CHAPTER: V

SUMMARY AND CONCLUSION

It is needless to remark that livestock sector has grown tremendously in India and became an important element of agriculture not just providing the livelihood and employment opportunities, supplementary income but rather also a greater source of earning the foreign exchange through export. Nevertheless, the sector is not given due attention and under-developed. The sector is highly gender sensitive and feminized as women constitute about 69 per cent of the workforce engaged in the livestock sector. Growing population, urbanization, a higher standard of living and increasing income level are certain major drivers for augmenting the demand for livestock products in recent times as the food consumption pattern is shifting from traditional cereals to high value commodities. More than 87 per cent of livestock is owned by the marginal, small and semi-medium farmers and as such Indian livestock sector is dominated by the small and marginal cultivars. India possesses one of the largest stocks of livestock population in the world. The total livestock population of India and Gujarat reached 512 and 27.12 million numbers, respectively under 19th livestock census.

The sector contributes around 4 per cent to national GDP. In terms of Gross Value Added (GVA) of Agriculture, the share of livestock sector has increased to 26 per cent in 2013-14. In Gujarat, the sector contributed 5.32 per cent in total GDP of the state whereas its share in GDP of agriculture & allied sector is 24 per cent in 2013-14. The production of milk and egg stupendously increased in the state and national level over the period. Several dairy development programmes such as Operational Flood led white revolution in the nation, AMUL Co-operative model and other poultry and livestock development programmes have promoted livestock sector in the state notably. Certain initiatives such as Operation Flood (1970), de-licensing the dairy industry in 1991 and removal of restrictions on setting up of milk processing
and manufacturing plants in 2003 subsequently expanded the scope of private investment in the livestock sector.

Livestock export has grown appreciably in the last couple of years. The emerging issues confronting the Indian livestock sector includes climate change, sanitary and phytosanitary standards (SPS), technical barriers to trade (TBT), antidumping duties, countervailing duties, etc. which are emerging as major constraints in tapping the benefits of export potential of the livestock sector. In order to cope up such challenges National Livestock Mission was established in 2014-15 during the 12th Plan.

Agro-ecologic variability across the regions, growing demand, technological advancement etc. are certain drivers changing the composition of livestock in terms of population, production and productivity over time. Thereby, an assessment of changes in growth pattern of livestock population, production and productivity were essential and they are carried out. The instability in production and productivity was analyzed as it might influence the performance of overall livestock sector. Under changing globalised era, study of the export dynamics will facilitate in understanding whether the changes in direction of trade across the globe are actually desirable or certain changes are required to enhance the trade to a particular market. As WTO statutory obligation among the members, import tariff rate has been reduced considerably over the past few years. The study of export competitiveness of livestock products quantify the export worthiness and help to ensure the level of protection provided on different livestock products. The livestock export is influenced by various determinants and those determinants influencing livestock performance are to be checked. Keeping all these in view, a study on “Growth and Export Performance of Livestock Sector in Gujarat” was undertaken with the following objectives.

1. To examine the pace and pattern of growth in livestock population in Gujarat state.
2. To study the growth and instability in production and productivity of major livestock products.
3. To measure the changes in the composition of livestock population.
4. To analyze the export dynamics of livestock products to different countries.
5. To study the export competitiveness and the determinants influencing the export of livestock products.
District-wise and state level data of livestock population, production and productivity were compiled from various issues of Integrated Sample Survey (ISS). Data were collected for the period from 1985-86 to 2014-15 which were classified into four sub-periods; 1985-86 to 1994-95 (Period-I), 1995-96 to 2004-05 (Period-II), 2005-06 to 2014-15 (Period-III) and 1985-86 to 2014-15 (Period IV). Export data regarding major livestock products i.e. poultry products, meat and its products, and dairy products were compiled from APEDA and DGCI&S for the period from 1995-95 to 2014-15 which were divided into three different periods viz. Period-I (1995-96 to 2004-05), Period-II (2005-06 to 2014-15) and Period-III (1995-96 to 2014-15). Per capita availability data at state level were collected from 32nd survey report on the estimates of various livestock products and Bulletin of Animal Husbandry and Dairy Statistics. National level data on livestock production, livestock GDP and per capita availability were brought together from the various issues of Basic Animal Husbandry and Fisheries Statistics. Data on population, exchange rate, GDP and per capita income, and export of global livestock products were taken from FAO database. The collected data were analyzed using the tabular analysis, compound growth rate, point to point growth rate, instability indices, NPC, RCA, markov chain analysis and gravity model through balanced panel data. The major findings of the study have been recapitulated here.

