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5. Author(s)

1. Mona Mehta
2.
3.

6. Contributing Organization(s)

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10. Abstract (optional - 250 word limit)

The purpose of the study is to analyze coarse grain transactions from four wholesale grain markets in Mali. These markets are located in Bamako, Mopti, Koutiala, and Sikasso.

The analysis consisted of comparisons of descriptive statistics in two time periods, 1985 and 1988, in addition to correlation analysis and calculation of spatial and temporal marketing margins.

The results of the study reveal increased cereals specialization by traders from 1985 to 1988. The market structure consists of low grade oligopolies, although market control by a few large traders seems unlikely. The coarse grains wholesaler market consists of one group of large volume agents who sell to organizations and contractual clients and another group of small volume wholesalers who sell to retailers and consumers. There appears to be a regional dichotomy between Bamako, relatively favored in terms of access to capital markets and marketing activities, and the other three markets.

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PROJET SECURITE ALIMENTAIRE C.E.S.A. - M.S.U

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REIMPRESSION

**AN ANALYSIS OF THE STRUCTURE OF THE
WHOLESALE CEREALS MARKET IN MALI**

by

Mona MEHTA

**Projet Sécurité Alimentaire C.E.S.A. - M.S.U.
BP 2314
Bamako, Mali**

REPUBLIQUE DU MALI
SECRETARIAT TECHNIQUE DE LA CESA
PROJET SECURITE ALIMENTAIRE

AN ANALYSIS OF THE STRUCTURE OF THE WHOLESALE
CEREALS MARKET IN MALI

by

MONA MEHTA

PREFACE

This research report was prepared as part of a research project on food security carried out under the auspices of the Technical Secretariat of the Malian Food Strategy Commission (CESA--Commission Nationale d'Evaluation et Suivi de la Strategie Alimentaire du Mali). The research project was conducted jointly by researchers from CESA and the Department of Agricultural Economics of Michigan State University (MSU), with funding provided by the U.S. Agency for International Development under the Food Security in Africa Cooperative Agreement between MSU and USAID (No. DAN-1190-A-00-4092-00). Preliminary results from this research project have already been published in Mali in the form of working papers, several of which are cited in the bibliography.

The author sincerely thanks Moussa Kalifa Traore, Technical Secretariat of the CESA, Josue Dione, N. Nango Dembele, staff of USAID/Mali (particularly David Atwood), and the Bureau of Science and Technology and Africa Bureau of USAID/Washington for their financial, administrative, and intellectual support of the project. Statements in this document, however, reflect solely the views of the author and should not be interpreted as official positions of either CESA or USAID.

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AN ANALYSIS OF THE STRUCTURE
OF THE WHOLESALE CEREALS MARKET IN MALI

By

Mona Mehta

A Plan B Paper

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in partial fulfillment of the requirements
for the degree of

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ABSTRACT

AN ANALYSIS OF THE STRUCTURE OF THE WHOLESALE CEREALS MARKET IN MALI

By

Mona Mehta

This marketing study analyzes coarse grain transactions data from Bamako, Mopti, Koutiala and Sikasso, four coarse grain wholesale markets in Mali, West Africa. This research was one component of a larger study of the coarse grain market conducted by Michigan State University and the Malian National Food Strategy Commission (CESA).

Data were analyzed by comparison of means and modal values; cross-tabulations and frequency distributions, all of which provide a snapshot of market structure and conduct at two points in time, 1985 and 1988. Correlation analyses and calculation of spatial and temporal marketing margins provided indicators of market performance.

Findings reveal an increase in cereals specialization by traders from 1985 through 1988, during a period of market liberalization. The market structure consists of low-grade oligopolies, but market control by a few large merchants seems unlikely. The market appears to be divided into two groups of wholesalers. One group consists of large-volume wholesalers who sell to organizations and contractual clients, while the other group consists of small-volume semi-wholesalers who sell to retailers and directly to consumers. Research findings also point to a regional

C'

dichotomy between Bamako and the other three survey cities with regard to access to capital markets and development of marketing-related activities. Bamako being either the more favored or more dynamic.

ACKNOWLEDGEMENTS

I would like to thank foremost my thesis director, Dr. John Staatz, for all his persistent guidance during the preparation of this research paper. Special thanks also go to the other members of my committee, Dr. Arntraud Hartmann and Dr. Michael Weber, who provided useful comments on the contents of this work. Dr. Weber pointed out some crucial structural variables which have greatly contributed to this paper and to my understanding of the marketing system in Mali. Thanks also go to Mr. Mossadeck Bally for his participation at my thesis defense.

Josue Dione and Nango Dembele deserve special thanks for the design and collection of much of the data used in this research. Nango Dembele provided much insight into the operation of the wholesale market and his invaluable comments on draft after draft of this paper are greatly appreciated. I would also like to thank the project enumerators, Tahirou Coulibaly, Moussa Traore, David Keita, Abou Diarra and Boubacar Keita, for the collection of the data. Fanta Sanoko's assistance in the preparation of this manuscript was very helpful. I would like to sincerely thank the wholesalers in Bamako, Mopti, Sikasso and Koutiala, whose cooperation made this research possible.

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CHAPTER ONE

BACKGROUND AND PROBLEM STATEMENT

Food security plays a crucial role in the economic policies of African countries, many of which are confronted with decreasing per capita production. When considering food security, many policies, however, neglect the role of marketing as an impetus to increasing food security.

The governments of many developing countries use non-price rationing of staple foods in an attempt to transfer real purchasing power to certain consumers, often those faced with chronic food insecurity. Staple foods are often considered a wage good due to their substitutability with higher wages, and governments with limited resources may strive to maintain artificially low prices for staple foods in exchange for lower wages, which may help avoid cost-push inflation. Under this scenario, the governments may also discourage free trade of the staple foods because free trade may undermine the governmental distribution mechanism. However, rather than reaching the targeted population, this policy often results in discrimination against the targeted groups due to the government's inability to provide cheap staple foods. Often, the group with more clout (normally the urban educated class) is the recipient of the subsidized

food while the others are forced to buy food at higher market prices.

This research paper examines the role of cereals marketing at the wholesale level in the context of food security and macroeconomic policies of Mali. Cereals account for 72% of total calorie consumption in Mali and are traditionally viewed as a wage good (Shapouri, Dommen and Roser, 1986). Prior to 1981, private participation in the cereals market was illegal, but the parallel market handled upwards of 70% of total marketed production between 1968 and 1981, while the government parastatal, OPAM, handled 30% (Humphreys, 1985). The twin problems of sporadic droughts and poor economic policies led in the late 1970's to pressure to liberalize the Malian cereal market.

Market liberalization refers in varying degrees to: i) a move away from state control and policing of trade and commodity flows; ii) the reduction of administrative determination of prices; iii) a contraction in the role of parastatal marketing institutions; and iv) measures to provide more favorable conditions for private sector food marketing (Kydd and Scarborough, 1988). The structure of the wholesale coarse grain market and the effect of that structure on market performance are the central questions which will be addressed in this paper.

STUDY OBJECTIVES

There is a paucity of data on the operation of the cereals market in Mali. One can only speculate about the operation of the cereals market prior to 1981, as little data are available for this time. To explore methods for improvement of market operation, it is imperative to understand market structure along with individual participants' opportunity sets and how these interact to influence market conduct and, ultimately, performance.

The data used in this paper were collected under the auspices of the CESA/MSU Food Security Project, which has as its objective to study all components of the coarse grains subsector. However, this research paper will utilize data solely from the wholesale component.

The objectives of this paper are:

1. to describe the dynamics of the wholesale cereals market with the structure-conduct-performance paradigm;
2. to evaluate the impact of the on-going liberalization on the wholesale cereals market; and
3. to provide suggestions for the government of Mali and the PRMC (Programme de Restructuration des Marches Cerealiers) donors to improve the performance of the cereals market.

By obtaining an in-depth understanding of the wholesale cereals market, the research paper aims to identify the role which governmental policy can play in promoting marketing

growth and efficiency in the cereals sector.

THE ROLE OF THE MARKETING SYSTEM IN HELPING ASSURE FOOD SECURITY

Eicher and Staatz define food security as "the ability of a country or region to assure, on a long-term basis, that its food system provides the total population access to a timely, reliable and nutritionally adequate supply of food" (Eicher and Staatz, 1987, p. 216). Coupled with food security, most countries have the following basic objectives for a national food policy:

1. efficient growth in the food and agricultural sectors;
2. improved income distribution; and
3. satisfactory nutritional status for the entire population (Timmer, Falcon, and Pearson, 1983).

This latter objective is clearly related to food security, as defined above.

Two types of food insecurity exist. Chronic food insecurity is defined by the World Bank as "a continuously inadequate diet caused by the inability to acquire food" (World Bank, 1986, p.1). The second type of food insecurity is transitory food insecurity, which stems from fluctuations in household income, food production and food prices (Ibid).

