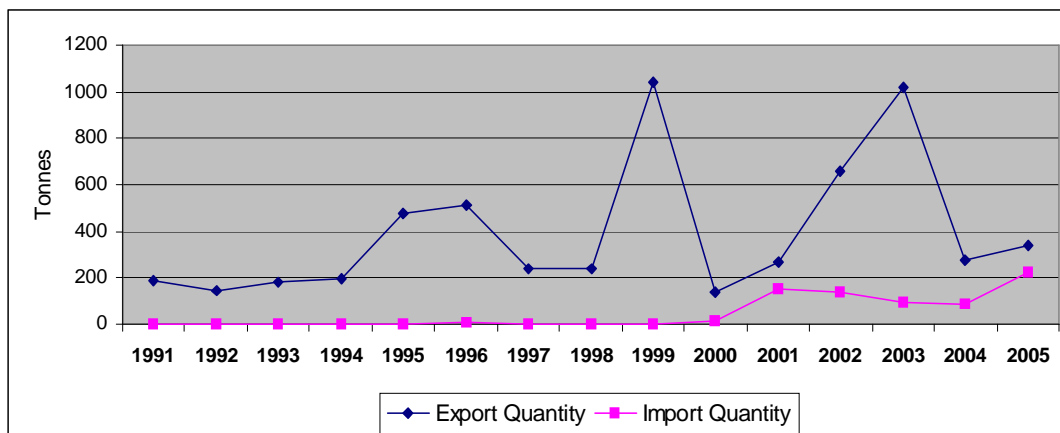


Figure 2.g: Year Wise Growth and Instability in Trade of Meat Preparations.



In case of meat preparations trade the exports were very instable in the recent years. But the exports were exceeding the imports for all the years. During recent years, however, the imports showed an increasing trend (Figure 2.g).

4.2.2. TRENDS IN BALANCE OF TRADE

The trends in balance of trade (BOT) in various livestock and livestock products was worked out to examine the periodical fluctuations in the balance of trade conditions of the livestock products trade of India during the period 1991 to 2005 in both quantity and value terms. The values are expressed as US\$ in current prices.

The balance of trade in live animals was negative till 2002 which became positive for the first time in 2003. However, the BOT showed an increasing trend through out the period of study. The positive balance of trade in live animal trade was mainly contributed by heavy exports of live sheep and goats in the recent years. For all other products the balance of trade remained negative in almost all the years (Table 5.a).

The year wise balance of trade for dairy products is shown in **table 5.b** and **table 5.c**. The total balance of trade for all the dairy products was mostly negative during the 1990s but the conditions improved in the recent years. The conditions were worse for cheese and curd (HS 0406) products almost

Table 5.a.: Balance of Trade in Live Animal Trade

Year	HS 0102	HS 0103	HS 0104	Total live animal
	Value	Value	Value	Value
1991	-611.93	-282.03	22.41	-871.55
1992	-949.19	-225.63	198.32	-976.50
1993	-485.37	-274.17	818.11	58.57
1994	-516.97	-371.15	-43.43	-931.54
1995	-698.52	-308.70	112.75	-894.47
1996	-447.11	-281.23	28.50	-699.84
1997	-408.08	-230.76	-112.15	-751.00
1998	-57.57	-155.30	69.28	-143.59
1999	-21.54	-143.83	-269.86	-435.22
2000	-35.79	-152.64	-111.37	-299.80
2001	-67.55	-180.81	-110.99	-359.35
2002	-180.37	-216.56	-102.28	-499.21
2003	-164.40	-188.94	3097.19	2743.85
2004	-252.40	-69.46	3782.71	3460.85
2005	-136.46	34.88	4783.45	4681.88

throughout the period. The BOT conditions were favourable in most of the years for butter milk, curdled milk, yogurt (HS 0403) but with a low magnitude. But in case of concentrated or sweetened milk (HS 0402) the magnitude of BOT was positive and high. The BOT conditions of other products improved during recent years with some fluctuations during the 1990s.

The BOT for all the meat products (**Table 5.d**) throughout the period of 1991-2005 was positive except in the year 1993 when the Balance of trade of edible offal of bovine, swine, sheep or goat (HS 0206) was negative. Increasing trends were observed in BOT conditions for fresh meat of bovine animals (HS 0201) and frozen meat of bovine animals (HS 0202). For other products i.e. HS 0203, HS 0204 and HS 0206 the condition of BOT fluctuated narrowly. BOT conditions were most favourable in case of frozen meat of bovine animals (HS 0202).

Table 5.b: Year Wise Balance of Trade of Dominant Dairy Products

(Value US \$ Million, Quantity: Thousand Tonnes)

Year	HS 0402		HS 0405	
	Value	Quantity	Value	Quantity
1991	0.703	0.624	-6.390	-2.852
1992	-15.588	-6.983	0.394	-0.077
1993	-2.834	-1.038	0.914	0.293
1994	8.326	7.385	-5.743	-3.758
1995	-5.112	-1.451	-5.458	-3.447
1996	0.820	0.365	1.134	0.208
1997	1.198	0.809	-5.525	-4.054
1998	-1.611	-1.016	-4.299	-3.403
1999	-17.123	-12.736	-11.920	-8.554
2000	15.055	8.680	-3.128	-4.719
2001	33.164	20.642	1.080	-1.585
2002	18.450	13.890	-3.666	-6.383
2003	-4.310	-2.655	-1.025	-2.895
2004	64.580	35.165	2.509	-0.523
2005	125.871	61.862	16.673	6.540

Table 5.c : Year Wise Balance of Trade of Other Dairy Products

(Value : US\$ Million, Quantity: Thousand Tonnes)

Year	HS 0401		HS 0403		HS 0404		HS 0406		Total Dairy Products	
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
1991	-0.022	-0.259	0.000	0.000	-0.301	-0.144	-0.044	-0.005	-6.054	-2.636
1992	-0.230	-1.826	0.003	0.008	0.000	0.000	-0.097	-0.016	-15.518	-8.894
1993	0.000	0.000	0.000	0.000	-0.003	-0.003	-0.050	-0.018	-1.972	-0.766
1994	0.000	0.000	0.000	0.000	-0.003	-0.002	-0.124	-0.046	2.455	3.579
1995	0.006	0.001	0.043	0.037	-0.112	-0.078	-0.280	-0.070	-10.912	-5.008
1996	0.047	0.014	0.022	0.019	-0.029	-0.012	-0.025	0.056	1.970	0.651
1997	0.000	0.000	-0.026	0.006	0.318	0.304	-0.117	-0.021	-4.152	-2.955
1998	-0.003	-0.011	0.033	0.034	0.160	0.152	-0.216	-0.078	-5.937	-4.321
1999	-0.096	-1.036	0.006	0.008	-0.661	-0.447	-0.732	-0.302	-30.526	-23.067
2000	-0.070	-0.358	0.013	0.006	0.553	0.198	-0.467	-0.239	11.957	3.568
2001	-0.002	-0.006	0.081	0.050	-0.136	-0.103	-0.780	-0.227	33.408	18.772
2002	0.119	0.120	-0.120	-0.012	-0.264	-0.160	-1.026	-0.137	13.493	7.319
2003	0.112	-0.105	0.497	0.232	-1.677	-1.557	-1.300	-0.166	-7.702	-7.146
2004	0.625	0.516	0.128	-0.012	-0.102	-0.143	-1.313	-0.131	66.428	34.872
2005	1.298	2.352	0.150	0.095	2.065	1.156	-0.467	0.422	145.590	72.427

