

Investments, value of output and trade in livestock sector in India: Pre- and post-WTO era*

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ABSTRACT

The domestic and international economic environment is changing rapidly since implementation of WTO agreements and rules by the early 1990's. The livestock sector is a promising sector and is playing vital role in agricultural economy. The 11th Five Year Plan (2007–12) and National Agricultural Policy (2000) have given much focus on livestock sector to achieve the target growth rate of 4% in the agricultural sector. However, there is a decline in public investment in both agriculture and livestock. There is a notion that livestock is a neglected sector in terms of investment and its distribution is also skewed. The investment in livestock sector was not substantial compared to its value of output. India has a tremendous potential to produce and export livestock and its products in the present liberalized era. The present study has analyzed the growth rates and trends of government investment on animal husbandry and dairy, livestock GDP and trade during pre- and post-WTO era.

The results showed that Government investment on animal husbandry and dairying (GEAHD) has increased one-and half-fold in real terms during pre-WTO period particularly in 80's compared to 70's. But the same trend was not followed during 90's onwards. During post WTO period, from 90's onwards, it is declining which is a serious concern and needs policy attention. Its overall annual compound growth rate as well as in 80's and 90's decades, and during WTO regime was negative but value of output growth rates during these periods increased varied from 4 to 5%, which is paradoxical. Milk group has contributed major share in livestock GDP during 1970–2004. The growth rate in livestock GDP is steady at about 4%. This study showed that meat products constituted the largest share in the total exports. India had been the net exporter of meat products from 1981 to 2001, but in dairy products net exporter in the post WTO period. India remained net importer of animal fats and hides and skins. These results have important policy implications. Indian Government should increase government spending to increase livestock production and which in turn will increase livestock export.

Key words: Government policy, Government investment in livestock, Livestock GDP, Trade, Investments in agriculture

The domestic and international economic environment is changing rapidly since the implementation of the WTO agreements and rules by the early 1990's. India's programme of economic reforms and trade liberalization opens significant market-led opportunities for the livestock sector. Economic liberalization is opening up opportunities for the expansion of livestock sector. The 11th Five Year Plan (2007–12) and the National Agricultural Policy (2000) gave much focus on livestock sector to achieve the target growth rate of 4% in the agricultural sector.

The livestock sector is a promising sector and is playing vital role in agricultural economy. Livestock contributes to 27% (2006–07) of agricultural GDP. Total export earnings

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from livestock, poultry and related products were Rs 5,120 crore in 2004–05 (Economic Survey 2005–06). Pratap *et al.* (1999) reported that the value of output from livestock sector and its components registered positive and significant growth rates except wool and hair. Despite the fluctuating growth rate in crop sector, the growth rate in livestock sector is steady. The steady and sustainable growth in livestock sector has been achieved despite the fact that the investment in this sector was not substantial compared to agriculture.

Several development economists see investments as the most important single factor in the growth process ((Nurkse 1953, Lewis 1955, Kuznets 1965, Schultz 1965). The decline in public investment has emerged as an important issue in recent policy debate. The time has come to analyze, discuss and debate on the validity of present policies towards investments in livestock in particular and agriculture in general.

The share of total agriculture spending going to animal husbandry and dairying activities ranged from 6 to 16% from the Fourth (1969–74) to the Eighth (1992–97) Five Year Plan. Until 1992, animal husbandry accounted for about 65% of the total spending on animal husbandry and dairying. Under the Eighth plan, however, the share of animal husbandry fell to 31%.

Wright (2009) reported that the share of the value of livestock in agricultural GDP has been rising steadily from about 16% in the early 1970s to 26.6% in 2006/07, but government expenditure is falling. Despite its growing importance, government expenditure on livestock as a proportion of total spending on agriculture has generally been falling for the past 40 years (although it did increase during the Tenth Five-Year Plan, 2002–07). Nevertheless, as a percentage of the value of output, public expenditure has fallen over the past 15 years from about 3.5% to just over 2%. BIRTHAL *et al.* (2002) reported that the contribution of livestock to AgGDP however increased from 18% in 1980s to 22% in 1990s. Since 1980, livestock GDP has been growing at an annual rate of about 6%, which is higher than the growth in AgGDP and GDP.