Population of crossbred cows inmilk and milch exhibited positive growth rates except Junagadh in Period-I, and Kheda, Mehsana, Panchmahal, Surendranagar, Valsad and Dang in Period-II. The highest increment in the growth rate of crossbred cow inmilk and milk was found in Bharuch in Period-I, Gandhinagar in Period-II and Porbandar in Period-III. Both, at districts and state level, crossbred cow increased at a considerable growth rate mainly due to wider adoption high yielding breeds such as Jersey and Holstein Friesian. The results of indigenous cow showed the slow growth rate and negative in many cases conversely of crossbred cow. The slow growth may be attributed to reduction in the demand of indigenous animal owing to mechanization, poor productivity, etc. State level growth rate of indigenous inmilk cow population increased from 0.99 to 1.96 per cent and in case of indigenous milch cow, it increased from -0.13 to 1.46 per cent during Period-I to Period-IV. Districts-wise growth rates of population of indigenous cow inmilk showed negative growth rate in Bhavnagar, Junagadh and Kachchh in Period-I, Gandhinagar, Amreli, Bharuch, Bhavnagar, Junagadh, Kachchh, Mehsana, Panchmahal, Valsad and Dang in
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Period-II, and Gandhinagar, Jamnagar, Anand, Patan, Rajkot, Sabarkantha, Surat & Tapi, Valsad, Dang and Navsari in Period-III. Growth rate of indigenous milch cow population was found negative in most of the districts in Period-I and Period-II and turned out to be positive in Period-III. The overall growth rate during study period for indigenous inmilk and milch cow population in Period-IV was observed to be negative in many districts. In case of buffalo, overall growth rate in the population of inmilk and milch revealed a positive trend in majority of the districts in Period-IV, except Kheda, Valsad, Dang and Navsari. The overall inmilk and milch buffalo population has grown at 3.21 per cent in Period-IV at the state level. Highest positive growth rate was found in Ahmedabad district which grew at the rate of 10.95 and 11.50 per cent in inmilk and milch population, respectively in Period-IV. Growth rate of buffalo population surpassed that of the indigenous cow population indicating that buffalo rose at higher rate than indigenous cow but lower than crossbred cows. The growth rate of population of goat inmilk and milch indicated a negative trend in many districts but higher decline was found in Banaskantha, Mehsana, Bharuch and Surendranagar districts. There was a mixed trend in the growth of goat population in Period-IV. Overall growth rate in Period-IV for inmilk population was negative i.e. -0.33 per cent while it was only 0.95 per cent in milch goat population during the same period at state level. The growth rate of sheep population showed a similar picture as of goat population. In Period-IV, the highest decline in the sheep growth rate was found in Valsad (-5.62%), followed by Panchmahal (-4.91%), Gandhinagar (-3.76%), respectively. Despite negative trend in growth rate at the district level, overall growth rate of sheep population at state level was found positive in Period-IV.

Desi poultry showed a slower growth rate at districts as well as state level. During Period-I, Rajkot and Mehsana districts observed the highest positive growth rate per annum which subsequently turned out to be negative in the remaining period. In Period-III, Ahmedabad, Narmada, Porbandar, Panchmahal, Dang and Navasri connoted higher positive growth compared to other districts in desi poultry population. Overall growth rate in Period-IV registered negative growth almost in all the districts. Conversely, improved poultry showed appreciable growth rate. Ahmedabad, Gandhinagar, Banaskantha, Bhavnagar, Anand and Patan were certain districts which showed rapid growth in present time. Overall growth rate in Period-IV for total poultry layer population for Bhavnagar, Ahmedabad and Gandhinagar registered the growth rates of 13.53, 7.86 and 4.92 per cent, respectively.
Compound annual growth rates of productivity of crossbred cow inmilk and milch in Banaskantha district were the highest in Period-I i.e. 3.94 per cent and 4.65 per cent, respectively. The growth rate of crossbred inmilk and milch productivity declined in Banaskantha, Panchmahal, Mehsana, Surat and Tapi in Period-I, Period-II and Period-III but maintained positive trend. In Period-IV, crossbred milch productivity increased except Porbandar, Kachchh, Kheda, Patan and Vadodara. The state as a whole, the overall productivity of crossbred cow inmilk and milch in Period-IV has been rising gradually. Instability of crossbred cow inmilk productivity declined to a greater extent than crossbred cow milch productivity in Period-III. However, for the state as a whole, instability of inmilk and milch cow remained same i.e. 2 per cent in Period-III. In Period-IV, the highest instability in crossbred cow inmilk and milch productivity was observed in Kachchh (13%) and Panchmahal (17%) districts.