The demand side of the food security equation concerns the ability of the population to obtain food, either through purchase, transfers, or own production. Some economists argue that the lack of effective demand is the main cause of

food insecurity; food is available on the global market, but many individuals and nations lack the means to purchase it.

Changes in food prices dramatically affect income distribution in most developing countries. Because of income and substitution effects, higher prices cause real purchasing power to decline. Consequently, consumers will readjust the composition of their commodity bundle. The relative change in real income is greatest among the poor, who devote a larger share of their budget to food (Mellor, 1984). To tackle food insecurity, governments need to increase real purchasing power (or entitlement of food) for the afflicted groups.

When discussing food security, the important role played by the marketing sector is often misunderstood. An efficiently operating food system greatly enhances the prospects for food security. Some governments of developing countries tackle the objective of food security by increasing production, with the belief that markets will create themselves. Marketing functions, from transportation infrastructure to credit availability, have sometimes been dismissed as second priority by developing countries. Several factors have contributed to the neglect of marketing in the development process:

1. lack of knowledge on the operation of marketing systems;
2. the prevalence of an anti-middleman attitude on the

part of consumers, producers and government officials;
and

3. the political sensitivity of food issues, leading to emphasis on direct production increases.

Farmers may double production, but until this produce can reach the targeted population or be stored for future use, food security is not obtained.

The marketing function refers to commodity transformation in time, space and form associated with storage, transportation and processing (Timmer, Falcon and Pearson, 1983, p.151). Without these functions, attainment of food security is impossible. An efficient marketing system facilitates cost reduction at all levels in the subsector. Information costs for producers and traders can be reduced along with transaction costs. Improved transportation and storage capacity affects costs of inputs as well as market and producer prices. A government which desires improved production should balance investments in basic production technology with those in marketing: information, storage, transportation, access to credit and processing.

The changing demographic balance between urban and rural population further marks the need for policy changes in developing countries, from a primary focus on production at the rural level to a focus on marketing output between rural and urban areas and within rural areas. A well-

operating market also helps supply food deficit rural households. To promote food security throughout the country, agricultural productivity must be increased in conjunction with improved marketing institutions and infrastructure.

CEREALS POLICY IN MALI

Two broad objectives have guided the formation of Malian grain policy:

1. increasing and protecting the income of certain groups; and
2. raising grain production to achieve food self-sufficiency (Humphreys, 1985, p.3).

From 1960 to 1973, the objective for the government was to industrialize the economy rapidly. This was undertaken by the extraction of surplus from the agriculture sector, at a time when the agricultural sector might have otherwise benefitted from technological change through investment. Based on the classical development model, whereby industry is supported by the agriculture sector, the Malian agricultural sector was squeezed to finance various parastatal enterprises. However, the government was reluctant to invest in agriculture to generate an agricultural surplus and sufficient time was not allowed for the agricultural sector to grow, leading to reduced output and performance. Eicher argues that this perception of

agriculture as a means towards industrialization was diffused throughout Africa in the 1960's as Western scholars disembarked on the continent armed with modernization and western macro models, most of which emphasized the industrial sector as the driving development force (Eicher, 1983).

Emerging from the crippling droughts of 1973, the Malian government adopted a long-run national goal of food security via self-sufficiency in cereals, but due to variable weather, thin markets and inconsistent macroeconomic policies, self-sufficiency in cereals has not yet been attained.

The instruments sought to achieve food self-sufficiency were the reduction of marketing costs and an increase in production. Governmental institutions called Organizations of Rural Development (ODR's) were established to increase production and reduce marketing costs at the producer level via diffusion of technology, credit subsidies to farmers and the supply of production inputs. However, many ODR's failed to increase production because of limited capital, poor management, and insufficient technical expertise among personnel. Further exacerbating the inefficiency of the ODR's was the often one-sided communication with farmers. The poor performance of many ODR's contributed to the failure of the dual goals of market cost reduction and increased output.

Between 1960 and 1980 per capita cereals production declined, while food aid and imports increased. In addition to the combination of poor weather and technology, many donors and local technicians had come to believe that low producer prices combined with strict marketing controls contributed to the lethargy of the grain sector (Humphreys, 1985). Alarmed by the inefficiencies in the cereals market and the fiscal drain of OPAM on the government's budget, a consortium of foreign food aid donors acting collectively proposed restructuring the Malian cereals market (the PRMC). The three reforms suggested by the PRMC were:

1. liberalization of the cereals market;
2. improving incentives to cereals producers; and
3. reducing the costs of the official marketing system.

This paper will examine the first objective, and will attempt to provide a better understanding of the impact of liberalization on the structure of the cereals market at the wholesale level.

PREVIOUS RESEARCH

Marketing and local trade of agricultural products in the Sahel region has been the subject of much research during the past two decades. Riley and Weber (1979) reported that over 50 U.S. Ph.D. dissertations were completed on marketing in sub-Saharan Africa during the 1970s. However the authors stress that research has been

distributed unevenly geographically.

Interest in the Malian cereals sector emerged in the 1970's with the advent of severe droughts and influx of food aid, but the illegality of the cereals trade discouraged detailed, in-depth research. Most of the studies conducted prior to the 1981 liberalization covered the basic operation of the cereal market and provided recommendations for improvement.

Liberalization was launched by a study commissioned at the request of five countries giving bilateral assistance to Mali (Canada, United States, France, Federal Republic of Germany, and England). Coordinated by the FAO, the study cited several reasons which necessitated the restructuring of the cereals market (de Meel, 1978). The de Meel report set the foundation for the new program aimed at restructuring the Malian cereals market (the PRMC).

Elliot Berg has cited two factors as responsible for why it took so long to reform the marketing system in Mali:

1. a lack of firm knowledge, due to a lack of basic studies, about how the grain markets actually function in Mali; and
2. reform proposals that were poorly articulated (Berg, 1979).

Berg stressed the importance of greater private sector involvement in marketing, with the government performing the following functions: managing the national security stocks;

managing grain imports; providing market information; and performing market inspection functions (Berg, 1979).

After 1981, private sector participation in the market was no longer clandestine and studies were undertaken which looked at governmental objectives, market efficiency, and producer incentives (LeCaillon and Morrisson, 1986). Overall evaluations of the government's policies were undertaken (Eriksen, 1982; USAID, 1987). Several studies have focused on structural reforms and liberalization in Mali (Simmons, 1987; Humphreys, 1986; Wilcock, Roth and Haykin, 1987; Bremmer and Ellsworth, 1986; Gagnon, 1988).

Although many studies have been done in Mali on the cereals market in recent years, few if any, have delved deeply into its various components. Most have briefly analyzed the market, providing useful information and insights using, usually, secondary data.

CESA/MSU data collection efforts provide some of the primary data needed to test the existing speculations and hypotheses about the cereals market.

ORGANIZATION OF THE RESEARCH PAPER

This paper is comprised of seven chapters. Chapter 1 introduces the topic, presents the problem setting and research objectives, and provides an overview of marketing-related studies done in Mali. Chapter 2 describes the sample used for the study, along with a presentation of the

stratification used. The research methodology is presented in Chapter 3, as is an introduction to the Structure-Conduct-Performance paradigm. Chapter 4 focuses on the structure of the cereals market, with special emphasis on the wholesale component. Chapter 5 then analyzes the conduct of wholesalers in the coarse grain market. Market performance at the wholesale level is described in Chapter 6. Chapter 7 presents conclusions along with policy implications and areas for future research.

