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**LIVESTOCK DEVELOPMENT IN NIGERIA:
A SURVEY OF THE POLICY ISSUES AND OPTIONS**

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Timothy O. Williams
Visiting Research Fellow
Livestock Economics Division
ILCA, Addis Ababa, Ethiopia



INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA (ILCA)

P.O. Box 5689, Addis Ababa, Ethiopia · Tel: 61 32 15 · Telex: ADDIS 21207

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Introduction

1. The livestock subsector (LSS) has always been an important component of the Nigerian economy. Livestock provide employment and income for a large proportion of the rural population and serve as an important source of protein in the diet. Despite the importance of the subsector, growth in livestock output has been slow. In the face of constraints posed by disease and ecological problems, government policies have not been totally successful in introducing or encouraging the development of basic technological and institutional changes necessary to exploit the potential that exists for an efficient growth of the LSS.
2. The anatomy of these policies is the subject of this paper. It begins with a summary description of the LSS, including an analysis of trends in livestock distribution, production, trade and consumption. A critical review of the historical evolution of government objectives and policies, from the colonial period up to 1986, sets the stage for an evaluation of past and present interventions in the LSS. Throughout the paper attempts are made to examine the political economy of policy decisions in order to explain why certain policies are chosen when other alternatives appear to be available. A discussion of the lessons and suggestions for feasible policy changes in the future concludes the paper.

Overview of the livestock sub-sector

Importance of livestock in the economy

3. The LSS contributes significantly to the national economy. In 1963, it accounted for 6% of the overall GDP and 10% of the agricultural GDP. By 1981, it constituted 5% of the total GDP and 20% of the agricultural GDP. The doubling of the share of the LSS in the agricultural GDP reflects the fall in the share of agriculture from about 60% of the GDP in 1960 to approximately 26% in 1981. The Livestock Review Mission (Federal Ministry of Agriculture, 1981) estimates that livestock production in 1981 prices amounted to about ₦ 2.0 billion (US\$2.0 billion).

Livestock population and distribution

4. Nigeria's livestock population in 1981 was estimated at about 9.3 million cattle, 8.8 million sheep, 20.8 million goats, 133.5 million poultry and 0.86 million pigs (Federal Ministry of Agriculture, 1981). Ruminant livestock distribution is limited by tsetse fly incidence and by the availability of forage. The semi-

arid ecological zone (400-900 mm rainfall/annum) which is virtually tsetse fly free, but with the lowest forage resources, previously carried over 90% of the cattle and 70% of the sheep and goats. However, recent evidence by Putt et al (1980) and Bourn and Milligan (1983) suggests that there has been a marked southward drift in Nigeria's cattle populations into the sub-humid zone (900-1500 mm rainfall/annum) partly due to the opening up of the zone with the attendant reduction in tsetse infestation and partly because of the desire of the pastoralists to overcome the feed supply problem. This movement is in line with the government's policy of relocating in the sub-humid zone a major portion of the national ruminant herd from the overstocked semi-arid zone (David-West, 1980).

5. With respect to the monogastrics, pigs are more widely distributed in the southern part of the humid zone (+ 1500 mm rainfall/annum) and in the middle belt between the humid and sub-humid zones, while poultry are kept throughout the country in traditional backyard flocks and modern commercial units.

Production

6. Cattle production in Nigeria remains a traditional activity carried out under pastoral and agropastoral systems in the north and mixed farming systems in the south. Under the pastoralist system, animals are managed within nomadic or transhumance herding systems by the Fulanis. The average number of animals per family is about 90 (Federal Ministry of Agriculture, 1981). The main constraint to increased production is the nutritional stress experienced by cattle during the dry season from January to March. This often necessitates seasonal migrations in search of pasture. These migrations, apart from the hardship they impose on the animals, have often resulted in conflicts with crop farmers who complain that the migrating animals eat and damage their crops. Partly because of these conflicts and partly due to the opening up of the sub-humid zone, it is estimated that about 40% of the erstwhile pastoralists have settled in areas where they have been able to overcome land tenure constraints and on government grazing reserves specifically established for this purpose (Waters - Bayer and Taylor-Powell, 1986; Opong, 1988).
7. Sedentarisation has largely been accompanied by an increasing trend towards improved integration of animal and crop husbandry. The settled pastoralists or agropastoralists often reduce their herd size to accommodate the sedentary way of life. Otchere (1986) found the average number of animals per family to be about 45. Production averaged 280 litres of milk per cow per annum,

with a 48% calving rate and an offtake rate of 11%.