Table 5.d: Balance of Trade in Meat Products

Value : Million US\$, Quantity : Thousand Tonnes

Year	HS 0201		HS 0202		HS 0203		HS 0204		HS 0206		Total Meat Products	
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
1991	15.331	14.042	66.128	62.852	0.000	0.000	7.622	13.935	2.497	2.313	91.578	93.142
1992	13.781	14.275	67.833	68.443	0.007	0.004	7.357	15.511	0.469	0.516	89.447	98.749
1993	17.398	16.032	84.267	73.473	0.056	0.040	11.022	19.818	-0.004	-0.008	112.739	109.354
1994	21.471	19.468	94.667	83.837	0.741	0.803	10.819	21.030	0.102	0.160	127.799	125.299
1995	28.235	30.802	131.469	134.616	0.934	0.782	8.613	16.818	0.055	0.094	169.305	183.112
1996	16.893	18.721	140.681	155.646	0.352	0.368	8.689	20.001	0.085	0.170	166.699	194.906
1997	78.084	87.654	98.245	108.630	0.242	0.235	7.546	16.863	0.172	0.253	184.289	213.636
1998	48.243	50.518	105.713	113.743	0.107	0.120	8.648	18.643	0.110	0.195	162.821	183.219
1999	63.535	61.285	103.755	102.728	0.283	0.296	12.416	21.067	0.102	0.204	180.091	185.580
2000	57.440	61.998	230.587	243.646	0.002	-0.002	11.896	17.292	0.239	0.413	300.165	323.347
2001	18.679	18.905	224.676	223.675	0.190	0.182	3.910	6.968	0.314	0.284	247.769	250.014
2002	25.046	22.542	272.851	245.938	0.140	0.081	4.971	8.212	0.424	0.477	303.433	277.250
2003	5.154	5.502	338.663	324.827	0.035	0.042	16.819	23.722	1.168	1.193	361.838	355.286
2004	4.349	5.183	302.538	351.312	0.305	0.168	8.877	17.487	0.714	0.946	316.783	375.096
2005	11.407	10.557	448.530	585.663	0.216	0.120	7.155	18.095	0.754	1.124	468.062	615.559

It can be observed from **table 5.e** that balance of trade conditions of raw hides and skins were the worst among all the products. This is so because India started exporting these products only from 1998 after which the BOT conditions started improving with minor fluctuations. The conditions were most favourable in case of raw hides and skins of animals other than bovine, equine, sheep or lamb (HS 4103).

For leather products the balance of trade analysis was done only in value terms at current prices because of non availability of data on quantities for some years. For leather of bovine animals (HS 4104) and leather of goat or kid skin (HS4206) the BOT conditions consistently improved from 1991 with minor fluctuations (**Table 5.f**). But leather of sheep or lamb skin (HS 4105) showed considerable fluctuations during the entire period of study. The BOT conditions of HS 4106 were most favourable in the recent years as compared to other products in this group.

Among the wool products the garneted stock of wool (HS 5104) showed positive BOT for all the years while for wool and fine or coarse animal hair (5105) BOT was negative till 1999 and thereafter improved gradually. For other wool products and all products together the BOT values were negative and deteriorated during the entire period due to negative BOT of other products in this group (**Table 5.g**).

For both the products under meat preparations group the balance of trade conditions worsened during the recent years with other prepared or preserved meat, meat offal and blood (HS 1602) products having a positive BOT for most of the years during 1991-2005 (**Table 5.h**).

The negative balance of trade conditions in many of the livestock products suggest that India was a net importer of those products. However, in the recent years the conditions were improving in this direction for most of the products except the wool products.

Table 5.e : Balance of Trade in Raw Hides and Skins

(Value US \$ Million, Quantity: Thousand Tonnes)

Year	HS 4101		HS 4102		HS 4103		Total of Hides and Skins	
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
1991	-4.880	-2.824	-12.902	-2.511	-0.944	-0.373	-18.726	-5.708
1992	-6.113	-2.884	-17.019	-3.329	-1.142	-0.348	-24.274	-6.560
1993	-11.473	-4.987	-16.393	-3.610	-2.704	-1.125	-30.570	-9.721
1994	-19.588	-7.884	-20.902	-3.465	-4.915	-1.453	-45.405	-12.802
1995	-21.480	-8.065	-21.353	-3.446	-4.858	-1.381	-47.692	-12.891
1996	-29.627	-11.513	-14.862	-2.772	-7.449	-2.034	-50.282	-13.544
1997	-27.089	-11.265	-10.620	-2.267	-7.395	-1.984	-49.348	-15.665
1998	-32.177	-13.223	-14.590	-3.654	-4.842	-1.614	-45.038	-15.514
1999	-29.430	-13.969	-13.426	-5.187	-3.349	-1.362	-51.674	-18.493
2000	-28.276	-11.658	-22.534	-6.523	-6.272	-2.447	-46.063	-20.468
2001	-26.619	-9.277	-26.602	-5.500	-11.136	-3.730	-55.655	-19.964
2002	-25.046	-7.976	-17.589	-3.810	-11.268	-3.459	-64.369	-18.496
2003	-22.616	-6.742	-13.683	-2.215	-9.723	-3.595	-52.284	-15.450
2004	-22.550	-5.718	-14.203	-1.496	-6.070	-2.241	-45.102	-11.878
2005	-33.737	-8.745	-15.237	-2.419	-1.687	0.533	-39.140	-7.081

Table 5.f: Balance of Trade in Leather Products.