Except Rajkot, growth rate of indigenous inmilk productivity in Period-I was positive in all the districts. Growth rate of indigenous milch cow productivity had declined but grown positively in Period-II, except in Kachchh and Dang. In case of indigenous cow milch productivity, growth rate declined almost in all the districts. The overall growth rates for both inmilk and milch productivity in Period-IV were positive in all the districts and at the state level as well. Instability of indigenous cow inmilk and milch productivity was higher in Vadodara, Bharuch, Banaskantha, Jamnagar, Panchmahal and Surendranagar in Period-I. Variation was lower in Period-III for indigenous inmilk and milch. In Period-IV, instability of indigenous inmilk productivity was found to be maximum in Bharuch, Vadodara, Panchmahal, Dang and Valsad. The state as a whole, the level of instability was more or less the same in all the four periods.

Growth of buffalo inmilk productivity during Period-I was found positive except in Jamnagar, Rajkot and Sabarkantha. Certain districts with positive growth showed negative growth rates in Period-II. Only Navsari district exhibited negative growth in Period-III. The growth rate in buffalo inmilk productivity has gradually declined in Banaskantha, Kachchh, Mehsana, Panchmahal and Vadodara districts in Period-I, Period-II and Period-III. Overall growth in Period-IV for inmilk buffalo was the highest in Panchmahal. During Period-IV, inmilk and milch productivity at state level increased at the rate of 1.17 per cent. Buffalo productivity in Gujarat state has been growing faster than crossbred cow but less than indigenous
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cow. Instability in Amreli, Bharuch, Kachchh, Surendranagar, Valsad, Dang and Bhavnagar showed higher discrepancy in buffalo productivity. Both buffalo inmilk and milch productivity at state level exhibited almost same level of instability in all the periods. In nutshell, instability in buffalo productivity was lower than crossbred and indigenous cow.

Growth rate of goat milch productivity was to be found negative in majority of the districts and even at state level in Period-I. In Period-II, Sabarkantha had shown a phenomenal growth rate of 10.56 and 11.25 per cent in goat inmilk and milch productivity, respectively and afterwards declined in subsequent periods. In Period-III, Ahmedabad, Baruch, Kheda, Vadodara, Dang, Junagadh, Narmada, Porbandar, Dahod had shown higher growth rates in goat productivity. Overall growth rate in Period-IV, for inmilk and milch productivity at state level increased at the rate of 1.21 and 1.01 per cent. Majority of the districts had higher instability in goat productivity. The overall instability of goat inmilk and milch productivity of Gujarat state in Period-IV was 2 and 7 per cent, respectively.

Growth rate in sheep productivity was maximum in Junagadh (3.23%) in Period-I. Lowest growth rate was observed in Vadodara (-8.76%) in Period-II. Majority of the districts had registered negative growth rate in Period-III. State as a whole the growth rate in sheep productivity was found to be -1.29 per cent. In period-IV, the overall growth rate in productivity was more or less positive but marginal. Sabarkantha district reported the highest level of instability in Period-I while in Period-II, Junagadh had the highest level of instability. During 1985-86 to 2014-15 (Period-IV), Amreli, Bharuch, Junagadh, Kheda, Patan, Sabarkantha, Vadodara, Surat and Tapi were highly instable in sheep productivity. Overall instability of Gujarat state was 4 per cent in Period-IV.

Panchmahal (4.51%) had the highest positive growth rate in Period-I in desi poultry productivity. Ahmedabad, Gandhinagar, Bharuch, Patan were the major districts which had faster growth rate in desi poultry productivity in recent period. Bhavnagar and Surendranagar were two districts in which productivity constantly declined in Period-I, Period-II and Period-III. In Period-IV, growth rate for desi poultry productivity in Gujarat was reported to be 1.56 per cent. In case of improved poultry productivity in Period-I, all the districts registered positive growth except Amreli, Rajkot and Sabarkantha. By and large, the districts showed declining growth in improved poultry during Period-III. Overall growth was 1.08 per cent in Gujarat for
improved poultry. Instability of desi and improved poultry productivity was more in Jamnagar, Rajkot and Vadodara districts in Period-I while in Period-II, Ahmedabad, Gandhinagar, Amreli, Bharuch, Junagadh, and Surendranagar were observed to be highly instable. In Period-III, majority of the districts had lower instability in desi poultry productivity. In general, Amreli, Bharuch, Junagadh, Mehsana, Panchmahal, Rajkot, Sabarkantha and Surendranagar were relatively more unstable in desi and improved poultry productivity. The state level instability was more or less same for desi and improved poultry.

