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Livestock Marketing and Trade in the Mali/Burkina Faso-Côte d'Ivoire Corridor

Nicholas Kulibaba

and

John S. Holtzman

May 1990

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EXECUTIVE SUMMARY

0.0 Purpose of Study

0.1 This study analyzes the competitiveness of livestock as a Sahelian export commodity and identifies constraints to expanding livestock exports from the Sahel to major coastal markets.

0.2 Research was carried out by the Agricultural Marketing Improvement Strategies Project, managed by the Bureau for Science and Technology of AID/Washington, with funding from the Sahel West Africa Office.

0.3 Field research was carried out between November 1989 and March 1990 in the livestock exporting countries of Mali and Burkina Faso and in the region's principal livestock importing country, Côte d'Ivoire. The field work was supplemented with tabulation and analysis of secondary data in the U.S.

1.0 Background

1.1.1 The Sahelian countries of Mali, Burkina Faso, Niger and Chad have been important suppliers of live animals to coastal West African markets for decades. A series of droughts in the 1970s and 1980s reduced both the regional livestock population and the supply of export grade animals to the coast during that period. Increasing human population of Sahelian countries, particularly in urban areas, had led to a shift in domestic demand, also cutting into the availability of export grade stock for shipment to coastal markets.

1.1.2 At the same time international agricultural commodity markets became better globally-integrated during the 1980s, which has increased competition between Sahelian exporters and suppliers in Europe and, to a lesser extent, Latin America and New Zealand. Competitive advantages for red meat exports from the EC were enhanced by the Community's Common Agricultural Policy, which provided incentives for major reductions in dairy production and dairy herd size in EC countries, beginning in 1984. The ensuing culling of surplus dairy cattle expanded EC beef supply, which was disposed of in part through chilled and frozen beef exports to non-EC markets, including several coastal West African markets. By the end of the 1980s Community dairy targets had been nearly achieved, beef surpluses had declined, and the level of exports to West Africa had begun to decline and prices of exported red meat had begun to rise. Given these developments in the EC, opportunities for Sahelian exporters in coastal West African markets appear to be reemerging.

1.2 While Sahelian human populations nearly doubled between the early 1970s and 1990, livestock populations have not rebounded to pre-drought levels. This raises two critical issues. First, can the Sahelian nations recover coastal markets once EC shipments are reduced? Second, can government policy and investments significantly reduce the high costs of exporting Sahelian livestock to coastal markets as a means of stimulating economic growth?

2.0 Trends in Regional Livestock Population

2.1.1 Data for six West African nations (Burkina Faso, Mali, Niger, Côte d'Ivoire, Togo, and Benin) indicate that aggregate cattle numbers for the region have declined at a compound growth rate of -1.0% between 1978 and 1988. While growth was strongly positive in the three coastal countries (3.1% per annum), it was negative across the three Sahelian countries (-2.6%). Drought-induced mortality in the Sahel, and Sahel to coastal state migration are the factors most likely responsible for these trends. Longer term data for the Sahelian nations, however, indicate a gradual overall increase in cattle numbers.

2.1.2 Among the most pronounced trends in the region is the shifting of the geographical "center of gravity" of Sahelian pastoralism southward, both within the Sahelian nations and for the region as a whole. This has occurred as a result of migratory activity, social and demographic pressures on pastoral resources, and policies to encourage migration and settlement of herders into Côte d'Ivoire.

2.1.3 Particularly disturbing is evidence of outmigration of pastoralism from the interior delta of the Niger River, where traditional systems for pastoral resource management have begun to break down. The expansion of flood-plain agriculture in this region is due principally to demographic pressures and medium-term trends of reduced rainfall and reduced flows in the river itself.

3.0 Sahelian Export Performance

3.1 Sahelian export performance has been mixed during the past decade. Official cattle exports from Burkina Faso averaged 43.0 thousand per annum during the 1980s, representing a 30.4% decline from the mean 61.8 thousand head exported during the 1970s. In contrast, officially estimated exports of cattle from Mali increased 64.7% from a mean 153.7 thousand head per annum during the 1970s to 252.7 thousand head in the 1980s.

3.2 Malian exports of small ruminants also rose by more than 60 percent during the 1980s, while those from Burkina Faso dropped 58.3% during the 1980s relative to the 1970s.

3.3 While a decline in livestock population has undoubtedly contributed to reduced exports from Burkina Faso, other factors have also intervened. These include increasing human population and demand for red meat, reduced demand related to decline of the Ghanaian, Liberian, and Nigerian markets, inexpensive imports of European beef into Côte d'Ivoire, increased marketing costs for Sahelian exporters, and a rather hostile government attitude towards private enterprise in Burkina Faso during much of the 1980s.

3.4 Exports of chilled and frozen red meat from Burkina Faso have fluctuated since the late 1970s but generally declined since the late 1960s and early 1970s. These exports represent a small proportion of total export volume of livestock products (when converted to live animal equivalents). Red meat exports from Mali have been negligible since the first half of the 1970s.

4.0 Organization of Marketing

4.1 The overwhelming majority of domestic and international livstock transactions in the Sahel and coastal countries are carried out by private entrepreneurs operating through traditional marketing systems. Government efforts to "modernize" this sector have failed, as poorly-managed parastatals collapsed due to underfunded and over-ambitious efforts to integrate production, marketing, and processing.

4.2 The majority of livestock traders involved in the Sahelian-coastal trade are individuals with regional, ethnic, or kinship ties to livestock production zones. While certain ethnic groups are predominant, only the Fulbe, who are the principal herding group in the Sahel, participate in virtually all levels of the marketing process.

4.3 The focus of international trade in the region is concentrated on large urban centers. Abidjan, the capital of the Côte d'Ivoire, consumes 54.6 percent of the nation's recorded cattle imports and 71.2 percent of small ruminant imports. The five largest Ivorian cities consume 78.9 percent of all cattle imports, while the top five small ruminant markets consume more than 90 percent of all recorded imports.

4.4 Market organization comprises occasional traders, Sahelian and coastally-based long distance traders, and short-distance traders. Although brokers are present at various stages of the marketing chain, they do not play a key role in marketing. Intermediaries--free agents who bring together buyers and sellers for a fee--are both pervasive and critical to traditional marketing systems. Acting as facilitators and guarantors of the legitimacy of transactions, they sometimes also act as guarantors of credit or agents of sellers residing far from terminal markets.

4.5 Terminal transactions throughout the region are usually sales to butchers. The trade is dominated almost exclusively by Moslems. Although butchers are well-organized in formal and informal trade associations, no single ethnic group predominates.

4.6 It is often alleged by public officials that the behavior of butchers may have detrimental consequences on the economy of terminal markets. However, contrary to allegations of collusive or oligopsonistic behavior, evidence suggests that atomistic competition, characterized by unregulated proliferation of butcher activity, leads to widespread low returns. This in turn has led to high rates of credit sales and defaults in the largest terminal markets, thereby increasing the risks in the Sahelian-coastal trade and attendant business failures.

4.7 Government intervention in terminal and retail markets is generally limited to the regulation of health conditions and retail pricing. Although butchers in Abidjan are required to be licensed, widespread abuse of the licensing process leading to hypercompetition among butchers.

4.8 Credit sales constitute a high proportion of all livestock transactions in terminal markets, due in large part to deteriorating economic

conditions in coastal markets. While absolute default on credit transactions is rare and subject to severe social sanctions, Sahelian traders are typically obliged to carry uncompounded, low-interest credit for periods of between six and eighteen months. The net effect of this trend is to reduce the availability of entrepreneurial capital and to lower net returns to traders.

5.0 Transportation Infrastructure and Costs

5.1 After purchase of livestock for export, transportation constitutes the second-highest cost component of the livestock marketing process, ranging between 23 and 50 percent of total marketing costs (excluding livestock purchase) reported by traders in Sahelian and coastal markets.

5.2 The principal determinant of transportation costs are: (a) the mode or modes of transport utilized; (b) distance to terminal markets; (c) seasonality of demand. Unlike other Sahelian exports which may be "captive" to particular transportation modes and axes, livestock are a mobile commodity which can be brought to market at a profit under their own power or through the use of road or rail transport for all or part of their itineraries.

5.3 During the past twenty years, significant shifts have occurred in predominant modes of transportation utilized by livestock traders. Trade between the Sahel and the coast was long-dominated by low-cost, if time consuming, trekking. Government and donor investment in improved regional road networks and the Régie Abidjan-Niger railway have expanded the range of competitive options for livestock transport.

5.4 Increased population density, expansion of agricultural lands, and regulatory restrictions on cattle movements in the Côte d'Ivoire and Togo have effectively limited the option of bringing livestock to market by trekking. Hence, while approximately one-third of all officially recorded arrivals of Sahelian cattle enter the Côte d'Ivoire on foot, most of these combine trekking with truck or train conveyance for the final portion of their journey.

5.5 Rail carriage, which accounted for nearly 40 percent of livestock arrivals in the Côte d'Ivoire during the early 1970s, declined drastically between 1974 and 1985, due to growing competition from road haulers and marked declines in the efficiency and frequency of rail service. In the late 1980s, however, use of the rail system rebounded. In 1989 the rail system transported more than a third of all officially recorded livestock imports to the Côte d'Ivoire, the highest proportion in fifteen years.

6.0 Trekking

6.1 Trekking costs are chiefly comprised of two elements: manpower and subsistence costs for drovers. These costs are, in turn, a function of herd size (the determinant of manpower requirements) and distance (measured as the time required to deliver animals to market).

6.2 Field data clearly indicate that trekking is no longer the most cost-effective means of conveying livestock to coastal markets. While

economies of scale related to the cost of manpower are extremely competitive for large herds, they must be weighed against the opportunity costs and risks associated with lengthy delivery delays.

7.0 Trucking

7.1 Ambitious investment in the sub-regional road network has increased the range and competitiveness of road transportation during the last twenty-five years.

7.2 However, road transport is characterized by high costs and inefficiency due to a number of factors, including: (a) high import duties on vehicles, spare parts and fuel; (b) high administrative costs and fees for the registration and operation of vehicles; (c) regulated tariff rates which are set too low, thereby limiting profitability and reinvestment, and; (d) high contingent costs in the form of bribes, extortion and other corrupt behavior by uniformed services responsible for controls.

7.3 In the Sahel, road transport remains competitive largely because of imbalances between the high volume of imports and the low volum of exports. This results in excess cargo capacity in vehicles returning to coastal entrepots. Transporters in the region regard Sahelian commodities as backhaul cargo which subsidizes the more profitable transport of merchandise through coastal ports.

7.4 Although there is overall surplus cargo capacity for Sahelian exports to the coast, there is an apparent deficit of vehicles for hauling livestock. This is explained by the fact that a high proportion of imports are hauled in vehicles unsuitable (e.g. tank trucks) or prohibited (vehicles carrying food and pharmaceuticals) for livestock carriage.

7.5 Truck tariffs in the region are etablished by governmental decree and periodically adjusted for inflation. However, tariffs are low and fall below the long-run variable and fixed costs incurred by transporters.

7.6 In order to compensate for low returns, transporters resort to overloading their vehicles, thereby slowing delivery time, increasing fuel consumption, and accelerating wear on already poorly-maintained roads.

8.0 Rail Transport

8.1 While Sahelian exporters recognize the railroad to be the most cost-effective means of shipping livestock to the Côte d'Ivoire, the inefficiency of rail operations provides practical disincentives to its use. Nonetheless, during the 1980s live animals constituted between 19 and 25 percent of all north-south cargo carried by the rail system.

8.2 The RAN rail system, which underwent scission and reorganization under the respective governments of the Côte d'Ivoire and Burkina Faso in 1989, is burdened with high debt and high recurrent costs. The effect of management difficulties has been declining quality and frequency of maintenance and service. Superannuated inventory of rolling stock, inadequate

numbers of boxcars and other wagons in the international "pool" of equipment, and inappropriate wagons for live cargo haulage have limited the ability of the railway to satisfy high demand for its services by livestock traders. Much-needed reinvestment for the upgrading and expansion of track and sidings has been postponed as the result of economic difficulties in Côte d'Ivoire.

8.3 Rail tariffs are established such that unit costs rise with proximity to major terminals. This reflects high demand concentration in southern portions of the rail network and pricing incentives to encourage long-distance carriage, particularly for backhaul cargo on north-to-south trajectories. Current rail tariffs for livestock, averaging 46.4 CFA per ton kilometer, are higher than those for other cargo. This reflects the higher unit cost of carrying live cargo, which cannot be consolidated or stacked to make use of all available carriage capacity.

8.4 The Burkinabe and Ivorian rail companies have instituted competitive tariffs to attract livestock cargo. However, existing haulage capacity and scheduling deficiencies effectively limit the volume of live cargo at current levels.

8.5 Although the need for reinvestment in the rail system is evident to policy-makers and donors, current economic conditions in the region preclude short-term improvements. Plans by the government of Burkina Faso to extend its rail system into the Sahelian provinces in the north of the country are officially justified, in part, by the need to expand rail capacity for livestock. Required conditions for livestock transport--including the need for rapid delivery to avoid high mortality--render this plan impractical. The greater evident need lies in expansion of carrying capacity for livestock through investment in appropriate rolling stock.

9.0 Official Costs

9.1 The greatest proportion of official levies in the cost of livestock marketing are charges to the economies of exporting nations rather than to importing countries.

9.2 Administrative fees, export taxes and other formal governmental charges constitute between 25 and 49 percent of all livestock marketing costs, exclusive of purchase costs, for cases studied in the field. Official costs vary on the basis of the location of terminal markets, the declared value of exported animals and modes of transportation used.

9.3 In most cases analyzed in the field, the aggregate cost of taxes and official fees exceeds to the net profit earned by traders.

9.4 Recent fiscal reforms in Mali and Burkina Faso will favorably alter the competitive position of livetock exports by significantly reducing official costs.

10.0 Corruption and Transaction Costs

10.1 Although corruption is prevalent throughout the region and impedes

the free movement of goods and services, few governments have been able or willing to employ effective efforts to combat it. Most corruption in West Africa's regional marketplace stems from the monopolistic nature of public administration. Government bureaucracies control the economic freedom to do business, as agents of the public interest. Their power to grant administrative and other clearances amounts to discretionary authority to determine who may do business, and when, where and how business may be conducted.

10.2 Types of corruption that are prevalent include: payments for licit services, bribery, extortion and fraud.

10.3 Field data indicate that various forms of illicit payments to public officials represent a cost factor of between 5 and 23 percent of marketing costs, exclusive of livestock purchase. The actual amount of these costs are a function of the mode or modes of transportation utilized, countries of origin, and the location of terminal markets. Aggregate costs can result in supplementary per head costs of up 1,300 to 7,000 CFA for cattle and proportionately higher amounts of 1,500 to 2,500 CFA for sheep and goats. Mean annual import figures for Côte d'Ivoire during the 1980s suggest that the global costs of corruption to Ivorian consumers are between 472-1,321 million CFA for cattle and between 533-817 million CFA for small ruminants.

10.4 Individual trader strategies for dealing with corruption are idiosyncratic. Traders weigh marginal returns from using particular routes and modes of transport against the transactions costs associated with using those routes/modes. Many traders cultivate official patronage to minimize corruption costs. Others avoid trekking and trucking routes in Côte d'Ivoire which are well-known as characterized by excessive corruption. To cope with very high transactions costs at the border and within Côte d'Ivoire, <u>sociétés de convoyage</u> have been created, which have negotiated lower, fixed payoffs to customs, veterinary and forestry officials.

10.5 Efforts to curb inflation in transport costs must address a variety of factors related to the causes of corrupt behavior. These include resolving chronic delays in the payment of public agents; indexing wages to the cost of living; instituting more efficient management controls in the civil service; simplifying administrative procedures for economic activities; improving oversight and supervision of the uniformed services; rotating uniformed personnel on a regular basis; tangibly rewarding efficient and honest performance by civil servants; instituting effective protection for those who report corrupt activity; rationalizing transport tariffs to induce improvements in vehicle safety; and mobilizing public opinion against corrupt activity.

11.0 <u>Livestock Trading Costs and Returns</u>

11.1 Representative livestock trading budgets were developed for four traders based in Mali and Burkina Faso, who used different transport routes and modes in exporting live animals to coastal markets. It is noteworthy that three of the four traders reported credit arrears among coastal butchers.

11.2 Excluding livestock purchase, which is treated as an investment cost, the two key cost components of livestock trade were transportation charges and the cost of various administrative formalities, export duties and fees, and taxes.

11.3 Returns to livestock trading ranged from 7.6 to 12.2 percent. In cases where payment by coastal buyers is delayed for more than six months, returns are lowered. Trader returns appear quite modest, given their skills, risks of livestock mortality, forced sale or confiscation, and losses ensuing from coastal buyer default on credit extended by traders.

11.4 Using weekly cattle price data from seven Malian markets which serve as collection or redistribution markets for the long distance trade, pairwise correlation coefficients were computed for export grade stock, cattle destined for resale and slaughter stock of the Zebu Peul race (see Annex 1). Despite data limitations, correlations were high for export grade stock and generally lower for cattle destined for resale, a more heterogeneous group of animals. The high correlation coefficients for export grade cattle suggest that the Malian livestock market is well-integrated and competitive. This reinforces the findings of the livestock trader budget analysis, which suggests that returns are not excessive.

12.0 The Ivorian Livestock and Meat Market and Import Trends

12.1 Côte d'Ivoire has invested heavily since the great Sahelian drought of 1968-73 in expanding its domestic livestock production. Cattle numbers have increased significantly in the north, as animals have migrated in from the Sahel and due to donor-subsidized investments in relatively capital-intensive techniques of production. A vibrant poultry industry emerged in southern Côte d'Ivoire during the late 1970s and the 1980s. As foreign exchange earnings and government revenues from coffee and cocoa exports decline in the 1990s, public sector investments in import-substituting livestock production will face increasing budgetary pressure.

12.2 The 1980s, particularly the second half of the decade, witnessed a phenomenal growth in Ivorian imports of chilled and frozen red meat and poultry, largely from EC countries. Beef imports predominated, and they flooded local urban markets at prices that undercut northern Côte d'Ivoire and Sahelian fresh beef.

12.3 There are twenty importers of chilled and frozen meat from non-African sources. Importers sell to wholesalers, who provide retailers with short-term credit. Most imported red meat is low-grade capas, which is sold in lower income quartiers of Abidjan in the form of brochettes or at small retail markets for home consumption. In March 1990, capas was priced at 650 CFA/kg., well below fresh beef prices of 1,000-1,200 CFA per kilogram. While red meat consumption of lower income urban consumers has appeared to expand, the regional livestock industry has been harmed by cheap imports.

12.4 The share of Sahelian exporting countries in Côte d'Ivoire's red meat market has declined from nearly two-thirds in 1975 to below 30% in 1988. Imports of non-African carcass meat and offals comprised only one-sixth of the

red meat supply in 1975, but non-African suppliers had captured over half of the market by 1988. EC countries, particularly France, Germany, Holland and Ireland, predominate as suppliers of carcass meat and offals to the Côte d'Ivoire market. South American market share has declined significantly relative to the late 1970s, when South American suppliers dominated among non-African suppliers. Calculated CIF prices for imports of chilled and frozen red meat in 1988 were well below wholesale prices for live Sahelian animals (expressed in carcass meat equivalents), even in assembly markets in Mali. The overvalued CFA has contributed greatly to the expansion in the market share of non-African suppliers. This has penalized regional West African producers and traders.

12.5 EC export statistics tell the same story as Côte d'Ivoire import data. Beef shipments to Côte d'Ivoire nearly tripled from 1984 to 1987. Pork and poultry exports also expanded significantly in 1987 relative to 1986 and earlier years. The calculated implicit prices (FOB) of EC exports declined from 1982 to 1987 in nominal terms (in ECU/kg.) for most categories of meat products, but most dramatically for chilled and frozen beef and pork.

12.6 Preliminary data from 1989 for Côte d'Ivoire suggest that imports of chilled and frozen red meat declined relative to 1987-88, the peak years. Implicit prices for beef, pork and pork offals and poultry imports rose in 1989 relative to 1988, which seemed to dampen Ivorian purchases. Economic hardship in Côte d'Ivoire, related to declining coffee world prices in 1988-89, probably also dampened Ivorian demand for imported red meat. Although demand for livestock and red meat imports may have shifted back somewhat in 1989-1990, rising prices for EC imports may encourage some substitution of Sahelian (and northern Ivorian) fresh red meat for chilled and frozen red meat at the margin.

12.7 As global markets for agricultural commodities become increasingly well-integrated, "domestic" policies in the EC, the U.S. and other major suppliers will affect African import levels and interregional trade flows. EC livestock subsector policies had a very significant effect on the competitiveness of Sahelian exporters of live animals in coastal West African markets during the 1980s. As the EC culled surplus dairy stock and expanded exports of chilled and frozen beef to non-EC markets at cut rate prices, West African livestock producers and traders were dealt a severe blow. The disruption of the red meat markets of several coastal West African importing countries that took place during the second half of the 1980s is not likely to recur in the 1990s, as the EC dairy herd has been cut back 12% (1987 relative to 1983), surplus beef has been disposed, and EC meat supplies are now in better balance with EC demand. Some observors forecast a deficit by the mid-1990s. EC agricultural and trade policies and their impact on the competitiveness of the Sahelian livestock industry need to be carefully monitored. The final report will include further information and analysis of this issue.

1.0 Introduction

1.1 Terms of Reference and Methods

The purpose of this study is to analyze the competitiveness of livestock as a Sahelian export commodity, and to identify constraints to expanding livestock exports from the Sahel to coastal markets.

Rapid appraisal methods were used to study livestock marketing, focusing on the following aspects:

(a) Identification and analysis of regional production, slaughter, and consumption trends;

(b) Identification and analysis of factors contributing to declining export performance during the 1980s, including policy, institutional and international trade factors;

(c) Collection and analysis of marketing costs and returns to long distance livestock traders; and,

(d) Analysis of administrative, regulatory and policy barriers to increased Sahelian livestock trade.

Field research was carried out in November-December 1989 (Mali and Côte d'Ivoire) and January-February 1990 (Burkina Faso and Côte d'Ivoire). Field visits concentrated on observation and interviews in the French and Fulfulde languages at all stages of the livestock production and marketing processes, both in production zones and at official government agencies charged with administration of livestock trade.

The work was carried out by the Agricultural Marketing Improvement Strategies Project, managed by the Bureau for Science and Technology of AID/Washington. The Sahel West Africa Office of the Africa Bureau provided funding for the field work.

1.2 Revisiting Sahelian Livestock Sector Competitiveness

The Sahelian countries of Mali, Burkina Faso, Niger and Chad have been important suppliers of live animals to coastal West African markets for decades. Data from the 1960s to late 1980s show that exports from Burkina Faso have fallen off steadily since the late 1960s and early 1970s. Despite periodic fluctuations related to drought, forced liquidation of animals by herders, and lags in herd reconstitution following drought, Malian exports of cattle and small ruminants expanded by approximately 60%.

The University of Michigan's Center for Research on Economic Development (CRED) conducted a multi-country study of the Sahelian livestock industry and exports to coastal markets during the late 1970s, which warned of increasing coastal imports of cheap Argentine and Australian chilled and frozen beef and

mutton. The historical livestock trading relationship between Sahelian suppliers and coastal consumers was beginning to unravel. As international agricultural commodity markets became better globally integrated during the 1980s, competition facing Sahelian livestock exporters expanded further. Burdensome EC surpluses of dairy products led to culling of surplus dairy cows during the mid to late 1980s, expanded surpluses of beef, and export incentives to liquidate these surpluses on the world market. Coastal West African consumers benefitted in the short run from the massive influx of inexpensive EC chilled and frozen beef (and poultry/pork products) during the second half of the 1980s, but regional West African livestock industry and Sahelian exporters were harmed.

By the end of the decade, EC cattle numbers and the surpluses of beef had declined, in turn lowering export volumes. There appeared to be an opportunity for expansion of Sahelian exports and recapturing of at least some lost market share. Yet Sahelian human populations have nearly doubled by 1990 from the early 1970s, while livestock populations have not reached pre-drought (of 1968-1973) levels. In order to maintain domestic red meat consumption levels in the Sahel, the supply of surplus animals for export has likely declined. Nevertheless, the idea that Sahelian suppliers of coastal markets should re-emerge as competitive, as EC exports of surplus red meat decline, inspired this study. This study will especially focus on policy, regulatory and technical barriers to Sahelian competitiveness in the coastal West African market of Côte d'Ivoire.

1.3 Data Sources and Difficulties

Despite decades of increased awareness of the importance of the livestock sector to national economies, few governments in the region have developed regular and reliable monitoring techniques for livestock production. This contrasts starkly with increasingly diligent efforts by Sahelian nations to monitor markets and price performance.

Because this study is regional in its focus, numerous problems were encountered with regard to data. Time-series data on livestock production, price, sales, export and import volume are not uniformly available in all countries studied. Where such data do exist, methods used for data collection and analysis are not always clear. Discrepancies in partner data (e.g. export and import statistics) are more the rule than the exception.

Data sources utilized for this study are of several types. Official statistics have been derived from central government data banks, ministry statistics offices, or agencies and sub-divisions of government offices having sectoral responsibilities. Often these data are derived independently and do not agree. Where such discrepancies exist and cannot be adjusted with confidence by the authors, multiple data sets are reported and utilized in analysis.

More thorough and regular reporting of data is carried out by importing nations in the region than by the Sahelian livestock-producing nations. Data pertaining to import volume are reported with a relatively higher degree of

confidence than other data. This is because imported livestock are required to obtain clearance documents when they enter coastal nations. Liquidation of commercial herds is almost impossible to carry out unless such clearances are obtained. At the same time, regular monitoring of major markets, slaughter facilities, and transportation hubs allows for comparison and checks of data reported at each stage of the marketing process. By contrast, data from exporting nations are less reliable, due to economic incentives for traders and herders to evade export controls and their incumbent costs.

Several multi-state organizations, (including the Food and Agriculture Organization of the United Nations, the Communauté Economique de Bétail et Viande, and the Conseil de l'Entente) publish annual statistical summaries for member states. Few methodological guidelines are provided to member states by data-gathering agencies of these organizations. It is difficult to distinguish carefully-monitored data from that based on only partially-reported field checks or hypothetical projections.

The third set of data sources was field interviews with key participants in the regional marketing system, at livestock markets, abattoirs and retail outlets.

Estimates of the Sahelian livestock population are inaccurate, based upon only quasi-formal and occasional data-gathering techniques by veterinary services, as well as the dubious practice of hypothesizing standard rates of growth for successive years, without field checks for accuracy.

Formal census activities in the region have been extremely limited in frequency. In the case of the 1989 Burkina Faso livestock census, random sampling techniques substituted for a complete enumeration of the livestock population by veterinary authorities. However, the 1989 effort in Burkina Faso represents a significant improvement over the practices of prior years, when the livestock herd was enumerated at the time when livestock head taxes were being collected. Given herders' incentives to under-report livestock ownership in order to minimize payment of head taxes, concurrent enumeration resulted in undercounting of the national herd of cattle and small ruminants.

Market data reported by Mali and Burkina Faso authorities is based upon periodic monitoring of selected markets and extrapolations derived from them. Field checks of market enumerators convinced the authors that these data are partial at best and not uniformly reliable for all reporting sites.

2.0 Trends in Regional Livestock Production

2.1 Review of Production Data

Time-series data from governmental and donor sources for the Sahelian countries (Burkina Faso, Mali, and Niger) are subject to a variety of interpretations regarding livestock numbers and their growth over time. Volatile short-term changes in livestock populations and the prevalence of migration and transhumance as responses to resource availability are characteristic of the region, underlining the need to interpret livestock data within the context of long-term cyclical trends and on a regional basis.

Livestock population dynamics in the Sahelian nations have been marked by episodes of rapid and extreme decline (at times exceeding 50 percent per annum) followed by periods of relatively rapid growth. Taken at face value, such short-term trends are misleading and imperfect indicators of longer-term trends.

Data assembled for six West African nations (Burkina Faso, Mali, Niger, Côte d'Ivoire, Togo, and Benin) in Table 1 show that aggregate cattle numbers for the region have actually declined at a (negative) compound growth rate of -1.0%. What is most striking is the difference in growth rates between Sahelian and coastal countries. While growth was strongly positive across the three coastal countries (3.1% per annum), it was negative for the three Sahelian countries (-2.6%). Drought-induced mortality in the Sahel and Sahel to coastal state migration were the factors most likely responsible for these trends. The compound growth rates for the three countries under study were as follows: Côte d'Ivoire, 5.3%; Burkina Faso, 0.4%; Mali, -1.2%. As discussed below, Côte d'Ivoire encouraged in-migration of livestock herds from Mali and Burkina Faso.

Longer term data for the Sahelian nations of Mali, Burkina Faso, and Niger, however, indicate a gradual overall increase in cattle numbers. Significant migratory activity within and between states has been noted for Mali, Burkina Faso and the Côte d'Ivoire in recent years, shifting the traditional geographical "center of gravity" of Sahelian pastoralism. This can be attributed to the effects of successive droughts in the region; social and demographic pressures on the use and availability of traditionally-pastoral lands; and policies to encourage the migration and settlement of pastoral peoples south of the Sahel, most notably in the Côte d'Ivoire.

Burkinabe data illustrate the potential for error in Sahelian livestock data. Data collected (at the same time the head tax was being administered) for a twenty-three year period indicate an overall growth trend, simultaneous with a movement of livestock away from the densely-populated Mossi plateau. Burkina Faso's cattle population, estimated to be 2,750,000 head in 1988, grew by 17.5 percent over a twenty-three year period. The mean cattle population for the 1978-1988 period was 2,829,000 head. In marked contrast to the head tax data, the 1989 Burkinabe census revealed that cattle numbers (3,860,000 head) were significantly higher than assumed, based on earlier estimates.

Table 1

Cattle Population in Selected West African Countries, 1978-1988
(in '000 head)

Year	Coastal Countries: Benin	Togo	Cote d'Ivoire	Subtotal Coast	Sahelian Countries: Burkina Faso	Niger	Mali	Subtotal Sahel	Grand Total
1988	896	255	992	2143	2750	1564	4724	9038	13,324
1987	895	245	945	2085	2700	1495	5457	9652	13,822
1986	895	232	936	2063	2891	1429	4475	8795	12,921
1985	962	228	920	2110	2948	1649	4344	8941	13,161
1984	924	229	808	1961	3100	3559	4899	11558	15,480
1983	897	225	803	1925	2928	3557	5682	12167	16,017
1982	871	244	765	1880	2871	3487	6663	13021	16,781
1981	846	237	696	1779	2815	3419	6396	12630	16,188
1980	829	273	666	1768	2760	3354	5850	11964	15,500
1979	755	230	630	1615	2706	3257	4865	10828	14,058
1978	740	255	590	1585	2653	2990	4603	10246	13,416
11 Yr Mean	865	241	796	1901	2829	2705	5269	10804	14,606
Std. Dev.	65	14	133	186	127	899	756	1486	1338
Compound Growth Rate (in %)	2.0	-0.3	5.3	3.1	0.4	-9.4	-1.2	-2.6	-1.0

Sources: CEBV statistics and OMBEVI statistics (Mali)

2.2 The Effects of Migration on Regional Livestock Production

Among the most pronounced livestock production trends in the sub-region has been a generalized movement by pastoralists southward from the Sahelian regions of both Mali and Burkina Faso. Migrations from the interior delta of the Niger River to the Sikasso region of Mali and into the Côte d'Ivoire have been the most notable.

2.2.1 Shifts in Livestock Population in Mali and Burkina Faso

Prior to 1986, Mali's 5th Region, with Mopti at its center, was the nation's principal production zone for livestock, accounting for more than a third of all cattle and small ruminants. However, beginning in the late 1970s, the Sikasso region began a sustained pattern of growth, during which its cattle population rose from 637,000 in 1977 to 1,228,000 in 1989.

The causes of outmigration from the Mopti region are complex and related in part to severe drought conditions in the early 1980s. Drought-related

mortality among livestock during the period 1982-1984 was disasterous in the 5th Region. Highest losses were reported for the administrative subdivisions of Bankass, Djenne, Douentza, Koro, and Niafunke, where mortality of cattle, small ruminants, horses and donkeys exceeded 50%. Losses elsewhere were estimated to be between 22% and 34%.

While the process of migration may have been accelerated by the drought of 1982-84, changes in the interregional composition of cattle and small ruminant herds have been underway since the mid-1970s (see Table 2). From 1977 to 1987, the cattle population in the drier regions of Kayes, Mopti, Tombouctou and Gao declined from 20% to 56%. Many of these cattle relocated to wetter regions with better pasture conditions, such as Koulikoro, Sikasso and Segou, whrere cattle population increased 48%, 93% and 79% respectively from 1977 to 1987. The national cattle population remained relatively stable over this period, increasing by only 2%.

With the exception of the vary driest regions of Tombouctou and Gao, small ruminant populations expanded significantly in each region. The lowest percentage increase over the 1977 to 1986 period was 25% in Mopti, where 29% of the national herd is located. The national small ruminant herd increased by 21%, outstripping expansion in the cattle herd by a wide margin. The reasons for this disparity are likely to be that small ruminants are generally heartier and more drought-tolerant than cattle, and that they do better on the allegedly deteriorating range conditions in Sahelian countries. Herders may also prefer an increasing proportion of small ruminants in their herds as a hedge against drought-induced mortality. Not only do sheep and goats fare better in droughts than cattle, but they also recover (reproduce) more quickly following drought.

In informal interviews, herders and livestock traders in the Mopti Region attribute outmigration of cattle to a breakdown of traditional arrangements governing pastoral and agricultural land use in the Niger Delta. This system, the "Dina", was first established in the 1820's, following an invasion of the ethnically-related Toucouleur and Fulbé peoples. Under the Toucouleur leader, Sekou Amadou, farms, pasture lands, and cattle trails were demarcated and strict regulation of grazing and transhumance itineraries was established. This system of land management has been extensively studied and is often cited as a historical model for grass-roots management of marginal resources.[1]

While this system remained in place following Malian independence in 1960, supervision and administration of the Dina has since passed from pastoralist-dominated traditional councils into the hands of centrally-appointed regional conferences and local commissions. Government authorities argue that this change was necessary to ensure proportional representation of pastoral and farming populations.

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[1]A two-volume study by Jean Gallais, Le delta intérieur du Niger, (1967) is the definitive study of resource management in this region. Pertinent shorter discussions are found in Ba (1962), Lewis (n.d.) and Swift (1977).

TABLE 2

Malian Livestock Population by Zone, 1977 - 1987

Cattle

	Kayes		Koulikoro		Sikasso		Segou		Mopti		Tombouctou		Gao		Bamako		Total	
1977	1,006	22%	476	11%	635	14%	309	7%	1,619	36%	252	6%	180	4%	--	0%	4,477	100%
1978	668	15%	689	15%	1,042	23%	512	11%	1,080	23%	372	8%	240	5%	--	0%	4,603	100%
1979	787	16%	697	14%	971	20%	627	13%	1,159	24%	361	7%	257	5%	6	0%	4,865	100%
1980	743	13%	758	13%	933	16%	663	11%	1,699	29%	776	13%	270	5%	8	0%	5,550	100%
1981	745	12%	780	12%	1,092	17%	686	11%	1,812	28%	863	13%	411	6%	7	0%	6,396	100%
1982	801	12%	838	13%	1,066	16%	739	11%	1,974	30%	775	12%	460	7%	10	0%	6,663	100%
1983	732	13%	724	13%	1,059	19%	720	13%	1,560	27%	558	10%	314	6%	15	0%	5,682	100%
1984	565	12%	606	12%	1,040	21%	595	12%	1,447	30%	432	9%	194	4%	20	0%	4,899	100%
1985	525	12%	628	14%	1,101	25%	555	13%	1,062	24%	295	7%	148	3%	30	1%	4,344	100%
1986	662	15%	649	15%	1,170	26%	581	13%	1,031	23%	239	5%	117	3%	26	1%	4,475	100%
1987	735	16%	705	16%	1,228	27%	554	12%	1,014	22%	202	4%	79	2%	30	1%	4,547	100%
Change Over Period	-27%		48%		93%		79%		-37%		-20%		-56%		--		2%	

Sheep and Goats

1977	833	10%	971	11%	289	3%	766	9%	2,429	28%	--	0%	3,244	38%	--	0%	8,532	100%
1978	880	10%	1,131	13%	447	5%	857	10%	1,958	23%	1,588	18%	1,791	21%	--	0%	8,652	100%
1979	827	8%	1,235	12%	442	4%	989	10%	2,587	26%	1,829	18%	2,024	20%	--	0%	9,933	100%
1980	898	8%	1,057	9%	475	4%	928	8%	2,888	25%	2,846	25%	2,415	21%	80	1%	11,587	100%
1981	991	8%	1,125	9%	756	6%	999	8%	2,724	22%	3,055	25%	2,732	22%	21	0%	12,403	100%
1982	1,137	9%	1,178	10%	618	5%	1,063	9%	2,905	23%	3,003	24%	2,483	20%	40	0%	12,437	100%
1983	920	8%	1,173	10%	614	5%	1,391	12%	3,231	29%	1,491	13%	2,379	21%	45	0%	11,244	100%
1984	940	9%	1,300	13%	375	4%	1,300	13%	3,100	30%	1,307	13%	2,030	20%	30	0%	10,382	100%
1985	921	9%	1,440	15%	441	4%	1,308	13%	2,922	30%	1,045	11%	1,720	17%	50	1%	9,847	100%
1986	1,049	10%	1,600	15%	506	5%	1,273	12%	3,029	29%	1,195	12%	1,650	16%	38	0%	10,340	100%
Change Over Period	26%		65%		75%		56%		25%		--		-49%		--		21%	

Sources: DNE, OMBEVI

Note: USAID/Bamako assembled the data from the above sources.

The enhanced influence of traditional farming populations on Mali's Commission Locale de Matérialisation de l'Espace Pastoral has had the effect of reversing decisions which long favored livestock producers. In the administrative region of Djenné, astride the Niger and Bani rivers, the past eight years have seen some 80% of traditional floodplain pastures overtaken by agriculture. While farmers who violate Dina regulations that prohibit farming on these lands have been fined on occasion, no instances were identified in which farmers were required to abandon these lands. More frequently noted were instances in which herders were fined or arrested for damage caused by cattle to agriculturally-reclaimed floodplains.

The magnitude of migration from Djenné, only one of several subdivisions of the 5th Region, is indicated by data maintained by the local veterinary post. Officials there note that the number of cattle annually vaccinated has declined since 1984/85 (a post-drought year) from 15,000 head to only 8,000 in 1989.

Researchers affiliated with Mali's Opération du Développement d'Elevage (ODEM) have noted, however, that agricultural incursions are only one aspect of more wide-ranging phenomena that have contributed to environmental changesin the 5th Region. They argue that ecological changes in the interior delta of the Niger River reflect a pattern of declining rainfall, diminished annual flooding, and ecological stress from rising human and livestock populations. Evidence to support this thesis includes high mortality of trees and shrubs; a narrowing of botanical diversity including the replacement of perennial grasses with annual species and dicotyledons: and increased soil erosion, paricularly in flood plains where rice-farming has become predominant.

The growth of Sikasso's livestock population has also resulted from aggressive extension programs by the Malian cotton parastatal agency, Compagnie Malienne du Développement Textile, (CMDT) to encourage widespread adoption of animal traction technology and the use of agricultural by-products for livestock fattening.

The implications of this phenomenon for government policy are significant. The traditional strength of Malian livestock production has been its ability to thrive in an environment characterized by marginal resources through highly mobile production strategies. The emerging dominance of intensive agro-pastoral production strategies in the south, and increasing orientations around mixed farming and livestock production activities elsewhere in the country, suggest new opportunities for increasing the efficiency of small-scale livestock production.

Similar arguments may be made for Burkina Faso. In spite of evident flaws in earlier livestock data, comparison of the 1989 census estimates with 1969 census data (see Tables 3 and 4) clearly indicates a movement of the cattle population into the southern and easternmost provinces of the country. According to the census, cattle numbers in the Centre-Est Region have more than tripled during the past twenty years, while they have doubled in the Est, Centre-Sud and Bougouriba Regions. At the same time, however, small ruminant

Table 3

Regional Distribution of Burkina Faso's Cattle Population, 1969 & 1989

('000 head)

Region	1969	1989	% Change
Centre-Est	105	320	205%
Est	283	627	122%
Centre-Sud	180	357	98%
Bougouriba	127	245	93%
Centre-Ouest	159	261	64%
Mouhoun	320	486	52%
Hauts-Bassins	152	226	49%
Centre	232	294	27%
Comoe	95	114	20%
Centre-Nord	287	298	4%
Nord	152	150	-1%
Sahel	560	482	-14%
Total	2,652	3,860	46%

Table 4

Regional Distribution of Burkina Faso's Small Ruminant Population, 1969 & 1989

('000 head)

Region	1969	1989	% Change
Centre-Est	100	700	600%
Nord	300	1,319	340%
Est	350	1,361	289%
Centre	300	1,104	268%
Mouhoun	400	1,053	163%
Centre-Sud	250	627	151%
Centre-Ouest	350	869	148%
Bougouriba	200	441	121%
Centre-Nord	650	1,419	118%
Sahel	900	1,906	112%
Hauts-Bassins	300	320	7%
Comoe	200	151	-24%
Total	4,300	11,270	162%

production has intensified throughout the country, while it has more than quadrupled in the traditional stockraising northern regions.

2.2.2 Growth in the Livestock Population of Côte d'Ivoire

Remarkable growth during the past fifteen years has also been evidenced by the livestock sector in Côte d'Ivoire. Extensive government and donor investment has resulted in sustained annual growth of 5.3 percent in the cattle population during the 1978-88 period and an increase of nearly sixfold in the population of zebu cattle in the northern region of the country from 1970-1985 (see Tables 5 and 6; note that transhumant cattle are Zebu cattle).