CHAPTER TWO

SURVEY DESIGN AND METHODOLOGY

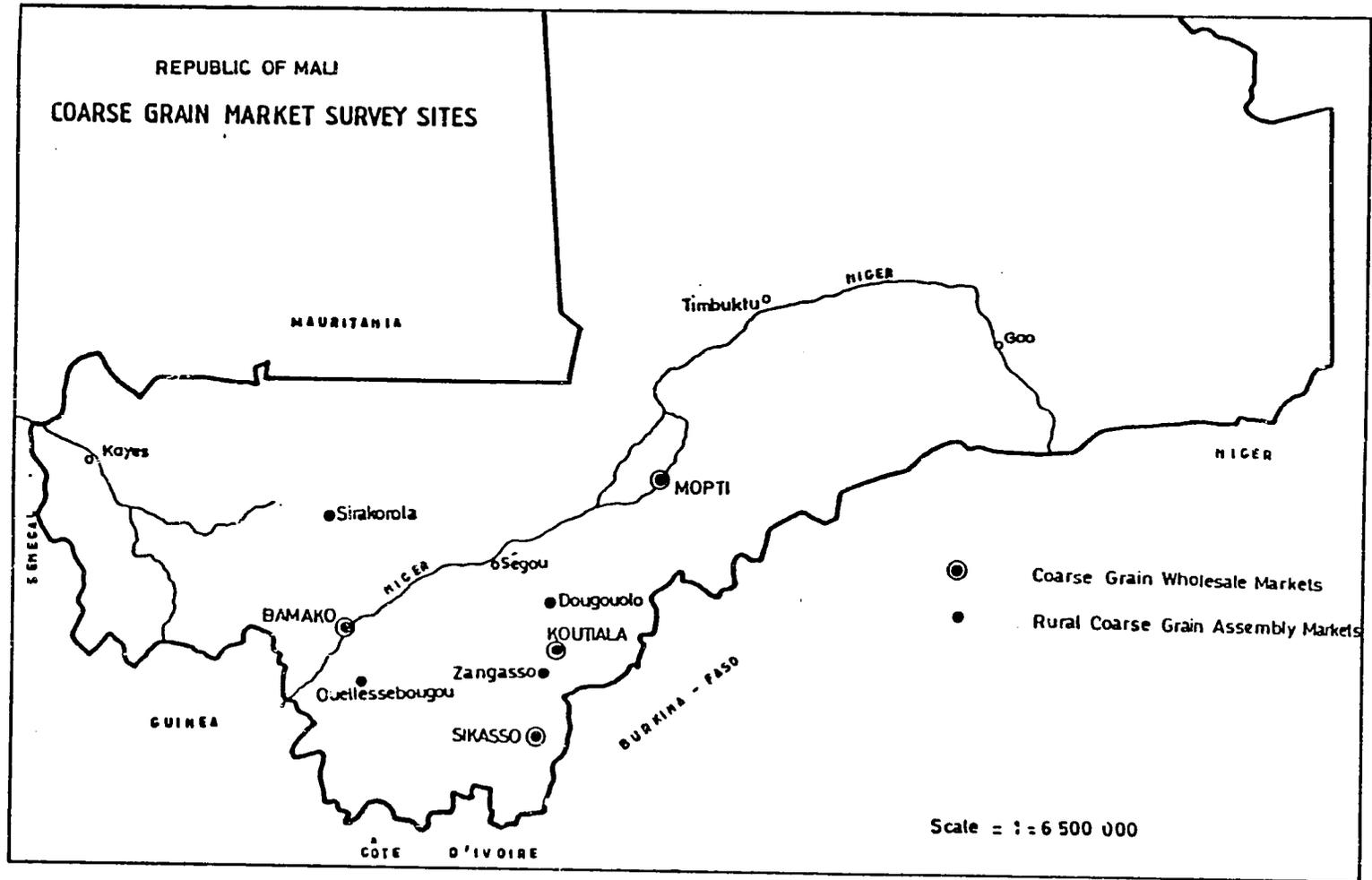
This paper is based on research carried out under the Michigan State University USAID-financed Food Security in Africa Cooperative Agreement. In Mali, this research was carried out by CESA (Commission Nationale d'Evaluation et de Suivi de la Strategie Alimentaire au Mali) and MSU.

Given the importance of cereals in Mali, the CESA/MSU team launched studies on several facets of the cereals market. Surveys were conducted with producers, rural market participants and wholesalers. The focus here will be on wholesalers who trade in millet, maize or sorghum. Most of the primary data were collected under the direction of Josue Dione. The overall objectives and methodology of the CESA/MSU Mali Food Security Project are presented in Dione, Dembele and Mariko (1986) and Dione (1989).

SAMPLE SELECTION

To initially establish a sample, coarse grain wholesalers were interviewed over a period of 6 months in the cities of Bamako, Sikasso, Mopti and Koutiala. These cities were selected because each plays a major role in the coarse grains market (Figure 2.1). Bamako and Mopti are major consumption centers for cereals, while Sikasso and

Figure 2.1.



Koutiala are located in cereals-producing regions. Bamako, the capital, holds the special position of being the nation's largest trade center. This, along with its high per capita income (by Malian standards), makes its inclusion necessary. Mopti is a major redistributive center, shipping grain to the northern regions of Gao and Timbuktu. Sikasso and Koutiala wholesalers, situated in the producing areas, supply much of the country with cereals.

The selection of these four sample cities allows identification of similarities and differences between cities which are situated in supply zones and those which comprise the demand pockets and dispersal centers.

SURVEY DESIGN

1985 Census Survey

A census survey of Bamako, Mopti, Sikasso and Koutiala wholesalers was conducted between October 1985 and March 1986. To compile the population list of wholesalers, the enumerators interviewed cereal wholesalers and asked them to identify other wholesalers.

For Bamako, the 1985/86 census questionnaire was less comprehensive than that used in the other three cities. However, a new and more complete census survey was undertaken in Bamako during February of 1988 to determine changes in the wholesale market structure since the 1985 census and to identify new wholesalers for inclusion in the

on-going price and quantity surveys.

The original 1985/86 census survey covered basic aspects of the structure and conduct in the cereal wholesale trade. Questions related to the demographic characteristics of wholesalers, the size of the business, the incidence of marketing activity such as storage and transport, and the seasonality of the cereals trade.

The goal of the census survey was to reveal the structure of the wholesale coarse grains market and to identify marketing conduct patterns and circumstances which warranted further investigation via other surveys.

1988 Census Survey

When the analyses for this thesis were almost completed, enumerators and other "market watchers" sensed the emergence of several new patterns in the structure of the wholesale cereals trade. Consequently, the decision was made to implement a new census in the four sample cities, along with Segou. The results presented for this recent census survey are sketchy, but they do help identify some new wholesale structure patterns.

The 1988 census survey was used to verify the hypothesis that a volume difference (and a consequent conduct difference) exists between wholesalers and semi-wholesalers. Wholesalers sell to semi-wholesalers, to other wholesalers, or on contract to organizations, but they never

sell retail. Semi-wholesalers, on the other hand, sell retail and it can be hypothesized that they trade in a smaller volume of cereal. Based on these definitions, the data for the 1988 census were stratified by type of wholesaler.

One-Shot Surveys

Selection for a series of one-shot surveys was based on participation in the 1985/86 census. The census population was not scaled down for the one-shot surveys. Rather, the incremental drop out rate reduced the population participating in the one-shot surveys.

Five one-shot surveys were undertaken in 1986 covering a variety of marketing-related topics: the use of storage facilities, transportation use, the incidence of risk, price formation, ease of market entry, the financial market structure, supply sources, basic marketing strategies, and the flow of market information. The surveys were conducted between March 1986 and August 1986.

Price and Quantity Surveys

Simultaneously with the census questionnaire, a monthly price and quantity questionnaire for purchases and sales was implemented in the four sample cities. This survey has been ongoing since October 1985.

The price and quantity survey obtains from the

participating wholesalers the quantity of millet, maize and sorghum purchased and sold during the month and the unit purchase and sales prices for each commodity.

DATA LIMITATIONS

Historically, there has been a lack of data on the operation of the Malian cereals market, and the CESA/MSU studies go a long way to fill the void, but limitations to the CESA/MSU studies do exist.

First, because the wholesalers for the sample were selected via word-of-mouth, several wholesalers were excluded from the 1985/86 census, but when the error was realized, they were included for the one-shot surveys. Hence, certain characteristics included only in the 1985 census are not available for this group of respondents.

Second, because a partial census questionnaire was implemented in Bamako in 1985, some aspects of structure covered in the other cities were not covered in Bamako. Further weakening the structure analysis is the incidence of missing responses for the 1985 census questionnaire. The 1988 census is more complete than the 1985 census.

The data on marketing activities were collected with one-shot surveys. The magnitude of marketing activities, however, vary by season and month, so some results from the analysis pertain only to the specific period during which the survey was implemented. Bias was introduced,

particularly for the calculation of marketing margins, because data for storage may be from May while data for transportation may be from August.

Another data limitation results from the tendency of wholesalers not to maintain complete records. Our data come from wholesaler recall (which may be inaccurate) rather than from transcribed entries.

SUMMARY

The relative shortage of data available on the cereals market in Mali makes the CESA/MSU study especially important from a policy viewpoint. Prior to this study, little was known about market structure, conduct and performance. The recent liberalization of the cereals market makes it imperative to gain further insights into wholesale activity to highlight points of efficient, as well as inefficient, operation. The data collected by CESA/MSU cover most aspects of wholesale cereals marketing with regard to structure, conduct and performance.

CHAPTER 3

APPROACHES TO STUDY MARKETING

The theoretical framework that guides this study is the structure-conduct-performance paradigm, which is widely used to study marketing issues.

THE STRUCTURE-CONDUCT-PERFORMANCE PARADIGM

The S-C-P paradigm was popularized by Joe Bain (Bain, 1958). Under the broader rubric of industrial organization theory, and is used to analyze market flow. Frank Scherer notes, "In the field of industrial organization, we try to ascertain how market processes direct the activities of producers in meeting consumer demands, how these processes may break down and how they can be adjusted (e.g., through government intervention) to make actual performance conform more closely to the ideal" (Scherer, 1980, p.2). The industrial organization theory supplements the elegant, but abstract, market equilibrium theory.