8. Two other less significant forms of cattle production are typified by crop farmers who keep a few heads of cattle to complement their cropping activities and by large-scale public sector cattle ranching operations. Examples of the former include the semi-arid zone farmer who keeps a few heads of cattle for draft purposes and the humid zone farmer who keeps trypanotolerant cattle in herds of up to 30 in the west and from 1 to 6 in the east for sale when meat supplies are low.
9. Small ruminant production methods vary from extensive, low-input systems based on free grazing and village scavenging in areas with low population pressure, to more intensive cut-and-carry feeding of confined animals in the intensively cultivated parts of the country. In the semi-arid and sub-humid zones, pastoralists and agropastoralists keep sheep and goats as part of their cattle herds. Sheep are kept predominantly by pastoralists in herds of 20-40, while agropastoralists keep goats with an average herd size of 5 (Federal Ministry of Agriculture, 1981; Bayer, 1986). Trypanotolerant dwarf sheep and goats are also commonly kept by smallholder crop farmers in the humid zone. The average flock size per owner is about 3-4, with goats predominating. Throughout the country, flock size and productivity are mainly constrained by disease and the availability of feed.
10. Poultry are raised under two distinct production systems. In the first, accounting for about 85% of the national flock, birds are raised in small backyard flocks throughout the country, while in the second, accounting for the remaining 15%, birds are managed along modern commercial lines in units usually located near the major urban centres. Although productivity is higher in the latter with hens laying about 160 eggs per year compared with about 40 eggs per annum in the backyard system, both systems are constrained by disease (Federal Ministry of Agriculture, 1981). The commercial flock is further constrained by reliance on maize feed imports which for a time (from mid-1970s to mid-1980s) was cheaper than locally produced maize as a result of the distorted domestic price regime caused by the overvaluation of the naira and low world market prices.
11. Table 1 shows the growth in production of meat and milk during the last 15 years. In arriving at these data Nigerian Livestock Meat Authority/Federal Livestock Department slaughter data have been adjusted, based on evidence

available from other studies (e.g. Federal Ministry of Agriculture, 1981; Okali and Upton, 1984), to take account of unrecorded slaughterings. Although figures such as those in Table 1 are only rough estimates, the table shows that by the mid-1980s the production of goat meat, pork and milk had increased by about 50% over the average of the mid-1970s, while the amount of beef, mutton, and poultry meat produced had roughly doubled. During the same period, per capita production levels varied somewhat. For beef and mutton, production per capita increased by almost 60%. For goat meat and pork, per capita production levels remained more or less constant, while there was a decline of about 10% in per capita milk production. Even by African standards, the figures of per capita meat and milk production given in Table 1 are extremely low, lower than the East African regional average of about 13.8 kg of meat and 35 kg of milk per caput in 1984 (Anteneh et al, 1988).

Trade

12. Despite the increase in production recorded for most livestock products during the last 15 years, imports of livestock products have continued. Table 1 shows that, with the exception of pork, imports of all the other products have increased. The increase in imports was particularly significant during 1977-81. The sharp rise in oil revenues beginning in 1974 and continuing till the early 1980s increased incomes considerably. This, coupled with the high income elasticities of demand for animal products, led to an increase in demand but supply did not keep pace.^{1/} The growing gap between supply and demand was largely met by imports. However, in an attempt to reduce the import bill, the government has, since 1983, cut imports of most animal products through a series of policy measures including import licenses, physical quota limits and outright bans.
13. Internal trade in livestock is mostly handled by the private sector. Historically, the trade has been largely unidirectional - from the producing areas in the north to the large urban centres in the south. The marketing system consists of three main markets: primary (rural), secondary (local), tertiary (urban/terminal) with middlemen acting as links between traders at any two levels. The improved road network, particularly since the mid- 1970s, has been of major benefit to the LSS as it allows easy access to livestock markets. The operations of the marketing system are generally considered well organized and efficient (World Bank, 1985a). As discussed in the next section, government attempts to provide parallel marketing and processing facilities through the

Table 1. Average annual production, net imports and consumption of selected livestock products in Nigeria, 1972-86.

Period	Commodity	Domestic Production ('000 mt)	Net Imports ('000 mt)	Aggregate Consumption ('000 mt)	Per Capita Production (kg)	Per Capita Consumption (kg)
1972-76	Beef	105.5	32.0	137.5	1.70	2.21
	Mutton	15.5	1.5	17.0	0.25	0.27
	Goat meat	49.0	2.6	51.6	0.80	0.83
	Pork	15.0	1.0	16.0	0.24	0.26
	Poultry	51.5	1.8	53.3	0.83	0.86
	Milk	241.0	249.0	490.0	3.90	7.87
1977-81	Beef	202.9	53.4	256.3	2.71	3.43
	Mutton	23.5	2.0	25.5	0.31	0.34
	Goat meat	64.0	3.5	67.5	0.86	0.90
	Pork	22.0	2.0	24.0	0.29	0.32
	Poultry	69.0	8.6	77.6	0.92	1.04
	Milk	279.0	613.5	892.5	3.73	11.94
1982-86	Beef	265.9	69.0	334.9	2.84	3.57
	Mutton	37.2	3.0	40.2	0.40	0.43
	Goat meat	79.0	4.2	83.2	0.84	0.89
	Pork	24.0	1.0	25.0	0.26	0.27
	Poultry	95.8	5.2	101.0	1.02	1.08
	Milk	333.4	381.4	714.8	3.56	7.63

Notes:

