CHAPTER I

LIVESTOCK SECTOR IN THE ECONOMY OF PAKISTAN

Agriculture sector plays vital role in Pakistan's economy. It contributes around 24 percent to the Gross Domestic Product (GDP) of Pakistan. As the largest contributor towards national income, the agriculture sector broadly includes the sub-sectors of crops, livestock, fisheries, wild life and forestry. The livestock sub-sector accounts for about 36 percent of the agricultural GDP that is higher than even the major crops; while it shares 9 percent of national income. It is also a major source of foreign exchange earning (i.e., about 11%) through exports of woollen carpets, leather, and leather products, wool, hides, skins and other products of livestock origin.

Livestock production and marketing activities constitute an important source of livelihood of the poor landless and small farmers. Livestock sector provides nutritive food products like milk, beef, mutton, poultry and eggs that make up an important constituent of human diet in the country. A small part of these products is consumed at the farm and the rest is sold for cash to purchase other necessities of life[1].

---

[1]Iqbal, M. "Major Constraints to Livestock Production in Pakistan". Paper Presented at the First SAARC Training Programme on Socio-Economic Techniques to Identify Constraints to Agricultural Production in Pakistan, Held at NARC, Islamabad, May 29-31, 1994.

The animal dung is an important source of organic manure which helps in conserving long term soil fertility. Moreover, it also improves the structure of the soil and helps restore micro-nutrient balance of soil in intensively cultivated areas.

Livestock Inventory and Growth

Table 1.1 provides detailed information about livestock population and changes in its composition and mix overtime. These trends are also depicted in Figure 1.1. The comparison of livestock population during 1970-71 with that of 1994-95 reveals that the cattle population increased at the composite rate of 1.10 percent annually (i.e., from 14.8 million to 17.8 million)[2]. Buffaloes increased at a compound rate of 3.22 percent per annum (i.e., 9.7 million in 1970-71 to 19.2 million in 1993-94). Goats experienced an annual increase of 4.14 percent, while sheeps increased at the rate of 2.29 percent during the period of 1971-1994. Maximum increase has been observed in the case of poultry, i.e., 9.40 percent per annum, during the same period.

The above mentioned trends show that the buffaloes population increased at an higher rate than that of cattle. Thus, dairy buffalo dominates the milk production system in Pakistan and accounts for almost three fourths of the total milk

---

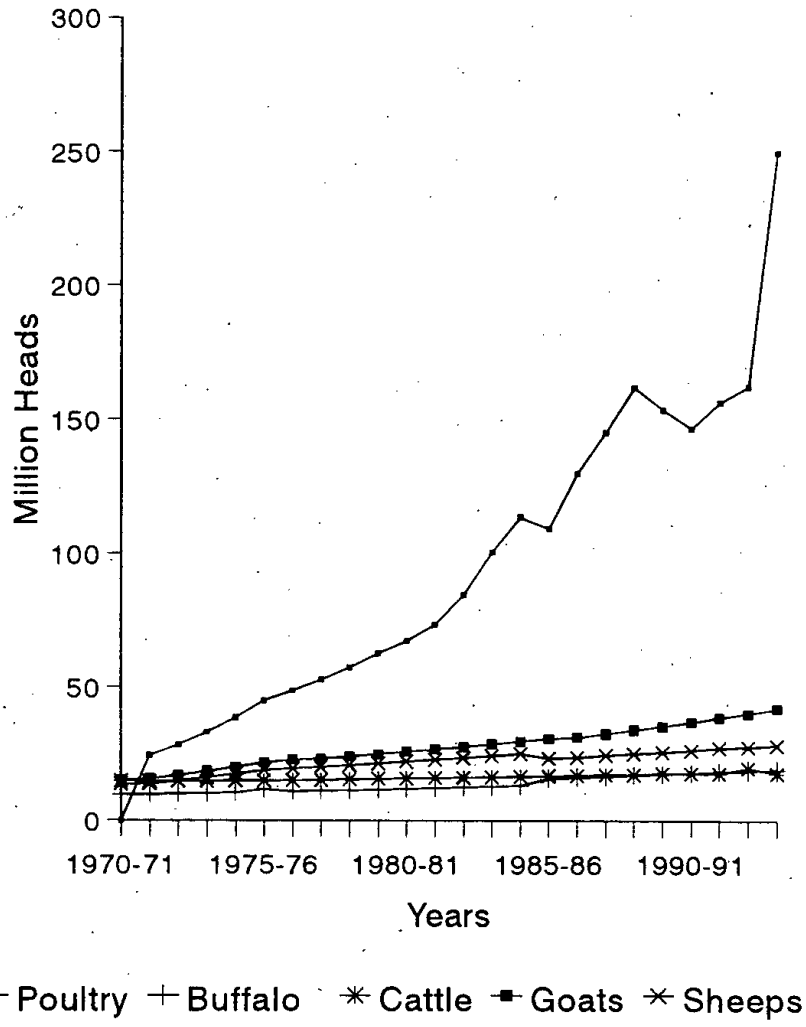
[2] Growth rates are computed using equation: $\ln(Y_t) = a + bt$, where $\ln(Y)$ represents the natural log of livestock population in year t, t is time period and b is regression coefficient. Annual growth rate can be computed by multiplying b with 100.