The paradigm commences with the assumption that society desires good performance from traders. Hence, the first step is to define performance. With this, the analyst seeks to identify certain attributes or variables that influence economic performance and link these with performance (Scherer, 1980). Working backwards from performance, we perceive that performance is determined by the conduct within the market, while the conduct of actors is influenced by the market structure. Thus, this paradigm encompasses a causal flow from basic market conditions to structure, leading into conduct and

performance; this flow can be redirected by the feedback effect (Scherer, 1980). The diagram of the structure-conduct-performance analysis is presented in Figure 3.1.

Two different emphases exist in the S-C-P school of thought. The original pioneering work of Joe Bain emphasizes structure and performance with a brief mention of conduct, making Bain a "structuralist." Frank Scherer, on the other hand, places equal importance on all three facets of the paradigm and can be characterized a "behavioralist."

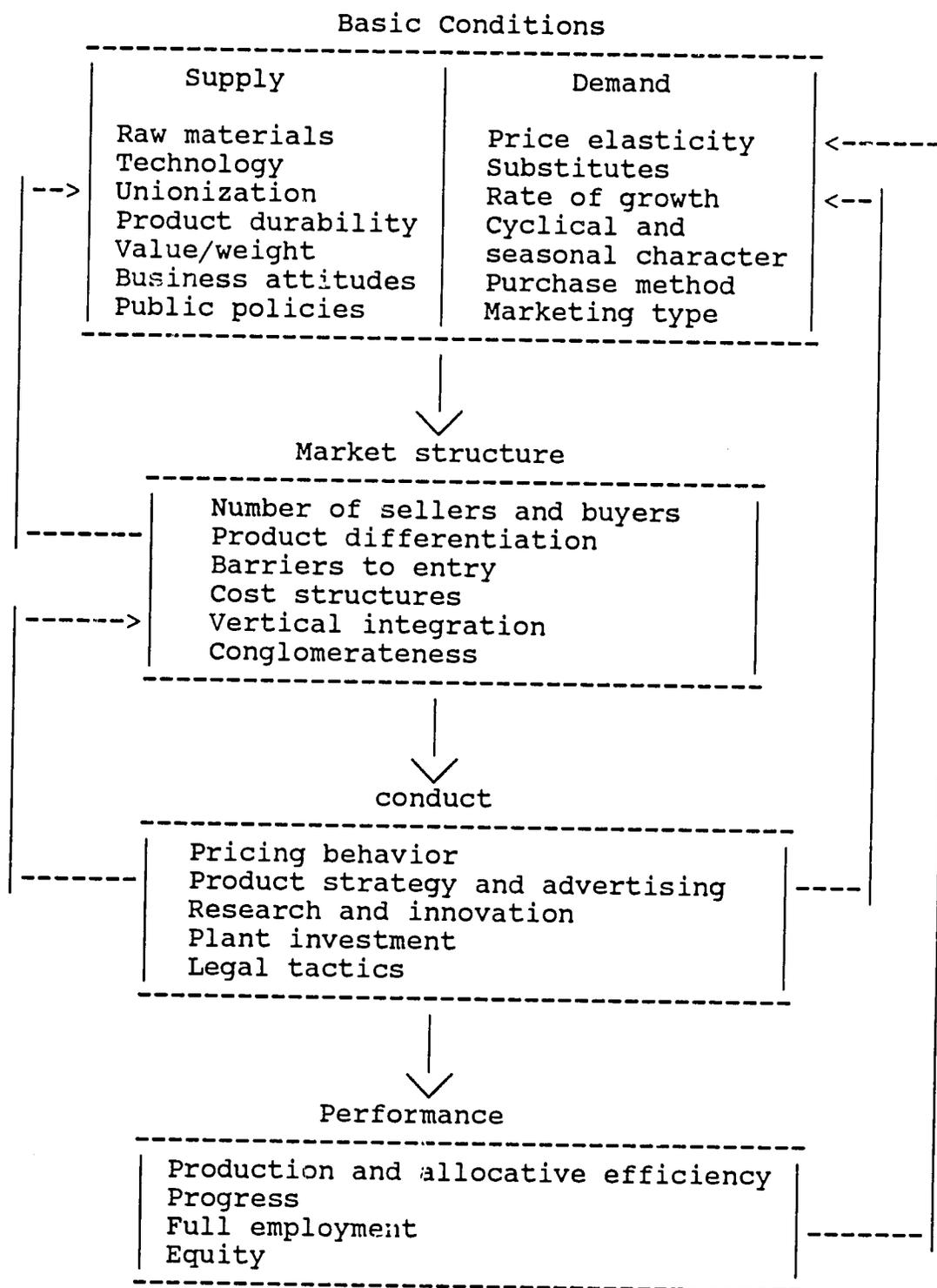
THE SUBSECTOR APPROACH

Subsector studies analyze the vertical components in a commodity system: the array of firms, markets, rules, and arrangements involved in producing a commodity and moving it through to the point of consumption (Marion, 1986, p. 111). Although utilized originally in American commodity markets, subsector studies have become more prevalent in marketing research for developing countries.

The subsector approach is an extension of the S-C-P paradigm, but, unlike the paradigm, looks at more than one stage of production. The subsector approach presents the processes and the participants in the chain from the producer to the consumer. In this respect, it is more complete than the S-C-P paradigm.

The subsector approach is able to capture the interdependencies which occur within the market of a particular commodity. For example, if prices rise at the production level, this will have repercussions at the assembly, processing, retail and wholesale levels. These

Figure 3.1. A Model of Industrial Organization Analysis



repercussions can be captured and measured by the subsector approach, but less well by the S-C-P paradigm.

A variation of the subsector approach has been employed by researchers at Michigan State University. This approach, known as the descriptive-diagnostic-prescriptive approach, emphasizes market coordination. The tool used in these studies to comprehend coordination within a market is identifying the standard operating procedures (SOPs) of market participants.

METHODS TO STUDY MARKETING IN DEVELOPING COUNTRIES

A large portion of the marketing-related research undertaken in developing countries has been carried out by geographers and anthropologists, who have described marketing channels, including the origin and timing of markets, the role of ethnic groups in determining marketing patterns, and the impact of local markets on social structure (Eicher and Baker, 1982).

The Economic Approach

Economists and agricultural economists brought their own models for marketing research in the 1960's and 1970's. W.O. Jones utilized the S-C-P paradigm with supporting evidence from studies done by other researchers and produced one of the pioneering books on marketing in Africa. He described the structure of selected food-marketing systems in tropical Africa in terms of product flows, exchange levels, personnel, and facilities, to appraise the performance of the system and

identify measures that might be adopted to improve its efficiency (Jones, 1972).

Jones used the theory of perfect competition, with the following criteria, to guide his research and to develop norms for performance: i) entry to the market is free; ii) the commodity traded is fungible; iii) there is knowledge of total supplies; iv) time and condition of sale are determined only by participants in a transaction; and v) participants are economically motivated or their economic resources are not unlimited.

Other market-facilitating conditions which are especially necessary, but often lacking in developing countries, are identified by Jones: standardized measures of quantity and quality; security of contract; flexible terms of sale, including credit sales, consignment, and forward and futures contracts; divisibility of the unit of sale and of the currency; availability of credit secured by stock of merchandise; open bidding or auction; and informational and financial clearing houses.

Jones conducted informal interviews to understand the structure of food marketing, but for a more rigorous evaluation of market imperfections he used three major tests of marketing efficiency: i) bi-variate coefficients of correlation of prices to test whether prices in nearby markets moved together, reflecting the extent of market integration; ii) price differentials between markets compared with transportation costs; and iii) seasonal price fluctuations compared with storage costs (Jones, 1972).

More recently, studies undertaken by The University of Michigan's Center for Reserch on Economic Development have employed the structure-conduct-performance paradigm in analyzing the performance of cereals markets in Burkina Faso (Sherman, Shapiro and Gilbert, 1986).

Criticism of the S-C-P Paradigm

Barbara Harriss has criticized the paradigm based on what she alleges is a simplistic approach to market performance. She questions the concept of "fair returns" and the emphasis which paradigm users place on competition. She asks "how much competition is enough?" She asserts that price correlations are an inaccurate measure of market integration or competition because "high coefficients indicate stable margins or stable prices and by themselves could as easily indicate monopoly conditions as perfect competition" (Harriss, 1979, p. 202). Regarding marketing margins, she contends that they reveal little about market performance because the absolute price concept used in calculations shows nothing about the bundle of services offered by the price. Harriss is also critical of the tendency of many S-C-P based studies to utilize secondary data for their analysis.

Riley and Weber (1979) have also criticized the S-C-P paradigm on the grounds that it focuses too much on structure. By emphasizing structure, not enough importance is placed on the influence of participant conduct on performance. Also, they argue that the paradigm ignores coordination and interdependence within related market functions. Riley and Weber contend that the S-C-P is incomplete because of its "lack of concern for the dynamic impacts that marketing services can have on production and consumption" (Riley and Weber, 1983, p. 321).