The crossbred cow milch productivity also increased from 5.89 Kg. in TE 1987 to 6.35 Kg. per animal per day in TE 2014. Indigenous cow inmilk and milch productivity increased from 2.46 Kg. to 4.07 Kg. per animal per day and 1.35 Kg. to 2.52 Kg., respectively. Productivity of indigenous inmilk and milch cow was less than half of crossbred inmilk and milch productivity but its productivity slowly increased. The productivity of buffalo inmilk and milch increased from 3.50 Kg and 2.25 Kg. to 4.87 Kg. to 3.12 Kg. during the study period. The productivity of goat also showed somewhat upward trend but it was meager. Annual wool productivity increased from 993 gram in TE 1987 to 1263 gram per sheep in TE 2008 but declined in later periods. The productivity of improved poultry layer was found around 2.4 times higher than desi poultry.

Compound growth rate of crossbred cow milk production was higher in majority of the districts, except Junagadh. Although, some of the districts which had higher positive growth rates turned down to negative growth rates in Period-II, the crossbred milk production in all the districts had admirable growth rate Period-III. The overall growth rate in Period-IV was very satisfactory. At state level, overall growth rate of crossbred cow milk production was around 13 per cent. Growth rate in indigenous milk production had declined continuously in Ahmedabad, Gandhinagar and Valsad in Period-I, Period-II and Period-III. On the whole, growth rate was positive in Period-IV except in Navsari. In case of buffalo milk production, all the districts indicated positive sign in the growth rates except Kachchh in Period-I, Gandhinagar, Bhavnagar, Kheda, Mehsana, Valsad and Dang in Period-II, Navasri in Period-III. In Gujarat state, buffalo milk production has increased at the rate of 4.41 per cent during the overall study period. The buffalo milk production of the state was growing speedily than indigenous cow. In case of goat milk production, the growth
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Rate was lower than crossbred, indigenous and buffalo. Overall growth rate in Period-IV for goat milk production was 1.98 per cent.

The instability indices revealed that the crossbred cow milk production was highly instable across the districts and state level as well. Overall instability was 16 per cent in Period-IV at state level. In case of indigenous cow milk production, overall instability in Period-IV was the highest in Kachchh (59%). Instability was reported to be lower in indigenous cow than crossbred cow milk production. Buffalo milk production was more stable than crossbred and indigenous cow milk production. The overall instability in buffalo milk production in Ahmedabad, Kachchh, Kheda, Panchmahal, Surendranagar, Valsad and Dang were observed higher than other districts. The goat milk production at state level became more stable as instability progressively declined from Period-I to Period-III.

Compound growth rates in total milk production had increased except in Kachchh in Period-I. Growth rates were reasonable in all the districts during recent period. Milk production positively increased at the districts level during Period-IV. State and national level, milk production increased at 4.85 per cent and 4.19 per cent in Period-IV. World milk production increased slowly comparing national milk production. The egg production of desi poultry in Bhavnagar and Jamnagar districts registered negative growth rates whereas, Banaskantha, Sabarkantha and Vadodara registered positive growth rates in the all the four periods. The overall egg production at state level increased at the rate of 2.04 per cent in desi layer. Improved poultry growth rate in egg production has splendidly increased mainly in Ahmedabad, Banaskantha, Anand, Bharuch, Bhavnagar, Patan, Rajkot, Surat and Tapi, Vadodara and Valsad in recent times. Growth in improved egg production was more rapid than desi poultry. In case of the total poultry egg production, Ahmedabad, Bhavnagar, Anand and Patan registered commendable growth rates during the study period. The growth rate in the overall period for total egg production in Gujarat and India were at the 5.94 and 5.64 per cent, respectively in Period-IV. On the other hand, growth rate in world egg production has steadily declined in Period-I, Period-II, Period-III. With respect to total wool production, growth rate in districts, state and national level indicated slow growth and negative in many cases.