Table 1.1: Trends in population (millions) of buffalo, cattle, goats, sheep and poultry.

Year	Buffaloe	Cattle	Goats	Sheep	Poultry
1970-71	9.70	14.80	15.00	13.60	0.00
1971-72	9.80	14.60	15.60	13.70	24.30
1972-73	10.00	14.70	16.90	14.80	28.30
1973-74	10.20	14.70	18.40	16.10	33.00
1974-75	10.40	14.80	20.00	17.40	38.50
1975-76	11.60	14.90	21.70	18.90	44.90
1976-77	10.90	15.00	22.70	19.50	48.60
1977-78	11.10	15.20	23.20	20.10	52.70
1978-79	11.30	15.40	24.00	20.70	57.40
1979-80	11.60	15.60	24.90	21.40	62.60
1980-81	11.90	15.80	25.80	22.10	67.40
1981-82	12.10	15.90	26.70	22.80	73.50
1982-83	12.40	16.10	27.70	23.50	84.50
1983-84	12.70	16.30	28.70	24.20	100.60
1984-85	13.10	16.50	29.70	25.00	113.70
1985-86	15.70	16.70	30.80	23.30	109.50
1986-87	16.10	16.90	31.20	23.70	130.00
1987-88	16.50	17.10	32.60	24.50	145.40
1988-89	17.00	17.20	34.00	25.10	162.10
1989-90	17.40	17.80	35.40	25.70	153.90
1990-91	17.80	17.70	37.00	26.30	146.90
1991-92	18.30	17.70	38.70	27.40	156.70
1992-93	18.70	19.80	40.20	27.70	162.60
1993-94	19.20	17.80	42.00	28.30	250.00

Source: Government of Pakistan (1995), Economic Survey, 1994-95, Finance Division, Economic Advisor's Wing, Islamabad.

Figure 1.1: A Graphical Representation of Buffalo, Cattle, Sheeps, Goats and Poultry Population.



production. Among buffaloes, Nili-Ravi is the most productive breed and thus, is very popular in Pakistan. Cattle is an all-purpose animal, it is kept for milk and also for draught power. The demand for draught power has undoubtedly increased over time mainly because of higher cropping intensities as well as increase in net sown area. However, tractorization in agriculture has reduced the relative demand for animal power. The demand for cow milk is also low because of less fat contents than that of buffalo milk. Another important factor is that cattle is less tolerant to the hot summer as compared to buffalo[3]. However, the Sahiwal and the Red Sindhi breeds, which are most popular among the cattle, are comparatively more tolerant to hot months than Friesian and Jersey breeds. Nonetheless, buffaloes are also more productive as compared to cow and are known to be better converter of poor quality roughages into milk.[4]

Productivity and Growth

Animal productivity in Pakistan is very low as compared to developed countries. For example, average milk production per

---

[3]Anjum, M. S., K. Lodhi, A.A. Raza, F. Walter, S. Krause (1989). "Pakistan Dairy Industry: Issues and Policy Alternatives". Special Report No. 14, Pakistan Economic Analysis Network Project,. USAID.