Critics of the S-C-P theory question the causal link which S-C-P theorists assert exists between structure and conduct and performance. Seaver states, "No one should be under the illusion that performance is anything but complementary with structure and conduct" (cited in Jesse, 1978, p. 6).

Jesse, along with the other critics of the S-C-P paradigm, supports the concept itself, but is averse to the causal deduction of performance. Jesse calls for the delineation of a set of performance objectives prior to analysis, with these objectives based on quantifiable measures.

CONCLUSION

It is evident that many models and approaches exist to study marketing in developing countries. Economists are realizing that an accurate model should incorporate more than traditional economic concepts of supply, demand and competition. The complexity of marketing in developing countries necessitates the utilization of models such as the subsector approach and theories from other fields that incorporate factors such as the impact of geographical location and ethnicity on marketing.

CHAPTER FOUR

STRUCTURE OF THE WHOLESALE COARSE GRAIN MARKET IN MALI

Market structure is defined as those characteristics of the subsector that affect price, competition and the behavior of actors within the subsector (Scherer, 1980). The opportunity sets unique to each actor also are encompassed by the term structure. The dimensions of market structure include the following: buyer and seller concentration, product differentiation, and barriers to entry and exit. In addition to these, the occurrence of collective organization (e.g., cooperatives) and public sector intervention can also be included. Caves stresses that the elements of market structure are all interrelated; any change in one brings about changes in others (Caves, 1982).

This chapter describes the structure of the Malian coarse grain wholesale industry. In order to place the wholesale trade in perspective, the chapter begins with a brief overview of each segment in the marketing system. . There are numerous components to a marketing system, beginning with the producer and finishing with the consumer. However, an analysis of the entire system is beyond the purview of this research paper, so only the wholesaler component will be analyzed in detail.

The structure of the coarse grains market is rapidly evolving in Mali. This chapter presents two snapshots of the market structure--one for the 1985/86 marketing season and the other, more detailed, of the 1987/88 structure.

The following issues will be covered in this chapter:

1. Who are the actors in the cereals subsector and what roles do they play?
2. Are there barriers to entry? What are they and how significant are they?
3. Does the marketing structure for a wholesaler differ from that of a semi-wholesaler? In what way?
4. Does market structure differ regionally?

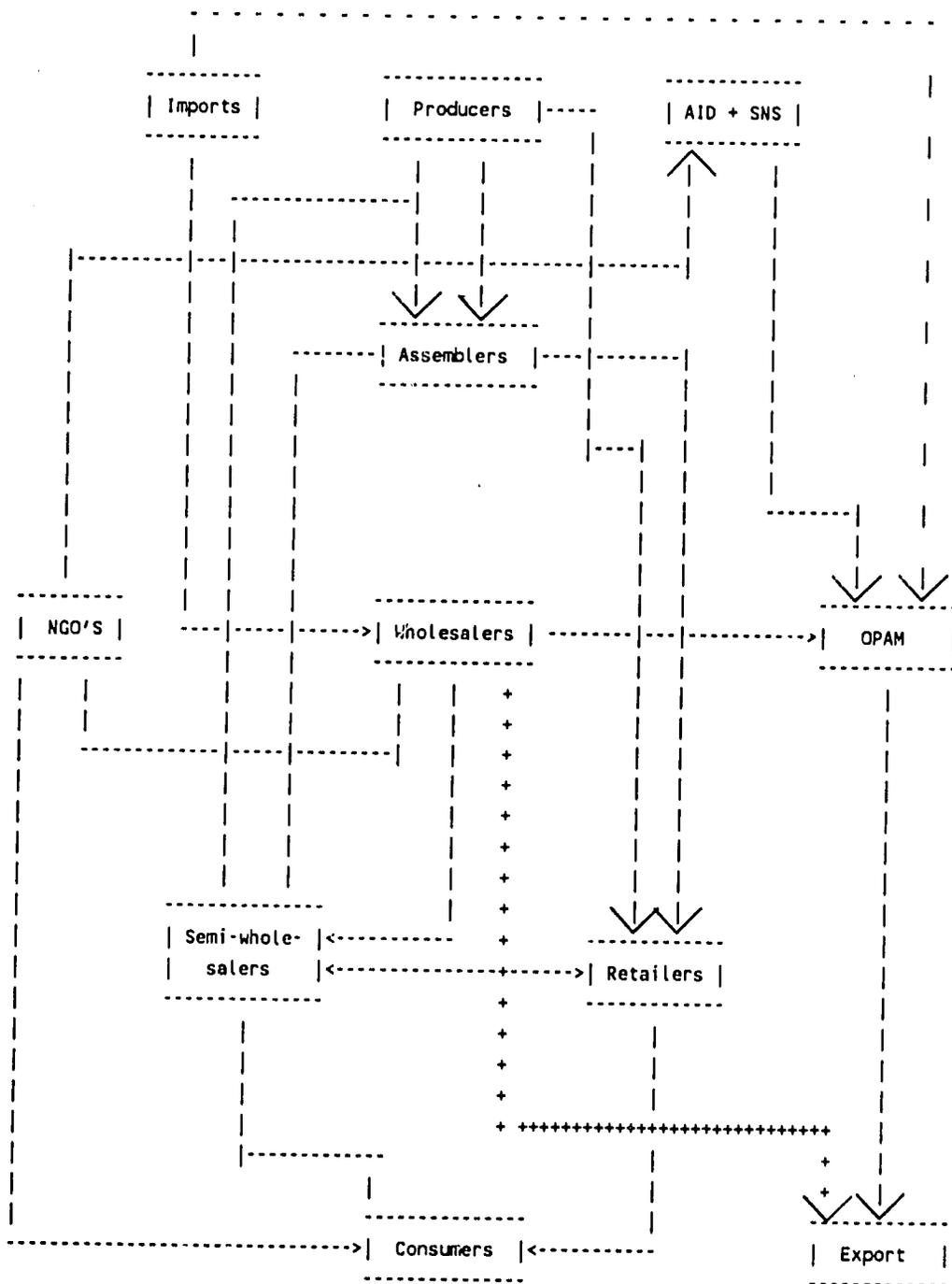
ACTORS IN THE SUBSECTOR

At this point, the participants in the coarse grain (millet, maize and sorghum) subsector will be briefly introduced. This section is a synopsis from Dembele, Dione and Staatz (1986a).

The main market for all primary coarse grains collection is the rural weekly market, where all transactions are made on a cash basis, with some categories of buyers financing their own purchases while others act as commission agents.

Figure 4.1 presents a subsector map of cereals flow in the Malian coarse grains subsector as it existed in 1985/86. Cereals flow from producing areas to consuming areas, and

Figure 4.1. Conceptual Model of Coarse Grain Subsector in 1985/86



- > Direction of cereals
- - - - -> Possible channel in distress situation
- + + + + -> Illegal channel

may flow back to rural areas during the hungry season. Data from the 1988 survey show that wholesalers in Bamako are more likely to import cereals from other countries than are wholesalers in Mopti, Koutiala or Sikasso.

Collectors

This term is "an umbrella definition" referring to a number of agents who collect cereals directly from producers at the farm level. They are most active immediately after harvest; thus, their numbers vary seasonally.

Assemblers

This group consists of travelling assemblers and sedentary assemblers, both of whom can be independent or commission agents. These agents account for much of the surplus cereals transactions in the market.

When assemblers are commission agents, they use funds provided by an urban wholesaler to purchase cereals in rural areas. They also frequent rural markets in important producing areas within a radius of over 60 kilometers of the urban market. They represent the largest group in the rural market. Usually, their remuneration is based on the difference between the rural market price and that at the wholesaler level.

Independent traveling agents use their own funds for purchasing grain. Along with purchasing the cereals, they have primary responsibility for transport and storage of the

purchased cereal. Unlike storage at other levels in the subsector, independent assemblers appear typically to store cereal for less than one week--until grain is sent in larger lots to wholesalers. Wholesalers in urban centers are also clients of independent traveling agents; however, for these transactions the independent agent, unlike the commission agents, bears all the transport costs and risk in price fluctuations.

Sedentary assemblers are producers who purchase cereals either as commission agents or independently in their home villages. The bulk of their purchases are made during harvest and, in the case of commission agents, their remuneration is the difference between purchase price and wholesale price.

Processors

This group is primarily comprised of women who go to rural markets within 50 kilometers of an urban area. These women usually purchase small quantities of cereals to process into beer or food.

Dione states that very little commercial or industrial processing is done for coarse grain and the bulk of marketed cereal reaches the consumer in unprocessed form (Dione, 1985).

Direct Consumers

Individuals traveling in the countryside and deficit producers who do not produce enough for sustenance comprise this group--in short, anyone who will directly consume the cereals purchased himself or herself rather than sell it. The total amount purchased in this category is not known and the price may be high because the purchase is made when a need arises, rather than when prices are low and stocks plentiful.