- (1) Domestic production of beef, mutton, goat meat and pork was estimated by adjusting Federal Livestock Department slaughter figures to account for unrecorded slaughterings. For poultry meat, domestic production was estimated following the approach used by the Livestock Review Mission of 1981 (see Federal Ministry of Agriculture, 1981 p. 33). Data on domestic milk production include estimates of the production of whole fresh milk from traditional and exotic herds but exclude the production of milk from milk processing plants.
- (2) All figures relating to milk in the table are expressed in liquid milk equivalents.
- (3) The import figures for beef include both the meat equivalent of live imports and processed beef imports. For sheep and goats the figures represent only the meat equivalent of live imports, while for pork and poultry only imported bacon and chicken are included since live imports of pigs and poultry are not allowed except for experimental purposes.
- (4) Aggregate Consumption = Domestic Production + Net Imports.

Sources: Federal Livestock Department, Nigerian Livestock Information Service (various issues) and Computer Print-outs.

Federal Office of Statistics, Nigeria Trade Summary (various issues).

Federal Ministry of Agriculture, 1981 and Nwoko, 1986.

Nigerian Livestock and Meat Authority (NLMA) and, later on, through the Nigerian Livestock Production Company (NLPC) have been unsuccessful.

Consumption

14. In the absence of any comprehensive national consumption survey, aggregate consumption estimates have been derived by adding up domestic production and net import figures as shown in Table 1. The table indicates that aggregate consumption of most meat products virtually doubled between 1972 and 1986. Aggregate milk consumption in liquid milk equivalents increased from 490,000 tons in the mid- 1970s to 892,500 tons in the early 1980s. However, aggregate milk consumption appeared to have declined between 1982-86, and particularly since 1984.
15. Per capita meat consumption averaged 5.6 kg over the period 1972-86. Looking at individual meat products, per capita consumption of beef, mutton and poultry increased by almost 50% during this period, but there was no growth in per capita consumption of goat meat and pork. Per capita milk consumption, after an initial rise from the level of the mid-1970s, declined sharply in the mid-1980s.
16. Overall, Table 1 shows that the production-consumption gap is wider for milk than for meat. Nigeria has traditionally relied on imports for its dairy consumption. As a result, trade and economic policies have tended to influence milk consumption more than meat consumption. The decline in per caput milk consumption since the mid- 1980s suggests that growth of income and urbanization may be less important than relative prices in determining the demand for milk since the fall in demand has coincided with periods of sharp increases in the price of milk (more about this in the following section).

Historical survey of government objectives and policies toward the livestock sub-sector

17. A review of government objectives and policies for the LSS in Nigeria can be conveniently divided into 4 periods: the colonial period preceding independence in 1960, the immediate post- independence period up to the end of the Sahelian drought in 1974, the oil-boom period from 1975-85, and the period since 1986 marking the commencement of the structural adjustment programme. This section describes these four periods, highlights the main objectives and policies and offers explanation for particular government strategies.

The colonial era

18. Initial colonial objectives with respect to the LSS were not explicitly stated, but the commitment to expand exports of livestock products had emerged prior to World War II. Early documents (cited in Waters - Bayer, 1988) indicated that schemes for the collection of fresh milk from the Fulanis for cream separation and processing into clarified butter-fat (CBF) for export began in the late 1920s in northern Nigeria. Exports of CBF rose from 10 tons in 1933 to 2,400 tons in 1939 (Waters-Bayer, 1988, p. 26). The early 1940s also witnessed the establishment of dairy herds and milk processing plants in Vom and Agege to meet expatriate population demand in Jos and Lagos (David-West, 1978).

19. The colonial government objectives were primarily implemented through a policy of investment in both physical infrastructure and basic research. By 1950 an extensive internal rail and road network system had been completed. A number of Livestock Improvement and Breeding Centres (LIBCs) were established in different parts of the country in the late 1940s and early 1950s to carry out cross-breeding experiments - primarily to achieve increased milk production - using exotic bulls and artificial insemination. Studies were also carried out to evaluate the potentials of exotic and local pasture species. Between 1955 and 1960, over 270 grass and legume species were screened for their adaptability, growth performance and nutritive value (Federal Ministry of Agriculture, 1981). However, most of the schemes embarked upon during this period were oriented toward ranching and thus had little impact on smallholder or pastoral systems. Furthermore, attention appears to have been focused mainly on cattle, particularly dairy production, to the exclusion of other species.

Independence to 1974

20. The onset of independence saw both a continuation and a shift in livestock development policy in Nigeria. On the one hand, some of the programmes initiated during the colonial period such as the tsetse eradication and livestock breeding programmes were continued. On the other hand, driven by a desire to improve the rate of growth of the economy and to achieve a more equitable distribution of income, the new regional governments initiated a number of programmes in an attempt to improve smallholder and pastoral systems. Thus in 1962, a supplementary feed programme aimed at introducing concentrate feeding to cattle in order to reduce seasonal weight losses was introduced

in northern Nigeria. The scheme was also viewed as an attempt to encourage settlement among the nomadic pastoralists. The supplementary ration, the cost of which was subsidised, took the form of equal parts of groundnut cake and cottonseed cake plus 2% common salt and mineral licks (Federal Ministry of Agriculture, 1981). Although the response of the pastoralists was favourable, the scheme did not have the desired impact due to inadequate supply and untimely distribution of the supplements.