[4]Patel, R.K. "Present Status and Promise of Dairying in India". Indian Journal of Agricultural Economics, vol. 48, 1993: 1-49.

cow in U.S.A. in 1990 was about 15000[5] lbs a year; while in Pakistan this average for cows was 1553 lbs per year and the average of both cows and buffaloes was 2500[6] lbs per year. This huge gap in milk productivity very clearly shows that we in Pakistan are producing only 17 percent of the practically achievable potential milk yield per animal.

Pakistan had a population of 10.722 million heads of milch cows and buffaloes in 1990-91, which produced 11.93 million tones of milk per year. In contrast, USA had 10.2 million milch cows producing about 67 million tones of milk. This low productivity of milch animals in Pakistan can mainly be attributed to the shortage of fodder and other feed supplies and higher disease incidence. Further, low animal productivity, on one hand, and higher growth in human population, on the other, have resulted in low per capita availability of major livestock products in the country.

Though not compatible with advanced world levels, our dairy sector has in fact, made significant progress during the past over two decades. Despite this satisfactory performance, Pakistan is still unable to fill the gap between supply and demand for livestock products. According to some estimates, however old, demand for milk and meat is increasing at the rate of about

---

[5]United States Department of Agriculture. " Dairy Situation and Outlook Year Book, Washington D. C., 1993.

[6]Government of Pakistan. " Agricultural Statistics of Pakistan. Ministry of Food and Agriculture (Econ. Wing), 1991-92.

5 percent and 7 percent per annum, respectively[7]. On the other hand, a reference to Table 1.2 would show that milk production has increased from 7800 thousand tones in 1971-72 to 18006 thousand tones in 1993-94 at a composite rate of 3.97 percent annually. Total meat increased at the rate of 5.50 percent annually - 2.57 percent due to increase in beef, 1.96 percent attributable to mutton and the poultry shared about 0.97 percent.[8] If we look at the performance of beef, mutton and poultry as separate commodities, it will be seen that these have put up an annual increase of 4.31 percent, 5.86 percent and 12.01 percent, respectively, during the period 1970 to 994 (Figure 1.2). Egg production during this period increased by more than 8 times which amounted to growth rate of 9.95 percent per annum.

---

[7]Government of Pakistan (1988). "Reports of the National Commission on Agriculture". Ministry of Food and Agriculture.

[8]

$$lnTM_t - lnTM_{t-1} = \beta_1 (lnBF_t - lnBF_{t-1}) + \beta_2 (lnMN_t - lnMN_{t-1}) + \beta_3 (lnPY_t - lnPY_{t-1})$$