While extensive efforts have been made to increase the efficiency of livestock production among small farmers, more rapid success has resulted from official efforts to attract transhumant and nomadic herds from Mali, Ghana, and Burkina Faso. Efforts to sedentarize immigrants have, however, encountered serious difficulties. Social tensions and land disputes between immigrants and the indigenous farming population led to communal violence and the deaths of several dozen Fulbe herders in 1987-1988, resulting in a slowdown of herder immigration into Côte d'Ivoire during the past two years.

Table 5

Evolution of the Ivorian Cattle Population by Zone, 1970-1985

Zone/Category	1970	1975	1980	1985
Northern Zone				
Transhumants	55,000	120,000	215,000	317,000
Sedentary	260,000	270,000	332,000	455,000
Farms/Ranches	--	--	20,000	23,000
Sub-total	315,000	402,000	567,000	796,000
Central Zone				
Traditional	50,000	54,000	72,000	90,500
Farms/Ranches	--	--	--	4,500
Sub-total	50,000	54,000	72,000	95,000
Forest Zone (West, Southwest, Southeast)				
Traditional	--	--	18,000	20,000
Farms/Ranches	--	--	--	9,500
Sub-total	15,000	21,000	30,000	29,500
TOTAL	380,000	477,000	669,000	920,500

Source: FAO, 1986

In addition to sedentary pastoralism, the region between Kadiolo and Kolondiéba (Mali) and Korhogo and Ferkessédougou (Côte d'Ivoire) currently hosts what local authorities refer to as populations flottantes ("floating populations") of nomadic pastoralists who regularly move between the countries. Principal incentives to these herders are the relative abundance of pasture in Mali and the opportunity to evade official procedures and costs for the export of livestock to Côte d'Ivoire.[2]

Table 6

Estimated Breakdown of the Ivorian Cattle Population by Breed

Breed	1970	1975	1980	1985
Taurin (bos taurus)	330,000	345,000	455,000	605,000
% of total	85.7%	74.2%	67.9%	65.6%
Zebu (bos indicus)	55,000	120,000	215,000	317,000
% of total	14.3%	25.8%	32.1%	34.4%

Source: FAO, 1986

Herders and veterinary authorities interviewed in this region note that this zone is also approaching the limit of its ability to sustain new herds. Annual influxes of transhumant herds during the dry season (estimated at between 300,000-500,000 head) regularly deplete water resources and force herds to move into more densely-cultivated Ivorian territory.

[2] Included in this population are Fulbe herders who the author first met in eastern Burkina Faso in 1977 and who have migrated to the region in stages via Togo and Ghana since then.

3.0 Livestock Exports from Burkina Faso and Mali

As shown in Table 7, data sources for livestock exports do not always agree. FAO figures are obtained from individual government trade data and are sometimes adjusted at a later date. Government trade data usually reflect official or declared exports and hence underrepresent total exports, as live animals can be trekked across borders without detection. The Malian government has attempted to make an upward adjustment to reported exports by estimating undeclared exports (see Table 8). Regardless of the source of data and the method used to estimate exports, the estimates shown in Table 7 should be treated with caution. They do provide a rough measure of export performance, however, and indicate performance in any given period relative to another.

3.1 Cattle Exports

Sahelian export performance was mixed for cattle (see Table 7 and Figure 1). If official Burkinabe exports for 1987 and 1988 are added to the FAO series for the 1980s, cattle exports averaged 43.0 thousand during the 1980s, a 30.4 percent decline from the mean 61.8 thousand head exported during the 1970s.

This decline was likely due to a variety of factors which are difficult to assess individually:

- Increased domestic demand for beef in Burkina Faso, resulting in reduced supply of exportable cattle from Burkina Faso in the 1980s relative to the 1970s;
- Decreased coastal demand for Burkinabe stock (especially in Ghana);
- Substitution of cheaper imported chilled and frozen meat for fresh Burkinabe beef in Côte d'Ivoire;
- Increased smuggling and evasion of official controls;
- Disincentive Burkinabe economic, agricultural and trade policies during the 1980s (particularly during the revolutionary period of the Sankara regime); and,
- Mounting inefficiencies in rail shipment.

While recorded Burkinabe cattle exports were lower during the 1980s than during the 1970s, Malian cattle exports increased in the 1980s according to both FAO and government sources.[3] Malian exports declined from 1971-72 highs

[3]Note that we refer to official estimates by DNE/OMBEVI of Malian exports, which include recorded exports plus an estimate of unrecorded exports. It appears as if unrecorded exports are estimated to be twice as large as recorded exports in most years.

TABLE 7

Estimated Cattle and Small Ruminant Exports from Mali and Burkina Faso, and Estimated Cattle Imports into Cote d'Ivoire, 1970-88

Year	CATTLE EXPORTS: Burkina Faso FAO	Burkina Faso SEE	Burkina Faso CEBV	Mali FAO	Mali DNE/OMBEVI Recorded	Mali DNE/OMBEVI Est.Total	CATTLE IMPORTS: Cote d'Ivoire FAO	Cote d'Ivoire Divers	Cote d'Ivoire CEBV	SMALL RUMINANT EXPORTS: Burkina Faso FAO	Burkina Faso SEE	Burkina Faso CEBV	Mali FAO	Mali DNE/OMBEVI Recorded	Mali DNE/OMBEVI Est.Total	SMALL RUMINANT IMPORTS: Cote d'Ivoire Divers	Cote d'Ivoire Border	Cote d'Ivoire CEBV
1970	50.8	83.3		190.0	81.6	190.0	230.7	198.4			233.2			107.4	270.0	351.0		
1971	81.1	81.1		200.0	80.0	200.0	254.7	175.9			238.0			126.9	320.0	303.5		
1972	72.9	72.9		220.0	98.9	220.0	280.0	212.4			279.8			97.1	200.0	394.0		
1973	81.4	81.4		150.0	51.3	150.0	220.0	224.0			301.8			NA	200.0	427.1		
1974	79.9	79.9		122.0	40.6	122.0	160.0	193.6			273.6			85.8	155.0	385.8		
1975	66.5	66.5		114.0	15.6	114.0	190.0	141.0			302.6			22.3	200.0	352.6		
1976	35.1	35.1		111.0	24.9	111.0	145.0	112.3			177.7			101.4	265.0	300.3		
1977	31.9	31.9		139.0	31.9	102.0	160.0	137.1			144.0			95.1	280.0	277.7		
1978	49.1		49.1	193.0	47.0	103.0	170.0	147.4	147.6		197.8	197.8		113.0	134.0	309.3		309.3
1979	61.6		61.6	274.0	77.0	225.0	211.1	211.0	211.1		216.7	216.7		109.0	307.0	398.5		398.5
Mean 70s	61.8			171.3	55.7	151.7	202.2	175.3			236.5			85.8	233.1	350.0		
1980	66.1		66.1	396.0	65.0	250.0	225.0	225.4	225.0		209.0	209.4		157.0	319.0	368.4		368.4
1981	65.1		65.1	455.0	60.0	204.0	225.7	226.0	225.7		158.9	158.9		134.0	402.0	406.9		406.9
1982	30.0		30.6	479.0	73.0	219.0	165.0	190.0	164.4			87.6		156.0	468.0	302.0		302.0
1983	18.0		32.6	470.0	87.0	305.0	190.0	185.0	147.5			72.7		54.0	162.0	350.0		219.7
1984	44.6		53.3	493.0	141.0	423.0	210.0	210.0	135.5			132.2		496.0	1488.0	360.0		202.0
1985	51.5	39.7	39.7	225.0	80.0	241.0	210.0	235.0	167.4		66.7	66.7		148.0	444.0	330.0		237.2
1986	45.0	41.0	41.0	263.0	69.0	207.0	213.0	180.0	132.5		89.4	89.4		132.0	396.0	346.0		249.3
1987		18.2	18.2		70.0	210.0		129.3	109.4		42.0	42.0		133.0	399.0	378.0	306.3	272.4
1988		24.7			73.0	215.0		118.6			28.6			155.0	435.0		271.3	
Mean 80s	45.9	30.9	43.3	397.3	80.7	252.7	205.5	188.8	163.4			107.4		173.9	501.4	355.2		282.2

Sources: FAO refers to FAO Trade Yearbooks. SEE refers to Secretariat d'Etat pour Elevage. DNE is Direction Nationale d'Elevage. OMBEVI is Office Malien du Betail et de la Viande. Divers refers to multiple sources, including Staats (1980), FAO (1986) SODEPRA posts and veterinary (BSV) posts, and estimates of ZOA and SODEPRA reported in SEDES (1988).

Notes: The DNE/OMBEVI export figures show both recorded exports and an official estimate of total exports from 1977 to 1988. Estimates of Ivorian imports include official and an estimate of unofficial exports as well. Border refers to 1987-88 recorded entries, reported by SODEPRA Nord and SICF.

TABLE 8

Recorded and Unrecorded Exports, Slaughter and Offtake for Cattle and Small Ruminants in Mali
(000 head)

Cattle

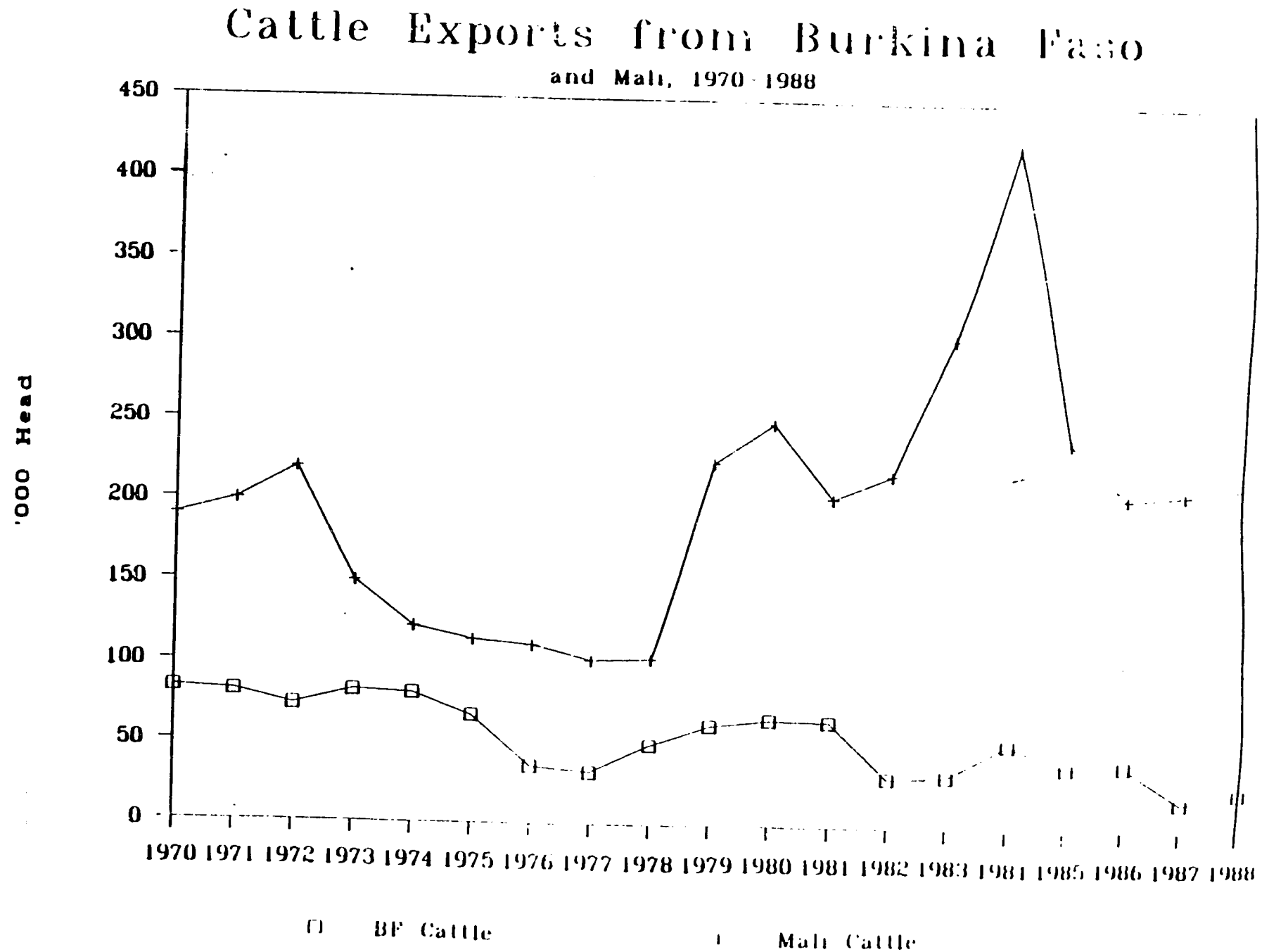
	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
National Herd Size	4,447	4,603	4,865	5,850	6,396	6,663	5,682	4,899	4,344	4,475	4,547	4,724	4,842
Exports													
Recorded	32	47	77	65	68	73	87	141	80	69	70	73	80
Unrecorded	70	56	148	185	136	146	218	282	161	138	140	142	150
	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	102	103	225	250	204	219	305	423	241	207	210	215	230
Slaughter													
Recorded	102	119	137	114	130	126	137	188	196	158	138	143	150
Unrecorded	221	211	161	193	194	189	206	281	294	200	207	214	225
	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	323	330	298	307	324	315	343	469	490	358	345	357	375
Total Offtake	425	433	523	557	528	534	648	892	731	565	555	572	605
Offtake Rate	9.6%	9.4%	10.8%	9.5%	8.3%	8.0%	11.4%	18.2%	16.8%	12.6%	12.2%	12.1%	12.5%

Sheep and Goats

National Herd Size	8,532	8,652	9,933	11,587	12,403	12,437	11,244	10,382	9,847	10,340	10,509	11,000	11,100
Exports													
Recorded	95	113	109	157	134	156	54	496	148	132	133	155	170
Unrecorded	185	21	198	162	268	312	108	992	296	264	266	280	290
	----	----	----	----	----	----	----	----	----	----	----	----	----
Total	280	134	307	319	402	468	162	1,488	444	396	399	435	460
Slaughter													
Recorded	237	299	295	292	293	315	334	361	391	314	348	450	525
Unrecorded	3,047	3,072	3,190	3,295	1,660	1,782	1,893	2,043	2,218	1,256	1,392	1,350	1,575
	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	3,284	3,371	3,485	3,587	1,953	2,097	2,227	2,404	2,609	1,570	1,740	1,800	2,100
Total Offtake	3,564	3,505	3,792	3,906	2,355	2,565	2,389	3,892	3,053	1,966	2,139	2,235	2,560
Offtake Rate	41.8%	40.5%	38.2%	33.7%	19.0%	20.6%	21.2%	37.5%	31.0%	19.0%	20.4%	20.3%	23.1%

Sources: DNE, OMBEVI (Compiled by USAID/ Bamako)

FIGURE 1


Cattle Exports from Burkina Faso
and Mali, 1970-1988
'000 Head
450
400
350
300
250
200
150
100
50
0
1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988
BF Cattle
Mali Cattle

to a mean 110.4 thousand head in the five years (1974-78) following the drought of 1968-73. By 1979 estimated exports surpassed 200,000 head, a level below which they did not drop during the 1980s. The peak export years of 1983 and 1984 (according to government estimates) came after close to a decadeof national herd build-up and, in 1984, in response to drought and ecological stress.

The most important market for Burkinabe and Malian cattle has historically been Côte d'Ivoire. During the 1960s and first half of the 1970s, Ghana was a key market for cattle exported from Burkina Faso, as shown in Table 9. Ghana absorbed an average of 48.4% of Burkinabe cattle exports during the 1960s. During the 1980-87 period, exports to Ghana averaged only 3.7% of Burkina's total cattle exports. In contrast, cattle exports to Côte d'Ivoire became increasingly significant in relative (percentage) terms from the 1960s on, exceeding 75% in every year since 1983. Absolute exports to Côte d'Ivoire actually dropped from the record years of 1965-1969 to the 1970s and 1980s.

AMIS was unable to obtain an uninterrupted series of export destination data for Mali since the mid-1960s. Data reported in Delgado (1980) for the 1967-1977 period show a similar pattern for Malian exports. Côte d'Ivoire became an increasingly important destination for Malian cattle, while exports to Ghana dropped from significant levels through 1974 to negligible in 1975-77. Liberia has been a secondary market for Mali during the 1970s and 1980s. Nigeria is reported to be another secondary market for Malian cattle, but these exports are unrecorded (or perhaps recorded as exports to Burkina Faso). Regardless of the importance of Liberia and Nigeria as export destinations, however, exchange rate depreciation, political instability and economic depression in each of these nations have reduced the volume of exports in recent years.

Ivorian cattle import figures cannot be expected to match up exactly with aggregate Burkinabe and Malian export data, since Côte d'Ivoire may import live animals from other sources and recording errors are likely. According to time-series data shown for Côte d'Ivoire in Table 7, there appears to have been little if any change in average Ivorian cattle imports between the 1970s and 1980s, which averaged slightly more than 200,000 head per year according to FAO and 175,000-190,000 according to a series reported by SEDES (1988). Yet the red meat supply has expanded in Côte d'Ivoire during the 1980s, due to a larger domestic ruminant livestock herd and higher levels of Ivorian imports of chilled and frozen red meat from non-African sources (as discussed in Section 12.0).

3.2 Small Ruminant Exports

As seen from Table 7 and Figure 2, Burkinabe exports of small ruminants declined dramatically (58.3%) during the 1980s relative to 1970s. In contrast, Malian exports of small ruminants were on average over twice as high during the 1980s as during the 1970s, according to government estimates. The export figure for 1984 of 1.488 million head appears to be exceptionally high, even though 1984 was a year of drought and livestock herd

Table 9

Destination of Burkinabe and Malian Cattle and Small Ruminant Exports by Importing Country, 1960-1987

BURKINA FASO

Year	Cattle Exports: CI	% CI	Ghana	Togo/Benin	Nigeria	Total	Small Ruminant Exports: CI	% CI	Ghana	Togo/Benin	Total
1960	16.4	18.9%	64.6	5.9		86.9	30.9	15.1%	173.6	5.3	204.4
1961	12.3	13.3%	78.4	2.1		92.8	34.6	15.5%	187.1	5.8	223.0
1962	34.4	33.5%	67.8	0.5		102.7	74.4	29.7%	175.6	5.8	250.8
1963	43.9	39.1%	68.4	0.0		112.2	120.8	45.1%	146.2	5.4	267.5
1964	44.2	38.6%	68.6	1.7		114.6	156.9	67.6%	68.8	6.0	232.1
1965	79.5	58.8%	53.8	1.9		135.2	225.4	76.9%	62.0	4.3	293.2
1966	66.6	58.0%	27.3	4.0		98.0	153.0	77.0%	42.8	3.1	198.6
1967	62.2	70.5%	23.2	3.0		88.5	206.1	79.5%	37.7	3.0	259.3
1968	76.8	78.1%	19.4	2.1		98.3	250.0	85.5%	38.2	8.1	292.3
1969	62.5	72.1%	28.7	3.5		86.7	174.5	79.6%	36.4	14.1	219.1
Mean 60s	49.9	49.1%	49.2	2.5		101.6	142.7	58.5%	96.8	6.2	244.0
1970	59.2	71.1%	20.9	3.2		83.3	191.6	82.2%	36.4	5.3	233.2
1971	59.6	73.5%	18.5	3.0		81.1	191.4	80.4%	40.0	5.8	238.0
1972	58.0	79.6%	18.0	4.9		72.9	265.8	95.0%	8.2	5.8	279.8
1973	48.6	59.7%	27.5	5.4		81.4	276.6	91.7%	17.0	5.4	301.0
1974	49.5	62.0%	23.5	7.0		79.9	241.5	88.3%	25.3	6.8	273.6
1975	57.9	87.1%	3.7	4.0		66.5	286.9	94.0%	11.4	4.3	302.6
1976	23.2	66.1%	3.5	8.4		35.1	136.3	80.0%	18.3	3.1	177.7
1977	24.7	77.4%	2.8	4.0		31.9	123.3	85.4%	18.1	3.0	144.4
1978	35.1	71.5%	3.6	9.8	0.7	49.1	180.4	91.2%	9.2	8.1	197.8
1979	46.4	75.3%	3.0	10.8	1.4	61.6	193.6	89.3%	9.0	14.1	216.7
Mean 70s	46.2	71.9%	11.7	6.1		64.3	210.7	89.1%	19.5	6.2	236.6
1980	52.4	79.3%	3.7	7.7	2.3	66.1	196.8	94.0%	3.1	9.0	209.4
1981	33.5	51.5%	1.8	4.2	25.6	65.1	135.4	85.2%	3.2	18.3	158.9
1982	16.3	53.3%	0.6	0.1	13.6	30.6	69.8	79.7%	1.2	15.0	87.6
1983	24.8	76.1%	0.0	2.5	5.3	32.6	56.7	78.0%	0.0	15.3	72.7
1984	40.9	76.7%	2.2	1.2	9.0	53.3	110.0	89.2%	0.3	13.0	132.3
1985	34.6	87.2%	2.9	1.7	0.5	39.7	64.2	96.3%	1.0	0.9	66.7
1986	39.6	96.6%	0.2	1.2	0.0	41.0	79.2	88.6%	0.0	9.0	89.4
1987	17.4	95.6%	0.0	0.8	0.0	18.2	40.5	96.4%	0.0	0.8	42.0
Mean 80s	32.4	74.2%	1.6	2.4	7.0	43.3	95.1	88.5%	1.1	10.3	107.4

MALI

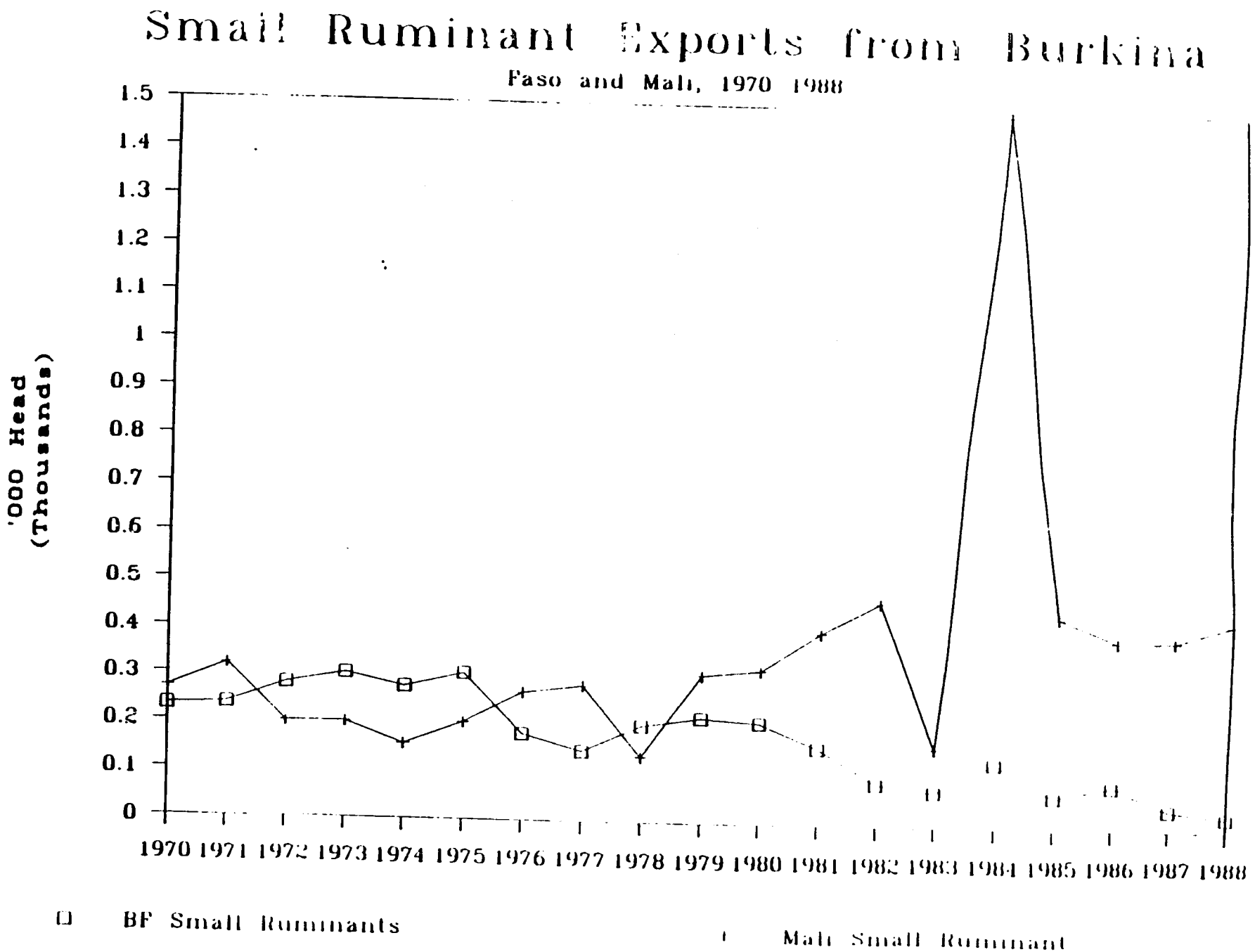
Year	Cattle Exports: CI	% CI	Ghana	Niger (a)	Liberia	Senegal	Other	Total	Small Ruminant Exports: CI	% CI	Ghana	Liberia	Senegal	Algeria	Other	Total
1960																
1961																
1962																
1963																
1964																
1965																
1966																
1967																
1968	17.2	39.9%	23.1	0.7	0.8	0.0	1.3	43.1	7.7	23.2%	0.6	1.3	0.2	0	23.6	33.4
1969	17.6	47.7%	18.7	0.0	0.4	0.2	0.0	36.9	2.0	11.6%	1.9	0.6	4.7	0	[illegible]	17.4
Mean 60s	30.8	48.3%	43.9	0.1	0.7	[illegible]	0.4	76.4	42.5	74.7%	0.5	2.0	0.0	0	11	56.9
1970	21.9	41.9%	28.6	0.3	0.6	0.3	0.6	52.1	17.4	48.6%	1.0	1.2	1.6		14.5	35.8
1971	49.6	60.8%	30.0	0.4	1.2	0.4	0.0	81.6	82.9	77.2%	1.4	5.0	2.0	0.0	16.1	107.6
1972	44.5	58.6%	32.2	7.8	0.3	0.0	3.2	88.0	86.7	68.3%	10.5	0.6	0.0	0.0	29.1	126.9
1973	49.5	58.1%	16.2	4.7	5.0	0.0	23.5	98.9	81.2	83.6%	0.4	4.1	0.0	0.0	11.6	97.1
1974	32.7	63.1%	11.3	0.0	0.0	0.0	7.8	51.8	NA	NA	NA	NA	NA	NA	NA	NA
1975	26.9	66.3%	6.3	0.1	2.8	0.7	3.8	40.6	70.2	81.8%	0.0	4.6	0.8	5.2	5.0	85.8
1976	13.0	80.5%	0.0	0.0	0.0	1.5	0.3	15.6	18.2	81.6%	0.0	0.0	0.9	0.0	3.2	22.3
1977	17.6	76.7%	0.3	0.1	1.7	5.1	0.1	24.9	59.7	58.9%	0.1	3.1	22.9	14.3	1.3	101.3
1978	22.5	70.5%	0.3	0.8	5.9	1.8	0.6	31.9	56.2	59.1%	0.0	5.9	14.3	17.2	1.5	95.1
Mean 70s	32.1	59.3%	12.1	1.7	2.1	1.2		54.2	65.0	71.6%	1.8	3.3	5.8	5.2	9.7	90.9
1980		69.0%					27.4		115.2	21.2%					374.0	570.0
1981	68.8	85.5%			11.2		0.4	80.5	133.6	90.2%		3.2			11.3	148.1
1982	66.5	96.2%			2.6			69.1	124.1	93.4%		0.3	0.1	0.3		132.8
1983	61.3	87.0%			9.0	0.1		70.5	136.9	93.0%		0.7	1.2	8.1	0.1	147.2
1984									127.5	55.2%						231.0
1985																
1986																
1987																
Mean 80s																

Sources: University of Michigan, CRED (1980), Livestock and Meat Marketing in West Africa (1960-1977).
Communauté Economique du Bétail et de la Viande, Statistiques Communautaires (1978-1986).
République de Burkina Faso, Ministère de l'Agriculture et de l'Elevage (1986-1987 for Burkina Faso).

Note: a signifies that cattle were in transit to Nigeria and Benin (see 1966-77 period).

Note: Means are calculated across years for which complete data were available.

FIGURE 2


Small Ruminant Exports from Burkina
Faso and Mali, 1970 1988
'000 Head
(Thousands)
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988
BF Small Ruminants
Mali Small Ruminant

liquidation.[4] If the 1984 estimate is dropped from the calculation of mean exports during the 1980's, the average drops to 378,100 head, which is still 62.2% above average levels of the 1970s. Nevertheless, this still represents a significant expansion in small ruminant exports from Mali during the 1980s. The reason for this expansion is unknown, but it may be partly related to an increase in the national small ruminant herd at the same time the cattle herd stagnated. Herders may have substituted small ruminants for cattle as a form of insurance against drought reoccurance, given higher reproduction rates for the former.

Ivorian imports of small ruminants, almost exclusively from Sahelian exporting countries, averaged approximately the same levels during the 1980s as during the 1970s. If the "border" data reported for 1988 are appended to the "diverse" series, Ivorian imports of small ruminants during 1988 fell to their lowest levels (271.3 thousand) since 1977 (277.7 thousand head, the next lowest figure during the 1970s and 1980s).

3.3 Export Herd Composition of Cattle

It was not possible during the course of this study to examine production parameters or to analyze the breed, age and gender profiles of Sahelian livestock herds. Earlier studies of this subject, however, have established that optimal herd composition in the Sahel comprises a relatively higher proportion of female animals of breeding age to males.[5] Economic advantage is obtained by herders who hold onto females until the end of their reproductive life, while culling a high proportion of immature males and aged cows.

Recent data on the composition of the Ivorian import herd Table 10 indicate that 98.1% of all Sahelian cattle entering the country in 1988 were animals of four or more years and that 83.8 percent of imported stock were males (predominantly steers). Of all imported cattle, 84.3 were of the zebu (bos indicus) race or were zebu-dominant cross-breeds.

As noted elsewhere in this report (Sections 5, 7 and 8), conveyance costs for livestock are relatively uniform on a per animal basis; the shipment of a large animal costs no more than that of a small animal. Import herd composition data suggest that herders are maximizing their returns by shipping mostly higher-value mature animals to coastal markets, where they can obtain higher prices relative to smaller, immature animals. While a proportionately higher number of culled stock are old cows or immature males, these animals are not sent to coastal markets in large numbers. They are generally sold for slaughter in the Sahel or savannah regions.

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[4]Note that cattle exports reached record levels in 1984 as well, although by not nearly as great a multiple as small ruminant exports. Small ruminant exports in the following year of 1985 were only 29.8% the level of 1984.

[5]See Dahl and Hjort's (1976) Having Herds for the classic study on ruminant livestock herd growth dynamics.

Table 10

Imported Cattle Herd Composition as Monitored by Northern Border Posts in the Côte d'Ivoire, 1988

Gender/ Age	Breed	Border Post: Tienko	Tengrela	Nielle	Ouangolo	Doropo	Total
Adult Male	Zebu/ Zebu X	2,835	7,512	25,101	48,769	4,875	89,092
Adult Female	Zebu/ Zebu X	675	3,214	1,051	0	3,577	8,517
Immature Male	Zebu/ Zebu X	0	602	134	43	323	1,102
Immature Female	Zebu/ Zebu X	1	288	82	0	220	591
Adult Male	Taurin/ Taurin X	1,903	3,387	1,052	0	3,306	9,648
Adult Female	Taurin/ Taurin X	1,491	2,000	858	0	3,890	8,239
Immature Male	Taurin/ Taurin X	0	186	64	0	28	278
Immature Female	Taurin/ Taurin X	1	100	51	0	96	248
	Total	6,906	17,289	28,393	48,812	16,315	117,715

Note: X signifies a crossbred animal.

Summary Breakdowns:

		Total	% Total
Breed	Zebu and Zebu X:	99302	84.4
	Taurin and Taurin X:	18413	15.6
Age-Sex Category	Adults (all breeds):	115496	98.1
	Males (all breeds):	98740	83.9
	Females (all breeds):	16756	14.2
	Immature (all breeds):	2219	1.9
	Males (all breeds):	1380	1.2
	Females (all breeds):	839	0.7

3.4 Red Meat Exports from the Sahel

Burkina Faso exports of red meat to coastal destinations, especially Côte d'Ivoire, declined steadily from the late 1960s and early 1970s to the 1980s, as shown in Table 11. Total exports averaged 1,336 metric tons per year from 1966 to 1972 but never reached 1,000 MT in any year after 1972. Exports dropped to an average of 621.2 MT per annum during the 1970s and 352.7 MT from 1980 to 1987. Exports bottomed out at 94.0 MT in 1987, the last year for which data are available. Converting the volume of beef and small ruminant meat exports to live animal equivalents, it is clear that exports of red meat constitute a small proportion of total livestock exports.

Red meat exports from Mali have been negligible since the 1960s and first half of the 1970s. Delgado (1980) reported that red meat exports averaged 305.1 MT from 1967 to 1971 and were shipped mainly to Côte d'Ivoire. Exports fell to nearly zero in 1977 and 1978, and recent statistical abstracts published by OMBEVI report no red meat exports.

TABLE 11

Composition of Beef, Small Ruminant Meat and Other Meat Exports from Burkina Faso, 1966-1987

(in metric tons)

Year	BEEF: Cote d'Ivoire	BEEF: % CI	BEEF: Togo	BEEF: Benin	BEEF: Nigeria	BEEF: Other	BEEF: Total	SMALL RUMINANT MEAT: Cote d'Ivoire	SMALL RUMINANT MEAT: % CI	SMALL RUMINANT MEAT: Togo	SMALL RUMINANT MEAT: Benin	SMALL RUMINANT MEAT: Nigeria	SMALL RUMINANT MEAT: Other	SMALL RUMINANT MEAT: Total	HORSE MEAT: Cote d'Ivoire	HORSE MEAT: % CI	HORSE MEAT: Togo	HORSE MEAT: Total	PORK	TOTAL
1966														270.5						1006.0
1967														203.4						1430.0
1968														120.6						1692.0
1969																				1327.0
Mean 60s														198.2						1363.8
1970														117.8						1189.0
1971														60.4						1374.0
1972														98.6						964.0
1973														48.6						854.0
1974														55.3						878.0
1975														21.7						473.0
1976														12.3						212.0
1977														10.4						189.0
1978	127.1	61.3%	17.1			63.2	207.4	10.9	75.2%	2.1			1.5	14.5	21.0	95.0%	1.1	22.1	4.5	226.4
1979	69.3	14.8%	23.3	7.4		366.8	466.9	2.6	38.8%	2.8			1.3	6.7	23.1	76.0%	1.3	30.4	0.0	473.5
Mean 70s														44.6						621.2
1980	200.6	65.5%	47.3	55.7		2.5	306.1	11.4	55.6%	8.0			1.1	20.5	19.0	94.5%	1.0	20.1	0.2	326.8
1981	396.6	72.0%	113.9	40.0		0.1	550.6	114.7	90.9%	9.2	0.1		2.2	126.2	23.8	94.1%	1.5	25.3	0.7	677.5
1982	34.5	12.7%	200.8	0.0	36.0	0.1	271.4	67.3	65.8%	21.2	0.3	11.2	2.3	102.3	17.9	94.7%	1.0	18.9	0.3	374.0
1983	32.3	32.4%	7.4	0.0	60.0	0.0	99.7	5.9	71.1%	1.2	0.3		0.9	8.3	4.4	91.7%	0.4	4.8	4.5	112.5
1984	98.4	22.0%	1.8	0.2	270.0	77.7	448.1	9.5	81.9%	0.5	0.6		1.0	11.6	11.2	100.0%		11.2	0.2	459.9
1985	92.0	31.2%	16.0	2.0	118.0	67.0	295.0	10.0	45.5%	4.0	1.0	5.0	2.0	22.0						317.0
1986	31.0	7.1%	1.0	0.0	357.0	47.0	436.0	15.0	62.5%	3.0			6.0	24.0						460.0
1987	4.0	4.9%	1.0	0.0	76.0	1.0	82.0	8.0	66.7%	2.0			2.0	12.0						94.0
Mean 80s	111.2	35.7%	48.7	12.2	152.8	24.4	311.1	30.2	74.0%	6.1			2.2	40.9	15.3	95.0%	1.0	16.1	1.2	352.7

Sources: Communaute Economique du Betail et de la Viande, Statistiques Communautaires, 1978-84 and 1985-88.

4.0 The Organization of Long Distance Livestock Marketing

The overwhelming majority of domestic and international livestock transactions in the Sahel and coastal countries are carried out by private entrepreneurs operating through traditional marketing systems.

This marketing network is not only labor-intensive, but may be characterized by its informality, i.e. the absence of institutional or juridical intermediation. Traditional marketing systems are highly personalized and based upon agreements and sanctions internal to the community of social and economic interests that overlap in the marketplace. In this respect, ethnic solidarity proves less a factor in the marketplace than established networks of livestock producers, traders, intermediaries and butchers which are inter-ethnic in nature. Factionalism in the marketplace is not common and, more often than not, regionally-based.

The degree of transparency suggested by activity in the open livestock markets of the Sahel is misleading. It is largely offset by the reticence of participants vis-a-vis casual observers, non-participants and government officials.

External authority in the marketplace is acknowledged only as the result of its imposition by government. Formal legal process is called upon to redress dysfunctions and disputes only on those rare occasions when traditional methods of conflict resolution have been exhausted. More often than not grievances in the marketplace are attributed to the effects of government policy and the behavior of official actors.

Governments in each of the study countries have made efforts in recent years to "modernize" livestock marketing. During the 1970s parastatal agencies (e.g. ONERA in Burkina Faso and ODEM in Mali) were created which sought to integrate production and marketing functions in order to obtain economies of scale, and to experiment with milk production, ranching, feedlot-based finishing, and refrigerated storage and transport of meat. With the sole exception of SODEPRA, the Ivorian livestock development agency, these organizations are currently financially insolvent or are being dissolved as part of structural adjustment programs.

The typology of Sahelian livestock markets first proposed by Herman (1979) continues to be valid in all countries studied. In his discussion of market organization in Burkina Faso (then Haute Volta), Herman categorized markets on the basis of their location in the marketing chain, predominant transaction types, and the roles of economic actors.

4.1 Collection Markets

Collection markets are located, for the most part, in key livestock production zones throughout the Sahel and, increasingly, in savannah and forest-savannah regions of southern Mali and Burkina Faso.

Principal sellers at collection markets are herders, who will typically present one or two cattle for sale at a time, as they cull weakened or unproductive animals from their herds to meet their own cash needs. Principal buyers include other herders who are seeking to replenish or add animals to their own herds, or traders who are amassing livestock herds for resale elsewhere.

Intermediaries, who play an important role in facilitating transactions at further stages of the marketing process, are generally not salient actors in smaller collection markets. However, in transactions which involve sellers and buyers who are not known to one another or which involve purchases on credit terms, intermediaries may be called upon to witness or guarantee the legitimacy of transactions.

Interviews and observations of collection market activity suggest that the role of sales to herders at collection markets may be less significant than suggested in earlier studies. Most livestock purchased for herd replenishment are obtained through informally negotiated purchases away from the marketplace. The majority of stock presented for sale at collection markets are females past breeding age, castrated males raised for slaughter, and young males culled because of herd surplus or lack of value relative to other breeding animals. Herder cattle purchases at these markets are generally confined to mature bulls with exceptional breeding characteristics or breeding-age cows, usually presented for sale in tandem with unweaned calves. Purchases of sheep and goats by farmers, herders and town-dwellers are more common, due to the larger number of fecund and traction animals presented for sale.

Although collection markets are, first and foremost, localized points of entry into the marketing chain, many of those in the Sahel are also of an international character. Cross-border transactions at collection markets are motivated by a variety of factors. The majority of border sales are, like most local market sales, made by herders who are grazing stock nearby as they follow seasonal grazing patterns. However, because many small border markets are not monitored closely by customs authorities, collection markets along the borders of Mali, Burkina Faso, Côte d'Ivoire, Togo and Niger often attract significant aggregate export and import transactions which are intentional efforts to bypass official export costs and procedures.

Slaughter activity at collection markets does not play a major role, although local butchers are invariably present.

Livestock purchased at collection markets by traders are often not immediately transported to other markets. Instead they may be placed in the care of a local herder until a large enough market herd is assembled or until market conditions elsewhere are deemed propitious, often requiring a period of up to several months. By the same token, livestock collected in border regions will often be confided to local herders who are able to cross international frontiers for the purpose of evading export taxation and official costs.

4.2 Redistibution or Regroupment Markets

These are generally large markets, located at transportation hubs or along major road and rail routes. Herman argues that these are located mainly in the southern portions of livestock-producing countries. However a number of the largest redistribution markets in the Sahel (including Fotoma and Sofara in Mali, and Gorom Gorom and Djibo in Burkina Faso) are located in the center of major production zones, at some considerable distance from terminal markets and transportation hubs.

Sales activity at regroupment markets is rarely constant throughout the year, following the rhythm of seasons, pasture and water availability. Northernmost markets in the Sahel, for instance, are relatively inactive during the dry season, when the majority of livestock are off on transhumance in more southern locations. These markets are, likewise, only relatively more active at the peak of the rainy season when, in spite of the presence of large numbers of livestock, traders have difficulty traveling unimproved and muddy roads to market. Their peak activity generally occurs late in the year, during the Harmattan period and early dry season, when grazing is abundant and markets are easily accessible.

