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INSTITUTIONAL CONSTRAINTS AFFECTING CEREALS MARKETING IN CHAD

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INSTITUTIONAL CONSTRAINTS AFFECTING CEREALS MARKETING IN CHAD

By

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ABSTRACT

INSTITUTIONAL CONSTRAINTS AFFECTING CEREALS MARKETITNG IN CHAD

By

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The purpose of this thesis was to analyze the effects of government interventions through administrative restrictions and road barriers on the movement of cereals in Chad. The study was part of a larger marketing research effort undertaken by the Center for Research on Economics Development (University of Michigan), and USAID/Chad.

This thesis uses descriptives statistics and statistical tests as analytical measures. Primary data were collected in 11 out of 14 prefectures in Chad of 1,152 traders from October 1992 to August 1994. Data from traders as well as from transporters were used in the analysis.

One of the main results is that most of the threats to Chadian food security are external to the marketing system. Among others, Administrative Restrictions and Road barriers increase marketing costs and risk.

Dedicated to

My parents, Fahima S. Abdelnabi and Mohamed Yacoub Dobio

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CHAPTER ONE

BACKGROUND AND PROBLEM STATEMENT

This thesis describes and analyzes some of the basic administrative constraints that affect grain traders' and transporters' practices in Chad. Chad is generally self-sufficient in cereal production during years of normal or adequate rainfall, but the marketing system faces some institutional constraints to transfer food from surplus to deficit zones. Among other factors, administrative restrictions[1] on cereals movements and road barriers[2] contribute to food insecurity in Chad. Administrative restrictions and road barriers are an often neglected bulk of institutional constraints to improving marketing and increasing food security. Recently, administrative constraints have become an important issue of policy debate.

The rationale for giving local administrators the authority to restrict the circulation of cereals was to protect the local populations against famine resulting from crop failures. Decree No. 267/PR/INT of 2 November 1972 (Art. 7) establishing the powers of the

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[1] Administrative restrictions are imposed on traders at the local and regional levels by authorities such as mayors, village chiefs, canton chiefs, sous-prefects, and prefects. They ban or tax the trucking of cereals from one domestic administrative area to the next.

[2] Illegal barriers and checkpoints along roads and at the entrance to most cities are operated by a wide variety of seemingly official government services. All trucks and most cars are subject to frequent interruptions of their journey, entailing delays and financial costs in the form of unauthorized charges.

prefet provides the basis for the authority of the prefet to control cereal movements within his district. Civil servants and security personnel who are poorly and irregularly paid are prone to turn to road barriers and local taxes as alternative sources of revenue. Weak central government authority, in part resulting from years of civil war, encourages local authorities to impose "protective" restrictions on trade and otherwise contributes to the inability of the state to put into effect its official liberal trade policy. Both road barriers and administrative restrictions (taxes and quotas) raise marketing costs, increase risk, and discourage trade between regions and impede the development of a positive climate for agricultural marketing (Herman, Fauba, and Yacoub, 1994).

Recently traders have played an important role in articulating their needs with respect to administrative restrictions. As a result, the Government has taken measures to abolish both administrative restrictions and road barriers. However, the poor harvest of 1993-1994 seems to have given new stimulus to both barriers and administrative restrictions.

This thesis broadly examines the structure of cereals marketing and government policy in the context of food security in Chad. A number of studies have identified roadblocks as a major constraint on Chad's agricultural marketing system, including: Grasberg and Hassanein (1988); BIEP (1988); Kent (1988 and 1989); Détard (1992); Ouedraogo and Adoum (1992); and Ngoidi (1992). While many of these authors have generally described the problem, none based its analyses on country-wide field work. Nor have they succeeded in proposing a successful strategy for solving the problem.

OBJECTIVES OF THE THESIS

This study is one component of a large Agricultural Marketing Project, which has as one of its objectives to fill the major gaps of knowledge about the marketing of major cereals in Chad. This thesis utilizes data from Millet and Sorghum Marketing Study to understand the millet and sorghum subsector and its key constraints and opportunities.

The purpose of the thesis is to understand the institutional environment under which the marketing of millet and sorghum in Chad operates. The main objectives are to analyze and describe the constraints to cereals movement within the country and the efficiency of cereals trade. We use the SCP paradigm to describe the market structure, the conduct of its participants, and the marketing efficiency, using the marketing costs and traders margins as key performance indicators. Finally, we analyze the effects of illegal taxes and road barriers on the circulation of cereals and road barriers on marketing costs and margins. We began field research in October 1992 and completed our in-country analyses in August 1994.

Much of our study on cereals marketing will be descriptive. We will focus on how markets are functioning, the behavior of the different economic agents, and constraints affecting flows of cereals throughout the country.

ORGANIZATION OF THE THESIS

This thesis is comprised of six chapters. Chapter 1 provides a statement of the problem, justifies the purpose of the present study, and describes the objectives of the study.

Chapter 2 discusses the survey design and methodology of the study. It briefly introduces the concept of subsector analysis, discusses the questionnaire design, the research questions and the review of the literature.

Chapter 3 describes and analyzes the marketing system for cereals, using a structure-conduct-performance paradigm.

Chapter 4 discusses the analysis of marketing costs and trader's margins.

Chapter 5 addresses policy issues. It examines the identification and analysis of key opportunities and constraints on millet/sorghum subsector. The focuses is on current policy debate issues concerning the impact of administrative restrictions, on problem of road barriers, and other institutional problems in cereals markets.

Chapter 6 presents the summary and the conclusions of the study, and suggestions for further research.

CHAPTER TWO

APPROACH AND METHODOLOGY

This thesis is based on research carried out under the University of Michigan's Center for Research on Economic Development (CRED) component of the Agricultural Marketing and Technology Transfer Project (AMTT). AMTT is a project aimed of improving agricultural marketing in Chad. It is co-financed by the USAID and the government of Chad, and implemented by the Ministry of Agriculture and Development Alternatives, Inc.

We began the research in October 1992, with field work being initiated in December. The major components of the study focussed on structure of the millet and sorghum market structure, trader behavior, and market performance. In general, the study emphasized the effects of administrative constraints on the marketing system, particularly how these constraints affect marketing margins.

This study was designed to cover assembly markets, major urban consumer markets, and export markets. The geographic scope broadly covered surplus and deficit zones in both the Sahelian and Soudanian regions of Chad (see figure 1). We collected data from traders and transporters. The use of rapid reconnaissance to collect market information enabled us to cover more broadly the marketing system and to ask market agents and local authorities what potentials and constraints they perceived.

During the course of the study we hired and trained eleven full-time enumerators to monitor marketing activity and administer formal surveys. Three enumerators monitored cereals flows into N'Djaména. The other eight enumerators worked in eight prefectures, covering the principal cereals markets and administering questionnaires to cereal traders, and transporters.

To establish a sample, traders and transporters were interviewed over a period of 8 months in 47 markets: 20 in the Sahelian zone and 27 in the Soudanian zone. The principal and secondary markets covered by the field enumerators were:

Soudanian Zone:

Mayo-Kebbi: Pala, Bissimafou, Fianga, Pont Carol, Léré, Moursalé

Logone Occidental: Moundou, Bénoye, Doher, Bebalem

Logone Oriental: Doba, Bebedja, Goré Nord, Bodo, Béti, Bédjal

Moyen Chari: Sarh, Bedigri, Ngargara, Sonasut, Goundi, Danamadji, Goro.

Sahelian Zone:

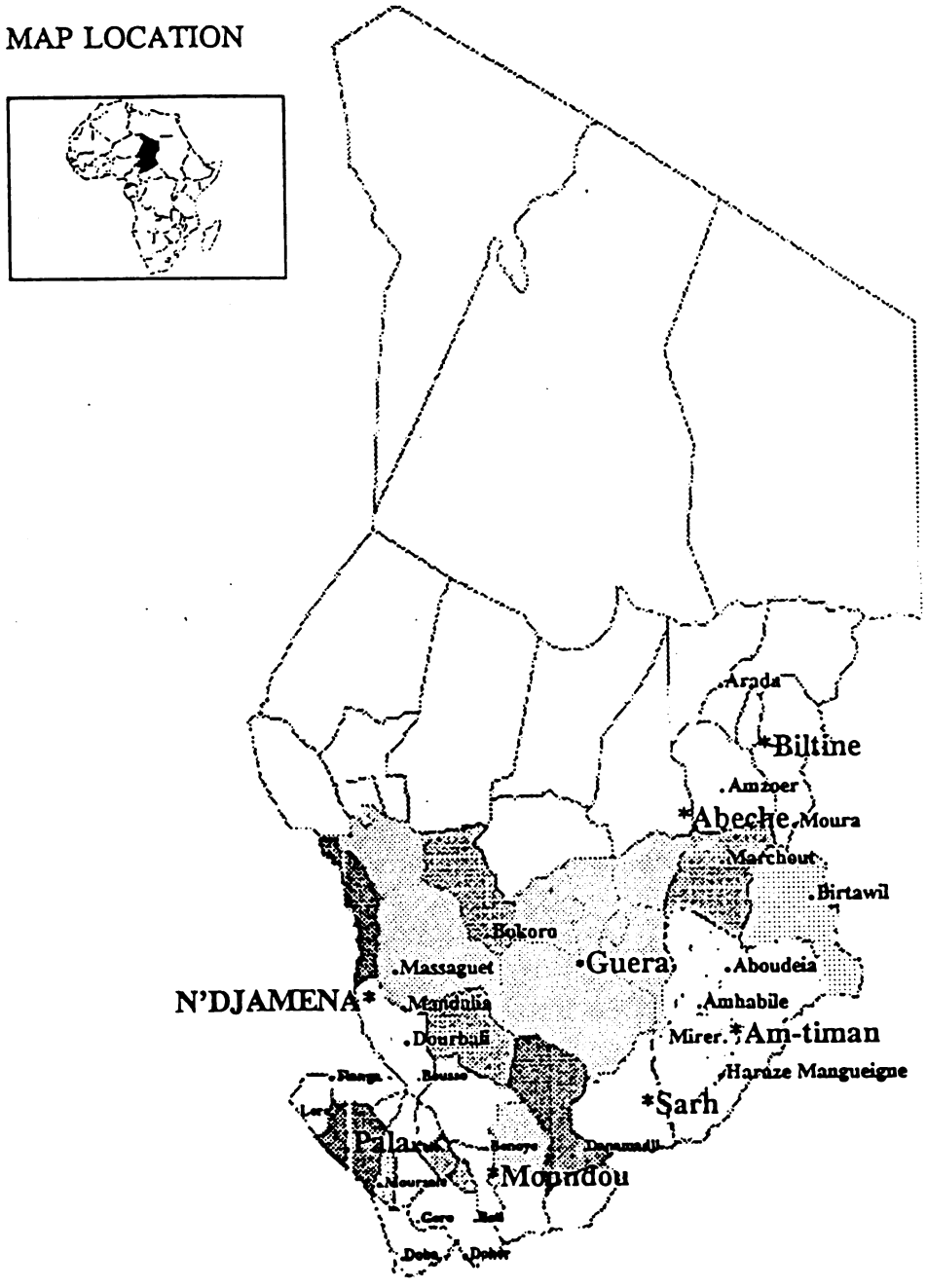
Salamat: Am-Timan, Am-Djalate, Aboudeia, Amhibilé, Mirere, Haraze-Mangueigne.

Ouaddai and Biltine: Abéché, Biltine, Birtawil, Moura, Marchout, Am-Zoer, Arada.

Chari Baguirmi: N'Djaména, Mandalia, Dourbali, Bokoro, Massaguet, Bousso.

The areas markets covered by our study are presented on figure 2.1.

FIGURE 2.1 REPUBLIC OF CHAD: STUDY ZONES



The study used two methods to research major administrative constraints to millet and sorghum marketing in Chad:

1. Rapid reconnaissance trips, and,
2. Questionnaires administered by field-based enumerators.

Each enumerator was responsible for visiting from three to six markets per week in their respective regions to conduct interviews with various economic agents. The questionnaires included:

- ***Trader Questionnaire***: This questionnaire was administered to 1,152 traders in 11 of the 14 prefectures in Chad. Analysis was done on 1,144 respondents after data cleaning. The questionnaire was administered by 8 enumerators in the 7 market clusters. It consists of 11 questions. The survey covered 47 markets: 20 in the Sahelian zone and 27 in the Soudanian zone. Every time a enumerator was in a market, he/she interviewed two traders using the questionnaire. Enumerators collected data to be used for evaluating market structure and conduct, determining margins and costs, and identifying constraints.

- ***Transporter Questionnaire:*** This questionnaire was administered to 419 transporters throughout the country. The transporters were chosen at random in the different markets covered by the study. Enumerators interviewed one transporter every time they frequented a market. Questions regard transporters' activities, the type of truck

they use, the main routes they circulate on, the fees they charge per sack per route and the difficulties they face.

- ***Trader Budget Questionnaire*:** This questionnaire was administered to 232 traders: wholesalers, itinerant traders, and retailers. The questionnaires were administered in 20 different markets from the Sahelian and the Soudanian zones. The questionnaire asks for purchasing and selling prices for one specific sack of cereals, and the different explicit costs involved. Case studies of over 230 traders provided information for the analysis of marketing costs and marketing margins.

- ***Road Barrier Questionnaire*:** This questionnaire was administered by enumerators as they rode trucks between collection and reassembly markets, and between reassembly and major consumption markets. The main purpose of this survey sheet was to collect data on the road barriers on different types of routes in the different regions of Chad.

Enumerators used public transport to reach the weekly markets, riding inside the trucks alongside the driver. Enumerators recorded their observations regarding road conditions, barriers, and the variety of fees and taxes that transporters must pay. They arranged with transporters to record all payments made to different services at all barriers encountered. Each time the vehicle stopped at a barrier, the enumerators

also measured the time lost by type of service running the barrier and per barrier. These surveys began in January and continued through July 1993.

Data were collected for 421 observations on a total of 49 routes connecting secondary and principal markets, and for 28 observations on eight routes connecting principal markets. Enumerators also made trips on selected long-distance routes including Abéché-N'Djaména and Sarh-N'Djaména. In all, data were collected for routes in 11 of Chad's prefectures. Each trip represents one observation for which enumerators kept a log of all barriers encountered, services represented, and fees paid.

- ***Market Conditions Questionnaire***: This questionnaire is used to describe cereal flows. It was administered to over 400 transporters and traders. Enumerators counted and recorded the number of sacks of cereals arriving and departing the market to help understand the direction and volumes of cereal flows. They also collected data on numbers of market agents, prices, and other market conditions. The questionnaire was administered every time an enumerator visited a market. Most markets were surveyed weekly, except for major urban markets such as Moundou, Sarh, Abéché and Amtiman, which were visited twice a week. Each morning, the enumerator would record cereals arriving by truck, identifying quantities, origins, and truck sizes. In the afternoon, when trucks were loaded and ready to leave the market, the enumerator would record similar information for outbound trucks.

- ***Financing Questionnaire*:** This questionnaire was administered to 44 wholesalers in 5 large centers: N'Djaména, Moundou, Sarh, Am-timan and Abéché. It was administered by two enumerators, one in the Sahelian zone and the other in the Soudanian zone. The survey was carried out from August to November 1993.

- ***Storage Questionnaire*:** The storage questionnaire was administered from July until September 1993, in 24 different markets. The questionnaire was administered to 159 respondents. Questions were relative to means of storage, storage capacity, timing of storage and quantity stored.

- ***Devaluation Questionnaire:*** This questionnaire was used to evaluate the effect of the January 1994 devaluation. The questionnaire was administered to 22 wholesalers in the N'Djaména markets in June 1994. Questions were relative to changes in cereals markets following the devaluation.

The basic methodology was the extensive use of rapid reconnaissance combined with market surveys to collect data and qualitative information about cereals marketing, with a focus on several key regions where "market clusters" were more intensively studied.

The N'Djaména based research team spent about 10 days per month visiting cereals markets throughout Chad, covering 11 prefectures. The team was composed of Fauba Padacke, and myself, with backstopping from Larry Herman. During the early stage of the study, Dr. John Staatz spent about two weeks in N'Djaména helping the research team to

develop a research planning matrix, and analyzing secondary data on price. During our missions throughout Chad, we gathered information on how regional marketing systems operate and investigated specific issues, such as how key administrative constraints and regulatory measures affect these systems. Information was organized into standardized reports called PICORs (Plan d'Information de Commercialization Régionale) to facilitate analysis.

Approach of the Study

The conceptual approach for the study is the structure-conduct-performance paradigm. This approach is widely used to study marketing.

Structure-Conduct-Performance Paradigm

The SCP approach had its origins with the work of Joe Bain in the early 1950s. Industrial organization is a branch of applied price theory that deals with the way the organization of sellers in a market affects the performance of the market and hence the nation's economic welfare. Thus, it is the study of how productive activities are brought into harmony with society's demands for goods and services through some organizing mechanism such as the market, and how variations and imperfections in the organizational mechanism affect the degree of success achieved by producers in satisfying society's wants (Scherer, 1990).

Bain started from normative assumption that, what society wants from producers and services is good performance. He then set out a model for predicting performance of an industry. The central tenet of SCP paradigm is that market structure strongly influences

market conduct of the firms, which in turn influences market performance. In the pure SCP paradigm, structure is defined by the level of concentration of buyers and sellers, barriers to entry, product differentiation, cost structures, types of vertical coordination between production stages in the industry, and conglomerateness.

Conduct refers to the pattern of behavior that firms follow in adapting to markets in which they operate, or put differently, firms' policies regarding product marketing and moves by their rivals. There is pricing and non-pricing conduct. Pricing conduct includes joint profit maximization, standard operating procedures for setting prices, price discrimination, cross-subsidization, predatory and limit pricing. Non-pricing conduct could take the following forms: product differentiation, research and innovation, legal tactics, political actions, and advertising.

"Performance means how well an industry performs the things that society wants it to do....It is defined from the standpoint of society, not of participants in the industry, or any single group inside it. The role of consumers is crucial, however" (Brandow 1976). Or as Caves puts it, performance is "the appraisal of how far economic results of an industry fall short of the best possible contribution to reach particular goals". Traditional performance criteria or dimensions include the following: technical efficiency, output levels, profit levels, product presentation, promotion costs, product suitability, exchange efficiency, employment, output growth, output composition, stability of output, externalities,

conservation and labor relations. Some of these dimensions apply to market performance while others deal with economy-wide performance.

These performance criteria beg the question of how to establish performance norms and measurements to be used to judge performance. This has been an area of intense debate in applied I-O research. The traditional approach has been to turn to price theory for norms and measurements of performance dimensions. So, for example, persistent above-average profits are often taken as an indication of misallocation of resources and as indicating monopoly power. So one performance norm for profit levels is that there should not be persistent above-normal profit levels (Sosnick, 1964). The next problem is actually to measure the profits.

Another important extension was emphasis on market coordination, via vertical coordination between different stages of production. Vertical coordination can be described as the sufficiency of the system of prices and other mechanisms as carriers of information and incentives and directors of the allocation of resources in a subsector (Marion et.al 1986). It can also be discussed as the ways of harmonizing the vertical stages of production and marketing (Mighel and Jones 1963). Poor coordination is sometimes prevalent in the food industry because of the scattered nature of participants and seasonality in production.

CRITICISM OF THE THEORY

One of the major criticisms of the SCP framework is that it restricts analysis to linking performance variables to structure and conduct, as laid out in neo-classical economic theory. Brandow commented that "the usefulness of inferences about performance obtained from studying the setting in which firms operate should not be built up to the point where knowledge of structrure and conduct is assumed to tell all one needs to know about performance. There are other determinants of performance, and most relationships between structure and conduct on the one hand and performance on the other have low predictive power. Improved understanding of the determinants of performance depends on having independent, not inferred, evaluation of performance."

We will use the SCP approach pragmatically, and so the performance dimensions we choose will be those related to food security. The subsector approach is particularly versatile because it allows us to reformulate the objectives and performance dimensions. In this context, the main performance objectives focus on the capacity of the subsector to reduce constraints to households' food security. From this, we derive performance dimensions. The selected ones are output level and stability of supply, profit levels, price level and stability.

A large portion of the marketing-related research undertaken in developing countries used the subsector approach, which is an extension of the S-C-P paradigm, as a tool in their studies. "Not all agricultural marketing studies in developing countries will follow a subsector format. Many of them will, and the subsector framework is a useful method of examining commodities marketing subsystems," (Holtzman, p.11). The University of

Michigan's Center for Research on Economic Development (CRED) has adapted the structure conduct and performance paradigm in its studies to analyze the performance of cereals markets in Burkina Faso (Sherman, Shapiro and Gilbert, 1986). Recently CRED carried out a millet and sorghum marketing study in Chad using the SCP paradigm (Herman, Fauba, and Yacoub, 1994). This thesis draws heavily on the later study.

MAIN RESEARCH QUESTIONS

How do the presence of administrative restrictions and illegal road barriers affect the efficiency and the performance of the millet and sorghum subsector?

In the course of undertaking research we compiled a list of both broad and specific research questions that we then attempted to address with our surveys and rapid reconnaissance trips. Many of these questions followed from our review of the literature, while others were added as we conducted field work. Still others came out of the series of roundtables that were held monthly to disseminate research results. These questions served to guide our ongoing research and to stimulate policy- and intervention-oriented discussion of the issues. Our file of policy-relevant research questions included:

- Is the structure of the market conducive to economic efficiency? How competitive is the market at different levels? Do traders compete or collude?

- How close are spatial marketing margins to transportation and marketing costs? Where margins exceed normal rates of return, what accounts for this? What role does

risk play in determining margins? Along which marketing axes do poor road conditions have the greatest impact?

- How close are temporal marketing margins to storage and marketing costs? How does local availability of storage affect temporal margins? Where margins exceed normal rates of return what accounts for this?

- What are the administrative constraints on internal trade? How widespread are local taxes or prohibitions on grain shipments? What effects do such policies have on prices? How can officials be convinced or induced to remove such constraints?

- How prevalent are extra-legal road barriers? What effects do they have on transportation and trade costs? What can be done to eliminate them?

- What institutions can help traders expand and improve their operations? Is lack of credit a constraint? Would the establishment of trader cooperatives improve trade or lead to increased collusion?

- Is there a conflict between national versus regional food security? Do restrictions on movements of cereals between regions improve local food security by encouraging the establishment of local stocks? Or do they disrupt flows and discourage production in potential surplus regions, limiting market integration and price

convergence, and create opportunities for selected traders to earn above normal profits?

- What impact does the National Cereals Office (ONC), a parastatal organization, currently have on cereals markets, storage, and food security? Does the ONC have the institutional capacity to play an effective role in cereals markets? Are there niches that the ONC can fill?

We will use the Structure, Conduct and Performance (SCP) framework to investigate these issues.

REVIEW OF THE LITERATURE

A number of surveys of cereals marketing in Chad have been undertaken by short-term consultants. Few reports are based on actual field work. Instead, much of what passes for analysis is speculative, hypothetical, or relies on a narrow base of observation. Even in cases where field research is carried out, it tends to be narrowly focussed (geographically and topically) and descriptive. Few systematic efforts to collect data for analysis have been undertaken. The exceptions stand out, such as Kent (1993), Guellar (1994), and Herman, Fauba, and Yacoub's work for CRED (1994).

The most impressive report dealing with administrative restrictions in the cereals market in Chad is that of Lawrence Kent, "The Adminstrative Restrictions to the Circulation of cereals in Chad, 1993." Kent found that the two types of restrictions consist of administrative bans or limits on the commercial movement of cereals out of a

given administrative unit (village, canton, sous-prefecture, etc.), and "exit taxes" or *taxes de sortie*.

From his rapid reconnaissance work, Kent found that these types of administrative restrictions are considered illegal by the central government, but local authorities believe that such restrictions are "good for food security". This belief is built on the idea that farmers sell most of their cereals right after harvest and purchase cereals during the hungry season, or soudure. These officials want to protect farmers from themselves. This belief, however, is based on a misconception. Local officials wish to retain cereals in their zones of influence so that food is not scarce and expensive during the hungry season. They do not understand the burden of the taxes that they impose are passed on almost entirely to farmers, which is likely to discourage production in the long run.

Kent concluded that the restrictions have negative consequences for cereal producers and traders. However, in work of this kind, the aim should be to find empirical data necessary to support some theory, then discussion with policy makers can be extended from empirical findings. However, Kent did not have empirical information on how these restrictions hurt traders and farmers; he was reasoning purely from theory.

In addition to the seminal work of Kent, a number of other primary and secondary sources are of special value to this study. In early 1994, an excellent institutional research work of Sheldon Guellar appeared but did not eclipse Kent's excellent point of departure. While focusing on millet and sorghum marketing issues, the political and institutional

analysis in Guellar's report has taken into consideration both broader systemic constraints and more narrowly focussed obstacles which hamper efforts to improve the efficiency of millet and sorghum marketing in Chad. Guellar emphasised administrative restrictions and road barriers. Although there were few studies and reports on cereals marketing in Chad, information on important aspects of how these constraints affect the marketing system have not been well researched and documented. These include marketing costs, including transportation, official and unofficial charges, and traders' net margins.

Useful, too, for the analysis presented here is the Millet and Sorghum Marketing Study in Chad (Herman, Fauba, and Yacoub, 1994), in which the marketing costs are described and analyzed. The results of this study were presented to the National Conference on Cereals in Chad in June, 1994. This two-day conference was held in N'Djaména to present the findings of the research to a wider audiance that could be reached with the simple publication of the project report, as well as to encourage discussion and solicit other points of view - a facet built into the MSMS research plan from the beginning through a series of successful roundtable discussions (initiated by Dr. John Staatz in November 1992) that took place as the research was being conducted.

However, the conference needs to be complemented by more opportunities for

researchers and policy makers to discuss and openly critique work, both completed and ongoing research.[3]

Among the best overviews of the contribution of markets to food security is Ouedraogo and Adoum (1992), which focusses on cereals activities as one of a diverse set of endeavors undertaken by both farmers and traders. Though the report overemphasizes the problem of food aid, the section on the private sector is one of the best available evaluations of traders and their strategies.

Détard's empirical work on trade and transportation in southern Chad reaches many of the same conclusions as Ouedraogo and Adoum. Based upon field work in the Soudanian zone, Détard presents theoretical arguments for why traders face a high level of risk. He then uses the results of his own surveys to show that this risk, high transportation costs, and the geographical segmentation of trucking routes are structural elements that impede fuller integration among cereals markets. One important aspect of risk identified by Détard is the thinness of rural markets and the high price variability there, which discourages traders from delivering cereals to those markets. Costs of bribes on the road are another important element of risk which discourages trade in general and leads to higher margins.

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[3] One of the early discoveries of the MSMS research was the enthusiastic response to our monthly informal roundtables at which research results were presented. These roundtables regularly drew up to fifty participants from as far as Moundou. The discussions were open and spirited, contributing to the development of our research focus and interpretation of results. One could say that researchers and government officials are starved for the opportunity to exchange ideas in an open and frank forum.

BIEP's 1990 effort to analyze prices and describe the marketing system is among the most complete. It presented a series of hypothetical margins for different routes over different years. Among its conclusions are the finding that gross marketing margins account for 60% of consumer prices for cereals in N'Djaména. Because the margins BIEP presented were hypothetical, a word of caution is necessary in considering its conclusion. Ngoidi claims that transportation costs account for between 30 and 45% of urban consumer prices.

Little empirical evidence is available regarding cross-border trade and cereals exports. In the most recent study, Caprio et al. (1994) identify the constraints to increasing agricultural exports as including high transportation costs, taxes and bureaucratic costs, lack of credit, and poor knowledge of external markets. Marketing channels for cereals exports are said to parallel those for peanuts. The authors note that the only consistent cross-border trade pattern occurs in the Mayo Kebbi, with millet and sorghum being exported through Cameroon and berbéré being imported. They maintain that potential for berbéré exports exists in Salamat and Mayo Kebbi.

Most other observers accept the observation of Harré et al. that regional cross-border trade in cereals doesn't follow any long-term pattern but tends to change with local production results. Since these authors assert that unofficial exports (fraud) represents between 50 and 90% of all cross-border trade in cereals, the conclusion is difficult to test. Gbipki (1988) reported that Cameroonian millet was smuggled into N'Djaména while Grasberg affirms that illegal cross-border trade is substantial.

An impressive array of documents focus is on the ONC and management of Chad's security stocks. These include: BIEP (1987), Valère-Gille (1990), CILSS (1991), Neils (1992), and Whitlock (1992). Of these, Neils gives the most comprehensive and analytical treatment of the subject, although much of the analysis is quite speculative. Neils' most relevant conclusion for Chad is that cereal banks are not an appropriate vehicle for emergency stock management. Valère-Gille advocates that ONC maintain a security fund to purchase stocks in the case of need rather than maintaining large physical stocks. The CILSS and Whitlock reports have little to contribute to the role of the ONC or security stocks in cereals markets. Several survey documents have much better descriptions and analyses of the national security stock and ONC issues, including Grasberg (1988) and Yumiseva (1990).

Arditi is one of the supporters of the ONC, while being critical of the way in which it has been used to distribute food aid. Grasberg (1988) advocated using the ONC for marginally profitable commercial operations which do not attract private traders.

CHAPTER THREE

CHADIAN CEREAL MARKETS AND MARKETING PARTICIPANTS

In this chapter we briefly introduce the organization of coarse grain production, consumption, and marketing in Chad. The rest of the chapter will focus on identifying and classifying cereal markets and their participants. This will be followed by description and analysis of the structural competitiveness of Chadian cereal markets based on the 1993/1994 survey. Later we will describe the way in which the structure influences the market behavior.

ORGANIZATION OF PRODUCTION AND CONSUMPTION

This section begins with a brief review of the patterns and trends of Chadian cereals production and consumption, from available data and secondary sources. We describe what is known about production, yields, technologies and production costs of Chadian cereals.

The three types of cereals studied (millet, sorghum, and berbéré) are locally grown, with millet mostly cultivated in the sahelian zone (e.g., Ouaddai, Batha, and Biltine). Sorghum is the most common cereal produced in the Moyen Chari, Mayo Kebbi, Guéra, and the 2 Logones. Berbéré dominates in Salamat and to a lesser extent in Chari-Baguirmi, Batha, and Mayo-Kebbi. All these cereals are grown in a "low-input" farming

system, mainly for subsistence. Farmers depend on rainfall with no utilization of fertilizers, leading to very low average yields per hectare: 373 kg for millet, 508 kg for sorghum, and 653 kg for berbéré (Herman, Fauba, and Yacoub, 1994).

Farmers are organized in families (an average of 7 persons per farm household) over small and scattered fields over large areas with poor transportation network to bring agricultural products to markets. The average cultivated area (three cereals) per farm household is 3 hectares in the sahelian zone and 1.54 hectares in the soudanian zone (Herman, Fauba, and Yacoub, 1994). The more densely populated south is associated with a diversified agriculture built around cotton (Herman, Fauba, and Yacoub, 1994). The proportion of production sold in the market is low and represents 17 percent of the total cereals produced in Chad (Herman, Fauba, and Yacoub, 1994), and the rest is consumed by the farm family. Local availability of supplies and equipment, lack of technology, poor transportation system, and riskiness of the market reduce incentives for Chadian farmers to become market oriented.

In general, production of millet, sorghum, and berbéré is characterized by a high degree of variability across both time and space. It is this variability that requires a great amount of flexibility from the marketing system, as regions of surplus and deficit change from year to year. Looking at the production patterns for millet, sorghum, and berbéré, from 1985 through 1994, the average annual production of millet, sorghum, and berbéré over the nine year period is 600,000 tons, almost evenly divided between sahelian (46%) and soudanian (54%) zones (DSA estimates). Production data for millet, sorghum, and berbéré are presented in table 3.1.

TABLE 3.1 INDEX OF ANNUAL PRODUCTION OF MILLET, SORGHUM, AND Berbéré BY PREFECTURE.

	1985-86	86-87	87-88	88-89	89-90	90-91	91-92	92-93	93-94	Average Production 9-Year (tons)	Coef of variation	Index Min [b]	Index Max [c]	Ratio Max/Min [d]	Year of good production	Year of bad production
Batha	166	75	65	159	123	30	114	111	57	30971	47%	30	166	5.6	1985-86	1990-91
Biltine	135	87	61	228	93	46	78	97	75	15161	54%	46	228	5	1988-89	1990-91
Chari-Baguirmi	56	88	63	112	65	77	162	195	83	76998	48%	56	195	3.5	1992-93	1985-86
Guéra	88	133	107	89	117	81	120	114	50	46358	25%	50	133	2.7	1986-87	1993-94
Kanem-Lac	149	26	29	259	26	32	55	237	87	20935	93%	26	259	10.1	1988-89	1986-87
Ouaddai	72	82	79	151	126	25	130	139	96	43644	40%	25	151	6.1	1988-89	1990-91
Salamat	67	24	41	87	92	98	220	127	145	40727	59%	24	220	9.3	1991-92	1986-87
Sahel Zone	**89**	**79**	**67**	**134**	**93**	**62**	**140**	**151**	**85**	**274794**	**33%**	**62**	**151**	**2.4**	**1992-93**	**1990-91**
Mayo-Kebbi	125	113	96	104	70	82	94	100	116	90996	17%	70	125	1.8	1985-86	1989-90
Tandjilé	144	141	109	122	44	99	50	130	61	42387	39%	44	144	3.3	1985-86	1989-90
Logone Occidental	134	105	83	102	90	111	64	144	67	30207	27%	64	144	2.2	1992-93	1991-92
Logone Oriental	115	116	105	99	69	115	62	120	98	70181	21%	62	120	1.9	1992-93	1991-92
Moyen Chari	124	111	101	92	86	112	95	98	82	92002	135	82	124	1.5	1985-86	1993-94
Soudanian Zone	**126**	**116**	**100**	**102**	**73**	**103**	**79**	**112**	**91**	**325773**	**17%**	**73**	**126**	**1.7**	**1985-86**	**1989-90**
National Total	**109**	**99**	**85**	**116**	**82**	**84**	**107**	**130**	**88**	**600567**	**17%**	**82**	**130**	**1.6**	**1992-93**	**1989-90**

[a] Production Index for each prefecture or zone. 100= Nine year average.
[b] Maximum annual Index for nine years.
[c] Minimum annual Index for nine years.
[d] Ratio of Maximum/Minimum index levels.
(Source: DSA/ONDR)

These averages mask the important variability observed year to year. Examining first national production, production ranges from 82% of average (491,246 tons in 1989-90) to 130% of average (778,175 tons in 1992-93), yielding a variability ratio (maximum divided by minimum) of 1.6. At the level of different zones of the country, variability is more pronounced. This high variability results from relatively poor soil, rainfall, nutrients, and pests.

For example, production in the soudanian zone averaged 325,773 tons, ranging from 73% of average (237,029 in 1989-90) to 126% of average (410,858 tons in 1985), yielding a variability index of 1.7. The sahelian zone displays even more striking variability, with production averaging 274,794 tons, but ranging from 62% of average (170,488 in 1990-91) to 151% of average (414,073 tons in 1992-93), with an index of variability of 2.4. However, in four out of nine years, the country experienced a shortfall, ranging from about 45,000 to 140,000 tons. "Computed surpluses[4]" range from 35,000 to an incredible 240,000 tons. This means that national production varies between 81% and 133% of national requirements.

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[4] In computing surpluses, we began with the combined production of millet, sorghum, berbéré, rice, maize, and wheat by prefecture. We then took the 1993 census figures for urban, rural, and nomadic populations by prefecture. Using the disaggregated growth rates reported in the census, we estimated stratified prefecture populations back to 1985 to match our production data. The estimates for per capita consumption are those used recently by the Ministry of Agriculture for its recent study of projected cereals consumption (Constans and Tamtangar, 1994). These estimates vary by prefecture and by population strata, ranging from 60 kilograms per capita for nomadic populations to 156 kilograms per capita for rural populations in Moyen-Chari. These consumption parameters were then applied to the population figures to generate estimates of cereals consumption by prefecture. Finally, these consumption estimates were subtracted from our production table to generate estimates of cereals balances (surpluses and deficits) by prefecture.

On the consumption side, little research has been undertaken on consumption of cereals at the household level in Chad. Estimates of national consumption are crude and based upon weak data. Most studies use standard per capita consumption figures developed by the FAO in 1965 (80 kg/cap for the Saharan zone, 135 kg/capita for the Sahel, and 150 kg/capita for the Soudanien zone. Almost none consider that consumption levels may vary substantially with production (and thus by imputed real income).

Even today, no estimates of coarse grain consumption are available. The estimates for per capita consumption are those used recently by the Ministry of Agriculture for its recent study of projected cereals consumption (Constans and Tamtangar, 1994). These estimates vary by prefecture and by population strata, ranging from 60 kilograms per capita for nomadic populations to 156 kilograms per capita for rural populations in Moyen-Chari.

Effective demand for marketed cereal is also variable. On the one hand, demand increases both with population growth and urbanization. On the other hand, erratic payment of civil servant salaries, late and declining payments to cotton producers, and a general weakening of purchasing power resulting from the 1994 CFA Franc devaluation have dampened demand. Salary arrears and a general lack of liquidity have led traders to sell increasingly on credit.

The supply and demand foundations of food security are not without their own serious problems. On the supply side, production is highly variable, both over time and

space, a factor which places even greater burdens on the marketing system. Yields for coarse grains are uniformly low, mainly as the result of a lack of improved production technologies available to farmers. And the commercialization rate for cereals is low, with very few farmers orienting their production strategies toward the market. On the demand side, food entitlements are regularly threatened in marginally productive regions like Biltine, Batha, and Kanem, and more occasionally in other parts of the country because of failed harvests. The erosion of purchasing power because of continuing economic problems reverberates throughout the economy, diminishing the capacity of consumers to effect demand in the market in order to secure needed quantities of food.

ORGANIZATION OF CEREAL MARKETS IN CHAD

The cereal marketing system in Chad is complex, as is the relationship among the markets.[5] Each type of market is frequented by several categories of participants who assume a variety of functions. It is a gross simplification to state that cereals enter the marketing system at collection markets, pass through redistribution markets, and then are sold in consumption markets. Similarly, the path from farmer to assembler to wholesaler to retailer to consumer is equally simplified. Cereals may enter and leave the marketing system at almost any point, and they may pass through the hands of one or several intermediaries. Figure 1 presents a simplified schematic of how the marketing system and its participants are most usefully conceived.