Value : Million US\$

Year	HS 4104	HS 4105	HS 4106	Total Leather Products
	Value	Value	Value	Value
1991	88.723	3.407	149.043	241.173
1992	82.458	12.449	153.021	247.928
1993	77.659	1.810	111.898	191.367
1994	140.828	23.663	150.330	314.821
1995	107.888	17.656	165.096	290.640
1996	74.469	16.005	135.196	225.670
1997	59.677	6.981	135.853	219.542
1998	37.718	10.052	130.996	179.788
1999	20.487	10.862	109.452	149.655
2000	61.979	7.589	186.794	270.412
2001	87.063	5.234	224.455	326.741
2002	103.243	15.931	253.883	414.640
2003	121.620	10.799	210.849	420.406
2004	152.951	-24.322	213.568	403.981
2005	183.695	2.506	205.693	61.646

Table 5.g : Balance of Trade in Wool Products

Value : Million US\$, Quantity : Thousand Tonnes

Year	HS 5101		HS 5102		HS 5103		HS 5104		HS 5105		Total Wool Products	
	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity
1991	-80.781	-27.677	-2.293	1.012	-0.971	-1.701	0.099	0.006	-7.822	-1.765	-91.767	-30.125
1992	-121.395	-38.436	-1.648	0.894	-3.574	-5.375	0.328	0.133	-0.533	0.458	-126.822	-42.326
1993	-118.614	-57.018	-2.094	0.792	-3.406	-6.117	0.001	0.000	-3.909	-0.712	-128.022	-63.054
1994	-111.678	-36.720	-4.319	1.417	-3.041	-5.673	0.462	0.243	-13.075	-1.623	-131.651	-42.356
1995	-144.711	-45.476	-5.578	0.990	-2.550	-5.285	0.161	0.102	-19.412	-2.250	-172.092	-51.918
1996	-163.374	-57.686	-6.289	0.160	-2.587	-6.531	0.044	0.021	-22.366	-3.004	-194.573	-67.040
1997	-160.334	-57.558	-2.599	1.052	-3.250	-7.617	1.308	0.313	-11.060	-1.496	-175.935	-65.307
1998	-115.588	-54.894	-1.395	0.575	-1.992	-5.119	0.283	0.063	-3.004	-0.447	-121.695	-59.822
1999	-113.507	-61.267	-0.919	0.402	-2.629	-6.610	0.000	0.000	-0.805	0.407	-117.859	-67.069
2000	-101.337	-53.582	-2.224	-0.205	-1.431	-5.204	0.079	0.078	1.971	0.656	-102.941	-58.257
2001	-131.834	-72.667	-2.092	-0.272	-2.148	-7.563	0.065	0.017	-0.557	0.064	-136.567	-80.421
2002	-164.592	-73.606	-1.793	-0.123	-2.417	-7.471	0.165	0.091	10.753	1.855	-157.885	-79.254
2003	-186.481	-84.511	-2.278	-0.353	-2.222	-6.372	0.144	0.082	4.565	1.165	-186.273	-89.990
2004	-181.918	-80.409	-1.991	0.046	-2.603	-7.168	0.540	0.116	13.058	1.888	-172.914	-85.526
2005	-203.896	-90.025	-2.262	-0.174	-1.726	-4.622	0.414	0.239	7.301	1.548	-200.168	-93.034

Table 5.h : Balance of Trade in Prepared Meat products

(Value US \$ Million, Quantity: Thousand Tonnes)

Year	HS 1602		Total Meat preparations	
	Value	Quantity	Value	Quantity
1991	447.003	191.300	447.003	191.300
1992	352.248	145.862	352.248	145.862
1993	301.870	179.557	301.870	179.557
1994	405.125	192.005	405.125	192.005
1995	1182.932	476.296	1182.440	476.140
1996	1219.505	509.014	1181.715	500.231
1997	503.973	240.122	503.973	240.122
1998	541.618	240.380	541.618	240.380
1999	1561.621	1037.038	1546.064	1035.247
2000	291.257	123.915	247.998	120.276
2001	-119.723	119.585	-137.328	111.491
2002	547.334	537.484	657.416	516.832
2003	1534.077	961.618	1470.147	924.044
2004	442.493	194.881	351.429	185.761
2005	344.957	204.767	162.750	114.604

4.2.3. TRENDS IN TERMS OF TRADE

Commodity Terms of trade (TOT) analysis was done to see the gains from trade of various livestock products. Terms of trade indices were constructed using Laspeyer's price index numbers. The export prices and import prices were derived in the following manner.

- i) Export Price (US\$ / Kg) = Export Value/ Export Quantity.
- ii) Import Price (US\$ / Kg) = Import Value/ Import Quantity.

The terms of trade index for a particular year was obtained by dividing the export price index by the import price index and multiplying the result by 100.

The analysis could be done only for few products taking 1993 as the base year because both export and import quantities and values were required for the analysis.

Terms of trade indices were constructed for three dairy products, two meat products, one prepared meat product and four wool products. Aggregate terms of trade were also worked out for each group of products.

Commodity terms of trade for dairy products are brought out in **table 6.a**. Terms of trade in cheese and curd (HS 0406) products were not in favour of India during the entire period. The TOT for concentrated and sweetened milk (HS 0402) and butter and other fat based products (HS 0405) remained favourable for India almost for all the years. However there were some fluctuations in the terms of trade of these products with unfavourable TOT for HS 0402 in 1994, 1995 and again in 2001, 2002. for butter and fat based products (HS 0405) TOT was unfavourable only in 1991 and again in 2005. The reason for unfavourable TOT value in total dairy products trade is due to the poor TOT conditions of other products in this group.

Table 6.a : Year Wise Terms of Trade Indices of Dairy Products

Base Year 1993

Year	HS 0405	HS 0402	HS 0406	Total Dairy Products
1991	81.02	114.52	22.78	90.98
1992	102.54	139.11	-	155.89
1993	100.00	100.00	100.00	100.00
1994	127.91	74.52	33.35	72.71
1995	129.83	94.84	28.17	99.36
1996	131.70	145.33	18.87	125.45
1997	140.15	117.65	33.42	90.36
1998	120.04	124.57	57.24	109.28
1999	109.13	137.74	57.77	93.82
2000	155.46	124.66	65.93	101.94
2001	167.32	93.43	43.51	89.77
2002	173.79	65.79	29.81	80.10
2003	149.46	131.41	22.61	109.10
2004	109.46	125.86	24.09	99.14
2005	83.38	114.13	25.44	107.20

The terms of trade conditions of total meat products were never in favour of India though the country had a positive balance of trade for the entire period of 1991 to 2005. Meat of sheep or goat, fresh or chilled (HS 0204) was not in our favour till 2001 which improved to a large extent to 244.13 in 2002 and stabilized later to some extent below 200 (**Table 6.b**). Similar results were observed in case of prepared meat products. The terms of trade conditions improved only during recent years. On the contrary, the wool products trade showed a very favourable terms of trade conditions (**Table 6.c**) starting from 1996 which improved rapidly upto 2004 and again declined in 2005. Among the individual products, terms of trade in wastes of wool or fine/coarse animal hair (HS 5103) were found to be favourable in all the years except in 1992. It improved till 2001 and later declined gradually. Terms of trade in other products like wool, not carded or combed (HS 5101), fine or coarse animal hair (HS 5102) and other wool and fine or coarse animal hair (HS 5105) were fluctuating during the entire period but were favourable in most of the years.