Northernmost markets also pass through multi-year cycles of inactivity related to periodic drought, which triggers herd migration over long distances in search of water and pasture. For example, Markoye, formerly one of the principal northern markets in Burkina Faso, has been in decline since the early 1980s, following the migration of local herds to the more southern Fada N'Gourma region. Similarly, the once-important Diapaga market in eastern Burkina Faso has also declined, due to decreased demand from depressed Nigerian markets.

The majority of transactions at redistribution markets are carried out by private entrepreneurs through professional intermediaries. Traders who have amassed livestock at rural collection markets present animals for sale to other traders, who are assembling large herds for delivery to major urban markets.

Intermediaries at both redistribution and terminal markets act as agents who guarantee the legitimacy of transactions, witness the terms of sale, and introduce sellers to buyers for a transaction-based fee. This fee varies in different markets.

Because most redistribution markets are located in provincial towns and administrative centers, they often take place in the vicinity of other large-scale commercial activity. This provides traders with immediate access to goods vehicles for the transportation of livestock to terminal markets and to butchers, who purchase injured and weakened stock for local slaughter.

Market infrastructure (including hangars, weigh bridges, corrals, and loading ramps) is also often well-developed at redistribution markets. The role of these markets as points of departure for export herds trekked or trucked to coastal markets has also led to the assignment of administrative,

customs and veterinary personnel to service the needs of traders and exporters.

4.3 Terminal Markets

Terminal markets are located in or adjacent to urban areas, where nearly all sales are for local slaughter and consumption. While large coastal cities are the principal terminal markets in West Africa, the Sahelian cities of Bamako, Ouagadougou, and Bobo Dioulasso are also categorized as terminal markets due to their large populations and the great number of livestock which are purchased for slaughter there. Sellers in terminal markets are almost exclusively traders, while buyers are for the most part butchers or representatives of consortia of butchers.

Analysis of export figures for livestock imported into the Côte d'Ivoire in 1987 (see Tables 12 and 13) highlight the key role of several terminal markets in the regional economy. The single-largest terminal market in the Côte d'Ivoire is Abidjan, which consumed 54.5% of all imported cattle and 71.2% of imported small ruminants.

Table 12

Declared Destinations of Imported Small Ruminants at Northern Border Control Posts of the Côte d'Ivoire, 1988

Destination	# Head	% Total
Abidjan	193,894	71.2%
Bouake	33,008	12.1%
Daloa	9,059	3.3%
Man	7,174	2.6%
Gagnoa	4,964	1.8%
Yamoussoukro	4,078	1.5%
Odienne	2,219	0.8%
San Pedro	2,177	0.8%
Soubre	2,131	0.8%
Duekoue	1,764	0.6%
Devrabo	1,764	0.6%
Korhogo	1,599	0.6%
Seguela	1,520	0.6%
Abengourou	1,169	0.4%
Tehini	1,083	0.4%
Divo	1,009	0.4%
26 other destinations	3,840	1.4%
Total	272,452	100.0%

Source: SODEPRA-Nord and Customs Service Reports

The second largest market is Bouake, which consumed 10.1% of all imported cattle and 12.1% of all small ruminants. Of sixty Ivorian markets importing Sahelian livestock in 1987, seventeen terminal markets consumed more than 1000 head, or 94.5% of all cattle.

The five largest Ivorian terminal markets for cattle (Abidjan, Bouake, Daloa, Abengourou, and Man) account for 78.9% of all imports, while the top five small ruminant markets (Abidjan, Bouake, Daloa, Man, and Gagnoa) consumed 91.9% of all imports. Of 43 Ivorian markets importing small ruminants from the Sahel, fifteen terminal markets consumed more than 1,000 head each, for a combined total of 98% of all Sahelian sheep and goats.

Table 13

Declared Destinations of Imported Cattle at Northern Border Posts of the Côte d'Ivoire, 1987

Destination	Head of Cattle	% Total
Abidjan	66,150	54.6%
Bouake	12,316	10.2%
Daloa	6,837	5.6%
Abengourou	5,775	4.8%
Man	4,648	3.8%
Odienne	2,132	1.8%
Gagnoa	1,918	1.6%
Soubre	1,826	1.5%
Agnibilekrou	1,762	1.5%
Yamoussoukro	1,686	1.4%
Duekoue	1,686	1.4%
Devrabo	1,686	1.4%
Bouafle	1,484	1.2%
San Pedro	1,345	1.1%
Issia	1,186	1.0%
Sinfrag	1,135	0.9%
Danane	1,131	0.9%
Ferkessedougou	697	0.6%
Ebilassokro	595	0.5%
42 other destinations	5,269	4.3%
Total	121,264	100.0%

Source: SODEPRA-Nord and Customs Service Reports

4.4 The Role and Importance of Livestock Traders

The majority of livestock traders involved in the Sahelian--coastal trade are individuals with regional, ethnic, or kinship ties to livestock production zones. While certain ethnic groups are predominant (Malian Maraka, Fulbe and Dioula, and Burkinabe Mossi, Fulbe and Hausa), only the Fulbe--who are the principal herding ethnic group in the Sahel--may be said to benefit from participation in virtually all stages of the marketing process.

A typology of livestock traders would include four roughly defined groups: occasional traders; long-distance traders; short-distance traders; and brokers.

4.4.1 Occasional Traders

Barriers to entry in livestock trading are limited only to investment capital and knowledge of the marketplace. As a result, a large number of market transactions are carried out by individuals who trade livestock on an occasional or infrequent basis.

The dominant group of participants of this type are Fulbe, Tuareg, (and to a far lesser extent Bella) herders. These traders typically amass small to medium-sized market herds, comprised of their own animals or those belonging to relatives and friends. Investment capital in these transactions is limited, and the bypassing of intermediary traders improves the potential for maximizing gains.

Occasional traders are most active in commerce between collection and regroupement markets, where the personal familiarity of traders with market conditions is greatest, and where delivery time to markets is shortest. Sales by occasional traders are rarely made on credit.

Large market herds are also sometimes traded over long distances between the Sahel and coastal markets by occasional traders. Among the most valuable informants encountered in the field were Sahelian livestock producers who, beginning in the 1950s, had assembled such herds only once each year for trade with the Abidjan/Port Bouet market.

Field interviews indicate that occasional trading is frequently an initial stage in the career of individuals who evolve into long-distance traders, or the final stage in the career of aged traders.

4.4.2 Sahelian and Coastally-Based Long-Distance Traders

The largest number of traders interviewed in the course of this study were of this type. The internal organization of livestock trading is such that the location of particular traders' home bases in relation to terminal markets may be insignificant to market conduct. The successful conduct of long-distance trade cannot be a solitary activity, because it requires cooperative efforts throughout various stages of the marketing process. For this reason, manpower derived from multigenerational kinship, ethnic, or economic networks of individuals are a practical necessity. These networks serve the very

practical purposed of lowering transactions costs and reducing trade-related risks. The informal nature of the trade and the increasing prevalence of credit sales also imply that participants in the trade maintain long-term associations with one another.

The social and economic organization of long-distance trade reflects the ethnic division of labor that is characteristic of the Sahel. Livestock producers, generally of the Fulbe or Tuareg ethnic groups, maintain close ties with town-based members of their own ethnic group, or members of other ethnic groups who represent their political and economic interests. Like the Fulbe and Tuareg, these individuals are almost invariably Moslems. These ties are often structured and formalized through inter-marriage, child fostering, and other forms of real or fictive kinship. They are mirrored in the long-distance marketing networks that are characteristic of the livestock trade. Continuity of supply and knowledge of market and price conditions are assured by individuals based at the beginning (production zone) and terminus (coastal markets) of the market chain.

The significance of traders' home bases in the Sahel or coastal markets is most relevant to the flow of capital derived from transactions and the form in which profits are repatriated or reinvested.

On the basis of interview data and observation, Sahelian-based traders seem less likely than their coastally-based counterparts to engage in large-scale trade in commodities other than livestock. Those who do generally concentrate on traditional commodities or raw materials which can be initially purchased with local currency, such as kola nuts and local manufactures.

Coastally-based traders are more likely to diversify by trading in goods and materials of non-African origin, including wax-print textiles, building materials and fixtures, processed foods, and diverse other items.[6] This behavior is due principally to the greater diversity of goods available in coastal markets, and the relative ease of conducting transactions through foreign banks represented in large coastal cities.

One other distinction between coastally-based and Sahelian-based traders merits discussion: cost savings relative to location. Livestock sales at all points in the market chain are usually facilitated by brokers, who witness the terms of sales for a fee. Because of their respective familiarity with local supply and terminal markets, Sahelian and coastally-based traders are often able to bypass intermediaries and generate cost savings of approximately 1,000 CFAF per head at "home" markets. Hence, relative economic advantage does not exist for either trader as the result of his location.

Relative advantage is also limited by the nature of the trading enterprise, which is generally represented at both supply and terminal markets. Apportioning of profits within the enterprise has the tendency of

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[6] Only one of the many traders interviewed simultaneously traded both livestock and imported chilled meat.

diluting the effects of advantages of any single actor relative to others within the enterprise.

4.4.3 Short-Distance Traders

This category of trader is most prevalent in redistribution markets and at transportation hubs. While long-distance traders often rely on established networks and are able to identify prospective buyers even prior to the shipment of livestock from the Sahel, short-distance traders are more speculative. They do not assume the costs and risks of transporting livestock over long distances or across international frontiers but, instead, trade between regional markets.

The largest number of regional traders identified are based in the Côte d'Ivoire, at Ferkessedougou and Bouake. Both of these sites are major railheads and truck depots whence Sahelian livestock are shipped onward to the coast. While purchase costs of stock delivered to these markets are considerably higher than in Mali or Burkina Faso, Sahelian traders often arrive at these sites without adequate resources for onward shipment, or willing to discount ultimate profits through the opportunity for immediate turnaround. Short-distance traders and brokers at these markets often purchase livestock that are deemed too weak to survive long-distance transportation and which are discounted for sale and slaughter in local markets.

Livestock purchased by short-distance traders are also often destined for smaller provincial markets which are not well served by long-distance traders because of their limited demand.

4.4.4 Brokers

Although they do not always play an absolutely essential role in the traditional livestock trade, brokers are present at various stages of the market chain. For the most part, brokers frequent major redistribution markets. Arriving early in the day, they attempt to make their purchases in the bush, before herders have arrived at market. Payment to sellers is often not made at this time, but is postponed to the close of market activity when the stock have been resold. The only advantage to sellers in such cases is that they are able to enter the marketplace with a guarantee of obtaining cash at day's end. This allows them to make food and other purchases on credit early in the day, when prices may be marginally lower than during peak market hours, or to engage in speculative credit purchases of their own. Brokers generally seek to hold on to their stock until later in the market session, when livestock prices have peaked and when the supply of available cattle is diminished. Depending upon the quality of the animals he has purchased, the broker will often seek to sell all of his animals for a lump sum or common average price.

Although the majority of brokerage transactions involve only a single intermediary sale, multiple brokerage sales are not uncommon. At Pouytenga market in Burkina Faso, the author tracked the sale of several male sheep from an initial seller, through three brokers, to their ultimate sale to a

Ouagadougou butcher over the course of a two-hour period. Profit margins to each broker averaged 3,000 CFAF.

Brokerage activity of this sort occurs throughout the year, although it increases in dramatic fashion immediately prior to the Islamic holidays of Ramadan and Tabaski when small ruminants are in greatest demand.

Brokers' risks are limited. Because they are not usually required to pay cash at the time of their purchases, skilled brokers can begin the trading day with little or no liquid capital, recovering their costs and a profit during the course of two to six hours. Prospects for loss are limited; at worst a broker must sell his stock at a price less than that which he paid, covering marginal losses from his own available capital.
While profit margins of brokerage are not high, they reflect the low level of risk and rapid turnaround of this form of speculation.

4.5 Intermediaries and Agents

The role of intermediaries in the livestock trade is commonly misunderstood, both among casual observers of the marketplace and by government agencies charged with their oversight. This is due, in part, to the wide variety of economic services performed by intermediaries and also to the opacity of highly personalized transactions that they facilitate.

In the most widely-applicable terms, intermediaries are agents who bring together buyers and sellers for a fee. These fees may be paid by buyers, sellers, or frequently, both parties to a transaction. In this capacity they usually are responsible for negotiating the terms of a particular sale. On occasion, this role may also require that they serve as legal witnesses to the legitimacy of transactions which are disputed in traditional Islamic courts.

Intermediaries should not be confused with salaried agents, however, who represent the absent owner of livestock in any and all transactions. Such agents are most visible in terminal markets, where they represent Sahelian-based traders or consortia.

4.5.1 Intermediary Functions and Hierarchies

The role of intermediaries does not vary between production zones and terminal markets. Their principal function is to facilitate sales between economic actors at respective stages of the marketing process. Intermediaries are, however, locally-based specialists, intimately familiar with personalities and conditions at specific markets.

As ostensibly neutral third-parties in any transaction, they rarely act on behalf of their kin. However, the degree of confidence they enjoy in the marketplace is based upon ethnic, religious, and regional ties to market participants. Hence, traders exhibit marked preference for intermediaries of their own ethnic group, or members of other ethnic groups with strong ties to their own place of origin. These preferences will often be overridden,

however, by longstanding ties to particular intermediaries who are well known to market participants.

Traders typically deal with the same intermediaries over time, such that specific individuals may come to be identified as agents of particular traders or groups of traders. These ties may be reinforced through a variety of services performed by intermediaries. Indeed, the internal social hierarchy of the marketplace is based largely on the depth and diversity of services performed by individual brokers.

During the past ten years, improvements in telephone communications between coastal cities and the Sahel have allowed intermediaries in terminal markets to act as reliable conduits of information regarding daily market performance[7]. Such information is especially valuable for traders who deliver livestock to market rapidly, by truck or train. Up-to-date information obtained by intermediaries has a strategic value in scheduling delivery of livestock to coincide with peaks in terminal market demand.

An additional function performed by many intermediaries is the provision of room and board to traders, who arrive at terminal markets to supervise the sale of their animals. This role has become so prevalent that the term logeur (lodger) is applied to nearly all intermediaries in the marketplace.

In major markets, a senior class of intermediaries is often found. They are generally elder members of the trading community, who act simultaneously as intermediaries, lodgers, independent brokers, and mediators in the market. A small proportion of these may play a role in the financing of transactions as well.

At the opposite end of the social hierarchy of the marketplace are "petits intermediaires," who have a limited clientele and perform only the most narrow range of services.

4.5.2 Intermediaries as Guarantors of Credit

At the present time, a large proportion of sales in the Abidjan and Bouake terminal markets are made by the extension of credit to butchers. Market participants attribute this to a variety of factors, of which the most frequently cited are the ongoing crisis (crise) in the Ivorian economy, and inadequate regulation of the butcher trade (discussed in the following section).

Staatz (1979) cites interview data which indicate that the prevalence of credit in these markets may be cyclical. His informants noted that credit sales were widespread during the 1950s and 1960s, declining significantly in the 1970s. Staatz's informants also provided carefully defined procedures

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[7]In Gorom Gorom, Burkina Faso the costs of telephoned market reports from Abidjan are paid for by local producers' and livestock traders' associations. The most active large-scale livestock traders, however, subscribe to phone service and bear the costs of these calls.

utilized by intermediaries for debt recovery on behalf of traders or in their own capacity as guarantors.

All but one of the traders interviewed during the course of this study noted that the majority of their sales in Côte d'Ivoire at present were made on credit, with only nominal interest (5 percent uncompounded) and for indefinite periods. In numerous instances informants were willing and able to provide documentary proof of debts owed to them as the result of credit sales.

Because many livestock traders are not based in terminal markets, they often rely on intermediaries to act as either guarantors of credit purchases or, more frequently, agents for the recovery of debts. Most important, however, is the intermediaries' role in identifying creditworthy purchasers.

At present, few intermediaries encountered in Abidjan or Bouake admitted a willingness to act as guarantors, due to the large number of defaults by butchers and the inability of governmental authorities to enforce recovery of even legitimate debts. This represents an erosion in one of the key functions of intermediaries over the course of the past decade and indicates one of the principal dysfunctions in the Ivorian market for Sahelian livestock.

4.6 Butchers

The social and economic organization of the butcher trade in all of the countries studied exhibits great similarity. The trade is dominated almost exclusively by Moslems, who observe Koranic strictures in the performance of their activities, allowing them to serve the full range of clientele. While non-Moslem butchers are found throughout the region, they serve exclusively a non-Moslem, and thereby limited, clientele. In those instances where they are present in terminal markets, they are physically segregated from other butchers.

While butchers represent a wide variety of ethnic groups, certain groups tend to dominate the trade both in the Sahel and in coastal markets. Principal among these are Maures, Bambara, and Bella (in Mali and Côte d'Ivoire); Bariba and Dendi (Benin, Togo, and Côte d'Ivoire; and Nago (Togo and Côte d'Ivoire). Fulbe (or Peul), who are the principal regional stockraisers and heavily represented in the livestock trade, rarely work as butchers, however.

Although competition is active among butchers, they are among the best politically-organized trade groups in the region and are regularly alleged to behave in a collusive manner. Official concerns about concerted efforts by butchers to drive up prices by limiting slaughter have led to strict government price regulation of the retail trade and efforts by government to supervise butcher syndicates and trade associations.

Data suggest that the behavior of butchers may well have detrimental consequences on the economy of terminal markets. However, contrary to allegations of collusive behavior, the evidence suggests that atomistic competition, characterized by unregulated proliferation of butcher activity, leads to widespread low returns. This reduces resources available for

improving product (e.g. cold storage and presentation). The large number of inadquately trained and incompetent butchers is alleged by traders to be the principal source of defaults on payments to suppliers of live animals.

4.6.1 Official Classification of Butchers in Côte d'Ivoire

In all of the countries studied, governments classify butchers on the basis of their location in the marketing chain, in accordance with the system established during the pre-independence period. The organization of the trade in the Côte d'Ivoire is representative of its counterparts elsewhere in the region. Butchers in the Côte d'Ivoire cannot practice without obtaining an operator's license from local authorities for a particular category of activity.

Two categories of butcher dominate activity at major terminal markets:

- Bouchers-chevillards are licensed to purchase live animals, slaughter them, and carry out wholesale marketing.
- Bouchers-détaillants are authorized only to retail meat purchased from bouchers-chevillards. Bouchers-détaillants de première classe, operate only from refrigerated facilities, where they make retail sales of imported and "European-style" meats, while traditional, open-air retailers are licensed as bouchers-détaillants de deuxième classe.
- Butchers in rural markets or smaller towns are licensed as bouchers abattant-détaillant, and are permitted to carry out the full range of activities, from slaughter to retailing.

In addition to licensed butchers, terminal markets also host large numbers of apprentice butchers, and petty retailers of cooked and uncooked meats, many of whom work on a commission basis. No legal guidelines exist requiring apprenticeship or governing its duration.

4.7 Government Administration of the Butcher Trade

Efforts by governments throughout the region to control the butcher trade are motivated by two concerns: health/sanitation, and consumer prices.

Abattoirs in medium and large-sized towns and in all major terminal markets are owned or supervised by municipal governments, who limit licensing. Ostensibly the number of licenses granted within any municipality is determined on the basis of assuring optimal sanitary use of facilities. Administration of licensing activity, however, opens most municipal governments to charges that they utilize this rationale to support elitism and exploitation within the butcher's trade. These limits create a competitive market for licenses as well as opportunities for corruption.

Butcher's licenses must be renewed annually, and there is little turnover in the ranks of licensees. While it is illegal for butchers to market

their licenses to others, it is not illegal for them to engage the services of employees or apprentices. Hence, while individuals may elect to leave the trade or retire, they also maintain an economic interest in nominally remaining in the profession. Large numbers of butchers present in terminal markets are, in fact, fictive "employees" and "apprentices" who pay daily commissions to license holders or who purchase the protection of a license on the secondary market.

Table 14 indicates wide variation in the ratio of "apprentices" to licensed butchers. While these data must be interpreted cautiously, they suggest the degree to which licensing abuse occurs in Côte d'Ivoire. Because apprentices are neither licensed nor formally registered with authorities, the data presented in the table are partial at best. Nonetheless, the existence of a ratio as high as 20/1 at Bonoua, an Abidjan market suggests flagrant violation of licensing controls. Ratios greater than 2/1 exceed the mean for the data set and could be indicative of irregularities.

Although authorities argue that this practice is difficult to prosecute, no efforts are made to determine whether license- holders practice their trade or merely act as intermediaries for practicing butchers. Critics of this practice, among the most vocal of whom are livestock traders, argue that daily inspection of meat by veterinary officials and collection of municipal taxes provide officials with an adequate means of identifying fictive license-holders and fraudulent practitioners.

While economic theory suggests that a large number of butchers should lead to enhanced efficiency in the butchers' trade as the result of competition. Evidence from the field, however, suggests the emergence of hypercompetition or atomistic competition. The principal indicator that this is the case is the high rate of defaults and protracted reimbursement of credit by butchers. Exacerbating this situation may also be such factors as excessively low retail price-ceilings and rent-seeking by license-holders and government authorities in the marketplace. While economic dysfunction in the retail butcher trade is openly acknowledged by both participants and the authorities, it is officially attributed to competition from subsidized imports of non-African beef.

The principal barriers to entry in the butcher trade are capital for the purchase or rent of licenses and livestock. Profits derived from butchering, commissions paid by "apprentices" and "employees", and capital earned through brokerage activity (a frequent sideline of senior butchers) are often utilized by senior butchers to provide financing for other butchers who are seeking to enter the trade. As individuals with established reputation, senior butchers can also purchase cattle on credit or act as guarantors for butchers at the earliest stages of their careers.

Table 14
Ratio of Apprentice to Licensed Butchers
in Côte d'Ivoire, 1987

Department/Town	Apprentice Butchers	Licensed Butchers	Apprentice/ Licensed Butcher Ratio
Abengourou			
Abengourou	57	28	2.04
Amelekria	2	3	0.67
Apoisso	2	2	1.00
Dame	2	6	0.33
Difribo	1	1	1.00
Ebilassokro	5	2	2.50
Niabley	4	6	0.67
Sankadiokro	3	2	1.50
Zaranou	2	1	2.00
Abidjan			
Abobo	43	166	0.26
Bingerville	7	4	1.75
Bonoua	20	1	20.00
Dabou	48	12	4.00
Grand Bassam	40	8	5.00
Jacqueville	12	3	4.00
Port Bouet	170	731	0.23
Sikensi	4	6	0.67
Aboisso			
Aboisso	6	12	0.50
Assouba	4	3	1.33
Adzope			
Adzope	0	17	0.00
Akoupe	12	8	1.50
Agboville			
Agboville	31	23	1.35
Rubino	1	2	0.50
Beoumi	6	18	0.33
Biankouma	8	18	0.44
Bondoukou	44	22	2.00
Bongouanou	15	8	1.88
Bouafle	30	14	2.14
Bouake	30	14	2.14
Bouna			
Bouna	24	14	1.71
Doropo	7	12	0.58
Tehini	4	1	4.00
Boundiali			
Boundiali	19	30	0.63
Gbon	2	5	0.40
Kouto	7	7	1.00
Sanhala	3	2	1.50
Total	675	1,219	0.55
Mean			1.39

Source: Ministry of Livestock Production

4.8 Credit Default as an Impediment to Trade

As discussed earlier, economic conditions in the Ivorian terminal markets at present are severe. Credit sales constitute a high proportion of all livestock transactions, and nearly all traders interviewed claimed that their own commercial activity was reduced as the result of disproportionately high rates of default on credit sales. This information was corroborated by interviews with butchers and with executives of the national butchers' syndicate.

While many butchers in large terminal markets of the coastal states maintain high debt, absolute default is rare. An individual butcher may seek to obtain credit from a large number of livestock traders, and will service his obligations selectively. Butchers strenuously avoid defaulting on credit from their most regular suppliers, but will risk default on credit owed to traders who are based in the Sahel or who are only infrequently present in the market.

Attrition among debt-ridden butchers is also a rarity due to the relative ease of obtaining new livestock on credit. This is possible because butchers who owe money to suppliers have leverage, and can argue that they must obtain new animals for slaughter in order to service their debts. The ultimate effect of this practice is to increase the opportunity costs of capital to livestock traders and to reduce their profit margins over the long term. At the same time butchers enjoy long-term credit at only nominal interest rates and are able to invest gains from butcher activity in a variety of economic activities at little cost.

Attribution of causes for this situation is wide-ranging. A frequently-heard criticism voiced by livestock traders cites incompetence among butchers. Butchers purchase animals by sight, rather than weight, and less-experienced butchers often miscalculate carcass value. They are then unable to obtain an adequate return on retail sales. While this situation is acknowledged by executives of the Ivorian butchers' syndicate, they note that their organization has neither the legal authority nor the political will to exclude poorly-trained butchers from the marketplace. At the same time none of the butchers interviewed expressed a willingness to utilize weigh bridges as a means of obtaining more accurate projections of carcas weights.

While government authorities have sought to blame deteriorating market conditions on the effects of dumping of chilled and frozen meat by the Eureopean Economic Community, the national butchers' syndicate attributes the problems of its largest members to credit defaults on sales of meat to the uniformed services, schools, hospitals, and other government institutions. Many butchers' who have suffered losses or payment delays as a result of sales to government agencies have discounted debt owed by the government in order to expedite payment, or have continued to honor supply contracts with confidence that they will ultimately be paid.

Ivorian law requires butchers not only to be licensed, but also to be bonded against defaults on credit. However, this stricture is not presently enforced by the authorities. Ivorian officials argue that enforcement would penalize the victims of a situation that is internationally-rooted and beyond the power of Ivorians to control. At the same time, liquidity problems in the

Ivorian financial sector have effectively precluded most institutions from servicing this market.

At the same time that risk-averse financial institutions have refrained from new lending to butchers, traditional arrangements for credit guarantees also appear to have broken down. Intermediaries who formerly acted as guarantors of credit now refuse to assume that responsibility, due to the absence of legal recourse for debt recovery and the prevalence of credit problems in the red meat sector.

5.0 Transportation Infrastructure, Strategies, and Costs

5.1 Introduction

After purchase of livestock for export, transportation constitutes the second-highest cost component of the livestock marketing process, ranging between 5 and 22 percent of aggregate costs reported by traders in coastal and Sahelian markets.[6] Excluding cattle purchases, transport represents between 23 and 50 percent of variable marketing costs.

Unlike other Sahelian exports which may be "captive" to particular transportation modes and axes, livestock are a mobile commodity which can be brought to market at a profit under their own power or through commercial forms of transportation.

The selection of any particular mode of transportation by livestock traders is the result of careful deliberation. Direct cost considerations (e.g. vehicle tariffs versus manpower costs for trekking) are weighed against the immediate availability of vehicles or manpower amd characteristic delays, mortality, and concomitant costs for particular modes of transport. These factors are balanced against available information regarding current and anticipated price cycles in coastal markets and the urgency of the trader to recoup investment costs and profits.

The principal determinants of transportation costs are:

(a) the mode, or combination of modes, of transport utilized;

(b) distance to terminal markets; and,

(c) seasonality of demand.

5.2 Evolving Usage of Modes of Transport

Over the course of the past twenty years significant shifts have occurred in predominant modes of transportation preferred by, and available to, Sahelian livestock traders. Trade between Mali, Burkina Faso, and the coastal West African states was long dominated by low cost, if time-consuming, trekking. However, government and donor investment in improved regional road networks and the Régie Abidjan-Niger railway have expanded the range of competitive options for livestock transportation, albeit in an environment characterized by high costs and low efficiency.

Since the 1960s, increased population density and the expansion of residential, agricultural and reserve lands in the coastal states have severely restricted the use of trekking to coastal markets. Beside such natural constraints as endemic trypanosomiasis in southern forest zones, government regulations have been imposed which drastically restrict the

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[6]See the four trader budgets in Section 10.0 for a detailed breakdown of livestock marketing costs under alternative itineraries and transport modes.

passage of livestock in certain regions. Beginning in 1963, the government of Côte d'Ivoire imposed a series of regulations delineating transit axes for livestock.

This measure was intended to restrict the passage of trekked cattle through highly populated and densely cultivated areas, while at the same time guaranteeing access to coastal markets along routes that could be officially monitored. The practical result of this policy, however, has been to eliminate livestock trekking between the central Ivorian city of Bouake and the nation's largest terminal market in Abidjan. Beginning in 1978, efforts to regulate trekking activity in the northernmost portion of the country have been largely abandoned, because of their incompatibility with an official policy to induce migration and settlement of herders to the region.

Hence, while approximately one-third of all officially recorded arrivals (and nearly all clandestine arrivals) of Sahelian cattle enter the Côte d'Ivoire on foot, most of these combine trekking with truck or train conveyance for the final portion of their journey.

Similarly, in Togo, key trekking routes from Niger and eastern Burkina Faso have been eliminated through the establishment of government reserves in the northeastern portion of the country. Development of the Parc National de Keran, along the north-south international highway, has also eliminated a principal transhumance and trekking zone. While these actions have not eliminated the use of trekking as a means of bringing cattle to market, they have rendered it less competitive with road transport by prolonging the period required for arrival in terminal markets.

Rail carriage, which accounted for nearly 40% of livestock entering Côte d'Ivoire during the early 1970s, declined dramatically between 1974 and 1985. This was due in large part to growing competition from private road transporters and marked decline in the quality and frequency of rail service.

However, demand for rapid delivery services--combined with the establishment of discounted tariffs on the Ivorian SICF system--has triggered a revival in the volume of livestock shipped by rail. By 1989, the Burkinabe/Ivorian rail system transported more than a third of all officially recorded livestock imports to the Côte d'Ivoire, the highest proportion in fifteen years. The percentage of Ivorian imports conveyed by rail nearly doubled from 1985 to 1988, as shown in Table 15.

Data available for all of 1987 and 1988 (see Table 16) show that 27.4% of recorded cattle imports and 34.2% of small ruminant imports were transported by rail in 1988 (up from 20.9% of cattle and 31.1% of small ruminants in 1987).

Table 15

Modes of Transport for Livestock Imported to the Côte d'Ivoire, 1970-1988

(% of recorded livestock imports)

Year	Rail	Truck	Trek	Combined Truck & Trek
1988	27.0	38.0	35.0	
1987	21.0	32.0	46.0	
1986	18.0	29.0	52.0	
1985	14.0	30.0	55.0	
1984	14.5			85.5
1983	13.3			86.7
1982	11.1			88.9
1981	18.9			81.1
1976	33.2			66.5
1975	40.0			60.0
1974	17.5 (a)			82.5
1973	29.0			71.0
1970	39.5			60.5

Sources: 1985-1988, SODEPRA-Nord, Côte d'Ivoire.
1973-1976, République de Côte d'Ivoire, Ministère de la Production Animale, as cited by Staatz (1979)
1970-1973, FAO

(a) FAO figures for this year cite percentage of livestock shipped by rail as 26.6.

Table 16

Mode of Transport for Livestock Passing Border Controls in the Cote d'Ivoire, 1987-1988

	1987					
	Cattle			Small Ruminants		
Post	Trek	Truck	Rail	Trek	Truck	Rail
Tienko	6,125	1,846	NA	362	25,307	NA
Tengrela	17,808	10,435	NA	570	31,324	NA
Niellé	9,136	19,767	NA	233	126,005	NA
Ouangolo	1,625	9,500	27,012	0	11,424	95,398
Doropo	25,879	158	NA	2,982	12,705	NA
Total	60,573	41,706	27,012	4,147	206,765	95,398

Table 16 (continued)

	1988					
	Cattle			Small Ruminants		
Pos.	Trek	Truck	Rail	Trek	Truck	Rail
Tienko	5,313	1,593	NA	1,433	16,936	NA
Tengrela	12,133	5,156	NA	2,103	8,177	NA
Nielle	6,012	22,403	NA	0	125,041	NA
Ouangolo	834	15,523	32,485	0	9,225	92,895
Doropo	17,124	0	NA	0	15,531	NA
Total	41,416	44,675	32,485	3,536	174,910	92,895

Source: SODEPRA-Nord, SICF reports

5.3 Major Transportation Axes

The principal transportation corridors used in the Sahelian livestock trade follow a north-to-south axis from production zones to terminal markets in the coastal countries.

In the past, when trekking was the principal means of bringing livestock to market, undelineated routes often followed lateral trajectories which cut across savannah and forest-savannah regions of the coastal states. In recent years, however, lateral (east-west) and diagonal routes transiting Ghana, Togo, Côte d'Ivoire, and Benin have diminished in importance. This has been due both to declining demand in certain terminal markets (e.g. Accra, Kumasi, Tema and Monrovia) and to progressive concentration of demand in markets along the key north-south corridors.

At present, the majority of livestock shipped from the Sahel to coastal markets, including those which transit borders clandestinely, travel a relatively limited set of itineraries from southern regroupement markets in Mali and Burkina Faso. Trekking, trucking and rail routes parallel one another along major segments of itineraries, merging at key markets and transportation hubs. This provides livestock traders with the opportunity to combine modes of transport as a strategy for minimizing costs and transit time, as well as for timing arrival at terminal markets.

6.0 Trekking

Governments in the region have sought to regulate and channel the movement of commercial and transhumant herds since 1937, when the colonial regime in Togo established a system of livestock trails which remained essentially unchanged until the late 1970s. Trekking regulations have a multiple purpose, permitting authorities to exercise veterinary, customs, and police procedures while simultaneously preventing incursions of livestock onto agricultural lands. Enforcement of these regulations has often proved difficult, particularly in areas where pasturage and water are in short supply, or where the security of drovers and their herds cannot be guaranteed.

Trekking activity appears, at present, to predominate during the initial phases of the marketing process, as cattle move from collection and regroupement markets to railheads and areas well-served by road transporters. A frequent complaint heard from traders in the field concerned the inadequate number of trucks and rail-cars available for livestock transport, and the emergence of a secondary market in Burkina Faso and Côte d'Ivoire for access to rail and motorized vehicles.[9]

6.1 Trekking Itineraries

6.1.1 Trekking Itineraries in Burkina Faso

There are three principal trekking itineraries in Burkina Faso, originating in the northern Sahel region of the country, and leading southward to Côte d'Ivoire and Togo borders (see Table 17). Two of these (Markoye-Ouagadougou and Djibo-Bobo Dioulasso) have been formalized by the Burkinabe authorities through demarcation with concrete pylons. The government has also enacted statutes prohibiting cultivation of lands immediately adjacent to the trek route right-of-way.

A significant number of livestock driven along the Djibo-Bobo Dioulasso itinerary are animals either trekked from the Mopti and Bandiagara regions of Mali, or culled from Malian herds on transhumance in Burkina Faso. This route not only offers direct access to major road and railway hubs for onward shipment to the coast but provided other cost advantages until recently. Traders report that until the recent reduction of Malian export taxes and suppression of import/export licensing, cost savings could be realized by trekking animals along this route even given requirements for payment of a 2,500 FCFA/head transit tax in Burkina Faso.

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[9]Secondary markets for access to trucks and rail wagons operate in a similar fashion, although in the latter case the practice is illegal. During informal negotiations with truck owners or drivers, traders bid for access to available trucks. In the case of rail wagons, for which a fixed tariff is established by rail authorities, intermediaries acting on behalf of station-masters exact payment from trek bosses and traders in order to obtain shipment priority.

Table 17

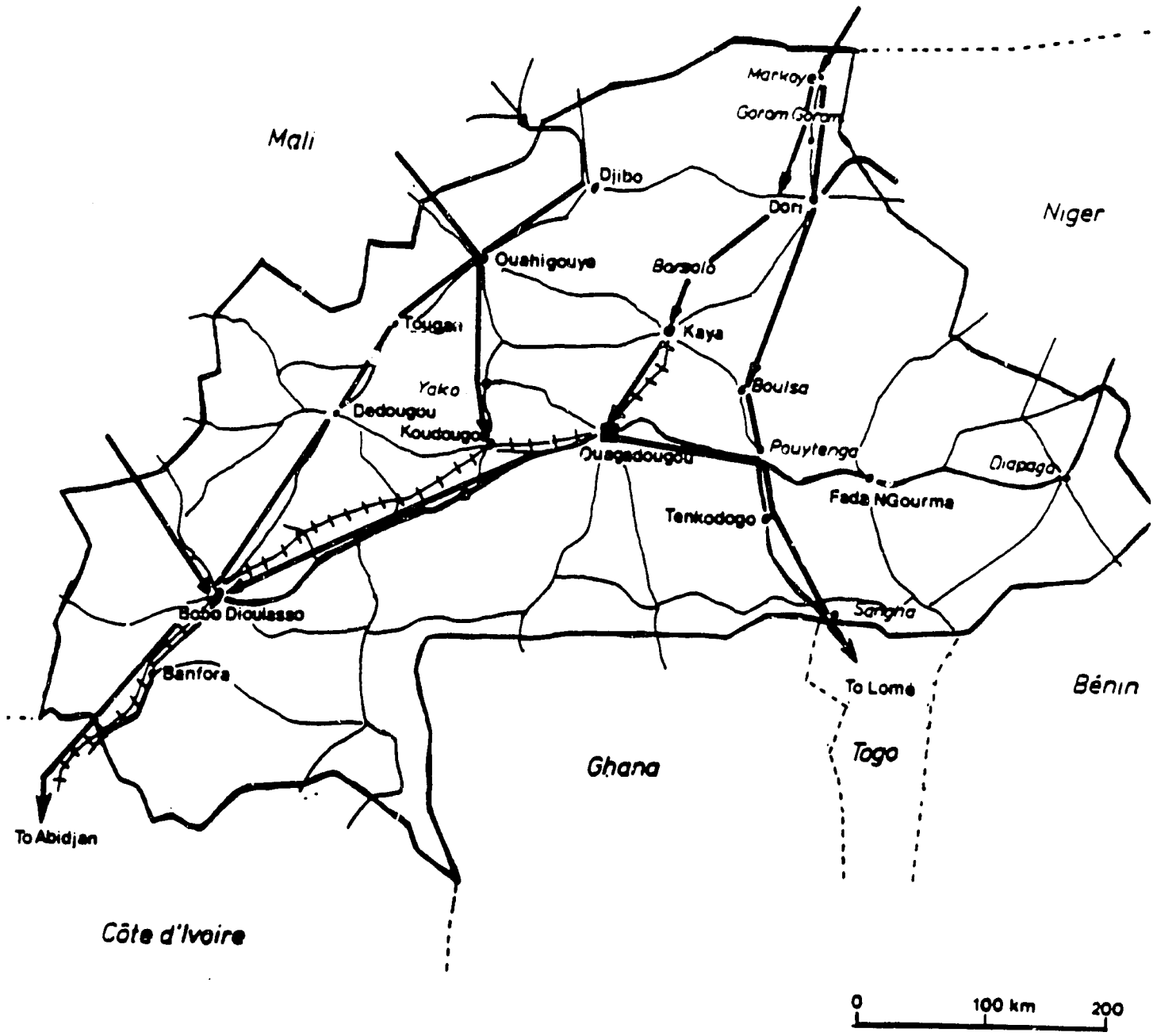
Principal Trekking Routes from Burkina Faso to Coastal Markets

Itinerary	Approx. Distance (km)	Approx. Transit Duration (days)
Itinerary #1: Markoye/Gorom Gorom--Ouagadougou		
Markoye--Barsolo--Kaya--Ziniare--Ouagadougou	325	15
Itinerary #2: Markoye/Gorom Gorom--Ghana/Togo Border		
Markoye--Dori--Boulsa--Pouytenga--Tenkodogo--Sangha (Togo/Ghana border)	425	20
Itinerary #3: Djibo--Bobo Dioulasso		
Djibo--Ouahigouya--Tougan--Dedougou--Bobo Dioulasso	330	15
Itinerary #4: Pouytenga--Ouagadougou		
Pouytenga--Ouagadougou	140	5
Itinerary #5: Ouahigouya--Koudougou Railhead		
Ouahigouya--Yako--Koudougou	165	6

In addition to the principal domestic itineraries, a fourth point of departure from Burkina Faso, spanning a 65-kilometer area in the southernmost portion of the country, is of extreme importance. Livestock trekked through this area enter Côte d'Ivoire at or near Doropo, and accounted for more than 40% of all livestock trekked through Burkina Faso during the 1987-1988 period. While the majority of these herds are reportedly from the region south and west of Koudougou (Burkina Faso), Burkinabe customs officials report that a large number of these animals are of Malian origin, accompanied by drovers carrying identity cards from both Mali and Burkina Faso.

Use of demarcated routes is limited. While drovers acknowledge that these routes are generally safer than travel along major roadways, they complain of pasture and water shortages during much of the year. Drovers also point out that herds following the demarcated routes are often subject to harassment or extortion by veterinary and forestry agents.

Figure 3


Mali
Niger
Markoye
Gorom Gorom
Djibo
Dori
Ouahigouya
Boroolo
Tougan
Kaya
Yako
Boulsa
Dedougou
Koudougou
Ouagadougou
Pouytenga
Diapaga
Fada N'Gourma
Tenkodogo
Bobo Dioulasso
Sangha
Banfora
To Lomé
Bénin
Togo
Ghana
To Abidjan
Côte d'Ivoire
0
100 km
200

Several other routes are relatively short, running parallel to major roadways. These are utilized to bring livestock from major rural markets to railheads, truck depots and terminal markets. Principal axes run between Pouytenga (Burkina Faso's largest livestock market) and Ouagadougou, and between Ouagadougou and Koudougou. The latter route is generally used in order to advance livestock to the Koudougou railhead, where access to wagons for onward shipment to Côte d'Ivoire is sometimes less competitive.