21. Starting in 1965, grazing reserves were introduced into the same region to protect the traditional grazing lands from crop farming, to secure a year-round source of fodder for ruminants and to encourage the settlement of pastoral nomads. By 1980, 2.3 million ha had been acquired by various state governments (Oxby, 1982).
22. In the south-west, a smallholder steer fattening scheme was introduced in the early 1960s. Using semi-intensive management systems, participating farmers fattened trypanotolerant steers for supply to slaughter houses in the adjoining urban areas. The scheme proved successful and the experience led to the establishment of a Smallholder Fattening Scheme in 1979 as a component of the World Bank assisted First Livestock Development Project (Federal Ministry of Agriculture, 1981).
23. Apart from these regional programmes, trade and production investment policies were also emphasized during this period. Trade policy towards the LSS initially took the form of import duties^{2/}. In 1960, imported meat, butter and cheese carried a 20% duty rate. Within the next 5 years tariff rates rose quickly, ranging between 35% for butter and cheese to 66.7% for meat. The 1961 budget speech provided a justification for what was to become the future direction of trade policy by claiming that "increases were imposed upon goods consumed by the better-off sections of the community". The statement added that "no one could reasonably maintain that imported meat, butter constitute indispensable or significant items in the family budget of the low-income groups which form the bulk of our population" (Federal Ministry of Agriculture, 1987). Thus, tariff increases were imposed to serve as an indirect consumption tax and raise revenue for the government.
24. The civil war of 1967-70 brought a new dimension to trade policy. The dominant consideration during the war was the balance of payments position. A significant departure from the past was the introduction and liberal use of quantitative

restrictions. Thus, between 1965 and 1970, importation of meat was controlled largely through import licensing. Freer trade did not resume at the end of the civil war. In fact, between 1971 and 1973, the use of quantitative import restrictions assumed greater importance as import bans were introduced to cover such products as beef and poultry meat. As discussed in the next section, these measures provided an implicit protection for domestic livestock producers.

25. During this period, the government attempted to provide a parallel production and marketing system. The NLMA was established in 1971 by the Federal Government, amongst other things, to operate abattoirs, cattle farms and wholesale meat markets; to manufacture animal feeds; to trade in livestock and hides and skins; to control and regulate the interstate activities of traders in livestock and livestock products; and to carry on any business connected with the livestock industry. For most of this period, investment in direct production was a major policy instrument. Intensive feedlot fattening for beef, based on high intakes of molasses with supplementary feeding of cottonseed and restricted grazing, was started in 1972 at the Mokwa cattle ranch owned by the NLMA (Federal Ministry of Agriculture, 1981). Bilateral assistance was initially provided by the Federal Republic of Germany. A significant development was the introduction of sugarcane molasses from the Bacita Sugar Factory. Under the scheme, local bulls and steers (mainly Sokoto Gudalis and Bunajis) were purchased as yearlings with average weights of 200-240 kg. Over a three-month fattening period, the animals averaged 300 kg liveweight. The dressed carcasses were sold through government-owned cold stores. Although the scheme was initially successful, the backward linkage with the sugar factory proved difficult to maintain and coupled with management problems at the ranch, only about 15,000 animals were fattened between 1972 and 1978 (National Livestock Production Company, 1980). Just like during the colonial period, it appears that little attention was paid to the other animal species, apart from cattle, during this period.

1975-1985

26. Policies instituted in the immediate post-independence period were largely continued in the 1975-85 period. The basic economic objective remained income growth with some new concern for increased animal protein intake. The rise in government revenue as a result of the oil boom initially led to a relaxation of livestock trade policy^{3/}. Between 1974 and 1977, quantitative import restrictions were removed and tariff rates were reduced such that, once again, customs duties on most livestock products fell in the range of 10-30%.