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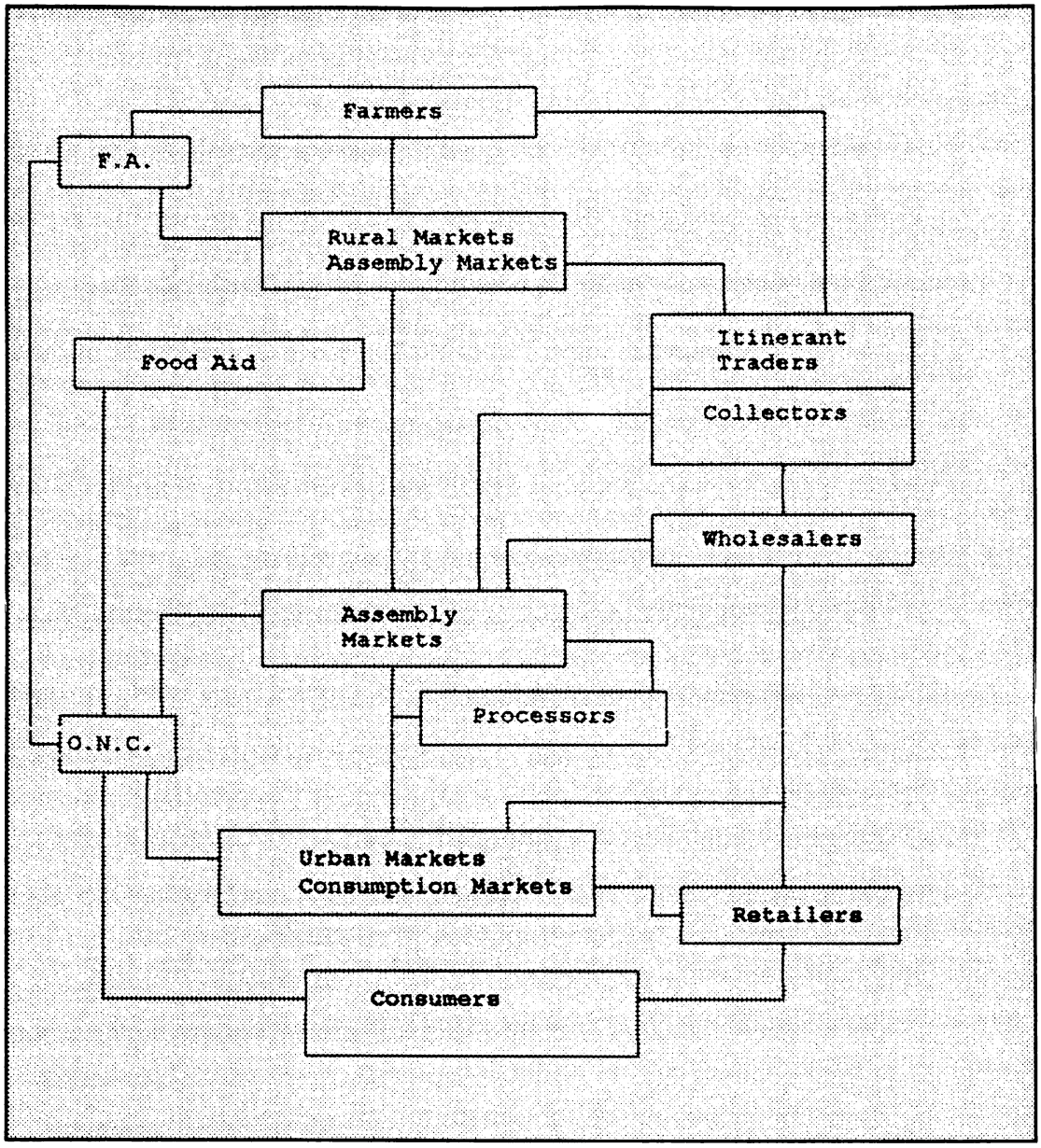
[5] Further analysis of the structure of the marketing system is presented in the section " Structure of the Wholesale Cereals Markets".

An typical flow might be described as follows: A farmer brings a small quantity of cereal to a local market and sells her grain to one of many assemblers in the market. This grain is placed in sacks and then transported to a larger regional market where the trader resells to a larger trader, more likely a man. This trader may assemble many sacks over the course of one or more market days, and then transport these to N'Djaména where he sells to a local wholesaler. The grain is then sold in sacks or smaller quantities to a retailer, or directly to a consumer. In such an example the cereal will have changed hands five times between farmer and consumer. However, this example while common, is hardly average or representative of the cereals' trade.

FIGURE 3.1: ORGANIZATION OF CEREALS MARKETS IN CHAD.



F.A= Farmers' Associations and Cooperatives.
O.N.C.= Marketing Board (Office National des Céréales).

CLASSIFICATION OF CEREALS MARKETS

In this section we are using the following attributes to clasify cereals markets in Chad: geographic location, frequency, and predominance of different cereals. Most markets, however have overlapping and multiple functions. Nonetheless, a reasonable selection and description of markets are necessary for any systematic description and analysis of the system. Similarly, identifying the different roles played by marketing agents is necessary to analyze market structure, conduct and the efficiency of the marketing system.

Location: Most important markets are located in the capital city of each prefecture and sous-prefecture (chef-lieu of prefecture and sous-prefecture). As one would expect, markets are more densely distributed in the more densely populated south.

Frequency: Most urban markets in Chad meet daily, while rural markets are weekly. In some locations markets meet daily and weekly, with more participation of nonresident traders in the weekly markets, e.g., Mongo in the Guera, Amtiman in the Salamat, Pala in the Mayo-Kebbi and Doba in Logone Oriental. Weekly markets usually attract traders and transporters from long distances. In most prefectures, a small daily market functions beside the more dynamic weekly market (e.g., Biltine, Bongor, Kelo and Fianga).

Predominance of cereals: Several rapid reconnaissance missions were carried out to generate baseline information on cropping patterns of millet, sorghum, and berbéré (which are harvested in different periods). Millet, red and white sorghum, and berbéré can be found in most urban markets, but in rural markets, one or two of the cereals dominate

sales. Since these are usually the cereals that are locally grown, in Sahelian markets millet dominates (e.g., Ouaddai, Batha, and Biltine). Sorghum is the most common cereal in the Moyen Chari, Mayo Kebbi, Guéra, and the 2 Logones. Berbéré is most common in Salamat and to a lesser extent in Chari-Baguirmi, Batha, and Mayo-Kebbi.

After we identified the role played by each market, and evaluated the importance of the market in the national framework, the following market types were developed according to their size and function:

By Size: Urban markets, principal markets, secondary markets, and small markets;

By Function: Assembly markets, redistribution markets, consumption markets, cross-border trade markets, and village markets.

Size Classification of Markets

The classification of markets by size is somewhat confusing and complex. The three criteria we used to classify markets by size are: a) the number of market agents active in a market; b) the quantity of cereal transacted in the market; and, c) the capacity of trucks that service the market. We used the reconnaissance survey and questionnaire on market conditions to differentiate among principal, secondary, and small markets according to the flow of cereal into or out of each market by truck. This analysis showed not only volume transacted but also the degree to which the markets attract agents from long distances. We further separated out those markets found in Chad's officially recognized communes because of their distinct character.

Urban Markets: These are defined on the basis that the cities are maintained and serviced by the communes. Our definition here led to interesting and complicated questions regarding the symbiotic relationship between urban government and urban market places, most especially the issue of financing these and other municipal services through taxes and fees collected in the market (AMTT Publication No. 47, January 1994). These are comprised of markets shown in Table 3.2.

Table 3.2. Urban Cereals Markets, 1993-1994

Préfecture	Market	Function
Chari- Baguirmi	Dembe (N'Djaména) Al-Afia (N'Djaména) Mil (N'Djaména)	Consumption Consumption Consumption
Logone- Occidental	Moundou	Consumption
Mayo-Kebbi	Pala Bongor	Consumption,Redist. Consumption,Redist.
Moyen-Chari	Sarh	Consumption,Redist.
Tandjile	Kelo	Consumption,Redist.
Ouaddai	Abéché	Consumption,Redist.

Source: Field surveys, 1993/1994

Abéché, Pala, Kelo, and Bongor have smaller populations, but they share the distinguishing characteristic of being official "communes". The absence of commune in a city is an impediment to include its market under this category, as these markets received no municipal or commune financing. The three markets, Dembe, Al-Afia and Mil are in N'Djaména. In N'Djaména, Moundou and Sarh the size of the urban population is large

enough to assure a high and regular level of activity in retail sales, and an inflow of cereals by and to wholesalers throughout the year. Even within this subgroup, N'Djaména dominates the other two in terms of volume of retail sales. In N'Djaména there are three separate markets in which large quantities of cereal are traded, with the greatest activity taking place in the marché de mil (most of the wholesale trade) and marché Al-Afia. Each of these urban centers is a major center for wholesalers, and there is a large number of retailers.

Principal Markets: These usually are markets of capital cities with no "Communes" to maintain and service markets. They regularly attract large numbers of traders (in many cases over 100 traders) from long distances, usually serviced by both large (20-40 ton) and medium-size trucks (7-12 ton). We have identified 25 such markets (having excluded urban markets) in seven prefectures, twenty of which were incorporated into our surveys or rapid reconnaissance (see Table 3.3). The most important of these include: Amtiman, Bokoro, Mongo, Doba, Bodo, Ngama, Fianga, and Pont Carol. Though most of these markets are home to some major traders, this is not always the case, notably in Pont Carol, Bodo, and Ngama. Most principal markets are found on main truck roads. Wholesale sales, usually in sack quantity, are an important part of these markets. Most principal markets meet weekly, with daily activity on a much smaller scale. Most of these markets serve the function of redistribution markets (meaning that sales between traders predominate), though several are more typically assembly markets. Several are also classified as consumption markets because of the importance of retail sales to local consumers.

Table 3.3. Main Cereals Markets in Chad, 1993-1994

Prefecture	Market	Function
Chari-Baguirmi	Bokoro	Redistribution
	Bousso	Redistribution
	Massakory	Redistribution
	Ngama	Redistribution
Guera	Bitkine	Redistr/Collection
	Melfi	Redistribution
	Mongo	Redistr./Collection
Logone-Occidental	Benoye	Redistr./Collection
	Doher	Assembly
Logone Oriental	Bodo	Assembly
	Doba	Redistri./collection
Mayo-Kebbi	Lere	Redistribution
	Pont-Carol	Redistribution
	Fianga	Redistri./Collection
Moyen Chari	Koumra	Redistr./Collection
	Danamadji	Redistr./Collection
	Moissala	Redistr./Collection
	Kyabe	Redistri./Collection
Salamat	Amtiman	Redistribution
	Aboudeia	Redistribution

Source: Field Survey, 1993-1994

Secondary Markets: These markets usually surround and serve principal markets, most often playing the role of assembling cereals for transport onward. They attract modest numbers of traders (20-50), most of whom are locally based. They are usually served by medium or small size trucks (7 tons or smaller). In such markets, small-unit sales in coros[6] usually predominate. We have identified 85 secondary markets in our reconnaissance survey, though throughout Chad there are many more. Our surveys covered 34 of these markets. Most secondary markets are located between 50 and 70 km on average from

[6] Local unit of measurement; one coro is equal 2.5 kilograms on average.

their principal markets. Most secondary markets meet weekly and serve the function of assembly markets (meaning that sales between farmers and small traders or assemblers predominate). Several are also described as typical thin markets because of the small size in terms of supply and demand, and the dominant retail sales to local consumers.

Functional Classification of Markets

Even though classifying markets by size is useful for identifying the volume of cereals likely to be flowing through any market, functional distinctions are most important for understanding the operation of the cereals marketing system. However, there is an imperfect correspondence between size and function.

Each of the following prominent roles served to broadly distinguish markets:

a) bulking and assembling, where most of the sellers are farmers or small traders;

b) moving cereals to consumption centers, where transactions are between traders;

c) debulking, where most sales are to ultimate consumers.

Though these distinctions are too simple, many markets serve multiple roles at once or different roles during different periods of the year. Further, we also define two specialized subcategories of markets that we believe are distinct enough to merit a separate classification.

Assembly Markets: These are weekly markets, mostly located in small administrative cities or villages. Sellers are mainly local farmers and occasionally local traders, but buyers

are mostly traders who move cereal on to other markets. Most initial sales are in small units, and bulking operations take place after. Such markets attract regional and even long-distance traders. During our field surveys we identified 160 markets that we characterized as assembly markets, and we conducted surveys in 47 of these. Though there are probably several hundred assembly markets throughout the country, some of these may be quite large. Examples of large and important assembly markets include Birtawil in Abéché, Koundjourou in Batha, Doher in Logone Occidental, Bodo in Logone Oriental, Gamba in Mayo-Kebbi, and Danamadji in Moyen Chari.

Redistribution Markets: These are often the immediate destination for cereals purchased in assembly markets. Redistribution markets are mainly located in large and medium-size towns. Transactions often take place between traders, and substantial quantities of cereal are moved on to other markets. Sack sales between traders are also common. Redistribution markets are usually an operating base for major traders with storage facilities. Cereals flow out to consumption or other redistribution markets. Since many of these markets are found in towns, they often have an important retail sales component that gives them some characteristics of consumption markets. Each prefecture has at least one important redistribution market. We have identified 40 markets of this type, of which half were also classified as consumption markets. Surveys and rapid reconnaissance were conducted in 31 of these markets. The range of size of redistribution markets is indicated by the fact that six were classified as urban markets, 15 as principal markets, 12 as

secondary markets, and even one as a small market (Khachkhacha in the Salamat prefecture).

Consumption Markets: These are characterized by the absence of collectors and the predominance of consumers as buyers. Though these are usually thought of as urban markets, some smaller towns and even villages also have markets where most sales are to local consumers and which can be thought of as endpoints in the marketing chain. The largest consumption markets coincide with "urban" markets defined earlier. However, most "chef-lieu" of sous-prefectures also display the characteristic of consumption markets since cereals tend to flow into but not out of these centers. As noted above, many markets have overlapping characteristics of redistribution and consumption. Only eight of the 29 markets that we identified as consumption markets did not also qualify as redistribution markets. Our survey and rapid reconnaissance covered 20 of these markets.

Besides the three main functional categories, we also identified two more specialized types of markets, village and cross-border-trade markets. Village markets are more common, but cross-border trade markets are rare.

Village Markets: These are differentiated from assembly markets by their thinness, the absence of regional traders, and the predominance of trade between farmers and local residents. All sales are on a very small scale. Though these markets are common, they are not necessarily tightly integrated into the national marketing system. Only forty-seven of

the 256 markets identified fell into this category. Ten of these markets were included in our surveys.

Cross-Border Trade Markets: These are usually located close to international borders where sales to exporters or purchases from importers play an important role. They are a specialized form of redistribution market. Because of the paucity of cross-border trade in cereals, these markets tend not to be large or very common. In fact, the only market that we have identified that can consistently be called a cross-border trade market is Fianga in the Mayo-Kebbi, a point for imports of berbéré from Cameroon. Daha in Salamat is occasionally an export market for berbéré moving to the Central Africa Republic.

CLASSIFICATION OF CEREALS MARKET PARTICIPANTS

In this section, we describe market participants according to function, size of operation, geographic range of activities, and economic characteristics. Although our description will focus on functional characteristics, roles often overlap, distinctions are sometimes confusing, and individuals frequently operate in multiple domains. However, we will use the following criteria to differentiate the principal roles played by market participants:

a) traders who specialize in bulking and assembling cereal from farmers or from other small traders;

b) those who move cereals to major consumption centers, engage in storage, and generally sell to other traders;

c) traders who specialize in retail sales to consumers.

As with markets, any definitions of traders must be considered indicative, since participants undertake overlapping and even changing roles. Moreover, very few participants engage in cereal trade exclusively. Most traders readily deal in other agricultural products, and a few in non-agricultural products.

Primary Categories

Wholesalers: The exact definition of a wholesaler is a subjective judgement. The operational definition that we adopted concerns the units in which cereals traders deal. In our definition, we are calling a "wholesaler" anybody who deals only in units of 100 kilogram sacks. Traders dealing in smaller units of measure are classified as retailers. This distinction is somewhat arbitrary, since there is a big difference between wholesalers who trade in quantities of less than a ton and the large wholesalers who deal more customarily with 10 ton transactions.

Wholesalers are traders who deal in large quantities annually, greater than 100 tons. Such traders usually deal in sacks and most are based in major consumption centers. In a few cases (E.g., Amtiman, Ati, Bokoro), wholesalers are based in redistribution centers. They usually employ others to bulk (collectors) and debulk. Thus, they may operate in a variety of markets without leaving their base of operation. They often own or rent trucks to transport cereals, and may offer credit to other traders, thus manifesting considerable vertical integration in their operations. These traders also have the experience, knowledge about formal contracts, and the financial means to bid for ONC contracts.

Semi-Wholesalers: These are stationary merchants who sell in sack quantities with annual volumes of less than 100 tons. Such merchants most often purchase from itinerant traders or from wholesalers. They tend to be based in consumption or redistribution markets. Usually operating with little capital, these traders sometimes arrange to obtain credit (usually in-kind) from wholesalers.

Itinerant Traders (Commercants Navettes): This category of traders specializes in assembling and bulking in most regional markets. These are mobile merchants who work for themselves, as compared to assembly traders. Itinerant traders purchase cereals in collection markets and resell in redistribution or consumption markets. Their base of operations is usually a redistribution or consumption market. Most operate on a moderate scale, handling less than 100 tons annually. Itinerant traders usually follow a regular circuit of weekly markets, renting places in trucks to transport themselves and their goods. They may either buy in small quantities and bulk to sack quantities or buy directly in sacks.

Collectors: These are mobile agents who work for wholesalers or semi-wholesalers. In most other respects they resemble itinerant traders. Agents' collectors earn commissions, usually based on number of sacks bought. As agents they often operate on a larger scale than itinerants traders. Many of these traders play double roles as collectors and itinerant traders.

Retailers: These are stationary merchants who sell in small quantities. They are mainly found in consumption markets and purchase stocks from itinerants traders or wholesalers. Most operate with little capital, sometimes borrowing from wholesalers.

Farmers: These are cereal producers who sell to assemblers at the farm gate, in village or in collection markets, and to other farmers. They also engage in small trade in cereal themselves, buying and selling small quantities in local markets. Their role in rural retail sales and in bulking for itinerant traders is often important.

Secondary Categories

Besides the primary categories of traders described above, we have identified the following varieties of market participants that are less common and whose activities are somewhat less central to the operation of cereals' markets.

Arbitragers: These are traders who engage in inter-temporal arbitrage or speculation. They tend to buy from and sell to producers, "lending" cereal during the "lean season" and being repaid in-kind following harvest. Though much discussed in the literature, they are relatively uncommon.

Trucker/Traders: These are truckers who also engage in grain trade on the side. They will commonly purchase sacks of grain (or other commodities) when they find themselves with excess space in their trucks.

Selling Agents: Like their "collector" counterparts, these agents work for wholesalers, debulking in consumption markets, and earning commissions. When wholesalers have

difficulties disposing of their stocks locally, they sometimes entrust stocks to the "agents vendeurs" who then travel to other markets in search of clients.

Courtiers (Intermediaries): These are intermediaries or brokers who try to arrange deals, most often between wholesalers but also between producers and itinerant traders. Courtiers may act on behalf of either buyer or seller, but they are neither a required nor a common element in most markets.

Dockers/Commerçants (Loader/Traders): Dockers are workmen who load and unload trucks. They occasionally engage in small trade. When they travel to assembly markets to load trucks, they buy mostly less than five sacks and sell in the distribution or consumption markets. They often do not pay transport fees when they transport between two (Sarh-Danamadji) to five sacks (Abéché-Birtawil).

Other Market Agents

The private-sector agents described above play the dominant role in Chad's cereals markets. However, a variety of cooperative, public-sector, and international organizations also intervene. Their impact is discussed in next section on "Market Structure," but their activities are briefly sketched here.

Groupements, Associations, and Cooperatives: These operate at several levels in Chad. Both farmers and traders organize for purposes improving some aspect of their economic activities. Farmers typically organize around storage and joint marketing activities, usually under the framing and supervision of an NGO. Traders' organizations may also be motivated by storage or transportation needs, but they are more likely also to

promote their interests through lobbying. The volume of cereals marketed by these groups is still a small share of total cereals traded.

Non-Government Organizations: A variety of NGOs are involved in cereals marketing activities at two levels. Some promote village-level storage activities, often providing funds or grain for the provision of initial stocks. Others are directly involved in food aid distribution.

Public Sector Organizations: The most important of these is the Office National de Céréales (ONC). Originally established along the lines of other African grain marketing parastatals (OPAM in Mali, OPVN in Niger), the ONC has since abandoned the goals of direct price controls or indirect price stabilization through its own commercial activities. Instead, it now focuses on two main goals: managing the national security stock of between 16 and 20 thousand tons, and distributing food aid.

STRUCTURE OF THE WHOLESALE CEREALS MARKETS

The purpose of this section is to describe and analyze the competitiveness of Chadian cereal markets. We use the structure-conduct-performance (SCP), the classical market organization paradigm, as our fundamental framework for analysis. The principle of this approach is that competitive and structured market should have large number of participants, low level of concentrations of buyers and sellers, low barriers to entry, and some types of vertical coordination between production stages in the subsector. It should also have competitive conduct, with indications of absence of collusion and predatory

behavior. According to the SCP Model, competitive market structure with competitive conduct will generally yield desirable market performance (efficient allocation of resources, low profit levels).

In the literature, competitiveness of the marketing system is often called into question. Frequent accusations are made that Chadian cereals markets show are disorganized and that traders enjoy monopoly power, manipulating price to the disadvantage of both farmers and consumers. For example, the "Consultation Sectorielle" (GDT/MAE and MPC, 1993) which represents official government thinking, emphasizes what its authors call a lack of organization of the cereals marketing system that they claim perpetuates food insecurity. Grasberg writes about the permanent conflict of interest between producers and traders and alleges that N'Djaména traders have considerable market power. BIEP (1990) advances the argument that farmers face dissolute traders who fix prices in villages while farmers are unaware of local market conditions.

In the next chapter we deal with the performance questions, via marketing costs and price spreads, while in this section our focus is to answer the following question: Do structural conditions exist that would allow traders to use market power? In general, we conclude that market structure is competitive. Occasionally traders are in positions of market power, not for very long, and their market position is often challenged. Low barriers to entry predominate, except some institutional barriers resulting from administrative restrictions to the circulation of cereals from areas of high supply to areas

of high demand, road barriers, and minimum bid requirements of ONC. In their report, Herman, Fauba, and Yacoub, 1994, concluded that cereals markets in Chad suffer from several market imperfections, but lack of competition is not one of them.

In this section we use our empirical results to discuss the structure of the Chadian wholesale cereals market and the behavior of wholesalers. Our specific objectives are:

a) to evaluate the effective competition by measuring the number of participants and concentration ratios at the wholesale level;

b) to identify and evaluate barriers to entry at the wholesale level;

c) to describe vertical integration by different market participants;

d) to describe the market behavior of market participants concerning possible anti-competitive behavior.

We used both rapid reconnaissance and formal survey interviews to evaluate market structure. We also exploited the questionnaires on traders and transporters to identify key characteristics for over 150 wholesalers and more than 400 transporters. Enumerators recorded market activities during almost 700 market days covering 47 separate markets, using the survey instrument on market conditions. A separate questionnaire on trader finance was administered to almost 50 traders.

Interviews and market surveys took place in collection, redistribution, and consumption markets. Often markets were visited weekly over a six-month period. Enumerators had a goal of interviewing on average two traders and one transporter each market day, besides completing the market information sheet.

MARKET CONCENTRATION AND COMPETITION

Measuring the level of market concentration in the wholesale cereal's trade in Chad may allow testing the existence of market leaders and barriers to entry. Few systematic studies of market structure have been done in Chad, with some anectodal reporting of localized cartels of wholesalers. The limitation of data has not prevented some observers from alleging that traders can behave as price makers and impose lower prices on farmers that are not related to underlying supply and demand levels[7].

The following section examines the data collected from our field surveys on the number of traders and the volume of flows they handle to test the hypothesis that: "Traders do not enjoy a degree of market power that would interfere with open competition."

The data presented here are based on samples that range from 33 to 87 percent of the population of wholesalers in the four main cities. The wholesalers were asked to estimate the monthly volume of their purchases at the time of the interviews (from January to June 1993). This information has been used in Table 3.4 to calculate total market volumes by multiplying the sample mean of the monthly reported volumes by the total number of wholesalers in the market. The estimated share of the largest trader in the sample is reported in Table 3.4 as is the estimated market share of the four wholesalers.

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[7] See for example, Yerlobé (1989).

Table 3.4: Estimated Concentration ratios for N'Djaména, Abéché, Amtiman, and Moundou wholesale cereals trade in 1993.

	N'Djaména	Abéché	Amtiman	Moundou
Population Wholesalers	80	20	40	50
Sample Wholesalers	20	17	26	8
Sample as % of the population	25%	85%	65%	16%
Total estimated volume marketed (tons) over 6-months (Jan-June)	107.3	47.5	395	78.4
CR1	13%	42%	10%	5%
CR4	17%	57%	30%	14%
CR1[a]		12%		
CR4[b]		45%		

[a] The market share of the largest wholesaler, without ONC intervention in the cereals market.
[b] The market share of the four largest wholesalers, without ONC intervention in the cereals market.

Source: Traders' questionnaire, field survey, 1993.

The results show that the high degrees of concentration for the single largest trader is in Abéché, where he accounts for about forty-two percent of the total market. Other ratios hover in the 10 percent range. Looking at the market share of the four largest traders, apparently Abéché has the highest concentration ratio, as together the largest four wholesalers have a 57 percent market share. The concentration ratio at level four for Abéché is probably caused by the fact that the whole market includes those wholesalers

selling to ONC. On the selling side, that may not reflect market power. Since the largest trader sells only to ONC, his market power are not felt in other sales areas, such as to retailers. On the buying side, the largest wholesaler is buying 42% of supplies, but since he is getting supplies from local and other markets where non-residents wholesalers are present to buy and sell, that would not have an effect on the buying side. In the rare instances we encountered where a wholesaler buying for ONC have tried to exercise market power, there has always been a sufficient number of actors in the market to frustrate these attempts. The most flagrant example of this was witnessed in Am-Habilé (Salamat) in Spring 1993 when the largest wholesaler in Am-timan (the same one who accounts for the 10 percent market share in Table 3.4) ordered his collection agents to buy at a price that was five FCFA/coro under the going market price. Although this wholesaler was by far the largest single buyer in the market on this day, there were sufficient numbers of smaller wholesalers and independent commerçants navettes who were willing to purchase at the higher price so that, even by the end of the market day, prices did not come down to the level he had set. Finally, at the end of the day he authorized his agents to buy at the going price, but was unable to amass the types of quantities that he had hoped to procure due to the closure of the market. In interviewing this same wholesaler later, he acknowledged the futility of his actions.

However, without the implication of ONC, the estimated largest share of the first wholesaler is twelve percent, and that of the four largest traders is fouty-five percent. The concentration ratio at the CR4 level for Amtiman is probably caused by the fact that three of these tend to be vertically integrated. First, three out of the four wholesalers above

possess at least one truck that they use to transport their own cereals to other markets. Second, all four sell empty sacks, and own storage facilities. They have selling agents (often their relatives) in other markets to debulk and sell their cereals. They also use their trucks to provide farmers with sugar, tea, etc. in assembly markets. Third, they have large amount of capital and often bid to supply ONC, benefiting from their economies of scale. But these are not indications of market power.

These ratios may indicate that, particularly in Abéché, there may be some evidence that the largest wholesalers do, at least, have the potential to influence prices. In other urban centers, it is less clear that markets shares are such that any trader can benefit from a predominant position to exert an influence on market prices.

However, before too much is concluded from the concentration ratios presented above, a word of caution is necessary. Table 3.4 considers only those wholesalers that have their operations headquartered in Abéché. That is not the case for the three other cities. At the time of the survey, outside or non-resident traders (Abéché) had been discouraged by insecurity in the Ouaddai region from operating in Abéché's market. In most cereals markets in Chad, there is a constant flow[8] of cereals moving through most urban areas, much of it directed by wholesalers who have agents in many different areas who track price movements and will call in or telegraph the wholesalers when prices in one area are such that it is advantageous for them to buy or sell. The ability of any local wholesalers to influence prices in any given geographic area is, thus, severely constrained

[8] For the analysis of flows see "Marketing Patterns and Flows" by Herman, Fauba, and Yacoub, 1994.

by the existence of some spatially integrated[9] cereals trading networks that link major markets all across the country.

Our results in table 3.5 showed that many nonresidents wholesalers are making sales or purchases in the four major cities from table 3.4. In all locations except Abéché, outside wholesalers constitute a significant portion of market participants on both the selling and buying sides. Although these results do not definitively exclude the possibility that some local wholesalers may still enjoy some market power, since many outsiders still buy and sell from the same local wholesalers, they do show that in most major urban areas, there are substantial numbers of mobile wholesalers who purchase and sell in sack quantities. This creates competition for local wholesalers and limits their ability to engage in oligopolistic behavior.

Another lesson to be drawn from our reconnaissance survey is the clear existence of differing patterns of wholesaler activity by region. During the survey period in the first half 1993, Am-timan was a magnet for cereals wholesale buyers, as shown by the large numbers of outsiders reporting purchases. On the other hand, there were relatively few outside sellers. This concurs with the data presented in the flow chapter by Herman, Fauba, and Yacoub, 1994, saying that Am-timan (in the Salamat Prefecture) is the source for much of the cereals entering N'Djaména. In contrast, the paucity of outside buyers in N'Djaména stands in stark opposition to the many sellers, showing the capital's role as the main consumption market and final point for much of the country's cereals flows. The

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[9] Yacoub, Fauba, and Staatz, working paper No. 01/92; Gockowski, 1993; Herman, Fauba, and Yacoub, 1994.

function of the N'Djaména market as the endpoint in the cereals trade and the relative importance of wholesalers from outside N'Djaména in supplying it with cereals is highlighted in Herman, Fauba, and Yacoub, 1994: "94 percent of the wholesalers interviewed reported making sales in N'Djaména, while only 13 percent of the sample (155) was drawn from N'Djaména-based wholesalers. Moundou and Sarh also appear to be major consumption centers that attract large numbers of outside wholesale sellers, while having less active buying markets."

Except Am-timan, none of the urban centers in Table 3.5 appears to attract large numbers of nonresident wholesale buyers--in fact the survey did not turn up any in Moundou or Abéché. Most likely this reflects what is well known to most cereals trade participants--that the most intense wholesale buying and collecting activity occur in the rural collection markets.

Table 3.5: Sampled Wholesalers Who Report Making Sales or Purchases in the Four Major Cities, 1993-1994.

Main's markets	Nonresident Wholesalers Who Purchase	Nonresident Wholesalers Who Sell
N'Djaména	18	125
Abéché	0	14
Moundou	0	31
Amtiman	32	4
Sarh	14	43

Source: Condition de Marché, field surveys

Table 3.6 shows that some larger collection markets in the most productive regions attract more wholesale buyers than the regional redistribution markets to which they are attached.

3.6. Activities of Sample Wholesalers in Collection and Redistribution Markets, 1993.

Prefectures and Markets	Traveling Wholesalers	Resident Wholesalers
Chari-Baguirmi		
Bokoro	13	2
Bousso	6	1
Massaguet	8	5
Ouaddai		
Birtawil	24	0
Salamat		
Amdjalat	8	1
Amhabile	14	6
Logone Oriental		
Bodo	15	1
Mayo-Kebbi		
Fianga	8	1
Pont-Carol	8	1
Moyen-Chari		
Bedigri	12	2
Danamadji	3	1

Source: Condition de marché, field survey, 1993/94

Such major rural markets as Birtawil in the Ouaddai, Am-Habilé in the Salamat, Bokoro in the Chari-Baguirmi, Bedigri in the Moyen-Chari, and Bodo in the Logone Oriental attract wholesalers from several redistribution markets. Again, except Massaguet's markets in the Chari-Baguirmi within about 80 kilometers of N'Djaména and Am-Habilé in

the Salamat, which each has five to six resident wholesalers in the sample, the one to two local wholesalers that are residents in the collection markets are usually vastly outnumbered by traveling wholesalers. It is hard to believe, therefore, that the resident wholesalers can influence any control on prices by acting on their own.

These figures on the numbers of wholesalers that are active in various rural markets paint a quite different picture than the one found in many accounts of cereals markets in Chad, according to which local traders can fix low prices independently of market conditions in the post-harvest period and inflate prices during the hungry season. Since rural markets are full of traders from many different areas, locally based cereals merchants could not affect prices without attracting scores of mobile wholesalers who can be counted on to descend on any market where prices are particularly advantageous. However, even in markets where there are not many competing wholesalers purchasing in multiple sack quantities, rural markets are full of smaller traders who compete for lesser quantities.

BARRIERS TO ENTRY

The existence of barriers to entry are another factor potentially contributing to imperfect competition in the cereals market. Such barriers may also retard the growth of cereals market. Barriers to entry refer to any conditions or constraints that provide current market operators an advantage over potential entrants (Marion, 1986).

Several related sources of barriers to entry are recognized in economic theory including: economies of scale, absolute cost advantage, minimum capital requirements, government restrictions and licenses, scarcity of primary resources, product differentiation, and strategic behavior by existing firms to impede new entry.

This section examines some barriers to entry that we have identified during our surveys, and may be operative in the Chadian cereals trade at the wholesale level. We have identified several sources of potential barriers to entry about cereals marketing, including administrative restrictions, road barriers, lack of capital, limited transportation capacity, market information inadequacies, and the existence of constraints related to ethnic or social group affiliation.

Administrative Restrictions

The existence of administrative restrictions is a barrier to entry to the wholesale cereals trade. They give special market preference to traders who enjoy favored relations with administrative authorities who impose "exit taxes," "exit authorizations" and other restrictions on the free circulation of cereals. Assessing the degree to which market success depends on good relations with the authorities is not an easy task, since, by their very nature, both parties have an incentive to keep secret any "exemptions" from prevailing administrative restrictions.

However, evidence collected during our field surveys shows that some merchants may indeed derive some benefit from privileged relationships with local authorities, making it

difficult for others to break into the market. In one case recorded in Am-timan, it became obvious that the largest resident wholesaler was consistently able rapidly to obtain an "exit authorization" from the Prefet's office for shipping grain to N'Djaména so that he could load his two trucks and send them out in only one day. In contrast, it usually took most other wholesalers and traders several days to obtain the required papers even when they freely paid the required fees. Without significant field work, it is impossible to tell if such isolated cases of favoritism really represent persistent patterns that lead to pervasive distortions in the competitive environment--in which case they would indeed constitute a serious barrier to entry.

Road Barriers

Road barriers are another impediment to the free entry into the wholesale cereals trade in Chad. Illegal barriers and checkpoints along roads and at the entrance to most cities are operated by a variety of official government services. All trucks and most cars are subject to frequent interruptions of their journey, entailing delays and financial costs including unauthorized charges. Again, some traders enjoy favored relations with the security forces who manage most road barriers.

Such barriers increase marketing costs and reduce the efficiency of the transportation and marketing systems. They delay delivery of agricultural commodities, discourage new entrants as well as current traders and truckers because of their intimidating nature, and have the potential to disrupt markets. Thus, they act as a barrier to entry and inhibit trader flexibility, rewarding those traders who "know how to go along" rather than those who

know market conditions. Therefore, they retard investment in the transportation sector. Further, they greatly affect production for market because they reinforce a widespread perception that formal trade is somehow suspect. Overall, road barriers impede the development of a positive climate for agricultural marketing. (The impact of these barriers is analyzed in detail in chapter 5.).

Capital Constraint

Lack of capital is often identified in the literature as a constraint to expansion of trading and storage activities in Chad. There is no doubt that capital is a scarce commodity in Chad. The cost of capital in rural areas show annual interest rates exceeding one hundred percent. The existence of a barrier to entry due to lack of access to capital is, thus, a credible hypothesis.

The limited capital is most likely to pose the biggest barrier to entry at those levels of the cereals trade that require large sums of working capital--mainly the upper level of the wholesale trade. Larger wholesalers can easily buy and stock over 100 tons of cereals per month. Much of this is done through advancing money to collection agents. Thus, at 140,000 CFAF per ton for millet in N'Djaména, larger wholesalers can easily have at least 14 million CFAF (US $56,000) tied-up in inventory. On top of these large amounts of working capital are capital required to offer sales on credit, finance purchases and pay storage and transportation. Thus, even without owning a truck, these large wholesalers may have as much as 20 to 30 million CFAF in total working capital needs. Owning a truck can cause this amount to double.

Obviously, very few people in Chad obtain with the required sums to operate at this level. Without a functioning capital market, little financing of this type is available. Informal sources of finance may contribute up to five or 10 million CFAF, but even financing at this level requires special family connections and depends more on a person's social/ethnic profile than on his business plan. NGOs such as VITA also occasionally furnish loans at this level, but these are always repayable within a year and are not really appropriate as sources of longer-term financing. Furthermore, the number of loans offered by such projects is quite small. (Only three cereals trader interviewed during our field research reported receiving VITA loans.)

The lack of financing at this level is also clear from interviews with successful large wholesalers. The personal histories of these individuals show that, usually, they amass sufficient capital to function at this level in one of three ways:

--they often inherit it as a family business or are financed themselves by family members who are already in the wholesale cereals trade;

--they often use funds from other areas of business activity in which they are well established to engage in large volumes of cereals trade (a large number of the largest wholesalers are also traders in other goods besides cereals); and

--they have slowly amassed sufficient capital and reinvested their earnings at lower levels of the cereals trade.

As these histories indicate, capital is not freely available to market participants wishing to enter the cereals trade at this highest level. Thus, at least for the larger wholesalers, a lack of capital may constitute a significant barrier to entry.

At levels beneath this, where wholesalers deal in hundreds of sacks per month rather than in thousands, capital is still scarce, but it is unclear how much this operates as a real constraint on entry to the market. Operating a medium-sized wholesale trade requires around five million CFAF (US$ 20,000) in working capital--a level that many more people can reach by calling on family members and their own resources. Still, even at this lower level, capital is not plentiful.