Wholesalers and Semi-Wholesalers

This group of traders is found in producing zones and urban centers. They buy cereals from independent assemblers as well as from their own commission agents or from other traders, and they sell directly to consumers, to intermediaries or to other wholesalers. A few traders in this category may also buy cereals directly from farmers.

Wholesalers are an important component of the cereals industry due to their role as transfer agents between producing zones and consuming zones. At the beginning of this research it was postulated that many wholesalers, particularly those operating in producing zones such as Koutiala, owned their own transport, while those in consuming zones such as Bamako were thought to be more apt to own storage facilities.

Some of the wholesalers in urban consuming centers have

regular trading partners in producing zones who ensure transport to the consuming zones, where the produce may be sold to semi-wholesalers and retailers.

Occasional wholesalers trade in other commodities besides cereal, but enter the cereals market to honor a large contract or seasonally, after the harvest.

Retailers

This group consists mainly of women who purchase small quantities, under 100 kilograms per transaction, from wholesalers in their city or in rural markets. Retailers who are regular clients of suppliers with a mutual relationship of trust may have access to limited purchases on credit. Women retailers who buy their supplies in rural assembly markets tend to use traditional measures for purchase.

Many wholesalers also engage in retail transactions (especially when supply declines), but retailers do not undertake wholesale transactions. Urban wholesaler-retailers frequently have approximately one ton of cereal in stock and perhaps three qualities of each cereal--rice, millet, maize and sorghum. They tend to be very location-specific and are found only around markets where women come to buy other produce. Unlike the women retailers (who often sell one-half or one-quarter of a kilo per sale), urban wholesaler-retailers use standard measures because they

trade in larger quantities of one or more kilograms.

Producers

Mali is a country of small-scale sorghum and millet producers. The cereals market can be characterized as thin, with roughly 80% of cereals production being consumed at the farm level (Wilcock, Roth and Haykin, 1987). Cereals production may not always respond to price, further exacerbating the very thin market situation stemming from high home consumption. Over the past 12 years, Malian farmers produced 83% of cereals needed for national annual consumption (Wilcock, Roth and Haykin, 1987). Only a minority of farmers provide a marketable surplus of grain during a good harvest. CESA/MSU results reveal that in 1985/86 (a year of good production) 48% of farmers in the OHV and CMDT zones were net sellers of grain, 39% were net buyers and 13% were just self-sufficient (Dione, 1987). Price and quantity data for deficit producers are presented by D'Agostino, who concludes "that many farmers tend to sell grain when they need money and buy grain when they have no more cereals in stock" (D'Agostino, 1988, p. 138).

OPAM

The functions of OPAM, the public grain marketing agency, have evolved considerably during the three-year span of this research. OPAM was initially created to carry out government grain policy. Since grain is considered a wage good in Mali, wages were kept low and OPAM supplied cereals

to civil servants at below-market prices. Until the 1981 market liberalization, OPAM enjoyed an official monopoly for all cereals transactions. The main responsibilities for OPAM were to supply remote, inaccessible areas in Mali, stabilize market prices through a stabilization stock, supply civil servants, manage and distribute food aid, and maintain national emergency stocks.

Direct purchases by OPAM used to be undertaken by OPAM agents and the local administration in rural areas, later expanded to include private merchants under contract. Indirect purchases were performed by cooperatives and ODRs. OPAM also prefinanced crop purchases from the production ODRs for resale to OPAM, paying for everything according to the annual "bareme" or official price schedule.

Based on a major organizational restructuring, several important policy alterations for OPAM and the cereals market were implemented in 1987/88. OPAM's role in the economy was changed to include responsibility for security stocks, maintaining food aid and supplying deficit regions. Supported market prices were theoretically discontinued as was the practice of supplying below-market-priced cereals to preferred groups. Prices are currently allowed to fluctuate based on market conditions, with no attempt to enforce official prices for millet, sorghum and maize. OPAM's costs should be reduced by this change in policy because previously OPAM was incurring large debts to support prices

in years of good harvests (e.g., 1985/1986).

Until the 1987/88 marketing season, official prices for all three staple crops were the same and panterritorial prices were in effect throughout the country. Wilcock, Roth and Haykin stress in their report that if the government of Mali would accept seasonal and geographic price differentials, OPAM's transport and storage costs would be better covered (Wilcock, Roth and Haykin, 1987). The policy changes set forth by Wilcock et al. have been implemented, but what the impact will be on the economy and OPAM remains to be seen.

Non-Governmental Organizations (NGOs)

This group became active in the cereals subsector shortly after the droughts in the 1970s and 1980s and is involved in supplying grain to stricken areas. Local supplies and delivery are provided by contracts with private merchants in Bamako, Koutiala and Mopti. Once the delivery is made to the designated location, the NGO bears the responsibility to transport the produce to the disaster areas. NGOs are also recipients and distributors of food aid, particularly during severe droughts.

Government Institutions and Urban Cooperatives

Wholesalers may have a permanent contract with governmental institutions and cooperatives to sell cereals

in bulk for employees or members, often selling on credit because institutional clients are (usually) less risky than individual clients.

Urban consumer cooperatives are located in most large neighborhoods, supplying local residents with cereals. Cooperatives were initially created by the government to receive supplies from OPAM and sell to area consumers. However, co-ops contributed greatly to the OPAM deficit because they received large quantities of grain from OPAM and often did not repay the money.

At present, cooperatives are supplied by cereals wholesalers, but their usefulness is declining due to their poor record of paying back wholesalers for the cereals in a timely manner. According to several observers, cooperatives in the north operate more efficiently than those in the south, mainly due to a strong information network, which enables them to supply themselves directly from the producing zones (Republique du Mali, 1988).

Village Cereals Banks

Cereal banks purchase grain directly from farmers after the harvest, storing for future needs and permitting deficit farmers and village residents to purchase cereals when supplies elsewhere are unavailable or prices are very high.

STRUCTURE OF THE WHOLESALE CEREALS TRADE

With this brief introduction to the Malian coarse grain market, the rest of the chapter will focus on the structure of the wholesale component. First, the market structure based on the 1985/86 census will be covered, using the degree of specialization and time of market entry as stratification variables. This will be followed by a description of market structure based on the 1988 survey, using type of wholesaler and geographic location as the stratification variables. The final item to be covered in this chapter is barriers to entry.

Characteristics of the 1985/86 Wholesale Structure

The number of wholesalers active in the market has varied in recent years, based on the strength of the harvest and the level of expected profit. This was particularly evident for the 1985/86 marketing season, characterized by an exceptional harvest, when individuals from diverse occupations entered the cereals market to buy low from producers and sell high to OPAM, due to the price differential between the official price and the market price¹.

Degree of Specialization and Period of Entry

To discern whether there is a structural difference

¹In Mali, the coarse grain marketing year runs from November, when the main harvest of millet and sorghum begins, to October of the following year.

between those wholesalers who traded in the cereals market before liberalization and those who entered after, variables presented in this chapter are stratified by time of entry into the trade.

It has been hypothesized that traders who specialize in a particular commodity are more likely to invest in marketing activities than are non-specialized traders. Elliot Berg says, "the private grain trading system (in Mali) is undeveloped...more important, there is extremely little specialization in foodgrains, just as there appears to be very few traders who are full-time traders and nothing else" (Berg, 1979, p.150). Does specialization foster development of marketing systems? Do specialized traders have different organizational structure than nonspecialized traders? Findings from the structural analyses presented in this chapter will provide insights into these two questions.

The distribution of wholesalers by the stratification variables time of entry and level of specialization is presented in Table 4.1. The table shows that the majority of wholesalers in Mopti entered the market prior to liberalization; most of these wholesalers are also specialized. Bamako, on the other hand, had 51 percent enter the market after liberalization. This could be a result of the rapid influx into Bamako during the past decade. The majority of Koutiala and Sikasso wholesalers entered trade prior to liberalization. The important

finding from this analysis is the large number of specialized wholesalers who entered the market after

Table 4.1. Distribution of Coarse Grain Wholesalers by City, Period of Entry, and Degree of Specialization in the Grain Trade, 1986

City	<u>Specialized</u>		<u>Non-specialized</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Koutiala				
Entered Pre-liberalization	6	30%	7	35%
Entered Post-Liberalization	3	15%	4	20%
Sikasso				
Entered Pre-Liberalization	6	27%	8	36%
Entered Post-Liberalization	6	27%	2	9%
Bamako				
Entered Pre-Liberalization	12	28%	9	21%
Entered Post-Liberalization	15	35%	7	16%
Mopti				
Entered Pre-Liberalization	21	64%	3	9%
Entered Post-Liberalization	8	24%	1	3%

Source: CESA/MSU field surveys

liberalization. Prior to liberalization, private trade was illegal and was undertaken clandestinely at the risk of fines or confiscation of goods. With liberalization, some barriers to entry have been removed and some risk reduced, enticing more individuals to enter the trade. This leads one to suggest that liberalization may have encouraged entry into the cereal market. However, it is unclear whether these traders entered cereals trade because of

conducted with traders corroborate the hypothesis that an influx of traders into the market occurred after liberalization.