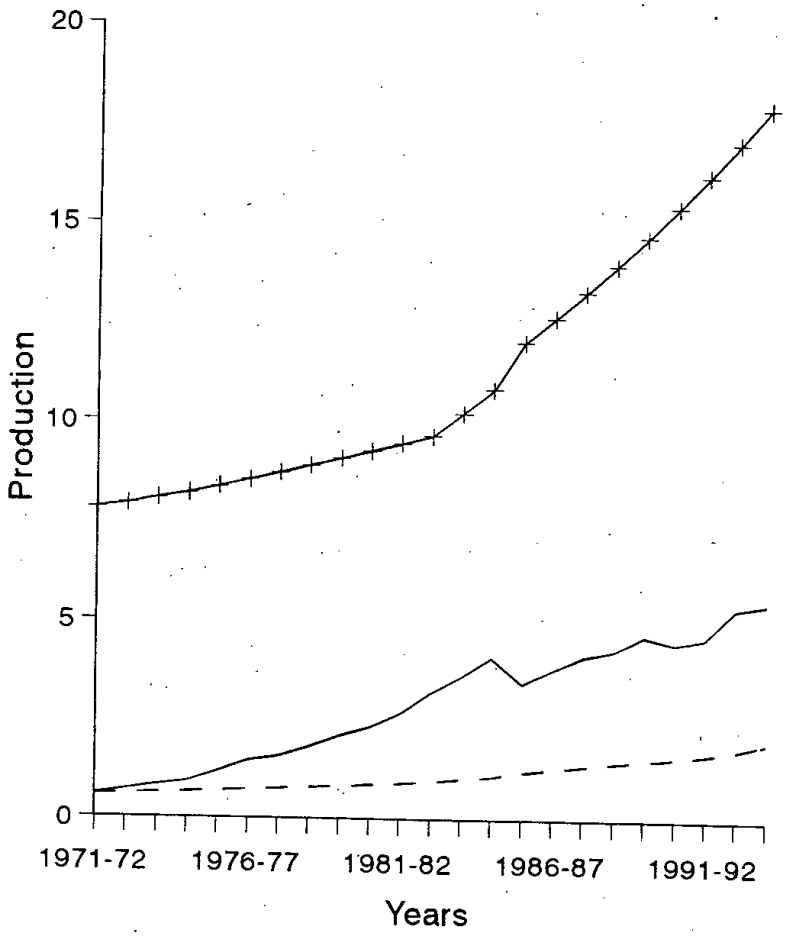
where TM is total meat (TM = BF+MN+PY), BF represents beef, MN is mutton, PY represents poultry and β_i are respective shares in total meat at time t. The term on right hand side gives rate of change in total meat at time t, which is composed of three components: 1) due to change in beef (first term on left hand side of the equation); 2) change attributable to mutton (second term on LHS of the equation); and 3) due to change in poultry meat (third term on LHS).

Table 1.2 Production Trend in Livestock Products (Figures in 000)

PERIOD	Milk	Beef	Mutton	Poultry	Total	Eggs
1971-72	7800	346	208	14	568	583
1972-73	7899	349	224	19	592	695
1973-74	8044	354	245	24	623	811
1974-75	8173	357	265	27	649	907
1975-76	8348	362	288	34	684	1159
1976-77	8524	376	303	37	716	1443
1977-78	8704	389	319	41	749	1557
1978-79	8888	404	335	44	783	1805
1979-80	9075	418	352	49	819	2094
1980-81	9267	434	370	52	856	2319
1981-82	9462	448	389	57	894	2664
1982-83	9662	464	408	75	947	3200
1983-84	10242	488	436	86	1010	3619
1984-85	10856	513	467	99	1079	4093
1985-86	12052	600	473	126	1199	3460
1986-87	12669	630	507	134	1271	3800
1987-88	13319	661	542	154	1357	4140
1988-89	14003	694	581	172	1447	4300
1989-90	14723	729	621	157	1507	4670
1990-91	15481	765	665	151	1581	4490
1991-92	16280	803	713	156	1672	4624
1992-93	17120	844	763	188	1795	5379
1993-94	18006	887	817	268	1972	5500

Source: Government of Pakistan (1995), Economic Survey, 1994-95, Finance Division, Economic Advisor's Wing, Islamabad.

Figure 1.2: A Graphical Representation of Trends in Milk, Meat and Egg Production From 1971-72 to 1993-94



Above facts manifest that our livestock sector has shown significant improvement over the last over two decades. However, the fact that embarrasses us all is that most of the increases that have been witnessed resulted from higher number of heads of animals, which indicates poor productivity per animal.

By increasing productivity per animal we would need to maintain less number of animals to feed and thus we could save area under fodder crops both in rabi and kharif seasons. The area thus released can help increase area under other important cash and food crops. Also, precious foreign exchange that is presently being spent on the import of edible oils, produced milk and pulses can be saved. Bringing more area under exportable crops like cotton and rice, would mean further addition to our foreign exchange reserves.

Dairy Farming: A Comparative View

In the western countries, commercial dairy farming is mainly based on feed grains or high green pastures. Besides this, milk producers in those countries are highly subsidized by their respective governments. On the other hand, cattle and buffaloes herds in Pakistan depend mainly on food stuffs like rice straw, wheat straw, maize, sorghum, millet, and other crop by-products and waste material. It is becoming difficult to allocate additional land to fodder because of increasing pressure of human population. In turn, number of cattle and buffaloes per acre of fodder is increasing over time, which is further deteriorating the feed and fodder situation for the livestock sector in Pakistan.