Often traders are reluctant to speak about their use of credit. A short survey of 13 cereals traders in N'Djaména and the other urban centers revealed that almost half reported benefitting from cash loans--most from informal sector sources. The average loan amount reported was 400,000 CFAF--about enough to buy 30 to 50 sacks in a rural market.[10] Most of these loans are passed back and forth between traders who know each other and can be sure of being paid back. This may make it less likely that an outsider, without any experience in the cereals trade, could benefit from such a loan. In general, however, loans of this amount can be obtained with a little searching in the informal sector financial market. Thus, it appears that a lack of capital is not a major barrier to entry at the smaller levels of wholesale trade and below.

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[10] These figures on the sizes of loans received by cereals traders also broadly concur with the figures collected by Andy Cook in his study of informal finance in Chad and Niger.

Ethnic Identity

Although making generalizations about the ethnic makeup of people engaged in the cereals trade is hard to do, at least at the wholesale level, there is a tendency for people from the Northern ethnic groups to predominate. Although the ethnic composition of the wholesalers we surveyed cannot be considered representative of the whole population, because of its nonrandom nature and limited geographic coverage, the breakdowns presented in Table 3.7 do seem to indicate a relative over-representation of Northern groups. This confirms the general notion of most market participants that the major wholesale trade is largely dominated by people from the North.

Ethnic identity in itself does not indicate that there are any persistent barriers to entries that necessarily bar the way to potential wholesalers from under-represented groups. However, as is clear from the tendency of cereals trade market participants to favor family sources of funding, there are many reasons showing some linkage between ethnicity and participation in the cereals wholesale trade:

a) the general absence of a reliable formal legal system in Chad means that traditional forms of guarantees continue to play a very important role in creating the necessary climate of trust that is vital in a system where many transactions are done on a credit basis. Most of these traditional guarantees rely on a web of shared values and personal connections that is inevitably intertwined with ethnic links. It is instructive to note that, at the larger wholesale levels, transactions of extremely large volumes take place with no written contracts--mainly because the

parties share a similar background that inspires the creation of a climate of mutual trust.

Table 3.7: Ethnic Composition of Wholesalers

Ethnic Group	Sample	Sample Percent (North)	Ethnic Group	Sample	Sample Percent (South)
Arab	45	30.0	Ngambaye	18	12.0
Bornou	6	4.0	Goulaye	1	0.6
Boulala	14	9.3	Lele	1	0.6
Dadjo	3	2.0	Marba	1	0.6
Foulbe	9	6.0	Masmadje	1	0.6
Hawssah	3	2.0	Mbaye	1	0.6
Maba	21	14.0	Mesme	1	0.6
Moubi	1	0.6	Mongoh	2	1.3
Zakhawa	3	2.0	Moundang	1	0.6
Guizga	1	0.6	Ngaman	1	0.6
Mimi	2	1.3	Sara	1	0.6
Tama	1	0.6	Toumak	1	0.6
Toupouri	1	0.6	Gor	3	2.0
Tot.North	116	77.3	Total South	34	22.7
Tot.General	150	100.0			

Source: Traders questionnaire, Field survey, 1993/94

b) useful market information, which is so necessary to the successful wholesale trader, is often passed along family lines and between people from similar backgrounds. The prevalence of Northerners in the wholesale cereals networks makes it difficult for Southerners to break into the same circle and enjoy the same degree of cooperation.

It should be stressed that this evidence of an "ethnic preference" does not necessarily mean that it is impossible for Southerners to break into the cereal's trade or even create their own network. The successes of Ngambaye traders in organizing the cereals trade in

the two Logones is an important illustrative case. There is also one Sara wholesaler in Sarh who buys in quantities that easily exceed 100 tons per month. Still, however, there is no doubt that, at least on the national level and at the highest levels of the wholesale trade, Northern traders enjoy an advantage by having easier access to a support network of related traders who can supply them with everything from market information to credit guarantees and even credit.

Although the existence of a "Northern Cartel" at the upper-levels of the wholesale trade is fact--it is not at all clear that this leads to any persistent market imperfections. The number of potential wholesalers at this level from northern groups alone is still sufficiently large to ensure that a competitive environment exists. Any wholesaler who tries to exert market power is soon likely to find that others are eating away at his market share--no matter what ethnic groups any of them belong to. While the lack of Southerners in the large-volume wholesale trade may be a "social" problem, it does not represent hindrance to market efficiency.

Transport

The existence of a transport constraint has been cited by at least one observer as a factor leading to market failures in the cereal's market.[11] Indeed, the numbers of cereals merchant who possess their own vehicles for transporting grain is quite limited. Many larger wholesalers in the urban centers do own vehicles that they use primarily for long-distance transport of large quantities between regions, but the vast majority of medium-

[11] See Jean-Fabrice Détard, "Le Marché du Transport des Céréales au Tchad et Ses Imperfections." (1992).

and small-scale wholesalers do not have independent access to any sort of freight transport.

A recent AMTT Study on the Transport Industry noted that the very healthy market for truck rentals, in most regions of Chad, means that cereals merchants or other intermediaries can easily rent trucks to transport their own goods or purchase cereals in regional markets as well as between major urban centers.[12] Our empirical result indicate that between collection and redistribution markets, nearly twice as many trucks are operated by "locataires" or "renters" who have rented a truck from its owner to transport their and other traders' merchandise and grain than are operated by owners[13]. The existence of this thriving rental market, then, seems to offer traders a level of service that, if not quite as reliable as that they might enjoy with their own trucks, is much less costly and spares them the negative aspects of truck ownership (mainly the risk of confiscation or theft, which is basically uninsurable in Chad, and capital immobilization). The number of trucks evacuating cereals from various collection markets during our survey period is shown in Table 3.8.

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[12] See "Chad Private Sector Transport Industry Report," (DAI, 1994).

[13] Out of a total of 1,305 separate trips in all the collector and regroupment markets surveyed, 843 were undertaken by trucks operated by locataires and 462 were owner-operated.

Table 3.8. Number of Trucks Evacuating Cereals from Different Prefectures and Various Collection Markets, 1993/94.

Prefectures	Markets	Obser-vations	Total Trucks	Trucks/Market day
Biltine	Arada	9	14	1.5
	Mata	4	4	1.0
Logone Occi-dental	Doher	7	9	1.3
Logone Oriental	Beti	7	18	2.6
	Bodo	13	89	6.8
Mayo-Kebi	Fianga	15	84	5.6
	Moursale	42	184	4.4
Ouaddai	Adre	1	4	4.0
	Birtawil	13	11	3.7
Salamat	Abate	4	9	2.2
	Mirer	2	2	1.0

Source: Conditions de Marche, Field Survey

Table 3.8 clearly indicates that most markets attract regular service by truckers--which coincides with the fact that few cereals wholesalers mentioned lack of transport as a problem (although nearly a quarter of them complained about its price.)

Market Information and Knowledge

Easy access to good market information is a prerequisite for success in the cereals market. Wholesalers will go to great lengths to seek out accurate data on production, stocks and prices in different regions. At harvest time, wholesalers will send out representatives into production zones to record stock levels and prices and send out collection agents to areas that offer the most attractive combinations of low prices and

easy transport. As noted above, good relations with an existing network of traders can greatly help access to such information--although the seasoned wholesaler will always search out his own independent sources. Besides the pure access to information, the ability to interpret relative movements of prices and recognize market signals in a market that is in a near continual state of flux requires a certain experience and is not a skill that can be acquired overnight.

Experienced cereals traders do, therefore, have a definite advantage over neophytes since they have had both more times to arrange systems for getting reliable price information and for learning how to interpret it. The recent innovation of broadcasting prices in major centers over the radio by the government's public cereals market information system (SIM) may be contributing to a weakening of these advantages. Although there is not yet enough of a history behind the SIM experiment to find out its impact, there is at least anecdotal evidence that the broadcasts may have reduced the advantages of some traders by lowering the costs of good market information to all. Before the advent of SIM broadcasts in Abéché, for instance, it was common to find wholesalers, their relatives and agents telephoning and sending telegrams at the Post Office to inform their colleagues in N'Djaména and elsewhere of prices in Abéché. Since the SIM has started broadcasting regular price bulletins, this activity has stopped--causing some wholesalers to complain that this has lessened their special advantage. The predominance of non-cereals specialists in the list of ONC cereals suppliers underlines the competitive nature of the cereals trade--which requires both seasoning and skill. Although

many larger businesspeople who win these contracts could make a profit in the controlled ONC market, few of these non-specialized traders participate in the cereals trade in the free market where returns fluctuate and a great deal of market knowledge is required to turn an adequate profit.

To summarize the section on barriers to entry, it seems clear that entry into the higher levels of the wholesale cereals trade is not something that is open to everyone. Significant capital constraints exist due to the large working-capital requirements at this level. Similarly, it is not easy for outsiders to break into this level of the trade without belonging to the same social groups that dominate it and, even more important, without the requisite market skills.

This does not mean, however, that these disadvantages facing some potential entrants necessarily lead to a situation of market power. Wholesalers at this level are not only in direct competition with each other, they are also in competition with traders at other lower market levels. Also, the high degree of spatial integration (Yacoub, Fauba, and Staatz, 1992; Gockowski, 1993; Herman, Fauba, and Yacoub, 1994), particularly between major markets where larger wholesalers operate, means that other wholesalers in other locations are always ready to arbitrage any price differential that is the result of the exercise of market power. Thus, although entry to the upper levels of the wholesale trade is subject to certain constraints (mainly related to capital availability and ethnic/social background), there is no evidence that this leads to any pattern of protected markets and long-run excessive profits. At lower-levels of the cereals trade, the case is even more clear: there

are few effective barriers to entry. The main difficulty is in amassing sufficient capital--which is really an endemic problem for almost any economic activity in Chad, rather than a problem that is particular to the cereals marketing trade.

VERTICAL INTEGRATION

The cereals market in Chad seems to be showing some indications of new movement toward vertical integration. Movements are observed in both directions, upstream and downstream. In fact, farmers organize themselves by forming village associations with the sole objective of selling their produce at the wholesale level as well all at retail. The rationale for farmers integrating in this way is that they are looking for a better price for their cereals. Often, farmers argue that traders are making large profits and are not giving them the "right price". As a result, farmers are increasingly attempting to perform marketing activities from collecting, bulking, transporting, storing and selling. In addition to farmers' actions, the government through ONC is also attempt to improve vertical coordination by building strong relationships with wholesalers through the bidding system. All these attempts to be vertically integrated by both farmers and government seem to indicate dissatisfaction with the services provided by private traders through the open market.

The Village Associations

An "Association villageoise" (AV) is a grouping of farmers from different villages with some specific objectives, such as the creation of common storage facilities, cereal banks,

and the "marché autogéré". The "marché autogéré" is a type of cereal market that is managed by AVs.

The objectives of the "Association villageoise" is to ensure proper marketing of cereals for members, and to create bargaining power to get the "right price" for their produce. The motivations for forming such associations are based on two fundamental themes:

1. private traders in Chad are unable to provide services that respond to farmers' needs. That is, either cereals traders have monopoly power and take advantage to earn excessive margins, or they are not organized enough to carry out the cereals trade in a satisfactory way.
2. A contribution of foreign aid in form of capital and extension training encourages farmers to attempt seasonal and spatial arbitrage in the cereals market.

Most of the AV's buy cereals after the harvest period when the price is low, then store and resell during the dry season. By doing that, they wish to make a profit resulting from seasonal price rises, and from the increase in demand (through their purchase) during the harvest time. A second function fulfilled by a few "associations villageoises", is the transfer of their cereals towards the urban markets, i.e., spatial arbitrage.

Our reconnaissance surveys show that farmers operating through AVs refuse to sell grain at the market price and then subsequently were forced to lower their price when their stocks did not sell. The "Office National de Developpement Rural" (ONDR) which is the main technical advisor for farmers' AVs, incorporates implicit costs such as cost of capital and management in their price computation, which result in higher selling price than the actual market price. As a result of this higher-than-market price, farmers

operating through the AVs could not sell their stock until the next marketing campaign. With the new campaign, grains from the previous year became cheaper and less preferred by consumers compared to the new harvested grain. Consequently, "associations villageoises" ran out of cash to buy and store because of the slow capital rotation. Some "associations villageoises" mentioned deterioration of their cereals during the storage.

Similarly, the spatial arbitrage has not been mentioned as a success by most farmers. For example, the AV's in Sarh have succeeded in selling their cereals in another prefecture (in Kelo) only once during eight years of business. In contrast, our survey results indicated that wholesalers from Sarh may sell in distant regions from their base of operation several times a year. In addition, wholesalers have better knowledge of market conditions because it is an integrated part of their daily activities.

In conclusion, the performance of the AV's attempts to vertically integrate is poor. The hypothesis that marketing services provided by traders do not respond to farmers's needs does not appear justified. AV's have centralized and slow decision making. Without enough experience and with lack of market information, they have proved less efficient than traders.

Office National des Cereals (ONC)

Having abandoned its attempts of price stabilization, the Office National des Céréales (ONC) now limits its interventions to managing Chad's food security stock. The ONC buys cereals through a bidding system in which wholesalers submit prices for contracts to

furnish a certain quantity of cereals--usually 300 to 1,000 tons. The ONC buys cereals at prices that are slightly above market prices--making ONC contracts a lucrative affair. Because of the stringent guarantees required of bidders, only the largest merchants can qualify for consideration. This eliminates many semi-wholesalers from the ONC market. Few professional cereals wholesalers participate in the ONC market--which tends to be dominated by the larger businesspeople in branches other than the cereals trade.

The relative impact of the ONC transactions within the overall cereal's market is quite small. Table 3.9 shows the total 1992-93 ONC purchases relative to private marketed volume estimates for both Chad as a whole and, as a regional example, for the Salamat Prefecture. It is clear from Table 3.9 that the ONC is in no way a major force in the Chadian cereals markets--either in terms of numbers of traders or in total purchases.

Table 3.9: Relative Scale of ONC and Private Cereals Markets, 1992-93.

	Number of Wholesalers	Quantities Marketed [a] (Tons)
ONC Contracts	9	4,000
Chad Total	136[b]	132,290
ONC/Amtiman	1	300
Contracts Salamat Prefecture	13	7,650

Source: ONC, Author's Estimates.

[a]Marketed quantities for Chad and Salamat are based on the assumption that 17 percent of production is marketed.
[b]Estimate for major cities only.

Not being a major player in the cereal's market, the main effect of the ONC is probably to reduce market concentration by a small amount. Many major benefactors of the ONC market are usually business people who would not be in the cereal's trade without the perceived "easy profit" nature of ONC contracts. These contracts serve, therefore, to probably reduce somewhat the volume of business being handled by the largest wholesalers--who would probably be the ones buying and trading these cereals if the ONC were not doing it. But with only about 2 to 5 percent of the total cereals market, the net effect of anything the ONC does is relatively insignificant.

Contract Farming

Certain instances of contracts between wholesalers in N'Djaména and farmers in nearby production zones have been reported. Although this does not seem to be widespread or a trend, during 1993 and 1994 one group of wholesalers in N'Djaména regularly advanced money to farmers' cooperatives in the villages of Bailli and Bousso during the hungry season and demanded payment in cereals during the harvest. The farmers interviewed reported that the agreement came about due to their initiative when they sought to find a way to leverage their 1992/93 harvest to get money for the December holiday (Christmas) season before the harvest was actually ready to be evacuated. The farmers contacted the Al-Maach wholesale cooperative in N'Djaména, which sent its president to inspect the harvest and evaluate its quality. Following this verification, both parties agreed to use the current (December 1992) market price, and an advance was made to the farmers, with delivery to take place in February. For the following campaign, 1993/94 the agreement

was renewed and the Al-Maach wholesalers advanced 200,000 CFAF (US$ 800) to the farmers during the hungry season. Due to the bad crop year, however, the farmers claimed that they were unable to fulfill their contract and, as of Spring 1994, no cereals had been delivered. The Al-Maach wholesalers have reportedly agreed to take delivery in the following season after the next harvest without an interest rate.

As this example shows, contract farming of this nature is subject to a high risk--since prices are decided before final harvest results are in. Given the generally high prices in 1994 caused by poor rains and CFAF devaluation, it is not clear whether the farmers in Bousso or Bailli really were unable to fulfill their contract or whether they preferred to sell at higher market prices than that specified in the contract. Anyhow, agreements such as these do not result primarily from any desire of farmers or traders to get around any imperfections in the cereal's market. Rather they are reflecting the pervasive pattern of credit and capital shortages that plague rural areas in Chad. This episode reveals more about financial market imperfections than about problems in the cereals market.

MARKET BEHAVIOR: COOPERATION OR COLLUSION?

The picture of market behavior given above indicates that many cereals' traders maintain complex relationships with each other that include elements of both cooperation and competition. It is clear from observing traders at different levels that there is a difference in how far the larger wholesalers are willing to cooperate with each other and how far semi-wholesalers and itinerant traders will collaborate.

Itinerant traders and wholesalers not only collaborate with each other by exchanging information on market prices and quantities offered, they will even often represent each other in specific transactions. Wholesalers and semi-Wholesalers often exchange such services as storage by grouping their stocks in a cooperative hanger. Credit and information about people who are considered bad credit risks is also freely exchanged among traders at this level.

This high level of cooperation, including the sharing of sensitive market information, is easy to understand. Market participants at this level could not influence prices individually. The presence of one or two more itinerant traders in any rural market is not likely to lead to a price decline for the others in the market that day. Similarly, semi-wholesalers, by engaging in transactions in quantities of under 10 tons, are not affecting general market conditions in any way. Thus individual actors at these levels have more to gain than to lose by cooperating.

As one moves up the scale of wholesale activities, this situation changes subtly. Larger wholesalers are much more directly in competition with each other than are the market participants at lower levels. This does not mean that they will not cooperate, only that they will not cooperate in areas that may give another an advantage that could be used to lessen their market share. They are much less willing, for instance, to freely discuss market prices than are itinerant traders and semi-wholesalers.

The existence of a sharper competition among wholesalers is most dramatically illustrated from watching their behavior in rural markets. First, when more than one

wholesaler is present at a collection market, they will often bid against each other for the services of local collection agents. At times, after collection has already begun, one will offer a more attractive commission to the other's agents in an attempt to get them to switch sides. It is not at all uncommon to see collection agents leave the market to take up positions on pathways leading to it to have the first chance at buying from farmers bringing cereals to the market. Disputes and even physical conflicts between collection agents working for different wholesalers often occur.

The common employment of intermediaries and agents to perform the role of sales agents is also indicative of a high level of competition among wholesalers in selling markets. Occasionally, wholesalers will send trusted family members to other regions with instructions to research prices and search out buyers. If collusion between wholesalers were a major phenomenon, it is hard to understand why so many of them are willing to pay the expense of sending employees on expeditions that can last for several weeks to identify buyers.

Cooperation among wholesalers can occur, however, when all stand to benefit collectively. One example of this was reported to us in Moundou, where local wholesalers organized themselves to participate in an NGO credit program that would give them access to revolving credit at subsidized interest rates. Even here, however, problems cropped up which prevented the wholesalers from acting in concert. Despite holding two meetings, the wholesalers were unable to decide the form of a collective loan guarantee. According to various informants, the consensus broke down on the question of the

number of wholesalers to include as guarantors for each line of credit. While "non-Ngambaye wholesalers" are in favor of a limited number of guarantors, "Ngambaye wholesalers" ask for a larger group of guarantors that would include all market participants. Unable to reach a decision on this issue, wholesalers were never included in the credit program. Thus, even in cases such as this, where the benefits of cooperation are very tangible and competitively non-threatening, some wholesalers find it hard to cooperate.

In the rare instances we encountered where some traders have tried to exercise market power, there have always been many actors in the market to frustrate these attempts. The most flagrant example of this was witnessed in Am-Habilé (Salamat) in Spring 1993 when the largest wholesaler in Am-timan (the same one who accounts for the 10 percent market share in Table 3.4) ordered his collection agents to buy at a price that was five CFAF/coro under the going market price. Although this wholesaler was by far the largest single buyer in the market on this day, there were enough of semi-wholesalers and independent itinerant traders who were willing to purchase at the higher price so that, even by the end of the market day, prices did not come down to the level he had set. Finally, at the end of the day he authorized his agents to buy at the going price, but was unable to amass the types of quantities that he had hoped to get due to the closure of the market. Later, this wholesaler later acknowledged the futility of his actions during an interview.

CONCLUSION

The evidence presented in this chapter indicates that a situation of relatively free competition prevails at all levels of the Chadian cereal's market. Despite certain minor distortions, due mainly to the existence of a widespread capital shortage, a pattern of trading relations based on ethnic and family ties, and the intervention of public authorities in the cereals markets, it is clear that there are sufficient numbers of wholesalers and semi-wholesalers engaged in the cereal's trade to ensure a high degree of market competition. Although concentration ratios may indicate that local markets are highly concentrated in certain cases, this is essentially irrelevant given the spatially integrated nature of the Chadian cereal's market in which major wholesalers are always conscious of price movements and arbitrage opportunities--even in far away markets. Furthermore, there is nothing to indicate that collusion or predatory market practices detract from market efficiency.

CHAPTER FOUR

UNIT COSTS AND PRICE SPREADS[14]

Marketing margins are defined as the difference between the price paid by consumers and that obtained by producers, or as the price of a collection of marketing services that is the outcome of the demand for and the supply of such services (Tomek and Robinson, 1990). The margins are composed of unit costs of marketing and returns to traders. Each can be used as a diagnostic tool to evaluate the efficiency of the market. High unit costs can be an indication of very low purchasing power of consumers, poor infrastructure for transportation, storage, processing, inadequate information and wholesaler market power. Most trade involves all three types of marketing margins: spatial, temporal, and product transformation.

A trader who collects cereals in small quantities in a local assembly market, transports them to a regional or consumption center, stores the cereal in sacks, and then resells would be engaging in all three types of transformation. Spatial margins refer to price spreads between different locations and include any transfer costs such as transportation, storage, and commissions. Trade in cereals usually takes place between surplus and deficit

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[14] This Chapter is based upon field work that was largely completed prior to the January 1994 devaluation of the CFA franc. Though costs and cereals prices have changed--even volatile--in response, these changes have not been reflected in the analysis presented here. A paper on the subject has been published as an MSMS discussion paper (see, "the Effects of Devaluation on the Cereals Subsector in Chad", February 1994).

areas. In a competitive market, the price differential between two locations should not exceed the sum of the transfer costs. High returns to traders[15], after taking into consideration the transfer costs and the implicit returns to labor, can be a sign of the existence of market power.

Temporal margins refer to price spreads between different period of time. In a competitive market situation, that price difference over time should not be greater than the storage costs. Trade in cereals may be seasonal or combined with other activities, further complicating the apportionment of costs and assessment of margins. Ultimately, when all units costs are accounted for, the net margin is a point estimate and an indicator of market performance. The size of a trader's net margin may reflect entrepreneurial skill, the risk associated with trade, the degree of market power, or it may only reflect a situation of short-term market disequilibrium.

While net margins indicate economic losses, evidence of positive net margins is not necessarily an indication of market imperfection such as monopoly or monopsony power. Even when net margins reflect "economic profits", this can be the result of changes in supply and demand conditions that signal a necessary reallocation of resources, redirection of trade, or adjustments of stocks. Economic profits (and losses) have an important role to play in that they should trigger entry or exit in response to these profit making opportunities. In well functioning markets it is the existence of profits (or losses) that

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[15] We define net margins as the nominal cash earnings of traders after accounting for all explicit costs. Expressed this way, net margins are not a good indicator of economic profits since they include returns to the traders' labor, capital, risk assumption, management and any other resources used in trade. Except if interest on borrowed capital is deducted, net margins don't account for the amount of time a trader's capital is tied up. Thus, while negative net margins indicated economic losses, positive net margins don't necessary indicate economic profitability.

push the market toward long-run equilibrium. The key to identifying market imperfections is the identification of persistently large margins. In an efficient market, economic profits tend to be quickly eroded by market responses.

This chapter evaluates and analyzes the unit costs of marketing cereals and wholesalers' margins in Chad. It examines both spatial and temporal trade, over a range of locations. The main conclusion is that high gross margins are mainly a function of high transportation costs and the risks associated with trade, especially price variability. Traders' net margins show a high variance, and though margins are consistently large in selected market circuits, overall these margins are consistent with a highly competitive, if risky, enterprise with relatively low barriers to entry.

The chapter is divided in five parts. We first explain briefly the research methodology used to collect the data for our analyses. We then examine the nature of transportation and the other components of marketing costs for each type of marketing operation and for a wide range of marketing routes. Using the results of surveys of wholesalers and transporters, we compute typical and extreme trading budgets comparing marketing costs to spatial and seasonal price spreads. These budgets are then illustrated with trader case studies. This is followed by an examination of net margins. The chapter concludes with an assessment of the results and their implications for Chadian marketing policy.

The different unit cost analyses are based on data collected during our field research and on observations and contacts made during rapid reconnaissance trips to different markets within different regions of Chad. The data are from three different data collection instruments: a trader budget questionnaire, a transportation questionnaire and a road barrier questionnaire. The types of marketing costs in Chad are transportation, handling, storage, taxes, risk, and opportunity cost of capital.

UNIT COSTS

This section describes and presents data on the different components of marketing costs including transportation, handling, storage, and taxes. We also discuss the nature of implicit costs including finance, traders' labor, and other resources provided by traders such as storage and transportation facilities. We explain which types of costs are applicable to wholesalers.[16]

Transportation Costs

Transportation costs are the major component of cereals marketing costs. These costs are mainly applicable to wholesalers. In addition to the costs associated with owner-used or rented trucks, many wholesalers incur loading and unloading costs, local transportation charges, and additional fees paid en route at road barriers. Loading and local transportation charges are discussed in the section on handling costs, while barrier charges are described in the tax cost section of this chapter.

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[16] In our analysis of costs and margins, we consider both wholesalers and semi-wholesalers as wholesalers.

The composition of transportation cost varies between the types of traders to whom this cost applies. Traders typically have three options for cereals transport: a) they may rent space on trucks; b) they may own and use their own vehicles; c) they may lease vehicles for specific shipments.

Our surveys found that the majority of wholesalers either lease vehicles or rent space for their shipments. Semi-wholesalers use almost exclusively the last option. The relatively small percentage of wholesalers who own their own vehicles can be said to be vertically integrated into transportation services. Such traders tend to be highly diversified in trade activities, and the allocation of costs to cereals marketing is somewhat arbitrary. The issues of transportation costs have been more fully addressed in another Agricultural Marketing and Technology Transfer (AMTT) study, "Republic of Chad: Private Transportation Industry Study" (DAI, 1993).

For wholesalers who own trucks, transportation costs are composed of fixed costs and variable costs. Fixed costs include insurance, amortization, and drivers' salaries. Variable costs vary with the distance and frequency of transport, the most important cost being fuel, followed by maintenance, repairs, taxes and park payments, and barrier costs. The AMTT transportation study concluded that "Chad has the highest truck operating costs in the world or is among the countries with the highest truck operating costs" (p.29). The study has presented data on truck renters (locataires). They fall in the category of wholesalers who rent trucks for the transportation of their cereals. The results of the study indicate that the operating cost to wholesalers who rent trucks ranges from a minimum of 52,250 CFAF (US$ 209) for a 7-Ton truck serving collection to regroupment

markets around Moundou in the soudanian zone to a maximum of 196,750 CFAF (US$ 787) for a 25-Ton truck serving between Abéché and Am-Zoer in the Sahelian zone (p. 43). These costs correspond to a transportation cost of 7,460 CFAF to 7,870 CFAF per ton. In both cases the "locataires" reported charging 7,500 CFAF per ton for cereals. Given that the distance between Moundou and Bébalem is 67 kilometers, the 7,460 CFAF per ton of cereal corresponds to a transportation cost of 111.3 CFAF per kilometer for one ton of cereal; the 7,870 CFAF per ton around Abéché corresponds to 98.4 CFAF per ton kilometer given the 80 kilometers between Am-Zoer and Abéché. For the 5 locataires the study has data on, the mean transportation cost is 8,350 CFAF per ton on domestic routes for an average of 76 kilometers per locataire; this corresponds to a transportation cost of 109.8 CFAF per ton per kilometer on domestic routes. Again, though these high imputed costs must be taken with caution, they may explain traders' preferences to rent space on trucks.

For wholesalers who rent space on truck transportation, costs are limited to the rental price per 100 kg or sack, traders' own transportation, and additional charges that are levied on them directly at barriers. Most often the illegal fees (taxes sauvages) paid at road barrier, are paid by truckers and the effects of the fees are built into per sack (100 kg) transportation charges. Occasionally, however, some of these payments are required to be paid directly by the shippers. The cost of a trader's own transportation (or that of his agent) is also part of transportation cost. This cost can vary widely.

For wholesalers and semi-wholesalers who rent space on a truck, the unit transportation charges represent the major part of transportation and marketing costs. Transportation

prices are usually fixed and well known, but they are neither uniform over space nor over time. Transportation prices vary with distance, with the quality of road and with the different seasons of the year. Prices paid by traders to transport a ton of cereal from one market to another tend to increase with distance, but fees tend to be relatively "flat" within categories of distance. The millet and sorghum marketing study (Herman, Fauba, and Yacoub, 1994) has defined categories of distance to analyze the marketing costs and traders' margins: Short-axis are routes that connect redistribution markets and the collection markets that feed them. The average distances of these feeder routes is between 75 and 84 kilometers. Medium axis are routes linking regroupment or collection markets of one region to regroupment or consumption markets of another region. The range of distances of these roads runs from 95 kilometers to over 350 kilometers. Long axis are long-distance routes that link different regroupment and consumption centers of different regions or prefectures to N'Djaména or to Faya. These routes average over 600 kilometers.

Most prices are set in even amounts, mostly in multiples of 2,500 CFAF (5,000, 7,500, 10,000 CFAF per ton/route). Most short-axis fees are set at 5,000, 7,500, or 10,000 CFAF, medium-axis fees generally run 7,500 or 10,000 CFAF, while long-distance rates are usually set in increments of 5,000 CFAF, ranging from 15,000 to 40,000 CFAF.

One notes an inverse relationship for price paid per unit of distance, both within and between distance categories. Some of the shortest routes within each category display the highest cost per unit of distance. For example, the per-kilometer cost of transporting a

ton of cereal 18 kilometers from Beti to Doba is 277.8 CFAF/km. Similarly, the most costly "long-axis" route in per kilometer terms is between Bol and N'Djaména, averaging 148 CFAF/km per ton. The transportation price per kilometer is lower for long axes than medium axes. The transportation price per kilometer is the highest for short axes, often considerably so.

There are probably two reasons for this inverse relationship between per kilometer price and distance. First, and most importantly, most short-axis routes connect redistribution markets and the collection markets that feed them. Most of these roads are in bad condition. Trucks that circulate on these roads tend to be old, break down frequently, and generally subject to high operating costs. These high operating and maintenance costs are transferred to traders through the transportation price. The second reason for the higher per kilometer prices on shorter runs is related to the fixed costs associated with transport. Trucks and drivers are tied up for one or two days regardless of whether the distance covered is 30 or 300 kilometers. Transportation prices tend to increase before and during the rainy season. The increase in transportation price during the rainy season is clearly related to the poor condition of the roads and the reduction in the supply of transportation services offered, especially in regions off the main roads.

There probably exist some economies of scale with respect to transportation costs, but not strikingly so. Traders with larger quantities of cereals to transfer from one place to another often end up paying less per kilogram. Truckers naturally favor clients who assure maximum capacity utilization, reduce transactions costs, and lessen the time they must wait to fill the load. The most common form of quantity discount given to traders is

personal free passage. Truckers with excess capacity (especially late in the day) may offer some discounts to traders to fill loads, but such cases are rare, as truckers are more likely to take the opportunity to engage in some trade themselves[17]. Sometimes prices are negotiated according to the relationship between the transporter and the trader. Traders who utilize the same transporter very often negotiate discounted prices or the right to transport a few sacks of cereals free of charge. To some extent these adjustments may also depend upon particular relationships such as friendship or kinship. The rates charged for cereals also depend on the presence of backhaul cargoes. For example, in the Soudanian zones where trucks can always find cargoes such as sugar, cotton-oil, cotton soap, beer, etc.. rates charged for cereals are generally lower compared to the Sahelian zones. Although the routes from the capital N'Djaména to the North are in bad condition, and medium size trucks are not available, transportation prices are higher (with the exception of Amtiman, which is the breadbasket for cereals) because of the absence of backaxe cargoes. Table 4.1 to 4.3 show regional averages for short-, medium-, and long-distance transportation routes, while Table 4.4 presents national averages.

[17] In markets where *commis de charge* operate, prices are generally uniform. The term commis de charge refers to commissionnaires involved in the transport sector. They look for clients, arrange for cargos, and are paid ten percent commission of the rental cost.

Short axes

Short axes are routes from collection markets to redistribution markets within the same region or prefecture. Table 4.1 presents average transportation costs by region for short axes using data from Transporter's questionnaire.

Table 4.1. Regional Averages for Short Axes Transportation Costs (CFAF per ton/km).

Principal Center	Number of obs.	Number of routes	Min Cost per ton/km	Max cost per ton/km	Avg Cost per ton/km	Avg Distance (km)	Std. Deviat.
Abéché	40	5	58.5	258.0	98.8	102	30.2
Amtiman	26	2	33.3	200.0	62.1	114	33.3
Biltine	3	1	115.4	153.8	141.0	65	22.2
Doba	16	5	94.3	277.8	155.5	36	63.1
Lere	23	5	25.2	142.8	70.0	88	29.9
Mongo	4	2	42.4	84.7	63.5	103	24.4
Moundou	11	5	77.5	185.2	120.3	78	41.6
N'Djaména	10	5	19.0	100.0	63.5	148	32.0
Pala	48	13	53.2	217.4	91.5	64	47.0
Sarh	71	10	43.3	200.0	89.7	85	28.4

Source: Transporter Questionnaire, field surveys

Table 4.1 shows that average costs range from around 62 CFAF per ton/km in the Amtiman, Mongo, and N'Djaména regions, to 156 CFAF per ton/km in the Doba region.[18] The average distances of these feeder routes is approximately 85 kilometers, though the range of average distances runs from 36 to 148 kilometers. Average costs per ton per kilometer of road are widely dispersed, with a standard deviation from 22 to 63. Doba is the market with

[18] The actual range of costs is much larger, as can be seen by the minimum and maximum costs reported in the table (Columns 4 and 5).

the highest average (155 CFAF per ton/km) transportation prices. Because of the short distance (36 kms) involved in transporting cereals from collection markets to Doba, it has the distinction of being the region with the highest ton per kilometer costs.

Medium axes

Medium axes are routes linking redistribution or collection markets of one region to redistribution or consumption markets of another region. Table 4.2 shows that costs range from a minimum of 16 CFAF/ton-km (around Moundou and N'Djaména) to a maximum of 105 CFAF (around the Abéché region), with an average cost of 54 CFAF per ton/km, and a standard deviation of 23.7. The range of distances runs from 95 kilometers (Abéché--Biltine) to over 350 kilometers (Am-timan--Sarh), with a standard deviation of 100. Transporters reported a number of 33 CFAF per ton/km, mainly connecting with Moundou. This may be indicative of competition for backhauls traffic out of Moundou[19].

[19] Trucks carrying beer from the "Brasserie du Logone", cotton-oil from "huilerie du Tchad" are examples of back-haul opportunities.

Table 4.2. Regional Average for Medium Axes Transportation Costs (CFAF per ton/km)

Principal Center	# of obs	# routes	Min Cost per ton/km	Max cost per ton/km	Avg Cost per ton/km	Avg. Distce.	Std. Dev.
Abéché	19	2	27.8	105.3	87.6	123	27.1
Amtiman	6	2	35.7	63.0	49.7	276	10.1
Bongor	2	2	40.0	72.1	56.0	229	22.7
Mongo	4	1	41.7	83.3	62.5	120	24.0
Moundou	36	6	16.3	96.2	52.5	193	20.2
N'Djaména	3	1	16.0	32.0	24.0	313	08.0

Source: Transporter Questionnaire, field Surveys

Long axes

Long axes are long-distance routes that link different redistribution and consumption centers of different regions or prefectures to N'Djaména (the capital) or to Faya in the Borkou-Ennedi-Tibesti's Prefecture (BET). These routes are almost the exclusive domain of wholesalers, often dealing in very large volumes. The average cost on long axes is around 32 CFAF per ton/km, with costs on most routes generally running from 13 CFAF to 87 CFAF per ton/km, as shown on Table 4.3.

Three of the most important routes are the longest--N'Djaména-Faya (1,240 kilometers), Abéché-N'Djaména (780 kilometers) and Amtiman-N'Djaména (760 kilometers). However, the costs of transporting cereal on these routes are not necessarily the highest, averaging around 32 CFAF per ton/km, with a standard deviation of 11. These figures vary inversely with distance within this classification, with the lowest cost per kilometer being the longest routes.

The explanation lies in the very limited supply of transportation on that long route combined with the lack of traffic for the intermediate destinations. Low densities limit the profitability of truckers to specialize in these short-axis routes, and the long-axis truckers view the marginal cost of a short-distance shipment as the loss of revenue they could make by taking on more long-distance shipments. Situations such as these are everywhere in transportation and are rarely the result of market power. There may be some degree of market power, however, as a result of very thin market.

Table 4.3. Regional Average for Long Axes Transportation Costs

Principal Center	# of obs.	# routes	Min. Cost per ton/km	Max. cost per ton/km	Avg. Cost per ton/km	Avg Distance (km)	Std. Dev.
Abéché	17	2	47.5	87.5	66.8	569	8.2
Amtiman	2	1	22.0	33.0	28.0	454	7.8
N'Djaména	93	16	12.8	57.0	25.5	667	10.8
Sarh	1	1	16.8	16.3	16.3	614	NA

Source: Transporter's questionnaire, field surveys

Table 4.4 summarizes costs nationally, and though it masks much of the variability among routes, it shows that the two data sets yield consistent results with respect to short-axis routes. Average costs range between 30 and 90 CFAF per ton/km, with a standard deviation range between 20 and 40.

Table 4.4. Average Transportation Costs: National Averages

Principal Center	# of obs	# routes	Min Cost per ton/km	Max cost per ton/km	Avg Cost (km)	Avg Distance	Std. Dev.
Short Axes	266	53	19.0	278.0	93.2	84	42.0
Medium Axes	120	14	16.0	105.3	54.0	288	23.7
Long Axes	114	20	13.0	88.0	32.0	653	18.0

Source: Transporter questionnaire, field surveys

The average costs for specific routes generally confirms the validity of the summary tables while also suggesting some anomalies. Mean costs for different routes range from 13.5 CFAF (N'Djaména-Pala) to more than 278 CFAF (Doba-Beti) per ton/km. Prices in Doba show far less downward flexibility for short distances. This may indicate a market imperfection in local transportation in the region.