Total milk production showed higher volatility in the districts viz., Amreli, Banaskantha, Jamnagar, Junagadh and Kachchh in Period-I. Instability in Period-II and Period-III has declined in many districts and state level as well. In
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Gujarat, instability has dropped from 6 per cent to 1 per cent during Period-I to Period-III. Instability in national milk production was 1 per cent in all the four periods. Improved egg production was more unstable than desi egg production. Instability of total egg production in Gujarat has gradually increased in Period-I, Period-II and Period-III. Wool production was also highly fluctuating as large number of districts has reported higher level of instability. Instability in Gujarat and India has steadily declined during the study period.

Gujarat contributed 8 per cent of total milk production of India. The share of national milk and egg production in world milk and egg production has also increased. The share of wool production in national level showed mixed trend mainly due to slow growth rate in wool production and negative in some period. India’s share was around two per cent in world wool production. Species-wise share of crossbred cow in total milk production increased during the study period. Conversely, the share of indigenous slowly declined in total milk production. Buffalo shared more than 50 per cent milk in total milk production but showed a declining trend in past one decade. In case of goat milk, percentage share has reduced to 2.29 per cent in 2014-15. Desi poultry share in total egg production declined while the share of improved layer enhanced during 1985-86 to 2014-15.

District-wise share in total milk production has increased over the period in Ahmedabad, Banaskantha, Sabarkantha, Surendranagar, Surat and Tapi. Both Banaskantha and Sabarkantha contributed more than 20 per cent in total milk production of the state. In case of egg production the share declined in majority of the districts. Around 80 per cent of total egg production contributed by Ahmedabad, Bhavnagar, Anand and Surat and Tapi in TE 2014. Percentage share has increased in Amreli, Kachchh, Sabarkantha and Surendranagar during TE 1987 to TE 2014 in total wool production. Kachchh district contributed approximately 30 per cent in total wool production during TE 2014. Bhavnagar, Jamnagar, Banaskantha and Rajkot were major contributors in total wool production. Per capita availability of milk and egg in Gujarat increased at a faster rate than India. Per capita availability of milk in Gujarat and India increased to 492 gram/day and 307 gram/day in 2014-15. Per capita egg availability in Gujarat and India increased to 25 egg/annum and 61 egg/annum, respectively from 2000-01 to 2014-15. Meanwhile, per capita milk and egg consumption per annum in rural and urban area also rose. On the flip side, per capita wool availability showed declining tendency.
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The share of cattle population in national and state livestock population was found to decline. The share of buffalo in total livestock population at state and national level increased. Share of sheep population showed a mixed trend at national and state level, the share of goat population was found almost stable. Horses and ponies, mules & donkeys, camel, dog, and rabbit had negligible share. The results of the TPM change in the composition of bovine population in Period-I revealed that farmers occupied 40 per cent of previous period share of crossbred cow inmilk and milch population during current period. Indigenous inmilk retained its 90 per cent of previous share in current period. Retention in all the categories of livestock population showed higher probability in Period-II than Period-I. Buffalo milch population retained 100 per cent in Period-I, Period-II and Period-III. During recent decade in Period-III, both crossbred inmilk and milch retained 40 per cent of their previous share in current time. Indigenous cow inmilk and milch as well as buffalo inmilk population retained 90 per cent of their previous share in current time. The TPM in Period-IV showed that crossbred inmilk population retained 43 per cent in current time. Buffalo inmilk become unstable category in Period-IV. Buffalo milch category in Period-IV retained around 62 per cent share while it was 100 in all the other three periods.

The results of TPM for dairy products export in Period-I indicated that United Arab Emirates was more unstable as it had zero per cent retention. It had gained from Bangladesh, Algeria Nepal and others. Bangladesh (0.1112) and Nepal (0.20) showed poor retention probability. Others countries were stable importers in Period-II as reflected by a higher probability retention of 66.67 per cent. Bangladesh and Nepal recorded moderate level of retention of 30 per cent in this period. Egypt Arab Republic recorded a low level of retention (10%) but gained from Bangladesh (20%) and United Arab Emirates and Singapore (30%). Retention probability was found lower in United Arab Emirates and Singapore. During Period-III, United Arab Emirates was most unstable country for Indian dairy export while the group of other countries had the retention of 31.58 per cent which implied that dairy export expected to be shifted towards other countries.

TPM of the Indian poultry products export concluded that Angola and Qatar has come out as most stable countries in the poultry export with the retention of 70 per cent and 50 per cent of its previous share in current time, respectively during
Period-I. On the contrary, United Arab Emirates, Oman and Kuwait were highly unstable. In Period-II, Afghanistan was most unstable importer of Indian poultry export with zero per cent retention. Oman and United Arab Emirates recorded moderate level of retention. In Period-III, Angola emerged as the most stable importer of poultry while United Arab Emirates was not a loyal market.