Table 6.b: Terms of Trade Indices of Meat and Meat Preparations.

YEAR	Meat			Meat Preparations	
	HS 0204	HS 0206	Total Meat Products	HS 1602	Total Meat Preparations
1991	-	-	15.20	-	-
1992	-	-	-	196.68	196.68
1993	100.00	100.00	100.00	100.00	100.00
1994	-	-	-	-	--
1995	-	-	-	5.02	7.21
1996	184.58	20.02	21.07	95.57	98.95
1997	-	-	-	-	-
1998	59.96	7.45	12.85	137.79	137.79
1999	48.52	16.96	19.84	362.09	45.71
2000	37.56	257.41	25.54	86.83	69.25
2001	65.60	62.24	28.07	64.07	69.04
2002	244.13	48.73	21.50	48.23	114.73
2003	167.86	9.15	46.38	89.11	113.68
2004	182.00	-	98.78	116.96	117.87
2005	147.63	26.29	35.87	120.62	152.15

Table 6.c: Terms of Trade Indices of Wool and Animal Hair

Year	HS 5101	HS 5102	HS 5103	HS 5105	Total Wool Products
1991	49.75	137.56	219.33	223.25	44.40
1992	40.23	71.73	95.58	42.43	107.42
1993	100.00	100.00	100.00	100.00	100.00
1994	97.17	50.34	146.85	63.80	62.36
1995	112.62	70.58	194.71	87.00	61.61
1996	57.58	72.83	213.78	131.71	106.16
1997	81.35	86.89	235.64	153.04	202.75
1998	184.49	104.11	274.20	114.60	297.32
1999	108.48	92.55	282.65	42.57	224.50
2000	59.29	120.97	233.29	69.99	379.46
2001	77.02	146.94	311.39	102.14	526.54
2002	97.41	118.51	296.23	125.05	568.75
2003	111.17	136.41	220.37	90.33	588.17
2004	68.89	76.36	288.84	113.93	641.47
2005	81.06	180.05	216.69	99.63	579.94

4.2.4. GROWTH TRENDS IN LIVESTOCK TRADE:

The growth trends were analysed using Compound Annual Growth Rate (CAGR) in quantity of exports and imports for different destinations of exports and sources of imports as well as for all destinations together for the period of 1991-2005. For live animals and leather products growth rate was calculated in terms of value of trade in US\$ at current prices as data on quantities were not available for all the years. This was done with the assumption that there has not been much changes in the value of US\$ after 1991.

For computation of CAGR some data treatment were done due to highly instable time series data. Outliers were removed and smoothing was done wherever possible using three year moving averages. In some case the growth rates could not be worked out because of less number of observations with high degree of instability. It is common experience that higher growth rates are

coupled with a higher degree of instability. Therefore, the country wise growth rates were higher in some cases as compared to the overall growth rates because of lesser instability in the trade data.

Country wise growth rates were not worked out for live animals as the instability in the data was very high and also number of observations was very less. It was found that the live animal exports grew by 22.16% per annum during the study period while the imports were declining with negative growth rate of -9.51 %.

The overall trend growth rate in dairy products exports was observed to be to the tune of 25.05% per annum which was highest among all the livestock products for the period of 1991-2005. The imports were growing at a much less rate of 7.06%. The country wise study of growth rates are brought out in **table 7.a**. It follows that, though the Asian countries were the major importers of Indian dairy products in terms of shares in total exports, but the growth rates were higher for the non-Asian destinations due to high volume of exports to those countries in recent years. Among the Asian destinations the export growth rate was highest for the West Asian markets (25.90%) followed by Southern Asia (25.17%) America (22.57%). Imports of dairy products grew at

Table 7.a: Country Wise Compound Annual Growth Rate of Trade Quantity of Dairy Products.

Country	Compound Annual Growth Rates of Quantity Traded (per cent)	
	Exports	Imports
America	22.57***	5.35
Europe	19.28**	15.11**
Oceania	20.91***	24.63**
West Asia	25.90***	-
Southern Asia	25.17***	1.92
Southeast Asia	15.62*	24.82**
Over all	25.05***	7.06**

*** Significant at 1% level of significance

** Significant at 5% level of significance

* Significant at 10% level of significance

31.63% from the Oceanian countries followed by that from the South East Asian countries (24.62%) and Europe (15.11%). Higher import growth rate from the Oceanian countries is due to the fact that recently India has been importing processed dairy products from Australia and New Zealand.

The total meat products imports at world level grew at a higher rate (18.06% per annum) than the exports (**Table 7.b**). Exports of meat products to Southern Asia grew at a high trend growth rate of 29.21% followed by Europe (24.39%), Africa (22.53%), Oceania (20.04%) and America (18.88%). The imports registered negative growth only from the West Asian countries (-22.52%).

Raw hides and skins products were not exported from India until 1998. So growth rates for these products were estimated for the period 1998 to 2005. During this period the total exports of these products grew at impressive rate of 19.07%. Exports to Oceanian countries grew at the highest rate of 16.19% (**Table 7.c**) followed by South East Asia (13.17%) and Africa (10.57%). But in case of Southern Asia the growth rate was negative (-0.11%). Since India imported these products starting from 1991, therefore, the whole study period was taken into consideration for studying the growth rate. The overall growth in imports of these products was 5.51% per annum. Imports of these products were found to be declining from Oceania, Southern Asia and Central and Eastern Asia. For most other countries imports grew at rates below 10% per annum except for South East Asian countries (18.45%) and West Asia (12.39%).

The analysis of growth rates for leather products were done in value terms (US\$) because of non availability of uniform data on trade quantity. Export growth rate (4.87%) was observed to be lower than that of the imports (8.80%) for these products (**Table 7.d**). Exports to America, Europe, Oceania and Southern Asia were found to be alarmingly growing at rates of -3.71%, -0.01%, -7.39% and -3.99% respectively. Positive growth rates in exports were observed for other destinations. African imports of leather products from India were growing at 20.82% followed by Central and Eastern Asia (16.66%). The

exports to West Asia and South East Asia were growing at similar rates of 5.97% and 5.83%

Table 7.b: Country Wise Compound Annual Growth Rate of Trade Quantity of Meat Products.

Country	Compound Annual Growth Rates of Quantity Traded (per cent)	
	Exports	Imports
America	18.88***	6.18
Africa	22.53***	-
Europe	24.39***	-
Oceania	20.04	22.96**
West Asia	6.89*	-22.52
Southern Asia	29.21***	-
Southeast Asia	10.00***	0.61
Over all	11.34***	18.06

*** Significant at 1% level of significance

** Significant at 5% level of significance

* Significant at 10% level of significance

Table 7.c: Country Wise Compound Annual Growth Rate of Trade Quantity of Raw Hides and Skins .