6.1.2 Trekking Itineraries in Mali

Unlike Burkina Faso, Mali has no demarcated or improved livestock routes. Three principal trekking itineraries exist which serve coastal markets, in addition to a large number of unmonitored minor trails leading to Senegal, Guinea, Burkina Faso, and Niger (see Table 18 and Figures 4 & 5 for key itineraries).

Market herds originating in the principal livestock-producing regions of Mopti (including Mopti, Koro, Bankass, Douentza, Djenne, and Tenenkou) and Sikasso are trekked to Côte d'Ivoire along an itinerary leading southward from San. This route passes through Koutiala and Sikasso, crossing the Ivorian border at Zegoua/Nielle, continuing onward to the Korhogo road hub and the Ouangolodougou and Ferkessedougou railheads. A second variant of this route, used by drovers seeking to minimize official harassment or to cross into Côte d'Ivoire clandestinely, continues in a southwesterly direction from Sikasso, to Kadiana. These herds enter Côte d'Ivoire at or near the Tengrela border crossing.

Livestock originating in the region north of Bamako (Koulikoro, including Kati, Kolokani, Kangaba, Dioila, and Banamba) are generally trekked via Keleya to Bougouni, on an itinerary parallel to a major roadway. From Bougouni, two itineraries may be chosen, depending upon the ultimate destination of each herd. Herds destined for the Ivorian markets of Odienne, Man, Tabou, San Pedro or Sassandra cross the Ivorian border at Manankoro/Tienko. An alternate itinerary from Bougouni crosses the Ivorian border some 110 kilometers to the east, at Nigouni/Tengrela.

While this itinerary sometimes serves herds destined for markets at Boundiali, Seguela, Sassandra and San Pedro, its primary use is by herds traveling onward, to trucking facilities at Korhogo or to the Ferkessedougou railhead. During the 1987-1988 period, this route was utilized my approximately one-third of all Malian livestock trekked to Côte d'Ivoire.

The third major trekking itinerary is that about which the least is known. This route, employed by herds from the Baroueli, Bla, San, Segou, and Mopti regions, transits the Burkina Faso border, where it joins trekking routes there. While this route was long used as a means of evading comparatively high Malian export fees and taxes, recent changes in Malian policy have, in principle, eliminated this incentive. This route also fell into disuse for several years immediately following hostilities between Mali and Burkina Faso in late 1984.

Table 18

Principal Trekking Routes from the Sahel to Ivorian Markets

Itinerary	Approx. Distance (km)	Approx. Transit Duration (days)
Itinerary #1: Manankoro, Mali--Man, Cote d'Ivoire		
Manankoro (Mali)--Tienko--Samatiguila--Odienne--Bako--Borotou--Touba	391	20
Itinerary #2: Gonkoro, Mali--Ferkessedougou, Cote d'Ivoire		
Gonkoro (Mali)--Tengrela--Katanra--Korhogo--Ferkessedougo	185	7
Itinerary #3: Gonkoro, Mali--Seguela, Cote d'Ivoire		
Gonkoro (Mali)--Tengrela--Boundiali--Fadiadougou--Seguela	335	17
Itinerary #4: Zegoua, Mali--Ferkessedougou, Cote d'Ivoire		
Zegoua (Mali)--Pogo--Mielle--Ouangolodougou--Ferkessedougou	147	6
Itinerary #5: Niangoloko, Burkina Faso--Ferkessedougou		
Niangoloko (Burkina Faso)--Leraba--Ouangolodougou--Ferkessedougou	97	4
Itinerary #6: Galgouli, Burkina Faso--Bondoukou, Cote d'Ivoire		
Galgouli (Burkina Faso)--Doropo--Bouna--Bondoukou	302	11
Itinerary #7: Ferkessedougou--Bouake		
Ferkessedougou--Tafire--Kanawolo--Niakaramandougou--Katiola--Bouake	231	12

Figure 4

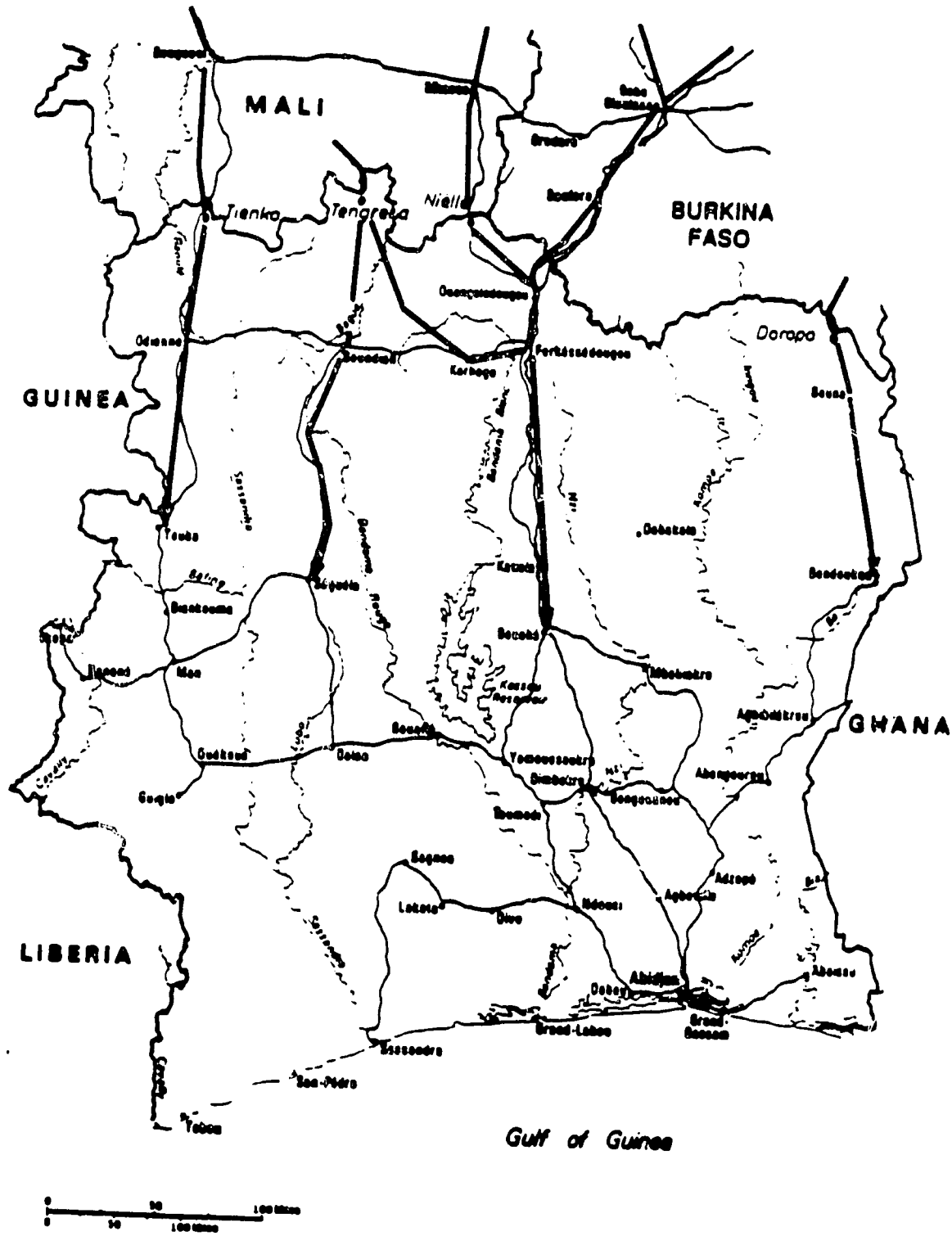
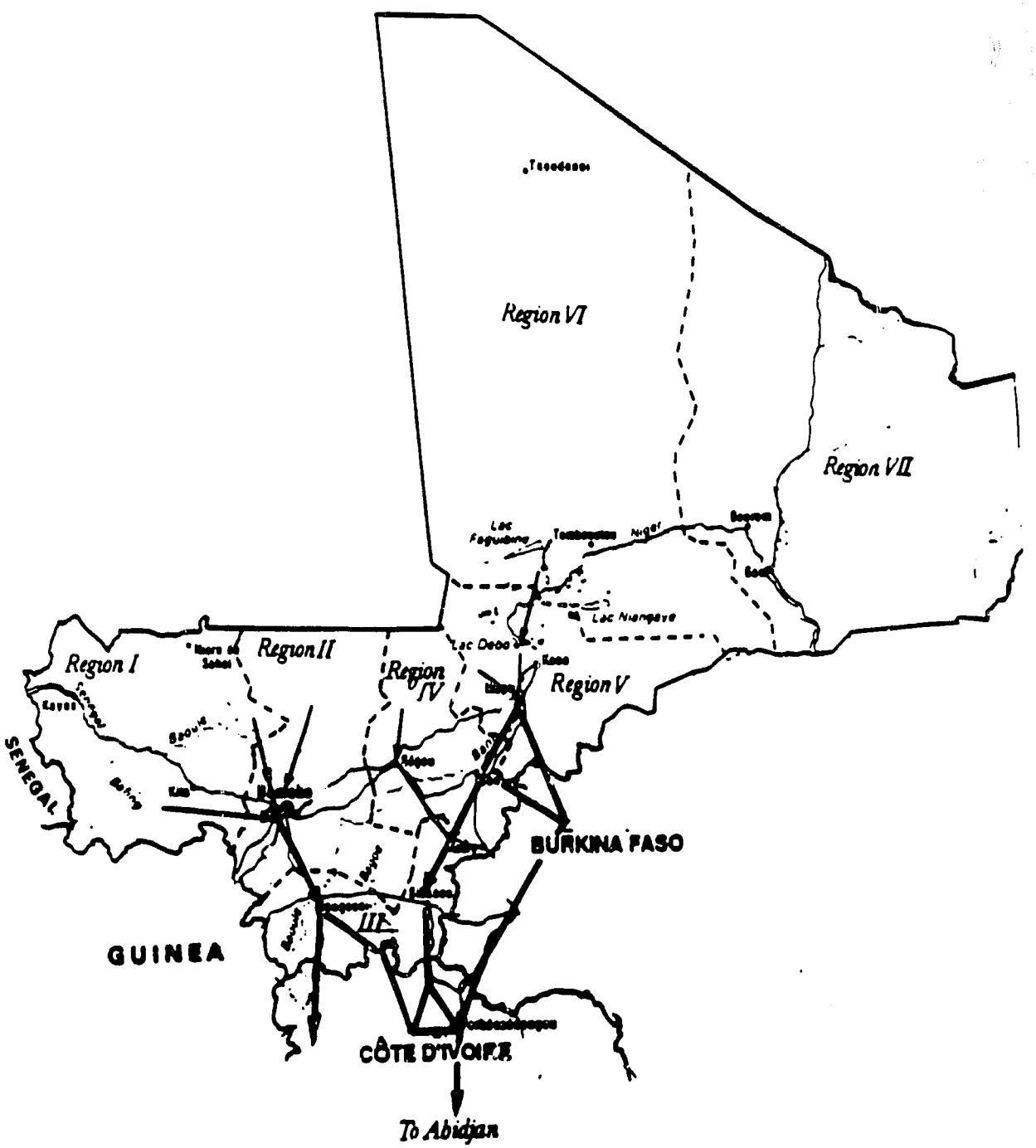

MALI
BURKINA FASO
GUINEA
GHANA
LIBERIA
Tienko
Tengrela
Niella
Dorapa
Gulf of Guinea

Figure 5


Region VI
Region VII
Region I
Region II
Region IV
Region V
SENEGAL
BURKINA FASO
GUINEA
CÔTE D'IVOIRE
To Abidjan

6.1.3 Trekking Itineraries in Côte d'Ivoire

Government policy, environmental and demographic constraints, and the emergence of competitive alternatives have combined to limit the degree to which trekking is utilized for long-distance shipment of cattle in Côte d'Ivoire. Principal trekking routes are continuations of those crossing the Ivorian border at Tienko, Tengrela, Nielle, Ouangolodougou, and Doropo.

Routes passing through Tienko and Tengrela, in the northwestern region of the country, are used primarily for the proportionately small number of herds marketed in the cities of Odienne, Touba, Man and Seguela. Herds destined for the coastal cities of San Pedro, Sassandra and Tabou must, however, be carried by truck from either Man or Seguela.

Between 1985 and 1987, the number of animals passing through Tengrela dropped precipitously, from more than 5,000 per year to less than 1,600. This was attributed to a series of armed attacks on both trekked herds and vehicles, in which drovers were killed and animals stolen.

The least significant trekking corridor, however, is that which begins a the northern border posts of Niele and Ouangolodougou. Animals not traveling onward by rail or truck from Ferkessedougou and Korhogo are trekked southward to Tafire, Niakaramandougou, Katiola and Bouake for slaughter or onward shipment to Abidjan and other major markets. Avoidance of this route by herders is attributed to the high transaction costs of negotiating official controls and border posts.

The easternmost trekking route, which begins at the Burkina Faso border and passes the Doropo control post continues southward through Bouna to Bondoukou. From Bondoukou livestock must be trucked onward to the large markets at Agnibilekrou, Abengourou, and Abidjan. This route was formerly a key transit corridor for livestock destined for Ghana, and will likely resume that former role as economic conditions in Ghana improve.

6.1.4 Trekking Itineraries in Togo

Only one significant trekking route presently exists in Togo, which follows a north-south axis from the Burkina Faso border to the capital city, Lome. At Nzara (Sansanne-Mango), however, the route divides in two, with separate itineraries passing through or around the Keran National Park. See Table 19 for a listing of key trek routes into and within Togo.

Although approximately a dozen other trekking routes through Togo have been identified in the past (Josserand, 1980), many of these have fallen into disuse because of diminished trade between Niger, Benin and Ghana. Others, originating in Benin and Niger, have been eliminated through the establishment of reserves which preclude their use. East-west highway axes developed in recent years have also tended to replace trekking routes and regularly convey small numbers of livestock from Benin to terminal markets in Togo.

6.2 Costs of Trekking

Trekking costs are chiefly comprised of two elements: manpower and subsistence costs for drovers. These costs are in turn a function of herd size

Figure 6

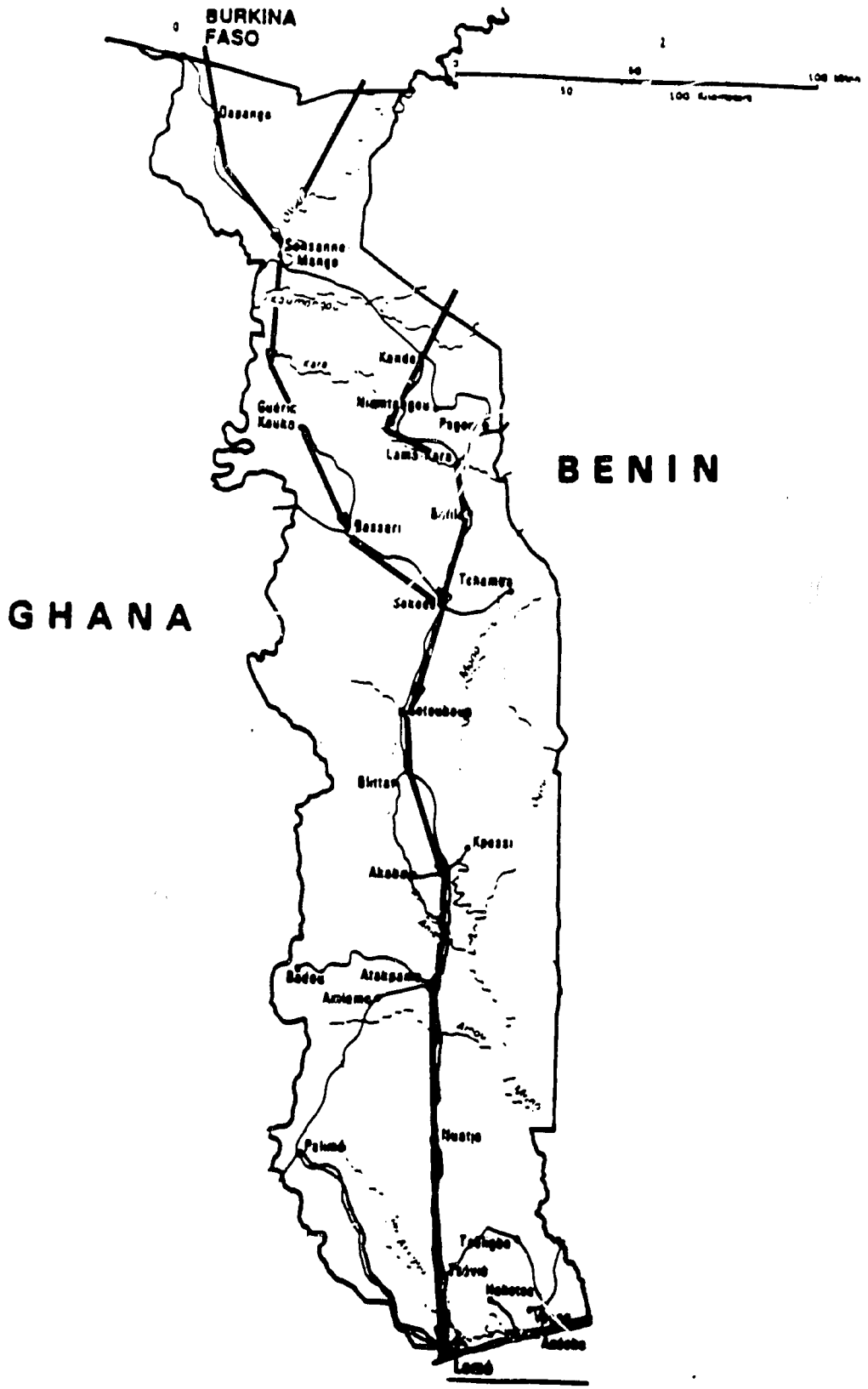

BURKINA
FASO
BENIN
GHANA
Dapaong
Sansanne
Mango
Kande
Guéric
Kouka
Pagouda
Lama Kara
Bassari
Tchamba
Sokodé
Kotoubong
Bimtar
Kpessi
Akaba
Bédou
Atakpamé
Azaméma
Palimé
Nuatja
Tsévié
Lomé

Table 19

Principal Trekking Routes in Togo

	Approx. Distance (km)	Approx. Transit Duration (days)
Itinerary #1: Burkina Faso--Sansanne Mango, Togo		
Nadjoundi--Dapao--Sansanne-Mango	73	3
Itinerary #2: Burkina Faso/Togo border--Sansanne Mango, Togo		
Koundjouare--Borgou--Sansanne Mango	75	3
Itinerary #3: Sansanne Mango--Sokode		
Sansanne--Mango--Koumongu--Katchamba--Guerin Kouka--Bassar--Sokode	177	9
Itinerary #4:		
Nadoba--Kante--Kadjalla--Sarakawa--Kara--Bafilo--Alodjo--Aleheride--Sokode	195	10
Itinerary #5: Sokode--Lome		
Sokode-- Sotoboua--Blitta--Anie--Atakpame--Nuatja--Ageblouue--Tsevie--Lome	442	23

Incidental costs which are unique to trekking include indemnities paid for damage done by livestock, grazing fees paid to local authorities, and payments extorted by forestry agents.

Field data clearly indicate that trekking is no longer the most cost-effective means of conveying livestock to coastal markets. While economies of scale related to the cost of manpower are extremely competitive for large numbers of livestock, they must be weighed against the opportunity costs and risks associated with lengthy delivery delays.

6.2.1 Trekking Costs to Collection and Regroupement Markets

Nearly all livestock presented for sale in collection and regroupement markets are trekked. At collection markets, livestock owners or members of their families drive cattle and small ruminants to market and normally drovers do not do this work. Numbers of cattle presented for sale at these markets are (the determinant of manpower requirements) and distance (measured as the time required to deliver animals to market). Because of economies of scale, it is extremely rare for herds of 70 cattle or less to be trekked for distances

greater than 200 kilometers. Numbers of cattle presented for sale at these markets are typically small (1 to 3 cattle, and 1 to 6 sheep or goats) and easily conveyed by only one or two people.[10]

The conveyence of stock to regroupement markets, however, generally requires the services of several drovers. Fees for local conveyence (distances of less than 30 kilometers) can vary widely. In smaller regroupement markets and those located in more isolated areas, fees run as low as 500 FCFA per head for cattle, and 150-200 FCFA for small rumininants.

Major markets, such as those at Pouytenga (Burkina Faso) and Fatoma (Mali) and markets located close to urban areas (e.g. Kati, the principal supply market for Bamako), create greater demand for the services of capable drovers who are familiar with the market towns and nearby locations of pasture and water. Typical fees for driving stock to these centers are in the range of 1500 FCFA/head for cattle, and as much as 500 FCFA for sheep and goats. Fees are marginally higher in Burkina Faso than in Mali. Manpower requirements for major markets are somewhat higher than they are for either trekking or for small, rural markets. This is because of the difficulty of controlling small herds in the chaotic conditions of large markets.

At these markets, thousands of cattle, sheep and goats will sometimes be gathered within the confines of a corral as hundreds of merchants, intermediaries, drovers, and other interested persons move among the herds. Individual animals must be cut out and moved into herds being composed at the market by traders. This sometimes creates dangerous conditions, when individual animals attempt to bolt from the confines of the market and attack drovers or other animals.

Sampling of a number of livestock markets indicated the following cattle/drover ratios for small market herds.

No. Cattle	No. Drovers
2	1
3-10	2
11-23	3
<24	4

6.2.2 Manpower Requirements for Trekking

The manpower required for trekking a herd over long distances is minimally composed of one trek boss and three drovers.

The role of the trek boss is to act as a facilitator, scout and intermediary with local authorities along the route. As the senior member of the trek team, he is often related to one or several of the herd's owners or has established a relationship of trust with them as the result of prior service.

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[10]Not all livestock brought to market are offered for sale. Additional animals will sometimes accompany sale-livestock because of the relatively greater ease of handling a larger, calmer herd.

The trek boss is the team's banker. Cash is placed in his keeping by the herd owners to cover subsistence costs of drovers and any incidental payments exacted from the herd along its itinerary. In the event of cattle mortality or forced sales along the route, the trek boss negotiates sale prices for liquidated stock or carries the skins of dead animals (as proof to their owners that animals have died).

The amount of cash carried by the trek boss can be quite high, minimally including 500 FCFA/day/drover(including himself), in addition to amounts for the payment of indemnities for damage caused by livestock and official bribes. Traders interviewed for this study noted that as much as 300-400,000 FCFA will sometimes by disbursed to the trek boss at the start of his journey. Because trek bosses are often the object of armed attacks, traders sometimes manage risk by arranging for disbursements of cash by relatives or associates who reside in towns along the trekking itinerary.

Typically, the trek boss is equipped with a bicycle, and moves ahead of the herd each morning in order to identify water, grazing and camp sites along the day's itinerary. He will also call on local authorities and visit markets to obtain information regarding problems along the route: banditry, the presence of disease or toxic plants, social tensions, and official or quasi-official harassment of herders. Among his responsibilities are also purchasing food and preparing meals after the herd has made camp at the end of each day's journey.

Labor requirements for drovers differ considerably from those for routine herding activity. This is because trekking is a directed activity which occurs in environments unfamiliar to livestock in the herd (often crossing several ecosystems), and which maintains a pace to which livestock are unaccustomed. In order to avoid losses due to theft, wandering, or damage to cultivated areas, drovers must maintain a higher than usual degree of vigilance around the clock throughout the duration of the trek.

Drovers interviewed for this study noted also that trekked livestock are typically drawn from a wide variety of herds and often will not behave as gregariously as they normally do. Market herds, which tend to be dominated by bulls and steers, may also be aggressive in their behavior and will frequently bolt from herders or in response to vehicles and unfamiliar persons.

The number of drovers hired to accompany trek-herds is a function of herd size, and reflects major economies of scale. A minimum of three drovers is required for any trekked herd up to approximately 70 animals. Herds of between 70 and 120 animals will generally be accompanied by four drovers, will five drovers are required for herds of between 120 and 170 animals.

It is extremely rare for herds to be composed of more than 170 animals. It is common practice, in fact, for larger trek herds to subdivide into two smaller herds, traveling and grazing within several hundred yards of one another throughout the day, while reassembling a camp at night.

The number of drovers recruited for a particular trek will also reflect the level of risk attributed to particular itineraries. Armed attacks on herds have occurred with relative frequency in certain north-south corridors

in recent years, most notably in the Boulsa region of Burkina Faso and near Tengrela, along the Mali/Côte d'Ivoire border. While herd owners generally seek to avoid areas where banditry occurs, this is not always possible. In such instances, additional drovers may be recruited in order to increase security of the herd.

The selection of drovers can also be a rigorous process. Trek bosses and herd owners seek to recruit at least several experienced drovers who are familiar with the itinerary to be followed. This is especially important for long treks which transit different ecosystems and pass through areas where drought or population density will have rendered water or pasturage scarce.

Because of their specialization in livestock husbandry, members of the Fulbe (Peul) ethnic group tend to dominate the ranks of drovers. Small numbers of Tamasheq (Tuareg) and Bella drovers were observed in the field, although they appeared most frequently as agents or handlers accompanying trucked livestock shipments.

The risks of recruiting inexperienced drovers were illustrated by one incident during the course of this study. A herd of 110 Zebu Peulh cattle began its trek to Côte d'Ivoire in the Malian town of Koutiala, accompanied by four drovers of the Bambara ethnic group. Near Loulouni, some 50 kilometers north of the Ivorian border, fourteen of the cattle died after they were allowed to graze on a species of toxic plant ("diassaje" in the Fulfulde language) that is unknown in the drovers' home region. The ability of another four animals to continue the trek remained in question when the herd was encountered several days after the incident.

Compensation to drovers is paid as a flat fee upon delivery at a terminal market or transportation hub, regardless of the number of days or weeks required for the journey. A portion of the drovers' fee is generally paid out at the start of the journey, with the remainder paid at its completion. Daily subsistence allowances (an almost uniform 500 FCFA/day/herder) are periodically disbursed by the trek boss, who retains a portion of the amount for the daily purchase of food.

Payment to drovers for return voyages home are usually negotiated on a case-by-case basis and are either included in the fee paid to the drover, or paid out as a separate item upon arrival at the terminal market. Drovers who accompany livestock from northern railheads obtain discounts from the Ivorian railway company for their return trips. Similarly, performance bonuses or cash gifts to drovers are sometimes made by owners for timely completion of the trek.

6.3 Costs and Returns from Trekking

While trekking retains its place as the principal means of conveying livestock through various stages in the marketing chain, it appears to do so only by default. Alternative means for bringing livestock to collection and regroupement markets rarely exist for cattle and, where they do, are prohibitive in cost. Motorized transport is, however, frequently used to move goats and sheep between collection and regroupement markets.

The principal advantages of trekking are the economies of scale generated for large herds. For example, at the present time, costs for trekking a herd of 60 cattle from any of the major regroupement markets in southern Burkina Faso to Lome, Togo are identical to the costs of trucking livestock along the same itinerary (60,000 FCFA/head). However, the comparative advantages of trucking begin to diminish with herds comprising more than 60 head. This is because economies of scale for trucking apply only to optimal loadweights for particular types of vehicles (25 or 30 cattle), and no marketing unit cost reductions are associated with moving multiple truckloads. By the same token, economies of scale for trekked animals become operative with larger herds. As shown in Table 20, herds of 120 and 160 head can attain cost savings per head of 38% and 46%, respectively, compared with herds of 50-60 animals.

While delivery time for trucked livestock in the Burkina--Togo example would not likely exceed 48 hours, a trekked herd would require seven or eight weeks to complete the journey. The opportunity costs of tying up capital for such long periods would also be compounded by delays in return on investment due to interest-free credit sales which are characteristic of larger urban markets in the region.

Enhanced communications between the most northern Sahelian zones and coastal markets now provide livestock traders with a source of daily market information. This allows them to time their shipments by truck or rail during periods when prices are highest and when they can easily recover motorized transport costs. The arrival of trekked herds, however, cannot be as easily timed to take advantage of favorable market conditions. While traders will frequently hold livestock away from markets during price slumps, daily grazing and guardian fees add to their costs, limiting the time period during which animals can be held off the market.

A final factor which has decreased the viability of trekking is the Ivorian requirement that commercial herds be moved only by rail or truck south of Bouake to the region including Abidjan, Yamoussoukro, Agboville, and other of the nation's largest markets. As discussed in the following section, trucking costs for the Bouake-Abidjan itinerary are extremely high when compared with mileage tariffs for vehicles departing from Mali and Burkina Faso. Hence, while direct costs of trekking may be comparatively modest, these are offset by the relatively--and unavoidably--much higher mileage costs of trucking for short distances in Côte d'Ivoire.

Table 20

Drovers Fees and Economies of Scale in Trekking

Origin/Destination	Approx. Distance (km)	Length of Trip (days)	Fee per Drover (FCFA)	Subsistence (500 FCFA Per Day)	Total Cost per Drover (FCFA)	Cost per Head (FCFA) for Herd of 50 Head	for Herd of 120 Head	for Herd of 160 Head
Kolokani, Mali/ Bouake, Cote d'Ivoire	840	60	75,000	30,000	105,000	8,400	5,250	4,593
		65	75,000	32,500	107,500	8,600	5,375	4,703
Djenne, Mali/ Ferkessedougou, Cote d'Ivoire	650	28	25,000	14,000	39,000	3,120	1,950	1,706
		30	25,000	15,000	40,000	3,200	2,000	1,750
Sikasso, Mali/ Bouake, Cote d'Ivoire	465	35	30,000	17,500	47,500	3,800	2,375	2,078
		45	30,000	22,500	52,500	4,200	2,625	2,296
Gorom Gorom, Burkina Faso/ Ouagadougou, Burkina Faso	340	14	7,000	7,000	14,000	1,120	700	612
		16	7,000	8,000	15,000	1,200	750	656
Bobo Dioulasso, Burkina Faso/ Bouake, Cote d'Ivoire	385	14	50,000	7,000	57,000	4,560	2,850	2,493
		20	50,000	10,000	60,000	4,800	3,000	2,625

Herd of 50 Cattle requires 3 drovers and 1 trek boss
Herd of 120 Cattle requires 5 drovers and 1 trek boss
Herd of 160 Cattle requires 6 drovers and 1 trek boss

7.0 Trucking

7.1 Recent Evolution of Road Transport

Ambitious investment in the sub-regional road network has dramatically increased the range and competitiveness of road transportation during the last twenty-five years. Between 1974 and 1988, the Burkinabe road network increased from a total of 7,752 kilometers to 13,070 kilometers. Paved surfaces nearly tripled, from 507 kilometers to 1,503 kilometers, while other improved surface roads increased from 1,988 kilometers to 6,934 kilometers. Similarly, in Mali, major new roads have been completed, linking the capital and southern urban centers with long-isolated towns in the nation's Sixth and Seventh regions, thereby providing with paved access to the coast.

It is difficult to gauge precisely the effects of expanded road networks on the livestock trade prior to the early 1980s. This is because available statistics on the conveyance of livestock to markets combine truck and trekking activity. However, since the mid-1980s, trucks have conveyed between 30 and 38 percent of livestock across the Ivorian border annually, competing with rail transport for rapid delivery of animals to market. For the coastal markets of Togo and Benin, trucking remains the sole alternative to trekking.

Road transport in West Africa is characterized by high costs and inefficiency, due principally to the following factors:

(a) high import duties on vehicles, spare parts, and fuel;

(b) high administrative costs and fees for the registration and operation of vehicles;

(c) tariff rates which are set too low, thereby limiting profitability and reinvestment; and

(d) high transactions costs in the form of bribes, extortion, and other corrupt behavior by uniformed services responsible for controls.

An additional factor which lessens the efficiency of road transportation is poor road maintenance, often attributed to imbalances in government spending to favor road creation. Road degradation is an inadvertent result of tariff regulations that encourage excessive axle-loading of vehicles (SETEC, 1987; Louis Berger, 1988; Groupe Chanic 1989).

The high costs of road transport make it cost-effective only for merchandise having high value per unit of weight or volume. However, the majority of Sahelian exports are agricultural and other bulk commodities having low unit-value.

7.2 Major Trucking Itineraries

7.2.1 Trucking Itineraries in Burkina Faso

The majority of Burkinabe animals which are shipped onward to coastal markets depart from a small number of transportation hubs or livestock markets in the southern portion of the country: Pouytenga, Ouagadougou, Kodougou or Bobo Dioulasso. Kaya, located north of Ouagadougou on the main route to Sahelian production zones, has declined in recent years as a entrepot for cattle shipments, but remains a major export and shipping center for small ruminants.

All of the principal shipping centers in Burkina Faso are within 36-60 hours road distance from major terminal markets in Côte d'Ivoire, Ghana, or Togo. This factor is a critical one given that it falls within the upper limits at which livestock can be transported in good condition without access to food or water.

Each of the five shipping points (see Table 21) is located at a major transportation junction, and four of the five include both trucking facilities and railheads (although the Kaya rail line is not yet operative). While Pouytenga is the sole exception in this respect, it is the site of Burkina Faso's largest weekly livestock market. All shipping centers are also equipped with basic infrastructure for holding and loading large numbers of animals (including corrals, loading ramps, and veterinary facilities).[11]

The use of road transport from Burkina Faso to coastal markets is, in practice, limited to only two major routes. The first is the north-south paved highway between Koupela and Lome, Togo. The second is the east-west highway which begins at the Niger border and passes from Fada N'Gourma through Koupela, Ouagadougou, Koudougou and Bobo Dioulasso, then turning southward at the Côte d'Ivoire border.

7.2.2 Trucking Itineraries in Mali

As in the case of Burkina Faso, trucking centers in Mali are, for the most part, located within two days shipping time of major Ivorian markets. However, Mali's significantly greater area and its adjacency to the Côte d'Ivoire result in a series of itineraries which are staggered in relation to Ivorian markets.

Fatoma, Mali's largest livestock market, is located near the city of Mopti, some 3.5 trucking days from Abidjan. Because shipping time to Abidjan under current conditions (including border controls, roadblocks and rest periods) approaches or exceeds the maximum allowable period during which livestock can remain unwatered and unfed, direct road shipments from this market generally serve only northern and central Ivorian markets. If most road barriers and security checks other than those at the border were eliminated,

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[11]Livestock scales are found at numerous of the shipping centers and regroupment markets visited. These were, for the most part, installed as part of donor-funded projects in the 1970s, and are no longer maintained or operable.

Table 21

MAJOR ROAD ITINERARIES OF THE SAHEL/COASTAL TRADE

	Distance (km)	Condition of Route
MALI--COTE D'IVOIRE		
Bamako--Sikasso--Zegoua		
Zegoua/Pogo--Ouangolo--	447	Paved
Ferkessedougou		
Total	141	Paved
	588	
MALI--COTE D'IVOIRE (VIA BURKINA)		
Mopti--Sienso (San)--Kimparana--		
Famana(Mali)-- Faramana (Mali)--		
Bobo Dioulasso	460	Partially paved
Segou--Bla--Koutiala--Kouri--		
Faramana--Bobo Dioulasso	370	Partially paved
Sikasso--Bobo Dioulasso	168	Unpaved
Bamako--Bougouni--Tengrela--		
Boundiali	305	Unpaved
BURKINA FASO--TOGO		
Ouagadougou--Koupela--Cinkassa--		
Dapaong--Kara--Sokode--		
Atakpame--Nuatja--Lome	842	Paved
Mopti--Bobo Dioulasso	460	Unpaved
BURKINA FASO--COTE D'IVOIRE		
Bobo Dioulasso--Doropo--	309	Partially paved
Bouna--Boundoukou--	257	Unpaved
Agnibilekrou--Abengourou	183	Partially paved
Total	749	
COTE D'IVOIRE		
Tienko--Odienne--		
Koro--Touba--Man	93	Unpaved
Total	159	Paved
	252	
Tengrela--Boundiali--		
Seguela--Daloa--	117	Unpaved
San Pedro	327	Partially paved
Total	265	Paved
	709	
Ferkessedougou--Katiola--Bouake		
Yamoussoukro--Abidijan	799	Paved

this itinerary could be completed in 48 hours. Additional costs are also introduced into the marketing process when traders unload livestock in Bouake for food and water prior to shipment to Abidjan. Onward transport from Bouake commands a higher shipping rate than other points of origin. Similar factors restrict the direct shipment of livestock from the cities of Bamako, Niono and their environs.

Shipments from the southern Malian entrepots of Koutiala, Bougouni or Sikasso, however, can reach coastal markets within required periods. For this reason these sites are frequently the destination of trekked herds, which are then trucked onward to the Côte d'Ivoire.

The principal road itinerary from Mali is the route from Bamako to the railhead at Ferkessedougou via Segou, San, Koutiala, and Sikasso and the Ivorian control post at Nielle. This route covers a distance of approximately 590 kilometers. Onward distance from Ferkessedougou to Abidjan (via Bouake and Yamoussoukro) is 570 kilometers. The Malian portion of this route is paved and, for the most part, in fair to excellent condition.

Less-used itineraries pass through Bougouni (some 163 kilometers south of Bamako) and onward to the Ivorian border posts of Tienko and Tengrela. While traffic on the Bamako-Bougouni route could increase dramatically once paving operations are completed in 1992, this laterite road cannot currently be used by large trucks throughout much of the year. Traffic through the Tienko border post is unlikely to increase significantly over the short-to-medium term, due principally to limited import demand from cities in the western region of Côte d'Ivoire. The Tengrela route, however, has at times been the second most important export corridor for Mali. In recent years, however, its use has declined due to a series of armed attacks on transporters and because of the degraded state of the road surface.

7.2.3 Trucking Itineraries in Côte d'Ivoire

Improvement of the road infrastructure in recent years has undoubtedly been a catalyst for major increases in the numbers of livestock shipped over long distances. At present, the main north- south road corridor between the Burkina Faso border and Abidjan (and through its junction with the Malian Koutiala-Sikasso highway) is entirely paved. (The only exceptions are several short strethes of roadway which are currently under repair near the Burkina Faso border). Southern Ivorian highways, meanwhile, are among the best in the region and include a 140 kilometer four-lane expressway between Singrobo and Abidjan.

Other north-south routes are unpaved laterite tracks which cannot carry heavy transport vehicles during the rainy season. These routes generally serve smaller towns and more sparsely populated regions where there is limited demand for large shipments of livestock.

7.2.4 Trucking Itineraries in Togo

Togo's principal transportation artery is a paved, two-lane highway which runs from Lome to the Burkina Faso border. The quality of the road, its access to efficient port facilities at Lome, and the generally cooperative attitude of Togolese officials have contributed to increased use of this

corridor by transporters in Burkina Faso, Mali, and Niger. Use of this itinerary by livestock exporters appears optimal relative to the limited demand for Sahelian beef by Togo's small population.

Available data do not break down Togolese livestock imports on the basis of mode of conveyance. Livestock traders and Togolese officials report, however, that the majority of cattle and small ruminants imported from Burkina Faso and Niger arrive by truck. The majority of trekked cattle are driven to loading facilities in the northernmost Togolese city of Dapaong, whence they are trucked onward to Lome and other coastal destinations.

7.3 Vehicle Availability

7.3.1 Effects of Vehicle Availability on Trade

For the economy as a whole, road transport under present conditions in the Sahel remains competitive only because of imbalances between the high volume of imports and low volume of exports. This results in excess cargo capacity in vehicles returning to the coast. Transporters in the region generally consider Sahelian commodities to be backhaul cargo which subsidizes the more profitable transport of merchandise imported through coastal ports.

Several major studies of the transport sectors in Mali, Côte d'Ivoire, and Burkina Faso (SETEC, 1987; Louis Berger, 1988; Groupe Chanic 1989) conclude that overall vehicle availability in the Sahel is high, and that excess cargo capacity acts as a brake against price volatility for the carriage of goods on north-south axes. (Estimated excess cargo capacity is shown in Table 22). Sahelian traders interviewed during the course of this study, however, do not agree with this conclusion. They argue that there are often shortages in the availability of trucks for livestock transport and that competition for available vehicles is high at major entrepots. Because livestock do not benefit from regulated tariffs applicable to other goods, shipping costs remain high throughout the year, while doubling or tripling during periods of peak demand.

The disparity of these conclusions can be resolved through a brief discussion of the composition of cargo for trade between Mali and Abidjan. While these data are not comprehensive for all bilateral trade, they suggest that there likely exists a shortage of transport capacity for the shipment of livestock from the Sahel in spite of apparent excess capacity.

In 1987, a total of 251,300 tonnes of cargo were imported to Mali from Côte d'Ivoire, including 84,319 tonnes which transited through the port of Abidjan.[12] All of this cargo entered Mali by truck or by rail. Exports from Mali to Côte d'Ivoire for the same period were only 77,100 tonnes, including 63,147 tonnes shipped directly to, or transiting through, Abidjan (see Table 22). The difference between these figures--174,200 tonnes--represents the

[12]Tonnes and metric tons are used interchangeably in the text.

hypothetical volume of excess backhaul shipping capacity available to Malian exporters.[13]

Table 22

Excess Cargo Capacity for Goods Traffic from Mali, 1982-1987

('000 MT)

To:	1982	1983	1984	1985	1986	1987
Abidjan						
Imports	191.0	274.5	305.2	520.0	377.9	251.3
Exports	143.0	49.7	49.9	46.6	62.0	77.1
Excess Cargo Capacity	48.0	224.8	255.3	515.4	315.9	174.2
Lome						
Imports	0.0	0.0	46.0	55.5	17.3	4.3
Exports	0.0	0.0	0.0	2.4	0.0	0.0
Excess Cargo Capacity	0.0	0.0	46.0	53.1	17.3	4.3
Cotonou						
Imports	7.0	5.0	14.2	3.0	1.3	0.0
Exports	0.0	0.0	0.0	0.0	0.0	0.0
Excess Cargo Capacity	7.0	5.0	14.2	3.0	1.3	0.0

Source: World Bank 1989, "Sahel Transport Corridors: The Case of Mali"

Composition of imports and exports, however, indicates that none of this excess shipping capacity could be used for livestock. Categories of vehicles which comprise "excess" cargo capacity include tank trucks or rail cisterns used for importing petroleum (40,208 tonnes), flatbed vehicles carrying containerized cargo (110,572 tonnes) and general goods vehicles carrying comestibles (30,150 tonnes). All vehicles used for transporting foods, beverages, tobacco and pharmaceutical products are prohibited for use in livestock hauling. Subtracting the cargo capacity of vehicles prohibited for use in livestock transport from total "excess" cargo capacity, the net result suggests an overall deficit of transport capacity for livestock.