India has tremendous potential to produce and export livestock and its products in the liberalized era. In India's export trade, the export earnings is Rs 5 120 crore from livestock, poultry and related products, out of which, export earnings of Rs 1 720 crore come from meat and meat products. The demand for livestock products is increasing at a high rate in the domestic market and simultaneously, in the international trade, the demand for value-added livestock products is increasing. In this context, analyzing the trends and growth rates of the trade of livestock and livestock products in both domestic market and international market has vital importance.

Keeping in view the scope of investments contribution in livestock sector and that India has tremendous potential to produce and export livestock and its products, it is very important to understand trends and growth rates and the interplay among investments, production and trade is very crucial. This study analyzes the trends and growth rates of government spending in livestock, production and trade and their interplay and policy implications. The specific objectives of the study are to analyze trends and growth rates of government investment on Animal Husbandry and dairying; analyze trends and growth rates of value of output of different categories from livestock sector; analyze the share of different livestock products to total exports and trends in net exports; and to examine the intricacies and interplay of investment, production and trade and suggest suitable measures to promote the growth of livestock sector.

DATA AND METHODOLOGY

The time series data were collected for the period of 1970–71 to 2003–04 at current and constant prices (1993–94) on

Government annual expenditure on animal husbandry and dairying (GEAHD), public gross capital formation in agriculture (PUGCFA), private gross capital formation in agriculture (PGCFA), total gross capital formation in agriculture (TOGCFA), annual total value of livestock output (TVOLS or production value or livestock GDP), with categories as milk group (MLKG), meat group (MTG), other livestock products (OLPT), exports and imports and trade data. The important sources of data are CSO, National Accounts Statistics various issues and the CSO website, Basic Animal Husbandry Statistics various issues (1999, 2006), Economic Survey (various issues), Five Year Plans reports, Ministry's of Agriculture, Department of Animal Husbandry and Dairying, Department of Agriculture and Cooperation, All India Rural Debt Survey, Agricultural Statistics at a glance, NABARD website and FAO stat website.

Using all-India time series data for 1970–2004, decade wise, pre (before 90's) and post (after 90's) WTO periods analysis was done. Means, trends and compound growth rates were estimated for variables namely; government expenditure on animal husbandry and dairying, public, private and total investment in agriculture, value of output of milk group, meat group, others, exports and imports of livestock products. The trends and growth rates of investments, production and trade in livestock sector were examined and their implications were compared.

RESULTS AND DISCUSSION

The average annual values and trends of investments in livestock and agriculture during pre and post WTO regime are in Table 1. Government expenditure on animal husbandry and dairying (GEAHD) increased one-and-half folds in real terms before WTO regime particularly in 80's compared to 70's. However, this trend did not continue in the later decades. The situation worsened more during WTO regime (after 90's). It is a serious concern and needs policy attention. The share of GEAHD in total gross capital formation in agriculture was nearly 3% during 1970's, it declined to 2% during 1990's and further to 0.5% during 2000. The share of GEAHD in public, private and total GCF in agriculture has

Table 1. Investment trends in livestock and agriculture in India during pre and post WTO regime (Rs crore at 1993–94 prices)

Period	GEAHD	Public GCFA	Private GCFA	Total GCFA
70's	316.8	4642.6 (6.8)	6948.9 (4.6)	11600.8 (2.7)
80's	497.1	6423.8 (7.7)	8568.9 (5.8)	14686.3 (3.4)
90's	268.3	4331.8 (6.2)	11069.4 (2.4)	15408.4 (1.7)
00's	94.7	4338.4 (2.2)	13630.9 (0.7)	17969.3 (0.5)
Before 90's	382.8	5313.4 (7.2)	7210.7 (5.3)	12401.8 (3.1)
After 90's	218.7	4333.7 (5.0)	11801.3 (1.9)	16140.1 (1.4)
Overall	279.4	3765.4 (7.4)	5694.4 (4.9)	9390 (3.0)

Figures in parentheses are percentages of GEAHD with column variables.