27. The trade liberalization policy was, however, short-lived. With the sudden downturn in the world oil market between 1978 and mid-1979, customs tariffs were revised upwards and quantitative import restrictions were reimposed. Import prohibition orders covered fresh milk, eggs and live poultry, while frozen or chilled meat came under import licensing. These measures served to raise the domestic prices of imported livestock products well above world prices. Although the 1983 budget speech reiterated the "determination to make Nigeria self-sufficient in food production" and thus provided a further justification for the trade restrictions, it is now well understood that those responsible for trade restrictions together with those who had access to import licences and foreign exchange allocations were able to gain from the rents implied by the price differential between domestic and world prices. Thus, following Collier (1988), a reasonable inference is that rent-seeking was at least partly responsible for the restriction of imports of livestock products.
28. In addition to the direct effects of trade policy on the availability of livestock products, there were also important indirect effects operating through the government's exchange rate policy. Oyejide (1986) estimated that between 1973 and 1980, the real exchange rate appreciated by 61% partly as a result of massive capital inflows associated with the oil boom and partly due to government's failure to depreciate the naira to reflect Nigeria's relatively high inflation rate. The overvalued exchange rate was sustained by periodic import restrictions and exchange control regulations. As noted earlier, short-term variations in quantitative import restrictions caused price instability for several livestock products.
29. Meanwhile, previously introduced investment and technical policies were continued. The Nigerian Livestock Production Company (NLPC) was established in 1976 to provide credit and technical services for the development of the Mokwa and Manchok fattening ranches. Following the dissolution of the Nigerian Livestock and Meat Authority in 1979, the NLPC was reorganized and enlarged to take over the former's functions.
30. Various dairy processing plants were also set up as part of the government's strategy to encourage the domestic dairy industry. Among these were Madara Limited in Vom, Nigeria Dairy Company in Kaduna and Minna Dairy Plant in Minna. All were established with daily capacities in excess of 20,000 litres of fresh milk, some of which was to come from associated government dairy farms and the rest from local collection from surrounding farmers. However,

inadequate prices offered by the plants made local milk collection difficult and the plants resorted to basing their production activities on reconstituting imported powdered milk (Federal Ministry of Agriculture, 1981; Waters - Bayer, 1988). Very few of these plants now operate above 10% of installed capacity as a result of poor management, poor maintenance of equipment and increases in the cost of milk powder and import duties.

31. Institutional policies involving land and credit were introduced during this period. The 1978 Land Tenure Decree vested all rural land not under active exploitation in state governors. Although an official title to land (i.e. certificate of occupancy) can be obtained through this decree, the process is both time consuming and expensive and, thus, out of the reach of most pastoralists. Further, it has been argued that the decree with its recommended high levels for land compensation has militated against land acquisition for the establishment of new grazing reserves (Waters-Bayer and Taylor - Powell, 1986).
32. The Agricultural Credit Guarantee Scheme (ACGS) was also introduced in 1978. The scheme was established to guarantee loans granted by commercial and merchant banks for agricultural purposes. As Table 2 shows, lending to

Table 2. Average annual percentage distribution of guaranteed agricultural loans in Nigeria, 1978-86

Activity	1978-80	1981-83	1984-86
Livestock	-		
Poultry	57.6	58.9	33.0
Cattle	1.9	4.3	3.9
Others	2.3	3.1	2.3
Total Livestock	61.8	66.3	39.2
Fisheries	-	1.5	2.5
Mixed Farming	9.8	3.0	3.1
Food Crops	21.4	20.2	33.7
Cash Crops	7.0	9.0	21.6
Grand Total	100.0	100.0	100.1

Source: Central Bank of Nigeria, Annual Report and Statement of Accounts (various issues).

the LSS has featured prominently since the inception of the scheme. The lending, however, has been lopsided and has tended to favour mostly the modern poultry sector. Loan guarantee statistics showed that between the inception of the scheme in 1978 and 1986, total guaranteed loans amounted to ₦316.86 million. Out of this total, ₦173.90 million or 54.9% went to livestock and out of the livestock loans, ₦149.04 million or 85.7% went to poultry production. Commercial banks were willing to lend for poultry projects not because such projects were intrinsically more profitable, but due to the short interval between loan advance and repayment. The scheme also appeared to have catered mainly for the large commercial producer. In 1986, for example, borrowers of over ₦50,000 accounted for only 2.4% of all borrowers but received 60.1% of the total guaranteed loans valued at ₦68.4 million, while the small and medium scale borrowers of under ₦50,000 represented 97.6% of all borrowers, but received only 39.9% of total loans. Nonetheless, the expansion of commercial bank credit for livestock production has been due, in large measure, to the introduction of the ACGS. In general, government effort to assist private producers engaged in modern commercial poultry production became evident during this period.

Post - 1986

33. The Structural Adjustment Programme (SAP) initiated in September 1986 has brought about a variety of sectoral reforms in the Nigerian economy. As it affects the LSS, it involves a reduction in the role of the state in production activities with a corresponding emphasis on using the private sector as an instrument for production and input supply. It has led to the scrapping of the NLPC and its subsidiaries. Following the massive devaluation of the naira from around parity with the U.S. dollar to the rate of 4.6 naira to the dollar in September 1986, prices of imported livestock products, particularly dairy products, rose substantially.
34. In general, the new programme has not led to freer trade. When the programme started the ad valorem duty on imported meat was 30%. Since early 1988, a ban on imports of fresh, chilled or frozen meat has been applied to protect domestic producers. For live animals, except poultry, import duty rose to 20% in 1986 from the 15% duty applied in 1984. However, since most live animals are trekked across the border from neighbouring countries, the herders avoid official crossing posts and the animals are, therefore, not directly affected by these tariff rates. Live poultry imports were banned in 1986, except for foundation and grandparent stock used for research or multiplication purposes.