Country	Compound Annual Growth Rates of Quantity Traded (per cent)	
	Exports	Imports
America	-	0.68
Africa	10.57	9.02***
Europe	-	8.16**
Oceania	16.19	-7.13**
West Asia	-	12.39***
Central and Eastern Asia	-	-12.78**
Southern Asia	-0.11	-6.98
Southeast Asia	13.17	18.45***
Over all	19.07	5.51***

*** Significant at 1% level of significance

** Significant at 5% level of significance

* Significant at 10% level of significance

Table 7.d: Country wise Compound Annual Growth Rate of Trade Value of Leather Products.

Country	Compound Annual Growth Rates of Value Traded (per cent)	
	Exports	Imports
America	-3.71**	4.34***
Africa	20.82***	21.64***
Europe	-0.01	10.86
Oceania	-7.39***	5.53***
West Asia	5.97***	20.24***
Central and Eastern Asia	16.66***	5.59***
Southern Asia	-3.99	3.06
Southeast Asia	5.83**	10.62***
Over all	4.87***	8.80***

*** Significant at 1% level of significance

** Significant at 5% level of significance

*Significant at 10% level of significance

per annum. Imports of these products were found to be growing at a high rate of 21.64% from African countries followed by that from West Asia (20.24%), Europe (10.86%) and South East Asia (10.62%). For other sources the imports were growing at rates of 5 % or less than that.

India is mainly an importer of the selected wool products. So, the overall exports in these products showed a very low growth rate of 0.46% but that of imports was considerably higher at 5.33% per annum (**Table 7.e**). Though the Oceanian countries were the largest importers of these products in quantity terms, there was a decline in exports towards these destinations (CAGR -24.28%). In other cases growth rates were positive. Imports of these products registered a negative trend growth of -2.8% per annum from America and -1.48% per annum from Central and Eastern Asia.

The country wise trade in prepared meat products was highly instable because of which the country wise study could not be carried out. Only for South East Asian countries it was found to be somewhat consistent and the growth rate was 13.87% for exports and 5.54% for imports. The over all trend

growth was 9.87% for the exports whereas that for imports was higher at 17.97%.

Here it needs to be mentioned that the causes of very high growth rates in case of certain products in exports and imports were primarily due to the highly instable time series data which is contributed by the peaks and troughs in business cycle as well as the changing trade relations with different countries of the world.

Table 7.e: Country Wise Compound Annual Growth Rate of Trade Quantity of Wool Products

Country	Compound Annual Growth Rates of Quantity Traded (per cent)	
	Exports	Imports
America	0.41	-2.80
Africa	20.13***	24.19***
Europe	14.58*	6.95***
Oceania	-24.28*	1.33
West Asia	2.65	18.27***
Central and Eastern Asia	23.23**	-1.48
Southern Asia	24.86***	3.05
Southeast Asia	6.12	11.41**
Over all	0.46	5.33***

*** Significant at 1% level of significance

** Significant at 5% level of significance

* Significant at 10% level of significance

Based on the above observations it can be said that, in the years to come West Asia and Southern Asia are expected to become important destinations for dairy products where as Europe and America are likely to emerge as prospective markets for Indian meat products besides the Southern and South East Asia. Africa, America, Oceania and Europe are likely to remain the preferred destinations for leather, wool, prepared meat and raw hides and skins. Indian imports of most of the livestock products are likely to remain confined to Europe, America and Oceanian countries.

4.2.5. INSTABILITY IN LIVESTOCK TRADE:

In the previous section the destination wise growth of exports and imports of various livestock products were discussed. This section looks into the destination wise instability in exports and imports in terms of coefficient of variation and Instability Index. Heavy and sudden fluctuations in trade and prices of exports and imports of a particular product acts as disincentive for entrepreneurs to enter into the industry, discourages investment, alters the planning horizon and increases the risks. In this context, instability in livestock trade have been analysed at the global level and at country level as well with the help of Coefficient of variation (C.V.) and Instability Index (II). The higher the value of the instability index higher is the degree of instability.

Table 8.a reveals that the trade in live animals was highly instable in case of exports. The imports, however, were less instable with trade flowing in regularly from different countries. Instability in exports of the selected animals was observed in case of the Southern and Western Asia. The lesser degree of instability in exports to America and Europe was due to the regular exports of live sheep and goats to these countries.

Table 8.a : Country Wise Instability in Live Animal Trade

Country	Instability in Value of Exports and Imports			
	Exports		Imports	
	CV	II (10^3)	CV	II (10^3)
America	141.36	3.10	129.90	3.22
Africa	-	-	-	-
Europe	90.40	3.74	-	-
Oceania	-	-	-	-
West Asia	161.60	4.96	-	-
Central and Eastern Asia	-	-	-	-
Southern Asia	124.97	5.74	54.29	1.35
Southeast Asia	-	-	-	-
Over all	164.17	4.71	49.71	0.31

Dairy product exports were found to be least instable (**Table 8.b**) to the American markets (C.V. 116.01%) while African markets are the most instable

(C.V. 229.76%) in terms of C.V. American countries were the most instable (C.V. 162.37%) sources of imports in terms of C.V. and South Asian countries are the least instable both in terms of C.V. and II(C.V. 103.53%, II 1.23). In terms of Instability Index, West Asian (II 0.12) destinations were the least instable destinations of dairy products followed by South Asia (II 0.83) where as European markets were the most instable (II 4.38) in terms of Instability Index.

In case of meat products West Asia, South East Asia, Africa, Europe and South Asian destinations showed a lesser degree of instability. The instability in total meat exports was the least among all livestock products. This finding is similar to the findings of Singh et. al., 2001. Exports of these products to South East Asia and West Asia were the least instable both in terms of C.V. and instability index (**Table 8.c**). The imports in meat products were more instable than that of the exports. Here an important feature is that most destinations which were less instable for exports showed a greater degree of instability for the imports.

Since the raw hides and skins were exported starting from 1998 therefore, high degree of instability in exports of these products was observed for all destinations taken together and at country level as well. The imports were very less instable from all the countries. However, imports from Central and Eastern Asian countries showed a greater degree of instability as compared to other countries (**Table 8.d**).

The analysis of instability for the three leather products was carried out in value terms (US\$) because of non availability of data in quantity terms for some years. It has been observed that almost all the destinations and sources of exports and imports of leather products were among the least instable category. The instability in total exports (II 0.25) was greater than that of the imports (II 0.11). Exports of leather products to Oceania was the least instable in terms of instability index (0.13) followed by European and American destinations with II 0.16 and II 0.20. The imports of these products were least instable from both America and Europe with instability index of 0.13 each. (**Table 8.e**).