[13]These data are not comprehensive for all bilateral trade between the Côte d'Ivoire and Mali, but they account for the majority of cargo monitored between the two nations. A discrepancy of 30,000 tonnes exists between data reported by the governments of Mali and the Cote d'Ivoire for this period.

7.3.2 The Regional Motor Pool

Because of high import traffic from a variety of ports, the Sahelian motor pool is international in nature. While transporters from the coastal regions report that they encounter some degree of official harassment in certain Sahelian entrepots, export transportation from the region is relatively unregulated. As a result, one regularly encounters livestock from one nation being shipped to a second nation on a vehicle registered in yet a third nation.

Data from Mali's national transport office, shown in Table 23, indicates that 38 percent of all "laissez-passer" permits issued for imported goods in Mali during 1985 were for vehicles of foreign origin.

Table 23

Share of Malian Import Traffic Carried by Foreign Vehicles, 1985

Total No. Trucks with Exit Permits

Month	Malian (A)	Ivorian (B)	Nigerian (C)	Togolese (D)	Sum Non-Malian (B+C+D)	% of Non-Malian
Jan	683	265	31	14	310	45.4%
Feb	658	243	29	15	287	43.6%
Mar	600	266	37	10	313	52.2%
Apr	771	207	53	8	268	34.8%
May	833	215	54	11	280	33.6%
June	647	278	32	13	323	49.9%
July	874	342	12	18	372	42.6%
August	600	179	10	15	204	34.0%
Sept	659	138	2	27	167	25.3%
Oct	600	135	6	33	174	29.0%
Nov	474	148	5	32	185	39.0%
Dec	802	212	8	15	235	29.3%
Total	8,201	2,628	279	211	3,118	38.0%

Source: Office National des Transports, Mali

Livestock traders report that they generally seek to avoid the use of third-country vehicles whenever the option of choice is available to them. This is because it is usually impossible for them to establish the legitimacy of vehicle registration, insurance coverage, and other official documents prior to any particular trip. Fraudulent, or allegedly fraudulent documents discovered by customs officials and police regularly serve as a pretext for delaying or confiscating livestock, for which ransom must be paid by the trader. Traders cited numerous instances where entire shipments of livestock were lost in accidents for which no indemnities could be obtained because

transporters carried fraudulent insurance documents. They alleged that this problem is most pronounced for Nigerian vehicles.

Vehicle types for which there is a demand for long-distance livestock transportation are of several types:

(a) medium-sized trucks with a 10-ton capacity, used primarily for transporting small ruminants distances of 100-300 kilometers;

(b) medium-sized trucks with a 15-ton capacity for small ruminant and cattle transport (e.g. Mercedes 1924L); and,

(c) tractor-trailers with a 32-ton load capacity, mainly for cattle transport.

7.4 Road Transport Costs

7.4.1 Government Controls and Tariffs

Truck tariffs between Mali and Côte d'Ivoire are established by government decrees, and follow from a 1975 treaty between the two nations. Established tariffs, however, are enforceable only at officially monitored warehouses or entrepots managed by the EMACI, a Malian government agency. Nearly all of these are located at international ports in Côte d'Ivoire and Senegal.

Under existing agreements, Mali is obliged to apportion two-thirds of all import carriage from Abidjan to Ivorian transporters, assigning the remainder to its own nationals or third-nation transporters. While this policy is more or less adhered to by both nations on northbound convoys, the system breaks down for backhaul operations. Cargo is more scarce for north-south trajectories and often involves inordinate waiting time. As a result, Ivorian transporters frequently opt to return to their home ports empty.

Official tariffs established by Mali and Côte d'Ivoire are, in principal, adjusted periodically in order to account for inflation and other economic changes. Currently operative tariffs are 31 FCFA/MT/Km for the Ouagadougou--Abidjan route and 24 FCFA/MT/KM for the Bobo Dioulasso--Abidjan route. These tariffs have not, however, been adjusted for several years and fall below the long-run variable and fixed costs incurred by transporters, as calculated by the World Bank. (as shown in Table 24)

In order to compensate for low returns, transporters resort to overloading their vehicles. This increases fuel consumption and vehicle wear and slows delivery times. Sample data from Mali's entrepot management agency, EMACI, suggest that this is a chronic problem, with average axleweights on northbound shipments exceeding prescribed 30 metric ton limits by between 8.9 and 13.0 percent per truckload (see Table 25).

Table 24

Comparison of Truck Operating Costs in Cote d'Ivoire and Mali in 1987
for Renault TLM 280 + Trailer with 24 Ton Payload

(FCFA)

	Cote d'Ivoire				Mali			
	Financial Cost	%	Economic Cost	%	Financial Cost	%	Economic Cost	%
Fuel	107.0	20.0	69.3	17.0	92.0	18.0	71.8	17.0
Lubricants	4.3	1.0	3.4	3.7	3.7	1.0	2.9	1.0
Tires	61.3	12.0	31.5	8.0	64.4	12.0	33.1	8.0
Maintenance/ Repair	89.8	17.0	68.4	17.0	89.8	17.0	68.4	16.0
Tr.Allowance	7.2	1.0	6.6	2.0	7.2	1.0	6.6	2.0
Variable Costs	269.6	51.0	179.2	47.7	257.1	49.0	182.8	44.0
Amortization	166.5	32.0	157.4	39.0	174.8	33.0	165.2	39.0
Insurance	29.1	6.0	26.5	6.0	30.6	6.0	27.8	7.0
Salaries	28.6	5.0	26.0	6.0	28.6	5.0	26.0	6.0
Taxes	4.7	1.0	0.0	0.0	5.0	1.0	0.0	0.0
Fixed Costs	228.9	44.0	209.9	51.0	239.0	45.0	219.0	52.0
Overhead	26.9	5.0	19.3	5.0	28.1	5.0	20.1	5.0
Total	525.4	100.0	408.4	103.7	524.2	99.0	421.9	101.0
KM Per Year	45,000		45,000		45,000		45,000	
Vehicle Operating Cost/TKm								
Load Factor								
100%	21.90	0.08	17.00	0.06	21.00	0.07	16.90	0.04
65%	33.70	0.12	26.20	0.09	32.20	0.11	26.00	0.09
50%	43.80	0.15	34.00	0.12	41.90	0.14	33.70	0.12
Gasoil/Liter	245.00	0.84	158.70	0.54	210.00	0.72	163.80	0.56
Int'l Tariff	25.00				25.00			
Dom. Tariff	33.00				25.00			

Source: Direction Centrale des Grands Traveux; World Bank

Table 25

Quarterly Destination and Distribution of Cargo Loaded at EMACI Facilities in 1986

(# of Transport Vehicles and MT)

Quarter		Mali	RCI	Total	MT	Avg. Load per truck (MT)
	1	1,589	1,520	3,109	105,685	34.0
	2	1,379	835	2,214	72,397	32.7
	3	1,608	1,320	2,928	97,910	33.4
	4	1,425	825	2,250	75,933	33.7
Total		6,001	4,500	10,501	351,925	33.5

Source: Entrepôts Maliens en Côte d'Ivoire (EMACI)

7.4.2 Cattle Trucking Costs

Costs of trucking cattle on key north-south itineraries, as reported by traders and transporters, are shown in Table 26 for 15 ton vehicles capable of carrying 30 head per trip. Ranges are reported for each itinerary, as transport costs vary seasonally in response to vehicle availability and livestock demand factors. Since demand for livestock in Côte d'Ivoire and other coastal markets is strongest at the time of major Christian and Moslem holidays, transport rates tend to be at the top of the range cited. Average costs were reportedly highest for trucking cattle within Côte d'Ivoire and lowest from Burkina to Lome, Togo.

Table 26

Sahel and Coastal Markets, 1990

Itinerary	Distance	Cost of Vehicle Hire		Cost Per Head			Average Cost Per Head Per 100 Km.
		High	Low	High	Low	Mean	
Bobo Dioulasso--Abidjan	799	240,000	175,000	8,000	5,830	6,915	865
Koutiala--Abidjan	911	260,000	190,000	8,600	6,300	7,450	818
Ferkessedougou Abidjan	571	375,000	270,000	12,500	9,000	10,750	1,883
Bouake--Abidjan	340	128,000	100,000	4,200	3,300	3,750	1,103
Pouytenga--Lome	892	240,000	185,000	8,000	6,200	7,100	796
Dapaong (Togo)--Lome	697	165,000	120,000	5,500	4,000	4,750	681

Source: Field interviews with traders and transporters.

8.0 Rail Transportation

8.1 Background

While Sahelian exporters recognize the railroad to be the most cost-effective means of shipping livestock to Côte d'Ivoire, the inefficiency of rail operations provides practical disincentives to its use.

In 1989 the Régie Abidjan--Niger (RAN), the rail system running from Abidjan to Ouagadougou underwent a potentially-damaging scission following nearly a decade of decline in revenues and passenger traffic. The once centrally-operated network is now managed by autonomous Ivorian and Burkinabe parastatal companies, albeit under agreements which guarantee bilateral service and cooperation.

The origin of operating difficulties in the RAN can be attributed to several factors. Between 1978-1983 the Ivorian and Burkinabe managers of the rail system embarked on an investment program of roughly 50 billion CFA francs. While many of the scheduled improvements were vital to modernization and expansion of rail service, inadequate funding and internal disagreements over investment priorities led to the abandonment of improvement programs prior to their completion.[14] The increased RAN debt burden, combined with the non-utility of aborted improvements resulted in financial crisis. During this same period, recurrent costs of the RAN system increased dramatically. By 1986 the salaries of approximately five thousand RAN employees represented 70-80 percent of operating costs of the entire RAN system.

The result of management problems within the RAN led rapidly to declining quality and frequency of maintenance and service, as well as user attrition in favor of road transport. The combined effects of inefficiency and increased competition by road transporters led to a decline in passenger traffic of roughly 66 percent between 1978 and the mid-1980s, and a fall of 25 percent in goods traffic to 500 million kilometer-tonnes in 1987. At the time of scission of the RAN, the World Bank estimated that the combined rail system required revenue increases of between 20 and 25 percent, with a simultaneous reduction of recurrent costs of 50 percent.

8.2 Composition of Rail Cargo

As in the case of road transport, the majority of cargo hauled on the rail system moves from the coast to the interior. It is composed principally of imported merchandise, including petroleum and petrochemicals, cereals and other foods, construction materials, fertilizer and containerized goods. Export rail traffic from the Sahel is largely composed of raw materials and agricultural bulk commodities, including cotton and its by-products, peanuts, hides and skins, and oilseeds. During the 1980s live animals, including

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[14]Scheduled improvements included track and siding replacement and the construction of parallel tracks along the most congested portions of the rail network.

poultry, comprised between 19 and 25 percent of all north-south cargo carried by the rail system. (See Table 27).

Although the government of Burkina Faso has planned to begin using the rail system to export zinc and other minerals, the future of this activity is in doubt. Mineral evacuation will depend on extension of the existing rail infrastructure to Perkoa in the northern Sahelian region of the country. Under existing economic austerity conditions, the government is unable to finance the project or to obtain credits for the effort from multilateral donors.

8.3. Equipment Inventory and Scheduling

While formal schedules provide for two daily goods trains between Burkina Faso and Abidjan, equipment shortages and breakdowns have rendered scheduled departures meaningless. The principal causes of this problem are an aging inventory of rolling stock, inadequate resources for the timely repair of rail cars and engines, and the inadequate allocation of railway cars which resulted from scission of the RAN system.

8.3.1 Equipment Constraints

At the present time the RAN equipment inventory has been divided out in three lots: two lots which are limited, by agreement, to domestic routes, respectively, in Côte d'Ivoire and Burkina Faso, and a "pool" of wagons used exclusively for international transport. The insufficient number of "pool" wagons, and occasional diversions of these wagons to provide exclusive service to Ivorian railhead, has created bottlenecks on the Burkinabe railway and resulted in the emergence of a secondary market for priority on available wagons. The use of rolling stock within the "pool" of rail wagons is further limited by restrictions which forbid the transportation of live animals, raw materials, and certain other cargo in wagons utilized for the transportation of comestibles.

As noted in Table 28, the hypothetical rolling stock inventory available for Burkinabe livestock exports to Côte d'Ivoire includes a total of 459 wagons of two general types.[15] Of 105 tombereaux (ore carriers which are often used for carrying sheep and goats) only 58 were servicable in February 1990. This high rate of breakdowns is explained by the average age of the tombereaux fleet: 10 percent of these wagons have exceeded their anticipated life of service (30 years) by between 10 and 20 years, while 25 percent of the wagons have entered the last trimester of their anticipated life of service.

The railway boxcar inventory is subject to similar problems. While 584 wagons are owned or leased by the Burkinabe rail company, 112 wagons have exceeded their anticipated life of service by between 4 and 18 years and are frequently incapacitated. An additional 90 wagons are ostensibly available for livestock transport, but are of a size that both traders and railway

[15]This number does not include cisterns, flatbeds, or other wagon-types which are not suitable for livestock transport.

Table 27

Rail Cargo Transported in Côte d'Ivoire, 1985-1987, by Category

(Tonnes)

Category	International				Domestic			
	North-South		South-North		North-South		South-North	
	1985-86	1986-87	1985-86	1986-87	1985-86	1986-87	1985-86	1986-87
Live Animals	23,575	20,983	11	59	0	9	16	10
Foods	8,093	7,391	85,547	94,880	0	430	2,086	1,695
Tobacco and Beverages	0	0	670	712	0	0	0	0
Raw Materials	65,083	79,531	1,027	537	90	0	53	0
Hydrocarbons	0	0	41,039	31,812	290	0	564	511
Vegetable Oils	30	0	2,625	1,819	0	0	0	0
Fertilizer	30	650	32,557	40,671	0	0	620	1,750
Manufactures & Diverse Goods	801	403	136,363	138,156	46	107	1,320	763
TOTAL	97,612	108,958	299,839	308,646	426	546	4,659	4,729
Amounts shipped in cargo container	0	0	66,460	64,470	0	0	0	0

AS PERCENTAGE OF ALL CARGO

	International				Domestic			
	North-South		South-North		North-South		South-North	
	1985-86	1986-87	1985-86	1986-87	1985-86	1986-87	1985-86	1986-87
Live animals	24.1	19.3	0.0	0.0	0.0	0.0	0.3	0.2
Foods	8.3	6.8	28.5	30.7	0.0	78.7	44.7	35.8
Tobacco and Beverages	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0
Raw Materials	66.6	72.9	0.3	0.2	21.1	0.0	0.1	0.0
Hydrocarbons	0.0	0.0	13.6	10.3	68.0	0.0	12.1	10.8
Vegetable Oils	0.0	0.0	0.9	0.6	0.0	0.0	0.0	0.0
Fertilizer	0.0	0.1	10.8	13.1	0.0	0.0	13.3	37.0
Manufactures & Diverse Goods	0.8	0.4	45.4	44.7	10.7	19.5	28.3	16.1
Amounts shipped in cargo container	0.0	0.0	22.1	20.8	0.0	0.0	0.0	0.0

Source: SICF

Table 28

Inventory of Railway Rolling Stock Used for Livestock Transport from Burkina Faso to the Côte d'Ivoire

Wagon type	Number Rolling Stock	Load weight (tonnes)	Average load (# head)	Year Put into Service	Years Remaining or Exceeding (+) Anticipated Life of Service
Tombereaux					
T11	1	10	75	1949	+11
T12	6	20	150	1940	+20
	2	20	150	1942	+18
T13	1	30	225	1946	+14
	1	30	225	1950	+10
T14	20	35	260	1963	3
	8	35	260	1970	10
	20	35	260	1971	9
	15	35	260	1974	14
	31	40	280	1980	20
Total	105				

NB: Tombereaux are used exclusively for small ruminant cargo.
NB: 58 Tombereaux are servicable for international livestock shipment.

Boxcars					
H12000	24	15	24	1942	+18
H13000	4	30	30	1963	3
J14000	33	35	40	1973	13
	29	40	45	1979	19
I4020	4	40	45	1980	20
K14000	28	35	40	1961	1
	12	35	40	1964	4
	22	35	40	1965	5
	12	35	40	1966	6
	29	35	40	1969	9
	2	30	35	1963	3
	37	40	45	1979	19
	29	40	45	1980	20
K13000	60	30	30	1950	+10
	28	30	30	1956	+4
Total	354				

NB: Boxcar capacity (# head) is reported for cattle only. Small ruminant capacity is determined by using a multiple of 7.0.
NB: 149 boxcars are servicable for international livestock shipment.

Source: Societe de Chemin de Fer Burkinabe

officials deem dangerous for livestock.[16] Railway officials estimate that at any given time only 149 boxcars (or 25.5% of the total) are available for use in the international pool. Of this number, approximately a third are reserved for hauling foods, tobacco, beverages and merchandise which must be transported in sanitary conditions. These wagons are, hence, prohibited from carrying livestock and non-food bulk commodities. Because of the very limited quantity of merchandise exported from the Sahel that is eligible for carriage in these wagons, they frequently return to the Abidjan railhead empty.

In addition to the above inventory, the Burkinabe rail company posesses three JK36 refrigerated wagons, capable of transporting 30 tonnes of meat or other chilled cargo. Placed in service, respectively, in 1961, 1963 and 1976, none of these is currently operable.

Conditions for the carriage of livestock on the railway are poor. Closed boxcars with inadequate ventilation are the predominant means of shipping cattle. Tombereaux used for transporting small ruminants are intended for use as ore-carriers. The shallow well within which sheep and goats travel is protected only by a low wall, and livestock may be easily stolen or accidentally ejected en route.

These conditions, combined with irregular and lengthy delays along the rail itinerary, contribute to high mortality in livestock shipments. Trader estimates of average mortality among cattle shipped by rail are between 4 and 6 percent, with most deaths due to goring, trampling or suffocation. Railway officials are critical of traders who seek to limit transportation costs by overloading rail cars. Most experienced traders and drovers, however, are sensitive to higher risks that this entails and compose market herds to be of a size that falls just under recommended cargo limits. In doing so they demonstrate a willingness to pay marginally higher unit shipping costs in return for diminished risk of mortality.

8.3.2 Scheduling and Rotations

Further exacerbating demand for rail wagons are excessive rotation times.[17] Scheduled rotation time for wagons is 5 days. However, average rotation time reported by rail officials is 9 days. These delays are attributed to excessive loading and unloading times in both Burkina Faso and Côte d'Ivoire, equipment breakdowns and shortages, and inadequate cargo for southbound trains. Delays en route also contribute to slow rotations. The itinerary between Bobo Dioulasso and Port Bouet (Abidjan) comprises 54 scheduled "short" stops and 6 major stations. Unscheduled police, customs and

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[16]These include the largest K13000 and J14000 boxcars, which have a 40-ton load weight and can accomodate 50 cattle or between 300-359 small ruminants. When loaded fully, these wagons experience higher than average livestock mortality due to suffocation and trampling. However, the cost of transport on these wagons for smaller numbers of livestock is prohibitive.

[17]Rotation is the period of time required for the completion of a round trip by a vehicle, including all handling and waiting time.

veterinary inspections can occur at any of these, adding between 12 and 18 hours to the scheduled 36-hour trip.

Operating guidelines require a minimum of 26 laden wagons before any goods train can obtain clearance to leave the Bobo Dioulasso rail station for Côte d'Ivoire. Hence, it is frequently the case that laden wagons will be held at station sidings for twenty-four hours or more awaiting an equipment quorum. Established rail company policy, however, assures that live cargo is loaded only shortly before anticipated departures, and that it receives priority on outbound trains.

Although livestock transporters are faced with a shortage of available wagons and departures during most of the year, train schedules and equipment allocation are altered during the period prior to the Islamic holiday of Tabaski. During the two weeks prior to Tabaski, 30 to 40 tombereaux and boxcars are allocated daily for the shipment of small ruminants from Burkina Faso to Côte d'Ivoire. This allows for the daily shipment of between 9,000 and 12,000 animals during the period of peak demand in coastal markets.

8.3.3 Other Infrastructural Deficiencies

In spite of the importance of livestock among cargo carried by the Burkinabe and Ivorian rail systems, infrastructure at railheads is inadequate to demand. Livestock holding pens in Ouagadougou, Koudougou, and Bobo Dioulasso are prohibitively small for the number of animals awaiting shipment, and are located a considerable distance from loading areas.

Holding and loading facilities at Bobo Dioulasso, the principal Burkinabe railhead, are especially poor. Holding pens are located nearly five kilometers from the rail station, and require herds to be trekked through the heart of the city along major traffic arteries. Municipal regulations forbid livestock to travel this route during morning and afternoon rush hours, in spite of the fact that these coincide with scheduled loading and departure times. In order to avoid delaying morning and evening departures, herds will often be brought into the heart of the city four or five hours before loading, where holding facilities do not exist. At the Bobo Dioulasso station there is only one siding for loading livestock, capable of accomodating only 5 wagons at a time.

8.4 Costs of Rail Transport

8.4.1 Rail Tariffs

Rail tariffs in the region are quoted by category of merchandise and calculated as a function of operating cost and distance. They are established, however, such that unit costs rise with proximity to major destinations. According to railway officials this reflects demand concentration in southern portions of the network and pricing incentives to encourage long-distance carriage, particularly for backhaul cargo on north-to-south trajectories. As indicated in Table 29, rail transport rates for the shipment of livestock between northern transportation hubs and coastal markets average 46.38 CFA per kilometer/tonne.

Table 29

Comparative Costs of Rail Shipment of Livestock, January 1990

Itinerary (hours)	Rail Tariff (CFA)	Distance (km)	Cost per km/ton (CFA)	Average Trip Length
Ouagadougou--Abidjan	45,767	1,175	38.9	72
Koudougou--Abidjan	40,193	1,025	39.2	60
Bobo Dioulasso--Abidjan	34,604	799	43.3	48
Ferkessedougou--Abidjan	25,200	571	44.1	36
Bobo Dioulasso--Bouake	24,916	460	54.2	36
Bouake--Abidjan	18,734	323	58.0	12
Average unit cost			46.3	

Source: SICF; SCFN

During the past year both the Burkinabe rail company (SCFB) and its Ivorian counterpart (SICF) have sought to boost cargo volume by instituting competitive rates. Beginning in November 1989 the SICF discounted its tariff for livestock by approximately 11 percent. At the same time the SICF began quoting tariffs on a regional basis. Whereas the gateway northern railheads of Ouangolodougou and Ferkessédougou had previously charged tariffs based strictly on mileage, they now employ a common rate.[18]

Rail tariffs are quoted on a per tonne basis, regardless of the category of rail wagon utilized. Per wagon rates are a multiple of established cargo capacity, regardless of the actual weight or number of livestock which are transported. For example, a convoy of 27 cattle transported in an H13000 wagon from Ferkéssedougou to Abidjan would be charged the following amount:

[18]Pre-November 1989 rates to Abidjan were 28,872 CFA per ton from Ouangolodougou and 27,815 CFA per ton from Ferkessédougou. Unit costs (CFA per kilometer/tonne) from these stations were respectively 47.0 CFA and 48.8 CFA.

25,000 CFA (tariff per tonne) x 30 tonnes (wagon capacity) = 750,000 CFA

The practice of charging rates based on the fully-laden capacity of individual wagons sometimes encourages traders to seek economies of scale by over-loading wagons. This practice is officially discouraged by railway officials because it increases the risk of high animal mortality.

A comparison of rail tariffs (Table 30) reveals that live animals are charged the highest unit tariff of any category of cargo, with unit costs (CFA per kilometer/tonne) exceeding the least costly category (shea, or "karité" nuts) by a factor of 4.0 and the second-most costly category (hides and skins) by a factor of 1.56.

Table 30

SICF Cargo Tariffs to Abidjan, 1989 (FCFA/MT)

Cargo Category	Bouake	Bobo-Dioulasso	Ouagadougou
Live Animals	58.0	42.0	38.0
Diverse goods	30.5	25.0	24.0
Cereals & Rice	27.0	23.0	23.0
Cement	17.6	18.0	14.0
Fertilizer	21.6	16.0	16.0
Baled Cotton	24.6	18.0	15.6
Cottonseed	46.0	33.0	30.0
Coffee & Cacao	22.0	18.0	17.2
Shea Nuts (Karite)	14.3	13.1	10.5
Wood (Logs)	18.4	14.6	13.8
Petroleum	31.8	23.0	21.4
Cottonseed Cake	18.5	15.8	14.8
Sugar	28.0	21.0	21.0
Hides & Skins	37.0	29.0	26.0
Minerals			
per wagon (min.40 ton)	19.0	16.5	13.3
per rame (min. 75 ton)	18.0	15.8	12.6
Empty containers (return) (Av. weight: 1.8 ton and 2.26 ton)	17.4	12.8	11.2
Full containers	27.3	24.8	22.5
Distance to Abidijan (km)	323	795	1,144

N.B. Major clients can negotiate rates. Tariffs may also depend on conditions of transport and timely delivery.

These disparities are explained by the character of particular types of cargo. Unlike other commodities, live animals cannot be consolidated with other cargo, or stacked to make full use of available vertical space. The railway thereby is unable to maximize returns on its shipping capacity. At the same time, high unit tariffs reflect the high demand for scarce wagons suitable for live animal shipments and the priority treatment they must be accorded once they are laden.

8.4.2 Other Direct Costs

In addition to tariffs, other costs are particular to rail shipment. The highest of these are labor and return transportation costs for herders or guardians who accompany livestock. At least one individual is required to oversee each rail wagon in which animals are loaded. In practice, guardians are generally drawn from the team of drovers who accompany cattle to railheads in addition to the trek boss or herd owner's agent who is responsible for the herd until it arrives at market. Rail companies do not charge a fare for transportation of these individuals, who generally travel in livestock wagons. Return fares for herders are discounted 50% by the Ivorian rail company. In addition to transportation costs for these individuals, it should be noted that traders are obliged also to provide a daily sum of approximately 500 CFA per herder/guardian for subsistence costs.

Teamster syndicates in Burkina Faso and Côte d'Ivoire have negotiated with their governments to receive a nominal fee of 6,000 CFA for each rail wagon that is loaded. This fee is imposed whether or not union representatives or members are present at the loading site. In Burkina Faso, the Syndicat National des Travailleurs Burkinabés also receive a surcharge of 200 CFA per ton of cargo transported on the rail system.

Actual loading costs at northern railheads are comprised of 1,500 CFA per wagon, in addition to an outlay of 3,000 CFA per wagon for straw bedding. Although this item is a discretionary one, virtually all traders recognize that bedding provides secure footing for livestock and reduces mortality. Unloading charges at the Port Bouet stockyards cost an additional 1,000 CFA per wagon.

8.4.3 Informal Charges

As discussed earlier, the scarcity of rail wagons has led to the emergence of a secondary market for loading priority at Bobo Dioulasso, Ouangolodougou, and Ferkéssedougou. This market is an informal one, in which traders seeking priority are approached by an intermediary, acting on behalf of the local "chef de gare", or station master. The amount paid by traders is a function of demand: a lengthy queue of herds awaiting shipment generally drives up bidding for priority. Fees paid for priority can range between 1,500 CFA during period of slack demand to as much as 25,000 CFA at year's end or during the weeks prior to Tabaski. Traders who frequently use the rail system often make supplementary gifts of between 500 and 1,500 CFA to station masters and their assistants as a means of cultivating this strategic relationship.

Like other means of conveyance, rail transportation also entails costs resulting from extortion and <u>tracasseries administratives</u>. Field data suggest that corruption costs directly related to rail transportation are significantly lower than those for truck travel by a margin of as much as 75 percent.

9.0 Official Marketing Costs

9.1 Impact of Official Charges

All of the countries visited during the course of this study are in the process of undertaking major fiscal reforms which will reduce the costs of livestock marketing and contribute to the competitiveness of Sahelian animals in coastal markets. For case studies carried out in the field, administrative fees, export taxes, and other formal governmental charges have, until recently, been onerous. They constitute between 24 and 50 percent of all marketing costs exclusive of livestock purchase, depending upon the location of terminal markets, the declared value of exported animals, and the mode of transportation utilized. Most significant, however, is the fact that the greatest portion of fees and taxes are direct charges to the economies of exporting nations rather than in import markets. In most cases analyzed, the aggregate cost of taxes and official fees far exceeds the net profit earned by traders.

9.2. Official Charges in Producing Countries Prior to 1990

Recent changes in taxation in producer nations will favorably alter the competitive position of livestock exported from the Sahel. However, in order to gain an appreciation of the competitive disadvantages of Sahelian livestock during the past decade it is necessary to review systems of taxation in the period prior to 1990.

Official marketing costs in exporting nations have been roughly similar in recent years, and have included taxes related to production, herd movement, administration of trade, domestic sales and exports.

9.2.1 Production Taxes

Production taxes in Burkina Faso were suppressed in 1987. Prior to that time, however, these were imposed in two forms. A livestock head tax was levied annually on cattle (200 CFA/head/annum) and small ruminants (150 CFA/head/annum). Exemptions were allowed, however, for both small ruminants and cattle under two years of age.

A second levy, the <u>impôt forfaitaire sur le revenu</u> or IFR, was a hypothetical income-type tax calculated on the basis of herd size, utilizing an assessment formula equating ten small ruminants with one cow. Tiered assessments were progressive and based on herd size. Levies ranged from 5,000 CFA for herds between 26 and 50 head; 10,000 CFA for herds between 51 and 250 head; and 22,000 CFA for herds larger than 250 head.

As in Burkina Faso, Mali assesses an annual head tax on livestock of 300 CFA/head for cattle and 150 CFA/head for small ruminants.

In addition to centrally imposed production taxes, Islamic levies are also assessed in many areas of Mali. <u>Sharia</u> (traditional Islamic law) calls for the <u>zakat</u>, an annual tithe on domestic resources and earnings. Ostensibly, the revenue derived from <u>zakat</u> levies are redistributed in the form of food or

charitable works. In the interior delta of the Niger River, under the rule of the Dina, precise levies are calculated on the basis of herd size.

Formal taxation of livestock by central authorities have proven difficult to enforce, due to a variety of factors, including collusive behavior by tax agents and producers, inadequate personnel and resources for census and assessment activity and the ease of evasion.

9.2.2 Transit Taxes

A taxe de pacage, or pasture tax, continues to be levied on all herds of foreign origin transiting Burkina Faso. These are assessed in the amount of 2,500 CFA/head for cattle and 150 CFA/head for small ruminants.

Abuse of the transit tax is a source of friction between Malian and Burkinabe authorities. The Malian government alleges that many herds claiming to be in search of pastoral resources in Burkina Faso are, in fact, commercial herds en route to coastal markets. They choose to pay the Burkinabe taxe de pacage rather than subjecting themselves to the more costly Malian export levies. Similar abuse is also alleged to occur among Burkinabe traders who fraudulently obtain Malian herd documentation and choose to pay the transit tax rather than Burkinabe export taxes.

Traders interviewed in the field corroborated these allegations and pointed out that the taxe de pacage offers a strategic alternative for minimizing taxation. They acknowledge, however, that herds of real or fictive Malian origin are more subject to official harassment and extortion by local authorities in Burkina Faso, where they enjoy little legal protection and recourse. Costs of this strategy are, hence, elevated beyond the actual costs of the tax.

As in the case of any fraudulent export activity, the ultimate cost of false declarations of origin or intent can result in the seizure of entire herds or the imposition of fines equal to or greater than any profits earned in terminal markets.

9.2.3 Domestic Market Taxes

Domestic market taxes are generally paid by sellers when livestock are presented for sale, regardless of whether or not sales are made. These vary geographically and are generally highest where infrastructural improvements have been made at markets.

Market levies in both Mali and Burkina Faso are relatively low (between 100 CFA and 200 CFA/head for cattle, and 50 CFA/head for small ruminants). The mean tax is 99 CFA for markets in Burkina Faso, as shown in Table 31. Separate levies may also be made for use of watering facilities, loading ramps, and holding-pens.

9.2.4 Licensing Costs

Licensing costs and procedures (described in detail elsewhere in this report) have, in the past, added significantly to the cost of livestock

Table 31

Provincial Market Taxes for Livestock in Burkina Faso
(CFA/head)

Province	Cattle Tax	Sheep & Goat Tax
Boulgou	100	25
Bulkiemde	100	25
Gnagna	75	10
Kenedougou	100	50
Houet	200	100
Kouritenga	50	25
Kossi	100	25
Mou-Houn	150	150
Oudalan	50	25
Poni	100	55
Sanmatenga	100	50
Seno	25	25
Sissily	35	35
Yatenga	100	25
Kadiogo	200	50
Average	99	45

exporting in terms of both official charges levied and bribes contingent to administrative performance.

While licensing and patente or export permit costs in Mali were standardized for all regions during the 1980s, the system utilized in Burkina Faso has been far more complicated. Patentes are granted in six categories which correspond with the number of livestock exported, with fees established by provincial authorities.

As indicated in Table 32, regional variations in the costs of export permits can vary by nearly 300%. While regional variations follow no apparent pattern, they are highest for Comoe and Houet--the provinces closest to Côte d'Ivoire; Seno, the principal Sahelian livestock-producing zone; and Nahouri, adjacent to the Togolese and Ghanaian borders. By the same token, the province of Kenedougou, also adjacent to the Côte d'Ivoire border, utilizes a fee schedule only a third higher than the national average. The provinces of Oudalan, Sourou, and Gourma, all of which are major livestock-producing regions, enjoy fee schedules among the lowest in the nation.

The apparent absence of internal logic in the establishment of export permit fees provides an incentive for traders who are based in the most costly regions to assemble herds and complete administrative formalities outside their zones of principal activity.

Table 32

Burkina Faso: Provincial Variations in Patente Fees for Cattle Exports

(CFA/ herd)

Province	< Patente Category > 6	5	4	3	2	1
BAM	4,000	10,000	18,000			
Boulgou		6,000				
Boulkiemde	3,000	16,000	34,000	55,000	85,000	135,000
Comoe	8,400	16,800	35,700			
Ganzourgou	3,000	6,000	12,000	20,000	50,000	100,000
Gourma	3,500					
Kenedougou	5,600	9,600	10,800	18,000		
Houet	8,800	17,600	37,400	60,500		
Kossi	6,200	11,700	21,700			
Kouritenga		4,000	10,000	24,000		
Nahouri	6,700	8,900	12,900			
Oubritenga	4,100	6,800	11,400			
Oudalan	4,100	6,800	11,400			
Passore	6,090	9,100	15,100			
Poni	3,000	6,000	12,000	20,000	50,000	100,000
Sanematenga	6,200	11,450	26,350	43,875	70,725	122,625
Seno	7,600	13,100	25,400			
Sissily	6,100	9,100	15,100	23,100	53,100	103,100
Sourou	6,000	12,000	20,000			
Yatenga	3,210	6,420	12,840	21,400	53,500	107,000
Zoundwego	3,000	6,000	12,000	20,000	50,000	100,000
Kadiogo	3,000	6,000	12,000	20,000	50,000	100,000
Average	4,618	9,062	16,640	24,125	57,791	79,091

Source: Ministère de l'agriculture et de l'élevage

9.2.5 Veterinary Fees and Taxation

These are among the least onerous charges levied on export herds. As noted elsewhere in this study, these constitute a fee for service: the provision of prophylaxis and certification of origin.

Because traders are convinced of the need for livestock vaccination and prophylaxis, efforts to evade these costs are rare. Although vaccination of In Mali export taxes comprise a constellation of charges attached to the herds is required by law in all countries of the region, prophylaxis against trypanosomiasis is an elective treatment which is voluntarily utilized by the majority of herds shipped to coastal markets.

9.2.6 Export Taxes and Customs Charges

Exports taxes and customs charges in both Mali and Burkina Faso have, in the past, been generally assessed on the basis of hypothetical values (mercuriales) periodically established by the authorities. While Mali ceased applying mercuriale indexes to livestock in the early 1980s, the practice has continued in Burkina Faso. Although government officials claim that these are adjusted on the basis of prices monitored at key markets in all regions of the country, mercuriale values generally are set between 10 and 20 percent below the real mean commercial value of livestock during any period.

export process. These include: (a) an export levy of 2,000 CFA/head for cattle and 500 CFA/head for small ruminants; (b) a tax to support the Office malien de bétail et viande, assessed at 50 CFA/head for cattle and 25 CFA/head for small ruminants; (c) the CPS/Ad valorem tax of 1,500 CFA/head for cattle and 300 CFA/head for small ruminants.

In Burkina Faso more complex formulae are employed. Export taxes include: (a) a departure tax (droit de sortie) assessed at 0.08% of the mercuriale value[19] ; (b) a "statistical tax" assessed at 0.04% of the mercuriale; (c) a levy to support the national commercial agency, ONAC, assessed at 0.0025% of the mercuriale; (d) a taxe de recherche et conditionnement of 0.50% of the mercuriale; (e) customs stamp fees of 0.06% of 8% of the mercuriale; and (f) a levy to support the Conseil Burkinabe des Chargeurs labor syndicate, in the amount of 0.5% of the mercuriale.

9.2.7 Export Tax Reform

As part of its fiscal reform program the government of Mali suppressed one of the most onerous of its charges, the four to eight percent livestock export tax, in January 1990. The action followed suppression of requirements for export licensing in July 1989. In practice, the issuance of import/export licenses had been severely restricted by the government as a form of political patronage. In effect, this system sanctioned intermediation and profiteering by the less than twenty individuals who held import/export licenses. Typically, livestock exporters have paid a fee of approximately 750 FCFA/head for use of the license held by a second party.

The licensing system has been formally replaced by an easy-to-obtain declaration of intent to export which costs only 200 CFA. Implementation of the program, however, has not been adequately publicized. None of the exporters interviewed five months after its implementation was aware of the change and all were continuing to pay license user fees.

The combined effect of Mali's licensing and export tax reforms will be to reduce aggregate taxes and formal charges to exports by 40 to 45 percent. It is possible that an immediate result of Malian reforms over the short term may be a drop-off in livestock exported through Burkina Faso. This would result from decreased use of Burkinabe provisions which allow Malian livestock

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[19] Throughout most the of 1980s the droit de sortie was assessed at 0.17 percent of the mercuriale.

to transit Burkina en route to coastal markets for payment of a single 2500 CFA transit fee.

Burkina Faso has yet to define its fiscal reform program, as it awaits further negotiations on an anticipated structural adjustment program.[20] However reforms aimed at easing the cost burden to producers began as early as 1987, when the government suppressed its annual head tax on livestock.

9.3 Official Costs in Consumer Markets

9.3.1 Import Duties

Of the several coastal markets studied, only Côte d'Ivoire exonerates all livestock from import duties.

In Togo several charges are assessed, based on unit values which, like mercuriales, are periodically revised by governmental authorities to reflect price trends. In 1989 these were fixed at 35,000 CFA/head for cattle and 6,000 CFA for sheep and goats. Import charges assessed by Togo include: (a) a fiscal duty, or droit fiscale, of 2.28% of unit value; (b) a statistical taxe of .03% of unit value; (c) a transaction tax of .03% of unit value; and a fiscal stamp assessment of 8.8% of unit value for cattle and 4% for other species.

Because Togo banned all imports of non-African meat in 1989, existing taxes affect only the competitiveness of Sahelian imports vis a vis local livestock. Even prior to the ban on non-African meats, Sahelian livestock remained competitive due to 22.4% duties on the cost, insurance and freight value of chilled and frozen imports.

Import duties in Benin are comprised of only two levies: (a) a duty of 11.2% of CIF value for cattle and 8.8% of CIF value for small ruminants, and; (b) an import tax of 12% of duties assessed.

9.3.2 Other Official Costs in Terminal Markets

Additional official charges incurred in terminal markets are principally in the form of municipal taxes. In the large terminal markets of Abidjan and its environs, a transit tax applies to all livestock passing through the central transportation and holding facility at Port Bouet, regardless of their origin or ultimate destination. The majority of livestock taxed are, however, Sahelian animals intended for local slaughter. A tax of 1,000 CFA/head for cattle and 150 CFA/head for small ruminants is levied by the municipality of

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[20] A principal impediment to agreement on Burkina Faso's structural adjustment program has been government investment in extending the rail line from Kaya to the extreme north. While the principal intended use for this rail extension would be the evacuation of minerals, Burkinabe negotiators have argued that the extension would also allow for increased rail shipment of livestock. Barring other major improvements in railway efficiency, delivery times for livestock on this line would exceed acceptable limits for direct shipment to coastal markets.

greater Abidjan, while the local authorities of Port Bouet impose an addition tax of 100 CFA/head for cattle and 50 CFA/head for sheep and goats. Municipal taxes imposed at the Bouake market are similar in magnitude, totalling 1,000 CFA/head for cattle and 100 CFA/head for small ruminants.

Although municipal taxation is not a form of de jure discrimination against imported livestock, in practice it applies almost exclusively to Sahelian herds which are off-loaded at the truck and rail facilities in major cities.