As for the structure of dairy farming in western countries, the number of dairy farms and total number of cows are declining over time, while stocking rates of cows per farm are on the increase which, in turn, is associated with significant increases in milk production per cow. The past dairy structure of USA shows that the number of dairy cows dropped from 21.9 million in 1950 to 9.84 million in 1992, while the total number of dairy farms decreased from 3.65 million to 0.22 million (17 times) in the same period[9]. As a result, the average number of dairy cows per farm has increased about eight fold.

In contrast, milk production in Pakistan is predominantly the realm of small and marginal land holders and the landless. Small farmers generally keep 1-2 milch animals as a part of mixed farming system, and they are holding about 38% of the total strength of milch animals[10]. According to another estimate, small farmers category having less than or equal to 12.5 acres (5 hectares) of land possess more than 73 percent of milch animals. The main agricultural activity of these farmers is, however, crop production. Additionally, they keep few animals for milk production either for home consumption or for sale as a supplementary source of income. Landless livestock

---

[9]United States Department of Agriculture. " Dairy Situation and Outlook Year Book, Washington D. C., 1985 and 1993.

[10]Government of Pakistan. Agricultural Census of Pakistan, 1990.

owners have also become an increasingly important contributors towards agriculture sector. These households account for about one-third of non-farm households and they have been increasing their livestock ownership overtime; almost all of these households produce milk.[11]

An important feature of this lot is that these animals are spread over such a rural area which is equipped with poor infrastructural facilities for health cover, cattle insurance, Artificial Insemination, etc. Also, these livestock owners have meager resource endowment.

Feed and Fodder Availability

The major cause of low milk output per animal in Pakistan is that of shortage of feed and fodder. The quantity of feed and fodder fed to animals is far less than their daily appetite[12]. Moreover, nutrient contents of these feed and fodder supplies are also low. Since total feed intake not only serves as maintenance ration of the animal but also partially meets the feed needs for producing milk, it is evident that adequate feeding will have more than proportional effect on milk production.

---

[11]Government of Pakistan (1988).

[12]Choudhry, A. Rauf (July, 1985). "Livestock Development in Pakistan". Pakistan Agriculture.

Iqbal (1994) in his study based on Malcolm and Hussain[13] has discussed various sources and requirements of feed in Pakistan. The sources of feed are rangelands, grazing at road sides, canal banks, grazing grass cutting from the national forests, and agro-industrial by-products. It will be observed from Table 1.3 that the crops sector contributes about 60 percent of TDN - - cereal straw (i.e., wheat and rice) provides 43 percent of total TDN and about 12 percent of DP, and the green fodder crops, i.e., berseem, sorghum and maize provide about 24 percent of crop's TDN and more than 42 percent of total crop DP. Rangelands supply 11 percent of the total TDN. Other sources include river banks, wastelands, road sides, fallow and forest grass. These together make significant contribution towards total feed resources. Iqbal (1994) further reports that cereal brans and grains contribute about 21 percent of crop DP. Cotton seed and rapeseed cakes supply about 12 percent of the DP generated from the crop sector.

The lower portion of Table 1.3 shows that the feed requirements are higher than the estimates of available feed energy and protein. This indicates that the whole herd is under

---

[13]Malcolm, H. and M. H. Hussain (1991). Pakistan Animal Feed Stuffs Policy Study. Prepared by the USAID, Pakistan Mission, Islamabad.

Table 1.3 Feed Sources, Total Nutrients Availability and Total Nutrients Requirement in Pakistan.

	TDN (million tons)	DP (million tons)
FEED SOURCES		
Crop sector	29.7	2.27
Rangelands	4.6	0.48
Other grazing	11.7	1.20
Other feed	1.3	0.37
Total Availability	**47.3**	**4.32**
FEED REQUIREMENT OF		
Buffaloes	22.69	1.93
Cattle	24.10	2.10
Sheep & Goats	8.52	0.90
Equine/Camels	4.02	0.35
Commercial Poultry	0.83	0.18
Total Requirement	**60.16**	**5.46**

Sources: FAO/ADB, 1987[14]; Malcolm and Hussein, 1991; Iqbal, 1994.