Table 4.1 also indicates that wholesalers in the producing regions of Koutiala and Sikasso tend to be less specialized than those in the consuming and disseminating regions of Bamako and Mopti. This difference may be attributed to the lower demand for cereals in smaller towns such as Koutiala and Sikasso in comparison to more highly populated cities such as Bamako and Mopti. The seasonality of the trade also induces wholesalers, particularly those in smaller areas, to diversify. Limited storage capacity and steep transportation costs may be other impediments to specialization in Koutiala and Sikasso that limit the quantity of cereals traded.

Table 4.2 presents the mean number of years in trade for the sample wholesalers, stratified by city. The wholesalers in Mopti have been in trade for a longer period than those in the other cities, perhaps due to Mopti's historic reputation as a trade center. The population of Mopti consists of many Fulani who used to trade in livestock and dairy products, but with the 1974 drought that eradicated much livestock, they may have entered cereals trade for survival. Table 4.2 presents the mean number of years in trade for the sample wholesalers, stratified by city.

Table 4.2. Distribution of Sample Wholesalers by Number of Years in Trade, 1986

<u>City</u>	<u>Average Number of Years in Trade</u>
Koutiala	10.8 years
Sikasso	14.6 years
Bamako	9.2 years
Mopti	18.6 years

Source: CESA/MSU field surveys

The table shows Mopti traders having the longest duration in cereals trade, followed by traders from Sikasso and Koutiala. Bamako has recently attracted immigrants from other regions in Mali, which may explain the shorter duration in trade for Bamako wholesalers (i.e., the new arrivals may have entered cereals trade). Also, the rise in the Bamako demand for cereals due to the population increase may have made cereals trade more attractive for newcomers.

Gender

Table 4.3 shows that the wholesale trade is male-dominated in all cities, with Mopti being the only city where women are wholesalers. The dominance of men in wholesale trade could result from the two conditions necessary to be a trader: a strong financial base and good "connections" to turn a profit. Connections are necessary to keep abreast of market information and price changes. Mali, being a Moslem country, still relegates women to mor

traditional roles and professions.

Grouping the data by time of entry and gender, the analysis shows 67 male wholesalers entered the market prior to liberalization while 44 said they entered cereals trade after liberalization. Five women wholesalers entered the market before liberalization while two entered after.

Table 4.3. Distribution of Sample by Gender and City of Residence, 1986

<u>City</u>	<u>Male</u>		<u>Female</u>	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Koutiala	20	100	0	0
Sikasso	22	100	0	0
Bamako	43	100	0	0
Mopti	26	79	7	21

Source: CESA/MSU field surveys

Mopti has long had the reputation of being "the trade city of Mali", which helps explain the participation of women here in the wholesale trade. Historically, the women of Mopti have traded in fish and dairy products and may have switched over to cereals when fish and dairy products were unavailable. On the average, the women in our sample had been in the wholesale trade longer than the men: 16 years as opposed to 13 years for the men. In our sample, 70 of the men said they specialized in cereal while 41 said they were nonspecialized. All seven of the women are specialized in cereals.

Main Business Activities

Table 4.4 shows that most traders in our sample consider their primary activity to be commerce. The primary activity, along with the commercial product, identified by wholesalers determined the stratum within which they were placed--specialized or non-specialized.

The category of secondary activity can be defined as the activity in which wholesalers partake in addition to commerce, or perhaps during the off-season. Types of secondary activities identified by wholesalers provide insight into any trade-related or marketing-related activities. It was suspected that many wholesalers in the producing regions are also grain producers. Table 4.4 shows that of those wholesalers in Koutiala who responded to the question on second activity, 53% identified agriculture as their second activity. In Sikasso, 67% of those who responded to this question also identified agriculture as their second activity. Table 4.4 shows that Bamako and Mopti wholesalers are more likely to raise livestock as their second activity. The high demand for meat in consuming centers such as Bamako and Mopti may explain the investment in livestock.

Ethnic Composition

Table 4.5 presents the ethnic distribution of traders in the four cities, which demonstrates that there is considerable ethnic diversity among cereals wholesalers in

in the four cities, which demonstrates that there is considerable ethnic diversity among cereals wholesalers in Mali. The Bambara are the dominant ethnic group in Mali, so it is logical to find that the largest single group in the census was Bambara.

Table 4.4. Primary and Secondary Economic Activities of Wholesalers by City, 1985/86

	Koutiala		Sikasso		Bamako		Mopti	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Primary Activity								
Commerce	16	80	21	95	40	93	32	97
Transport	2	10	-	-	-	-	-	-
Agriculture	2	10	-	-	3	7	-	-
Missing	-	-	1	5	-	-	1	3
Total	20	100	21	100	43	100	33	100
Secondary Activity								
Commerce	4	20	1	5	3	7	-	-
Transport	3	15	3	14	2	5	2	6
Agriculture	8	40	8	36	1	2	4	12
Livestock Raising	-	-	-	-	6	14	12	36
None	5	25	9	41	31	72	14	42
Missing	-	-	1	5	-	-	1	3
Total	20	100	22	100	43	100	33	100

Source: CESA/MSU field surveys

**Table 4.5 Ethnic Composition of Wholesalers
by City 1986**

	Koutiala	Sikasso	Bamako	Mopti	Total	%
Bambara	11	6	15	10	42	35
Marka	1		3		4	3
Minianka	6				6	5
Fulani	1	3	8	9	21	18
Dogon		2		1	3	3
Senoufo		12			12	10
Kassonke			2		2	2
Saracolle			3	1	4	3
Bozo				5	5	4
Sonrhai				3	3	3
Somono	1			4	5	4
Malinke			12		12	10
Total	20	23	43	33	119	100

Source: CESA/MSU field surveys

After Bambara, the ethnic group to have the largest representation in the sample is Fulani, with 21 individuals. The Fulani have historically been the herders of West Africa, but the 1973 drought took a heavy toll on livestock, forcing this group to branch out into other trade. Due to the drought, much food aid was channeled through the northern area, so many Fulani may have taken advantage of this situation and set up petty trade by selling the food aid in the market. When the conditions in the north failed to improve, they may gradually have migrated south, continuing their trade in cereals.

Distance to Purchases and Sales

The distances wholesalers traveled to purchase and sell grain provided insight into cereals flow and spatial

arbitrage. Table 4.6 presents the analysis for sales and supply sources for the three cities for which data are available.

Table 4.6. Distance to Purchases and Sales by City and Specialization (kilometers), 1986

	Kouciala	Sikasso	Mopti
<u>Most Important Supply Source</u>			
Mean Distance	43	69	265
Specialized	77	60	250
NonSpecialized	25	72	360
Missing	9	11	27
<u>Most Important Place of Sales</u>			
Mean Distance	57	14	20
Specialized	0	0	0
NonSpecialized	170	0	0
Missing	7	8	13

Source: CESA/MSU field surveys

Table 4.6 shows that the average distance traveled by Koutiala wholesalers to their first supply source is 43 kilometers. Sikasso wholesalers traveled 69 kilometers to their first supply source, while Mopti wholesalers traveled the farthest to their first supply source--265 kilometers. Data are not available for Bamako.

Due to their location within a producing zone, Koutiala wholesalers did not have to travel as great a distance to obtain supplies. Also, the smaller size of Koutiala and the close proximity to producing villages make it more

attractive for wholesalers to purchase their goods directly from the rural markets, rather than at the higher market price in Koutiala.

Sikasso wholesalers traveled a little farther than those in Koutiala because cereals production in the Sikasso region is less than that in Koutiala. However, three wholesalers in Sikasso also purchased supplies within Sikasso.

Mopti wholesalers traveled the farthest to purchase their cereals. This may have resulted from the poor harvest of 1984/85, when supplies were sparse. When poor harvests occur, wholesalers from deficit consuming centers such as Mopti may travel to Sikasso and Koutiala for their supplies. The costs incurred to travel to Koutiala and Sikasso may be recouped during poor harvests, because although purchase prices are high in these two cities, sales prices are even higher in Mopti. More likely, however, wholesalers or their representatives from Koutiala and Sikasso will often travel to consuming regions such as Mopti to sell cereals, explaining why several wholesalers bought their supplies within Mopti that year. The sales to the northern regions are made within Mopti, as wholesalers from the northern areas travel to Mopti for cereals purchases.

The variable "most important place of sales" represents the normal sales location of the trader. As expected, most of the first sales for our sample were made within the

sample city. This does not mean that the cereal stays in the city; it only means that the transaction was completed in the city. It is common for merchants from one city to travel to other regions in order to buy cereals.