An analagous situation also exists in the form of municipal slaughter taxes. In Abidjan these are levied at a rate of 3,500 CFA/head for cattle and 750 CFA/head for sheep and goats (see Table 33). Because the majority of livestock slaughtered in these markets are of Sahelian origin, the net effect of this tax has been to drive up the net retail cost of Sahelian meat, rendering it less competitive with chilled and frozen imports, regardless of origin. Although butcher and traders' associations in Côte d'Ivoire have lobbied extensively for a reduction of municipal transit and slaughter taxes, they have had little success. Municipal revenues derived from these levies are considerable, and authorities argue that they are necessary in order to assure maintenance of central off-loading and slaughter facilities.[21]

Table 33

Municipal Slaughter Taxes in Major Ivorian Markets, 1989

Site	Cattle Taxes	Small Ruminant Taxes	Site	Cattle Taxes	Small Ruminant Taxes
Abidjan	3500	750	Duekoue	800	300
Bouake	2300	1000	Devrabo	850	350
Daloa	1250	500	Bouafle	700	400
Abengourou	2300	1200	San Pedro	800	400
Man	1100	450	Issia	500	300
Odienne	500	200	Sinfrag	600	200
Gagnoa	1500	600	Danane	500	200
Soubre	800	300	Ferkessedougou	1000	500
Yamoussoukro	1500	400	Ebilassokro	600	200

[21] Total 1988 revenues from livestock transit taxes at Port Bouet totalled 95,704,250 CFA for the municipality of Abidjan, and 15,977,350 CFA for Port Bouet. Revenue from abattage taxes totalled 376,152,250 CFA during the same period.

Contrary to the official position of local authorities regarding the disposition of tax revenue from these sources, the Port Bouet stockyards are scheduled to be replaced by a new facility to be constructed with fund derived from a donor grant beginning in 1991.

10.0 Corruption and Transaction Costs

Although the corruption prevalent throughout the region impedes the free movement of goods and services and drains the economy, few governments have been able or willing to employ effective efforts to combat it. In general, most types of corruption in West Africa's regional marketplace stem from the monopolistic nature of public administration. Government bureaucracies and civil servants control the economic freedom to do business, as agents of the public interest. Their power to grant necessary administrative and other clearances amounts to a discretionary authority to determine who may do business, and when, where and how business may be conducted.

In an environment characterized by economic uncertainty, public officials sometimes divert their monopolistic powers to rent-seeking. Although this behavior generates popular disillusionment with government, it may alleviate a crucial problem that is typical of each nation studied in this document: profits derived from rent-seeking behavior can substitute for higher wages, serving as an immediate source of cash income for civil servants.

Diagnosing and formulating a strategy for combatting corruption must begin with the recognition that the optimal level of corruption is rarely zero. The marginal economic and social costs of a particular type of corrupt behavior must be weighed against the marginal costs of its suppression.[22]

Post-colonial political history in West Africa demonstrates that this concept is familiar to political leaders, who often conclude that the costs of allowing corruption to flourish are lower than the costs in political support of suppressing it. The essential miscalculation made by many regimes, however, has been to underestimate other negative externalities generated by corruption: administrative inefficiency and tardy performance of services, economic decline, and public disaffection with leaders held hostage by systemic corruption.

10.1 Definitional and Methodological Issues

An extensive literature exists which argues that corruption is a morally and culturally relative concept. While reprehensible in a European context, it is interpreted differently in African societies. For purposes of this analysis, however, we adhere to a definition that is not susceptible to this criticism. We define corruption only as illicit rent-seeking by public officials or their agents in the performance of their duties. In the following discussion we remove ourselves further from the debate over cultural relativism by recognizing that particular corrupt behaviors may result in benefits as well as costs to the economy as a whole.

Whether in the form of extortion, tracasseries administratives, bribery, or informal fees for administrative services, corruption as defined by the respective laws of the countries studied is prevalent at all stages of the

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[22]See Klitgaard (1988) for an elucidation of the concept of "optimal" corruption.

marketing chain, adding significantly to the cost of livestock sold in coastal markets. The authors of this study were unable to identify or benefit from studies of the mechanics and economic effects of corruption in the countries studied. Several factors account for the absence of literature on this topic. Corruption is an emotive topic which reflects upon the performance of political leaders. Even where leaders are not directly implicated in corrupt behavior, the degree to which corrupt practices are acknowledged to occur reflects upon the effectiveness of their leadership and moral suasion.

Second, it is difficult to obtain information on corrupt practices. The civil servants who benefit from corruption are rarely willing to discuss the limits of their devotion to the public interest, while private beneficiaries fear that their own economic advantage will be co-opted by any admission of the way they do business in a corrupt environment. One aspect of corrupt behavior underlies the reticence of informants: even where it is flagrant and systematized, it remains both illegal and socially unacceptable.

The ability of the authors to move beyond merely anecdotal information is based on the fact that economic actors interviewed in the field universally perceive themselves to be the victims of economic dysfunctions and corrupt practices. The economic crisis throughout the region has generated popular disaffection with official practice and open criticism of the performance of public agents. Economic factors which give rise to corrupt practices are openly discussed by officials and government agents who are reticent about their own particular roles.

10.2 Typology of Corruption Costs

Predominant forms of corruption encountered in the livestock trade may be categorized as follows.

10.2.1 Payments for Licit Services

Economic actors must make payments for licit services to government officials to perform duties which it is their normal obligation to perform. In most instances payments serve as an inducement for timely completion of administrative procedures. Typically this involves payments of 1,000 CFA at each stage of required administrative procedures to obtain documentation or clearances for licenses, certificates of origin, identity cards, passports, customs documentation, vehicle registration and insurance certifications, or other documents at any point in the marketing process. This type of payment is most commonly referred to as <u>dossier</u> in the francophone countries and "speed money" in the angolophone countries. The incentives to traders and other economic actors to participate in this type of corruption can be measured in time and opportunity costs associated with administrative delays.

It may be argued that payment for licit services can serve a positive managerial function, inducing efficient performance in bureaucracies which suffer from overly complex procedures and managerial lassitude. However, payment for licit services has become so pervasive that it undermines any possible advantages. Payment for prompt performance of particular administrative services has evolved into payment for all or most administrative services.

10.2.2 Bribery

Bribery, or payment for illicit services, is generally offered in order to circumvent legal and administrative sanctions or to obtain official collusion in fraudulent behavior. Typical examples are payments for inducing police to overlook vehicle overloading or safety violations; payments by Burkinabe livestock traders to obtain "transit" documentation, falsely attesting that their herds originated in Mali; or payments to market inspectors to permit the sale of diseased animals or meat.

The costs of this type of corruption are proportional to the magnitude of the violation and the ostensible threat to public safety it poses. In Mali and Côte d'Ivoire a "major" violation such as excessive tire wear or braking difficulty will require payments of between 5,000 and 7,500 CFA at each technical inspection site. Inadequate documentation of personal identity, livestock shipments, vehicle registration or insurance can result in a need for bribes of between 2,000 and 5,000 CFA at each control point.

One of the most significant payments of this type encountered in the livestock trade occurs at rail depots in Burkina Faso and Côte d'Ivoire. Although official policy of the national railway operating authorities is to load livestock on a first-come, first-served basis, station masters have engaged intermediaries who solicit bribes for access to scarce rail wagons.

10.2.3 Extortion

Extortion is money paid to officials to keep them from doing harm, such as barring passage of livestock, confiscating livestock, or detaining drovers, traders, and vehicles for fictitious faults. This practice has become so prevalent that transporters and traders assume tacit threats of detention and automatically insert cash into the pages of documents that are presented at road barriers and control points.

This category makes up the largest proportion of corruption costs to livestock traders and transporters. These payments are invariably paid to members of uniformed services (army, police, gendarmerie, customs, and forestry services) at border points, road barriers, and railway stops. Refusals by transporters to comply with solicited payments can result in exorbitant or aggravated demands by official agents and consequential mortality among transported livestock.

Although strategies (discussed below) have recently been developed to reduce the burden of this category of corruption, road transporters of livestock have typically budgeted 150,000 CFA for each truckload or herd of livestock traveling between central Mali and Abidjan.

Informants noted that the cost of this type of corruption has been reduced in several countries of the region in recent years. During the mid-1980s Burkina Faso underwent an official clampdown on police extortion, while since 1987 the government of Togo has utilized a system of personnel rotations and inter-service staffing of control points to reduce systemic corruption. At the same time, however, informants report that the magnitude of extortion by Malian and Ivorian agents has increased in recent years.

10.2.4 Fraud

Several forms of corruption related to fraud were identified in the field. Veterinary fraud at northern points of entry into Côte d'Ivoire results from the fictitious vaccination of imported Malian and Burkinabe livestock. Following the examination of livestock health documents which attest that animals have been vaccinated, Ivorian veterinarians require that trek bosses or those accompanying herds pay for additional vaccinations which are not performed. Unused vaccine is then sold on the secondary market to local and transhumant herders.

Licensing fraud in Mali is probably a temporary phenomenon. As discussed previously, Mali awarded only a limited number of import/export licenses in the past. These licenses could be "rented" to livestock exporters. The institution of new procedures which eliminated this licensing requirement in January 1990 was not well publicized. Government officials continued to require herders to follow obsolete procedures, reportedly in exchange for kickbacks from license holders. Little detailed information exists on licensing fraud by butchers in Côte d'Ivoire, yet the apparent abuse of licenses is officially tolerated (see Section 4.7).

10.3 Costs of Corruption to Livestock Traders

Interview data and marketing budgets for Mali, Burkina Faso, Togo, and Côte d'Ivoire suggest that various forms of illicit payments to public officials represent a cost factor ranging between 5 and 23 percent (excluding livestock purchase costs). The actual amount of these transactions costs are a function of the mode or modes of transportation utilized, countries of origin, and the location of terminal markets. The aggregate costs of payments to public officials can result in supplementary per head costs of up to 10,000 CFA for cattle and proportionately higher amounts of 2,500-5,000 CFA for small ruminants. In all likelihood, however, average per head costs of corruption for livestock arriving at the Abidjan market are significantly lower: 2,500-7,000 CFA/head for cattle and 1,500-2,500 CFA/head for small ruminants.

Mean annual import figures for Côte d'Ivoire during the 1980s suggest that the global costs of corruption to Ivorian consumers are between 472-1,321 million CFA per year for cattle, and between 533-817 million CFA per year for small ruminants. While these figures may appear modest, rent-seeking behavior generates costs in all forms of international commerce. Traders and transporters report that rents for general commercial goods and cargo are significantly and proportionally higher than those assessed for livestock.

10.4 Trader Strategies for Dealing with Corruption

Individual strategies by livestock traders to reduce the costs of corruption are idiosyncratic. They involve weighing marginal returns in profit and efficiency derived from utilizing particular routes and modes of transport against the transaction costs endemic to those routes. Although corruption costs cannot be forecast exactly, the magnitude of corruption in

particular countries, transportation hubs, and markets is widely known in the community of traders.

Just as transactions between herders, traders, and butchers are highly personalized and based on established client relationships, so too are relations with civil servants and security services. The most active traders skillfully cultivate official patronage as a shield against excessive abuse by minor officials. Effective patronage never fully protects a trader from bribery and extortion, but it can act as an effective curb on the most flagrant and costly abuse. This protection, however, is not without cost; it requires regular investment in the relationship over time through gift-giving, commercial representation, and other social and economic prestations.

The principle of patronage has been institutionalized for commercial purposes in Côte d'Ivoire with impressive results. Beginning in 1988 a private company, the Coopérative Centrale d'Importation et de Distribution de Bétail de Côte d'Ivoire (CCIDB-CI) was created under the patronage--and with informal financial participation--of several senior government officials. The CCIDB was able to negotiate a fixed rate of 1,000 CFA to be paid by its representatives to customs, veterinary and forestry agents at control points on all major roads in Côte d'Ivoire.

The ability to minimize transaction costs for road transportation of livestock allowed the CCIDB to market its services at northern border posts. CCIDB agents are hired by individual traders or transporters as they enter Côte d'Ivoire at Tengrela or Ouangolodougou; they accompany vehicles until they arrive at terminal markets. At each customs, veterinary, or forestry service road check, agents present required convoy documentation to officials, along with a "gift" of 1,000 CFA. CCIDB agents are not, however, able to perform this function at police, gendarmerie or army control points.

The success of the CCIDB has spawned two competitors: the Coopérative Nationale d'Importation, de Convoyage, de Vente et d'Abattage de Bétail et de Volaille (CONIBE) and SOCIPRACI. The effects of competition among these sociétés de convoyage have been to further decrease transaction costs in Côte d'Ivoire.

The cost composition of the CCIDB's original rate of 60,000 CFA per truck in early 1989 included payments to customs, veterinary, and forestry agents between northern border posts and Abidjan (17,000 CFA); subsistence costs for agents accompanying livestock convoys (2,000 CFA); return transportation from Abidjan for agents (5,000 CFA0; profit, overhead, and patronage payments (36,000 CFA). This original rate generated a net savings to traders and transporters of 40,000 CFA per truck. Because the CCIDB has resisted efforts by CONIBE and SOCIPRACI to negotiate a common tariff, it has had to compete by progressively lowering its rates. In early 1990 each of the sociétés de convoyage had dropped tariffs to 35,000 CFA per truck, with reductions absorbed by narrowing profit margins and overheads. This represented a further 25,000 CFA savings per truck to livestock traders.

The effect of emergence of additional sociétés de convoyage has been to reduce net corruption costs to their clients, over the course of a year, by approximately 40% per truck, or between 2,100 CFA and 2,600 CFA per head of cattle. Additional benefits to traders and transporters are derived from the

expediency of using agents who are able to pass through control points quickly. It should be noted that cost savings generated by expediting firms remain small in relation to the generally higher corruption costs (70,000 CFA to 90,000 CFA per truck) paid out to uniformed services, with whom convoyers have no negotiated agreements.

10.5 A Diagnostic Perspective on Corruption

A useful framework for the analysis of corruption and for the formulation of strategic measures to combat it has been suggested by Klitgaard (1988). Table 34 is an adaptation of his diagnostic model to the Sahelian livestock trade. This model calls for:

- Identifying particular corrupt behaviors;
- Measuring their magnitude or prevalence;
- Identifying the beneficiaries of a particular corrupt behavior;
- Identifying who is harmed by those behaviors;
- Describing conditions or factors which give rise to particular corrupt behaviors; and,
- Recommending reforms or actions to combat particular corrupt behaviors.

From this table and the previous discussion we can conclude that corrupt practices have different causes and produce discreet results. Identification of the beneficiaries of corruption suggests the organizational or political loci where resistance to reform would be strongest, while identifying the victims of corrupt practice suggests where support for reforms might be mobilized. The attribution of causes of particular types of corruption provides perspective on the array of factors which give rise to particular practices. Suggested cures relate directly to identified causes.

The hierarchy of corrupt practices cited in Table 34 is organized roughly according to the degree to which particular practices create negative externalities. In a very limited number of cases corrupt activity by official agents may, in fact, intentionally or inadvertently result in a public good.

The best example of the latter category is the practice of cost-recovery by Malian veterinarians. Since the mid-1980s the operating resources of the Malian veterinary services have been drastically cut back. Although formal provisions exist to reimburse transportation costs, including the use of personal vehicles by veterinary agents, the financially-troubled government rarely makes these payments. Since 1988, veterinarians have begun to supplement officially-established vaccine costs with charges to cover the costs of transporting agents and their equipment to vaccination sites. While this practice is technically illegal, it has had the effect of instituting

TABLE 34

DIAGNOSIS OF CORRUPTION IN THE SAHELIAN LIVESTOCK TRADE

Activity	Prevalence	Helps	Hurts	Causes	Cures
Export license rental (Mali)	Mali	Elite license holders	Traders; export performance; coastal consumers	Past practice; poor publicity on administrative reforms official tolerance	Public education; enforcement & simplification of revised export procedures
"Dossier" speed money (All countries)	Universal	Administrative agents	Traders; national economy (revenue and export earnings); coastal consumers	Prevailing practice; inadequate and tardy salaries; inadequate controls; official tolerance; complex documentation & administrative bottlenecks	Performance monitoring; Salary rationalization and timely payment; enforcement of existing laws & penalties change of organizational culture; simplification of procedures; surveillance
Veterinary cost recovery	Mali	Veterinary service	No one	Inadequate operating budget; tardy disbursement and compensation	None needed; future abuse can be prevented by establishing fee-for service guidelines & rates
Vaccination fraud	Cote d'Ivoire	Veterinary agents	Traders; coastal consumers; Ivorian livestock producers	Prevailing practice; poor supervision, information, and controls	Inventory controls; performance monitoring & supervision; personnel rotations; enforcement of existing laws & penalties; change of organizational culture; whistle-blowing" by clientele; timely payment of salaries & indemnities
Extortion by uniformed services	Universal	Army, police, gendarmerie, customs agents, forestry agents	All users of the road and rail system; national economy (revenue & export earnings); consumers	Prevailing practice; inadequate and tardy salaries; inadequate controls & supervision; official tolerance and collusion	Performance monitoring & supervision; personnel rotations; enforcement of existing laws & penalties; change of organizational culture; mobilization of general public; anonymous reporting option for "whistle-blowers";
Bribery of uniformed services to avoid safety & technical penalties	Universal	Army, police, gendarmerie, customs agents, transporters, traders	Public safety; transportation infrastructure; national economy	Prevailing practice; low returns on transport enterprise; high costs of maintenance; inadequate controls & supervision; official tolerance.	Monitoring & supervision; personnel rotations; enforcement of existing laws & penalties; change of organizational culture; adjustment or lifting of allowable freight tariffs.
Fraudulent use of transit permits	Burkina Faso	Traders, army, customs agents, veterinary agents	Burkina economy (customs revenue)	Marginal savings against export taxes and fees	Rationalize transit fees & export taxes, Monitoring & supervision; personnel rotations enforcement of existing laws & penalties, change of organizational culture
Bribery of railway expeditors	Burkina Faso & Cote d'Ivoire	Railway managers, traders	Traders, export economy; coastal consumers	Inadequate number of rail wagons; traders' need to ship livestock quickly; competition among traders	Increased number of rail wagons; Open auction for priority on rail shipments; timely payment of salaries
License fraud by butchers	Cote d'Ivoire	Licensed & unlicensed butchers	Traders; export economies	Ceiling on number of licenses Enticement by market inspectors	Increase number of licenses; performance criteria for licensees; enforcement of existing laws & penalties, personnel rotations among market inspectors, timely payment of salaries

a fee-for-service practice by veterinarians. Hence, it is tolerated by government and uncritically supported by those who require services that would otherwise be unavailable.

A second category of corrupt activity involves the introduction of competitive markets to monopoly services. The best example of this behavior is the "marketing" of rail wagons in Burkina Faso and Côte d'Ivoire, which introduces a market mechanism (bidding) to the allocation of a scarce commodity (rail transportation of livestock) that would otherwise be allocated by queuing. The upper limits of profits to be derived from this form of corruption are internally regulated by livestock traders in their bidding activity, which. Although this practice increases the cost of doing business and narrows profit margins, traders are not vociferous in their criticism of it. This is because it parallels free-market principles that are operative in private sector competition for access to road transport vehicles.

The negative effects of this practice, however, are that profits derived from bidding represent rent-seeking by individual agents, rather than increased revenue to the financially beleaguered rail system. A decision to clampdown on this practice, however, should take account of several other underlying causes. Railway agents have not had salary increases in recent years despite inflation, nor are they paid in full on a regular and timely basis. As a result, rent-seeking offsets the negative consequences of inadequate and tardy salary payments. A clampdown on the small number of agents who engage in this corrupt practice could prove more costly to the rail system than the value of revenues lost as its result.

One form of corruption which harms the public is bribery of gendarmes and police who agree to overlook technical and safety faults in vehicles. Although the costs of these bribes induce transporters to make necessary repairs, bribery has the direct negative consequence of endangering public safety. An additional class of technical violations, vehicle overloading, not only affects public safety but also accelerates degradation of road surfaces.

While rent-seeking government agents may appear to be a discrete problem, other policies and regulations contribute to the high-incidence of technical faults by transporters. As discussed in Section 7.4, regulated cargo tariffs provide an incentive to transporters to increase axle-loading beyond prescribed capacity, and cut into returns which might be reinvested in vehicle maintenance. Tariff rationalizations would not only improve vehicle safety and profitability, but would reduce one cause of corruption.

Several forms of corruption identified in the livestock trade represent monopolistic rent-seeking in its most predatory form. Required payments for routine administrative performance by civil servants and extortion by uniformed services have direct negative consequences on public confidence and national economic performance. They increase the costs of production and marketing, render goods and services less competitive, and raise costs to consumers. Rents, which the public views as quasi-official taxation, make no contribution to the fiscal health of the government and harden public attitudes toward legitimate taxation.

11.0 Comparative Analysis of Livestock Trading Costs and Returns

Previous sections of this report have discussed the structure and magnitude of individual cost components of the livestock marketing process. These factors are compared in the following discussion utilizing sample marketing budgets constructed from data obtained in informal interviews with livestock traders. Although the sample utilized is limited in size, it includes marketing efforts encompassing a variety of points of national origin, modes of transport and sales in three different terminal markets.

The data presented are representative costs and returns for the export of Sahelian livestock to Côte d'Ivoire and Togo. They demonstrate the comparative efficiency and competitiveness of different modes of transport and marketing channels.

11.1 Characteristics of the Sample

Four case studies are presented below. We provide background information for each case.

11.1.1 Livestock Trading Budget 1

These data were obtained during a group interview in Kolakani, Mali with two traders who participate jointly in once or twice-yearly marketing efforts. The informants have been active livestock traders since the 1950s and appeared to be in their sixties. Both were of the Fulbe ethnic group and derived their principal income from livestock production and petty local commerce; one of them also served as djaoro or village chief.

The two butchers purchased 78 cattle in the environs of Kolakani, which were trekked to the Ivorian border town of Tengrela and trucked onward to the Abidjan/Port Bouet market. A small number of cattle included in this sample were drawn directly from the traders' own herds. The value of the non-purchased animals was estimated by the informants and included in the herd value at its point of origin.

These traders possessed documents indicating that purchasers of their livestock in Abidjan owed outstanding credit of 840,000 CFA from sales which had taken place 8 months prior to the interview. Such arrears are not atypical.

11.1.2 Livestock Trading Budget 2

A Sonray (Songhai) trader, who also serves as president of the local livestock producers' and traders' association, provided information for a recent marketing effort. The informant's principal source of income was livestock trading and brokerage. He also engages in local trade of food grains and kola nuts.

Forty cattle were purchased in the Gorom Gorom and Markoye markets in Burkina Faso's northernmost Sahel province and trekked to Ouagadougou. From Ouagadougou the herd was shipped to the Abidjan/Port Bouet market by rail.

Livestock Trading Budget No.1

Costs of Trekking 78 Cattle from Kolakani, Mali to Tengrela, Cote d'Ivoire, with Onward Conveyance by Truck
Autumn, 1988

Cost/Return Category	CFA per head	Total	As a % of Total	As a % of Total Less Purchasing Costs
Purchase of 78 cattle at Kolakani regional markets	86,770	6,768,060	74.0%	---
Purchase Commissions to Marketing Agents (50 Head)	1,000	50,000	0.5%	[illegible]
Veterinary Formalities				
-Vaccinations	100	7,800		
-Certificat sanitaire/Laissez passer	150	11,700		
-Trypanocides (Berenyl + Typamodium)	240	18,720		
-Cost for marking cattle at market	10	500		
Sub-Total	500	38,720	0.4%	[illegible]
Administrative Formalities Duties and Taxes				
-Export license user fee, paid to licensee	384	30,000		
-Patente	1,500	117,000		
-Export tax/Contribution directe	2,000	156,000		
-Diverse customs fees (including export certificate)	64	5,000		
-CPS/Ad valorem tax	1,500	117,000		
-OMBEVI tax	50	3,900		
-Market Tax: Assembly Markets (39 Head)	150	5,850		
-Municipal tax: Abidjan	1,000	75,000		
-Stockyard tax: Port Bouet	1,100	82,500		
Sub-Total	7,748	592,250	6.5%	24.8%
Transportation and Handling				
Trekking Costs				
-Drover (40 days) @ 50000 X 4	2,564	200,000		
-Food for drovers (@ 500/day X 4)	1,025	80,000		
Road Transportation and Handling				
-Truck rental: Tengrela to Port Bouet - Mercedes 1924L @ 350,000 X 2	8,974	700,000		
-Straw bedding for trucks @ 3000 X 2	77	6,000		
-Drovers (2/truck) @ 30,000/each	770	60,000		
-Food and lodging for drovers @ 500/day	103	8,000		
-Unloading costs at Port Bouet stockyard	26	2,000		
-Herder/grazing fee at Port Bouet (750/day x 2 herders x 2 days)	38	3,000		
-Travel to Abidjan for trader (Round trip)	897	70,000		
-Food and Lodging Costs in Abidjan (700/day X 7)	63	4,900		
Sub-Total	14,537	1,133,900	12.4%	47.6%
Bribes and Extortion				
-Facilitation of Malian export documents	294	23,000		
-Forest Service/Veterinary Service during trek	371	29,000		
-Uniformed services (trek)	512	40,000		
-Prestations to local authorities	385	30,000		
-Malian Customs Service at border	192	15,000		
-Ivorian Customs Service at border	256	20,000		
-Ivorian Veterinary Service at border	256	20,000		
-Uniformed services: 39 road barriers, Tengrela -- Port Bouet X 2	4,487	350,000		
-Abidjan/Port Bouet (Customs, Police)	128	10,000		
-Abidjan/Port Bouet (Veterinary Service)	51	4,000		
Sub-Total	6,932	541,000	5.9%	22.7%
Opportunity Cost of Capital (Half-Month @ 10% per annum)	362	28,200	0.3%	1.2%
Total costs (Capital invested for One-half month)	117,849	9,152,130	100.0%	
Cash Proceeds from Sale of 75 Cattle (assuming Mortality Rate of 2.5%)	135,000	10,125,000	110.6%	
Net Cash Returns (on 78 head)	12,473	972,870	10.6%	
Net Cash Returns / Investment in Cattle			14.4%	

Livestock Trading Budget No.2

Costs of Marketing 40 Cattle from Gorom Gorom, Burkina Faso to Abidjan, Cote d'Ivoire, by Trekking and Rail

Cost/Return Category	CFA per head	Total	As a % of Total Costs	As a % of Total Less Purchasing Costs
Purchase of 40 cattle at Gorom Gorom	39,000	1,560,000	56.7%	...
Commission to Marketing Agent/Intermediary	2,000	80,000	2.9%	[illegible]
Veterinary Formalities				
-Vaccinations	35	1,400		
-Veterinary Health Inspection	200	8,000		
-Certificate of Origin	200	8,000		
-Laissez passer	10	400		
-Cost for marking cattle at market	10	400		
Sub-Total	455	18,200	0.7%	1.5%
Administrative Formalities, Export Fees, Duties and Taxes				
-Droit de Sortie (0.08 X 55,000 Mercurial)	4,400	176,000		
-Patente (9000 CFA for lot of 75 Cattle)	120	4,800		
-TRC (0.005 X mercurial)	275	11,000		
-Tax Statistique (0.04 X mercurial)	2,200	88,000		
-Timbre Douaniere (0.06 X 6,875)	412	16,480		
-Taxe CBC (0.005 X declared value)	195	7,800		
-Taxe ONAC (0.0025 X declared value)	98	3,920		
-Municipal tax: Abidjan	1,000	37,000		
-Stockyard tax: Port Bouet	1,100	40,700		
Sub-Total	9,800	385,700	14.0%	32.4%
Transportation and Handling				
Trekking Costs to Ouagadougou railyard				
-Herders (15 days labor @ 50000 X 4)	650	26,000		
-Food for herders	700	28,000		
Rail Transportation and Handling				
-Fee: J14000 rail wagon (32 ton)	10,000	400,000		
-Straw bedding for wagon	75	3,000		
-Loading fee (Syndicat des Transporteurs)	150	6,000		
-Herders to accompany cattle (15,000 X 2)	750	30,000		
-Food and lodging for herders	250	10,000		
-Unloading costs at Port Bouet stockyard	25	1,000		
-Herder/grazing fee at Port Bouet (750/day x 2 herders x 2 days)	75	3,000		
-Travel to Abidjan for trader (Round trip)	2,000	80,000		
-Food and lodging costs for trader in Abidjan (700/day X 7)	122	4,900		
Sub-Total	14,797	591,900	21.5%	49.7%
Bribes and Extortion				
-Railway				
-Niangolo, burkina Faso (Customs, Police)	375	15,000		
-Ouangolo, Cote d'Ivoire (Customs, Police)	250	10,000		
-Ouangolo (Veterinary service)	500	20,000		
-Ferkessedougou (Customs, Police)	250	10,000		
-Bouake (Police)	125	5,000		
-Dimbokro (Police)	50	2,000		
-Other control points on the rail line (54)	50	2,000		
-Abidjan/Port Bouet (Customs, Police)	750	30,000		
-Port Bouet (Veterinary Service)	125	5,000		
Sub-Total	50	2,000		
	2,525	101,000	3.7%	8.5%
Opportunity Cost of Capital (Half-Month @ 10% per annum)	325	13,000	0.5%	1.1%
Total costs (Capital invested for One-half month)	68,902	2,749,800	100.0%	
Cash Proceeds from Sale of 37 Cattle (assumed mortality rate of 7.5%)	83,000	3,071,000	111.7%	
Net Cash Returns (on 37 head)	14,098	321,200	11.7%	
Net Cash Returns / Investment in Cattle			20.6%	

This trader claimed that outstanding credit owed to him by buyers in the Abidjan market totalled 630,000 CFA, with half that amount dating from sales made 14 months previous.

11.1.3 Livestock Trading Budget 3

A Fulbe trader, residing in Mopti, utilized agents in his full-time employ to purchase 128 cattle from several livestock markets in Mali's Region V over the course of one month. The cattle were assembled in a village near the town of Sikasso and trekked onward for sale at Bouake, Côte d'Ivoire.

The informant, approximately 50 years old, is an entrepreneur participating in a wide variety of commercial activities, including construction, the sale of construction materials, and trading of livestock, imported European textiles and kola nuts.

Real marketing costs are likely higher than reported due to the fact that the trader utilized the services of one of his own senior employees to represent him in nearly all marketing transactions. This agent's labor and management, however, was divided among a number of different commercial activities. An additional unreported cost was probably incurred but not reported in the hiring of drovers to bring livestock to the Sikasso assembly area.

This trader claimed to have no outstanding credits extended to purchasers in terminal markets.

11.1.4 Livestock Trading Budget 4

A herd of 30 cattle was purchased during the course of two successive market days at Pouytenga, Burkina Faso and shipped immediately onward to Lome, Togo by truck.

The trader was a well-educated member of the Mossi ethnic group who claimed that his income was derived from livestock trading and sales at two pharmacies that he owned. He reportedly ships livestock to either Togo or Côte d'Ivoire three or four times each year. Payment problems and credit defaults by purchasers in Côte d'Ivoire have led him to concentrate his efforts increasingly in Lome market during the past four years.

11.2 Comparative Costs and Returns

Comparative costs and returns are presented in Table 35. This table attempts to provide a ranking of individual cost factors. As the table demonstrates, however, two cost factors--transportation and taxes--vary in importance for different modes of transportation and points of national origin.

Costs of Trekking 128 Cattle from Sikasso, Mali to Bouake, Cote d'Ivoire

Cost/Return Category	CFA per head	Total	As a % of Total Costs	As a % of Total Less Purchasing Costs
Purchase of 128 cattle at Region V markets	63,000	8,064,000	81.0%	---
Commissions				
-Commission to Marketing Agent/Intermediary	1,000	128,000		
-Gift to Agent intermediary	250	30,750		
Sub-Total	1,250	158,750	1.6%	3.1%
Veterinary Formalities				
-Vaccinations	100	12,800		
-Veterinary Health Inspection	200	25,600		
-Certificate of Origin	200	25,600		
-Laissez passer	10	1,280		
-Cost for marking cattle at market	10	1,280		
-Trypanocides (Beranyl + Typamodium)	240	30,720		
Sub-Total	760	97,280	1.0%	5.2%
Administrative Formalities, Export Fees, Duties and Taxes				
-Export license user fee, paid to liscensee	470	60,000		
-Patents (9000 CFA for lot of 75 Cattle)	1,500	192,000		
-Export Taxe/Contribution directe	2,000	256,000		
-Diverse customs fees (including export certificate)	412	52,736		
-Customs Expediter	39	5,000		
-CPS/Ad valorem tax	1,500	192,000		
-OMBEVI tax	50	6,400		
-Market tax: Bouake	1,000	123,000		
Sub-Total	6,971	887,136	8.9%	47.0%
Transportation and Handling				
Trekking Costs				
-Drover wages (35 days labor @ 30000 X 6)	1,406	180,000		
-Food for drovers (500 CFA/day X 35 X 6)	820	105,000		
-Return transportation for drovers	375	48,000		
-Gifts to village leaders (informal grazing fees)	156	20,000		
-Indemnities for damage caused by herd	313	40,000		
-Gifts to facilitators on route	39	5,000		
-Travel to Bouake by trader (Round trip)	227	28,000		
-Food and lodging costs for trader in Bouake (600/day X 10)	39	6,000		
Sub-Total	3,375	432,000	4.3%	22.9%
Bribes and Extortion				
-Facilitation of Malian export documents	195	25,000		
-Malian veterinary service	70	9,000		
-Malian forestry service	47	6,000		
-Malian customs at Zegoua	94	12,000		
-Malian uniformed services (police, gendarmes)	109	14,000		
-Ivorian uniformed services at border	156	20,000		
-Fradulent vaccination (Ivorian Veterinary Service)	234	30,000		
-Ivorian uniformed services between border and Bouake	211	27,000		
-Veterinary and forestry services between border and Bouake	183	17,000		
-Bouake (Customs, Police)		10,000		
-Bouake (Veterinary Service)	47	6,000		
Sub-Total	1,346	176,000	1.8%	9.3%
Opportunity Cost of Capital (Two months @ 10% per annum)	1,050	134,400	1.4%	7.1%
Total costs (Capital invested for two months)	77,752	9,949,566	100.0%	
Cash Proceeds from Sale of 125 Cattle (assumed mortality rate of 3%)	86,000	10,578,000	106.3%	
Net Cash Returns (on 125 head)	8,248	628,434	6.3%	
Net Cash Returns / Investment in Cattle			7.8%	

Livestock Trading Budget No.4

Costs of Marketing 30 Cattle from Pouytenga, Burkina Faso to Lome, Togo

Cost/Return Category	CFA per head	Total	As a % of Total Costs	As a % of Total Less Purchasing Costs
Purchase of 30 cattle at Pouytenga market	53,000	1,590,000	72.2%	---
Commissions				
-Commission to Marketing Agent/Intermediary (Purchase)	1,000	30,000		
-Commission to Marketing Agent/Intermediary (Sale)	1,000	29,000		
Sub-Total	2,000	59,000	2.7%	9.0%
Veterinary Formalities				
-Vaccinations				
-Veterinary Health Inspection	35	1,050		
-Certificate of Origin	200	6,000		
-Laissez passer	200	6,000		
-Cost for marking cattle at corral	10	300		
-Patente (9000 CFA for lot of 75 Cattle)	10	300		
Sub-Total	120	3,600		
	575	17,250	0.8%	2.8%
Export Fees, Duties and Taxes				
-Droit de sortie (0.08 X 55,000 mercurial)				
-TRC (0.005 X mercurial)	4,400	132,000		
-Taxe Statistique (0.04 X mercurial)	275	8,250		
-Timbre Douaniere (0.04 X 6,875 mercurial)	2,200	66,000		
-Taxe CBCC (0.005 X declared value)	412	12,360		
-Taxe ONAC (0.0025 X declared value)	250	7,500		
-Import Duties - Togo	125	3,750		
Sub-Total	2,300	69,000		
	9,962	298,860	13.6%	48.7%
Transportation Costs				
-Rental: Mercedes 1924 LS 30 ton truck				
-Herder	4,000	120,000		
-Loading fee (Syndicat des Transporteurs)	1,666	50,000		
-Travel to Lome by trader (Round trip)	166	5,000		
-Food and lodging costs for trader in Lome	666	20,000		
Sub-Total	120	3,500		
	6,618	198,500	9.0%	32.4%
Bribes and Extortion				
-Cinkasse				
-Sansanne/Mango	66	2,000		
-Parc de Keran (Forest and Game Service)	70	2,000		
-Kante (Gendarmes, Police, Customs)	33	1,000		
-Niamtougou(Gendarmes and Police)	166	5,000		
-Piya (Army)	66	2,000		
-Kara (Police)	66	2,000		
-Sokode (Police)	66	2,000		
-Blitta (Gendarmes)	66	2,000		
-Anie (Gendarmes)	66	2,000		
-Atakpame (Gendarmes)	66	2,000		
-Glei (Customs)	66	2,000		
-Lome (Forest Service)	66	2,000		
-Lome (Customs)	66	2,000		
Sub-Total	166	5,000		
	1,095	33,000	1.5%	5.4%
Opportunity Cost of Capital (One-half month @ 10% per annum)	221	6,625	0.3%	1.1%
Total costs (Capital invested for one-half month)	73,471	2,203,235	100.0%	
Cash Proceeds from Sale of 29 Cattle (assumed mortality rate of 3%)	83,000	2,407,000	109.2%	
Net Cash Returns	9,529	203,765	9.2%	
Net Cash Returns / Investment in Cattle			12.8%	

TABLE 15

Comparison of Marketing Cost Factors for Four Sample Herds
Late 1989 - Early 1990

Cost Category	Herd A Total (CFA)	Herd A As % of total	Herd A As % of total less purchase cost	Herd B Total (CFA)	Herd B As % of total	Herd B As % of total less purchase cost
Purchase Price	5,768,360	74.3%	--	1,560,000	56.7%	--
Transport & Handling	1,133,900	12.4%	47.5%	591,900	21.5%	49.7%
Taxes & Duties	592,250	6.5%	24.8%	385,700	14.0%	32.4%
Bribery & Extortion	541,300	5.9%	22.7%	101,300	3.7%	8.5%
Purchase and/or Sale Commissions	50,000	0.5%	2.1%	80,000	2.9%	6.7%
Veterinary Charges	38,720	0.4%	1.6%	18,200	0.7%	1.5%
Opportunity Cost of Capital	28,200	0.3%	1.2%	13,000	0.5%	1.1%
Total Costs	9,152,130	100.0%	100.0%	2,749,800	99.5%	98.9%
Proceeds from sale	10,125,000	--	--	3,071,000	--	--
Net Return	972,870	10.6%	--	321,200	11.7%	--

Cost Category	Herd C Total (CFA)	Herd C As % of total	Herd C As % of total less purchase cost	Herd D Total (CFA)	Herd D As % of total	Herd D As % of total less purchase cost
Purchase Price	8,064,000	81.0%	--	1,590,000	72.2%	--
Transport & Handling	432,000	4.3%	22.9%	198,500	9.0%	32.4%
Taxes & Duties	887,136	8.9%	47.0%	298,800	13.6%	48.7%
Bribery & Extortion	176,000	1.8%	9.3%	33,000	1.5%	5.4%
Purchase and/or Sale Commissions	158,790	1.6%	8.4%	59,000	2.7%	9.6%
Veterinary Charges	97,200	1.0%	5.2%	17,220	0.8%	2.8%
Opportunity Cost of Capital	134,400	1.4%	7.1%	6,625	0.3%	1.1%
Total Costs	9,949,566	100.0%	100.0%	2,203,235	100.0%	100.0%
Proceeds from Sale	10,578,000	--	--	2,487,000	--	--
Net Return	628,434	6.3%	--	283,765	9.2%	--

Source: Field interviews in Mali, Burkina Faso, and Cote d'Ivoire November 1989-February 1990.

N.B. Cost factors in CFA and percentage terms do not add to 100% due to rounding exclusion of miscellaneous petty expenditures.

11.2.1 Purchase Costs

The principal cost component of livestock marketing is the purchase of animals, ranging between 57 and 82.2 percent of total costs for the sample herds. Purchase costs differ from other marketing expenditures, being an investment cost rather than operating cost. Although no detailed breakdown was provided by informants, they acknowledged that herd composition regularly includes the following:

- livestock owned by traders and their kin (for which no cash is immediately paid);
- livestock purchased on credit and repaid following final sale; and,
- livestock purchased for cash prior to shipment.

For this reason, it is possible that the costs of livestock purchase relative to operating costs may not be so high as suggested in the marketing budgets. This conclusion is significant in that it suggests that capital may not be as significant a barrier to entry in the livestock trade as often assumed. Livestock ownership or access to livestock on informal producer credit can substitute for financial resources.

Cost factors are reported in the livestock trading budgets both as a percentage of total marketing costs and as a percentage of total costs exclusive of livestock purchase costs. The following discussion refers only directly to the latter except where otherwise noted.

11.2.2 Transportation Costs

For the purposes of analysis, this category includes labor costs for drovers or agents who accompany livestock to market as well as costs contingent to particular modes of transport (e.g. drovers' subsistence costs, straw bedding for railway wagons and trucks, loading and unloading fees).

On the basis of the data included here it cannot be concluded that any single mode of transport is universally more cost-effective than any other. As argued in Section 6.3, there are economies of scale associated with trekking. The lowest relative transportation costs for herds analyzed here (24.7%) were incurred by livestock trader 3, the largest herd examined and the only one which utilized trekking as its sole means of conveying livestock to market. The highest relative costs incurred (50.3%) were for livestock trading budget 2, which combined trekking with rail transportation.

11.2.3 Taxes and Duties

The cost of official government levies vies with transportation as the second-highest relative cost factor, ranging between 24.8 and 48.7 percent. As noted in Section 9.0, the greatest proportion of all taxes are paid to the governments of exporting nations. Only municipal and market taxes are imposed in Côte d'Ivoire, while Togo applies a duty of approximately 2,300 CFA to imported cattle.