Note that our analysis was done only on unimproved dirt roads, and the terms "short-axes" "medium axes" and "long-axes" strictly refer to distance than quality of road. Analysis on transport costs per ton/km by quality of road (among tarmac, laterite and unimproved dirt roads), was not done in Chad. That may be an area warranting further analysis, and might be at least as revealing as "long-hauls," "medium-hauls," and "short-hauls".

Seasonal variations in transportation price

Transportation prices increase before and during the rainy season because of diminished traffic and then the poor conditions of the roads. The rainy season starts early June and ends

in mid-September. Our survey data do not cover trade during the rainy season, but they do show slight increases in transportation prices from January to June for both long and short axes (Table 4.5). The difference, however, is not statistically significant

The 1993 AMTT transportation study estimated transportation prices on long and medium routes, both during the dry and rainy seasons. The study reported that truckers increase their charges between one-third and fifty percent during the rainy season.[20] The figures correspond to an increase in transportation price by 33 to 50% from dry to rainy season.

Table 4.5. Seasonal Transportation Prices (CFAF per ton/km)

Routes	Distance	January-March				April-June				% Increase
		Obs	Min	Max	Mean	Obs	Min	Max	Mean	
Long Axes	653	45	12	70	30.4	69	13	88	32.5	7.0
Medium Axes	228	56	16	105	57.4	64	16	105	51	(12)
Short Axes	83	122	33	278	89.6	144	19	278	96.2	7.0

Source: Transporter Questionnaire, field surveys

For long axes, per ton kilogram transportation prices range between a minimum of 12 CFAF and a maximum of around 70 CFAF on average from January to March. From April

[20] The Transport Study reported that long-haul dry-season prices are between 10 to 30 FCFA per kg of cereals on long hauls, and 15 to 40 CFA per kg during the rainy season. For medium hauls, the transport price range from 7.5 to 15 CFA per kg during the dry season and from 10 to 20 FCFA per kg during the rainy season. (DAI 1994, Appendix C--Table c-8).

to June, the average long axis minimum and maximum transportation price rose to 13 and 88 CFAF respectively. For medium axes, the range of the average transportation price was 16 to 105 CFAF per ton kilometer from January to June. From April to June, the range rose to a minimum of 16 CFAF and a maximum of 105 CFAF. These figures correspond to an average increase of 7% for long axes, and a decrease 12% for medium axes. These higher costs (even when road are dry) and lower costs can be explained by supply and demand influences. The supply of transportation services begins to diminish during the late spring, thus reducing the availability of back-haul capacity. The supply diminishes in the spring as a result of the rainy season and bad roads. During the rainy season, the Ministry of Transport restricts the movement of trucks between different zones. At the same time, traders are willing to pay somewhat higher prices to transport cereals as prices begin their annual rise toward the hungry season.

Handling Costs

Handling costs are the second major part of marketing costs, following transportation costs. Handling costs have four components: 1) The cost of local transportation at the buying and selling sites; 2) the price of empty sacks; 3) the commission paid to collection agents; 4) loading and unloading fees at buying and selling markets.

Total handling costs paid by traders in our sample are reported in Table 4.6. The costs reported here are the averages for all cases. In the following section, where we report costs for those traders who actually incurred them, the averages for each component are higher.

Table 4.6. Handling Costs (CFAF per ton)

Types of costs	Obser-vations	Minimum	Maximum	Mean	Std.Deviation
Empty sacks	135	110	3500	1468	466
Commission	82	100	2250	1220	544
Loading/ Unloading	147	500	4000	1500	600
Local Transport	81	100	1500	510	281
Handling	36	3350	7000	4740	828

Source: Compte d'Exploitation, field surveys

Indeed, some traders do in fact pay each cost, so the range of handling costs is rather wide averaging almost 4,740 CFAF per kg for wholesalers with an average minimum and maximum of 3,350 and 7,000 CFAF and a standard deviation 828. In reporting the results of our surveys we report averages for those traders who reported having incurred each category of cost. Later, when computing trader budgets we apportion costs according to the frequency with which they are paid. In some cases, some traders reported not incuring some costs associated with handling (local transport, empty sack, and commission). These are often cases where traders own their own carts ("pousse-pousse"), recycle sacks from previous uses, and/or have their relatives acting as commission agents in the market place.

Local transportation cost at buying and selling sites

The local transportation cost applies to all types of cereal traders. It is the cost of transporting a sack of cereal between the market and the truck park or storage facility. Often the cost of local transportation is combined with loading and unloading fees, and the sacks of cereal are transported by "dockers" to and from the market. Most wholesalers who pay separately for this service employ young men with carts ("pousse-pousse") for the local transport.

More than one-third of the traders interviewed claim to have paid for local transportation either at the purchasing or the selling site. Our data indicates that the average cost of transporting a ton of cereals to and from the market is 510 CFAF, with an average minimum and maximum of 100 and 1,500 CFAF per ton respectively, and a standard deviation of 281 (Table 4.6).

Some traders who possess carts ("pousse-pousse") did not incur these costs. Although the cost of local transportation can be obtained for these traders (opportunity cost), this is beyond the scope of our study. The Millet and Sorghum Marketing Study in Chad found that: out of the 232 traders interviewed, 37% paid for a local transportation of sacks of cereal at the purchasing site; and 33% paid for a local transportation in the selling market.

The amount of fees paid for local transportation averages about 510 CFAF per ton, though it can range as high as 1,500 CFAF (Table 4.6). The cost of local transportation represents on average 10% of handling cost for wholesalers.

Empty sacks

Although we calculated the cost of an empty sack in term of CFAF per ton size, the sack size is 100 kg on average. Most traders pay for their own packing empties. Wholesalers generally pay for new sacks. Itinerant traders also purchase new empties, but they usually recycle their empties 2 to 3 times. Retailers who purchase cereals from wholesalers do not generally pay for empties.

Data on 135 trader budgets show that two third of traders buy or use recycled empties when purchasing cereals. For those who pay for new empties, the average price of empty sacks for 1 ton of grain is 1,468 CFAF with a standard deviation of 466. (Table 4.6). The average cost of 1 ton empty-sack represents 31% of handling cost for wholesalers.

Loading/Unloading

The costs of loading sacks of cereal on a truck from the purchasing market and of unloading the sacks at destination applies to all type of traders except retailers. Almost all traders who pay for transportation between markets also pay for loading and for unloading.

Wholesalers (most often their collection agents) pay the loading and unloading charges to "dockers"--a type of market participant who travels with transporter for just this purpose. Occasionally, dockers engage in cereals trade using their loading revenue to buy cereals in a collection market and sell in the market where stock is unloaded. This practice is most common in the south.

Loading and unloading fees are paid per sack. The amounts paid for loading and unloading are about the same. Loading and unloading fees range from a minimum of

500 CFAF to a maximum of 4,000 CFAF per ton (table 4.6). Loading and unloading fees of 1 ton of cereals represents 32% of handling cost for wholesalers.

The mean price for loading a ton of cereals is 794 CFAF and the mean price for unloading the ton is also 799 CFAF. Thus, the average cost for loading/unloading a ton of cereals is 1,600 CFAF. Loading and unloading fees represent 32% of wholesalers' and semi-wholesalers' handling cost.

Fees or commissions paid to intermediaries

Commissions are fees a trader pays to an agent who helps in assembling cereal in a collection market. Though such commissions represent a relatively small share of costs in cereals markets, payments to and the numbers of intermediaries in markets have often been a target of criticism. It is useful to review briefly the positive role that intermediaries can play in marketing. In general, intermediaries and the like can reduce transactions costs for traders. Since they are usually local, they are able to convey information about market conditions, local preferences and practices, and even help overcome language barriers. In the case of cereals trade, intermediaries provide labor services, identifying trading partners, actually collecting and assembling cereals, and making other arrangements. Finally, in the vibrant markets where sellers often arrive early, the use of agents can be a competitive practice. Our observations in the field suggest that use of agents is one of the most intensely competitive aspects of the cereals trade.

The use of collection agents is mainly the practice of wholesalers who usually pay a fee per sack unit to collection agents for purchasing cereals in a collection market. Very often these collection agents are recruited from among active itinerant traders. This practice is described more fully in Chapter 3.

Wholesalers also pay commissions to young villagers who help them by intercepting farmers on the road for selling cereals to specific traders in collection markets. Local agents tend to be used by wholesalers or by itinerant traders in collection markets where competition is high. The young villagers "negotiate" with the producer, asking her or him to sell cereals to trader who uses that agent. Since many sellers coming to collection markets are anxious to sell their grain quickly and continue with other market affairs, these local agents often help to facilitate rapid transactions.

Our data show that 60% of the wholesalers sampled paid commissions to buying agents. The amount of commission paid per ton of cereals ranges between 100 and 2,250 CFAF, with a mean of almost 1,200 CFAF (Table 4.6). Commissions represent 26% of wholesalers' handling cost.

Storage Costs

Storage is mainly the practice of wholesalers. Itinerant traders and retailers rarely store cereals for more than a week, usually in small quantities, and most often only because they were unable to liquidate their stocks as intended. Our surveys and interviews also indicate that wholesalers tend not to store cereals for long periods of time, and certainly not to the extent that the literature would suggest. Wholesalers who supply urban markets try to keep a

constant stock though regularly replenishing their inventories. We also found little evidence of large wholesalers storing cereals for speculation.[21]

A few wholesalers own storage facilities; most others rent space in warehouses to store their cereals. Itinerant traders and retailers also rent space in wholesalers' warehouses if there is a need to store cereals because of lack of sale. Given the diversity of how cereals are stored, storage costs are not regularly incurred for all trading activities.

The data from 193 interviewed traders show that 42% of the sample paid for storage, and among those who paid, almost two third (76%) stored cereals for one month or less. Some respondents stored for 2 to 3 months (12%), and a few stored between 4 to 6 months 6 months (9%).

Surprisingly, the cost of storage varies very little with duration. Over night often costs the same as storing cereals for one or several months. In most markets, the accepted practice is to charge traders a fee for bringing a sack into the warehouse, however long it remains. Our data indicate that storage costs per ton of cereal range from 250 to 2,000 CFAF with a mean of 758.6 CFAF (Table 4.7).

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[21] This is not to suggest that large-scale storage doesn't take place. But most traders who maintained large stocks also transport cereals. Merchants in Salamat, for example, maintain large stocks of berbéré which they transport to N'Djaména and elsewhere when road conditions allow. On the other hand, our surveys took place in 1993, following the second generally excellent growing season, when cereal prices were extremely low, making it as attractive a time for speculative storage as one could find. Despite this fact, we failed to uncover widespread large-scale speculative storage.

Table 4.7. Storage Costs (CFAF per ton)

Zone	No. Obser.	Minimum	Maximum	Mean	Std. Dev.
Sahelian	56	250	2,000	670	313
Soudanian	60	500	1,000	41.7	234
Chad	116	250	2,000	758.6	300

Source: Compte D'exploitation, field surveys

However, there is a strong modal cost of 1,000 CFAF. Storage appears to be more expensive in the Soudanian zone and in N'Djaména, as expected. In the Sahelian zone, where traders commonly use space in their homes for storage, the demand for rented storage space is lower. The mode of the per ton storage cost is 250 CFAF in Abéché, 500 CFAF in the Amtiman region and 1,000 CFAF in N'Djaména. In the soudanian zone, the overall storage cost mode is 1,000 CFAF, though the 500 CFAF per ton mode prevails in the Sarh and the Pala regions.

Taxes

Cereals traders face a range of taxes applied to their activities. In principle, cereals trade is not subject to burdensome levels of taxes or official fees, but in practice, the trader faces a wide variety of inconsistently administered official, quasi-official, and illegal charges. These

taxes can be categorized according to their nature into three major categories: official taxes, administrative restrictions on cereals flows, and illegal charges, or taxes sauvages.

Official taxes

The only official taxes on cereals that are recognized by the Ministry of Interior are those collected by communes in urban markets in order to increase commune revenues. These taxes are collected in major centers where communes exist such as N'Djaména, Bongor, Moundou, Sarh, Abéché and Kélo.

The official taxes that represent actual costs to cereal traders are collected as market place use taxes. They are levied on wholesalers in redistribution or consumption markets where commune representatives are present when sacks of cereals from collection markets are unloaded. This practice is frequent in Sarh. Other actual costs to cereal traders are known as "droit de hangar" in urban markets. Other official taxes known as parking taxes are required of truckers. These taxes do not directly influence the traders' operation costs but can be charged to traders through transportation prices. Traders receive the receipts printed by the national printing house of Chad from the commune as they pay their taxes. In some centers such as Bongor, the farmers selling cereal also pay taxes to the commune (2,500 CFAF per ton).

Results from Table 4.8 indicate that the amount of official taxes varies from one commune to another as well as from soudanian to sahelian zone and according to the type of the official tax. Taxes paid at both buying and selling market places are higher in the soudanian zone. Taxes assessed on wholesalers vary from 250 to 5000 CFAF per ton.

Table 4.8. Taxes Paid at Buying and selling Markets (CFAF/ton).

Zones	Taxes Paid at Buying Market Places				Taxes Paid at Selling Market Places				Std. Deviat.
	Obs	Min	Max	Mean	Obs	Min	Max	Mean	
Sahelian	5	500	1,500	1,000	18	250	1,000	458	345
Soudanian	20	500	2,500	1,338	27	500	1,500	1,041	95
Total	54	250	5,000	1,389	45	250	1,500	810	391

Source: Compte d'Exploitation, field surveys

Administrative restrictions on cereal flows

Administrative restrictions on cereals trade are imposed by local authorities (prefets, sous-prefets, and chef de cantons) in order to discourage cereals from leaving their regions. These restrictions are without exception illegal. Restrictions may be quantitative (quotas) or they may involve a tax (droit de sortie) or negotiated payment.

The administrative restriction taxes are collected in every type of market: collection, redistribution, and consumption markets, even including communes that otherwise have legal powers to tax. Examples of communes where administrative restrictions are also imposed include Abéché, Sarh, Kélo, and Bongor. These taxes are usually imposed on cereal sacks being shipped and are paid against a receipt. In some collection markets, half-sack tickets exist. The local authorities that collect taxes are chefs de village, chefs de canton, chefs de poste administratif, sous-préfets or prefets.

The administrative restrictions vary from one region to another. However, taxes in urban markets are higher than taxes in collection markets. In urban markets such as Sarh, Moundou, Bongor and Kélo, the tax on cereal flows is 5,000 CFAF per ton (3,500 CFAF in Abéché), whereas in collection markets, these taxes range from 250 to 2,500 CFAF per

ton, with 1,000 CFAF as the most common amount. Sometimes assessments depend on the origin of the trader or the destination of the shipment, local traders being treated more generously and cross-border shipments paying higher taxes.

Traders have difficulty differentiating between the legitimate commune tax and the illegal administrative restrictions. In either case a receipt may be provided, though official receipts are printed by the national printing office. For that reason our case study analyses combine the two.

The fact that many traders manage to avoid these taxes is shown by the low overall average of taxes paid (Table 4.9). Average taxes per sack for wholesalers, semi-wholesalers, and itinerant traders is only around 600 CFAF, but they range from zero (most common) to 5,000 CFAF.

Table 4.9. Average Taxes Paid by Wholesalers at both buying and sale sites (CFAF/ton)

Number of observations	Tax at Buying Site	Tax at Sale Site	Sum of All Taxes	Tax *Sauvage*	Average	Min	Max
55	280	280	560	50	610	0	5,000

Source: MSMS, Compte D'exploitation, Field Survey

The low percentage of traders from our sample paying these taxes can be explained by a number of factors: 1) attempts to suppress these taxes coincided with the survey period; 2) traders try to avoid paying these taxes either by negotiating or hiding the sacks from the

tax collectors; 3) semi-wholesalers try to store cereals in half sacks in markets of different localities. Corruption between traders and collector agents was also observed. The trader can offer a certain amount of money less than the required amount to the tax collection agent; in this case, the trader is not given any receipt and the money goes to the collector's pocket.

Illegal Taxes ("Taxes sauvages")

The "taxes sauvages" are patently illegal fees collected at road barriers, usually levied on truckers. These taxes are called *sauvages* because there is no rationale for their collection. Although traders are occasionally forced to pay these taxes by the armed agents at barriers, this is relatively rare. Only seven of the 182 traders in our case studies who moved cereals between markets reported paying illegal fees directly. The amount of taxes sauvages paid per ton ranged from 500 to 2,500 CFAF, with an average of 1,000 CFAF per ton.

Though few transporters or traders pay the taxe sauvage directly, it is important to note that wholesalers pay this tax indirectly in their transportation cost. Both the DAI transportation study and the MSMS discussion paper, "Analysis of Road Barriers in Chad: Economic Effects on the Transportation of Cereals, by Yacoub, Herman, and Fauba (1993), found that road barriers increase transportation costs by between 10 and 20 percent. These barriers are analyzed in more details in chapter 5.

Marketing Costs and Component

Cereals marketing costs vary by type of trade. They vary by activity and by the length of axes. As we would expect, explicit marketing costs are higher for long axes than for short axes. Table 4.10 shows the short axis marketing costs for different routes. These costs differ from one route to another depending on road conditions, distance between the two locations, and the demand and supply of transport.

Table 4.10. Short-Axis Marketing Costs (CFAF per ton/km)

Origin-Destination	Distance (km)	# Obs.	Minimum	Maximum	Mean	Std. Dev.
Farchana-Abéché	120	4	91.7	116.7	101.0	10.8
Birtawil-Abéché	105	15	112.0	147.6	134.8	6.6
Amdjalat-Amtiman	13	6	319.2	596.2	394.9	103.2
Goaygoudoum-Pala	34	4	221.0	286.7	257.3	31.2
Moursale-Pala	22	2	63.6	295.4	179.5	164.0
Gamba-Fianga	50	2	230.0	425.0	327.5	138.0
Tikem-Fianga	16	2	359.4	406.2	382.8	33.1
Kabi-Lere	35	2	193.0	200.0	196.4	5.0
Beti-Doba	18	5	389.0	594.4	512.8	84.5
NDjamena-Masaguet	83	2	174.7	186.7	180.7	8.5
Danamadji-Sarh	50	4	197.0	300.0	245.5	42.2

* The first city represents the market of origin, and the second the destination market.

Source: Compte d'Exploitation, field surveys

Short-axis marketing costs average about 250 CFAF per ton/km (Table 4.10), although they range from a minimum of just 64 CFAF to almost 595 CFAF. The range of

averages on the eleven short-axe routes surveyed run from just 100 francs on the short Farchana-Abéché route to 512 CFAF on the Beti-Doba route.[22]

Medium-axis marketing costs for the six routes surveyed generally ranged between 30 and 100 francs with an average of about 55 CFAF per ton/km (Table 4.11).

Table 4.11. Medium-Axis Marketing Costs (CFAF/ton)

Route*	Distance	# Obser.	Minimum	Maximum	Mean	Std. Dev.
Amtiman-Sarh	357	3	50.4	60.2	58.8	11.9
Bodo-Moundou	158	23	95	110.7	101	6.5
Bitkine-NDjamena	447	4	31.9	38.6	33.8	3.2
Bokoro-NDjamena	313	7	45.5	49.5	47.6	1.45
Melfi-Ndjamena	329	4	46.4	49.4	47.5	1.46
Mongo-NDjamena	551	5	30.4	37.6	33.9	2.8

* The first city represents the market of origin, and the second the destination market.

Source: Compte d'Exploitation, field surveys

The range of averages for these six routes is between 34 CFAF per ton/km for two routes, Bitkine-N'Djaména and Melfi-N'Djaména, up to 100 CFAF per ton/km on the Bodo-Moundou route.

[22] The high cost on the relatively short Moundou--Benoye route can be explained by the very poor condition of the road. In general, we observed and traders confirmed an inverse relationship between road condition and average marketing cost, though no attempt was made to objectively measure road quality.

Long-axis marketing costs were evaluated for three routes: Amtiman-N'Djaména, Ati-N'Djaména and Abéché-Faya (Table 4.12).

The average minimum cost on the N'Djaména-Amtiman route was about 24 CFAF per ton/km, while shipments to the BET from the Ouaddaï cost more than twice that amount. These results are suggestive of the high variability of costs for long-distance trade, an important element in considering profitability and risk.

Table 4.12. Long-Axe Marketing Costs (CFAF per ton/km)

Route	Dist. (Km)	# Obser.	Minimum	Maximum	Mean	Std. Dev.
NDjamena-Amtiman	759	8	24.4	37.5	31.2	4.3
Ati-NDjamena	445	3	37.6	37.6	37.6	NA
Abéché-Faya	603	3	71.3	71.3	71.3	NA

* The first city represents the market of origin, and the second the destination market.

Source: Compte d'Exploitation, field surveys

Costs by component

Analysis of the marketing costs from these case studies confirms that transportation costs represent the major component of total explicit marketing costs (exclusive of the cost of the grain itself). Inter-market transportation costs account for almost 93% of short axis costs, 89% for medium axes, and 82% for long axes.

Handling costs represent between 5%, 8%, and 12% of total costs on short, medium, and long axes, respectively. Handling costs are the second highest share of total marketing costs after transportation costs.

Though taxes can be an important part of marketing costs, our case studies show them to be relatively small on average. Taxes on long axes are highest for inter-market trade, averaging 4% of all costs, with 2.3% and 1.4% being the averages for medium and short axes, respectively. The MSMS found taxes for long hauls the highest averaging 6% of all costs, with 4% and 2% being the averages for medium and long hauls, respectively. The MSMS has also concluded that, "these averages probably understate the impact of taxes since they may range up to one-third of marketing costs in some cases, especially in trade between collection and redistribution markets." The main economic costs of administrative restrictions and illegal taxes arise from discouraging trade (and from their impacts on transportation costs). The higher share of these taxes in trade from collection to consumption markets (long axes) indicates that the problem is more confined to both collection markets and large urban centers. The absolute value of taxes paid by retailers is small, but given their very small operating costs, the taxes can account for a sizable percentage of costs.

Explicit storage costs are the smallest components for those traders we surveyed who claimed to incur them. Storage costs average about 1% of marketing costs from collection to redistribution markets, 1.5% and 2% for medium and long hauls, respectively.

Table 4.13. Share of Cost by Component (Percent)

Components	Short Axis	Medium Axis	Long Axis
Transportation[a)]	93.1	88.7	82.0
Handling	4.7	7.8	12.3
Storage	0.7	1.2	2.0
Illegal Taxes	1.4	2.3	3.6
Average Cost[b)]	220.8	42.0	43.4

[a)] Transportation cost includes barrier charges which represent an important proportion of the transportation cost: 31.5% for short routes, 14.7% for medium routes, and 26.5% for long routes.
[B)] Average cost (CFAF per ton/km) of all cases surveyed by activity.
Source: Compte d'Exploitation, field surveys

The fact that explicit storage costs are so low suggests that any barriers to entry into inter-temporal speculation are most likely a function of access to capital. Commissions range between 2 and 8% for inter-market trade, with the share being the highest for short axes.

CAPITAL INVESTMENT AND FINANCE

Most traders don't have large amounts of capital invested in trade except for their operating capital. The exceptions include a few large traders who own trucks and warehouses, and costs of market place installations--mainly for urban traders. For an analysis of investments in vehicles, see DAI's transportation study (1993).

As for warehouses, many traders use space in their homes or concessions or rent space in other traders' storage facilities. In cases where traders own their own warehouses, the appropriate imputed value is the opportunity cost. In N'Djaména, for example, the cost of

market place stalls (permanently) vary between 300,000 (US$ 1,200) and 2 million CFAF (US$ 8,000).

Few of the traders interviewed during our trader finance survey admitted to borrowing funds for the specific commerce in which they were engaged. However, other studies (Cook, 1992) have estimated the cost of informal credit at around 10-13% monthly. An unpublished study of Chadian finance cites the range of informal-sector interest rates as varying from 184% and 3000% annually, figures which translate into monthly rates ranging from 9 to 33% monthly.[23] Formal sector credit is available to some through Vita and a few other sources such as local banks, where interest rates are much lower (13-25% annually), but almost no traders we interviewed use these sources. Cook's survey included only four Chadian cereals traders, but he found that 36 of his 37 respondents in Chad and Niger (97% of the sample) used informal credit.

Because so few traders claim explicit finance costs we use imputed costs of capital in our evaluations of net margins. These imputed costs are based on estimates of the operating capital needed for wholesale trade activity. We have estimated typical ranges based upon our respondents' own claims of trade volumes and turn-around times (Table 4.14).

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[23] Cook suggests that credit charges are often a fixed amount, invariate with time. This could explain the surprisingly high monthly rates cited by some observers. If the going (short-term) rate to borrow 1,000 CFA is 100 francs, then on a monthly basis, the interest rate would be 10%. But if the loan were for a shorter period, the same 1,000 FCFA payment yields a much higher interest rate.

Table 4.14. Imputed Capital Requirements (Wholesalers)

	Wholesalers	
	Entry Level	**Typical**
Monthly Scale	4 Tons	20 Tons
Rotation Time	monthly	monthly
Quantity to Finance	4 Tons	20 Tons
Cost-Price(CFA per ton)	47,750	47,750
Fixed Capital	2,000	500,000
Capital Investment	193,000	1,445,000
Imputed Monthly interest rate	10%	10%
Imputed Monthly Finance Cost	19,300	145,500
Imputed Finance Cost per ton	4,830	7,280

Scale of Operation: Wholesalers can turn over 10 to 30 tons per month. Data from the questionnaire "Composante Commerçant" show that the modal quantities of cereals bought and sold per month are 20 tons for wholesalers. The medians are also in the same range.

Rotation Time: From our observations during rapid reconnaissance missions, wholesalers generally try to rotate their capital once a month.

Volume to Finance: From the quantity of cereal sold in a month and the frequency of capital turn-over we describe above, we estimate that typical wholesalers need to finance 20 tons of cereal.

Cost-Price per ton (Prix de Revient): Assuming that traders pay for the purchase price of the cereal and all costs prior to resale, the operating capital necessary will be equal to

the cost-price per ton. Using averages from our case studies, these amount to about 47,750 CFAF (US$ 190) for wholesalers (data from Compte d'Exploitation).

Fixed Capital: Our model assumes that typical wholesalers have fixed capital expenses of 500,000 CFAF (US$2,000) to pay for permanent storage and other overhead costs. However, many wholesalers claim to have few fixed capital costs.

Entry-Level Requirements: The parameters established above are not indicative of the minimum necessary capital investment for wholesalers. We have estimated entry-level capital requirements assuming smaller scales of operation, as low as 40 sacks for wholesalers.

Based on these assumptions we have computed that "typical" capital investment ranges for wholesalers between 200,000 CFAF (US$ 800) to 1.5 million CFAF (US$ 6,000).

Upper-bound levels of capital invested by wholesalers can exceed by far the ranges established here, especially for those who are vertically integrated into storage or transportation. Several traders interviewed regularly hold several tons of cereal, the cost of which can run upwards of ten million CFAF (US$ 40,000). As noted above, the cost of a market stall in N'Djaména can exceed one million francs. Costs of trucks range from 5 to 10 million for medium-size trucks. And traders who bid on ONC contracts must have access to up to 15 million francs to finance their purchases.

Table 4.15. Imputed Finance Costs Under Alternative Assumptions

Activity	Entry-Level Wholesaler-Speculator	Wholesaler (Low fixed capital)	Wholesaler (with moderate fixed capital)	Wholesaler Speculator	Large Wholesaler-Speculator
Monthly Scale (tons)	4	20	20	20	100
Storage time (months)	1	1	1	6	3
Quantity to finance (tons)	4	20	20	20	100
Cost-price per kg	50	50	50	50	50
Fixed Capital	3000	5000	500000	1000000	1000000
Capital Investment	203000	1500000	1500000	1000000	6000000
Finance Cost per ton at:		**Sensitivity**	**Analysis**		
1 percent	510	500	750	3500	1600
2 percent	1020	1010	1500	7000	3200
5 percent	2540	2510	3750	17500	8000
10 percent	5080	5030	7500	3500	16000
15 percent	7610	7540	11250	52500	24000

Source: Compte d'Exploitation, field surveys

In all cases, the economic costs of finance, whether self financed or borrowed, must be considered. Since estimates of the appropriate opportunity cost of capital vary so widely, they can make significant differences in computed real rates of return to any trading activity, especially those involving long-term storage and large amounts of capital such as for wholesalers. In Table 4.15 we show simulated finance costs per sack of cereal based on the parameters described above and a range of market interest rates. As one would expect, the results are extremely sensitive to the interest rate applied, but they are suggestive of the importance of implicit finance costs, especially for traders who store. Monthly interest rates of 1 or 2% would generally only be available from formal sector institutions. We believe that monthly rates of 5, 10, and even 15% are more appropriate to cereals marketing, the higher rate being applicable to short-term activities.

According to our model, for wholesalers with low fixed capital who rotate their capital monthly, implicit finance costs would range from 2,500 to 7,500 CFAF per ton (assuming monthly interest rates of between 5% and 15%), an amount that can exceed the total of all explicit costs except inter-market transportation. For those traders with moderate fixed capital costs (500,000 CFAF), implicit finance costs would be about 50% higher. The most amazing result is for wholesalers who combine inter-temporal speculation with inter-market trade. A wholesaler who tied up his capital for six months would incur implicit finance costs of between 17,500 and 52,500 CFAF per ton, assuming monthly interest rates of between 5% and 15%. Even the lower-bound estimate combined with average long-axis costs of 25 CFAF would require margins in excess of 40 CFAF without considering returns to labor, management and risk. The last column of Table 4.15 would

be applicable to wholesalers (or cooperatives) bidding for ONC contracts. It indicates that for such traders, implicit capital costs could amount to 10,000 CFAF/ton or more. On the other hand, such traders are more likely to have access to formal credit with interest rates closer to 1 or 2% monthly, thus substantially reducing finance costs.

Estimated implicit finance charges are also very sensitive to assumption about rotation of capital. While traders may accelerate turn-around times to exceed those shown in the table, the opposite is also true. During periods when market activity slackens, their rate of capital rotation may slow down. It is highly questionable that credit markets are fluid enough for traders to adjust their credit positions rapidly. More likely, traders switch unused credit resources into other trade activities. Because cereals trade is not a year-round activity for most traders, it is not uncommon for traders to have other seasonal trade or agricultural investment opportunities.

EVALUATION OF NET MARGINS AND PROFITS

Margins were computed for each case study for which we had complete information. Gross margins by region are summarized in Table 4.16.

Gross Margins

Gross margins for selected short axis range from a minimum of 72 CFAF to a maximum of 538 CFAF per ton of cereals. There is a surprising uniformity of average gross margins by route among the short-axis routes. Average gross margins range from about 150 CFAF per ton-km around N'Djaména to 200 around Abeché, and 250 around Sarh. This may indicate that traders target trade when price spreads are between 150 and 250 CFAF.

Table 4.16. Gross Margins for Selected Short-Axes (CFAF per ton-km)

Origin-Destination	Observ.	Minimum	Maximum	Mean	Std. Dev.
Birtawil-Abéché	44	71.7	537.7	207.1	62.4
Massaguet-N'Djaména	2	59.7	227.0	143.4	118.3
Danamadji-Sarh	4	95.6	478.0	247.9	162.4
Farchana-Abéché	4	167.3	191.2	173.2	11.9

Source: Compte d'Exploitation, field surveys

For medium axes, the average gross margins range between 70 and 505 CFAF per ton/km. The average margins for medium routes coming into N'Djaména are lower than for short routes. This likely indicates greater competition along this route (Bitkine-N'Djaména).

Table 4.17. Gross Margins for Selected Medium-Axes (CFAF per ton)

Origin - Destination	Observ.	Minimum	Maximum	Mean	Std. Dev.
Bitkine-N'Djaména	4	76.8	307	139.8	111.6
Bokoro-N'Djaména	7	76.7	394.7	180.2	141.5
Melfi-N'Djaména	4	87.7	504.4	233	194
Mongo-N'Djaména	6	92.1	394.7	164.1	118.2

Source: Compte d'Exploitation, field surveys

Long-axes average gross margins range from -8 CFAF per ton/km for route to N'Djaména to 84 CFAF per ton/km for routes leaving Abéché for Faya. Again, the gross margins for N'Djaména routes are higher for the medium routes than for long routes, though this is explained by the fact that data for several medium-routes came from the post-devaluation period when prices rose sharply.

Table 4.18. Gross Margins by Region of Long-Axes (CFAF per ton)

Origin-Destination	Observ.	Minimum	Maximum	Mean	Std. Dev.
Amtiman-Sarh	3	36.0	41.0	37.5	2.6
Amtiman-N'Djaména	8	-7.9	32.9	21.5	14.3
Ati-N'Djaména	3	30.6	67.4	50.5	18.6
Abéché-Faya	3	35.2	84.2	65.3	26.4

Source: Compte d'Exploitation, field surveys

Table 4.18 provides the averages over all routes from tables 4.16, 4.17, and 4.19. Although, it masks all the interesting details from the above three tables, it gives us a broad idea on gross margins between short, medium, and long axes. The gross margins are higher on short axes, 196 CFAF per ton/km route, than medium and long axes. Long axes have the lowest gross margins 39 CFAF per ton/km route, Table 4.19.

Table 4.19. Gross Margins by Axe (CFAF per ton)

Axes	Obser-vations	Minimum Gross Margin	Maximum Gross Margin	Average Gross Margin	Standard Deviation
Short Axes	61	59.8	537.7	195.8	79.1
Medium Axes	25	70.2	504.4	165.2	126.2
Long Axes	18	-7.9	84.2	38.5	21.9

Source: Compte d'Exploitation, field surveys

Net Margins

After marketing costs have been accounted for, the real issue is net margins. We have computed net margins from our case studies using explicit costs reported by traders. These results do not include our estimates of implicit returns to capital, labor, or other resources provided by traders, issues we address later. Net margins of wholesale activity for selected short axes are reported in Table 4.20.

Table 4.20 Net margins by Region of short axes (CFAF per ton/km)

Axes	Observ.	Minimum	Maximum	Mean	Std. Dev.
Birtawil-Abéché	43	(150.0)	3,000	344.2	478.0
Ton/km		(1.4)	27.3	3.1	4.3
Massaguet-N'Djaména	2	274.7	449.9	362.7	92.0
Ton/km		3.3	5.4	4.4	1.5
Danamadji-Sarh	3	(135)	50.0	(40.0)	92.6
Ton/km		(2.7)	1	(.8)	1.8
Farchana-Abéché	4	200.4	300	237.6	43.3
Ton/km		1.7	2.5	2.0	0.4

Source: Compte d'Exploitation, field surveys

From Table 4.20, the range of average margins for the sample wholesalers extends from a loss of 2.7 CFAF to a maximum gain of 27 CFAF per ton/km. The data also indicated that, 10% of the sample wholesalers incurred losses.

Though the results of the case studies should perhaps be regarded with some caution, they are consistent with independent observations of marketing costs and price spreads. The highest margins were reported by traders who sold following the devaluation when

prices increased dramatically. In particular, large gains were reported on trade from the Guéra eastern Chari-Baguirmi (Bokoro, Melfi) during early 1994. Unfortunately, we do not have comparable case studies from the pre-devaluation period for these routes. However, net margins for long axes coming into N'Djaména during the pre-devaluation period are much lower, averaging less than 50 CFAF per ton, and with a maximum of 70 CFAF.

Net margins on other routes tended to be more consistently smaller. Table 4.21 presents net margins for major medium-axe and by length of route.

Table 4.21 Net Margins by Region of Medium Axes (CFAF per ton/km).

Axes	Observ.	Minimum	Maximum	Mean	Std. Deviat.
Bitkine-N'Djaména	4	325.0	5,275	1,675	2,402
Ton/km		0.7	11.8	3.8	5.4
Bokoro-N'Djaména	7	1750.0	9,000	4,107	3,227
Ton/km		0.88	23.8	8.4	10.2
Melfi-N'Djaména	4	424.4	9,976	3,751	4,433
Ton/km		1.3	30.3	11.4	13.5
Mongo-N'Djaména	5	126.8	7,323	2,138	3,030
Ton/km		0.2	13.3	3.9	5.5

Source: Compte d'exploitation, field surveys

From this table, we see that medium axis net margins vary between axes, with the greatest variability being on Melfi-N'Djaména route (standard deviation of 13.5). Medium axis average net margin lies between 4 CFAF per ton/km (Bitkine-N'Djaména, and Mongo-N'Djaména) and 11.4 CFAF (Bokoro-N'Djaména). The results from Table 4.22

indicate that the greatest variability was on trade into N'Djaména, which reported both maximum losses and gains from our sample. On average, net margins vary little with the different types of axes with the exception of the routes to N'Djaména and Abéché-Faya route. Long axis average net margins vary from a minimum of -2.5 CFAF per ton/km of cereals on trade between Amtiman-N'Djaména and a maximum of 6.1 CFAF per ton/km on Ati-N'Djaména route.

Table 4.22 Net Margins by Region of Long Axes (CFAF per ton/km).

Axes	Observ.	Minimum	Maximum	Mean	Std. Dev.
Amtiman-Sarh	3	(50.0)	549.8	200.0	312
Ton/km		(0.2)	1.5	0.6	0.9
Amtiman-N'Djaména	8	(1,900)	1,050	(334.0)	876.5
Ton/km		(2.5)	1.4	(0.4)	1.2
Ati-N'Djaména	3	75.6	2,723	1,460	1,328
Ton/km		0.2	6.1	3.3	3.0
Abéché-Faya	3	700.0	1,200	883	275.4
Ton/km		1.2	2.0	1.5	0.5

Source: Compte d'exploitation, field survey

Profitability

Though the average net margins are generally positive, they do not take into account the return to traders for the opportunity cost of labor, for risk taking and for entrepreneurship or for management skill. As we described in the section on finance and capital costs, estimates of the implicit costs of capital are very sensitive to assumptions

regarding rotation of capital and the appropriate interest rate. Capital rotation in cereals trade varies according to the type of trader. Wholesalers who have large capital investment in cereals trade can usually expect to turn over their capital once a month. It takes about a month for a wholesaler to send a collection agent with a truck to collect cereals in the Amtiman region, to transport them to N'Djaména, to sell the cereals in N'Djaména, and send the money back to Amtiman for another cereals purchase. It similarly takes the same length of time for a wholesaler in Sarh to send an agent for cereals collection in Amtiman.