TPM of meat and its products export revealed that Malaysia with the highest retention probability of 60 per cent emerged as the loyal market followed by others countries group (55.56%) and Jordan (50%), respectively. Philippines and United Arab Emirates were most unstable importers as they retained only 20 per cent of previous share in current time. In case of Period-II, Others countries were found to be the stable market with the retention of 60 per cent. Conversely, Egypt Arab Republic was found to be the most unstable importer showing only 10 per cent retention. During overall Period-III, other countries followed by United Arab Emirates were found to be moderately stable importers. Retention probability of Egypt Arab Republic was found low. Malaysia, United Arab Emirates and Vietnam Social Republic were moderately stable markets for meat and its products.

India’s share in world livestock basket is meagre except to meat and egg. Share of bovine meat increased from 0.96 per cent to 6.94 per cent during 1995-96 to 2013-14. The share of sheep and goat meat gradually rose after 2008-09. Poultry meat had negligible share in the world poultry trade mainly due to high domestic demand for poultry meat and egg. The share of butter, WMP, condensed milk and cheese and curd were less than one per cent in world livestock market. From India SMP and WMP were competitive while butter and condensed milk were not competitive in global market. The value of the NPC was less than one during the study period in bovine meat. India had competitive advantage for the export of pig meat but NPC was found 1.39 and 1.28 during 2012 and 2013, respectively. Poultry meat was not competitive in the initial year but afterwards the NPC of the poultry meat declined and became competitive. NPC of egg declined after 2001. The NPC of condensed milk was more than one except 1995 and 1997. The result of RCA was more than one for bovine meat and indicated a larger comparative advantage. RCA for egg was more than one till 2009, thereafter it turned down to less than one. On the contrary, the value of RCA in majority of the dairy products such as butter, WMP, condensed milk and cheese and curd was less than one.
Breusch and Pagan LM test confirmed that RE was better than the pooled model. Hausman specification test preferred fixed effect model. Livestock GDP (lnY
In
) in dairy export was found to be negative and statistically significant. GDP of importing country (lnY
j
it
) was positive and significant in dairy and meat products export. An one per cent increase in the GDP of importing country raised 11.08 per cent dairy exports and 7.31 per cent poultry export, respectively. Population of importing country (lnP
j
it
) was negative but non-significant in dairy export but found statistically significant for the poultry and meat products export. The coefficient of population of India (lnP
i
it
) was found significant and had positive sign. The coefficient of per capita income of India (lnY
inpc
it
) in poultry exports was -13.28 and significant. However, lnY
inpc
it
was non-significant in case of meat and its products. Per capita income of importing country (lnY
j
ipc
it
) positively influenced the poultry export. Coefficient of lnTO
j
it
was found positive in dairy and meat product and the value was 6.99 and 5.07 in dairy and meat products, respectively. Real exchange rate (lnRER
j
it
) was not significant in dairy and poultry products export while it was found positive and statistically significant in the meat products export. Coefficient of distance variable (lnD
ij
) was found negative (-2.57) but non-significant for dairy export whereas in case of poultry, it was significant (-4.74). On the contrary, coefficient of lnD
ij
was significant and had positive sign in meat and meat products. Coefficient of Asian dummy (ASIA
j
it
) was found non-significant in dairy and meat and its export but coefficient was negative (-6.71) and significant in poultry. European country dummy (EU
j
it
) in poultry export was found negative.

Policy Implications

The important policy implications emerged is described as follows.

(1) Livestock sector is dominated by small and marginal farmers. Therefore, efforts ought to be made for doubling farm income across the farm household. Besides, incentives ought to be facilitated through financial assistance, improved technologies, extension services, improve the productivity of indigenous animals and their conservation.

(2) Poultry sector gained momentum in present times particularly improved poultry due to high productivity and private sector participation. Appropriate strategies must be made to rise and conserve the productivity of desi poultry.
breeds and integrate small farmers who mainly rely on backyard poultry with corporate through SHG or co-operatives.

(3) India is the major contributor in world milk production but has meager share in dairy trade. There is vast scope to raise the production and productivity of livestock breeds particularly indigenous species for creating huge export surplus. There is need to maintain the quality parameter and safety standard for hygiene to create reputed image in world market.

(4) For competitive livestock production, export subsidies need to be reduced by the developed countries and meanwhile efforts must be made to enhance the production efficiency in domestic market.