Table 8.b: Country Wise Instability in Dairy Products Trade

Country	Instability in Quantity of Exports and Imports			
	Exports		Imports	
	CV	II (10 ³)	CV	II (10 ³)
America	116.01	1.35	162.37	2.26
Africa	229.76	1.72	84.44	2.24
Europe	120.35	4.38	116.68	3.13
Oceania	174.03	4.05	108.55	2.72
West Asia	135.03	0.12	155.31	2.14
Central and Eastern Asia	140.90	2.74	170.87	3.14
Southern Asia	121.65	0.83	103.53	1.23
Southeast Asia	147.40	2.58	133.76	1.75
Over all	144.38	0.70	84.90	0.79

Table 8.c: Country Wise Instability in Meat Products Trade

Country	Instability in Quantity of Exports and Imports			
	Exports		Imports	
	CV	II (10 ³)	CV	II (10 ³)
America	107.99	1.09	58.40	2.69
Africa	105.86	0.48	-	-
Europe	97.84	1.00	196.40	1.98
Oceania	188.65	4.59	139.62	3.43
West Asia	45.74	0.18	137.25	3.13
Central and Eastern Asia	139.66	4.10	44.85	1.82
Southern Asia	81.62	1.61	-	-
Southeast Asia	39.98	0.18	100.42	3.67
Over all	50.39	0.12	163.85	3.21

Table 8.d: Country Wise Instability in Raw Hides and Skins Trade

Country	Instability in Quantity of Exports and Imports			
	Exports		Imports	
	CV	$\Pi(10^y)$	CV	$\Pi(10^y)$
America	114.11	2.16	81.54	0.76
Africa	73.35	0.35	49.12	0.35
Europe	141.74	2.60	45.65	0.43
Oceania	166.90	2.35	37.44	0.29
West Asia	95.38	2.22	51.21	0.46
Central Eastern Asia	120.90	2.87	92.39	1.81
Southern Asia	207.88	2.84	60.19	0.77
Southeast Asia	53.87	2.61	90.31	0.84
Over all	125.85	2.97	32.95	0.29

Table 8.e: Country Wise Instability in Leather Trade

Country	Instability in Value of Exports and Imports			
	Exports		Imports	
	CV	$\Pi(10^y)$	CV	$\Pi(10^y)$
America	23.10	0.20	25.79	0.13
Africa	73.35	0.35	104.15	0.69
Europe	15.43	0.16	45.89	0.13
Oceania	36.55	0.13	42.77	0.28
West Asia	47.37	0.33	111.69	0.60
Central Eastern Asia	78.11	0.62	42.27	0.36
Southern Asia	96.92	1.10	53.05	0.44
Southeast Asia	46.42	0.36	61.60	0.34
Over all	32.11	0.25	44.40	0.11

Table 8.f shows that Europe (II 0.54) was the least instable destination for wool exports followed by Oceania (II 0.71) and West Asia (II 0.95) while Oceania, Europe, Africa, America and South Asia with Instability Index of 0.18,0.33,0.50,0.61 and 0.70 respectively were the least instable sources of imports.

For meat preparations almost all the destinations for exports and sources of imports were highly instable except West Asia. The instability in total meat preparations export was, however, found to be low (II 0.56). India imported these prepared meat products intermittently because of which the import instability was higher than that of the exports (**Table 8.g**).

Table 8.f: Country Wise Instability in Wool Trade

Country	Instability in Quantity of Exports and Imports			
	Exports		Imports	
	CV	II	CV	II
America	98.53	1.86	51.87	0.61
Africa	123.08	3.01	94.96	0.47
Europe	68.46	0.54	41.68	0.33
Oceania	87.52	0.71	19.03	0.18
West Asia	67.16	0.95	66.18	0.48
Central Eastern Asia	143.30	3.04	123.60	1.16
South Asia	132.08	1.91	55.03	0.70
Southeast Asia	116.76	3.16	52.27	2.60
Over all	28.78	0.32	27.67	0.14

Table 8.g: Country Wise Instability in Meat Preparations Trade

Country	Instability in Quantity of Exports and Imports			
	Exports		Imports	
	CV	II	CV	II
America	134.92	4.03	210.21	3.95
Africa	52.61	3.72	51.39	3.12
Europe	106.25	5.10	120.45	2.74
Oceania	35.82	2.09	110.94	2.85
West Asia	130.02	0.77	-	-
Central Eastern Asia	-	-	-	-
South Asia	189.54	2.86	79.59	2.52
Southeast Asia	150.65	4.10	104.05	3.52
Over all	75.15	0.56	125.81	2.84

An important aspect worth mentioning is the differences in relative dispersion of some countries according to the level of instability as captured through two different measures i.e. C.V and II. For instance, African countries show lesser instability to Central Eastern countries as per the C.V but based on II it is more instable than the later for the dairy exports.

Since in time series data, spread over a longer period, there may be some systematic trend, therefore, the Instability Index is considered as better measure of instability than C.V. This is also because the C.V. does not consider all the observations. But since Instability index is built from the residual values of exponential growth trend curve therefore it reflects the instability in time series in a better way.

The classification of destinations of exports and sources of imports according to Instability Index are given below. The classification of countries ranged from $0 < II \leq 1$ to $4 < II \leq 5$ showing various degree of instability.

Table 9.a : Classification of Countries According to Instability Index for Live Animal Trade

Instability	Value of II	Export Destinations	Import Sources
Less Instable	$1 < II \leq 2$	-	South Asia
Highly Instable	$3 < II \leq 4$	America, Europe	America
Very Highly Instable	$4 < II \leq 5$	West Asia, South Asia	-

Table 9.b: Classification of Countries According to Instability Index for Dairy Trade

Instability	Value of II	Export Destinations	Import Sources
Least Instable	$0 < II \leq 1$	South Asia, West Asia	-
Less Instable	$1 < II \leq 2$	America, Africa	South Asia, South East Asia
Moderately Instable	$2 < II \leq 3$	Central & Eastern Asia, South East Asia	Africa, America, Oceania, West Asia
Highly Instable	$3 < II \leq 4$	-	Europe
Very Highly Instable	$4 < II \leq 5$	Europe, Oceania	-

Table 9.c : Classification of Countries According to Instability Index for Meat Trade

Instability	Value of II	Export Destinations	Import Sources
Least Instable	$0 < II \leq 1$	Africa, West Asia, South East Asia	-
Less Instable	$1 < II \leq 2$	America, Europe, South Asia	Europe, Central & Eastern Asia
Moderately Instable	$2 < II \leq 3$	-	America
Highly Instable	$3 < II \leq 4$	-	Oceania, West Asia, South East Asia
Very Highly Instable	$4 < II \leq 5$	Oceania, Central & Eastern Asia	-

Table 9.d : Classification of Countries According to Instability Index for Raw Hides and Skins Trade