35. Increased interest rates since 1987 have also limited the number of livestock producers applying for loans from commercial banks.
36. In summary, the history of livestock development in Nigeria reveals a long-standing effort to find a strategy to improve productivity and raise output. Policies that have been instituted to achieve these goals have not been totally consistent. Trade and exchange rate policies, in particular, appeared to have been driven by macro-economic concerns rather than by a desire for livestock development. The support given to various categories of producers and to different livestock species has also been lopsided. Large commercial producers appeared to have benefited at the expense of the bulk of small-scale pastoralists, while small ruminants seem to have been neglected. These problems put the attainment of government objectives into question.

Evaluation

37. Since independence, two of the major long-run goals of livestock policy have been to raise the low level of supply of animal protein, and to improve and stabilise rural income emanating from livestock production and processing. More recently, concerns with balance of payments problems have directed increased policy attention towards the need to attain self-sufficiency in livestock production (Federal Ministry of Agriculture, 1988). Policies that have been implemented to achieve these objectives were reviewed in the last section. Here, the effects of these policies are analyzed with the aim of determining how successful they have been in helping the government to move toward its objectives.

Impact of policies on livestock output and protein consumption

38. The index of animal productivity for 1971-86 is shown in Table 3. Animal productivity is defined as total output divided by all the animals of that species in the herd. Because the index is derived from data sets that are remarkably weak, the true extent of productivity growth is hard to establish. Nonetheless, only poultry showed a significant increase in productivity during this period. There was a decline in productivity in the case of mutton, while beef productivity increased by 11% or at a maximum of 0.7% of the annual compound rate. In the lower part of the table, changes in total output are disaggregated into changes in the total number of animals with productivity remaining constant and changes in productivity. The table indicates that for mutton and pork more than 80% of the growth in output came from increases in the number of animals, while less than 20% arose from increased production per animal.

Table 3. Animal productivity changes and contribution of numbers and productivity to changes in livestock output in Nigeria, 1971-86

	Beef	Mutton	Goat Meat	Pork	Poultry Meat	Cow's Milk
Production per animal ^{a/}	111.1	96.1	140.9	110.4	282.3	163.8
Relative contribution (%) of change in						
Numbers	41.7	110.3	46.9	81.1	40.5	43.5
Productivity ^{b/}	58.3	-10.3	53.1	18.9	59.5	56.5

^{a/} 1971 = 100

^{b/} Includes the interaction effect of yield and numbers.

Source: FAO Production Yearbook (various issues).

39. A further breakdown of the 16-year period covered in Table 3 reveals a slightly higher productivity for cattle and sheep during 1979-86 than between 1971-78. In all the other cases, production per animal was lower during 1979-86 compared to the period 1971-78. The fall in productivity was particularly marked in the case of poultry. The import restrictive policies that were being implemented during this period (e.g. ban on the importation of maize feeds and day-old chicks) seemed to have affected poultry relatively more than the other animal species. The picture painted above with respect to the disaggregation of changes in total output into changes in numbers and productivity remains largely unchanged during the two sub-periods, except again for the lower productivity of poultry between 1979 and 1986. This implies that most of the growth in poultry productivity occurred in the first half of the 16-year period covered here.
40. Not surprisingly, the modest increase in livestock output has not resulted in any significant change in animal protein consumption. According to food balance sheets estimated for the period 1961-85 (Table 4), the share of animal protein in total protein intake has remained more or less unchanged over the 25-year period. Even during the peak of the oil boom, i.e. 1975-81, the increase in animal protein consumption was minimal. Given the daily requirement norm of 75 g of protein (Wagner, 1986), of which about 35 g is supposed to be of animal origin (David-West, 1978), it is obvious that both aggregate and animal protein consumption levels have been markedly below the norm.

Table 4. Estimates of per capita daily protein consumption in Nigeria, 1961-1985

Period	Protein (grams)		
	Animal Products	Vegetable Products	Total
1961-63	6.5	44.3	50.8
1964-66	6.6	43.6	50.2
1969-71	7.0	40.8	47.8
1972-74	7.3	43.0	50.3
1975-77	8.0	44.7	52.7
1979-81	10.0	40.9	50.9
1981-83	9.7	39.6	49.3
1983-85	7.0	38.0	45.0

Source: FAO Production Yearbook (various issues).

Impact of policies on prices and incentives

41. Unlike the pre-1986 situation in the crop subsector when commodity marketing boards used to set producer prices for export crops and guaranteed minimum prices for food crops, direct price intervention has not featured as a major policy instrument in the LSS^{4/}. However, government's restrictive trade and exchange rate policies have indirectly affected livestock prices through their impact on the entire domestic cost structure. It will be argued that the oil boom, import restrictions and the overvaluation of the currency have all combined to trigger mechanisms which have produced two important consequences for prices and incentives in the LSS.