Table 2. Compound annual growth rates of investments in livestock and agricultural during pre and post WTO regime (percentages)

Period	GEAH&D	Public GCFA	Private GCFA	Total GCFA
70's	6.00	9.40	7.40	8.30
80's	-1.20	-4.90	1.40	-1.30
90's	-19.10	-0.40	3.10	2.60
00's	15.10	1.10	9.30	7.30
Before 90's	2.90	1.50	3.80	2.90
After 90's	-10.40	0.01	3.00	2.50
Over all	-2.60	1.10	3.50	2.80

been declining since 90's. The same trend was observed during post WTO regime compared to pre WTO period. The growth rates of public investment in livestock and total agriculture have shown no clear trends during the study period. However, the private investment in agriculture has been increasing from 1990's onwards.

The annual compound growth rates of investments in livestock and agriculture during pre and post WTO regime are shown in Table 2. The GEAHD historical annual compound growth rate (-2.6%), the growth rate in 80's (-1.2%), 90's (-19.1%) decades and during WTO reforms (-10.4%) were negative. It appears that livestock sector has been neglected in terms of investments. This is a serious concern and needs policy attention. Almost the same trend

was noticed in public investment in agriculture except that its historical growth rate was positive. Contrastingly, private investment in agriculture had been increasing during 90's.

The trends and growth rates of value of outputs of different categories of livestock sector during pre and post WTO regimes have been shown in the Table 3. The share of value of output of milk group in total value of livestock output increased in each decade as well as pre and post WTO periods. The share of value of meat groups increased in alternative decades whereas the share of other group decreased in each decade. Milk group contributed 64.35 per cent in total value of livestock output during 1970–2004. The share of meat group was more in total value of livestock output during WTO regime compared to other group.

It is evident that growth rate in value of livestock output is steady and sustainable at about 4%. Milk group had a major influence on growth of livestock output value during 70's, 80's and 90's. During WTO regime, the growth rate in value of meat group was more compared to value of other groups. Historical growth rates revealed that the value of milk group had grown at about 4.5% and meat group at around 4% and other groups at approximately 2.8% and total value of output has grown at about 4%.

Comparisons of growth of investments and livestock GDP

The growth rates of investments and livestock GDP during pre and post WTO regimes are shown in Table 4. The GEAHD historical annual compound growth rate (-2.6%),

Table 3. Trends and growth rates of output of different categories from livestock sector during pre and post WTO regimes (Rs crore at 1993–94 prices)

Years		Milk group	Meat group	Others	TVOLS
70s	Mean values	17603.5	5340.9	6849.1	29793.5
	Percentage	59.09	17.93	22.99	100.00
	Growth rate	4.31	3.18	2.67	3.72
80s	Mean values	29775.1	7844.6	9384.2	47003.9
	Percentage	63.35	16.69	19.96	100.00
	Growth rate	5.54	5.69	2.43	4.95
90s	Mean values	46636.2	12477.7	11540.6	70654.5
	Percentage	66.01	17.66	16.33	100.00
	Growth rate	4.22	3.57	2.96	3.90
00s	Mean values	60739.8	15882.5	14418	91040.3
	Percentage	66.72	17.45	15.84	100.00
	Growth rate	2.64	6.77	4.93	3.71
Before 90s	Mean values	23689.3	6592.8	8116.7	38398.7
	Percentage	61.69	17.17	21.14	100.00
	Growth rate	4.98	3.83	2.60	4.27
After90s	Mean values	50665.8	13450.5	12362.7	76479
	Percentage	66.25	17.59	16.16	100.00
	Growth rate	3.83	4.12	3.17	3.77
Overall	Mean values	34797.3	9416.5	9865.0	54078.8
	Percentage	64.35	17.41	18.24	100.00
	Growth rate	4.52	3.96	2.78	4.07