Using the net margins computed from the case studies and the estimates of imputed finance costs from Table 4.18, we have estimated ranges of expected returns to labor and risk (Table 4.23). These ranges only consider mean and median net returns, so the actual ranges of real returns is much wider, including likelihood of losses.

Table 4.23 Estimates of returns to Labor and Risk (CFAF/ton)

	Wholesaler No Storage	Wholesaler 2 Months Storage
Mean Net Margin	9,200	10,390
Median Net Margin	5,250	8,250
Finance Cost per ton at 2%	1,010	2,200
Finance Cost per ton at 5%	2,510	5,500
Finance Cost per ton at 10%	5,030	11,000
Lower-Bound Return to Labor and Risk[a]	525	825
Middle-Bound Return to Labor and Risk[b]	262.5	412.5
Upper-Bound Return to Labor and Risk[c]	105	165

[a] Uses median net margin and 10% finance cost.
[b] Uses median net margin and 5% finance cost.
[c] Uses mean net margin and 2% finance cost.

Source: Compte d'Exploitation and simulations.

In fact, the lower-bound estimate for wholesalers who store for two months (the only storage group for whom we had a substantial sample (22 respondents) was 825 CFAF per ton. The middle range estimates of returns to labor and risk are between two and four hundred francs per ton for inter-market traders. The expected returns to traders who store for two months are about 60 percent more to those who rotate their capital monthly, further evidence that returns to storage are not excessive when capital costs are taken into account. It is not surprising then, that we were unable to find vast stocks of cereal being

held by traders as is commonly argued in the literature. Most traders find it more profitable to rotate their capital than to sit on it in the form of cereal.

We are left with the issue of returns to labor, risk, and entrepreneurial skills. The wide range of net margins is indicative of the risks involved in cereals marketing. They also suggest that the amount of entrepreneurial skill (not to mention investment in human capital, networks of contacts, and familiarity with the terrain) required is not negligible if traders are to avoid losses. Neither of these observations original, but they do bear repeating: agricultural trade is a risky and demanding business. The remaining factor is labor. Using the middle-range estimate from Table 4.23 and the monthly scales of operation cited in Table 4.18 and in the text, monthly returns to wholesalers' labor, entrepreneurship, and risk taking would be about 60,000 CFAF. Obviously, many traders make profits in excess of the computations performed here, but just as obviously, many also lose money.

PROFITS AS A MEASURE OF MARKET EFFICIENCY

This chapter began with the assertion that economic profits can be used to measure market efficiency. Economic profits are the returns to trade after taking into account the normal or implicit returns to labor, to capital and to other resources the trader provides. What do the estimates of returns computed in this chapter say about the health of Chadian cereals markets? In general, the returns are very consistent with a competitive sector. On the other hand, the high costs of transportation point to the area of greatest inefficiency, the terrible road network in Chad.

The levels of returns computed show little evidence of sustained market power, though our sample was perhaps not large enough to establish this convincingly for all regions. Somewhat troubling are the high net margins computed for selected routes such as Birtawil-Abéché, N'Djaména-Ati, and from eastern Chari-Baguirmi region (Bokoro) into N'Djaména. Administrative restrictions have been discovered on all these routes except the first, and the high rate of returns may indicate economic rents to those who manage to trade despite them. But other factors also enter in, including local supply shocks (certainly the case around Abéché) and the effect of devaluation. As the market adjusts to these changes, higher returns are to be expected in some areas, just as lower returns are expected elsewhere. The prevalence of low net margins in the Sarh region may well indicate the intense level of competition among small wholesalers there, or it may be the result of market signals redirecting trade.

Regardless of the explanation for specific rates of return in different regions, the fact is that this study did not uncover persistently large returns throughout the system or at any

level. In particular, the putative excess returns to storage vanish under scrutiny. This is not to say that inter-seasonal price increases are non-existent or that some farmers manage their sales poorly so as to sell when prices are lowest. But the evidence here is that traders who store grain do not necessarily make high returns once capital costs are accounted for. Further, as the post devaluation experience has shown, traders who find their stocks appreciating, often quickly liquidate them to use the capital for other activities. Most traders don't like to keep their capital tied up in sacks.

The generally positive net margins our data show seem broadly consistent with the idea of normal profits or returns. We believe that the serious problems that face the cereals sub-sector and its marketing system lie elsewhere, mainly in the areas of improved production, better roads, effective free trade, and a better macroeconomic environment that will revitalize demand for marketed commodities. This chapter strongly suggests that when these other conditions improve, Chadian traders will be prepared to move cereals spatially and inter-temporally without excessive profits.

CHAPTER FIVE

IDENTIFICATION AND ANALYSIS OF KEY OPPORTUNITIES AND CONSTRAINTS IN THE CHADIAN CEREALS MARKET

Agricultural sector performance and liberal cereals trade policy continue to be a source of concern and debate among nationals and donors involved in the policy making of Chad. After the 1979 civil war, the Government of Chad has maintained a relatively liberal policy for grain marketing on a national level. Prices have been freely determined by supply and demand conditions, and private traders have been responsible for more than 95 percent of all cereals marketing activities. The Government of Chad has never tried to suppress or eliminate private cereals trading, as often happens in some of Sahelian countries. The government has intervened in the market through the ONC, and its activities have usually been related to the national buffer stock and the distribution of food aid in coordination with donors. However, the private cereals trade policy has been usually liberal.

The general policy is liberal, but the institutional environment surrounding cereals marketing, however, has been remarkably weak. Political, military, and economic instability have created conditions in which local officials have developed the power to intervene in cereal markets in ways that often contradict national policy. Military instability has led to the creation of hundreds of road barriers, used originally for security controls, but used subsequently to extract bribes from traders and transporters. Political instability and armed conflicts, not uncommon in Chad, have created an environment in

which local officials, such as prefets, sous-prefets and canton chiefs, do not feel obliged to follow government directives coming out of N'Djaména. Instead, they create their own rules in their respective administrative districts -- rules that often restrict or tax the cereals trade. Economic instability has created a climate where government officials are paid irregularly and infrequently. This situation leads officials to extract illegal taxes from cereals traders, and it reduces overall demand for cereals in key urban markets.

These local interferences in the cereals trade have evolved in terms of administrative restrictions (illegal taxes, and quotas) and road barriers. During the past sixteen years, several cereals marketing studies have been conducted throughout the country, but the political environment led many researchers and consultants to consider restrictions as minor theme. The purpose of this chapter is to provide a better understanding of the key institutional factors that constrain agricultural sector performance.

This chapter describes and analyzes the most prominent policy issues related to cereals marketing in Chad. It consists of two parts, each treating an important policy issue. The first part addresses administrative restrictions to cereals movement -- taxes and controls imposed by government authorities at local levels. This part of the chapter is organized as follows: First, it provides historical background on the administrative restrictions. Then it describes the two types of administrative restrictions, giving several examples, followed by the rationale for these restrictions. It also analyses the effects of restrictions on producers and consumers, and describes the efforts that have been undertaken to end administrative restrictions. Finally, it presents recommendations to strengthen these efforts. In the second part of the chapter, we address issues of road

barriers and their effects on the transportation of cereals. Additional policy issues, involving the role of the National Cereals Office (ONC), the cereal banks, and municipal governments in the organization of Chadian cereals markets are discussed in chapter six.

A. ADMINISTRATIVE RESTRICTIONS TO CEREALS MOVEMENT

Administrative restrictions to cereals movement have important historical precedents and date back to the colonial period (Adloff and Thompson, 1960). These took several forms:

1. African rural taxpayers had to provide the colonial administration with 100 kilograms of cereals (millet, sorghum, berbéré) at a price well below the market rate to supply the colonial administration and army with grain.
2. Colonial administrators had the power to restrict grain movements out of their jurisdiction.
3. The colonial administration used the Sociétés Indigènes de Prévoyance (SIP) to collect cereal stocks for the capital. Membership in these Sociétés was mandatory.

Because of the important historic antecedents of administrative restrictions on cereals movement, these restrictions and taxes persisted after Independence. However, the original rationale for giving local administrators the authority to restrict the movement of cereals was to protect local populations against famine resulting from crop failures. Decree No. 267/PR/INT of 2 November 1972 (Art. 7) establishing the powers of the

prefet provides the basis for the authority of the prefet to control cereal movements within his district:

"When supplying the population in foodstuffs of primary necessity create problems of public order, the administrator of that locality must take urgent measures, that can be called for, and report the situation to the government."

The rationale mentioned above is dubious, and the legal text remains vague concerning what constitutes a problem of public order or the nature of the urgent measures to be taken to redress the situation. Although this is the only text that we could find to provide a legal basis for restricting cereal movement within an administrative district, administrative authorities such as prefets, sous-prefets, and chefs de canton have intervened to prevent cereals produced in their district from being sold outside their district or have insisted that cereal shipments cannot leave without their authorization.

However, combined with the current political and economic climate which encourages local officials to seek alternate sources of finance, this argument has been powerful with administrators. As a result, restrictions such as taxes and direct controls have become firmly entrenched in the Chadian administrative culture. All taxes except those levied by communes have been banned by the government. Still, they persist. Administrative restrictions raise transaction costs, thus harming producers and consumers. However, those paying these taxes are not well organized as an interest group, making it difficult to resist even illegal levies. Since the main beneficiaries are the sous-prefets and the canton chiefs, implementation of the government decree banning administrative

restrictions will be difficult. This difficulty arises because of insecurity, lack of governmental authority, non-payment or late-payment of salaries, and the rapid turnover of administrative officials.

The long distances, poor roads and other communications make supervision and control from the capital over the activities of district administrators and canton chiefs difficult. As a result, local authorities have been able to administer their jurisdictions with little or no interference from the central authorities. Traditional authorities and canton chiefs often abused their authority in collecting taxes and restricting free movement within their districts.

There is a huge gap between the limited powers given only to the prefet during a food crisis to restrict shipment of grain outside his district and current practices in many areas of the country. The texts do not give the sous-prefet or the canton chief the power to issue exit autorizations for grain (authorizations de sortie). Nevertheless, sous-prefets and canton chiefs often act as if they were empowered to issue such authorizations. In addition, these authorizations were not intended to be a means of collecting revenue for the state or the local administration. Yet it is common knowledge that canton chiefs, often with the collusion of sous-prefets, levy illegal "exit" taxes on cereals. For example, at the weekly market of Bandiongo, merchants had to pay an average of 250 CFAF per sack droit de sortie. The revenue was said to be divided in the following manner: 50 CFAF for the canton chief, 50 CFAF for the gendarmerie, 50 CFAF for the army and 100 CFAF for the sous-prefet. In the larger towns of the interior such as Abéché, Moundou and Sarh, the commune is also collecting a tax on cereals although they have no legal authority to do so.

The law gives the commune the right to collect market place fees from traders and retailers using the market and market fees from transporters. The "exit" tax varies from 100 to 500 CFAF per sack of 100 kilograms; the amount of communal tax was only 20 Fcfa per sack in 1989 (Yacoub and Laoubara, 1989). During our field survey, we identified over 30 examples of administrative restrictions. In Table 5.1, the types of tax collected by different authorities are presented, and below we describe few examples.

In the Mayo-Kebbi, several chefs de cantons forbade traders from moving cereals out of their cantons in 1992/93, and many cantons and sous-prefectures imposed taxes of 100 to 250 CFAF per sack on the transfer of cereals out of their administrative regions. In 1994, these taxes were imposed in Fianga and Lere.

In the Salamat, local authorities imposed a tax of 250 CFAF on each sack trucked out of the region in 1992 and 100 CFAF per sack in 1993.

In Moundou, the Mayor issued a decree in early 1993 to ban the commercial transfer of cereals out of the city, despite the city's traditional role as a heart for the cereals trade. In 1994, the ban was being enforced by local security officers.

In the Logone Oriental town of Bodo, traditionally an important cereal market, the village chief banned outright the sale of millet and sorghum at the weekly market in 1992/93, forcing local producers to sell clandestinely, at night, at low prices. He renewed the ban in early 1994, then rescinded it.

In Sarh, these taxes are listed in the communal budget as taxes levied on food products. The city put a tax of 500 CFAF on each sack trucked out of town in 1993/94.

In the productive regions of Ba-Illi and Moissala, traders were required to get an "authorization" in 1993/94 signed by the chefs de canton and sous-prefets to transfer cereals out of these zones. These signatures take time, connections, and occasionally money to obtain.

In Abeché, the prefecture imposed a tax of 350 CFAF on each sack trucked out of the region in 1992, then adopted a system administratively limiting quantities "exported" by requiring "authorizations" for shipments of over five sacks. In 1994, limitations were strengthened and departing trucks were searched for cereals.

In Mongo, local officials imposed a tax of 300 CFAF on each sack trucked out of the region in 1992, then adopted a system administratively limiting quantities "exported" by requiring "authorizations" for shipments of over five sacks.

In Ati, traders were required to obtain an "authorization" from the sous-prefecture to transfer cereals from the area. Although "authorizations" were free, they were denied on occasions, and occasionally could be obtained only through bribes.

In Biltine, the sous-prefect issued a decree in 1992, limiting all cereal "exports" from the region to three sacks per person "for household consumption only" unless a tax of 100 CFAF/sack was paid.

Table 5.1: Type of tax collected by different authorities in Chad.

Market	Region	Tax Type	Amount	Unit	Year	Authority
Biltine	Biltine	Droit de place	50	trader	1994	Sous-Prefecture
Bébalem	Log Occidental	No name	200	sack	1994	Canton
Bénoye	Log Occidental	No name	100	trader	1994	Canton
Moundou	Log Occidental	Taxe de sortie	100	sack	1994	Canton
Bodo	Log Oriental	No name	200	sack	1994	Canton
Doba	Log Oriental	Droit de place	100	sack	1994	Commune
Goré Nord	Log Oriental	No name	200	sack	1994	Canton
Fianga	Mayo-Kebbi	No name	100	trader	1994	Canton
Léré	Mayo-Kebbi	No name	250	sack	1994	S-Pref&Canton
Bédigri	Moyen -Chari	No name	200	sack	1994	Canton
Danamadji	Moyen-Chari	Taxe de sortie	250	sack	1994	Local Autorities
Sarh	Moyen-Chari	Droit de place	100	sack	1994	Commune
Sarh	Moyen-Chari	Taxe de sortie	500	sack	1994	Commune
Abéché	Ouaddai	Droit hangar	50	trader	1994	Commune
Am-Zoer	Ouaddai	Taxe de sortie	25	trader	1994	Sous-Prefecture
Arada	Ouaddai	Taxe de sortie	50	trader	1994	Sous-Prefecture
Birtawil	Ouaddai	Taxe de sortie	250	vehicle	1994	S-Pref&Canton
Marchout	Ouaddai	Droit traditionnel	25	seller	1994	Canton
Mourra	Ouaddai	Droit traditionnel	25	trader	1994	Canton
Pont-Carol	Tandjilé	No name	250	sack	1994	S-Pref&Canton
Ati	Batha	Authorisation	0	sack	1993	Local Autorit ies
Bodo	Log Occidental	Interdiction de sortie			1993	Canton
Moundou	Log Occidental	Taxe de sortie	200	sack	1993	Commune
Bissi-Mafou	Mayo-Kebbi	Droit de sortie	100	sack	1993	Canton
Bongor	Mayo-Kebbi	Droit de sortie	500	sack	1993	Commune
Fianga	Mayo-Kebbi	Droit de place	100	buyer	1993	Sous-Prefecture
Am-Zoer	Ouaddai	Interdiction de sortie			1993	Local Autorities
Aboudeia	Salamat	Droit de sortie	100	sack	1993	Local Autorities
Kélo	Tandjilé	Taxe de sortie	500	sack	1993	Commune
Pont-Carol	Tandjilé	Droit de marché	200	sack	1993	Canton
Mongo	Guéra	Droit de sortie	300	sack	1992	Préfecture
Abéché	Ouaddai	Droit de sortie	350	sack	1992	Préfecture
Am-timan	Salamat	Droit de sortie	250	sack	1992	Local Autorities

Source: Road Barriers' Questionnaire, field surveys

1. TYPES OF RESTRICTIONS

Two types of restrictions on cereals flows exist in Chad. The first consists of administrative bans or limits on the commercial movement of cereals out of a village, canton, or sous-prefecture. The second type of administrative restriction is the "exit tax" or taxe de sortie. In many regions around the country, local administrators impose these taxes on every sack (100 kgs) of grain to be moved out of the area. These types of taxes have been declared illegal by the Central Government, but they persist in many districts of the country.

Both types of restrictions are widespread in Chad, though they are rarely mentioned in the literature to date. This is probably because they are sporadic, and their highly localized nature makes them difficult to identify without significant field work. Local officials are often reluctant to discuss the issue of restrictions, because they don't want to account for the proceeds of trade taxes and they know that most are illegal. One has to ask probing questions to find out the truth. Prior 1991, the political environment was not attractive to raise issues of interests, because restrictions are the outcome of political weakness in which interests of prefets, sous-prefets, and chef de cantons are favored above those who would benefits from liberal trade.

2. Reasons for their existence

Administrative restrictions are imposed on traders at the local and regional levels by authorities such as mayors, chefs de village, chefs de canton, sous-prefets, and prefets. They impose administrative restrictions for two principal reasons. The first reason is to

collect tax revenues. Cereals are relatively easy to tax. These types of taxes, however, are considered illegal by the central government. Only the five major cities, called communes, are allowed to tax agricultural trade to raise funds as part of their budgets. Because most taxation of cereals is illegal, a strict accounting of revenues collected in this way does not exist. Local authorities often claim to use the funds to do small repairs on schools, hospitals, or pay for food for visiting officials. The truth is that they can use the money on almost anything they choose.

A second reason for imposing restrictions is the belief by many authorities that such restrictions are "good for food security." This belief is built on three trembling foundations. First, many Chadians believe that farmers sell most of their cereals right after harvest and must repurchase cereals during the hungry season. These officials want to protect farmers from themselves. This belief, however, is based on a misconception. In a recent AMTT study it was found that: "Farmers tend to space sales out throughout the year and sell in markets where competition is keen" (Herman, Fauba, and Yacoub, 1994). Secondly, many local authorities believe that each sous-prefecture in Chad should be self-sufficient and save up its own production. Consequently, the free movement of cereals should be discouraged. This idea runs contrary to an important conclusion of a recent Millet and Sorghum Marketing Study in Chad: food security requires free and flexible cereal flows, given the high degree of variability in production from region to region and year to year (Herman, Fauba, and Yacoub, 1994). Third, local officials believe that food security means suppressing consumer prices. In the short run, administrative restrictions may reduce prices to consumers in regions where they are imposed. Suppressed prices

and restricted sales, however, provide disincentives to production and that will hurt food security eventually. These are discussed in the following sections.

However, from the local authority' point of view, the rationale for all such restrictions is to "protect local interests" by protecting the regional stock of cereals. However, administrative restrictions have come to serve the interests of local authorities as an important source of revenue, especially important when central government allocations have been reduced or delayed. Often, regular exemptions from quotas are given for the payment of a fee, often called the droit de sortie.

Other sources of misunderstanding also exist. The motivations of those who impose local export taxes and quotas are usually good -- they wish to retain cereals in their zones of influence so that food is not too scarce and expensive during the hungry season or soudure months. They usually impose trade restrictions when they feel that their administrative region is likely to be in a cereal "deficit situation" during the soudure months. These decision-makers usually do not fully understand that the taxes that they impose are passed on almost completely to the producer (because the N'Djaména market is highly price elastic in relation to any single supply region), which is likely to discourage production in the long run. These decision-makers usually do not fully understand the role of prices in assuring an efficient distribution of cereals from areas of relative abundance to areas of relative scarcity. Authorities believe that they can administratively control cereal movements more efficiently that can price signals. Instead of allowing higher prices in a neighboring prefecture to signal relative scarcity and attract cereals from their

administrative area, many local authorities try to block cereal flows out of their areas, claiming that their administrative zone is "in deficit."[24]

This attitude, of course, ignores the relative nature of the term "deficit." While many areas of Chad are likely to be "in deficit" simultaneously, some areas are likely to be more "in deficit" than others. Prices in highly-deficit areas will be higher than those in moderately deficit areas, which should evoke trade between these regions. When a local authority blocks trade between a moderately-deficit area such as Am-zoer and a highly-deficit area such as Arada, he not only harms his local producers but he harms the presumably hungry consumers of Arada. Short-term food security is damaged in Arada, and long-term food security is damaged in Am-Zoer, as farmers are discouraged from producing surplus grain for market.

In 1984, during a particularly bad drought year, prefects all over Chad are reported to have banned cereal "exports" from their respective regions. These bans undoubtedly kept cereals from flowing to the hardest-hit deficit and famine regions in Chad, and probably contributed to the severity of suffering in these areas.

In 1993/94, the production of cereals fell 30% compared to 1992/93 production. Consequently, the mayor of Abéché is reported to have banned the outflow of any cereals from his city. Thus, famine-struck areas to the North of the city were having difficulties getting supplies, despite the availability of commercial surpluses to the South and East of Abéché.

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[24] Many local authorities say things like "We allow cereals to leave the area when there is a surplus, but we restrict exports when there may be a shortage." In a liberal economy, price signals are supposed to perform this function, not sous-prefects.

3. THE EFFECT OF ADMINISTRATIVE RESTRICTIONS

There are three major effects of cereals trade restrictions that may delay and hurt the performance of millet and sorghum subsector and the food security in Chad. First, they reduce the flow of cereals from areas of surplus to areas of deficit, thereby harming food security. Second, they increase transaction costs, resulting in lower prices being paid to farmers, and reduce farmers' incentives to produce cereal surpluses, which also harms food security. Finally, they foster the development of corrupt relationships between local authorities and certain traders.

These effects apply to both types of restrictions: quotas and taxes. Specific effects of each of these categories of restrictions, which slightly differ, are outlined below.

a. Effects of Local "Export" Taxes on Cereal Movements

Economic analysis shows that the effects resulting from the imposition of taxes by local authorities on the transfer of cereals out of a given region are: a) Producer prices are reduced by almost the full amount of the tax, even if it is nominally imposed on the traders. b) Consumers in the local area benefit from the tax, because the tax drives down local cereal prices and reduces exports from the region. c) Cereal consumption is encouraged, and cereal production is discouraged in the taxed region. d) Incentives are distorted, leading to economic inefficiencies and wasted resources. e) Tax revenues are raised by local authorities, but the use of these revenues is unclear.

Our economic analysis in figures 5.1 and 5.2 is based on the fact that a single trader cannot influence the N'Djaména grain price. In the short run, a single trader cannot

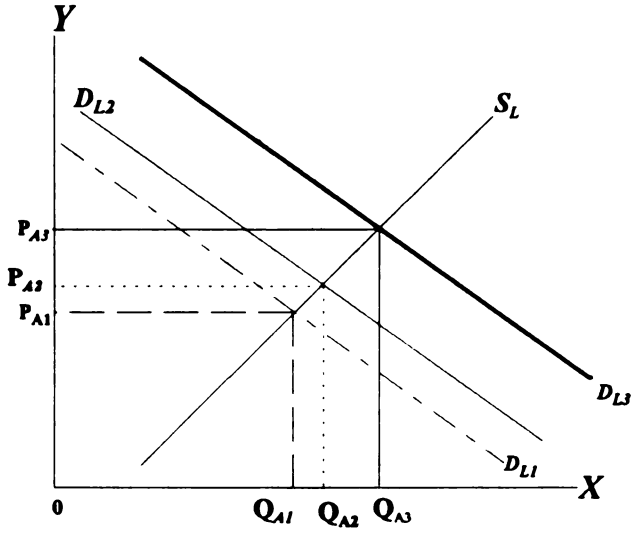
therefore, pass the cost of a trade tax onto N'Djaména's consumers. He can, however, lower the price that he pays the producer. This is why these types of taxes hurt producers the most.

Figures 5.1 and 5.2 illustrate the effects of internal "export" taxes (taxes on the transfer of cereals out of a prefecture or other administrative unit to another area of Chad)[25]. In figure 5.1, we assume that Abéché is the main supplying market of N'Djaména with millet. The quantity of marketed millet in the region is measured by the *X*-axis, and the price is measured on the *Y*-axis. Local supply is represented by the curve labeled S_L while local demand is represented by the curve labeled D_{L1}. Without trade with N'Djaména, the local price in Abéché would be P_{A1} and the quantity traded would be Q_{A1}. Once one considers the demand for grain in N'Djaména, however, the situation is altered. Traders wishing to bring grain to N'Djaména are willing to pay up to price P_{A3} for local grain (the average price P_{A3} for that specific period). The demand curve in Abéché shifts to the right and is represented by the higher curve D_{L3} and the total quantity exchanged is OQ_{A3}, of which OQ_{A1} is purchased for local consumption and $Q_{A1}Q_{A3}$ is the quantity supplied to N'Djaména within a specific period. Without any government intervention to restrict the movement of cereals from Abéché to N'Djaména, this will be the natural outcome. When local officials impose an "export" tax of 100 CFAF on each sack (100 kgs) of millet to be transferred to N'Djaména, the situation changes. The tax increases traders' costs and by that causes a drop in their demand for grain in the region. This is depicted by a downward shift of their demand curve by the amount of the tax D_{L3} shifts

[25] In our example, we choose N'Djaména and Abéché to illustrate the effects of taxes and quotas.

down to D_{L2}. Under these conditions, the price falls from P_{A3} to P_{A2}, and the total quantity exchanged falls to OQ_{A2}, of which OQ_{A1} is purchased for local consumption and $Q_{A1}Q_{A2}$ is "exported" to N'Djaména.

FIGURE 5.1: EFFECTS OF LOCAL "EXPORT TAXES" ON SUPPLY AND DEMAND.



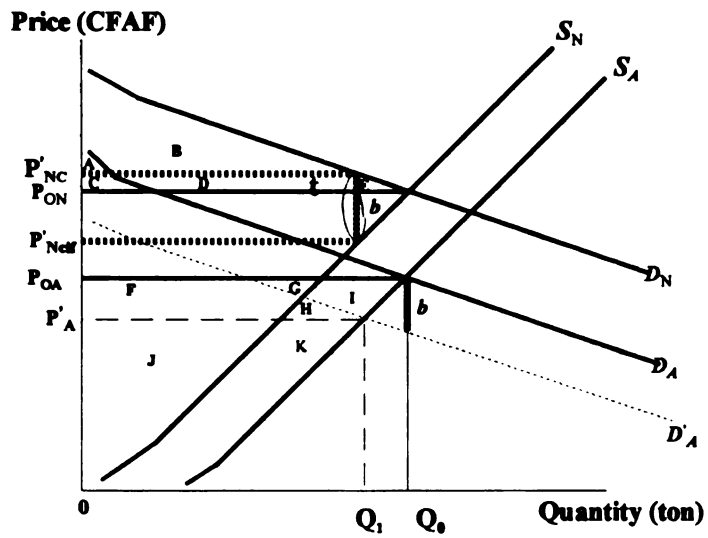
Source: Road Barriers' Questionnaire, field surveys

Figure 5.1 shows that with introduction of export taxes, the following effects on prices, consumption and production occur in both cities. The price received by farmers declines in Abéché. Over the long run if there are not excess profits in cereals trading, then the tax raise costs, which are eventually passed on, at least in part, to consumers

assuming their demand for cereal from Abéché is not perfectly elastic. The increase in marketing costs discourages traders to transfer cereals from Abéché to N'Djaména and consequently the demand curve shifts downward by the amount of the tax. That D_{L3} shifts down to D_{L2} by the amount of the tax, but increases the amount of grain to be stored in Abéché. However, consumption declines in N'Djaména. Production declines in Abéché, as traders' incentive is lowered as well as price. However, production rises in N'Djaména, but the price will still remain higher relative to Abéché due to higher production costs in the N'Djaména area compared to the cost of acquiring the same marginal output through trade.

The imposition of the tax succeeds in reducing the price in Abéché, reducing flows of cereals and increasing the amount of grain retained in the local region. These changes, however, result in significant losses to local producers and to the local economy, as depicted in figure 5.2.

FIGURE 5.2: INCIDENCE OF LOCAL "EXPORT" TAX ON CONSUMERS AND PRODUCERS



Source: Road Barriers' Questionnaire, field surveys

Figure 5.2 represents figure 5.1, with the areas between the curves labeled to simplify the welfare analysis. Before any government intervention, consumers in N'Djaména would be willing to pay P_{ON}. With that price the consumer surplus is represented by the area $A + B + C + D + E$; but with the imposition of the tax, price in N'Djaména has risen from P_{ON} to P'_{NC} and consumers buy only Q_1. They have lost $C + D + E$ of surplus (Loss of consumers' surplus) and their surplus is now only $A + B$.

Again, with the imposition of the tax, producers in Abéché receive lower price P'_A and conseqently they will experience a fall in their income. The farmers' reduced income will reduce their surplus from F + G + H + I + J + K to $J + K$. The relative incidence

betweeen farmers and consumers of these taxes depends on the size of the supply and demand elasticities. The imposition of these taxes creates certain "deadweight losses" to the local economy. The taxes were not imposed as a source of government revenue. In the medium to long term, these types of taxes are bound to discourage cereal production.[26]

b. ECONOMIC EFFECTS OF LOCAL "EXPORT" QUOTAS

Export quotas, or quantity-based limitations on cereals' transfers from one region to another, are another common means to restrict cereals' flows in Chad. In many administrative zones, local authorities do not tax the movement of cereals. Instead, they set administrative limits or quotas on the amounts of cereal that can be trucked out of their regions. A trader must obtain an "authorization" from the authorities before moving grain. In Ati, for example, traders need to obtain an "authorization" from the sous-prefecture to transfer grain out of the region. These authorizations limit the amount of grain "exported" to what the sous-prefecture considers a "reasonable" amount. Economic analysis shows that the probable effects of these types of restrictions are the following:

- Farmer prices in Ati are reduced.
- Consumers in Ati benefit in the short run. However, cereal consumption is encouraged in Ati, because the restrictions reduce exports from the region and drive down local cereal prices. In the long run, cereal production is discouraged in Ati (the taxed region) and farmers may shift their production towards other commodities.

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[26] This point is particulary relevant in the Soudanian zone of Chad, where farmers are increasingly abandoning cotton (because of sales problems) and turning to millet and sorghum as alternate cash crops. Their production of surplus cereals will be discouraged if local authorities damage their opportunities to sell these cereals.

- Incentives are distorted, leading to economic inefficiencies and wasted resources.
- No tax revenues are raised by local authorities, but traders that could obtain "authorizations" earn windfall profits, at the producers' expense.[27] The economic effects of quotas are the same as effects of taxes on exports except that with a quota there is no revenue to the government. It is the private traders who get the benefits rather than the government. These benefits are quota rents, which are revenues that accrue to the traders having export-authorization, who can charge a higher price for each unit of the restricted supply.

4. EFFORTS TO ELIMINATE ADMINISTRATIVE RESTRICTIONS

Under the auspices of the AMTT project, we took several steps in 1993 and early 1994 to expose the problem of restrictions and develop solutions. In February 1993, the project published a paper on the topic that was widely circulated and discussed during project roundtables.[28] USAID/Chad used the paper to convince the Minister of the Interior to issue a letter in March 1993 addressed to all prefets, sous-prefets, and local authorities. This letter called for an end to all illegal taxation of agricultural products.

AMTT, in collaboration with ONDR (Ministry of Agriculture), distributed over two thousand copies of this letter to farmers' associations, traders and transporters. Many used the letter for support while refusing to pay illegal taxes on cereals movements. In one

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[27] These profits can lead to the development of "special" relations between local authorities and privileged traders.

[28] "Administrative Restrictions to Cereals Circulation," AMTT, February, 1993.

case, a trader used the letter to obtain a substantial rebate of taxes collected from him illegally in the Salamat. During our field surveys we travelled to several dozens of market towns to discuss the issue with local officials, traders, transporters and farmers. In almost all cases, traders and farmers received this initiative enthusiastically; local officials, less so.[29]

We also organized full-day workshops in N'Djaména, Moundou, and Abéché to raise consciousness about the issue among local leaders, ONDR agents, and other government officials.

During 1993-94 traders became more alerted and there were opposing pressures on local officials. In early 1994, a newly-formed trader's association became involved. The Chadian Association for the Defense of Retail Traders noticed that, in spite of the memorandum (note circulaire) put out by the Ministry of the Interior, cereals could circulate freely in Chad. Consequently, the Association distributed copies of the Ministry's letter to its members, and put together a committee of four people that went to see the Ministry of the Interior. They petioned for the letter's contents to be diffused on a national radio broadcast. The Ministry updated the letter and had it read over the air repeatedly in several languages over three days. The Association and the Ministry began to collaborate to respond to complaints about illegal taxation of cereals trade. On the one hand, the central government increased its efforts to suppress the use of administrative restrictions, bolstered by more assertive efforts by traders complaining about their imposition. In the

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[29] In Moissala, the sous-prefet threatened to put a farmers' local leader in jail, after the latter complained about the imposition of illegal *taxes de sortie* on cereals. The Chadian Human Rights League and the Ministry of the Interior eventually intervened on the side of the farmer.

Sahelian zone, in particular in Abéché, Am-timan, and Mongo, there was great success at suppressing restrictions, though they persisted in Melfi and Adre. For the 33 cases of administrative restriction fees that we documented during 1993 and 1994, we observed a decline in the average from fee 227 CFAF per sack for 15 cases recorded in 1993 to 151 CFAF per sack for the 20 cases reported in 1994. On the other hand, the combination of poor harvests and the effect of the devaluation seems to have led to a resurgence of these restrictions.

Illegal taxes can be found in purchase as well as in sale markets, and the amount of the tax differs from one market to another. Among 182 traders interviewed, 75 traders or 41% have paid taxes in the cereals purchase market. The average of taxes paid at the purchase market is about 100 CFAF per 100 kgs, as discussed in the analysis of marketing costs and traders margins. For the tax payment in the sale markets, 44 traders or 24% have paid. The average of taxes paid in the sale markets is 79 CFAF per 100 kgs (Table 5.2). Communal taxes paid by retailers are not represented in table 5.2. These are not considered as illegal taxes, and they represent a charge for a market stall, which is a legitimate user fee for retailers using the market facilities.

Table 5.2: Average Taxes Paid by Trading Activity (CFAF/sack)

Type of activity	# of obs	Tax at Buying Site	Tax at Sale Site	Sum of All Taxes	Tax *Sauvage*	Total	Min	Max
Wholesalers	55	28	28	56	5	61	0	300
Itinerant traders	127	47	16	63	3	65	0	550

Source: Compte d'Exploitation, field surveys

In general, the sum of the two taxes paid is higher in the Soudanian zone than in the Sahelian zone by a factor of two. This is consistent with the observations that administrative restrictions are somewhat more common in the south.

Taxes, exit authorizations and communal cereal taxes raise the transaction costs of doing business for cereals traders and contribute to the lowering of prices paid to producers and raising the price paid by urban consumers. Those paying exit taxes are not organized as an interest group and are under-represented in the government. At this level, many are individual itinerant traders and women traders who accept the status quo. Wholesalers are somewhat better organized at the prefecture level. In Moundou, the larger wholesalers sent a delegation to protest the mayor's raising the tax per 100 kgs (sack) from 100 CFAF to 500 CFAF. In response to that, the mayor backed off for a while, but has recently restored the proposed increase.

At some point these efforts were reported to policy makers. Awareness was raised about the problem, and several key agencies became involved in the effort, including the Ministry of the Interior, ONDR, and traders' and farmers' associations. Individual traders

reported saving money by not having to pay illegal taxes. During our surveys we noticed the cancelation or reduction of trade restrictions in many regions.

But all restrictions did not disappear. Many local authorities ignored the Ministry of the Interior's letter. Others obeyed it only temporarily, or they reduced but did not eliminate their local taxes. When cereal prices shot up after the 1994 devaluation, some authorities reintroduced old restrictions. Efforts to combat these restrictions should continue.

In describing the efforts to end administrative restrictions it is important to know the beneficiaries of these restrictions. Administrative restrictions benefit a small segment of the population. The first group, which includes the main beneficiaries of the levying of the exit authorization or "droits de sorti", is the canton chiefs, the sous-prefets and the prefets. Since the prefets are themselves involved in collecting these taxes, they seem reluctant and lack the authority to stop the collecting of these taxes by the canton chiefs and sous-prefets. Since the taxes are not considered really legal, local authorities do not have to account for them. Many of these authorities have not been paid for months. Thus, local officials resist efforts by the central government to end this practice.

Another interest group that benefits from this tax is the communes. The Ministry of Interior considers the commune to be the only institution that has the right to collect taxes on cereals and has asked the mayors to enforce this rule.

5. Recommendations and Obstacles to Reform

The main recommendation is to enforce the law and stop all exit taxes on cereals by canton chiefs, sous-prefets, prefets and communal authorities. The Minister of Interior has already asked all but the communes to stop levying these taxes. However, implementation will be difficult for several reasons: a) The central government, in general, and the Ministry of the Interior, in particular, does not have sufficient authority to impose its will. The general insecurity, the ability of sous-prefets to ignore the orders of their hierarchical superiors without being sanctioned, and the collusion of security forces in enforcing illegal taxes all make the elimination of these taxes in the future problematic. b) The late or non-payment of government salaries may be forcing or at least pushing sous-prefets and canton chiefs to collect the exit tax as a source of revenue to perform their duties. Canton chiefs also often claim that they need more money to host visiting state officials and to pay retainers and canton guards not officially on the payroll. c) The rapid turnover of administrative officials, especially at the prefecture level, undermines discipline and weakens the chain of command. Sous-prefets tend to stay longer than prefets but canton chiefs, once named, usually hold their posts for life. The short tenure of prefets make it difficult for them to know their districts and to assert their personal authority over sous-prefets and canton chiefs. This situation is aggravated by the general insecurity in many areas that restricts the prefets circulation.

Additional efforts to eliminate administrative restrictions can also be considered: Experience to date shows that efforts to combat administrative restrictions can work; however, a one-time effort is insufficient and constant pressure must be brought to bear on

local authorities to ensure that they do not interfere with vital cereal flows. The necessary pressure can come from several sources, ideally working together.