42. First, restrictive trade policies which were designed to address the balance of payments problem and prop up the overvalued exchange rate appeared to have raised domestic prices above world equivalent prices. As Figure 1 shows, between 1973 and 1984, there was an upward trend in nominal protection coefficients (NPCs) for beef, mutton and poultry meat^{5/}. The NPCs have been estimated using the official exchange rate. Figure 1 indicates that, although domestic beef and mutton prices were below world equivalent prices between 1973 and 1974, all three products received protection from external competition for most of the period under consideration. The level of protection for poultry was higher than the protection given to beef and mutton partly as a result of the more stringent restrictions on poultry trade and partly due to the downward movement in world prices for poultry during this period. Figure

2 shows that the upward trend in NPC for beef is dampened when the exchange rate is adjusted to account for the overvaluation of the naira.^{6/} Although not shown, similar patterns were obtained for mutton and poultry meat. Nonetheless, the government through its restrictive trade policy provided protection to livestock producers by keeping domestic prices above world equivalent prices. The protection provided to poultry no doubt had some effect in stimulating domestic production during this period. Moreover, since the policy affected livestock producers differently, it had some effect on income distribution within the LSS.

43. The other major consequence for livestock prices and incentives came about as a result of the inflow of foreign capital associated with the oil boom. The sudden increase in oil-related capital inflows created a standard case of the "Dutch disease" (Corden, 1984). The influx of foreign capital augmented not only the supply of tradeables, but by raising incomes increased the demand for all goods and services. The ensuing excess demand for nontradeables was curtailed by an increase in their price relative to tradeables, which induced reallocations of expenditure and production. That this process indeed occurred during the oil boom is partly confirmed by the data in Table 5 which show that over the period 1975-85, animal product (tradeable) prices declined by about 50% relative to the price of millet (a non-tradeable grain that is commonly exchanged for animal products in northern Nigeria). The devaluation of the naira following the introduction of the SAP in September 1986, has slowed down the relative price decline. Nevertheless, it is clear that one consequence of the oil boom was a perceptible change in relative prices in favour of nontradeable goods and services and against the producers of tradeable goods.

Table 5. Indices of relative prices of selected livestock products in Nigeria, 1975-86^{a/}

Year	Beef/Millet	Mutton/Millet	Poultry/Millet
1975	100	100	100
1976	111	100	98
1977	89	94	90
1978	66	67	72
1979	56	57	55
1980	79	83	79
1981	48	53	53
1982	45	47	56
1983	56	63	66
1984	38	40	41
1985	42	53	52
1986	88	93	87

a/ 1975 = 100

Sources: Akinwumi et al. (1979); CARD (1981)

Central Bank of Nigeria, Annual Report and Statement of Accounts (various issues).

Federal Livestock Department. Nigerian Livestock Information Service (various issues) and World Bank (1985b).

44. In summary, the overall effect of government policies has been to raise the domestic prices of most livestock products above their equivalent world prices with the result that varying degrees of protection are provided for domestic production. However, it appears that up till 1985, domestic prices for most livestock products were simultaneously high by international standards but low in terms of being able to attract domestic resources to increase production. This picture which largely depicted the situation for agricultural tradeable products as a whole, was in sharp contrast to the enhanced profitability of investments in the construction and service sectors during the same period (Collier, 1988).

Lessons and policy directions for the future

45. What lessons can be drawn from the foregoing review and analysis of livestock development objectives and policies in Nigeria? First, direct production programmes by the government have been largely ineffective in expanding

livestock output in Nigeria. The production increases generated by such programmes have been minimal. What is worse, by diverting resources away from the pastoralists and agropastoralists, such programmes have tended to hinder the development of the traditional sector.

46. Second, for most of the period under review trade policy more or less substituted for an explicit price policy for the LSS. Trade policy, however, failed to provide appropriate incentives for domestic livestock production. Trade restrictions resulting from policy changes in response to macro-economic concerns provided protection for most livestock products. Because it ensued as a by-product of other concerns, the resulting protection lacked important features of an appropriate production incentive system, such as stability and consistency.
47. Given these lessons, what should be the direction of government policy in the future? Since the inception of the SAP, a number of changes have taken place to redress some of the past mistakes. Two specific issues in addition to the changes already implemented deserve mention and should help to facilitate the growth of livestock output.
48. First, government investment policy within the LSS needs to be reviewed. All too often in the past, government provided funds for production programmes with little or no consideration being given to the past performance record of such programmes. A shift from this approach to a strategy that promotes research on new technologies and strengthens the extension services to disseminate the results of this research is needed. At the same time, complementary incentive policies that will facilitate the uptake of new innovations and induce private capital investment in the LSS should be instituted.
49. Second, in designing government policies, the full implications of these policies for the different sectors of the economy need to be explicitly recognized and taken into consideration. The fact that most livestock products are tradeable means that livestock, trade and exchange rate policies are inevitably interlinked. The upshot is that better coordination of policy decisions is necessary. However, proper coordination and informed policy-making call for a good data base. A significant feature of policy-making in the past has been that crucial decisions were made on the establishment of new projects, support to different livestock species, level of imports and so forth with little or no empirical information. Not surprisingly, such policy-making has often led to mistakes. Thus, the gathering, processing and reporting of production statistics need to be improved.