Variation on taxes as a cost factor occurs within exporting nations due to the practice of basing levies on mercuriale values for different regions of the country, under the assumption that local market prices are lower in areas most remote from major terminal markets. Manipulation of this system is possibly only where traders can claim a false point of origin for their herds. The requirement that taxes be paid at the point of origin and prior to the receipt of conveyance documentation makes this type of fraud difficult, however.

As mentioned in Section 9, the relative magnitude of taxes as a cost factor for Sahelian livestock is expected to diminish significantly in 1990, as the result of fiscal reform and the suppression or reduction of export taxes. The resultant cost savings should contribute significantly to the competitiveness of Sahelian livestock in coastal markets by reducing traders' operating costs by as much as 30%. It remains to be seen, however, whether this will be reflected in more competitive prices in coastal markets or as an increase in marginal returns to livestock traders. The latter development is only likely to occur where market concentration of traders is highest and most oligopsonistic.

11.2.3 Bribery and Extortion

The costs of bribery, extortion, and other tracasseries administratives vary between 5.4 and 22.7 percent, and are highest in Mali and Côte d'Ivoire. For livestock conveyed to Ivorian markets, these costs were highest for animals shipped by truck or rail, even where motorized transport was combined with trekking. The majority of all bribery and extortion costs were paid to members of the uniformed services manning border posts and control posts along road and rail itineraries.

11.2.4 Purchase and Sale Commissions

The cost of commissions were almost constant for three of the four cases, ranging between 0.7 and 9.1 percent of all costs exclusive of purchase. They were lowest (3.3%) for livestock trading budget 1, reflecting lower overall commission costs in local markets and a relatively higher proportion of marketed animals derived from the traders' and his kin's own herds, for which no commission was paid.

As in the case of taxes, commission costs are highest in exporting nations, where both buyers and sellers are frequently obliged to pay commissions to intermediaries who facilitate transactions. By contrast, commissions in terminal markets are generally paid only by purchasers.

11.2.5 Veterinary Charges

The costs of veterinary formalities and required vaccinations are the lowest relative cost factor in the marketing process, ranging between 1.6 and 5.2 percent. Nominal veterinary costs are, in fact, higher for livestock marketed in Côte d'Ivoire. Because of the practice of providing fraudulent documentation for required--but unadministered--vaccinations at northern border posts, those costs have been calculated as a component of bribery and extortion charges.

Marginal savings can be obtained in veterinary charges for livestock shipped by truck to coastal markets. These savings are derived by traders who elect not to treat livestock against trypanosomiasis under the assumption that rapid conveyance and turn-around diminishes the risk of losses due to this disease. The need for the treatment is widely appreciated and traders who trek livestock to coastal markets make sure that it is administered.

11.3 Returns to Livestock Trading

Returns to traders in the sample were calculated against all costs, including livestock purchase, and range between 7.6 and 12.2 percent. When informal credit is provided over long periods at the typical flat 5% fee, traders' returns are lowered. If the credit is not repaid within a period of six months, the opportunity cost of tying up capital in livestock exceeds the flat simple interest return of 5%, assuming a 10% opportunity cost of capital on an annualized basis.

No significant correlation appears to exist between marginal returns and other factors, although it should be noted that lowest returns were obtained by traders in livestock trading budget 3. This herd--trekked for the entire distance between its point of origin and the Bouake market--obtained significant cost savings in transportation costs, but incurred higher costs than all other herds in expenditures for taxes and duties, purchase and sale commissions and veterinary charges. Additionally, by selling the herd at Bouake, an inland market, the traders obtained a lower per head price for their cattle than traders selling stock in the larger coastal markets.

Based on our empirical findings, returns to livestock trading appear to be reasonable. Given the risks of livestock mortality or confiscation, buyer default and losses that may result from competition with imported chilled and frozen livestock products in the Ivorian market, returns are quite modest. It should be underlined that livestock trading requires skill in estimating liveweights and likely returns in foreign markets from sales of animals of different weights, age-sex characteristics and breeds.

11.4 Measures of Market Integration

Weekly cattle price data from Mali are available in a nearly two-year series for several age-sex categories sold at nearly eight livestock markets (see Annex 1). Animals are classified as export grade stock, destined for resale and slaughter stock. Export grade cattle are invariably steers and bulls. Slaughter stock are in large part cull cows. Cattle destined for resale include steers, bulls and cows. The resale category is the least clearly defined, in that it includes cattle that traders intend to resell in terminal domestic markets and redistribution markets further down the export marketing chain.

Pairwise intermarket price correlations were done for the three categories of cattle using estimated price per kilogram (carcass weight). Carcass weight was estimated and not determined by weighing animals at markets, so the price per kilogram must be considered an approximation. Correlations were done on animals of the same breed as well. Since Zebu Peul

stock predominate in livestock trade, and time-series were incomplete for Ndama and Zebu Maure and Zebu Tuareg stock, all correlation analysis was done on Zebu Peul prices per kilogram.

Despite the obvious limitations of these data, intermarket price correlations were high for export grade stock, ranging from 0.67 to 0.94 (see Table 36). This suggests that the Malian livestock market for export grade cattle is well-integrated. Combined with measures of returns to livestock trading presented above, it appears as if the Malian livestock market is efficient and competitive, given the constraints under which traders operate.

Correlations were far lower for cattle in the destined for resale category (generally well under 0.62). This is not surprising in that this category includes a more heterogeneous mix of animals destined for different end uses and markets.

Table 36

Correlation Coefficients for Zebu Peul Cattle Sold in Malian Markets
1988-1989

Export Grade

Bulls

	Yolo	Boussin	Segou
Yolo	1.00		
Boussin	0.78	1.00	
Segou	0.72	0.67	1.00

Steers

	Yolo	Boussin	Segou
Yolo	1.00		
Boussin	0.93	1.00	
Segou	0.87	0.94	1.00

Destined for Resale

Cows

	Faladie	Segou	Boussin	Yolo	Niono	Bilaly
Faladie	1.00					
Segou	0.39	1.00				
Boussin	0.55	0.85	1.00			
Yolo	0.52	0.90	0.77	1.00		
Niono	0.05	0.22	0.12	0.15	1.00	
Bilaly	-0.22	0.03	0.18	0.24	0.62	1.00

Steers

	Faladie	Segou	Boussin	Yolo	Niono	Bilaly
Faladie	1.00					
Segou	0.54	1.00				
Boussin	0.56	0.85	1.00			
Yolo	0.43	0.87	0.78	1.00		
Niono	0.50	0.59	0.56	0.63	1.00	
Bilaly	-0.23	-0.41	-0.45	0.02	0.27	1.00

12.0 The Ivorian Livestock and Meat Market and Recent Trends in Meat Imports

The Ivorian livestock subsector and market for livestock products have undergone significant change since the mid-1970s. This section will discuss changes in livestock production, trends in imports of chilled and frozen meat and trends in imports of Sahelian livestock products.

12.1 Livestock Sector Investments and Changes in Livestock Production in Côte d'Ivoire

The Ministry of Animal Production in Côte d'Ivoire has been strongly committed to an investment and development program of import substitution since the mid-1970s. Significant resources have been invested in upgrading and expanding ruminant livestock production in northern Côte d'Ivoire. The FAC, FED and World Bank have financed major livestock production projects. SODEPRA, a parastatal agency, has invested heavily in capital-intensive production schemes. As shown in Table 5 in section 2.2.2, the cattle population is concentrated in the Northern Zone (86.5% in 1985). The sedentary cattle population expanded by 75% from 1970 to 1985, and cattle numbers on farms and ranches grew from nil in 1975 to 23,000 in 1985. Many of these latter animals are cross-bred, improved stock, bred for both dairy production and trypano-tolerance.

A vibrant poultry production industry also emerged during the 1980s, primarily in the South near Abidjan. This production is modern, capital-intensive and dependent upon processed feed. The poultry industry was dealt a heavy blow by expanded imports of EC and U.S. frozen broilers during the 1980s.

As world prices for coffee and cocoa have fallen during the past year, Ivorian export revenues have declined dramatically. Given the importance of these commodities in generating foreign exchange and government revenues, the Government of Côte d'Ivoire will face increasing budgetary pressures. As resources for public sector investment in development projects become more and more limited, the strategy of expanding livestock production in Northern Côte d'Ivoire through largely capital-intensive investments may be called into question.

12.2 Expansion in Imports of Chilled/Frozen Meat

The 1985-88 period witnessed a 434.5% increase in Ivorian imports of chilled and frozen meat, which includes beef, small ruminant meat, pork, offals and poultry (see Figure 7 and Table 37). Virtually all of these imports were supplied by non-African sources. Averaged across the 1980s, beef imports represented 66.3% of total imports of chilled and frozen meat. In the peak year of 1988 only 57% was beef, as frozen poultry reached 15.5% and pork offals 14.7%.

Most of the carcass meat was low-grade beef (called capas[23]) exported from livestock-surplus EC countries to West African markets. These exports were subsidized by the EC, in part as an inducement to reduce the EC supply of dairy cattle (and costly surpluses of dairy products). Imported frozen poultry was also shipped largely by the EC.

The nearly five-fold increase in chilled and frozen imports of red meat products from non-African sources from 1980 to 1988 allowed overall red meat consumption to expand in Côte d'Ivoire during the 1980s, despite what appears to be stagnant levels of imports of live cattle and small ruminants from Sahelian exporters. Capas imports allowed low-income Ivorian consumers in urban areas to maintain and in some cases expand red meat consumption despite variability in supply of Sahelian stock.

Table 37

Côte d'Ivoire Import Volumes and Prices for Selected Chilled and Frozen Meat Products

	Beef		Offals		Small Ruminant Meat		Small Ruminant Offals		Pork		Pork Offals		Frozen Poultry		Total Meat	Live Poultry	
Year	MT	FCFA	MT	FCFA	MT	FCFA	MT	FCFA	MT	FCFA	MT	FCFA	MT	FCFA	MT	MT	FCFA
1975	6,100	ND	200	ND	200	ND		ND	20	ND		ND	150	ND	6,670	2,700	ND
1980	9,440	457	328	481	622	530		ND	2	ND	21	229	381	357	10,974	1,700	ND
1981	9,137	517	786	447	572	822	27	ND	234				583	342	11,339	1,360	ND
1982	12,604	518	941	512	682	837	17	ND	35	738	29	317	608	332	14,896	1,660	ND
1983	7,739	521	909	448	605	788	17	ND	27	871	32	262	1,000	276	10,329	1,730	ND
1984	7,920	458	638	457	311	894	2	ND	17	650	182	320	659	273	9,729	1,800	ND
1985	11,580	403	1,096	472	296	923		ND	39	344	338	220	[illegible]	381	14,253	1,720	ND
1986	20,560	355	2,037	500	578	713	8	ND			1,000	179	[illegible]	326	25,393	2,280	ND
1987	22,137	342	2,734	370	413	968	24	ND	848	232	4,310	178	1,930	259	32,396	1,960	ND
1988	27,400	274	3,080	346	430	1,008		ND	2,400	206	7,000	178	7,400	244	47,680	1,500	ND
1989	15,000	391	3,500	343	600	830		ND	2,000	238	6,000	215	9,600	281	36,700	ND	ND
Unweighted Mean 1980s	14,352	426	1,602	438	529	832	16		622	410	2,108	233	2,420	307	21,648	1,571	
Weighted Mean 1980s		391		405		801				284		192		277			

Sources : CEMEX for all categories except live poultry. MPA/RAG for live poultry.

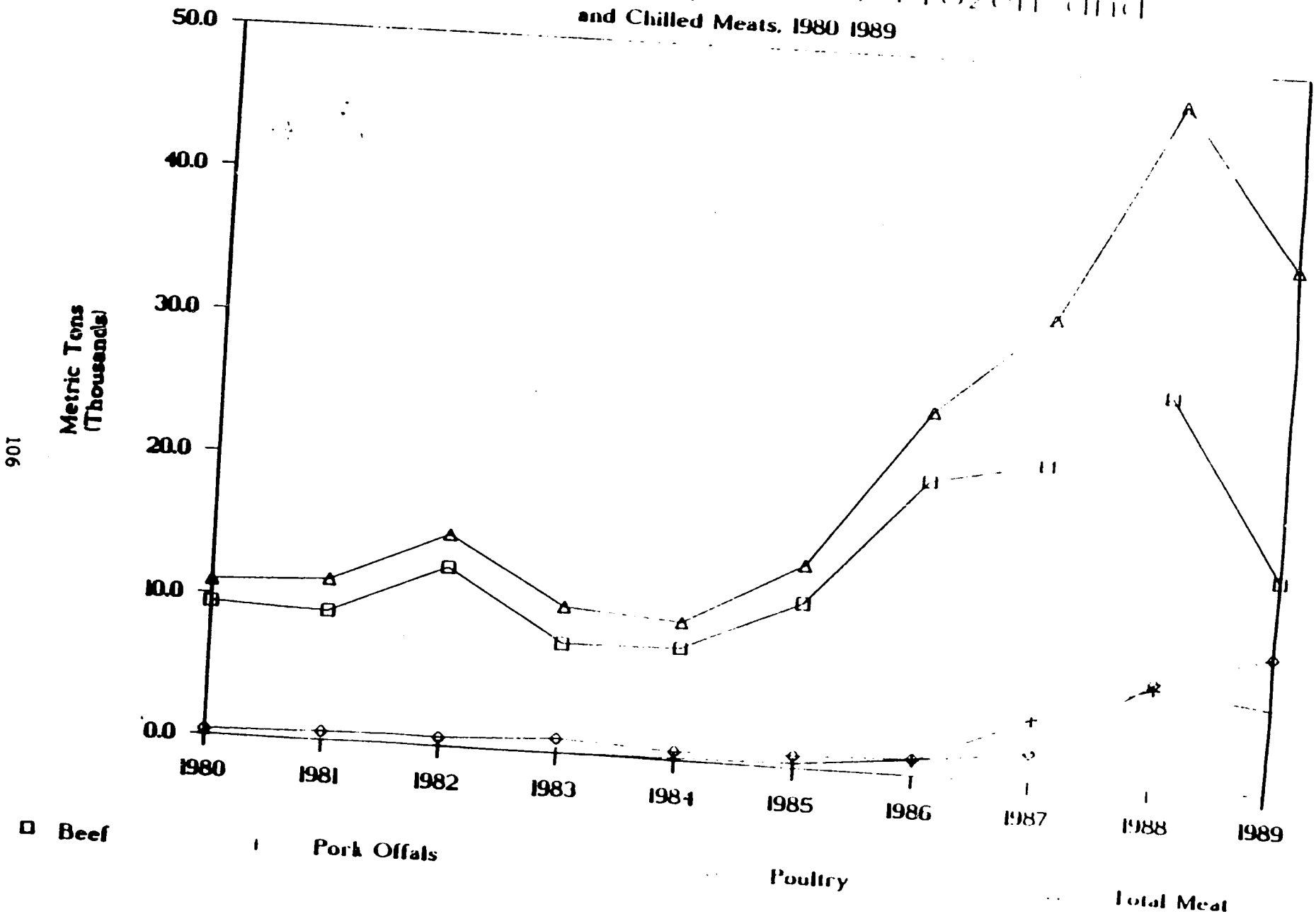
Note: Import volumes reported in metric tons. Import prices are CIF prices in FCFA per kilogram.

Note: Figures for 1989 are preliminary and for first ten months only.

[23] Capas refers to side-meat with 25% or higher fat content. There is no market for this product in Western Europe. It is in fact regarded as industrial waste.

FIGURE 7

Cote d'Ivoire Imports of Frozen and Chilled Meats, 1980 1989



12.3 Marketing Channels for Imported Chilled and Frozen Meat

There are twenty importers licensed by the government to import meat (see list in Annex 2). In order to obtain a license an importer must provide the following:

- o documentation
- o cold storage capacity of 100 MT per month
- o a bank guarantee of five million CFA

The largest volume of importers are mainly French, such as AFRIC VIANDE, SCOA-COTE D'IVOIRE and La Générale d'Alimentation. Importers sell to wholesalers, who have freezers and who sell to retailers in the local market. Importers typically provide wholesalers with short-term credit; the wholesalers pay importers when they return to make their next purchase. This willingness to provide credit contrasts with increasing reluctance of long-distance livestock traders, based in the Sahel, to provide credit to wholesale butchers on the coast.

Capas is sold in lower-income urban areas such as Treichville in two ways. Capas is used to make brochettes sold on the street and in smaller markets throughout Abidjan. In addition, consumers buy capas by the kilogram (at a price of 650 CFA/kg. in March 1990) for household use. This is well below the prevailing retail prices of 1,000-,1200 CFA/kg. for fresh beef from cattle of northern Côte d'Ivoire and the Sahel. Capas is shipped in 20-25 kilogram boxes. Brochette butchers trim off fat, which averages about 8 kg. or 32-40% of the total weight.

Estimated ranges for marketing costs to the importer level for capas are shown in Table 38.

Table 38

Representative Import Marketing Costs for Capas in Côte d'Ivoire, March 1990

	Capas I	Capas II
FOB Price, Europe	200	250
CIF, Abidjan	50	50
Tariffs/Taxes (32.6%)	81.5	97.8
Subtotal	331.5	397.8
Transit Handling Costs	18.5	18.5
Importer's Margin (8%)	28	33.3
Total	378	449.6

Source: Informal interviews with importers.
Note: Capas I has a higher fat content than capas II.

12.4 Composition of the Ivorian Meat Supply

Estimates of Ivorian red meat supply, by source, provided by the Ministry of Animal Production (see Table 39), show that the market share of live Sahelian stock declined steadily from 1980 to 1988. Sahelian imports also fell in absolute magnitude by 46%. Domestic supplies expanded by 45%, although market share remained relatively unchanged. Imports of carcass meat and offals from non-African sources rose 270% from 1980 to 1988 and market share expanded from 17.9% to 51.7%. Most of this non-African supply was imported from EC countries.

Table 39

Breakdown of Côte d'Ivoire's Red Meat Supply, 1980-89

Year	Domestic Sources		Live Sahelian Imports		Carcass & Offal Imports		Processed Meat & Offals		Total Meat Supply
	MT	% Total	MT	% Total	MT	% Total	MT	% Total	
1975	6,290	16.4%	25,400	66.4%	6,300	16.5%	280	0.7%	38,270
1980	10,670	17.0%	40,500	64.6%	11,200	17.9%	330	0.5%	62,700
1981	11,570	18.6%	38,900	62.6%	11,300	18.2%	350	0.6%	62,120
1982	12,580	21.9%	29,200	50.8%	15,400	26.8%	350	0.6%	57,530
1983	13,550	24.7%	31,500	57.5%	9,400	17.2%	310	0.7%	54,810
1984	13,840	22.9%	35,200	58.2%	11,100	18.3%	360	0.6%	60,500
1985	14,360	20.0%	39,600	55.0%	17,600	24.6%	330	0.5%	71,690
1986	14,240	18.1%	31,500	40.1%	32,470	41.3%	330	0.4%	78,540
1987	14,680	19.4%	26,000	34.3%	34,800	45.9%	340	0.4%	75,820
1988	15,510	19.4%	22,800	28.5%	41,450	51.7%	350	0.4%	80,110
1989	16,230		21,000		NA		NA		
% Change, 1980-1988	45%		-46%		270%		6%		28%

Source : Ministere de la Production Animale

Units: Metric tons of carcass plus offal ton equivalents.

Detailed, disaggregated trade data for imports of chilled and frozen beef, sheep and goat meat and poultry during the first eleven months of 1988, displayed in Table 40, show the country and commodity composition of imports. 82.3% of the non-African beef was supplied by three EC countries: Germany, France and Holland. New Zealand was the major supplier of small ruminant meat, and France and the U.S. supplied 69.3% of the poultry meat. The volume of beef imports was reported as approximately four times that of poultry meat imports and nine times that of offals. South American suppliers were relatively insignificant, in sharp contrast to the late 1970s, when they shipped large quantities of chilled and frozen meat products to coastal West Africa. The per kilogram import value of meat products from non-African sources in 1988 was well below wholesale prices (expressed in carcass meat

Table 40

Cote d'Ivoire Imports of Chilled and Frozen Beef, Small Ruminant Meat, and Poultry
First Eleven Months of 1988

Meat Type/Supplier	MT Carcass Meat	CFA	CFA/kg
Beef			
France	5,599,620	2,300,581,130	411
Germany	3,363,392	300,559,517	96
Netherlands	4,995,392	1,334,138,209	267
Spain	1,386,589	305,279,530	220
Belgium/Lux.	1,330,596	304,914,362	296
Ireland	545,535	154,155,556	308
United Kingdom	293,874	74,513,149	254
Denmark	292,599	71,301,198	244
Italy	248,905	83,374,274	334
Austria	61,248	25,368,447	414
Argentina	201,649	61,865,556	307
Subtotal of Above	24,019,899	5,530,050,728	
*Total Reported	24,238,854	5,713,904,897	
Difference	218,955	183,854,169	
Mutton/Goat Meat			
New Zealand	113,259	66,870,847	590
France	58,426	119,646,591	2,048
Germany	13,980	9,076,618	649
Subtotal of Above	185,666	195,584,056	
*Total Reported	218,308	219,775,556	
Difference	32,643	24,181,499	
Poultry			
France	2,674,624	681,494,232	255
United States	1,780,215	419,581,083	236
Canada	721,104	159,540,619	221
United Kingdom	385,592	90,650,786	235
Netherlands	379,774	102,542,028	270
Italy	318,819	77,486,168	245
Germany	53,253	12,855,368	241
Belgium/Lux.	69,050	16,499,524	239
Subtotal of Above	6,380,431	1,560,865,725	
*Total Reported	6,427,711	1,571,884,339	
Difference	47,280	11,218,614	
Offals			
France	863,000	311,921,427	361
Argentina	501,142	256,352,743	435
United States	499,986	130,854,151	262
Germany	156,762	66,186,246	425
Spain	156,751	26,129,052	166
Belgium/Lux.	55,946	14,630,251	261
Ireland	89,179	21,110,483	237
Uruguay	70,794	32,281,882	456
Netherlands	102,702	41,980,986	409
Subtotal of Above	2,584,861	901,438,089	
*Total Reported	2,713,081	938,686,889	
Difference	128,130	36,193,888	
Grand Total of Above	33,170,988	8,187,762,298	
*Grand Total Reported	33,897,946	8,441,190,679	
Difference	686,958	253,448,170	

Source: Ministere de la Production Animale

Note: *Reported Totals are assumed to be for all suppliers. Therefore the difference represents imports from countries other than those reported above.

terms) of Sahelian animals shipped live to the Côte d'Ivoire market. In fact, the former prices were less than estimated wholesale prices of live animals sold for export in livestock markets in Mali (see Annex 1)! Furthermore, official retail beef prices in Bamako (shown in Table 41) were higher from 1986 on than retail capas prices in early 1990. The overvalued CFA exchange rate artificially cheapens the cost of importing chilled and frozen meat from non-CFA zone suppliers and penalizes producers and traders in Côte d'Ivoire and within the CFA zone.

12.5 EC Exports of Livestock Products to Côte d'Ivoire during the 1980s

EUROSTAT data for EC exports of livestock products for the period 1979-1988, shown in Table 42, complement Côte d'Ivoire import data and tell much the same story. As seen in the top third of Table 42, EC shipments of chilled and frozen beef, pork and poultry ballooned in the mid-1980s. Beef shipments to Côte d'Ivoire nearly tripled from 1984 to 1987. Pork and poultry shipments expanded greatly in 1987 relative to 1986. Total meat and meat preparation exports increased from 9,876 metric tons in 1984 to 29,633 MT in 1987.

As shown in the bottom third of Table 42 and in Figure 8, the calculated implicit prices of EC exports of livestock products fell in the aggregate (see last line) by 51% from 1982 to 1987 in nominal terms. The decreases were most pronounced for chilled and frozen beef and pork. Poultry export prices fell to their lowest levels by far in 1987, a year in which turkey wings were reportedly dumped in large quantities on coastal West African markets. As one would expect, the decline in exports of sheep and goat meat to Côte d'Ivoire from peak levels in 1981 was associated with increased nominal export prices.

The main EC country exporters of livestock products to Côte d'Ivoire in the second half of the 1980s were France, Germany, Holland and Ireland, accounting for an average of 80% of the EC export volume from 1985 to 1988 (see Table 43). In 1985, the peak year for the EC cattle population (see Table 44), these four countries combined for 59.7% of the EC cattle herd.

12.6 Rise in Import Prices of Chilled/Frozen Meat in 1989

Average annual CIF prices for imported chilled and frozen beef declined in Côte d'Ivoire, even in nominal terms (as shown in Figure 9), from 1983 through 1988 but rose 42.7% in 1989. The 1989 price rise was accompanied by a decline in beef imports from 27,400 to a preliminary estimate of 15,000 metric tons. Nominal CIF prices declined for small ruminant meat and remained essentially the same for cattle offals in 1989 relative to 1988, and imports rose for both types of meat. As shown in Figure 10, nominal CIF price rises for pork and pork offals in 1989 were associated with a decline in import volume in 1989 relative to 1988. Despite a 15% increase in the average price for frozen poultry products in 1989 over 1988, imports surged nearly 30%.

The 1989 price rises are related to a reduction in the EC meat surpluses available for export. The EC dairy herd has been cut back to a lower level relative to the mid-1980s through culling of surplus stock, which contributed to the beef surpluses and dumping in West African coastal markets during the

Table 41

Nominal Retail Prices of Selected Livestock Products in Bamako, Mali and Selected Cities in Cote d'Ivoire

(in CFA Francs per unit)

Livestock Product	Unit	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989**
Bamako											
Beef Without Bone	Kg.						789	963	1000	1000	1000
Beef With Bone	Kg.	507	543	634	642	619	640	704	703	700	700
Mutton with Bone	Kg.	624	752	758	758	760		1000	1000	1000	1000
Fresh Fish (Capitaine)	Kg.	708	695	854	864	751	1219	1133	1125	1207	1352
Other Fresh Fish (Gelin)	Kg.	582			749	689	1634	1144			
Live Chicken	Kg.	603	653	830	852	819	968	1062	852	889	819
Fresh Milk (Local)	Liter	166	176		256	252	260	271	266	250	250
Sour Milk (Local)	Liter	117	204		156	189	273	177	171	153	150
Butter	Box of 454 g	480	363	583	764	936	1209	1071	1033	1012	996
Fresh Eggs (Local)	Egg	46	55	61	60	68	75	71	72	71	67
Bouake											
Beef With Bone	Kg.	622	650	724	750	750	750	825	887	825	
Mutton with Bone	Kg.	833	900	1000	1060	1200	1200	1200	1233	1283	
Abidjan											
Beef With Bone	Kg.	761	844	918	950	950	950	942	900	928	
Mutton with Bone	Kg.	1113	1200	1259	1216	1200	1200	1211	1200	1406	
Korhogo											
Beef With Bone	Kg.	493	540	642	700	700	700	700	706	600	
Mutton with Bone	Kg.	757	789	842	900	900	950	900	929	1000	

Sources: Bamako price data - Direction Nationale des Statistiques et Informations
Cote d'Ivoire price data -

Note: Bamako retail prices for beef (both types) and mutton appear to be official prices.
Beef and mutton prices for Ivoirian markets may also be official prices in some years.

FIGURE 8

Implicit Price of EEC Meat Exports

to Cote d'Ivoire 1979 1987

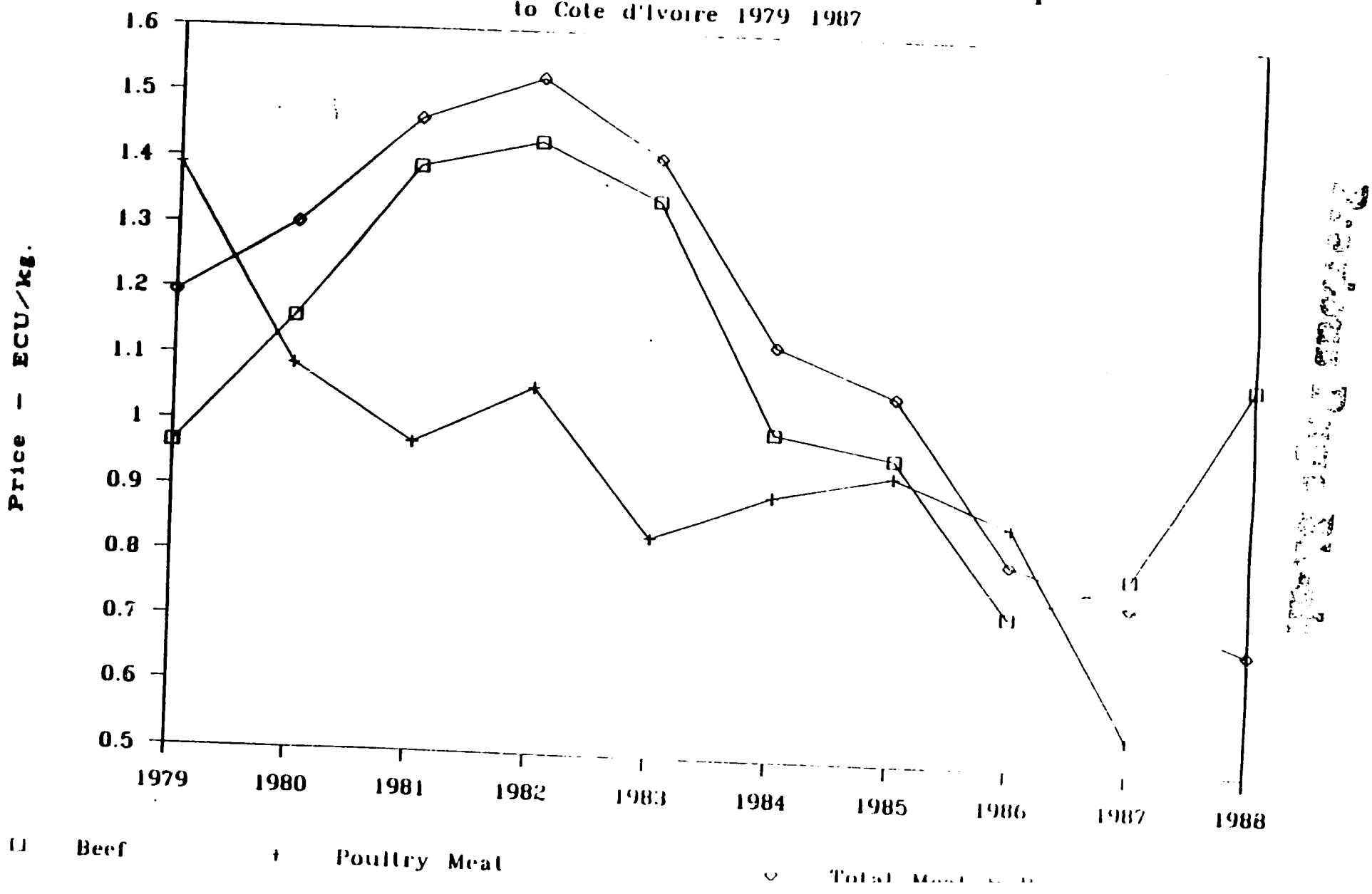


Table 43

Breakdown of EC Exports of Meat and Meat Preparations to Cote d'Ivoire
by Key Exporting Countries, 1985-88

	1985		1986		1987		1988 *	
	Vol.	% Total	Vol.	% Total	Vol.	% Total	Vol.	% Total
France	5,423	40.9%	10,383	44.2%	13,065	44.1%	10,095	36.3%
Germany	2,579	19.5%	4,375	18.6%	4,230	14.3%	4,172	15.0%
Netherlands	2,371	17.9%	4,660	19.8%	6,577	22.2%	8,232	29.6%
Ireland	1,094	8.3%	1,372	5.8%	1,851	6.2%	396	1.4%
Subtotal	11,467	86.5%	20,790	88.4%	25,723	86.8%	22,894	82.3%
Total EC-10/12	13,255	100.0%	23,508	100.0%	29,633	100.0%	27,820	100.0%

Source: EUROSTAT, European Communities.

* 1988 - Preliminary data only, 9 months ending September.

FIGURE 9

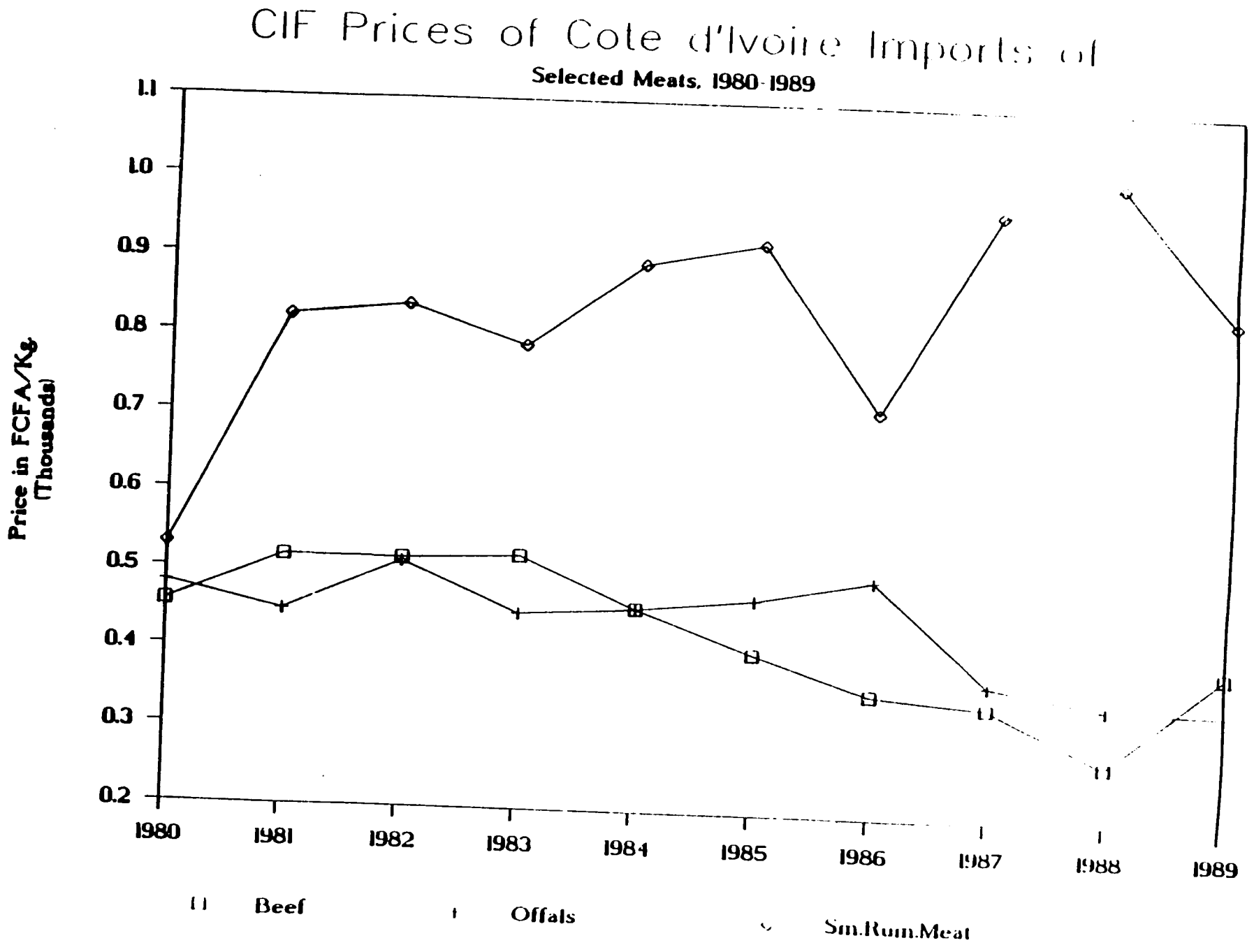
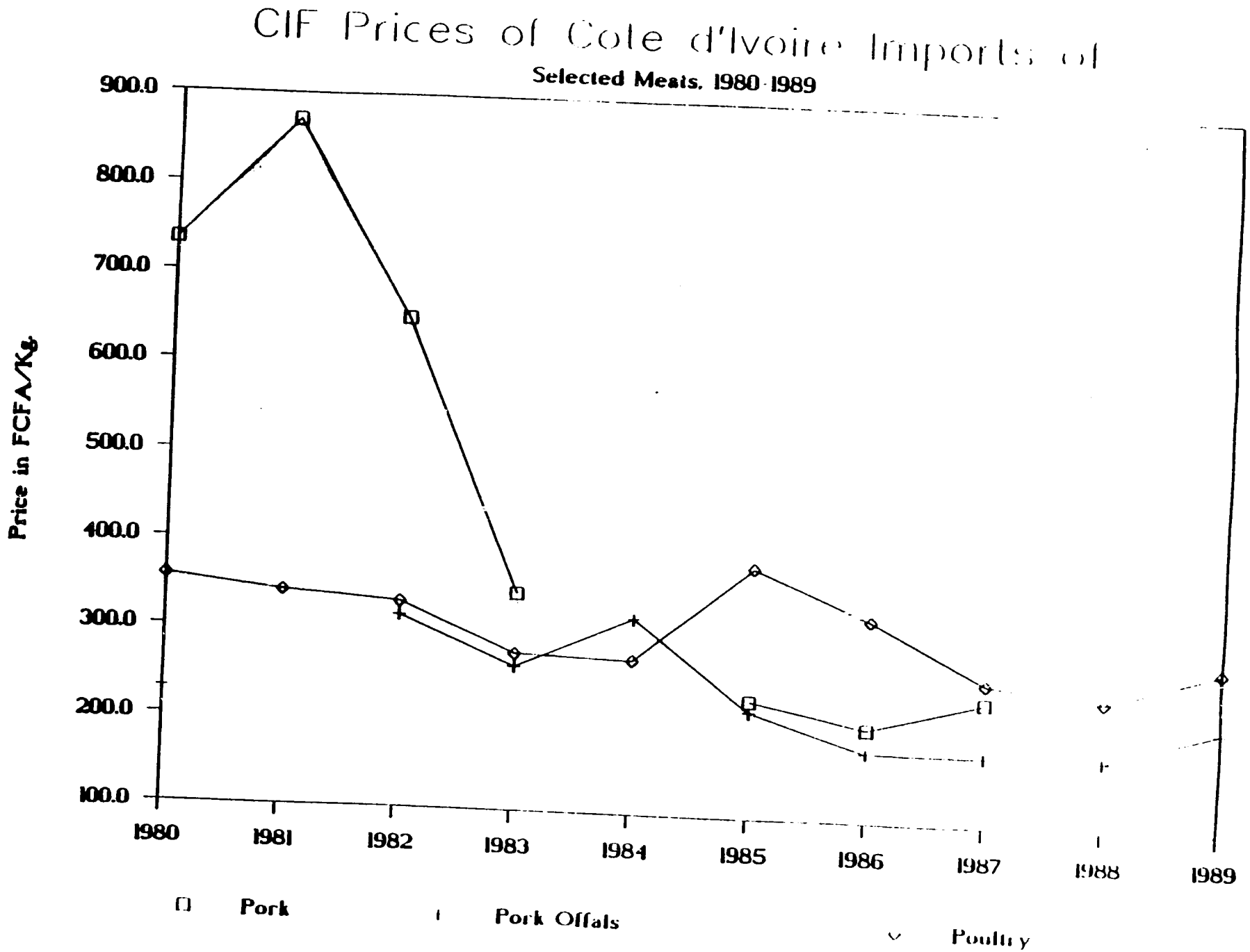

CIF Prices of Cote d'Ivoire Imports of
Selected Meats, 1980-1989
Price in FCFA/Kg
(Thousands)
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
Beef
Offals
Sm.Rum.Meat

FIGURE 10


CIF Prices of Cote d'Ivoire Imports of
Selected Meats, 1980-1989
Price in FCFA/Kg
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
Pork
Pork Offals
Poultry

second half of the 1980s. One source (Entreprises agricoles, no. 219, Janvier 1989) forecasts that the EC countries will actually become deficit in beef by the early 1990s.

As the availability of cheap imports declines and prices of imported low-grade carcass meat rise, beef consumption levels of low-income Ivorian consumers will likely be negatively affected, particularly those in urban areas such as Abidjan. According to informed sources, the tariff on meat imports will rise from 25% to 40% in early 1990. This will put additional upward pressure on the retail price of imported frozen and chilled livestock products. Higher import levies will offset in part the negative effects of exchange rate overvaluation and offer more protection for local Ivorian production. This should help to improve the competitive position of Sahelian live animal exports in the Ivorian market at the margin. At the same time, higher meat prices, along with higher prices for other basic foodstuffs, could contribute to urban consumer unrest. The evolving Ivorian market situation and prices for alternative livestock products need to be carefully monitored.

Sahelian countries can strengthen their competitive position by removing policy and regulatory impediments to livestock exports and improving marketing infrastructure. This would include massive investments in improved rail capacity and management in Burkina Faso and Côte d'Ivoire. Devaluation of the CFA is also absolutely essential to strengthening Sahelian competitiveness in the Côte d'Ivoire market vis-a-vis non-African competitors.

12.7 EC Livestock Sector Policies and Recent Changes

The legendary mountains of butter, powdered skim milk and processed milk that characterized the EC of the first half of the 1980s led to reduced public intervention in support of dairy producers. This provided an incentive for producers to cull surplus cows, which expanded beef surpluses and shipments to non-EC markets. Subsidized EC exports of chilled and frozen beef and offals flooded coastal West African markets during the mid to late 1980s. Urban consumers benefitted from the low prices to expand red meat consumption, but West African livestock producers were penalized. Many coastal butchers ended up defaulting on credit extended by traders, which accompanied the sale of cattle and small ruminant herds. The risks of long-distance trading increased and many Sahelian traders interviewed in the field reported arrears in repayment of credit extended to butchers in coastal markets, particularly Abidjan.