First, pressure can come from the Ministry of the Interior. This can consist of centralized pressure, i.e., the central offices of the Ministry should send letters of reprimand to offending local authorities and sanction those who continue illegal practices. It can also consist of decentralized pressure -- prefets and sous-prefets can be enlisted to inform local authorities of the ill effects of restrictions and to hold them accountable for infractions. The Ministry can also publish and make available lists of legal taxes, so that farmers, traders, and transporters know which ones are permissible and are not. Second, pressure can come from other ministries, such as Agriculture, Commerce and Transport, which have as their mandate the protection of farmers and trader interests. Third, pressure can come from donors, who can insist that cereal trading is not restricted or taxed, when dealing with the national and local governments. These donors can also raise awareness about the issue at roundtables and other fora, and strengthen non-governmental organizations that fight against restrictions. Fourth, and perhaps most important, pressure can come from those who suffer most from restrictions, such as farmers and traders. These groups can best exert pressures when they are organized into active, representative associations such as the Chadian Association for the Defense of Retail Traders. These groups need to strengthen their efforts to monitor the incidence of restrictions and to work with the Ministry of Interior and local officials to identify, denounce, and dismantle restrictions. They should also consider working with the press to denounce flagrant

violations by local officials. Donors should support these groups' efforts with training and logistical support that will allow them to monitor and lobby effectively.

Besides pressures for monitoring and enforcement, a legal change is also necessary. The Ministry of the Interior's 1993 and 1994 letters focus only on illegal taxes on cereal movements, but fail to mention other types of restrictions, such as quotas and trading bans. The Ministry should correct this omission in a new letter, stating clearly that both types of restrictions are forbidden. Other interested parties (Ministry of Agriculture, associations, donors, etc.) should encourage the Ministry of the Interior to issue such a new letter. These parties will then have to work together to monitor and strengthen enforcement of bans on all types of illegal restrictions.

B. EFFECTS OF ROAD BARRIERS ON THE TRANSPORTATION OF CEREALS

Adminstrative restrictions are not the only constraint to the movement of cereals in Chad. Another serious obstacle to the free movement of cereal and other agricultural products in Chad are illegal barriers and checkpoints along roads and at the entrance to most cities.[30] Like administrative restrictions, their underlying causes are both historic and current, they have been banned by government decree, they persist nonetheless (alongside the several which remain authorized), and their eventual elimination depends on broad systemic changes in Chad's political and economic environment. Truckers form a strong

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[30] A number of studies have identified roadblocks as a major constraint on Chad's agricultural marketing system, including: Grasberg and Hassanein (1988); BIEP (1988); Kent (1988 and 1989); Détard (1992); Ouedraogo and Adoum (1992); and Ngoidi (1992). While many of these authors have generally described the problem, none based their analyses on country-wide field work. Nor have they succeeded in proposing a successful strategy for solving the problem.

interest group with potential to resist barriers (as evidenced by the October 1993 truckers' strike) but truckers principal concern is the existence of barriers on international routes. The main obstacle to eliminating barriers is the complicity of state security services in operating barriers, and problems of insecurity (bandits and rebel forces) elsewhere. One only has to travel between any two major cities in Chad to note the many barriers and check points operated by a variety of seemingly official government services. All trucks and most cars are subject to frequent interruptions of their journey, entailing delays and financial costs. For example, on the road between Abéché and N'Djaména trucks must stop approximately every 40 kilometers for up to half an hour at each stop. Radio Chad recently reported truckers complaining that between Abéché and N'Djaména (780 kms) drivers must report to more than 80 different services and that the total fees paid for a 30-ton truck may rise above 300,000 CFAF.

Such barriers increase marketing costs and reduce the efficiency of the transportation and marketing systems. They delay delivery of agricultural commodities and have the potential to disrupt markets. Illegal roadblocks are costly, time-consuming, highly unpopular, and one of the most serious obstacles to reducing costs of cereals marketing.

The implication of the problem of road barriers on cereals marketing is more serious than would appear from a simp[illegible]lysis of the direct effect on costs. Though the direct effects on costs are modest, barriers increase risk, thus discouraging traders and truckers because of their intimidating nature. They also act as a barrier to entry and inhibit trader flexibility, rewarding those traders who "know how to play the game" rather than those who know market conditions. Consequently, they retard investment in the transportation

sector. Further, they greatly affect production for market because they reinforce a widespread perception that formal trade is somehow suspect. Overall, road barriers impede the development of a positive climate for agricultural marketing.

Most barriers are in fact illegal, and even those that are otherwise permitted are frequently abused. The explanation for the widespread existence of these roadblocks is rooted in history and complicated by the continuing security problems and economic predicaments faced by the state. Road barriers exist because poorly and infrequently paid civil servants use them to substitute for unpaid salaries; because they are tacitly tolerated by local officials; and because of a combination of ignorance and fear by truckers, traders, and passengers. The free movement of persons and commodities is not considered normal in a country that has so long been plagued by security problems. Although the Chadian government has recently taken measures to suppress illegal road barriers, their elimination requires more than just the issuance of government decrees. Unless these complex underlying conditions are addressed, it is unlikely that these barriers and their harmful consequences will disappear.

I. THE BARRIER SYSTEM

A good deal of confusion exists regarding the nature and legality of road barriers. Immigration and customs services exist, of course, at the frontier. In the interior of the country some government services are authorized to establish checkpoints that don't interfere with all road traffic, but rather monitor traffic, enforce highway and vehicle regulations, or regulate the movement of specific commodities such as firewood. In other

cases, for a limited time and in selected regions, police may need to systematically stop traffic for security reasons. Further, rain barriers are operated during the rainy season, stopping traffic on unpaved roads during and immediately following rains to protect road quality.

In practice, however, cars and trucks in Chad are routinely and frequently stopped at many permanent and semi-permanent barriers and checkpoints that do not fulfill these legitimate and legal purposes. These barriers exist throughout the country, mainly concentrated along main roads near major cities and towns, requiring trucks and most cars to stop. Road barriers tend to be put in place where traffic is most dense, so they are more common in the more densely populated and more heavily traveled South than in the North. On the other hand, it is also common for barriers to be placed on feeder roads between regional and secondary markets.

When stopped at barriers, drivers must report to one or more seemingly official government services, present documents justifying the trip, and almost invariably pay a bribe to an official. On occasion the vehicle, its cargo and passengers are examined, leading to further delays. Since at most barriers at least one of the security services is represented (presumably armed), few truckers choose to ignore the barriers completely.

Occasionally physical barricades are placed across the road, requiring the vehicle to stop. In other cases a sign posted along the side of the road announces the existence of a barrier. On occasion there is no physical sign of a barrier, but an armed service agent conspicuously positions himself in the middle of the road when commercial traffic approaches. Sometimes there is no sign posted. Armed service representatives wait under

a tree along the road and signal as a truck approaches. Trucks either stop in the road or pull off to the side. Most often, several different government services are grouped together. These officials may sit in a small shed or simply under a tree. In most cases a crude sign announces which service is represented. Drivers must make the rounds from one post to another, satisfying whatever conditions are imposed or negotiated, before continuing their way.

Frequently, payments of fees at barriers are made by drivers independently of the vehicle's cargo and passengers. This type of fee payment is considered bribery; the service agent may not even require official papers from the driver.

Sometimes, however, officers will examine the vehicle's condition, cargo and passengers. Payment required at the barrier is higher if the vehicle is in bad condition or its papers (insurance, title, etc..) are not complete. Passengers who don't have the National Identity Card are often required to pay a bribe to police agents. Traders who have import/export commodities on the vehicle must put money together to help the driver out with fee payment to the customs. Traders who are transporting forestry and wildlife products also have to put money together to pay agents of Water and Forestry Service (Eaux et Forêt).

No direct payment is required from cereal traders at the barriers. However, the fees the drivers pay as bribery or for bad conditions of their vehicles are recuperated from transport charges for all commodities, so these payments by drivers raise the transport cost of cereals as well.

According to the transport study carried out in Chad by DAI in 1993, barrier payments can amount to approximately 10% of the transport cost of one sack of grain on weekly market routes. For long distances on the main routes, barrier payments can account for up to 20% of the transport cost of a sack of cereals (DAI 1993, p.24).

On heavily travelled roads there may be long lines and delays. These delays may cause trucks to arrive late to markets or even to miss market days completely in weekly markets. Though some "officials" insist on seeing truckers' official papers, most offer no pretense for the interruption other than the well-understood requirement to pay a bribe. Occasionally the amount is well-known and paid rapidly while in other situations, truckers negotiate in an attempt to reduce the cost. Intimidation, attempts to embarrass drivers in front of their passengers, and the threat of even longer delay motivate most drivers to pay the bribe demanded. Though charges are arbitrarily imposed, they do vary in rough proportion to the size of the vehicle and the value of the merchandise. There may also be a relationship between the fee paid and time the trucker is willing to wait; those who refuse to pay are most often made to wait much longer. Drivers tend to be under pressure from passengers and shippers to get through these barriers quickly, and "officials" use this pressure to their advantage. It is rare for the trucker to be provided with an official receipt.

During our survey of cereals transportation on both short and long hauls, 15 different "services" (exclusive of rain barriers) were identified, of which six represented constabulary (security) forces (See Table 5.3).

Table 5.3: "Services" Represented at Road Barriers

Name of Service	% of all barriers	Comment
Bureau National de Fret (BNF)	4.3%	At main entrance of largest cities. Authorized to collect a fee.
Brigade (Gendarmarie)	37.9%	Found at every administrative post. Function is to monitor movement of military vehicles.
Commis de Charge	1.5%	Regulate loading of "common carriers." At barriers to search out trucks that loaded outside truck parks.
Commune/Mairie	4.9%	Local police agents, monitor collection of local taxes. Autonomous and legitimate.
CRCR	6.7%	Former presidential security service controlling political activities.
Douanes	9.2%	Control movement of imports and exports, operate in the interior to control fraud.
Eaux et Forêt	1.6%	Control movement of forestry and wildlife products.
"Militaires"	2.1%	Uniformed agents without identifiable affiliation.
Mouvement Populaire de Salut	0.1%	Political party.
Office National des Routes[a]	1.7%	Operate rain barriers and monitor movements of fuel.
Police: Circulation	20.7%	MIAD: Check vehicle papers and condition.
Police: Post	2.3%	MIAD: Check identification papers of vehicles and passengers.
Police: Renseignement Général	2.3%	MIAD: Control general criminal activities.
Police: Sécurité Territoriale	3.5%	MIAD: Supposed to monitor borders only.
Syndicat de Transport	1.2%	Truckers' Union
Total Services Surveyed	2,830	

[a]Recently changed Service National d'Entretien des Routes (SNER)
Source: Field surveys of 59 transportation routes.

By far, the Gendarmes and various police services were the most commonly encountered services. Several represent non-governmental authorities that have established themselves alongside police or other enforcement agencies. The authority of most of these services to stop traffic routinely is doubtful. Few seem to have any legal authority to impose fees.[31]

II. THE ORIGINS AND RATIONALE FOR ROAD BARRIERS

Although illegal road barriers have existed in Chad since before independence, their prevalence increased substantially during and following years of civil war. Attempts to monitor and control traffic by national security services was and continues to be motivated by the outbreak of civil unrest and real and perceived threats to security. Since regional and local authorities also have responsibility for maintaining order, they too have sought to control movements of persons and commodities. It is thus quite understandable that these authorities have endorsed or at least permitted roadblocks by various security services although they are without any legal legitimacy. The presumption that road traffic must be explicitly justified led easily to abuse as agents for various services can extract payments from truckers and their passengers.

The problem has been exacerbated by Chad's continuing fiscal crisis which led to both reductions of support for the budget of regional authorities and to very serious delays in the payment of civil service salaries. This has motivated an increase in the demand for illegal payments as a substitute for vanishing legitimate sources of revenue and income, in

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[31] In principle the BNF collects a fee of 14% of the transport charges, for which receipts are provided.

turn encouraging the growth of road barriers and an expansion in the number of services. Though there is little question of local authorities overtly sanctioning barriers as a revenue raising technique, government officials who are unable to pay their employees are perhaps less inclined to stop the practice than they otherwise might be. Obviously local, regional, and national authorities have long been aware of the situation and decided to tacitly accept it.

On June 8, 1993 a presidential decree[32] abolished all "barrières de contrôle . . . anarchiquement implantées." Although this language seems to leave somewhat unclear which barriers remain legitimate, the decree explicitly exempts barriers at the national borders and rain barriers. Further, the decree threatens to punish violators and give enforcement responsibility to the Ministry of Interior, Public Works and Transportation, and National Defense, who together oversee almost all of the services most commonly found at barriers (the exception being the forestry service which is under the authority of the Ministry of Agriculture). Reinforcing the government's decree was a strike called by the truckers' union (Union des Transporteurs Tchadiens or UTT) in late October 1993 to register their opposition to the number of barriers.[33] There were indications of a substantial reduction in the incidence of barriers, the number of services operating at each, and the amount of money being collected both following the decree and following the

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[32] Decret No. 304/PR/93. The text of the decree is reproduced in Appendix A.

[33] While protesting barriers of all kinds, the strike was particularly directed at the extraordinarily long delays at Chad's border crossings.

truckers' strike.[34] Nonetheless, as the underlying causes for the existence of barriers persist, their widespread elimination remains in doubt.

A. Legal and Illegal Roadblocks

Of all the constraints to the free movement of goods in general and cereals in particular, government agency roadblocks are doubtless the most unpopular and perhaps the most serious obstacle to reducing the costs of marketing cereals in Chad.

Barriers can be divided into several categories: Legal and justifiable, selected implementation of physical roadblocks by certain state agencies for specific and legitimate functions, and unauthorized roadblocks manned by state security services --e.g., police, gendarmerie, army-- which are often used to shake down truckers and other travelers. Each of these is briefly described below.

Legal and justifiable: These are barriers still authorized by the government and include rain barriers that are needed to prevent trucks from ruining dirt roads during the rainy season. However, some state services have used the physical rain barriers to stop trucks and collect illegal taxes (taxes sauvages) from truckers and passengers. During the dry season, there is no need for rain barriers and traffic should be allowed to flow freely through rain barrier points. Customs and police barriers at border crossings, check papers, collect customs duties, and discourage smuggling.

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[34] Somewhat ironically we took advantage of the barriers around N'Djaména. Beginning in January 1)3 our surveyors were able to monitor the entry of cereal to the capital as trucks stopped at the three entrance points to the city. However, following the truckers's strike the end of October, even these barriers ceased to function and the monitoring of cereals entering N'Djaména ended.

Selected implementation of physical roadblocks by certain state agencies for specific and legitimate functions. These include: a) Forestry service checkpoints at main city entrances used to stop only those trucks carrying large quantities of firewood or charcoal. These checkpoints should not affect trucks carrying grain. b) Bureau National de Fret (BNF) offices which give loading permits to larger trucks and collect fees. c) Security checkpoints used by police, gendarmerie, or army which are justified by real security needs. Checkpoints can be used to check for illegal weapons and stop bandits and other suspected criminals from leaving the area.

Unauthorized roadblocks manned by state security services --e.g., police, gendarmerie, army-- which are often used to shake down truckers and other travelers.

Illegal roadblocks, set up by bandits, undisciplined army units, and rebel forces to collect money and seize vehicles.

All roadblocks which force vehicles to stop increase transaction costs. This is true even of legitimate roadblocks. Transaction costs rise even higher when roadblocks are accompanied by illegal levies by armed security forces and other state agencies. Finally, the presence of banditry and lawless elements creates an atmosphere of insecurity and further discourage the free movement of goods.

B. Interest Groups Most Affected by Roadblocks

As the recent transporter strike has proved, drivers and truck owners are among the best organized interest groups in Chad. The SNTRT had enough clout to stop most truck traffic within the country and Chadian truck traffic in Cameroon. The best organized

transporters are primarily concerned with reducing their costs in transnational trade routes since they earn more money shipping manufactured goods and oil products into Chad from Cameroon and Nigeria than in shipping millet and sorghum from the interior to major consumption centers in Chad. Nevertheless, transporters are crucial agents in cereals marketing since transport is one of the major costs in getting grain from producers to urban consumers. One of the consequences of the transport strike was a sharp rise in millet prices in N'Djaména.

Long-distance and transnational truckers have the most to lose through the roadblocks. Truck drivers are obliged to carry large sums of money for payoffs and to spend many extra hours on the road because of the multiple roadblocks.

Because the roadblocks adversely affect all segments of society, they are widely unpopular. Cereals merchants deplore the roadblocks because they must pay higher transportation costs and face high personal risks when they travel. Cereals merchants we interviewed clearly supported the transporters' strike and demands that the barriers be dismantled. Ordinary travelers also suffer from the roadblocks because they lengthen the time needed for travelers to get to their destinations and often are accompanied by shakedowns by different state officials. Banditry and shakedowns by armed irregulars contribute to creating a climate of insecurity and fear that discourages the free movement of goods and people.

I1. THE ECONOMIC EFFECTS OF ROAD BARRIERS

The economic effects of road barriers are not unlike those of administrative restrictions as described above.[35] Transportation costs rise directly because of the unofficial taxes that must be paid (sometimes called *taxes sauvages*) and indirectly because of lengthened time of travel. Even where delays in route would not be enough to affect return hauls by trucks, the increased likelihood that merchants will miss market opportunities has the effect of increasing risk and reducing the expected returns to trade. Additionally, some transporters try to avoid barriers together by driving at night or driving "off-road," trading off the increased risk of accident or banditry for lower explicit costs at barriers.

Higher costs then have their effects in both producing and consumer markets, in both surplus and deficit zones, also on traders and truckers themselves. Modest increases in consumer prices and decreases in producer prices result. These effects hold no matter who pays the illegal fees since they act like a tax with the incidence depending on supply and demand conditions. In general, increased transportation costs cause the "wedge" between producer and consumer prices to increase. To the extent that one believes that consumer prices are relatively insensitive to changing market conditions, i.e., relatively elastic demand for domestic cereals (if, for example large quantities of cereals were imported at stable world market prices) then it would be producers who would bear the

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[35] The effect of higher transportation costs on prices, quantities and social welfare can be shown using supply and demand analysis. See figure 5.1 and 5.2 which illustrate the economic impact of taxes on cereals trade. The impact of both the direct (illegal payments) and indirect (delays in route) costs of road barriers are very similar to those of taxes. In the case of unauthorized fees, "tax revenues" simply accrue to those individuals to whom payments are made. The economic effects of increased transportation time are purely a loss in economic efficiency, not compensated by any transfers.

brunt of increased transportation costs through lower prices. Similarly, if the domestic supply of cereals were relatively insensitive to price variations (as is sometimes argued by officials), then producers would also absorb most of the burdens. However, neither of these conditions is realistic, and thus consumers share some of the increased cost with producers. Also, since delays disrupt both the collection and delivery of cereals, temporary surpluses and shortages may result, leading to reduced price stability, especially in thin rural markets. High fees and increased operating costs by truckers reduce their incomes and diminish incentives for both transporters and traders, decreasing overall marketing efficiency. As a result, the cereal marketing system becomes less responsive to spatial price differentials than it would otherwise be, hindering regional and national food security.

A final deleterious effect of road barriers and their disruption of transportation is the discouraging signal they transmit to the commercial sector and potential entrants. Even if permits, fees, and other authorizations are unnecessary, road barriers convey the idea that free movement of persons and property is a suspicious rather than an ordinary activity. When officials appear to condone if not officially endorse these practices, it conveys a message that the government does not support the liberal movement of commodities. This forces traders and transporters who want to compete to develop "expertise in corruption." This situation rewards those who know how to deal with the "officials" who operate barriers to the detriment of traders who know the market. Traders become less flexible in switching to new routes, while potential entrants face an additional obstacle to overcome to break into cereals trade. The effect reduces the number of trucks that operate on any

route. This barrier to entry to both transportation and trade seriously impedes the efficiency of marketing.

IV. Empirical Results

As part of our surveys conducted between January and September 1993, we monitored the incidence of road barriers and illegal charges. We travelled to secondary markets in the region on trucks that carried cereals and traders. We also made trips on selected long-distance routes including Abéché-N'Djaména and Sarh-N'Djaména. In all, data were collected for routes in 11 of Chad's prefectures. Each trip represents one observation for which our enumerators kept a log of all barriers encountered, services represented, and fees paid. Data were collected for 385 observations on a total of 49 routes connecting secondary and principal markets, and for 28 observations on eight routes connecting principal markets.

a. Short-Haul Routes

The list of all short-haul routes surveyed along with the number of observations, distance, and the average size of trucks used along the route, are presented in Appendix B. Most of these routes link major regional markets. Table 5.4 presents averages for short-haul routes for each of the 6 regions. It shows that for all routes there were an average 2.5 barriers over an average distance of 81 kilometers. The average number of services per route was 6.2. The number of observations per route, i.e., the number of questionnaires filled out per route, ranges between two and 17. The distances traveled per

route range between 18 and 173 kilometers, and the size of trucks that serve these routes ranges between 2 and 34 tons.

Table 5.5: Short-Distance Routes by Major Market Center

Major Market Region	Average Distance (km)	# of Observations	# of Barriers	# of Services	Average monetary Cost per Trip (CFAF)	Time lost per Trip (minutes)	Average Truck Size (mt)
Abéché	82	46	2.1	5.3	3,924	26	13
Am-timan	114	7	1.3	1.9	2,071	25	18
Doba	34	99	1.4	2.2	2,047	7	14
Moundou	65	76	2.8	6.0	6,529	21	14
Pala	65	90	1.9	7.6	8,457	14	7
Sarh	123	67	4.8	11.9	10,554	38	15
Average	81	385	2.5	6.2	6,135	19	13
		(total)					
Average per 100 km		--	3.6	8.7	8,677	26	--

Source: Field Surveys

Standardizing the incidence of barriers and services over distance traveled yields 3.6 barriers and 8.7 services per 100 kilometers of route. The average expenses per route were 6,135 CFAF and the time lost per route was 19 minutes, corresponding to an expense of 8,677 CFAF and a time lost of 26 minutes per 100 kilometers of route.

The above figures on expenses are concerning an average 13-ton truck, the average on short hauls surveyed. Since such a truck can carry 130 sacks of grain, the average expenses per 100 kilometers of route could be allocated as 65 CFAF per sack of cereals that the truck can transport. According to field observations, traders charge 500 CFAF for transporting one sack of grain on most routes of 100 kilometers or less. So the average cost per sack of grain on 100 kilometers of route would correspond to 13% of the transport price of one sack of grain. This result concurs with the result of the DAI transport study that showed that barrier payments can amount to approximately 10% of the transport cost of one sack of grain on weekly market routes (1993, p.24).

Comparing the number of barriers around each of the major markets (Table 5.4) we find that barriers were most prevalent on the local roads around Sarh (5 barriers per route) and least common around Am-timan (1.3 barriers per route). The number of services per route is also the highest for routes around Sarh (11.9 services per route) and the least for those around Am-timan (1.9 services per route). The services figures correspond to 2.5 services per barrier in the Sarh region and 1.5 services per barrier in the Am-timan region. The number of services per barrier is the highest in the Pala region. There are 1.9 barriers and 7.6 services per route around Pala; this corresponds to 3.9 services per barrier in that region.

When standardized by distance (Table 5.5) the Moundou region has the most barriers per 100 kilometers (4.4), with Doba and Sarh also in the range of 4. With regard to the number of services per 100 kilometers, the Pala region had 11.6 with Sarh and Moundou both close to 10. With regard to bribes and fees for short-distance routes, trips are most costly in the Sarh region (10,554 CFAF per route), in the Pala region (8,457 CFAF per route) and in the Moundou region (6,529 CFAF per route). These regions dominate the list of "worst routes" (see Table 5.6).

Finally, standardizing by distance shows that expenses are the highest in the Pala region (12,967 CFAF per 100 kilometers) with Moundou (10,046 CFAF) and Sarh (8,580 CFAF) following. Costs are lowest by far in the Am-timan region (1,816 CFAF per 100 kilometers). The average expense per barrier is also the lowest in the Am-timan region (1,651 CFAF) and the highest the Pala region (4,337 CFAF). The time lost per 100 kilometers of route ranges between 21 minutes in the Doba and Pala regions and 32 minutes in the Abéché and Moundou regions. The time lost per barrier is the least in the Doba region (4.9 minutes per barrier), but the highest in the Am-timan region (20 minutes per barrier). The average time lost per barrier for all routes was 9 minutes.

Table 5.5. Short-Distance Routes by Major Market Center Barriers per 100 Kilometers

Major Market Region	Average Distance (km)	# of Observations	# of Barriers	# of Services	Average Cost per Trip (CFAF)	Time lost per Trip (minutes)
Abéché	82	46	2.6	6.4	4,758	32
Am-timan	114	7	1.3	1.6	1,817	22
Doba	34	99	4.1	6.6	6,060	21
Moundou	65	76	4.4	9.2	10,046	32
Pala	65	90	3.0	11.6	12,967	21
Sarh	123	67	3.9	9.7	8,580	31
Average per 100 km		385 (total)	3.6	8.7	8,677	26

Source: Guide de Recherche Routiere, field surveys

Table 5.6: The "Worst" Short-Distance Routes

By Number of Services			By Time Lost en Route		
Origin	Destination	# of services	Origin	Destination	Time Lost (minutes)
Sarh	Bédigri	32	Sarh	Goundi	165
Sarh	Goundi	30	Abéché	Birtawil	158
Sarh	Bodo	26	Bedigri	Sarh	128
Léré	Pala	16	Moundou	Bebedjia	90
Koumra	Goundi	14	Koumra	Sarh	78
By Number of Barriers			By Cost per Trip		
Origin	Destination	# of barriers	Origin	Destination	Cost (CFAF)
Sarh	Bodo	12	Fianga	Pala	40500
Goundi	Sarh	10	Léré	Pala	34000
Bedigri	Sarh	8	Bodo	Sarh	31000
Pala	Moundou	7	Sarh	Bedigri	28500
Bodo	Sarh	7	Sarh	Goundi	24250

Source: Guide de Recherche Routiere, field surveys

These results support the hypothesis and general observation that the illegal barrier problem is worst along heavily traveled roads. The difference between the Sahelian zone (Abéché and Am-timan) and the Southern zone is substantial. The explanation for why the Sarh region had the worst incidence of barriers in absolute terms is explained by the long distances traveled in the region. When computed on a per 100-kilometer basis, Sarh, Moundou, and Pala all showed higher rates of barriers, services and payments. This is explained by the density of traffic in those regions. In other words, setting up and operating illegal barriers seems to follow economic location theory: barriers exist in those regions where they are most profitable.

i. Medium and Long-Haul Routes

The list of long and medium-distance routes surveyed is presented in Table 5.7. Several factors need to be considered in interpreting the data. First, almost all of the observations took place following issuance of the decree banning illegal road barriers. It could be expected that enforcement would be most strict along these major routes. Secondly, most of the trucks that our enumerators took were medium size trucks that made direct runs over long distances. Though these trucks did haul cereal, much more is carried on larger trucks that run less frequently, making several intermediate stops, and taking much longer to arrive. Thus, we probably have a significant sampling bias in these data. Finally, the number of observations on most routes is limited to one or two.

The incidence of barriers clearly varies with distance, but not uniformly. By far, the Abéché--N'Djaména route had the most barriers, services, cost, and time lost.

Table 5.7. Long and Medium-Distance Routes by Major Market Center

Point of Origin	Destination	Distance	# of Observations	# of Barriers	# of Services	Average Cost per Trip (CFAF)	Time Lost per Trip	Average Truck Size
Abéché	N'Djaména	882	2	26.5	53.5	28,625	287	7
Bokoro	N'Djaména	305	1	6	10	3,254	49	3.5
Bousso	N'Djaména	305	2	8	17.5	2,675	46	7
Dorbali	N'Djaména	160	4	5.7	10.5	3,763	39	7
Sarh	N'Djaména	560	1	8	12	7,950	13	4
Pala	Moundou	209	1	7	12	2,250	24	2
Doba	Sarh	202	1	2	3	1,200	6	2
Doba	Moundou	105	16	4.1	8.4	9,344	29	27
Average		341	28	6.5	12.7	8,636	49	7
Average per 100 km				3.4	6.8	5,863	24	

Source: Guide de Recherche Routiere, field surveys

The average cost of 8,636 CFAF per route is dominated by the high number of observations on the Doba--Moundou route, and by the expensive Abéché--N'Djaména route. Standardization of the results by distance yields interesting comparisons (see Table 5.8).

Table 5.8: Long- and Medium-Distance Routes by Major Market Center (Average number of Barriers per 100 Kilometers).

Point of Origin	Destination	Distance	# of Observations	# of Barriers	# of Services	Average Cost per 100 km (CFAF)	Time Lost per 100 km (minutes)	Average Truck Size (ton)
Abéché	N'Djaména	882	2	3.0	6.1	3,245	33	7
Bokoro	N'Djaména	305	1	2.0	3.3	1,067	17	3.5
Bousso	N'Djaména	305	2	2.6	5.7	877	16	7
Dourbali	N'Djaména	160	4	3.6	5.7	2,352	25	7
Sarh	N'Djaména	560	1	1.4	2.1	1,400	3	4
Pala	Moundou	209	1	3.4	5.7	1,077	12	2
Doba	Sarh	202	1	1.0	1.5	594	3	2
Doba	Moundou	105	16	4.1	8.4	9,344	28	27
Average per 100 km				3.4	6.8	5,863	15	7

Source: Guide de Recherche Routiere, field surveys

The average cost per hundred kilometers traveled on long routes appears somewhat lower than for short routes (5,863 CFAF vs 8,677 CFAF for longer routes); however, as explained earlier, the average size truck observed was also smaller (7-ton trucks vs 13-ton trucks). The number of barriers per hundred kilometers is about the same (3.4 barriers vs 3.6 barriers) and the average time lost per 100 kilometers and per barrier is slightly lower (24 vs 26 minutes per route, and 7 vs 9 minutes per barrier). The number of services per 100 kilometers is also lower (6.8 compared to 8.7 services).

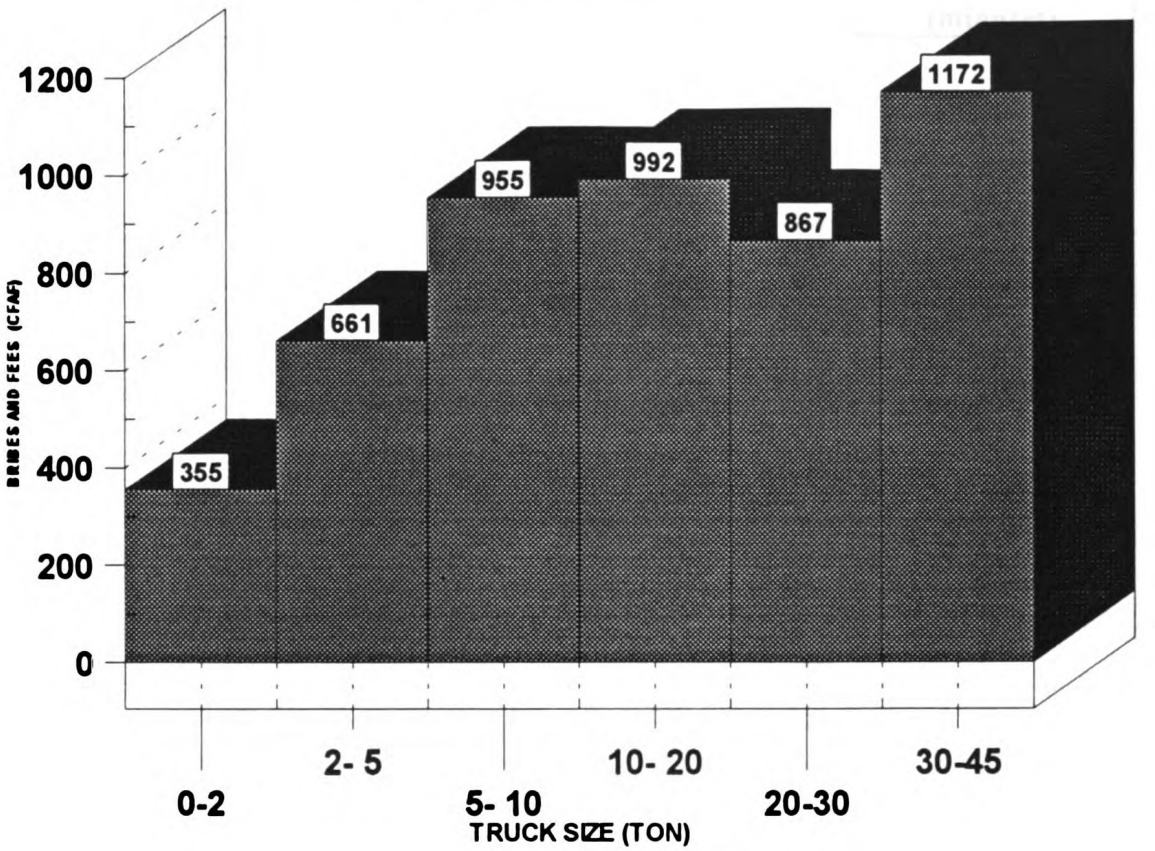
The average cost of 5,863 CFAF per 100 kilometers of route corresponds to an average 7-ton truck. Given the capacity of 70 sacks of grain to a 7-Ton truck, we could allocate the cost as 83 CFAF to one sack of grain. Taking still 500 CFAF as the transport price of one sack of grain per 100 kilometers, this barrier cost accounts for 16.8% of the transport price of grain. If the generally lower per-kilometer costs on long-distance routes are used (about 250 CFAF per 100 kilometers) this would fall to the range of 10% of transport costs, indicating that barriers have important effects on transport costs on long hauls. We believe that these estimates seriously understate the effects of barriers on long-distance routes for the reasons explained above. By contrast, the AMTT Transport study found that barrier payment account for up to 20% of the transport price of grain.

V. Effect of Truck Size

Figure 5.3 shows the relationship between average truck size and the amount of bribes and fees paid at barriers. The average size truck for all routes was 12.8 tons, with 7-ton

trucks being the most common by far (156 observations as compared to fifty-three 12-ton trucks). As noted above, our survey of long-distance routes was probably biased in favor of smaller trucks that made direct runs between cities; however, over 90% of our observations were on short-haul routes. The evidence suggests that fees and bribes generally increase with the size of the truck (though not proportionally). Payments rise to the range of medium-size trucks at which point they are relatively flat from the 7 to 25 ton ranges. Payments jump a bit for trucks over 30 tons. The relationship between time spent at barriers and truck size is less clear, with an irregular pattern suggesting only modestly higher waiting times for large trucks. (See Table 5.9 for data on truck size, expenses, and waiting time.)

FIGURE 5.3: BRIBES AND FEES PER TRUCK SIZE, PER SERVICE
(CFAF PER TRUCK SIZE)



Source: Road Barriers' Questionnaire, field surveys

Table 5.9: The Relationship Between Truck Size, Expense, and Time Lost

Truck Size	# of Observations	Cost per "Service" (CFAF)	Time Lost per "Service" (minutes)
0.7	1	15	1.0
1	21	369	9.2
1.5	14	357	5.4
2	12	348	4.3
2.5	15	669	4.6
3	21	681	6.1
3.5	7	1,118	8.3
4	1	663	2.0
6	2	625	1.0
7	156	961	6.7
8	1	700	19.0
10	2	950	11.5
11	1	500	2.0
12	53	1,123	9.4
16	8	783	3.4
19	23	788	8.1
20	12	816	7.4
25	8	943	12.6
30	29	1,163	8.3
35	27	1,241	10.0
40	19	1,088	11.5

Source: Road Barriers' Questionnaire, field surveys

Table 5.10: Summary of Costs from Road Barriers on Medium and Long Hauls

Truck Size	# of Observations	Cost per Service/Trip (CFAF/truck)	Time Lost per Service/Trip (minutes)
0-2	36	355	7.5
2-5	56	661	5.5
5-10	159	955	6.7
10-20	87	992	8.5
20-30	20	867	9.5
30-45	75	1,172	9.7

Total Observations 433		**Average Cost per Service (CFAF)**	**908 per trip**
Average Truck Size 12.8		**Average Time per Service (minutes)**	**7.6 per Trip**

Source: Road Barriers' Questionnaire, field surveys

VI. Effects of the Ban on Barriers

Table 5.11 and Table 5.12 show the incidence of barriers on short-haul routes during the periods before and following the issuance of the June 8, 1993 Presidential decree abolishing all illegal road barriers. Looking at the averages for all routes, the data show a slight decline in the number of barriers (from 2.6 to 2.3), a more substantial decline in the number of services (from 7.3 to 4.8), a 22% decrease in costs, and a similar decrease in time lost.[36] Similar magnitudes of change are evident when the statistics are standardized by distance (see Table 5.13 for details per 100 kilometers of route). One of the few figures that did not show an improvement was the cost per service; it rose from 926 CFAF

[36] Data for Am-timan were excluded since no observations were made after June.

to 1,104 CFAF, suggesting that those services that did continue to operate maintained or even increased their fee collections.

Table 5.11: Effects of the June 8 1993 Presidential Decree Banning Illegal Roadblocks

Table 5.11: Effects of the June 8 1993 Presidential Decree Banning Illegal Roadblocks

Major Market Region	Distance (km)	# of Observations	# of Barriers	# of services	Average cost per Trip (CFAF)	Time Lost Per Trip (minutes)	Average Truck Size (mt)
BEFORE JUNE 8 1993							
Abéché	79	24	1.9	4.4	3,417	21	16
Doba	39	57	1.6	2.7	2,871	12	18
Moundou	65	48	3.1	7.3	7,505	22	17
Pala	64	68	1.9	7.6	7,343	13	7
Sarh	128	38	5.4	15.3	12,755	52	18
Average	70	235 (Total)	2.6	7.3	6,766	22	15
Average per 100 km	–	–	3.7	9.9	9,541	30	–
AFTER JUNE 8 1993							
Abéché	86	22	2.3	6.3	4,477	33	11
Doba	27	42	1.1	1.6	929	2	8
Moundou	65	28	2.4	3.6	4,857	19	10
Pala	68	22	2.1	7.5	11,898	16	7
Sarh	115	29	4.1	7.4	7,669	19	12
Average	68	143 (Total)	2.3	4.8	5,298	16	9.4
Average per 100 km	–	–	3.6	6.9	7,295	21	–

Source: Road Barriers' Questionnaire, field surveys

The effect of the decree varies by region. The largest positive impact of the decree was seen in the Sarh region, with the average number of barriers and services declining by 24% and 52% respectively. Costs decreased the most in the Doba region (68%), though they also fell substantially in Sarh and Moundou (40% and 35% respectively).