Note: according to Iqbal, these calculations have been made with the assumption that animals were only receiving 75 to 80 percent of the nutrients necessary to attain their full genetic potential, i.e., they were adjusted to their current production levels.

[14]FAO/ADB. Pakistan Livestock Sector Study. Report No. 55/87 AS-Pak 39.

nourished and, in turn, this deficiency reduces conception rate, diminishes lambing, lowers birth weight and increases mortality in youngsters.[15] The estimated shortfall is about 21 percent in both the cases, i.e., TDN and DP. According to some other estimates, animals receive even less than 70 percent of the required quantity of daily feed and fodder. At present, milch animals consume about 38 percent of all the available feed and fodder. If balanced feeding is provided to the milch animals alone, it would absorb 55 percent of the total available feed which, consequently, would further reduce the quantity of feed for the remaining herd.[16] This leads to an inevitable conclusion that if the animals are properly nourished - - availability of the feed throughout the year with some nutritional improvements, then per animal milk production as well as meat could be increased by more than 100 percent.[17]

Instead of expecting any improvement in feed situation, it is rather deteriorating further because of little scope for increasing the area under green fodder, since food grains, pulses and oilseeds are given high priority in the present system. Although the availability of dry fodder is not a problem, this, infact, is of poor quality in terms of certain nutrients and has low digestibility.[18] Moreover, the rangelands are continuously

---

[15]Jasra, A.W. (1995). Rangeland a Renewable Source of Production. Progressive Farming, Vol. 15, No. 5.

[16]Government of Pakistan (1988).

[17]Government of Pakistan (1988).

[18]Patel, R. K. (1993).

being over grazed and animals carrying capacity on per acre basis is continuously diminishing.[19]

Over-time Public Sector Investment in Animal Husbandry and Dairying Sub-Sectors

Both volume of investment on animal husbandry and dairy programmes and its overtime trends show a clear neglect on the part of government. Table 1.4 and Figure 1.3 reveal that the share of livestock sector in GDP originating in the agriculture sector has increased over time at an annual rate of 1.53 percent from 30 percent in 1970-71 to 40 percent in 1993-94 at the current factor cost. Despite its significant contribution towards agriculture, the budgetary allocations made to the livestock sector do not match with the present level of its output and future potential for growth and development.

Allocations made to the livestock sector in various five year plans are given in Table 1.5 and also graphed as Figure 1.4, which show that the highest percentage allocation to livestock sector was a little over seven percent in only two recent five year plans (i.e. 6th and 7th FYP), while in others it remained below five percent. In contrast, the crop sector is being allocated more than 90 percent of the development expenditure on agriculture. Moreover, it was being supplied with subsidized inputs (i.e., fertilizers, water, tractors). Further, all the major crops are protected through a price support system for them. In the case of livestock, there has virtually been no price support, subsidy, or

[19]Government of Pakistan (1988).

Table 1.4: Share of livestock in Agriculture and in over all economy.

(millions)