Table 4. The growth rates of investments and livestock GDP during pre and post WTO regime

(per cent)		
Period	Investment growth rates	Livestock GDP growth rate
70's	6.00	3.72
80's	-1.20	4.95
90's	-19.10	3.90
00's	15.10	3.71
Before 90's	2.90	4.27
After 90's	-10.40	3.77
Over all	-2.60	4.07

the growth rate in 80's (-1.2%), 90's (-19.1%) decades and during WTO reforms (-10.4%) were negative but value of output growth rates during the same period were 4.0%, 5.0%, 4.0%, 4.0% respectively which is paradoxical. It appears that no proper economic rationale was used in allocation of funds in livestock sector. It was found that the growth in livestock GDP was steady but investments were fluctuating.

Trends in investments and livestock GDP: The trends of investments in livestock and livestock GDP are depicted in this section. The time series data on LSGDP and investment

are shown in Fig 1. Despite fluctuating investments in livestock sector, LS GDP trend was found increasing steady.

Trends in livestock trade

The share of different livestock products to total exports and trends in trade during pre and post WTO regime are presented in Table 5. The results showed that meat products constituted the largest share in the total exports. However, the share has been gradually declining. Contrastingly, the share of dairy products in the total exports has been slowly rising during 1991–2001. The export data revealed that India had been the net exporter of meat products from 1981–2005, but became dairy products net exporter in the post WTO regime only. India remained net importer of animal fats and hides and skins. But the net import has been declining for animal fats and increasing for hides and skins. The over all scenario is that net export of livestock products in the country has substantially increased from \$29 063 thousand in 1986 to \$467 948 thousand in 2005. Bardhan (2007) reported that the rates of growth in the values of livestock products exports were significantly higher in post-WTO period, indicating that the WTO regime has provided favourable environment for enhancing India's potential in livestock sector trade.

Policy implications: The results of the study have revealed that investment in livestock sector has increased one-and-half-

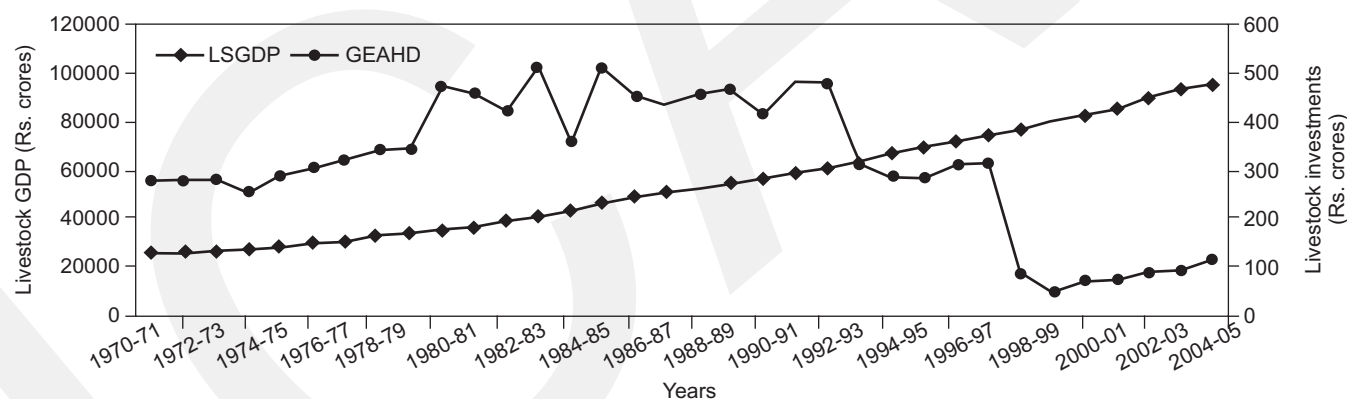


Fig 1. Trend of livestock GDP and investment

Table 5. The share of Different livestock products to total exports and trends in net exports during pre and post WTO regime