Table 5.12: Effects of June 8 1993 Presidential Decree (Percentage changes on short- hauls routes)

Major Market Region	# of Barriers	# of services	Average cost per Trip (CFAF)	Time Lost Per Trip (minutes)
Abéché	22%	44%	31%	57%
Doba	-28%	-40%	-68%	-83%
Moundou	-22%	-50%	-35%	-14%
Pala	11%	-2%	62%	23%
Sarh	-24%	-52%	-40%	-63%
Average	-12%	-34%	-22%	-28%

Source: Road Barriers' Questionnaire, field surveys

Barriers, services, costs, and time lost all showed a substantial increase in routes around Abéché, in the north. Barriers and costs also rose in the Pala region.[37]

Obviously the Decree had some desired effect, most notably in the south and in regions where officials are most likely to travel and monitor. The Decree failed in the Abéché and Pala regions, indicating that implementation and enforcement was not uniform.

[37] Observation in the Pala region suggests that barriers there are less likely to be permanent physical structures than in other southern regions, and therefore more difficult to suppress.

Traders are less upset about paying exit taxes than the illegal taxes set up at the barriers and levied by the various security forces. The "exit" tax, though illegal and increasing their costs of doing business, at least, has the advantage of being standardized and predictable. Despite this fact, many traders were seriously affected by illegal taxes collected either at the exit gate of most localities or at different road blocks along the road sides.

ECONOMIC IMPACT OF BARRIER PAYMENTS ON CEREAL TRADE

The economic effect of barrier payments is similar to a tax on transportation. The net effect is to increase marketing costs, decrease farm-gate prices while increasing consumer prices, generate transfers from transporters to collectors of barrier payments, reduce the average rate of return to transportation investment, increase risk and uncertainty, and generally reduce economic efficiency. In order to show these effects, we provide a simple graphical depiction of the effect of illegal payments (Figure 5.3). To simplify the geometry, we assume that payments at the barrier are the only cost of marketing. Further, we ignore the negative effects of increased costs due to loss of time which also leads to marketing inefficiency.

Our graphical analysis assumes that for a given route, market conditions can be captured in standard upward-sloping supply and downward-sloping demand curves. (The implications of extremes in elasticities are discussed later.) The supply curve is assumed to incorporate both the purchase price of grain from farmers or intermediaries and the

other costs of transportation and handling to the relevant consumption market. Without barriers, the market price would be P_e and the quantity transacted is Q_e.

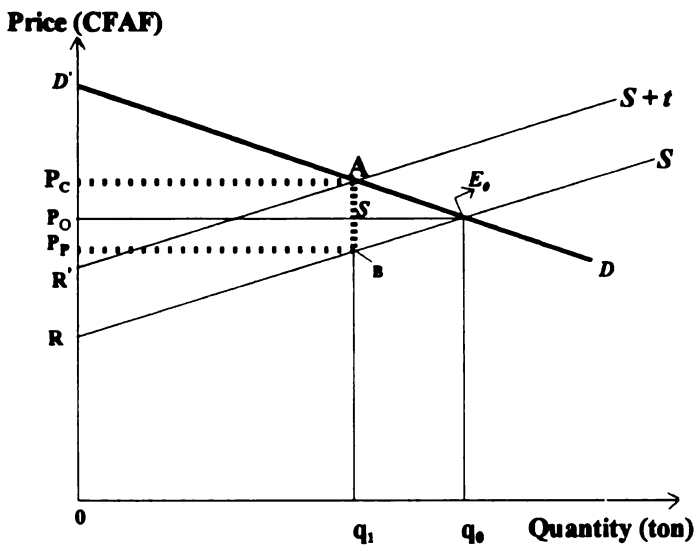


Figure 5.3: Economic Effects of Road Barriers

Source: Road Barriers' Questionnaire, field surveys

Additional transportation costs such as barrier payments are shown by the upward shift in the supply curve to $S+t$, the vertical distance t representing total of expected barrier payments. Since barrier payments increase transporters' costs, they in turn are assumed to increase transportation charges for compensation. The higher cost of transport raises the cost of marketing to traders, shifting supply curve upward. Once a transporter pays some fee at a barrier, he/she raises the cost of transport by the amount "t"

per sack. The increase in transport cost by "t" per unit acts as a tax and shifts the supply curve to the left.

As a consequence, the upward shift in supply results in a reduction in the quantity of cereals transacted and to an increase in the consumer price. The quantity transacted decreases from q_o to q_1 and consumer price increases from P_o (the equilibrium price), to P_c (the consumer price). The result of the decrease in quantity transacted and of increase in consumer price is a reduction in consumer surplus. Without the barrier payment consumer surplus would be the triangle (P_o,E_o,D'). With leftward shift in supply because of barrier payment, consumer surplus is represented by the area (P_c,A,D'). The area (P_o,E_o,A,P_c) is the loss to consumer surplus. Part of this loss is a transfer of income from consumers to fee collectors [area (P_o,S,A,P_c) on the graph]; the other part [triangle (A,S,E_o)] represents a loss to society not compensated by any other economic benefit. Thus, barrier payments increase consumer prices and decrease consumer surplus.

The upward shift in supply which results in a decrease in the quantity of cereals transacted also results in a decrease in producer price. Traders tend to pay a lower price to farmers in order to cover their barrier expenses. The producer price decreases from P_o (the equilibrium price) to P_p (the producer price). The decrease in producer price also results in a decrease in producer surplus. Without payment at the barriers, the producer surplus is represented by the area (P_o,R,E_o); with barrier payment, the producer surplus is reduced to the triangle (P_c,R',A) which is equal to the triangle (P_p,R,B). The loss in producer surplus [area (P_o,P_p,B,E_o)] is also in part a loss to society [triangle (S,B,E_o)] in part and a transfer of revenue from producers to barrier fee collectors [area (P_o,P_p,B,S)].

The total loss in welfare to consumers and producers (inclusive of transporters) is equal to the area (P_p,B,E_e,A,P_c). The right-hand triangle B,A,E_e represents the efficiency loss from the barrier payments. The size of this loss depends both on the absolute value of the payments and on the decrease in quantity exchanged, which is positively related to supply and demand elasticities. The rest of the loss to consumers and producers, the rectangle P_c,A,B,P_p represents a transfer to barrier fee collectors. This transfer depends directly on the size of fee extracted by the fee collectors, and inversely with the decrease in transactions. Therefore, barrier payments result in both welfare losses and in uncompensated transfers.

Barrier Payments Have Negative Long-Run and Dynamic Consequences

Lower prices paid to farmers discourage production and therefore hinders food security in different regions within the country. Without barriers, farmers would be willing to produce enough cereals to be able to sell Q_e at the price P_e. With barriers, in the short run farmers will reduce their marketed production from Q_e to Q_1, but the long-run disincentives to produce marketable surpluses will be even greater. Further, consumers will have an incentive to rely on imported grain.

Transporters are also affected by the barrier system. Not all the increased costs can be recovered for most transporters, so returns to transportation investment are reduced. Also, since the imposition of barrier payments has a random element, rates of return are more variable, further reducing incentives to invest. Finally, some transporters will have

advantages in dealing with fee collectors, reducing competitiveness and enabling them to collect economic rents.

In general, because of road barriers and illegal fees, revenue is transferred from consumers and producers to illegal barrier fee collectors without any economic rationale. This leads to both short-run and long-run misallocation of Chad's scarce transportation and agricultural resources.

VII. CONCLUSION

This section of chapter five has presented the rationale and evidence for why the illegal road-barrier system is a serious impediment to improving the efficiency of agricultural marketing, especially in the case of cereals. Besides the direct impact on costs of the illegal fees collected at barriers, the costs in terms of delays en route also discourage traders and transporters. The evidence supports earlier findings that these costs add at least 13 percent to the direct costs of transport on short-haul routes, from secondary to regional markets. Since almost all grain enters the marketing system at this point, this is a serious impediment. Though limited survey data and questions of timing limit the robustness of our conclusions for long hauls, the evidence generally corroborates earlier studies (also reports by transporters themselves) that long-haul transportation charges may be inflated by as much as 20 percent. The number of barriers, their direct costs, and the indirect costs in terms of time lost are all indicative of the discouraging effect that road barriers have on trade.

The government's Decree of June 8 1993 to ban illegal barriers by decree, resulted in a decline in the incidence and effects of barriers in heavily traveled regions in the south. Unfortunately, the decree seemed to have no positive effect in Sahelian zone or in the Mayo Kebbi, probably because those areas are less accessible and enforcement is more difficult. Although survey work ended in October, there was evidence of a re-emergence of barriers in those zones where they initially declined following the issuance of the decree. The October truckers' strike was, in part, a reaction to the failure of the decree to resolve the problem.

These results show that while the determination of the government of Chad to ban illegal barriers is important and somewhat effective, additional measures are also necessary. Monitoring of the incidence and seriousness of barriers by traders' associations, truckers' unions, and by the media would provide important restraints on the officials who operate barriers. Establishment of a liaison between the Ministry of Interior and these groups for reporting and publicizing barrier problems is a good way to empower the victims of barriers and to encourage private-sector monitoring.

Local officials can also be enlisted to help if they are carefully informed of the adverse consequences of barriers. Some may be unaware of the frequency or the actual costs involved. Others may be unsuspecting of the deleterious effects that they have on regional marketing and commerce in general. In any event, a campaign that makes local officials a part of the effort to remove barriers is much more likely to succeed than one introduced and directed out of N'Djaména.

It is understood that the government officials responsible for those services operating barriers need to do a better job of censuring abusive practices. However, the legitimacy of even legal barriers needs to be questioned as well. An environment where armed agents and authorized checkpoint are the rule too easily nurtures the establishment of illegal barriers and allows corrupt practices to flourish. The government should set a goal of eliminating all manned checkpoints, targeting specific services for immediate removal. Of the 15 services listed in Table 5.1, only a handful have any need to operate check points or routinely stop traffic; the others should be prohibited from doing so. An interministerial commission should be created to issue a specific set of guidelines.

Unfortunately, until the underlying causes of illegal barriers are addressed (insecurity, poor economic performance, etc.) it is unlikely that the problem can be completely eradicated. The government and the private sector must be vigilant in trying to suppress them. Barriers can be minimized by constantly exposing them, by informing local officials of their illegality and their adverse consequences, and by empowering traders and transporters to lodge official protests. Until a more concerted effort is undertaken to complement the simple (though important) measure of banning by government decree, barriers are a problem that will continue to seriously plague Chadian agricultural marketing.

VIII. Obstacles to Removing the Roadblocks

While it is government policy that illegal roadblocks should be dismantled, the full implementation of this policy will be difficult for several reasons: 1) The Ministry of the

Interior does not have sufficient authority to force diverse security services, especially those under the President and the Ministry of the National Defense, to eliminate the barriers. The president is probably the only person in the country with sufficient authority to compel the state security services to get rid of the roadblocks. He may be reluctant to do so for fear of alienating some of the same elements that brought him to power. On the other hand, such a move would enhance the president's popularity and increase his chances of winning the April 1996 presidential elections. 2) The main beneficiaries of the roadblocks are primarily those security forces levying irregular taxes. One of the heaviest burdens on the state treasurery is the need to pay Chad's large military forces-- presidential guard, the regular national army, the Republican Guard, irregular forces who are waiting to be integrated into the national army, and other irregular forces who have been laid down[38] and claiming their "benefits." The late and non-payment of regular salaries to heavily armed security forces provides temptations for the latter to use their power to exact tribute to survive if not to enrich themselves. The long civil war in Chad has also produced traditions in which armed forces have become used to living off the local populations. Regular payments of salaries and the imposition of tighter discipline are necessary but not sufficient conditions for the elimination of illegal roadblocks by security forces. 3) Even if the security forces got paid regularly, exercised tighter control over the behavior of their personnel, and agreed to stop illegal roadblocks and levies on the civilian population, some roadblocks would continue to persist because of the presence of rebel

[38] A new government policy to reduce the military force at the National level, from over 50,000 to 20,000 soldiers.

elements and bandits in many parts of the country. Thus, in the area around Moundou, the so-called "codos" or armed forces who have not rallied to the regime, roam the countryside and exact tribute from local merchants and rural farmers. Tension and insecurity is also high in the Ouaddai region around Abéché where irregulars associated with Dr. Alharis Bachar have not been demobilized or integrated into the national army. While changes in government policy toward illegal roadblocks by state security forces combined with the political will to enforce such a policy would do much to sharply reduce roadblocks and their negative consequences on the economy, the complete elimination of roadblocks will not be achieved until order is reestablished in the country and large numbers of Chadian soldiers demobilized, disarmed, and integrated into civilian Chadian society.

CHAPTER SIX

THE POLITICAL ECONOMY OF CEREALS MARKETING REFORM IN CHAD

Although administrative restrictions and road barriers are major issues of current policy debate, the National Cereals Office (ONC), the cereals banks, and the Communes also create important institutional problems related to cereals marketing in Chad. These are described in the paragraphs below.

1. THE ONC AND ITS ROLE IN FOOD AID DISTRIBUTION

A. Organization and Functions of the ONC

The Office National des Céréales (ONC) was established in 1977 with a broad mandate to develop and manage a food security stock for emergency relief, to distribute food aid, and to stabilize producer and consumers prices. The ONC operates as a financially autonomous "Enterprise Publique d'Interet Commercial" (EPIC) under the direction of the Ministry of Agriculture and Rural Development. This status theoretically gives ONC directors considerable freedom to manage ONC activities.

During the late 1970s and early 1980s, ONC activities were disrupted by wartime conditions. In the mid-1980s, the ONC resumed its activities, which were financed primarily through donors. During the late 1980s, the ONC's inefficient operations led to a sharp erosion in its

financial resources (Whitlock,1992), which had been bolstered by a 1.2 billion CFAF grants by the EEC in 1986. By 1991, the ONC had lost two-thirds of these funds and could not cover its operating costs through receipts generated by the sale and distribution of food security stocks.

At the beginning of the 1990s, the ONC had clearly proved that it could not fulfill its mandate to stabilize producer and consumer cereal prices. Its often poorly timed interventions in the marketplace had little impact on prices, while resulting in heavy losses. In recent years, the ONC has reduced its staff and focused primarily on developing and managing a food security stock and distributing food aid. Currently, ONC operations can be characterized by the following dominant features:

1. its inability to cover its basic operating costs through food aid sales.
2. the abandoning of food stabilization objectives.
3. its primary role as the manager of national food security stocks housed in ONC warehouses around the country.
4. the heavy if not total dependency upon donor food aid for constituting and replenishing the national food security stock.
5. donor control of major decisions affecting food security stocks and food aid distribution.

The main decision-making body concerning food aid distribution and national security stocks in Chad is the Comité d'Action pour la Sécurité Alimentaire et l'Aide d'Urgence (CASAU), which was created in 1987. Its membership includes representatives from the ONC, several government ministries and services, (e.g. Ministry of Agriculture and Rural

Development, Interior, Public Health,), donor agencies, and NGOs operating in Chad. While CASAU makes decisions by consensus, USAID-Chad as the major food aid donor in the country exercises a great deal of influence on CASSAU decision making.

CASAU also has regional and local action committees which work with SAP (Système d'Alerte Précoce), FEWS (Famine Early Warning System) and mobile nutritional surveillance teams to provide CASAU with information identifying areas and populations at risk because of crop failures and food shortages. After receiving this information, CASAU presents the information to the Comité de Stocks de Sécurité Alimentaire (CSSA), a smaller working committee for further study. CASAU then approves decisions of the CSSA to release cereals stored in ONC warehouses to markets at risk and vulnerable populations. The cereals can be sold in the market at subsidized prices or distributed at no cost to the local populations, depending on how CASAU assesses the situation. In the past, the World Food Program (WFP) tended to provide much of the transportation for food aid distribution to stricken areas. However, with the privatization of the WFP truck fleet, NGOs have taken over much of the responsibility for food aid distribution to stricken areas. After distribution of food aid, the ONC replenishes its stocks thanks to donor assistance as food or funds to purchase cereals. To date, USAID-Chad has been the only donor to sign the 1990 Accord-Cadre pledging to replenish depleted food stocks. However, other donors, especially the French, have continued to provide food aid despite their refusal to make a long-term commitment by signing the Accord-Cadre.

One of the major issues now being discussed by the ONC and donors is whether to centralize stocks in N'Djaména or to maintain the present policy of positioning cereals in local warehouses. Centralizing stocks would decrease personnel costs by eliminating warehouse managers, guards, and maintenance costs in rural areas. On the other hand, centralization increases transportation costs and entails a greater risk that grains may not arrive in time to distant rural areas because of poor weather and road conditions and bureaucratic bottlenecks.

B. The ONC, Interest Groups, and Food Aid Distribution

Under the Habré regime (1982-1990), the ONC was a highly politicized organization and subject to considerable external political pressure from the President, who could commandeer ONC resources for his own purposes. During this period, the ONC sold cereals derived from food aid to certified merchants and sold grain to civil servants and military personal on credit. Contracts usually went to merchants affiliated with Habré's party who were members of the Union Nationale des Commerçants du Tchad (UNACOT).

The sale of grain to civil servants and soldiers was accompanied by low repayment rates and huge operating deficits. Moreover the military often ordered large quantities of grain without paying for it. The military still owes the ONC 200 million CFAF for grain purchased before 1991.

Other groups involved with the ONC were farmers who sold millet and sorghum to the ONC when the latter was intervening to stabilize producer prices. In some areas, ONC

officials promised farmer associations and groups that they would purchase cereals from them. For the most part, these promises were not met when the ONC moved out of the stabilization business. Despite the current ONC policy of restricting its activities to the management of a national security stock and participation in the food aid distribution system, farmer groups still look to the ONC as a potential customer for their surplus cereals and provider of marketing services. Thus, local farmer groups and cooperatives in regional workshops held in the interior and in N'Djaména in late 1991 and early 1992 called upon the ONC to regard the producer groups and associations as "privileged intermediaries" in the grain marketing circuit and to work with peasant groups and cooperatives to find new markets and outlets for their surplus production.

A survey of cereal wholesalers attitudes toward the ONC showed that 50% of those interviewed saw ONC intervention in the market as harmful to their interests. Many other traders did not see the ONC as a serious threat for several reasons. First, the ONC did not supply a significant portion of the grain on the market. Thus, it did not have much influence on market prices. Second, even when it offered grain at lower than the going market rate, the ONC often experienced difficulty in selling its stocks because grain was often spoiled or of low quality. Third, many wholesale grain merchants enjoyed favorable contracts with the ONC in selling food aid or purchasing ONC grain put on the market because of collusion between ONC officials and politically well-connected traders. Finally, the more knowledgeable wholesalers can benefit from their superior knowledge of the marketplace to time their purchases and sale of grains to take advantage of ONC interventions. For example, during the 1985-86 season, the ONC bought 7,500 tons of

grain. Wholesale grain traders let the ONC purchase much of the available grain at relatively high prices until ONC funds were exhausted. Then the merchants intervened and bought cereal at much lower prices which permitted them in turn to sell at prices lower than those needed by the ONC to break even (Arditi, 1991: p.56). When the banks put heavy pressure on the ONC to reduce its stocks to repay their loans, grain traders then bought cereals from the ONC at very low prices.

The ONC's role in regulating market prices through seasonal purchases and sales of grain has been reduced in recent years. Thus, ONC will no longer sell grain on credit to civil servants and the military, and the tight control by the donors over food aid distribution have reduced the scope for corruption and put relations between the ONC and grain traders on more businesslike footing. ONC officials claim that since 1991, bids for ONC contracts by grain traders have become more competitive and decisions made on strictly economic rather than political criteria or social and family connections. Some traders allege, however, that highly placed ONC officials still accept kickbacks in allocating contracts to traders whose bids were not always the most competitive.

Donors and NGOs are major players in interest group politics concerning food aid distribution. Earlier, Italy, and more recently, France have channeled food aid directly to the military. Through CASAU, the donors led by USAID-Chad have taken control over food aid distribution decisions. Almost totally dependent upon donors for resources, the ONC is eager to please. Besides being represented in CASAU and regional and local food aid action committees, NGOs now have the responsibility for distributing food aid to stricken regions and seek contracts from the major donors to finance these transactions.

USAID tends to pay the going transport rates for NGOs like the Chadian Red Cross to deliver food, while France currently takes competitive bids and pays the NGOs a certain amount per ton delivered. The role of the canton chiefs and sous-prefets in making and implementing food aid distribution decisions has been sharply reduced.

C. Policy Issues Concerning the ONC and National Food Security Stocks and Food Aid Distribution

According to USAID sources, the ONC has performed reasonably well in managing the national security stock and American food aid. Other donors have been less enthusiastic in their support of ONC. Nevertheless, there seems to be a consensus that the ONC should survive with its primary activity, the management of a national food security stock.

If the ONC were completely eliminated, Chad would have to rely exclusively on the private sector --e.g., grain traders and local community cereal banks-- to constitute the national security stock, and donors to import large quantities of emergency food aid when crops failed. Although the private sector might constitute sufficient stocks to cover national needs in grain during normal years, in case of massive crop failure, Chad would have to rely on donors and the long, costly, and burdensome process of importing and distributing grain to the stricken areas and populations. Moreover, even during normal times, the private sector might not be able to meet minimum needs in certain areas because of insufficient reserves in local cereals banks or the lack of sufficient financial incentives for grain traders to supply that area. Moreover, some food aid is earmarked to be distributed to targeted populations who may be too poor to pay market prices for cereals even when available. Given these circumstances, it makes sense to maintain the ONC as an important manager of national food security stocks.

To survive, the ONC must generate sufficient resources to cover its operating costs since state finances are not in a position to subsidize ONC activities. The ONC has

already cut costs by restricting its activities and reducing the possibilities for heavy losses by no longer selling on credit. The ONC could also cut costs by reducing its personnel. This could be done by closing down warehouses in the interior in areas where food aid could clearly be provided by the private sector and NGOs even during periods of drought or in areas that are far less likely to suffer food shortages. Centralization of all food stocks in N'Djaména would enable the ONC to close local warehouses and cut down on staff. On the other hand, it would also slow the process of food distribution during periods of food crisis and require far more sophisticated levels of management to maintain the quality of the food stocks.

The ONC has already considerably reduced its staff. For example, a recent visit to the ONC warehouses in Amtiman, Mongo, Biltine, Sarh, and Moundou revealed that the staff there consists only of one ONC agent and a guardian while the ONC agent, a warehouse manager, had practically no funds in his operating budget. In places like Moundou, there is not much that the ONC can do to further compress its costs.

The private sector clearly has an important role in forming national grain's stocks. Cereal traders regularly purchase large quantities of grain that are stored and then sold during the hungry season, usually at higher prices. Our trader surveys show that grain traders stock much less grain than often depicted in the literature and that profits are not exorbitant, especially when one considers opportunity costs and high risk factors. It is sometimes difficult to draw clear boundaries between stocking in response to market forces and collusion on the part of a small number of grain merchants to deliberately manipulate the market to drive up prices. The distinctions should be made on empirical

evidence and not determined by ideological positions either portraying the trader as always responding to pure market forces or as people who constantly seeks to manipulate markets and exploit producers and consumers.

A recent study (Carole and Ouedraogo, 1992) suggested that a food trigger mechanism should be considered which would permit the ONC to intervene and sell grain in the market when prices rose beyond a certain level. This would again put the ONC back in the business of stabilizing markets, a function that the ONC has already largely abandoned. The ONC does not have the resources and food stocks to take on this role. It is unlikely that the donors would be willing to expand the role of the ONC again and to put sufficient resources into a program that would enable the ONC to flood the market with sufficient grain to drive down prices. Moreover, the record of the ONC in market intervention for stabilization purposes has not been very effective. This would suggest that the trigger mechanism proposal is at best problematic.

2. The Cereals Banks

Another issue in the cereals marketing in Chad is the role of cereals' banks. Cereal banks have been promoted by NGOs and proponents of grassroots development organizations with the main objectives of promoting local storage schemes, raising farmers' income, and protecting farmers from seasonal price variations. The term cereal banks refers to buffer stock program, owned by farmer group organisations involved in temporal arbitrage activities. Cereal Banks are managed by NGO's like BELAC, ONDR, SECADEV, etc. NGO's supporting cereal banks often argue that farmers sell their grain

at the lowest prices at harvest time and buy grain at the highest prices during the hungry season. The profits generated by the cereals banks are either distributed to individual members or used to finance community projects. Village based community granaries are another storage schemes (local) designed primarily to raise farmers' incomes, buffer farmers from seasonal price variations, and contribute to local or regional food security.

Some NGOs and proponents of grassroots development organizations see family and community-run community granaries and cereal banks as alternatives to the ONC and private grain traders. Some donor agencies and experts view the issue of the relative effectiveness and potential of community-run cereal's banks from an ideological perspective. Thus, some supporters of local cereal banks see traders as exploiting the producers, buying cheap and selling dear and charging exorbitant interest rates when extending credit, and the cereals banks as liberating peasants from the yoke of the traders. On the other hand, some free-market proponents see the trader as inherently far more effective and responsive to market conditions and the community-run cereal bank as likely to fail because of high transaction costs, lack of individual incentives, and the injection of non-economic criteria into the decision-making processes.

The relative effectiveness in protecting farmers from seasonal price fluctuations, and raising farmers income of the community-based cereals bank is again an empirical question. In Chad there is a current drive backed by the ONDR and the cooperative service in the Ministry of Commerce supported by NGOs like BELAC and SECADEV to organize peasant organizations everywhere and to get many of them involved in cereals

bank activities. This effort is likely to fail because the initiative has come from above and not been a response to strongly felt needs of the local population. On the other hand, some cereals banks seem to be doing well in areas like Pala where NGOs like BELAC have been active for more than a decade and in villages where the people are well-organized, have strong leadership, and clearly see the economic and social value of such institutions. Recent studies suggest that village-based community granaries seem to be working better than the larger cereals banks which require greater managerial and technical skills and more sophisticated internal control mechanisms than the community granaries.

Community granaries and cereal banks can reduce the costs of purchasing grain during the hungry season for participating farmers and for grain-short villages in grain surplus zones (see BELAC, 1992). On the other hand, from the perspective of a national food stock policy, one cannot rely on locally-based cereals banks to constitute a sufficiently large and geographically dispersed food stock to meet Chad's needs in times of serious food shortages since the few successful experiences cannot be easily replicated on a nationwide scale.

It should also be noted that cereals banks have different primary objectives than a national food stock security policy. The community granaries and cereal banks programs are designed primarily to raise peasant incomes by providing credit to producers so that they don't have to sell their grain at the lowest prices at harvest time and buy grain at the highest prices during the hungry season. Ideally, the cereals banks are expected to generate profits that will be distributed to individual members and be used to finance

community projects. Local storage schemes are designed primarily to raise farmers' incomes, buffer farmers from seasonal price variations, and contribute to local or regional food security. They are unlikely to be able to successfully assure national food security or relief functions.

Given their different goals, it is possible to support both cereals banks and the ONC as important components of food security programs. However, donors interested in promoting a national food security stock should probably devote more attention to the ONC as the main instrument for carrying out a national-level program.

3. ROLE AND ACTIVITIES OF COMMUNES IN CEREALS MARKETS

The role of the commune in the cereals market is an often neglected institutional constraint to improving marketing. The commune is an organ of local government with the objectives to provide local market facilities, maintain public order, and provide public goods and services needed for the smooth functioning of the market. Market and other taxes on trade generate revenues needed to finance communal services. Market participants tend to regard these taxes and fees as burdensome while maintaining that they get few services for the money they are paying out. On the other hand, communal officials complain that revenues are not sufficient to permit them to provide basic public services. Communes are autonomous and rely inordinately on market taxes and fees.

The quality of public services have suffered substantially because of both general insecurity and economic crisis. When public services break down, the market suffer. Poor

sanitary conditions, badly maintained streets and roads, and a general climate of insecurity and fear discourage businessmen and consumers from fully participating in the market, raise costs, and discourage payment of taxes and fees. Communal revenues could be increased by broadening the tax base, improving recovery rates on existing taxes, and returning more of the revenues collected by the treasury to the commune. Success will depend largely on broader improvements such as resolution of Chad's fiscal and economic crisis, reduction of corruption, and improvement in the political climate and responsiveness of government to local needs.

a. Communal Taxes as Additional Costs to Cereals Marketing

Although the market is a major source of revenue for the communes, communal taxes constitute additional marketing costs. Taxes and fees related to commercial and market activities represent a major part of communal revenues. These can be divided into two broad categories: (a) general fees and taxes paid by businessmen such as patente, license, and permits for pushcart operators and (b) taxes levied in the markets themselves such as stall rental fees, parking fees for trucks, and taxes levied on food products entering and leaving the commune. While a significant part of these taxes are paid by those directly involved in cereals marketing functions, economic actors involved in other activities also pay the same kind of taxes. The fact that many traders, truckers, pushcart operators, and retailers are involved in non-cereals marketing activities makes it difficult to sort out exactly how much the cereal marketing sub-sector contributes to communal resources as a percentage of the total contribution made by the commercial sector as a whole.

Whether traders regard communal taxes as burdensome or not, taxes always add to the costs of doing business, and who bears the tax depends on supply and demand elasticities. If possible, the commune should seek to widen its tax base and mobilize other potential sources of revenues to cover the cost of providing and expanding communal services. This could lead to a reduction of market taxes or expansion of communal services for the market. For example, in N'Djaména, real estate and office rental taxes generate fewer revenues than patents, licenses, and market fees despite N'Djaména's large population and relatively large modern housing and office structures. A more detailed study of these structures could identify those areas in which the tax base could be enlarged.

Tax recovery rates depend upon several factors, such as: a) The degree of corruption by tax collector and tax officials. Official tax recovery rates may thus be lower than the real tax recovery rate if tax collectors pocket some of the money they collect; b) The ability of taxpayers to pay. The recent economic crisis in which many salaried workers have not been paid by the state makes it difficult for many to pay their taxes; and c) The willingness of taxpayers to pay. Taxpayers are generally more willing to pay taxes if they are satisfied with the services provided by the government to whom they are paying or if they fear that nonpayment will be accompanied by sanctions taken on those who won't pay.

Finally, the commune can increase its real receipts if the Treasury will return taxes collected on behalf of the commune to the commune. Patente and license taxes are collected by the Ministry of Finances and deposited in the treasury. The 1993 communal budget of N'Djaména calls for these taxes to generate 190 million CFAF and for taxes collected by the central tax service to generate 459 million CFAF. To date, most of these

taxes remain in the central treasury, thus leading to shortfalls in communal receipts. On the other hand, interviews with communal authorities in Moundou and Sarh showed that treasury officials there were more willing to release communal funds directly deposited in the regional treasury to the commune. In Moundou, the Treasury even advanced funds to the commune to permit it to cover its deficit and to pay its employees on time. In contrast with the situation for central government employees who have experienced difficulty getting paid or getting paid on time, communal employees in Sarh and Moundou have generally been paid on time or after short delays.

One of the most important sources of revenue for the communes of the interior directly related to cereals marketing is the exit tax on food products entering and leaving the city. This tax may be illegal since none of the texts defining the kind of taxes that can be levied by the commune mention food taxes. The former mayor of Pala says that this tax was instituted by the Habré regime in the early 1980s. It has since been levied by canton chiefs and their representatives in villages and towns hosting weekly markets. Interior officials maintain that food taxes are legal but can be levied only by the established communes. They are legal because they formally appear in communal budgets which are approved by both the Minister of Finance and the Minister of the Interior.

Communal food taxes were much higher during the early and mid 1980s reaching as much as 200 to 300 CFA per 100 kg sack of cereals. They have gone down since then and now range between 50 and 100 CFAF per sack. Other market taxes such as stall rental taxes and daily parking fees have not gone up very much in real terms since the 1960s. Stall rental taxes range from 25 to 100 CFAF per day for small traders and

retailers and from 1,000 to 1,500 CFAF per month for permanently established merchants. In N'Djaména, the commune charges the larger traders 500 CFAF per square meter per month rental fees. Truck parking fees depend on the size of the truck and are paid on a daily basis. Large trucks pay 4,000 CFAF while smaller trucks pay from 1,500-2,500 CFAF per day.

b. Public Services Provided by the Commune of Benefit to the Cereals Market

The general insecurity in the country coupled with a severe financial and economic crises have greatly affected public finances and consequently on the quality of public services now being offered by the state and urban government. The situation seems to be worse in N'Djaména, where communal services cannot keep up with the rapidly expanding population. Much of the available resources are allocated to pay salaries, with operating funds and investment in equipment being drastically reduced. The situation is somewhat better in some communes in the interior like Sarh, Moundou, and Abéché, which recover a relatively larger percentage of taxes.

Some main public services expected to be provided by the communes that benefit the market include: 1) the maintenance of public order, 2) the construction of hangars and other market infrastructure and/or the renting of market space, 3) the spatial organization of the marketplace, 4) the repair and maintenance of streets and roads, 5) garbage collection and street cleaning services, 6) the maintenance of minimum standards of public hygiene.

When these services break down, the market suffers. Poor sanitary conditions, badly maintained streets and roads, and a general climate of insecurity and fear discourage businessmen and consumers from fully participating in the market. Streets and roads without maintenance can ruin cars and trucks and make it more difficult for traffic to circulate. Shortages of hangars and space can lead to overcrowding and spoilage of food products. When services break down and insecurity reigns, businessmen and urban dwellers are more reluctant to pay their taxes.

In general, there needs to be more dialogue between communal officials, the private sector, and urban dwellers to find creative ways of maintaining public services needed to support market activities.

c. Collaboration between Commune and Market

A better understanding of the relationship between the commune and the market can contribute to the formulation of policies that will be mutually advantageous to both the commune and the economic actors involved in urban cereals market transactions.

The largest cereals markets in Chad are found in towns that have the status of urban communes. These markets provide the urban populations with their basic food needs and employment for the thousands of people involved in cereals marketing activities (wholesalers, retailers, intermediaries, transporters, dispatchers, unskilled labors loading and unloading trucks, etc.).

There is a certain collaboration between the commune as an organ of local government and the markets located within the commune. On the one hand, the commune organizes

the space within the market, maintains public order, and provides public goods and services needed for the smooth functioning of the market. On the other hand, market and other taxes on trade generate revenues needed to finance communal services. Both institutions clearly need each other. A decline in market activities reduces the commune's potential tax base and makes the financing of communal services more difficult. When the communes cannot maintain market infrastructure properly or ensure public order, market efficiency also tends to decline. On the other hand, a flourishing and expanding market can generate more revenues for the commune which can in turn be used to improve urban infrastructure and public services that ease access to the market and reduce the costs of doing business.

However, at the present, there is little collaboration between communal officials and economic agents involved in cereals marketing. Market operators have little representation on communal decision-making bodies, which are dominated by state officials. An effective remedy would be the establishment of Market Improvement Associations. One such committee exists in Moundou, though there the focus is more on improving tax collection than improving market conditions. Collaboration would be necessary on how to improve market conditions and make the market more efficient.

In Moundou, the mayor has recently created a vigilance committee (comité de vigilance) consisting of 15 local merchants and four municipal police officials to oversee the market and to participate in collecting food taxes. In this instance, the commune has enlisted the greater participation of local businessmen more to improve tax collection than to solicit ways on how to improve market conditions.

N'Djaména has an urban planning committee presided by the Minister of Public Works. Of the 20 members of the committee, only three are not ministers or directors of central government services. The three include representatives of the Chambre Consulaire and the Water and Electricity Company, and a member of Parliament. While one of the major tasks of the urban planning committee is to plan the development of N'Djaména, there is no specific reference to planning the organization and development of N'Djaména's major markets.

Legal and political structure and interest group politics play an important role in understanding the formulation and implementation of cereals marketing policy. Chad has one of the least developed legal systems in Francophone Africa with least experience in using contracts and courts to organize trade or resolve conflicts. The climate of insecurity and the absence of representative institutions favors extra-legal tactics by individuals and interest groups to address their needs: underground behavior and avoidance of the state on the one hand; collusion with state authorities to extract special favors and privileges on the other. Political violence, regional strife, chronic instability, and a destabilized economy have discouraged the emergence of powerful well-organized interest groups in the private sector.

There are three distinct kinds of interest groups affected by cereals marketing: a) Private sector groups directly involved in cereals marketing: while having the most to gain from reforms and liberalization, some elements may prefer the current system because of the preferential treatment they currently receive; b) State institutions and officials involved in regulating cereals marketing; though somewhat responsive to the reform in principle,

their interests work against economic liberalization. On the other hand, this is the group most under pressure from donors to reduce the scope of regulation; c) State and military personnel extracting rents through the misuse and abuse of state authority: these are most likely to oppose the ending of barriers and the imposition of illegal taxes. The major donors have also emerged as a potent interest group in the country promoting the liberalization of the economy and streamlining of state regulations regarding the private sector.

One obstacle to strengthening private-sector interest groups is that Chad has no independent Chamber of Commerce to defend and promote their interests. The existing Chambre Consulaire is a quasi-state institution. Of all the sub-sectors involved in cereals marketing, the transport sub-sector is the best organized. It has used its influence to lobby for lower taxes, fewer regulations, and the elimination of the illegal barriers. Large-scale grain traders constitute a potentially powerful interest group, though mostly concentrated in N'Djaména. Millet and sorghum producers have little influence as an organized pressure group, particularly in the realm of cereals marketing. While Chad has thousands of rural-based farmer cooperatives (groupements), most are not really operational.

Nevertheless, the nature of commune and market also need to be pointed out. Several important factors determine the nature of commune and market relationships:

1. Differences in legal status: The capital of N'Djaména has a different legal status from the urban communes of the interior. Now only four urban communes in the interior are fully functioning-- Sarh, Moundou, Bongor, and Abéché- with a mayor and management committee (comité de gestion). The rest--Am-Timan,

Doba, Kelo, Koumbra, Lai, Moussoro, Ati, and Faya-- are governed directly by the territorial administration, while Pala has no communal structures at all since these were suspended.

2. The domination of communal affairs by state officials: Presently, Chad has no form of representative municipal government. The president/mayor of the commune is named directly by the President of the Republic. Only one representative of the commercial sector can sit on the management committee. No popularly elected representatives sit on the commune's management committee, which serves as the equivalent of a municipal council.