Year	GNP of Agri. (1959-60)	GNP of Livestock	Share in Agri.	GNP of Agri. (current)	GNP of livestock	Share of livestock in Agri.
1960-61	7695	2887	37.52	8184	3064	37.44
1970-71	12188	3509	28.79	16236	4794	29.53
1971-72	12611	3579	28.38	17934	5053	28.18
1972-73	12821	3651	28.48	21907	6169	28.16
1973-74	13357	3724	27.88	28084	8247	29.37
1974-75	13074	3799	29.06	33533	9629	28.71
1975-76	13659	3875	28.37	38338	11130	29.03
1976-77	14004	3977	28.54	43968	13356	30.38
1977-78	14399	4133	28.70	50567	14272	28.22
1978-79	14845	4274	28.79	54147	14822	27.37
1979-80	15826	4418	27.92	62164	16668	26.81
1980-81	16405	4574	27.88	76399	20139	26.33
1981-82	16992	4742	27.91	92216	22810	24.74
1982-83	17637	4941	28.01	99380	26740	26.91
1983-84	16521	5251	31.69	104550	31396	30.03
1984-85	18600	5584	30.02	121293	36391	30.00
1985-86	19806	5943	30.00	128801	40858	31.72
1986-87	20967	6293	30.01	135308	46450	34.33
1987-88	21540	6651	30.88	156375	57438	36.73
1988-89	23018	7044	30.60	184074	65838	35.33
1989-90	23716	7473	31.51	197441	74237	37.60
1990-91	24160	7847	32.48	233130	86219	36.98
1991-92	26456	8314	31.43	282374	100726	35.67
1992-93	25059	8814	35.17	297816	117792	39.55
1993-94	25719	9341	36.24	343592	141191	40.39

Source: Government of Pakistan (1995), Economic Survey, 1994-95, Finance Division, Economic Advisor's Wing, Islamabad.

Figure 1.3: A Graphical Representation of Livestock Share in Agriculture at Constant Factor Cost and Current Factor Cost.