50. Finally, the economic reforms of the last two years and the steep devaluation of the naira have raised domestic prices and created an environment that will reward producers who are able to curtail the use of imported inputs in their production activities. The implications of this for poultry producers who depend on imported stocks, feeds and drugs are clear. But given the low value of such inputs in the total cost of production of ruminant livestock in Nigeria, the opportunity now exists for increased output of beef, mutton and goat meat. However, this opportunity will be turned into the country's advantage only if a consistent mix of policies is put in place to encourage improved animal husbandry and feeding and an efficient delivery of farm inputs and veterinary supplies. These issues should form part of an overall package of measures to promote structural changes within the LSS.

FOOTNOTES

1. de Montgolfier - Kouevi and Vlavonou (1981) estimated income elasticities of 1.08, 1.20 and 1.20 for meat, milk and eggs respectively in Nigeria. These estimates are very close to those derived by the IBRD Agricultural Sector Review Mission of 1978.
2. Export duties on livestock are not an important feature of trade policy since livestock exports from Nigeria have been almost non-existent, except for some hides and skins.
3. The Central Bank of Nigeria figures show that government revenue rose from ₦ 633 million in 1970 to ₦ 8,039 million in 1977. Between 1972 and 1974 government oil revenue rose five-fold to form over 80% of total revenue.
4. Retail prices for beef and poultry meat were officially controlled between 1976 and 1979. However, the official prices proved difficult to enforce and the scheme was eventually discontinued.
5. The nominal protection coefficient measures the extent to which domestic prices diverge from world equivalent prices. It has been estimated using the formula:

$$NPC = \frac{P_i^d}{E(P_i^w)}$$

where P_i^d is the domestic producer price of commodity i , E is the official (or adjusted) exchange rate and P_i^w is the world price equivalent at the farm gate of commodity i . A NPC less than one indicates that policy is a potential disincentive to production, i.e. producers are being taxed. Conversely, a NPC greater than one indicates that policy measures such as tariffs or other import restrictions protect (i.e. subsidise) domestic producers.

6. The adjusted exchange rate is meant to correct for distortions in the official exchange rate. The extent of overvaluation of the latter was estimated using the differential inflation rate between domestic prices (approximated by the consumer price index) and foreign prices (based on the consumer price index of industrialized countries). The year Nigeria's currency was changed from the pound to the naira, 1973 was used as the base year.

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Figure 1. Nominal Protection Coefficients (NPCs)
for Beef, Mutton and Poultry Meat in
Nigeria, 1973-1986

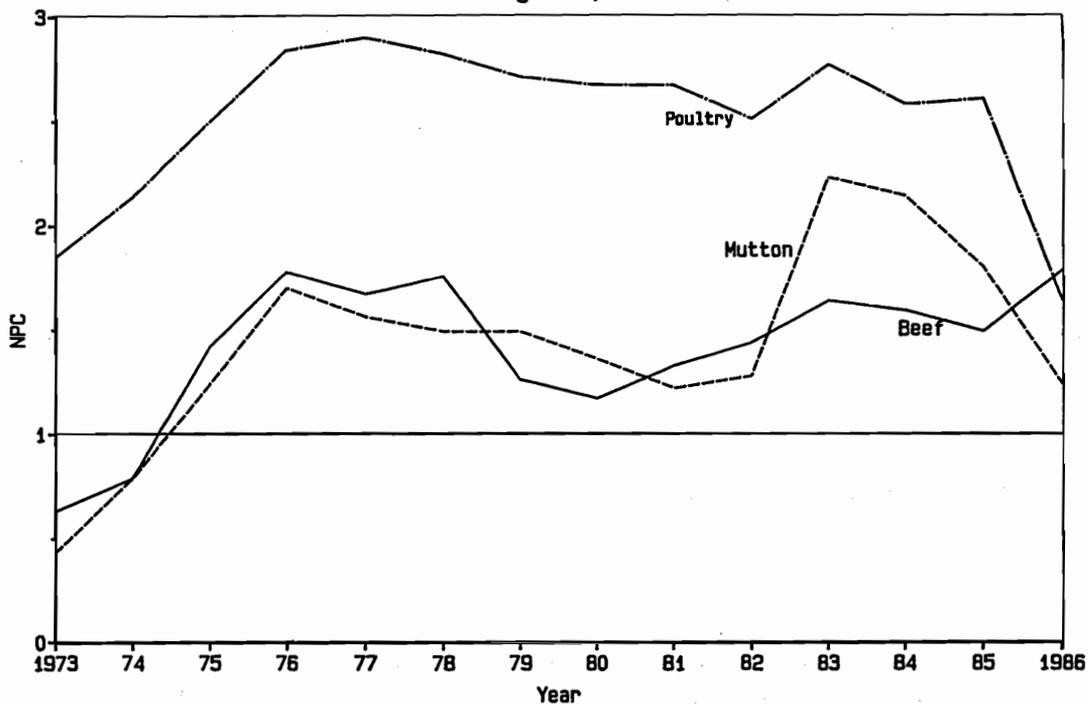


Figure 2. Comparison of NPCs for Beef at Official and Adjusted Exchange Rates, Nigeria, 1973-1986