Year	Total exports					Net export (Export-Import)				
	Meat and meat preparation	Dairy products +egg	Animal fats	Hides and skins	Total	Meat and meat preparation	Dairy products +egg	Animal fats	Hides and Skins	Total
1981	74 651 (91.76)	6 070 (7.46)	0 (0)	638 (0.78)	81 359 (100)	73 818	-156 785	-53 459	224	-136 202
1986	61 296 (95.03)	3 166 (4.91)	14 (0.02)	23 (0.04)	64 499 (100)	61 166	-28 735	-117	-3 251	29 063
1991	94 901 (91.37)	8 299 (7.99)	15 (0.01)	653 (0.63)	103 868 (100)	94 893	-2 385	-235	-18 377	73 896
1996	195 185 (85.74)	32 004 (14.06)	121 (0.05)	321 (0.14)	227 631 (100)	195 080	30 534	-1349	-54 278	170 981
2001	262 936 (77.10)	75 844 (22.24)	388 (0.11)	1873 (0.55)	341 041 (100)	262 362	68 432	-426	-84 334	246 034
2005	376 943 (33.08)	150 714 (13.22)	-	11655 (1.02)	1 139 580 (100)	376 651	135 895	-	-35 663	467 948

Source: Singh. 2004.

folds in real terms during pre WTO regime particularly in 80's compared to 70's. But the same trend was not followed in the rest of the decades. During WTO regime i.e. from 90's onwards investment in livestock has been declining, which is a matter of serious concern and needs policy attention. Milk group has contributed major share in total value of livestock output during 1970–2004. The growth rate in livestock GDP is steady at about 4% but investments are fluctuating.

The comparative investments in livestock in relation to their output contribution reveals an interesting finding. The GEAHD overall annual compound growth rate (–2.6) as well as in 80's (–1.2) and 90's (–19.1) decades and during WTO regime (–10.4) is negative but value of output growth rates during the same period are 4%, 5%, 4%, 4%, respectively, which is a paradoxical phenomenon. It seems that there is no proper economic rationale in allocation of funds in livestock sector. The trend of livestock investment is fluctuating but its GDP trend is steady and increasing.

It shows that meat products constituted the largest share in the total exports. However, the share has been gradually declined. It was found that India was the net exporter of meat products from 1981–2005. But in case of dairy products net exporter only in the post WTO period. India remained net importer of animal fats and hides and skins.

The results of this study have important policy implications. Indian Government should increase government spending to increase livestock production and which in turn

will increase livestock export.

REFERENCES

- Bardhan. 2007. India's trade performance in livestock and livestock products. *Indian Journal of Agricultural Economics* 62 (3): 411–25.
- Birthal Pratap S, Joshi P K and Anjani Kumar. 2002. *Assessment of Research Priorities for Livestock Sector in India*. NCAP Policy Paper No.15, published by Director, NCAP.
- Economic Survey. 2004–5. *Ministry of Finance*. Government of India, New Delhi.
- Economic Survey. 2006–07. *Ministry of Finance*. Government of India, New Delhi.
- Kuznets Simon. 1965. *Economic Growth and Structure*. New York: W.W. Norton & Company.
- Lewis Arthur W. 1955. *The Theory of Economic Growth*. Allen and Unwin, London.
- Nurkse Ragnar. 1953. *Problems of Capital Formation in Underdeveloped Countries*. Oxford: Basil Blackwell & Mott, Ltd.
- Pratap S Birthal, Anjani Kumar, Ravishankar A and Pandey U K. 1999. *Sources of Growth in the Livestock Sector*. NCAP Policy Paper 9.
- Singh S P. 2004. Post WTO Era: Impact on export prospects of Livestock products. NABARD occasional paper 32. 2005. Year data compiled from Basic Animal Husbandry Statistics. 2006.
- Schultz T W. 1965. *Transforming Traditional Agriculture*. New Haven, Yale University Press.
- Wright Iain A. 2009. The future looks good: With the right support, policies and investment. *Veterinary Today* 1 (2).