3. The size of the commune and the nature and extent of economic activities within the commune: The size of the commune is important because it determines the size of the tax base and the volume of food needed to feed its populations. With a population of 600,000, N'Djaména has a larger tax base and budget than any other commune and consumes the largest quantity of cereals. For example, Moundou is less dependent upon market taxes than other communes in the interior because of the presence of the main offices of COTONCHAD and the country's largest beer industry. Communes in the wealthier cotton producing areas tend to have larger budgets than those in areas lacking cash crops.

4. The nature of trade relationships between the commune and its rural hinterland: The smaller the commune and the poorer the hinterland, the more likely it will be that cereal's transactions will be a relatively more important market activity in the commune.

THE DYNAMICS OF INTEREST GROUP POLITICS AND CEREALS MARKETING POLICY

1. Institutional Context: The Political System

Chad's political system is currently going through a major transitional period. After many years of civil war and regimes based on military or one-party rule, the National Conference held in early 1993 laid down the ground rules for the transition to a democratic regime which would ensure human and civil rights and provide for representative institutions and national and local elections. There is still some question about whether the current regime that took power in December 1990 will fully implement the recommendations of the National Conference or has the capacity to restore stability, curb the excesses of state and irregular security forces, and establish a regime based on the rule of law.

Personal and one-party dictatorships, civil strife, and military regimes have stifled the development of civil society in Chad and a society based on the rule of law. Thus, Chad has one of the least developed legal systems in Francophone Africa with only a small number of lawyers and judges and one characterized by little use of courts to resolve conflicts or to enforce sanctions on those violating the law. Until very recently, Chad had no independent press, opposition political parties, or independent trade union activity. Where associations were allowed to exist, these were generally subordinated to the ruling party or the state.

The absence of representative institutions means that interest groups have to defend their interest by petitioning the state to address their needs. Protection from the state and lucrative state contracts depend primarily on individual ties with those in power rather than the application of the rule of law and competitive bidding. Conversely, private sector businessmen and their families identified with the losers of political power struggles invariably lose their privileges and sometimes their lives.

2. Interest Group Associations in Cereals Marketing

Like many Francophone countries, Chad has no independent Chamber of Commerce to defend and promote the interests of the private sector. In Chad the Chambre Consulaire is clearly a quasi-state institution with most of the officers named by the state and many members representatives of state or parastatal enterprises. The Chambre Consulaire seems more of a place to give influential businessmen in the private sector some nominal honor than an arena for seriously debating public policy and promoting the interests of the private sector.

The Conseil National du Patronnat Tchadien, though formally more independent of the state, tends to include members from the modern service sector, industrialists, and those involved in international trade. These groups tend to seek protection from the state. Large grain traders as such do not have much influence in this group.

Of all the sub-sectors involved in cereals marketing, the transport sub-sector seems to be the best organized. During the last years of the colonial period, Chadian truckers banded together to form the Coopérative des Transporteurs Tchadiens (CTT), which

lobbied the colonial government to give their group a monopoly over the transport of cotton produced in the country. The CTT won its demands and exercised tight control over the land transport sector until its demise in 1989 that was engineered by the World Bank as one of its conditions for financing a massive road construction and rehabilitation program. It should be noted that transporter associations in Chad have used their influence to gain monopoly power rather than to promote greater competition. They have preferred to have fixed prices which would set minimum and maximum rates that would assure them a guaranteed profit. On the other hand, they also want lower taxes on gasoline, lower customs taxes on imported trucks, fewer regulations, and above all the elimination of the illegal barriers in Chad and in neighboring countries.

The organization of the transport sector has been described in great detail elsewhere (DAI, September 1993). The truckers now have a national organization founded in 1992 known as the Syndicat National des Transporteurs Routiers du Tchad (SNTRT), which has 700-1000 members and includes most of Chad's truckers. The SNTRT also has close ties with the driver's union, whose strike in Cameroon in early October 1993 set the stage for the strike of Chadian truckers that began on October 14 and ended on October 21 with the dismantling of many illegal barriers.

Outside N'Djaména, larger grain merchants are less likely to be organized in formal associations. Instead, they tend to meet together on an ad hoc basis to deal with specific problems such as how to prevent the commune from raising the tax per sack of grain. Many deal on an individual basis with local officials. While Sarh had a wholesale traders' association, Moundou did not. Sarh's cereals merchant organization included eleven large

wholesalers, of which only six were full-fledged members. The six members bought their grain from the five nonmembers, who collected cereals in the weekly markets for sale in town. Organization of wholesale traders in the smaller towns was even more problematic.

The creation of a market improvement association could conceivably encourage those involved at the lower end of the cereals marketing chain to organize associations of market pushcart operators, dockers, hangar owners, etc. to represent them in the association.

The last major group involved in the cereals marketing cycle are the millet and sorghum farmers themselves. In recent years there has been an effort to organize village-based associations and cooperatives (groupements) and larger scale cooperatives and unions. In April 1992, a national conference on the cooperative and voluntary association movement in Chad was held in N'Djaména. While Chad has thousands of rural-based groupements, most are not really operational. Some were set up by individuals to get funding from donors and NGOs. Moreover, many people often use the word association and groupement interchangeably, although they are technically different legal entities under the tutelage (tutelle) of different ministries. Associations are under the tutelage of the Ministry of the Interior, while groupements are under the tutelage of the Ministry of Commerce.

The new voluntary association movements at the village level are seeking credit, organizing community granaries and food banks, looking for markets to sell their surplus grain, and participating in small-scale development projects. NGOs like Secadev, Belac, Africare, and Vista provide financial support and credit for these locally-based groups.

Thus far, these groups seem to have little influence as an organized pressure group, particularly in the realm of cereals marketing.

To sum up, economic interest groups concentrated in the capital and involved in modern services, industry, and international trade seem to be the best organized in Chad. The major donors have also emerged as a potent interest group in the country promoting the liberalization of the economy and streamlining of state regulations regarding the private sector. Thus, the World Bank was able to insist that the CTT be dissolved as part of its conditions for releasing funds for its program. Donors now largely control the major decisions affecting national food stocks and distribution, and donor pressure was an important factor in getting the existing regime to organize the National Conference.

3. Interest Groups Involved in Cereals Marketing

One can delineate three distinct kinds of interest groups affected by cereals marketing:

1. economic groups directly involved in cereals marketing--e.g., importers, exporters, wholesalers, retailers, transporters, manutention labor, producers, and consumers.
2. state institutions and officials involved in regulating cereals marketing, extracting state or government revenues, and providing services and technical assistance to private sector groups active in cereals production and marketing--e.g., Ministry of Commerce, the territorial administration, communal officials and services, cooperative and agricultural extension services, tax collectors and treasury officials, etc.

3. state and military personnel extracting rents from various economic agents involved in cereals marketing through the misuse and abuse of state authority. These groups are all involved in illegal actions and sometimes involved in extracting rents by threats of violence against those not conforming to their wishes.

The third group is the one most likely to oppose the ending of barriers and the imposition of illegal taxes. They profit the most by the general insecurity in the country and lack of rule of law. The military components of this group comprise a very powerful interest group since they have been the decisive elements in toppling old regimes and bringing new ones to power. Discipline is not very strong, especially among irregulars or units awaiting demobilization or reintegration into the army. Non-military state officials like canton chiefs and sous-prefets also prefer to maintain the status quo since the illegal taxes they collect do not have to go into state coffers. The lack of state authority makes it possible for them to operate more freely. It remains to be seen whether the current regime will attempt to curb this group since that might entail an armed confrontation which could prove costly and lead to the loss of power. Simultaneously, the regime is under pressure from donors and the public to end the barriers and imposition of illegal taxes and stop the plundering of Chadian citizens.

The second group is more responsive to change. However, state officials generally want to preserve their regulatory and tutelage (tutelle) powers over diverse economic groups, ensure state dominance in key economic sectors, and maintain tax levels as they are. Their interests work against those seeking to liberalize the economy or to provide relief to those involved in cereals marketing. This group is more likely to support the

dismantling of illegal administrative barriers and the imposition of illegal taxes. On the other hand, they may resist movement towards establishing representative municipal government, the elimination of various taxes and regulations to lighten the burden on the private sector, the phasing out of direct government intervention in certain areas, and greater transparency in government operations. On the other hand, this group is under heavy pressure by the donors to reduce the scope of regulation and to further liberalize the Chadian economy.

The first group of economic agents involved in cereals marketing has the most to gain from elimination of the barriers and illegal taxes, liberalization and simplification of regulations concerning their activities, and a lighter tax load. However, some elements within these groups may prefer the current system because they are in league with state officials and get preferential treatment as state contracts and being exempted from various government regulations and taxes. Thus, in many African regimes, private sector groups work hand in hand with state officials in extracting rents from the economy that would not be possible under conditions of freer competition.

For the most part, Chad's diverse economic interest groups are not well organized at the national level. In N'Djaména, the most active private sector groups participating in modern associations to defend their interests are those involved in international trade, industry, and modern services. On the other hand, most cereals merchants tend to organize around family, kinship, ethnic, and religious ties rather than to join around common economic interests. In general, the beneficiaries of reform policies have weak voices in most organized interest groups.

4. Conclusion: Constraints and Recommendations

A. Broad Constraints:

Institutional obstacles to improving the efficiency of millet and sorghum marketing in Chad can be divided into broad systemic constraints and impediments more inherent to the sector.

The broader constraints are:

1. The general climate of political insecurity and weak authority of the central government.
2. The absence of representative political institutions at the national and local levels.
3. The crisis in public finances which prevents the government from paying its employees on time.
4. Excessive state regulation of private sector activities.

Further progress in reducing the costs of cereals marketing and improving the efficiency of millet and sorghum marketing in Chad depends to a large extent on overcoming these broad systemic constraints. While these issues impinge on the entire agricultural sector and on the economy as a whole, the potential beneficial impact on cereals marketing from improvements in these areas cannot be overstated. As importantly, the effectiveness of measures specifically designed to improve millet and sorghum marketing (as noted below), even when well designed and implemented, will be severely limited until these systemic constraints are relieved.

B. Recommendations:

The following recommendations, which will affect far more than the narrow millet and sorghum marketing sector, nonetheless show how efforts to address systemic constraints can improve cereals marketing, while identifying potential difficulties in implementation.

1. Measures related to the general political climate of insecurity, lack of representative institutions, and poor state of government finances:

a. Eliminate illegal roadblocks and the prosecute lawless elements harassing the free circulation of people and goods.

b. Eliminate illegal taxes on the circulation of cereals imposed by canton chiefs and other state officials. Also move to abolish the so-called "legal" taxes on cereals levied by the communes.

Effectively resolving the problems of roadblocks and excessive taxation will reduce marketing costs and encourage flows of cereals between prefectures. However, implementation of effective measures will depend largely on restoring political stability and the authority of the central government. Specifically, these problems are not likely to be resolved until the government can: 1) regularly pay its employees and provide sufficient operating funds to enable state officials to carry out their duties so that state officials will be less tempted to levy illegal taxes to support themselves and their functions. 2) establish its authority over state officials and sanction those violating the rules to discourage corruption and the illegal imposition of taxes.

c. Ensure greater representation of the public and the private sector in policy-making bodies at the national and communal levels. This can be achieved through the establishment of democratic government as elected national and local government bodies. The democratization process should be encouraged by donors. Though these measure will not directly affect the costs of cereals marketing, they will improve the public's confidence in government interventions in the sector.

2. Measures related to excessive state regulation of the private sector:

a. Simplify regulations and registration procedures for businessmen to reduce transaction costs.

b. Privatize the Chambre Consulaire and remove it completely from state control.

These measures will encourage competition and flexible response in the sector.

3. Measures related to reducing transportation costs:

a. Improve Roads: Increase investments to improve and maintain national, regional, and local road systems.

b. Reduce Taxes: Reduce illegal taxes on cereal movements.

Given the poor state of state finances and the Chadian economy, donors will almost need to intervene in the short-run to provide financial support for these policies.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSION

It is now widely understood that effective food security requires a liberal trading environment. The marketing system must be capable of directing food from surplus to deficit regions, while both responding to and transmitting market signals.

The main conclusion of this thesis is that problems of food insecurity in Chad lie largely with the restrictions on the movement of cereals, and that improvements are likely to follow from measures that address effective distribution and general economic well being. The main limitations faced by the distribution system are those being imposed willfully or inadvertently by the state and its agents.

In general, the marketing system is flexible and responsive to ever-changing shifts in production. Marketing agents operate in a competitive environment, earning returns that are highly variable but, on average, not excessive. High gross margins are well-explained by the high costs of transportation and implicit capital costs.

This impressive performance takes place in a largely inhospitable environment. A series of broad systemic constraints tends to increase both costs and risks and discourage investment in marketing (and agricultural production). These constraints include:

- A general climate of political insecurity and weak authority of the central government;

- A deteriorating macroeconomic environment that undermines purchasing power and financial markets;
- The crisis of public finances, especially the problem of salary arrears;
- And, the undeveloped and fragmented transportation infrastructure.

One of our main conclusions is that most of the threats to Chadian food security are external to the marketing system, though also they make the role played by that system even more critical. Until the broad systemic constraints that face the Chadian economy (and policy) are dealt with, the capacity of the marketing system to assure food security will be seriously strained. As the economic crisis eases, as political stability improves and governmental authority is reestablished, and as more resources are made available to improve the transportation system, we believe that the marketing system will respond accordingly.

Nonetheless, there are some concrete measures that can be taken now to assure continued good performance and even lead to improvements in marketing efficiency. Several of these measures focus on ways to diminish the deleterious effects of illegal impediments to trade, notably administrative restrictions and road barriers. Another focuses on identifying road maintenance efforts that have the potential to significantly reduce costs. Expanding the dissemination of market information and encouraging transparency in all public sector interventions in the subsector is another set of recommendations. We have also identified several areas where monitoring and research are likely to yield other positive measures, or at the least help prevent counterproductive interventions.

This chapter presents the main conclusions and recommendations of our thesis. Although we have been relatively comprehensive and tried to explain the rationale underlying our judgments, we do not repeat all of the arguments or reintroduce the evidence on which our conclusions are based. The foundations for our conclusions are found in the preceding chapters. We believe that the validity of our recommendations is based on the evidence rather than on their inherent appeal.

SUMMARY OF FINDINGS

The main observations regarding the Chadian cereals sub-sector include the following:

- The cereals marketing system is highly competitive and efficient, yielding generally low margins.
- High marketing costs are mainly the result of the poor transportation infrastructure.
- Administrative restrictions and road barriers also increase marketing costs and risk.

This section elaborates on the most important elements of these findings.

Competition and Market Performance: The cereal marketing system in Chad is complex, as is the relationship among markets. Both markets and market participants tend to take on multiple and sometimes changing roles during collecting, assembling, and moving cereals to their final destination. We found the cereals marketing system to be highly responsive to changing conditions and very efficient because of the difficulties it faces, notably: high transportation costs, poorly developed credit markets, and a variety of institutional constraints.

Market structure: The absolute number of traders at each level of operation and in each market is large. Market shares tend to be modest. Barriers to entry are low. In sum, the structural conditions for competition are met. Neither is there any evidence of market power exerted by traders at any level of trade. Competition is particularly keen in collection markets where itinerant traders and wholesales both vie for purchases. Important collection markets attract traders from far away, as wholesalers send their agents to any market where prices are particularly attractive.

Traders do cooperate at several levels, but we uncovered no cases of collusion or successful attempts to fix prices. Most traders, even the largest, act as price takers. In fact, our observations suggest that large traders are less likely to cooperate among themselves than smaller wholesalers or itinerant traders.

The assumption of imperfectly working markets underlies the efforts to organize farmers into *Associations Villageoises*, a form of vertical integration. Most of the impetus comes from the ONDR and NGOs. The objectives of *Associations Villageoises* are to bypass local marketing options to benefit from perceived spatial or inter-temporal market opportunities. The implicit assumptions are that traders are either exploiting farmers through market power, or that the market is too poorly organized to benefit farmers. We believe that both assumptions are invalid. Regardless, the experience of *Associations Villageoises* has not been very successful to this point for a variety of reasons, despite the substantial operating subsidies that have been provided.

Prices and Margins: Market performance was evaluated by examining marketing costs. Marketing costs are dominated by transportation charges that account for between 80 and

90% of explicit marketing costs and from 15 to 35% of the price-cost (prix de revient) of cereals. Other explicit costs are considerably smaller (6-10% of price cost), though taxes--especially administrative restrictions--tend to be highly variable and can significantly affect traders' margins. Transportation costs for short hauls are high per unit of distance and compared with cereals' prices, mainly because of the very poor condition of most feeder roads and the trucks that serve collection markets.

Few traders incur explicit finance costs, and estimates of imputed finance costs are very sensitive to interest rate assumptions. These costs may range between 200 and 500 FCFA per sack of cereal traded. Even lower-bound estimates of imputed finance costs indicate that these are very high for multi-month storage. This shows that the high cost of capital is probably the biggest impediment to increased inter-temporal trade.

Net trader margins are highly variable. On average, net margins range from 8 to 16% of the cost-price (prix de revient). When imputed finance costs are considered, returns to traders' labor, risk, and trading skills appear modest (averaging around 200 to 300 FCFA per sack in our middle-range estimate). At the average scale of operation for wholesalers, average monthly returns to traders would be about 60,000 FCFA. Given the high variability of net margins and realistically large imputed finance costs, negative returns are fairly common.

Administrative Restrictions and Road Barriers: Road barriers and administrative restrictions (taxes and quotas) raise marketing costs, increase risk, and discourage trade. Neither is legal, and both are resistant to central government efforts to have them abolished. Local officials tend to be ignorant of the deleterious effects, and the poor state

of local finance and salary arrears lead officials to actively employ or tacitly tolerate them. These underlying causes make them particularly difficult to eliminate.

Both administrative restrictions and barriers increase risk, thus discouraging traders and truckers because of their intimidating nature. They also act as a barrier to entry and inhibit trader flexibility, rewarding those traders who "know how to play the game" rather than those who know market conditions. Both have the effect of depressing prices to farmers and increasing prices in destination markets. Further, they greatly affect production for market because they reinforce a widespread perception that formal trade is somehow suspect. Administrative restrictions in particular are harmful to the food security objective because they discourage movements of cereals from surplus to deficit zones. Overall, administrative restrictions and road barriers impede the development of a positive climate for agricultural marketing.

Administrative restrictions are imposed ostensibly to protect local food security, though generation of local revenues is almost certainly another motivation. Local officials often argue that restrictions on sales and shipments of cereals help to assure the availability of cereals during the hungry season. They are often supported in this view by NGO's involved in the development of local storage operations (cereal banks and *Associations Villageoises*). We believe that these officials fail to perceive the essential role that interregional trade plays in maintaining food security and in encouraging increased production for market. In particular, restrictions tend to be imposed during years of poor harvests, just when interregional trade is most necessary.

Road barriers are some residues of years of national insecurity and a legacy of widespread administrative control over movements of persons and commodities. They also exist because poorly and infrequently paid civil servants use them to substitute for unpaid salaries. Several different administrative and military services operate barriers. Problems are worst on heavily traveled roads. Barriers both increase transportation costs and impose delays. These costs are highly variable over time and space. The direct costs are borne by truckers, but are passed on to traders and ultimately to farmers and consumers. They increase the cost of transporting cereals by at least 10%.

The government has taken measures to abolish both restrictions and barriers. Both ministerial and presidential decrees were issued in 1993, reiterating the illegality of each and requiring government officials to desist. In each case the decrees had temporary effects, especially in administrative restrictions, where our regional workshops raised the awareness of officials and the vigilance of traders. However, the poor harvest of 1993-94 and the effects of devaluation seems to have given new impetus to both restrictions and barriers. For the future, traders and farmers associations will need to maintain continuous pressure on local authorities to reduce these impediments to agricultural trade.

Systemic Constraints

A variety of broad systemic constraints also affect cereals marketing. These include:

- The absence of representative political institutions at the national and local levels.
- The crisis in public finance that prevents the government from paying its employees on time.

- Excessive state regulation of private sector activities.
- Chad's undeveloped and fragmented transportation infrastructure and generally high transportation costs.

Further progress in reducing the costs of cereals marketing and improving the efficiency of millet and sorghum marketing in Chad depends to a large extent on overcoming these broad systemic constraints. The potential beneficial impact on cereals marketing from improvements in these areas cannot be overstated. As importantly, the effectiveness of measures specifically designed to improve millet and sorghum marketing, even when well designed and implemented, will be severely limited until these systemic constraints are relieved.

Policy Recommendations

Maintain a Liberal Trading Environment

Our overarching recommendation is that Chad continue to pursue a liberal policy toward cereals marketing and correct some of the de facto restrictions on trade. Given the high variability of cereals production, we feel strongly that liberal trade is a key component of national food security, complemented by efforts to increase production and enhance purchasing power. Most of the specific recommendations that we make are designed to support private-sector trade activities, but perhaps the most important guidance we can give is, "first, do no harm."

Fortunately, the government's official policy supports liberal trade, but such a policy requires commitment and vigilance to make sure that it is effectively carried out. The

problems of illegal administrative restrictions and road barriers are two areas where the government's stated policy is undermined.

More subtle threats to liberal trade also exist. When farmers organize themselves into marketing cooperatives to strengthen their marketing opportunities, competition and trade are enhanced. When farmers are encouraged and subsidized to bypass or withdraw from markets, the results are less compatible with liberal trade. Similarly, the ONC has withdrawn, for the most part, from commercial operations and reoriented its activities toward managing national security stocks. Calls for ONC interventions for price stabilization will no doubt persist, and must be challenged. Finally, though we observed no large distributions of food aid during the survey period, the potential for poorly-timed or inappropriately targeted distributions is a continuing danger.

Administrative Restrictions and Road Barriers

- **Continue efforts to sensitize officials** regarding the harmful effects of administrative restrictions and road barriers. A campaign that makes local officials a part of the effort to remove barriers is much more likely to succeed than one introduced and directed out of N'Djaména. Additional seminars and workshops should be organized in the prefectures so that efforts already undertaken in this regard are reinforced and expanded.

- **Monitor and report the incidence of restriction and barriers:** These efforts can be undertaken by farmers and traders associations, truckers unions, and by the media. Establishment of a liaison between the Ministry of Interior and these groups for reporting and publicizing barrier problems is a good way to empower the victims of barriers and to encourage private-sector monitoring. Simultaneously, the government should regularly

publish and broadcast regulations and tax schedules affecting trade and transport to clarify which measures are legal.

- **Censure abusive practices:** Government officials responsible for those services operating barriers need to do a better job of ensuring compliance with government decrees. The legitimacy of even legal barriers needs to be questioned as well. An environment where armed agents and authorized checkpoints are the rule too easily nurtures the establishment of illegal barriers and allows corrupt practices to flourish. The government should set a goal of eliminating all manned checkpoints, targeting specific services for immediate removal. An inter-ministerial commission should be created to issue some specific sets of guidelines for government services that impose taxes and fees on trade and transportation.

- **Increase transparency in government operations** relating to the cereal's sector. This should include opening the accounts of the ONC to public scrutiny, and publishing and publicizing a complete list of the legal regulations related to cereals marketing. Such actions would allow traders and farmers to know which taxes are legitimate which are not. Radio broadcasts of this information in local languages would maximize its diffusion.

- **Establish some regular forums for public sector-private sector dialogue:** A series of roundtables focusing on the cereals sub-sector should be initiated, inviting farmers, traders, public officials, and researchers, to discuss issues of concern. The results of these roundtables could be summarized and broadcast, and eventually contribute to the formulation of government policy.

Improve Transportation

- **Upgrade and maintain the major axes that carry large volumes of cereals**, in particular the routes out of Am-timan toward Sarh and toward Mongo, and the main roads out of Mayo-Kebbi that are not passable for long periods during and following the rainy season.

- **Improve the system of feeder roads from major collection markets**. This will contribute greatly to reducing transportation costs and increasing prices received by farmers, the vast majority of whom sell in these markets. Feeder road maintenance might be an alternative activity to collective storage schemes for farmer (and trader) groupements.

- **Reducing taxes and tariffs on trucks** and imported oil. This was one of several recommendations made by the DAI Transportation Study. Since transportation is the single largest element of marketing costs, measures such as these that will reduce transportation costs will have significant impacts on cereals trade.

Systemic Issues

The single most important change that would stimulate trade in cereals (and most other agricultural commodities) would be economic recovery. The long-term erosion of purchasing power has hurt consumers and traders alike. The continuing fiscal crisis of the state severely limits the capacity of government to provide supportive interventions, notably road maintenance. Implementation of effective measures to eliminate illegal barriers and administrative restrictions will also depend in part on restoring political

stability and the authority of the central government. Specifically, these problems are not likely to be resolved until the government can:

- Establish its authority over state officials and sanction those violating the rules to discourage corruption and the illegal imposition of taxes.
- Reduce the rapid turnover of regional authorities. Those who remain in office longer develop greater knowledge of the region and will have greater authority to impose elimination of restrictions.
- Regularly pay its employees and provide sufficient operating funds to enable state officials to carry out their duties so that state officials will be less tempted to levy illegal taxes to support themselves and their functions.
- Find alternative sources of local revenues for communal services.

Donors can make a significant contribution to strengthening Chadian institutions related to millet and sorghum marketing by taking the following measures:

1. Reinforce and expand the market information system's efforts to publish and broadcast (in the local languages) regulations and tax schedules affecting cereals marketing . This would clarify rules and provide the public with knowledge about which measures applied by government officials are legal or not.
2. Encourage greater transparency in government operations concerning cereals marketing. This can be done by making the ONC's accounts open to public scrutiny. This measure would increase the credibility of the ONC with the public in general and grain traders in particular.

3. Promote the establishment of autonomous Market Improvement Associations (MIAs) in urban communes and in villages with important weekly markets. The MPAs would fulfill the following functions:

    a. Provide for the exchange of information among communal, local officials, businesspersons, and local citizens concerning the operation of communal services, the use of tax money to provide services for the market, and the needs of different market interests.

    b. Provide a forum for planning market improvements. MIAs should take responsibility for evaluating the physical infrastructure available in markets, identifying needed improvements, and planning for new investments.

    c. Serve for mobilizing local financial and people to improve the local markets.

    d. Provide a mechanism for resolving disputes between communal and state authorities, local grain traders and businessperson involved in cereals marketing, and urban and rural consumers.

4. Find alternative sources of local revenues for communal services to permit the lightening of the tax burden on trade.

E. Measures to Insure Greater Collaboration Between the Commune, the Market, and Urban Citizens

To remedy the lack of collaboration among commune officials, local businessmen, and urban citizens concerning ways of improving local markets, it would be helpful to establish Market Improvement Associations in the communes. These associations would not be

formal government bodies but private or quasi-public organizations that would have representatives of the commune, the communal management committee and the prefet as ex officio members of the association, representatives of diverse market groups--wholesalers, retailers, transporters, loaders, producers, etc.--and representatives of the community at large who would represent the interests of the consumer. The Association would fulfill the following functions:

1. provide exchange of information among communal officials, businessperson, and local citizens concerning the operation of communal services, the use of tax money to provide these services, the quality of communal services affecting the market, market prices in other parts of the country, and the needs of different market interests.
2. provide a forum for planning market improvements.
3. discuss means of mobilizing local financial and human resources to improve market conditions and the local business climate.
4. provide a mechanism for resolving disputes between communal, and state authorities, local businessmen, and the urban community.

At the national level, one could establish a National Commission for Improving Market conditions which would have representatives from the local communal market improvement associations which would have similar goals and permit the exchange of views and ideas.

Similar kinds of market improvement associations could also be established to promote the development of the weekly market in villages hosting weekly markets. The

composition of these associations would include the canton chiefs, the sous-prefet, representatives of NGOs, village representatives, and representatives of the diverse business interests involved in the weekly market.

Finally, the establishment of elected municipal governments with popularly elected mayors and municipal councilors would do much to make the commune more responsive to community needs in general and the needs of local businessperson in particular.

Issues Specific to Millet and Sorghum Marketing:

USAID and/or other donors, may take the following appropriate actions that deal more specifically with specific Chadian institutions related to millet and sorghum marketing:

a. Conduct immediately an in-depth study to investigate the role for local associations in improving marketing efficiencies.

b. Prepare for the establishment of autonomous community-based Market Improvement Associations (MIAs), as described above, and oversight committees, especially with the greater participation of business women.

c. Create an inter-ministerial monitoring committee, with private sector participation, to monitor and recommend measures eliminating illegal taxes on the circulation of foodstuffs, as well as abolishing the so-called "legal" taxes on foodstuffs levied by communes.

d. Reinforce and expand SIM's efforts to promote the collection and dissemination of information concerning market conditions and prices.

e. Encourage greater transparency in government operations concerning cereals marketing, including:

- Make the ONC's accounts open to public scrutiny.
- Publish and broadcast regulations and tax schedules affecting grain marketing in the local languages.

Implications for Future Research

The analysis of our traders' budgets and road barriers data provided a detailed understanding of key institutional constraints and their effects on the marketing of millet and sorghum. It has also suggested areas for further research that might increase the level of understanding of those constraints and their effects on farmers, traders, and consumers.

One area that merits further examination is that of cereals consumption. Whereas our study focused on how institutional constraints affect farmers and consumers, the state of knowledge regarding size, seasonality, regional patterns, and other characteristics of domestic demand for cereals, might help understanding how removal of these constraints will improve rural and urban consumption patterns. Little research has been undertaken on consumption of cereals at the household level in Chad. Therefore, complementary research on rural and urban consumption would likely improve the understanding of restrictions on Chad's "thin" market and the effects of tax and quotas on prices and producers' revenues.

A second area that needs further examination is the new government policy toward the free circulation of cereals as a response to the CFA franc devaluation. This study was

not able to determine out the effects of devaluation on the behavior of markets and on the welfare of consumers, producers, and traders. However, further research might add value to existing data through economic analysis and diffusion of results. Our reconnaissance surveys found that the combination of poor harvests and the effect of the devaluation has led to a resurgence of these restrictions, after we observed a decline in the average from 1993 to early 1994. In emphasizing economic analysis and diffusion of results, the future study might capture the proportion of increases in millet and sorghum price attributable to the 1994 devaluation. That proportion can be separated from that resulting of tax, bans, and poor rainfall. Although the devaluation of the CFA franc in January 1994 presents a challenge to many sectors of the economy, including the cereal sector, it has been characterized almost exclusively in negative terms by most Chadians, especially in urban centers and among government officials. This is to be expected since the immediate consequences for most consumers have been some substantial increases in many prices, including substantial increases in the price of cereals. Less public attention has been given to the logic behind the devaluation and its anticipated beneficial effects. So far the discussions on how some government policies pursued by some local authorities in Chad may have hurt the performance of their agricultural sectors are very general in nature. A monitoring and analysis program is currently being developed for the Sahel by a regional food security project managed by the Sahel Institute in Bamako (INSAH/PRISAS). This monitoring project will focus specifically on the effects of devaluation on the cereals sub-sector. Chad will need to identify an institution and researchers capable of contributing to this effort.

A third area that requires further examination is the import and export of cereals. This study provided data on the effects of administrative restrictions on the circulation of cereals at the national level. It was not able to assess the extent of cross-border trade and discuss government policy toward export potential. The cereals production (over the period 1985-1993 varied between 81% and 133% of national requirements, suggesting considerable inter-annual variation at the national level and the importance of cross-border trade to deal with surpluses or shortfalls. For example, officials in Biltine reported that they forbade the export of Chadian millet to Sudan following the very poor harvest in 1993-94. In early 1994, the AMTT study identified an inflow of millet to N'Djaména from Nigeria. However, no evidence that any institutional survey was made to report on government interventions, trade regulations, and import and export procedures. These observations support the need for further research to assess government intervention in international trade. While increasing agricultural exports often contributes to economic growth, it is not likely that millet and sorghum will become important export crops. Though these are currently not widely exported by Chad, Chad's western borders, Cameroon and Nigeria are in a better position to export grains to Chad rather than the inverse. Further, many economic studies question whether Sahelian countries really have a comparative advantage in cereals at all.[39] Until cereals exports are deemed advantageous by market conditions, efforts to enhance institutional capacity to promote

[39] See for example, Christopher Delgado, "Cereals Protection and Agricultural Development Strategy in the Sahel, IFPRI, 1991.

exports will likely be ineffectual. Traders' willingness to engage in cross-border trade and factors that affect their willingness to trade need to be examined.

Annex A: June 8 1993 Decree Banning Illegal Barriers

DECRET N° 304/PR/93
Portant suppression des barrières et fouilles sur l'ensemble du territoire national

Le Président de la République, chef de l'Etat
Président du conseil des ministres

D E C R E T E

Article 1° - Sont supprimées sur l'ensemble du territoire national:

- Les barrières de contrôle et autres mesures d'effet équivalent anarchiquement implantées ;
- Les fouilles effectuées par les agents de l'ordre sur les aéroports à l'occasion des vols internes.

Article 2° - Nonobstant les dispositions de l'article 1°, sont autorisées :

- Les barrières implantées sur les frontières avec les pays voisins et les fouilles qui s'y opèrent.
- Les barrières de pluies instituées par le ministère des Travaux Publics et des Transports.

Article 3° - Toute implantation de barrière en violation des termes du présent décret constitue un acte d'insubordination et sera puni comme tel.

Article 4° - Le ministre de l'Intérieur et de la Sécurité, le ministre des Travaux Publics et des Transports et le ministre Délégué auprès de la Présidence de la République chargé de la Défense Nationale des Anciens Combattants et Victimes de Guerre sont chargés, chacun en ce qui le concerne, de l'exécution du présent décret qui sera enregistré et publié au journal officiel de la République. -(ATP)-

Fait à N'djaména, le 8 juin 1993

ATP Bulletin N° 3[illegible] du 11 Juin 1993

Appendix B.

Table 5.1: Short-Distance Routes Surveyed

Origin	Destination	Observations	Distance (km)	Average Truck Size (mt)
Abéché	Am-Zouer	8	65	18
Abéché	Biltine	7	92	9
Abéché	Birtawil	6	110	13
Abéché	Marchout	2	38	2
Abéché	Mourra	2	45	2
Am-Timan	Haraze	3	162	7
Am-Zouer	Abéché	7	65	24
Arada	Biltine	3	65	15
Bebalem	Moundou	15	67	18
Bebedjia	Doba	14	35	11
Bebedjia	Moundou	2	75	10
Bedigri	Koumra	2	52	5
Bedigri	Sarh	8	167	22
Bedjal	Doba	7	35	7
Beti	Doba	8	18	8
Biltine	Abéché	7	92	8
Biltine	Arada	3	65	15
Birtawil	Abéché	6	110	15
Bissi-Mafou	Pala	8	35	6
Bodo	Doba	11	55	15
Danamadji	Sarh	8	50	16
Doba	Bebedjia	2	35	14
Doba	Bedjal	8	35	9
Doba	Beti	8	18	9
Doba	Bodo	11	55	34
Doba	Goré-Nord	16	25	14
Doher	Moundou	13	60	14
Flange	Pala	17	72	8
Goré-Nord	Doba	14	25	13
Goundi	Sarh	8	173	11
Gounougaya	Pala	2	80	7
Koumra	Bedigri	4	52	15
Koumra	Goundi	3	58	3

Table 5.1 (cont): Short-Distance Routes Surveyed				
Origin	Destination	# of Observations	Distance (km)	Average Truck Size (mt)
Léré	Pala	16	94	7
Moundou	Bebalem	14	67	16
Moundou	Bebedjia	16	70	5
Moundou	Doher	14	60	21
Moursale	Pala	15	22	6
Pala	Bissi-Mafou	3	35	6
Pala	Flange	4	72	6
Pala	Léré	10	94	7
Pont-Carol	Pala	13	72	7
Sarh	Bedigri	11	167	20
Sarh	Bodo	3	160	19
Sarh	Danamadji	7	50	19
Sarh	Goundi	7	173	18
Sarh	Koumra	3	115	9
Sarh	Sonasut	6	25	2

Appendix C.
Government Decrees and Other Documents Related to Cereals Marketing

A. Texts related to organization of the territorial administration

1. Décret no. 181/Pr/int/sec of 2 juillet 1983 portant organisation générale du Ministère de l'Intérieur et de la Sécurité.

2. Décret no. 27/int fixant certaines modalité d'application de l'ordonnance no.4 du 13 février 1960 portant organisation administrative du territoire de la république.

3. Ordonnance no. 4/Int of 13 février 1960 portant organisation administrative générale du territoire de la république modifiée par l'ordonnance no.5 Du 6/5/70.

4. Décret no. 267/Pr/int du 2 novembre 1972 fixant attributs des prefets.

5. Décret no. 186/Pr/int/sec/ du 09 1983 portant organisation des services des prefectures et sous-préfectures.

6. Décret no. 102/Pr/int du 6 mai 1960 portant statu de la chefferie.

7. Décret no. 26/Sgct portant détermination des pouvoirs des chefs de circonscription.

B. Texts related to communes

1. Décret no. 560/Pr/mira/dg du 24 juillet 1985 portant création des communes de moyen exercice

2. Ordonnance no. 017/Pr 85 du 24 juillet 1985 portant organisation des communes de moyen exercice.

3. Ordonnance no. 23 Du 22 septembre 1975 portant statut de la commune de N'Djaména.

4. Ordonnance no. 22 Portant réorganisation des structures administratives de la ville de N'Djaména du 22 septembre 1975.

5. Ordonnance no. 10/P.Csm/int/sec du 12 mars 1976 définissant le régime financier et compte de la commune de N'Djaména.

C. Texts related to organization of private sector

1. Ordonnance no. 006/Pr/84 du 12 avril 1984 portant statut des commerçants.

2. Ministère de l'Economie et du Commerce, textes régissant la chambre consulaire du Tchad, N'Djaména, le 27 septembre 1985.

3. Ordonnance no. 025/Pr/92 portant statut général des groupements a vocation coopérative et des coopératives en République du Tchad.

4. Décret no. 282/Pr/mci/89 déterminant les modalité de l'importation, de la répartition, de la circulation et de la distribution des produits dans la République du Tchad.

5. Décret no. 113/Et du 14 juin 1966 portant réglementation de l'exportation et de réexportation des produits, marchandises, denrées et objets de toute nature de la République du Tchad.

D. Texts relating to food security institutions

1. Arrêté no. 369/ Msaps/dg/87 du 26 décembre 1987 portant création du comité d'action pour la sécurité alimentaire et l'aide d'urgence (CASAU).

2. Ministère de la Sécurité Alimentaire et des Populations Sinistrée, accord-cadre sur les principes généraux d'utilisation et de gestion d'un stock de sécurité alimentaire d'urgence en République du Tchad.

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