Instability	Value of II	Export Destinations	Import Sources
Least Instable	$0 < II \leq 1$	Africa	America, Africa, Europe, Oceania, South Asia, South East Asia
Less Instable	$1 < II \leq 2$	-	Central & Eastern Asia
Moderately Instable	$2 < II \leq 3$	America, Europe, Oceania, Central Eastern Asia, South Asia, South East Asia	-

Table 9.e : Classification of Countries According to Instability Index for Leather Trade

Instability	Value of II	Export Destinations	Import Sources
Least Instable	$0 < II \leq 1$	America, Africa, Europe Oceania, Central & Eastern Asia, South East Asia	America, Africa, Europe Oceania, Central & Eastern Asia, South Asia, South East Asia
Less Instable	$1 < II \leq 2$	South Asia	-

Table 9.f : Classification of Countries According to Instability Index for Wool Trade

Instability	Value of II	Export Destinations	Import Sources
Least Instable	$0 < II \leq 1$	Europe, Oceania , West Asia	America, Africa, Europe, Oceania, West Asia, South Asia
Less Instable	$1 < II \leq 2$	America, South Asia	Central & Eastern Asia
Moderately Instable	$2 < II \leq 3$		South East Asia
Highly Instable	$3 < II \leq 4$	Central & Eastern Asia, South East Asia	-

Table 9.g: Classification of Countries According to Instability Index for Prepared Meat Trade

Instability	Value of II	Export Destinations	Import Sources
Least Instable	$0 < II \leq 1$	West Asia	-
Moderately Instable	$2 < II \leq 3$	Oceania, South Asia	Oceania, South Asia
Highly Instable	$3 < II \leq 4$	Africa	America, Africa, South East Asia
Very Highly Instable	$4 < II \leq 5$	America, Europe, South East Asia	-

The foregoing discussion suggested that Southern Asia, West Asia, America and Africa are less instable destinations for dairy, meat and leather products where as Europe, Oceania and Central & Eastern Asia are highly instable destinations for these products. On the contrary, for wool and prepared meat products West Asia, Oceania and Europe are less instable destinations. Europe, America Oceania and West Asia are highly instable sources of imports for meat products. But for most other products these are less instable sources.

Though detailed study is required to look into the causes of instability, still some likely causes can be mentioned as a passing note. Instability in production and lack of product specialization or diversifications are suspected to be the primary causes of such instability. Moreover, India shares long open boarder with neighboring countries like Nepal, Bangladesh and Bhutan. This is likely to encourage heavy illegal and unscrupulous trade practice in those borders. Policy problems again worsen the matter. Various domestic as well as

the major importer and exporter countries trade policies may also equally be important to influence the trade relations with India. International trade relations are governed by the imposition of quotas and various types of tariffs and quantitative restrictions. This causes a heavy fluctuation in the exports and imports of some major products and then to total trade. Lastly, since the Government began to allow private exports of livestock products during early 1990s, small scale unorganised sectors have started exporting indigenous products. These exports are mainly based on surplus basis and of specific contract in nature which are much sporadic and fluctuates to a great extent. As a result, this adds up more instability to the Indian livestock exports.

5. SUMMARY AND CONCLUSIONS

India possesses vast resources of live stocks but its presence in international trade of livestock products has been marginal. After the economic liberalization, the trade situations in Indian livestock products have improved. The earlier efforts directed towards studying India's performance and potential in livestock products trade were done only in relation to major partners and products at aggregate levels. Though some studies at focused on products at disaggregated level, they were confined to few products.

The present study is comprehensive in terms of products covered, period of study and area with the following specific objectives.

1. To examine the direction and composition of livestock and livestock products trade.
2. To estimate the growth and instability of exports and imports of livestock products of India.

The data on exports of selected Indian livestock and livestock products and imports of the same products by India, both in quantity (Kg) and value(US\$) terms for various countries of the world, taken from the electronic database of Commodity Trade Statistics Division of United Nations (UN COMTRADE) for the period of 1991-2005 constitutes the basis of the study.

For examining the direction and composition of livestock and livestock products trade, the country wise share of various livestock products, changes in directions over time, country wise composition of exports and imports of the selected livestock products were worked out. Attempts were also made to identify the major products in various product groups. The study period was further subdivided into five equal periods each of three years span for studying the changes in direction of trade. Trends in various livestock products trade, balance of trade, terms of trade, compound annual growth rate and instability in trade were estimated for studying the growth and instability in exports and imports of livestock products.

The salient findings of the study are presented below:

Among the various livestock products, the leather products were found to be the major products in terms of export earnings followed by the meat products. Live animal and prepared meat products constituted a very small share in the total livestock product trade of India. Wool products were observed to be the major items of imports.

Countries like Southern Asia, West Asia and America were major trade partners of India for live animals whereas dairy and meat products exports were confined to Asian destinations (Southern Asia and West Asia). Non-Asian countries were major exporters of these products to India. Concentration of trade in raw hides and skins and leather products were towards the European and American countries for both export and import.

The trade in wool products was diversified in terms of directions, but Europe and Oceania were the major partners for both export and import. Prepared meat products exports were concentrated towards the Asian countries while imports were flowing from Europe and Oceania.

While studying the changes in direction of trade, exports were found to be flowing towards Southern Asia, West Asia, Europe and America for most of the products during the entire period of study. However, imports were coming mainly from Europe, America and Oceanian countries for meat, wool, raw hides and skins and leather products. Considerable diversification in exports towards non-Asian countries was observed in case of dairy products over the period.

Indian export basket constituted mainly of Sheep and live goats and live bovine animals (Live animals); concentrated or sweetened milk and cream, butter and other fat based products (Dairy products); fresh and frozen meat of bovine animals (Meat products); raw hides and skins of bovine or equine animal (Raw hides and skins); leather of bovine or equine animals (Leather products); fine or coarse animal hair and other wool or fine/coarse animal (Wool and Animal hair); prepared meat, meat offal and blood other than sausages (Prepared meat products).

Some diversification in the export basket of dairy products was observed. For example, cheese and curd based products, fermented milk products started to figure in the export basket during the recent years.

The import basket also consisted of the same major items as exports for dairy products with addition of cheese and curd products from some countries like Central and Eastern Asia and Southern Asia. Live bovine animals and live swine were major items of imports from America and Southern Asia. The major items of meat imports were the meat of swine, meat of sheep or goats and edible meat offal of bovine, swine, sheep or goat. Raw hides and skins of sheep or lamb in addition to that bovine or equine animals were imported from most of the countries. The imports basket of leather products was similar to that of exports. Wool, not carded or combed was imported from almost all countries accounting for more than 70% of wool imports from a particular country. Sausages of meat, meat offal or blood accounted for more than 40% of the imports of prepared meat products from Africa, Southern Asia and South East Asia.