The specific change in EC policy that led to reduced dairy cattle and surplus beef and dairy products were the imposition of production quotas for fluid milk in 1984. Cow numbers declined in response to the production quotas and the supply of surplus dairy products decreased. Intervention buying was limited to only the first 220,000 metric tons of milk in 1989. Beyond this level intervention was suspended until the price dropped below 80% of the intervention price.

The EC policy incentives were successful in reducing dairy surpluses. Numbers of dairy cattle have declined 12.2% from a high of 25,776,000 head in 1983 to 22,497,000 head in 1987, the year for which data are most recently available (see Table 44). In addition, little surplus beef is currently

reported to overhang the EC market. The total cattle herd for the EC 10 countries (excluding Spain and Portugal) fell 12.8% from 82,497,000 head in 1985 to 71,912,000 head in 1988. EC exports of beef and veal to non-member countries, shown in Table 45, peaked in 1986 at 1,166,600 metric tons, falling 32.8% to 783,700 MT by 1988.

The final version of this report will examine EC livestock production and trade policies in greater depth. They have had an obviously profound impact during the 1980s on the competitiveness of the Sahelian livestock industry.

Another development in EC trade policy of the late 1980s which has affected EC beef exports has been the ban on imports of U.S. beef from cattle injected with growth hormones. Domestic supplies that might be available for export have been retained on domestic markets of EC countries to substitute for decreased imports from the U.S.

Table 44

Cattle and Dairy Cow Numbers in the EC (December of previous year)

Total Cattle (in '000 head)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
EC 12	--	--	--	--	--	--	--	81,984	79,441	78,269
Belgium	2,904	2,897	2,896	2,896	2,963	2,993	2,960	2,932	2,950	2,977
Denmark	2,944	2,921	2,921	2,857	2,876	2,704	2,623	2,490	2,323	2,230
Germany	15,849	15,878	15,069	15,098	15,552	15,688	15,627	15,305	14,887	14,659
Greece	--	900	848	785	769	757	776	761	741	729
France	23,558	23,605	23,605	23,656	23,519	23,102	22,803	22,171	21,052	20,122
Ireland	6,169	5,824	5,826	5,783	5,812	5,835	5,779	5,626	5,580	5,637
Italy	8,808	8,836	8,836	9,127	9,221	8,921	9,008	8,866	8,898	8,843
Luxembourg	217	228	220	219	220	221	220	214	209	207
Netherlands	5,028	5,018	5,010	5,192	5,359	5,280	5,076	4,922	4,549	4,606
Portugal	--	--	--	--	--	--	--	--	1,332	1,356
Spain	--	--	--	--	--	--	4,930	4,954	5,071	5,001
United Kingdom	13,318	13,519	13,112	13,177	13,157	12,985	12,695	12,476	11,849	11,902
EC 10	77,995	78,402	78,343	78,790	79,448	78,486	82,497	75,763	73,038	71,912

Dairy Cows (in '000 head)

EC 12	--	--	--	--	--	--	--	25,337	24,663	
Belgium	983	977	977	969	995	990	946	639	915	
Denmark	1,056	1,066	1,066	1,014	988	948	913	865	807	
Germany	5,442	5,469	5,469	5,530	5,735	5,582	5,451	5,391	5,077	
Greece		384	242	221	237	224	219	233	232	
France	7,446	7,128	7,120	7,166	7,195	6,764	6,506	6,359	5,841	
Ireland	1,503	1,449	1,449	1,512	1,535	1,549	1,528	1,490	1,444	
Italy	3,074	3,013	3,013	3,044	3,068	3,024	3,120	3,004	3,024	
Luxembourg	68	69	69	71	73	71	70	68	64	
Netherlands	2,343	2,356	2,356	2,482	2,521	2,437	2,333	2,260	2,038	
Portugal	--	--	--	--	--	--	--	--	388	
Spain	--	--	--	--	--	--	1,891	1,786	1,778	
United Kingdom	3,342	3,294	3,296	3,353	3,429	3,311	3,257	3,242	3,052	
EC 10	25,257	25,197	25,057	25,363	25,776	24,900	24,343	23,551	22,497	

Source: The Agricultural Situation in the Community, Commission of the European Communities, Volumes: 1980-1989.

Table 45

EC Trade in Beef/Veal with Non-Member Countries

(in '000 MT carcass weight)

EXPORTS

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
EC 12	--	--	--	--	--	--	--	1,166.6	909.1	783.7
Belgium/Lux.	10.9	11.5	11.3	3.1	5.0	14.7	6.7	9.8	7.6	9.0
Denmark	42.4	40.0	40.1	30.7	43.1	65.2	54.9	84.8	68.4	53.7
Germany	134.7	167.9	143.7	78.2	101.7	193.9	183.7	250.1	158.0	186.0
Greece	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
France	62.9	150.4	179.9	165.3	169.5	196.5	248.7	362.6	270.0	223.3
Ireland	32.6	118.7	130.3	119.7	160.6	148.2	163.4	222.4	214.3	184.2
Italy	13.2	47.5	46.7	33.4	40.8	61.4	48.5	88.7	71.4	44.0
Netherlands	32.3	79.3	74.4	21.3	37.4	61.3	65.4	88.6	70.4	41.7
Portugal	--	--	--	--	--	--	--	0.7	0.6	0.3
Spain	--	--	--	--	--	--	--	0.3	2.7	5.5
United Kingdom	9.8	28.2	35.7	24.6	44.7	49.3	33.3	58.6	45.5	36.0
EC 10	338.8	643.5	662.1	480.3	602.8	790.5	804.6	1,165.6	905.8	777.9

IMPORTS

EC 12	--	--	--	--	--	--	--	465.4	496.3	517.0
Belgium/Lux.	10.5	6.8	8.9	10.0	10.6	6.2	7.6	4.9	5.3	5.1
Denmark	0.5	0.3	1.1	1.0	0.7	0.6	0.7	1.4	2.0	1.6
Germany	95.7	51.2	88.2	101.1	101.7	95.6	100.1	110.6	117.9	115.4
Greece	--	--	4.1	13.8	18.5	10.5	14.7	20.0	21.0	21.0
France	10.7	12.6	9.8	8.7	8.9	10.6	10.9	9.0	11.0	14.1
Ireland	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.5	0.6
Italy	139.3	124.1	106.0	144.8	137.5	133.5	188.2	144.5	170.9	165.5
Netherlands	27.7	21.8	17.1	18.1	17.9	15.7	17.7	17.3	20.7	22.8
Portugal	--	--	--	--	--	--	--	1.6	0.1	1.5
Spain	--	--	--	--	--	--	--	2.9	4.4	5.7
United Kingdom	127.8	97.7	128.8	142.7	151.4	141.7	148.9	152.5	142.3	161.7
EC 10	412.2	355.0	364.0	440.2	447.6	414.4	489.0	460.9	491.6	509.8

Source: The Agricultural Situation in the Community, Commission of the European Communities. Volumes: 1980-1989.

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Youssouf Dia, Livestock Trader
Ali Sare, Livestock Trader
Chokoba Sidibe, Livestock Trader

Zegoua

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Bokar Diallo, Traders' representative to market board; Livestock herder & trader
Tjedian Bathily, Traders' representative to market board; livestock trader
Bokar Ba, Livestock trader

COTE D'IVOIRE

USAID/REDSO Abidjan

Paul Mulligan, Economist
Fidele Sarassoro, Economist
Steve Crabtree, Controller

Ministère de la Production Animale

Dr. Adama Traore
Olivier Pillot, Technical Advisor

Syndicat National des Commerçants (SNC)

Koua Kodidia Pierre, Membre, Bureau Executif; Secrétaire, Rélations Extérieures
El Haji Traore Adama, Trader and Treasurer, SNC
Amadou Sangare, Attaché au Secrétariat
Irenee Kouadio Kouassi, Attaché au Secrétariat
Sy Savane Oumar, Conseiller, Bureau Executif
Kone Bajoumba, Attaché au Secrétariat
Bigose Etienne, Attaché au Secrétariat
Silawe Ouana, Chargé du Presse au Syndicat

Port Bouet/Abidjan Stockyard

Dioum M'Bandy, Président du Syndicat National des Bouchers et Chevillards de Côte d'Ivoire (SYNABCC)
Boukary Ouedraogo, Livestock Trader
Ali Mande, Livestock Trader
Amadou Barry, Livestock trade, President of Livestock Park

Al Haji Legre Azialoud, Livestock Trader; Secretair Executif, Port Bouet Section, SNC
Sekou Degene, Livestock Trader
Kone Moussa, Livestock Trader
Koffi Albert, Meat Importer

Compagnie Centrale d'Importation et de Distribution du Bétail en Côte d'Ivoire (CCIDB-CI)

Sekou Touré, Président, Directeur Général, CCIDB-CI
Al Haji Daoud Abubakr Tiegbe, Administrator

Bouaké

Peter Matlon, Research Director, West African Rice Development Association
Koffi Gali, Director, Institut du Sahel
Kwami Miezan, Institut du Sahel
Aboubakari Sidibe, Livestock Trader
Group of 3 butchers, (Central Market)
Ousmane Traore, Livestock Trader
Group of 5 Malian Fulbe (Peul) Livestock Drovers

Korhogo

Dr. Abo Soh Jules, Directeur, Société de la Production Animale
Coulibali Ladji, Livestock Trader
Toukour Dramane, Livestock Trader
Siroma Adama, Livestock Trader
Dougou Bah Doh, Livestock Trader
Moses Turore, Liberian Livestock Trader

Ferkassédougou

Ouattara Mamadou, Livestock Transporter
Coulibali Kassoum, Livestock Transporter
Souleyman Teou Nagouble, Livestock Trader/Agent
Coulibaly Boua, Livestock Trader
Kouakou Kouassi Celestin, Chief Railway Inspector, Régie Autonome du Niger (RAN)/Société Ivoirienne des Chemins de Fer (SICF)
Yaya Traoré, Railway Inspector, RAN/SICF

Ouangoulodougou

Coulibaly Gbennefole, Agent, CONIBE
Kone Yeferaga Moustapha, Agent, CONIBE

Toure Adama, Transporter
Issa Yaya, Transporter
Group of 3 Customs Agents
2 Fulbe (Peul) Livestock Drovers

BURKINA FASO

USAID/Ouagadougou

Wilbur Thomas, USAID Representative
Dennis McCarthy, Agricultural Development Officer
Sandra Solaiman, Ph.D., Consultant, Tuskegee University
Boue Zinso, Economist
Greg Farino, Contractor, Agricultural Research
Diane Fink, Contractor, Famine Early Warning System Project

Direction Nationale d'Elevage

Ouedraogo Seydou, Directeur de la Réorganisation de l'Elevage Traditionnel
Dr. Fevrier Jacques, Conseiller au Direction
Jean-Jacques Soula, Chef du Projet Statistiques Animales
Diaby Bakary, Directeur, Projet Statistiques Animales
Barry Alioune, Assistant, Projet Statistiques Animales

Ministère du Commerce et de l'Approvisionnement du Peuple

Some M. Christophe

Entreprise Burkinabé de Ravitaillement en Viande et Bétail

Simpore Max Seydou, Directeur

CILSS

Dramane Coulibaly, Economist
Emmanuel Lauras, Conseiller Régional, Coopération Française
Steve Reid, Consultant
Nguigma Salif, Chef de Service Production Végétale et Animale

Communauté Economique du Bétail et de la Viande (Ouagadougou)

Dr. Aloua Moussa, Secrétaire Executif
Douti Mankeboueb, Chef, Section Information et Statistique
Georges Royant, Consultant, Association Française de Zoötechnie

World Bank (Ouagadougou)

Ellen Goldstein, Economist

Foda N'Gourma

Marga Mohammadou, Livestock Broker
Ouedraogo Liman, Livestock Broker
Marga Issa, Livestock Broker
Ido Jean-Pierre, Livestock Broker

Barray Amadou, Livestock Herder
Sidibe Amadou, Livestock Herder
Maiga Moussa, Livestock Trader

Pouytenga

Service Vétérinaire

Banaou Nemaoua, Chef de la Zone d'Elevage
Sana Djibril, Enqueteur, Projet de la Statistique Animal
Kabore Jean-Marie, Docteur Vétérinaire
Yanogo Theophile Ate, Chef de l'Unité d'Encadrement d'Elevage
Yugbare Paul, Livestock Trader
Kabore Simeon (Pouytenga)

Gorom Gorom

Maiga Olasori, President, Livestock Market Association
Ardo Bidou, Livestock Herder/Trader
Boulikessi Cisse, Livestock Herder/Trader
Diallo Mamadou, Livestock herder and exporter (Dori)
Bouba Bello, Livestock Herder/Trader
Group of 15 Livestock Traders
Chef de la Zone d'Elevage

Koudougou

Semde Moussa, Livestock Trader
Sinon Tasgere, Livestock Trader
Bague Adama, Livestock Trader
Guiro Somaila, Livestock Trader (Youba)
Sana Hamade, Livestock Trader (Youba)

Yatenga

Ouedraogo Yameogo, Livestock Trader
Kagone Rasmane, Livestock Trader

Private Traders and Importers: Benin (CEBV Conference)

Malete Yombo, Abattoir de Cotonou et Porto Novo
Concalves Carlos, Président, Importeurs de produits congélés au Benin
Kotingan Eustach, Directeur, Société UCAF, Cotonou
Hounkpe Celestin, Butcher, Cotonou
Bani Gnesere Ibrahim, Livestock Trader

Private Traders and Importers: Togo (CEBV Conference)

Gbadoe S. Koussan, Importer, Lome-Port
El Hadj Aboudou Balla, President, UNATRO trading firm, Lome
Alassani Fousseni, Butcher, Lome-Port

Private Traders and Exporters: Niger

El Hadji Cheffou Baoua, Butcher, Abattoir de Niamey
El Hadji Adamou Sanda, Secrétaire Général des Exportateurs de Bétail, Niamey
El Hadji Ibrahim Guido, Butcher, Abattoir de Niamey

Bobo Dioulasso

Diallo Hama Zakaria, Livestock Trader
So Barry, Livestock Market Intermediary
Diallo, Livestock Drover

Société de Chemin de Fer Burkinabé

Eloi Mosse, Chef de Gare
Bado Augustin, Chef de Gare en Retraite
Kyelem Norbert, Representant Commerciale
Maxime Nitem.., Chef, Bureau des Marchandises

Service Provincial d'Elevage de Houet

Dr. Dembele M'Pe Augustin, Chef du Service Provincial
Louis Edouard Kyendrebeogo, Ingénieur d'Elevage

Customs Service

Dambele Tiekoura, Directeur Régional, 4ème Région des Douanes

Abattoir Frigorifique de Bobo Dioulasso

Timaoura Alain Ouorobi, Director

Annex 1

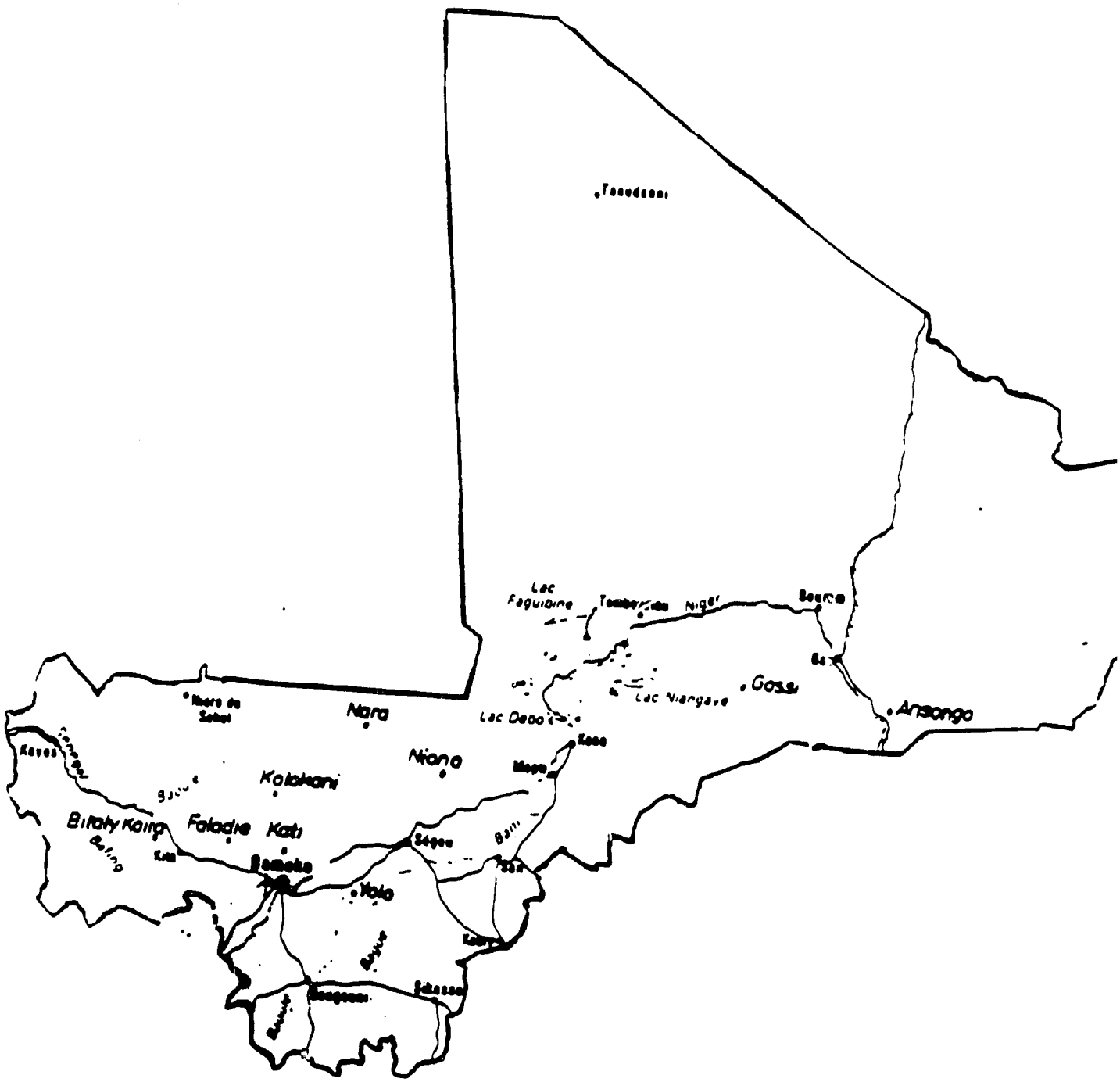
Measures of Market Integration

One approach to evaluating market integration is to examine the correlation between movements of prices in different markets. Prices for markets that are well integrated tend to move up and down in unison. In theory, markets that are perfectly integrated would exhibit perfect price correlation (1.00). In reality, however, unbalanced distribution of information and limited competition along with many other factors inhibit market integration and efficiency.

Pairwise intermarket price correlations were calculated for slaughter, export and resale (wholesale) grades of Zebu Peul for the period January 1988 through July 1989 for selected markets. The results are presented below. As might be expected, correlations were highest for export grade cattle. Pairwise correlations for this category ranged from a low of 0.67 to a high of 0.94 suggesting a relatively high degree of market integration. Export grade cattle are clearly the most homogenous of the three grades examined in terms of weight and level of quality. More importantly, the relatively high correlations probably reflect a greater integration of markets for export grade cattle that result from more intense competition and better information flow. This high degree of correlation between markets is also demonstrated in the plot of export prices.

Correlations between the prices of steers for slaughter ranged from as low as 0.01 to a high of 0.83. Although the low correlations may reflect in part poor linkages between markets, they probably result more from the substantial variation in the quality and size of steers destined for slaughter that were included in the survey. In addition, it is important to note here that the carcass weight figures used to calculate prices per kilogram were estimated by enumerators rather than by actually weighing the animals. Consequently, prices and thus price correlations, must be considered rough approximations.

Correlations between prices of steers and cows for resale, the most broadly defined category, showed a wide range of pairwise price correlations. Several of the market comparisons exhibited strong linkages with correlations of 0.85 or higher. Others, however, such as Yolo-Bilaly at 0.02 for steers exhibited very low market integration. Again, the degree of heterogeneity among animals in the survey and the error factor due to the weight estimation process have probably contributed to the low correlations. The substantial variation in prices between markets is clearly demonstrated in the attached plots.


Tessalit
Lac Faguibine
Niger
Gossi
Lac Niangaye
Ansongo
Mopti
Nara
Niono
Kolokani
Bilaly
Kalira
Falodie
Kati
Bamako
Ségou
Yélo
Sikasso

Correlation Coefficients for Zebu Peul Cattle Sold in Malian Markets
1988-1989

Export Grade

Bulls

	Yolo	Boussin	Segou
Yolo	1.00		
Boussin	0.78	1.00	
Segou	0.72	0.67	1.00

Steers

	Yolo	Boussin	Segou
Yolo	1.00		
Boussin	0.93	1.00	
Segou	0.87	0.94	1.00

Destined for Resale

Cows

	Faladie	Segou	Boussin	Yolo	Niono	Bilaly
Faladie	1.00					
Segou	0.39	1.00				
Boussin	0.56	0.85	1.00			
Yolo	0.52	0.90	0.77	1.00		
Niono	0.05	0.22	0.12	0.15	1.00	
Bilaly	-0.22	0.03	0.18	0.24	0.62	1.00

Steers

	Faladie	Segou	Boussin	Yolo	Niono	Bilaly
Faladie	1.00					
Segou	0.54	1.00				
Boussin	0.56	0.95	1.00			
Yolo	0.43	0.87	0.78	1.00		
Niono	0.50	0.59	0.56	0.63	1.00	
Bilaly	-0.23	-0.41	-0.45	0.02	0.27	1.00

Slaughter Stock

Steers

	Bamako	Bilaly	Boussia	Faladie	Kati	Niona	Segou	Yolo
Bamako	1.00							
Bilaly	0.08	1.00						
Boussin	-0.14	-0.53	1.00					
Faladie	0.38	0.09	0.19	1.00				
Kati	0.66	0.02	-0.07	0.14	1.00			
Niona	0.02	0.24	0.77	0.12	-0.06	1.00		
Segou	0.02	-0.37	0.88	0.23	0.04	0.83	1.00	
Yolo	-0.42	0.37	0.18	-0.05	-0.41	0.74	0.71	1.00

Source: Ministere de L'environement et de l'elevage, Government of Mali

Average Prices of Zebu Peul Cattle by Grade and Market in Mali

CFA per Kilogram

Export Grade

		Steers			Bulls		
		Yolo	Bouaua	Segou	Yolo	Bouaua	Segou
Jan	1988	461	478	502	487	485	512
		538	512	534	562	485	576
Apr		564	562	566	543	558	500
		551	562	587	565	563	563
		535	532	545	566	538	522
July		563	557	560	540	548	524
		507	497	497	487	490	488
		484	486	456	472	468	473
Oct		439	435	429	448	441	425
		458	463	455	468	478	457
		461	455	445	427	446	440
Jan	1989	435	439	440	457	435	466
		458	497	523	481	470	466
		485	508	508	452	502	520
Apr		471	466	491	485	488	488
		462	492	471	489	487	530
		507	495	500	461	506	529
July		513	511	508	509	502	505

Slaughter Stock

		Steers							
		Bamako	Bilaly	Bouaua	Faladie	Kati	Niono	Segou	Yolo
Jan	1988	700			642	662	525	452	
		675			686	645	557	493	587
Apr		664		595	693	678	621	581	590
		692		594	671	714	595	583	549
		703		549	720	670	598	543	
Jul		700	503	509	683	696	548	488	503
		742		503	719	755	577	516	490
				477	708	738	500	469	458
Oct		706	547	417	679	704	507	429	443
		700		444	693	699	536	438	431
		679	488	479	682	691	542	445	456
Jan	1989	680	488	440	683	679	518	465	451
		687	560	440	688	700		431	487
		701	425	483	679	704	523	503	449
Apr		708	548	444	683	691	576	520	482
		698	500	491	707	702	583	479	490
		727	500	521	706	701	585	514	
July		706		519	703	713	588	524	509

Source: Ministere de L'Environnement et de l'elevage, Republique du Mali

Average Prices of Zebu Peul Cattle by Grade and Market in Mali

CFA per Kilogram

Destined for Resale

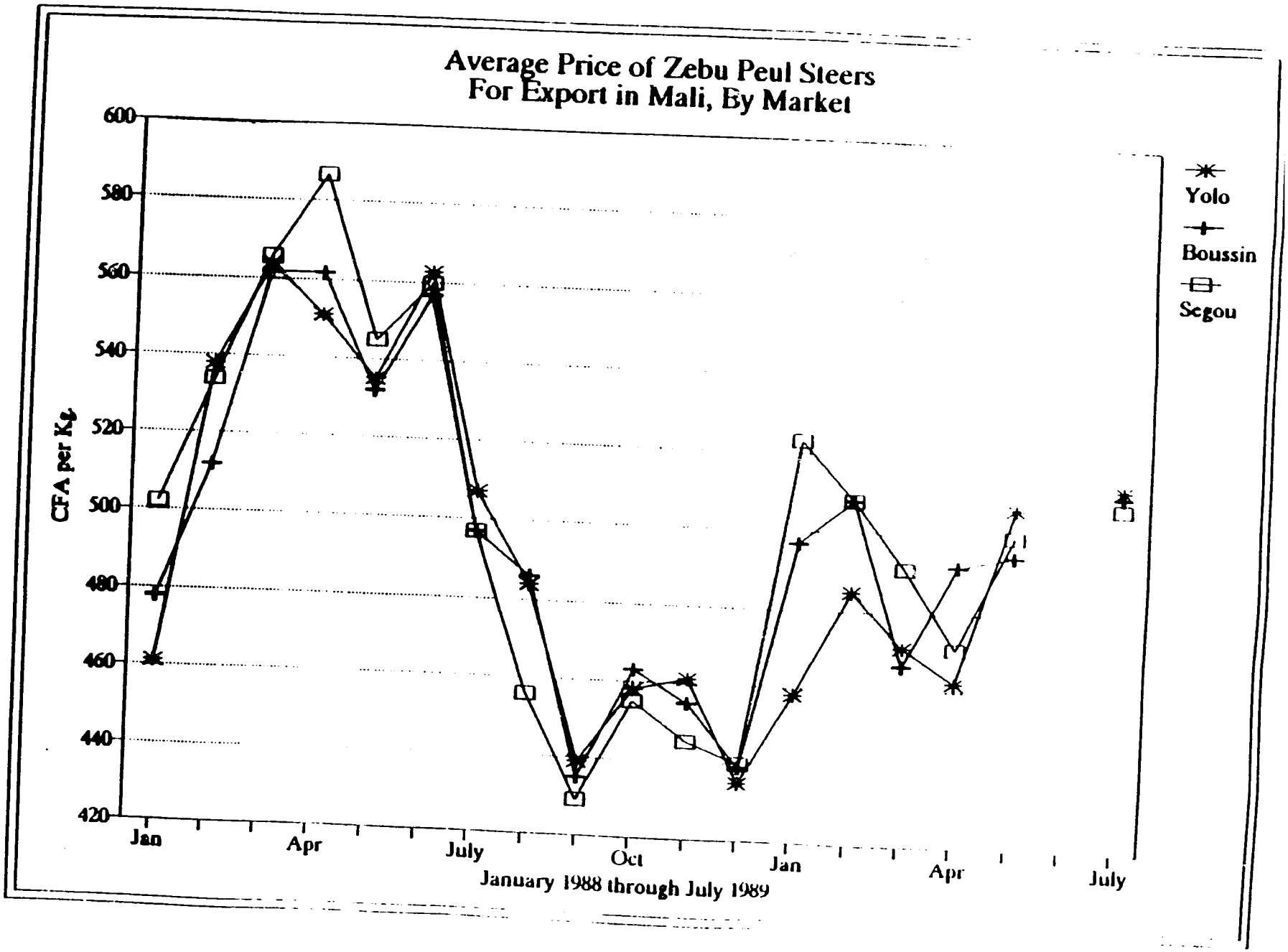
Cows

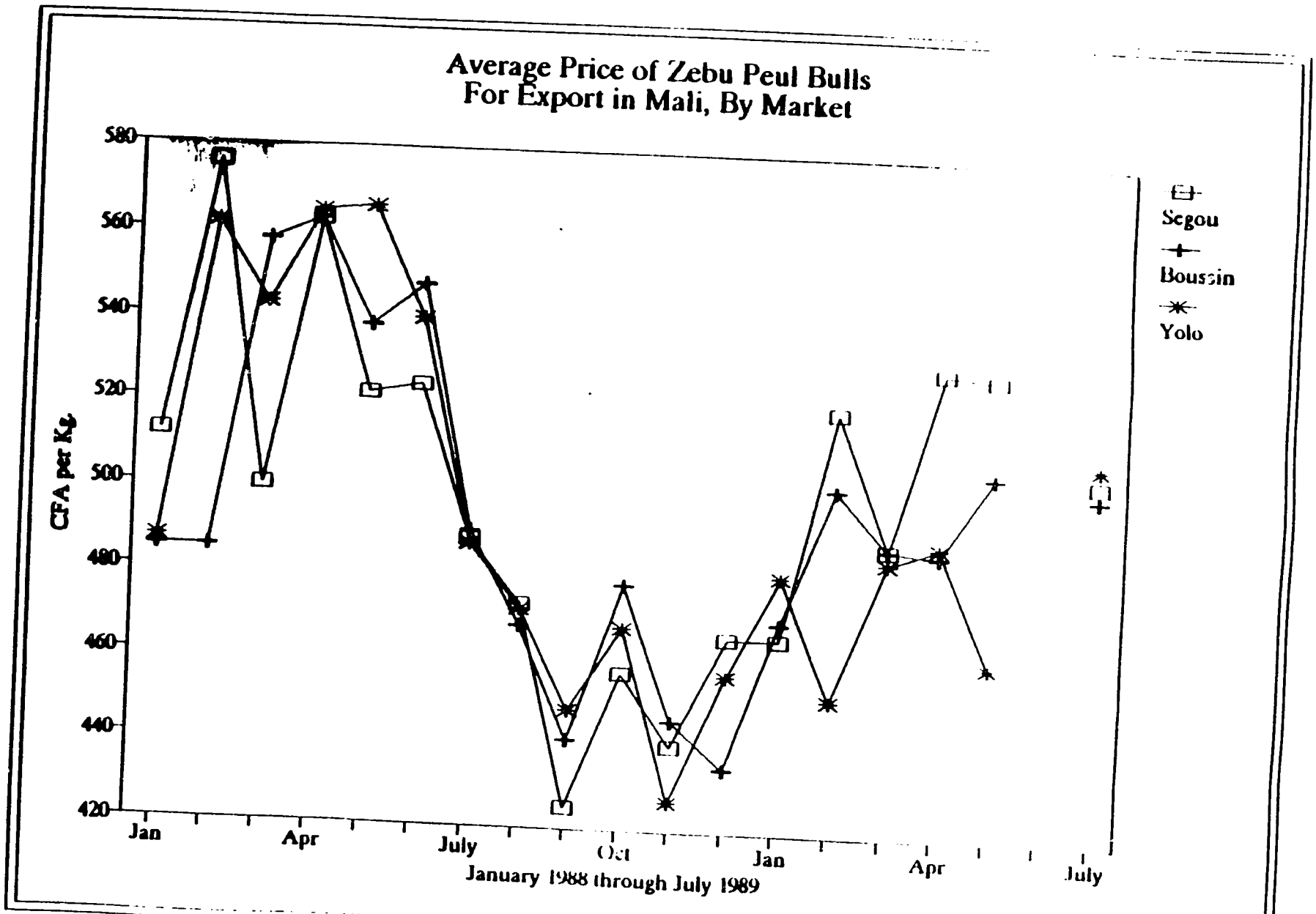
		Faladie	Segou	Bouaua	Yolo	Niono	Bilaly
Jan	1988	655	475	480	475	476	
		652	522	508	504	523	525
		655	560	555	560	530	495
Apr		561			586	496	521
		566	528	557		484	
		661		546	569	491	
July		658		496		539	571
		652		458	461		
		644			423	450	483
Oct		641		423	384	436	364
		638	389	391	365	449	492
		637	426	409	447	476	486
Jan	1989	549	440	380	384	480	562
		613	473	455	454	548	518
		658	445	359	449	559	
Apr		612	438	427	424	527	518
		666	457	508	417	553	523
July		616	443	430	380	565	

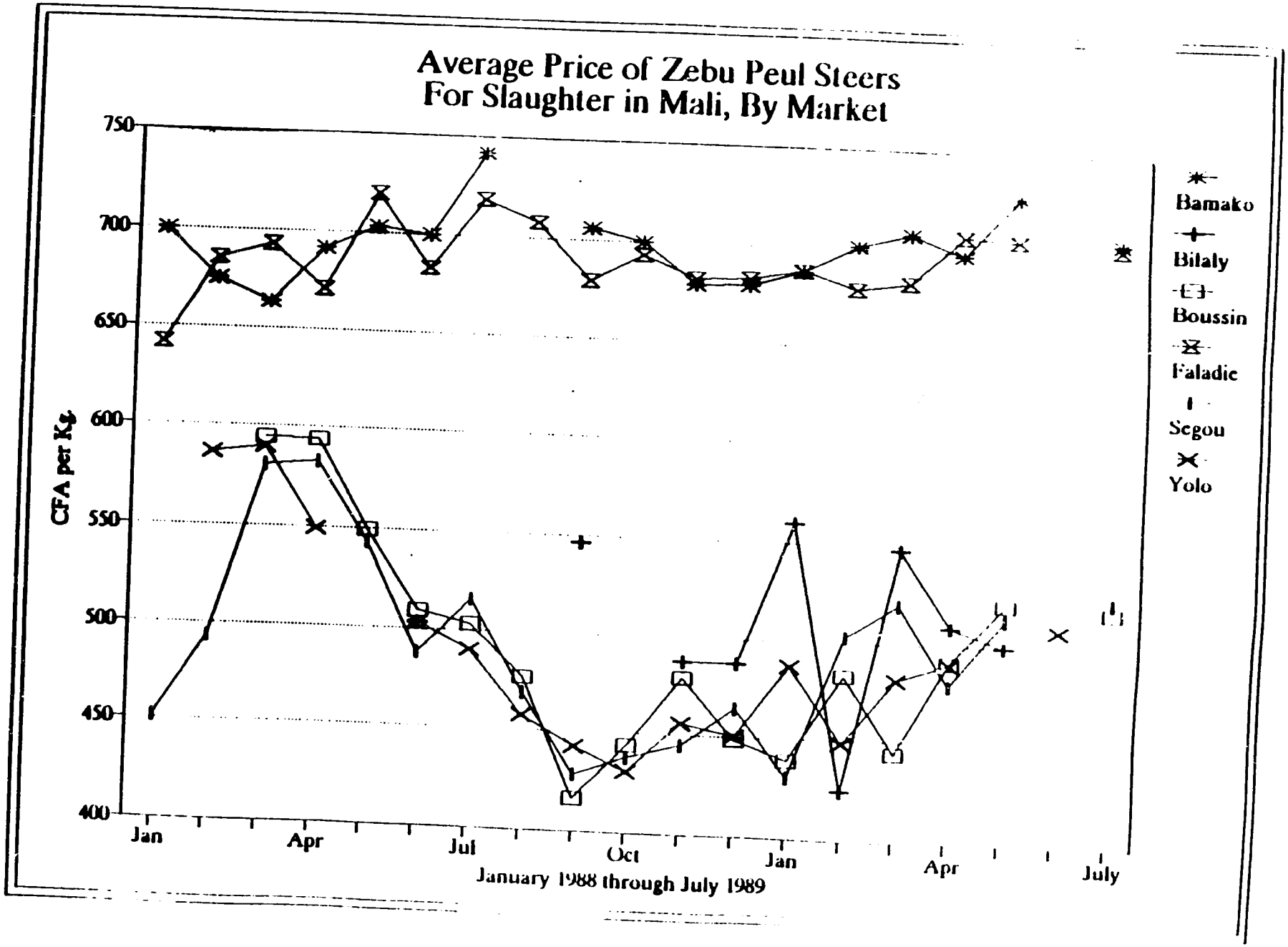
Steers

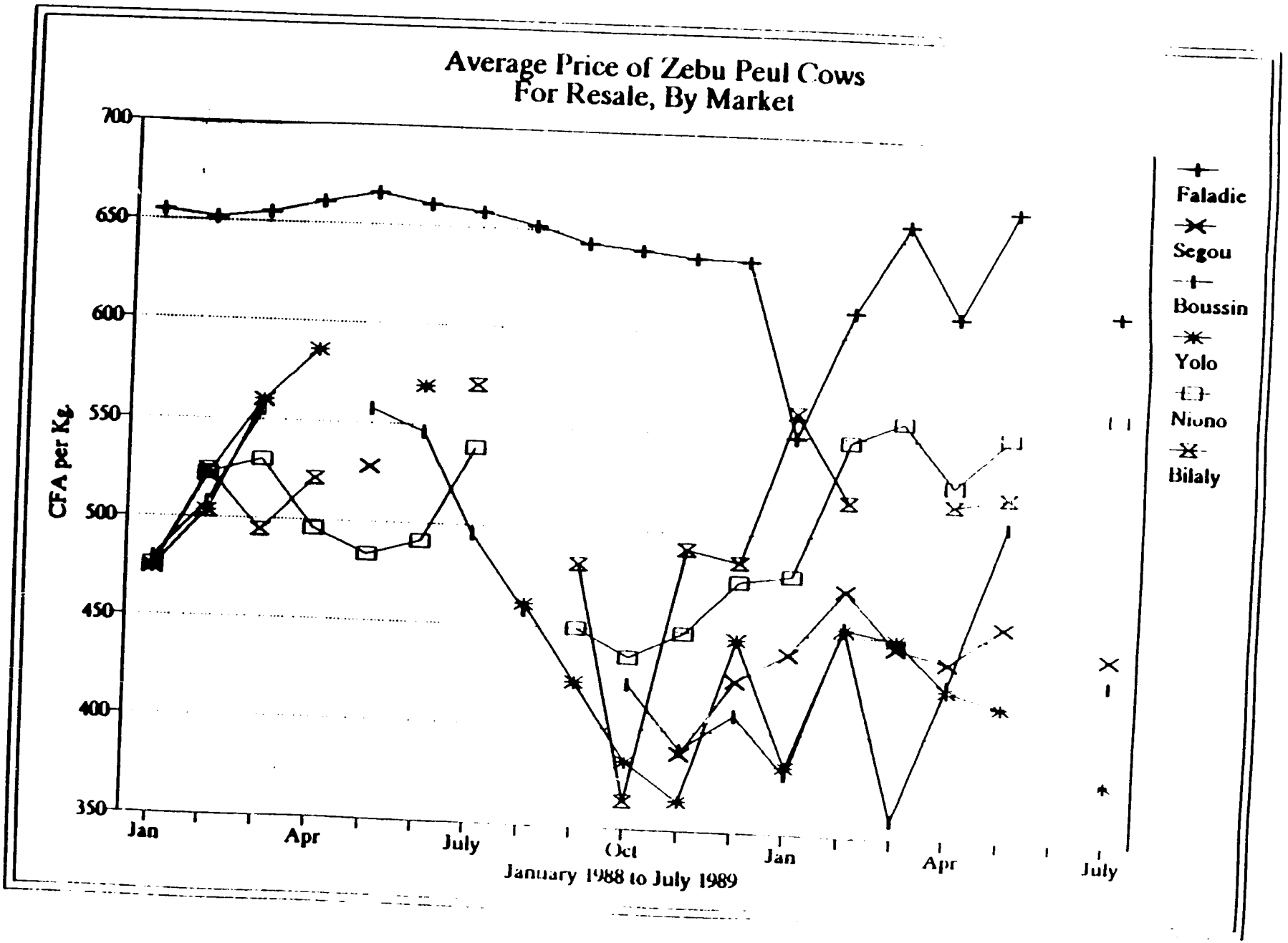
		Bamako	Bilaly	Bouaua	Faladie	Kati	Niono	Segou	Yolo
Jan	1988	700			642	662	525	452	
		675			686	645	557	493	587
		664		595	693	678	621	581	590
Apr		692		594	671	714	595	583	549
		703		549	720	670	598	543	
		700	503	509	622	696	548	488	503
Jul		742		503	719	755	577	516	490
				477	708	738	500	469	458
		706	547	417	679	704	507	429	443
Oct		700		444	693	699	536	438	431
		679	488	479	682	691	542	445	456
		680	488	449	683	679	518	465	451
Jan	1989	687	500	449	684	700		431	487
		701	425	483	679	704	523	503	449
		708	548	444	683	691	576	520	482
Apr		698	500	491	707	702	583	479	490
		727	500	521	706	701	585	514	
July		706		519	703	713	588	524	509

Source: Ministere de L'Environnement et de l'elevage, Republique du Mali


Average Price of Zebu Peul Steers
For Export in Mali, By Market
CFA per Kg
600
580
560
540
520
500
480
460
440
420
Jan
Apr
July
Oct
Jan
Apr
July
January 1988 through July 1989
Yolo
Boussin
Segou


Average Price of Zebu Peul Bulls
For Export in Mali, By Market
CFA per Kg
580
560
540
520
500
480
460
440
420
Jan
Apr
July
Oct
Jan
Apr
July
January 1988 through July 1989
Segou
Boussin
Yolo


Average Price of Zebu Peul Steers
For Slaughter in Mali, By Market
CFA per Kg
750
700
650
600
550
500
450
400
Jan
Apr
Jul
Oct
Jan
Apr
July
January 1988 through July 1989
Bamako
Bilaly
Boussin
Faladie
Segou
Yolo


Average Price of Zebu Peul Cows
For Resale, By Market
CFA per Kg
700
650
600
550
500
450
400
350
Jan
Apr
July
Oct
Jan
Apr
July
January 1988 to July 1989
Faladic
Segou
Boussin
Yolo
Niono
Bilaly