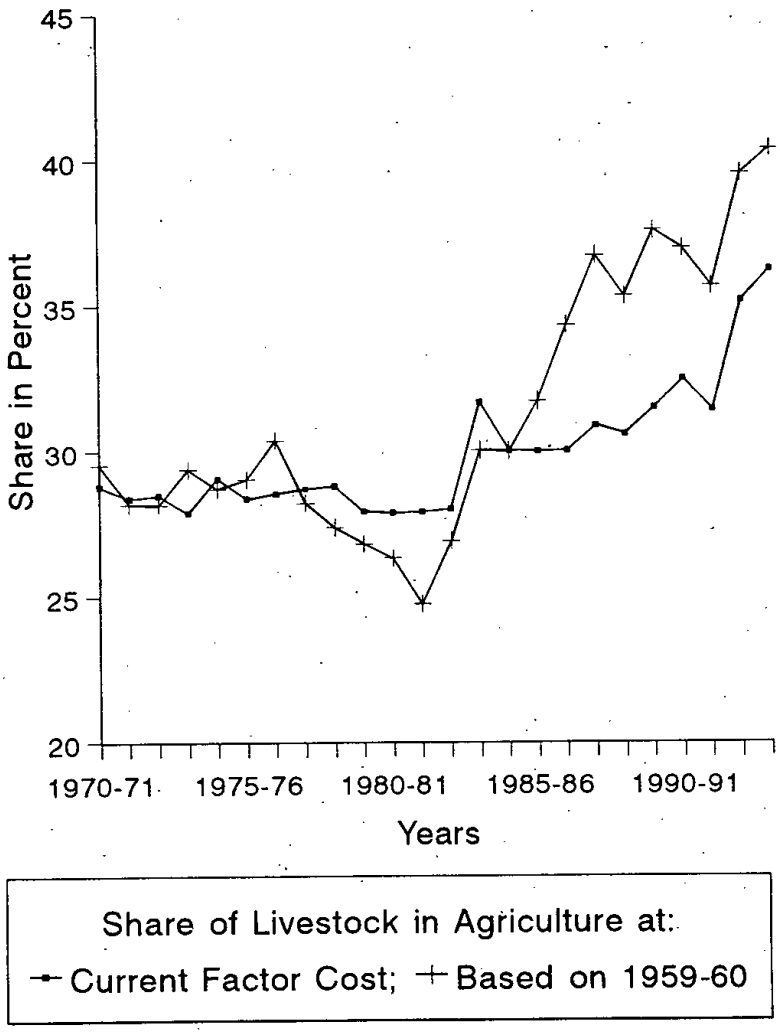


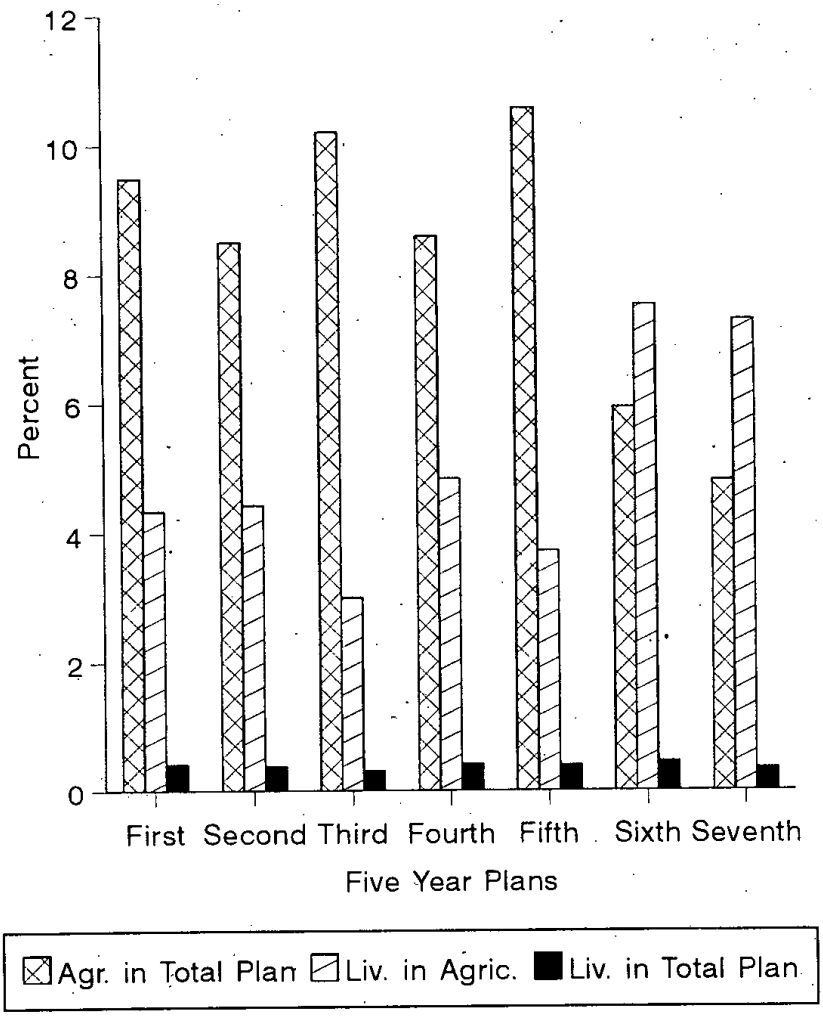
Table 1.5: Investment Pattern on Agriculture and Animal Husbandry During Various Development Plans.

Plan Period	Total Expenditure (million)	Agri. and allied activities (million)	Exp. A. H. Dairy (million)	Percent of Agriculture
First 1955-60	4860[a]	461[b] 9.49[c]	20[d] 0.41[e]	4.34[f]
Second 1960-65	10610	902 8.5	40 0.38	4.43
Third 1965-70	13500	1377 10.2	42 0.31	3.05
Fourth 1970-78	75540	6492 8.59	314 0.42	4.84
Fifth 1978-83	152610	16112 10.56	600 0.39	3.72
Sixth 1983-88	239747	14250 5.94	1071 0.45	7.52
Seventh 1988-93	324600	15600 4.81	1137 0.35	7.29

Note:- c = (b/a) x 100 e = (d/a) x 100 f = (d/b) x 100

Source:- Government of Pakistan (1995), Economic Survey, 1994-95, Finance Division, Economic Advisor's Wing, Islamabad.

Figure 1.4: A Graphical Representation of Financial Allocation to Agriculture and Livestock Sector.



development outlay. On the contrary this sector has rather been discriminated by forcing prices of livestock products below cost of production and by the imposition of heavy export tax levies on exported livestock products.

In short, the existing poor conditions of the livestock sector cannot be ameliorated without a clear-cut change in the priority setting in the public sector planned development programmes for the agriculture sector. Budget allocation in various development plans is a clear evidence of the keenness of the government in developing this highly valuable sector.