From the analysis of year wise trend in export and import, it was found that Indian exports of live animals were less than the imports till 2002 and after that there was sudden hike in exports with imports declining steadily. There was not much instability in total dairy export with some peaks during 1994 and 2001. Imports were fluctuating around the exports and in the recent years fell below the exports. Steady increase in meat export was observed while imports were negligible throughout the study period. Raw hides and skins exports started in late 1990s and surpassed the import quantities in 2005. Increasing trend were observed in case of wool and leather exports while imports remained very low. Leather exports showed increasing trend after 1999.

Balance of trade of meat products was most favourable to India. Though negative balance of trade was observed in case of dairy products it improved during the recent years. Declining balance of trade was observed in case of wool products.

The commodity terms of trade (ToT) in wool products was favourable in most years with an increasing trend. ToT in concentrated or sweetened milk

and cream and butter and fat based products were favourable to India in most of the years. ToT in recent years became favourable to India for the prepared meat products.

The analysis of growth and instability revealed that trade in livestock products was highly instable. Growth rate in dairy exports was found to be the highest among all live stock products. Import growth rate was negative only for the live animals. Growth of exports to non-Asian destinations was found to be higher because of high volume of export during recent years.

Based on the estimates of compound annual growth rates it can be said that, in the years to come West Asia and Southern Asia are expected to become important destinations for dairy products where as Europe and America are likely to emerge as prospective markets for Indian meat products besides the Southern and South East Asia. Africa, America, Oceania and Europe are likely to remain the preferred destinations for leather, wool, prepared meat and raw hides and skins. Indian imports of most of the livestock products are likely to remain confined to Europe, America and Oceanian countries.

The study of instability in livestock trade revealed that Southern Asia, West Asia, America and Africa are less instable destinations for dairy, meat and leather products where as Europe, Oceania and Central & Eastern Asia are highly instable destinations for these products. On the contrary, for wool and prepared meat products West Asia, Oceania and Europe are less instable destinations. Europe, America Oceania and West Asia are highly instable sources of imports for meat products. But for most other products these are less instable sources.

To sum up, Indian livestock products trade has improved to great extent in the recent years. India has started to diversify her trade in both the products and destinations for the various products and has found new markets in non- Asian countries. However, the trade still revolves around few major products and share Indian products in world markets is still marginal which can be attributed to the low quality of the products apart from the trade distortions imposed by various measures like quotas, tariffs and sanitary and phytosanitary measures.

India needs to strive for capturing the emerging European and American markets apart from the ever growing Asian markets through producing quality livestock products conforming to the international standards enforced by WHO and FAO. As most of the livestock products like dairy, meat and prepared meat are of perishable nature, proper infrastructure in their procurement and processing are required to be created. Parity between the national and international standards for livestock products needs to be maintained by harmonization of BIS (Bureau of Indian Standards) standards with that of international standards. With this India will be able to go a long way in capturing the world market for livestock products.

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APPENDIX

Appendix I: Nomenclature of HS codes

Description of selected livestock and livestock products according to HS classification at 4 digit level.

HS Code	Description of Product
01	Live Animals
0102	Bovine animals, live cows, bulls , heifers
0103	Swine, live
0104	Sheep and goats, live
02	Meat and edible meat offal
0201	Meat of bovine animals, fresh or chilled beef, veal
0202	Meat of bovine animals, frozen beef, veal
0203	Meat of swine, fresh, chilled or frozen pork, ham
0204	Meat of sheep or goats, fresh, chilled or frozen lamb
0206	Edible offal, bovine, swine, sheep, goat, horse, asses, mules, hinnies, fresh, chilled or frozen
04	Dairy produce; birds eggs; honey and other edible animal products
0401	Milk and Cream, not concentrated nor containing added sugar or other sweetening matter
0402	Milk and Cream, concentrated or containing added sugar or other sweetening matter
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
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
0405	Butter and other fats and oils derived from milk, Dairy spreads
0406	Cheese and Curd
16	Edible preparations of meat, fish, crustaceans, molluscs or other aquatic invertebrates
1601	Sausages or similar products of. meat, meat offal, blood
1602	Other prepared or preserved meat, meat offal & blood

HS Code	Description of Product
41	Raw hides and skins (other than furskins) and leather
4101	Raw hides & skins of bovine or equine animals, (not tanned, parchment-dressed or further prepared)
4102	Raw hides & skins of sheep or lambs, (not tanned, parchment-dressed or further prepared)
4103	Raw hides & skins of animals (not bovine, equine, sheep, lamb) and (not tanned, parchment-dressed or further prepared)
4104	Leather of bovine or equine,(no hair &)
4105	Leather of sheep or lamb skin,(no wool &)
4106	Leather of goat or kidskin,(no hair &)
51	Wool & animal hair, including yarn & woven fabric
5101	Wool, not carded or combed
5102	Fine or coarse animal hair, not carded or combed
5103	Waste of wool or of fine or coarse animal hair, including yarn waste not garnetted stock
5104	Garnetted stock of wool, fine or coarse animal hair
5105	Wool & fine or coarse animal hair, carded & combed

APPENDIX II: Classification of Countries

Country Groups	Constituent Countries
Africa	Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mayotte, Mozambique, Seychelles, Rwanda, Reunion, Somalia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe, Angola, Cameroon, Chad, Congo, Gabon, Equatorial Guinea, Gabon, Algeria, Egypt, Morocco, Sudan, Tunisia, Botswana, Namibia, South Africa, Swaziland, Benin, Cote d' Ivoire, Guinea, Ghana, Liberia, Mali, Niger, Senegal, Sierra Leone, Togo.
America	Anguilla, Antigua and Barbada,, Aruba, Bahamas, Cuba, Dominica, Greda, Haiti, Jamaica, Netherland Antilles, Puerto Rico, Saint Kits and Nevis, Saint Lucia, Trinidad and Tobago, turks and Caicos Islands, Belize, Costa Rica, Guatemala, Honduras, Mexico, Nicargua, Panama, Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela, Bermuda, Canada, Greenland, United States of America.
Central and Eastern Asia	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, China, Hong-Kong, Japan, Mongollia, Republic of Korea.
Europe	Belaras, Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, Ukrain, Denmark, Estonia, Finland, Icaland, Ireland, Jersy, Lithuania, Norway, Sweden, United Kingdom of Great Britain, Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Malta, Montenegro, Portugal, San Marino, Serbia, Slovenia, Spain, Austria, Belgium, France, Germany, Luxembourg, monaco, Netherlands, Switzerland.
Oceania	Australia, new Zealand, Fiji, Papua New Guinea, Solomon Island, Kiribiti, Guam, Nauru, Cook Island, French Polynesia, Samoa, Tonga, Tuvalu, American Samoa, Vanuatu.
Southern Asia	Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, Sri Lanka.
South Eastern Asia	Brunei Draussalam, Cambodia, indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam.
Western Asia	Armenia, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates, Yemen.