Returning to Table 4.6, one sees that the average distance to the most important place of sales is considerably less than it was for the distance to the most important supply source. Koutiala wholesalers travel an average 57 km to their first place of sales; 11 wholesalers sell within Koutiala and 2 sell to merchants in Mopti. All 14 of the wholesalers who answered this question in Sikasso and the 20 wholesalers who responded in Mopti make most of their sales within their city borders.

Table 4.6 also shows that the most important point of sales for specialized wholesalers in Koutiala was within the city limits, while for non-specialized wholesalers, the average distance traveled was 170 kilometers. Both of the wholesalers in the latter group had traveled to Mopti to make their sales. For Sikasso, neither specialized or non-specialized left the city for sales. The same situation occurred in Mopti, with both specialized and non-specialized respondents claiming to make sales only in Mopti.

Transport

Transport represents a substantial portion of the cost structure for wholesalers, with much of this being initially borne by producing-zone traders. The poor quality

of roads in Mali (especially in rural regions) takes a severe toll on vehicles and increases travel time to supply and distribution areas. From the first handler to the wholesaler or retailer, transport is via trucks owned or rented by the wholesaler.

In Koutiala in 1986, 32 percent of wholesalers owned their own transport, while 18 percent of wholesalers in Sikasso owned their own transport. Mopti had the lowest rate of transport ownership, 3 percent, and 4.7 percent of Bamako wholesalers owned their own transport. Bamako wholesalers were more apt to own storage rather than transport. For those wholesalers who did not own their own transport, the majority used a commercial trucker to meet their transport needs.

Use of Credit

Wholesalers frequently use credit to expand their market share. To do so they sell on credit to retailers without charging interest, using the per kilo price for the day of the original transaction as the reimbursement price. Wholesalers in producing zones also sometimes sell on credit without interest or provide discounts to wholesalers in consuming zones to attract them as regular clients. Although interest payment is not demanded, some type of future obligation to extend credit is understood. For example, parties to credit transactions may be expected to extend loans for baptisms, weddings and other future

monetary needs.

In April and May 1986, when the CESA/MSU survey was conducted, wholesalers were asked questions concerning the last sale made on credit. Only 22 percent of the wholesalers who sold on credit said the reimbursement price was higher than the market price. Mopti wholesalers had the same average price of 68 CFAF per kilo for credit sales and cash sales. For this question, Koutiala respondents said the average selling price on credit was 9.7% higher than the cash price, while Sikasso wholesalers said the last credit sale was 9.6% higher than the cash price. For those Bamako wholesalers who said the credit price was higher than the cash price, the price for their last sales on credit was 9.6% higher than the last cash sales price.

Table 4.7 presents frequency of credit sales for the sample. The table shows that 43 percent of the survey respondents reported always selling on credit. Given the instability of the financial situation for many Malians, this high figure for sales on credit is not surprising. Traders in Koutiala, Sikasso and Mopti sell on credit more frequently than do those in Bamako. A possible explanation for this could be that many wholesalers from these three cities supply wholesalers in other regions with whom they have a long-standing relationship. Bamako wholesalers, however, may sell to anonymous clients with whom a long

Table 4.7. Frequency of Sales on Credit by City and Degree of Specialization in 1986
(Number of respondents)

	Koutiala	Sikasso	Bamako	Mopti
<u>Never</u>				
Specialized	0	0	1	4
Nonspecialized	0	0	0	1
Total	0	0	1	5
<u>Less than 1 Time per Year</u>				
Specialized	2	1	2	0
Nonspecialized	2	0	4	0
Total	4	1	6	0
<u>One time in 5 Sales</u>				
Specialized	0	0	7	1
Nonspecialized	0	0	2	0
Total	0	0	9	1
<u>One Time in 3 Sales</u>				
Specialized	0	1	1	3
Nonspecialized	1	0	0	1
Total	1	1	1	4
<u>Two Times in 3 Sales</u>				
Specialized	0	0	1	0
Nonspecialized	0	0	0	0
Total	0	0	1	0
<u>Always</u>				
Specialized	2	8	2	9
Nonspecialized	2	2	0	0
Total	<u>4</u>	<u>10</u>	<u>2</u>	<u>9</u>
Total	9	12	20	19
Missing 0				
N=60				

Source: CESA/MSU field surveys

standing relationship is not forged, making cash transactions necessary.

Given the higher per capita income in Bamako, demand for cereals in Bamako is also higher and wholesalers may not have to use credit schemes to increase their clientele base. Findings by Rogers and Lowdermilk show that Bamako's higher income manifests itself in an increased quantity of food purchased from the market (Rogers and Lowdermilk, 1988).

In the 1986 survey, participants were asked to identify the last client to whom they sold cereals on credit. The responses varied from credit sales to consumers, retailers and semi-wholesalers. The majority of Mopti and Koutiala wholesalers sold on credit to wholesalers or semi-wholesalers, while Sikasso and Bamako wholesalers sold on credit to consumers. For Bamako, the identified consumers may not be individuals; for the most part, they are organizations which purchase a large quantity of cereals from wholesalers on behalf of their employees and deduct the necessary charges from each paycheck. Hence, wholesalers agree to sell on credit because organizational backing minimizes the risk. The last quantity of cereals sold on credit identified by respondents in 1986 ranged from 300 kilograms to 87,000 kilograms, as shown in Table 4.8.

Koutiala and Mopti had the largest mean volume of cereal sales on credit. As explained previously, wholesalers in both of these cities sell on credit mainly to

other wholesalers, semi-wholesalers or retailers with whom they probably trade on a regular basis. In contrast, the average size of a sale on credit in Sikasso was only about one ton, while in Bamako it averaged three tons.

Table 4.8. Mean Amount of Last Cereal Sale on Credit by City (kilograms), 1986

<u>City</u>	<u>Minimum</u>	<u>Mean Amount</u>	<u>S.D.</u>	<u>Maximum Amount</u>
Koutiala	500	6,313	5,438	15,000
Sikasso	300	963	670	2,000
Bamako	350	2,928	3,525	14,000
Mopti	1,000	11,007	22,326	87,000
Specialized		5,886		
Nonspecialized		3,177		
N=52				

Source: CESA/MSU field surveys

Purchases of cereals on credit are very frequent, with 33 percent of the sample respondents claiming to have done so. This figure is slightly less than the figure for sales on credit. The suppliers of cereal on credit are always other traders. No wholesaler purchased cereal on credit directly from producers. The traders who sell on credit to wholesalers are normally production-zone wholesalers selling to consuming area wholesalers. Table 4.9 supports this argument: the largest mean amounts of the last cereal purchase on credit were for the two consuming zones of Bamako and Mopti. Furthermore, an evaluation study done for PRMC/ACDI shows that 87% of the wholesalers in Mopti (13 out

of 15) and 63% (20 out of 32) of the wholesalers in Bamako purchase cereals on credit (Mehta, 1988). Informal interviews conducted in March 1988 revealed that Koutiala and Sikasso wholesalers travel to Mopti on a weekly basis to supply Mopti wholesalers, further explaining the high mean value for Mopti for the last cereal purchase on credit.

Table 4.9. Mean Amount of Last Cereal Purchase on Credit by City (kilograms), 1986

<u>City</u>	<u>Minimum</u>	<u>Mean Amount</u>	<u>S.D.</u>	<u>Maximum Amount</u>
Koutiala	2,000	2,500	707	3,000
Sikasso	1,000	2,400	1,257	10,000
Bamako	1,000	7,385	7,869	32,000
Mopti	1,000	10,974	15,468	68,000
Specialized		9,144		
Nonspecialized		2,167		
N=40				

Source: CESA/MSU field surveys

For purchases made on credit, survey respondents said that the per kilo market price of the day of the transaction was normally the reimbursement price. Unlike with monetary loans, respondents said the time length for repayment for credit purchases is variable. Contrasting these results with those from Table 4.8, we see that Bamako and Sikasso wholesalers purchase more cereals on credit on average than they sell on credit. Koutiala and Mopti wholesalers sell more cereal on credit than they buy on credit. Recall that Koutiala and Mopti wholesalers sell to semi-wholesalers,

other wholesalers and retailers on credit. Thus, Bamako and Sikasso wholesalers may be the recipients of the credit sales supplied by Koutiala traders, while traders in the north and east of Mopti may be the recipients of credit from Mopti wholesalers. Mopti is quite an enigma in that the wholesalers there make many credit transactions, more so than any other city. A possible explanation for this unexpected findings from Mopti may be that traders here buy large amounts of cereals on credit from surplus zones and sell it to others who supply the deficit zones of the north. Thus, wholesalers in production zones like Koutiala are probably indirectly financing the cereals traders of Timbuktu and Gao.

In addition to purchasing grain on credit from other traders (i.e., receiving credit in kind), wholesalers sometimes also borrow cash from others to buy grain. Table 4.10 presents the use of borrowed cash for cereals purchases by city and specialization. The table shows that 40 percent of Bamako wholesalers and 63 percent of Mopti wholesalers claim to never borrow money to purchase cereals on credit. A possible explanation for this could be that Bamako and Mopti wholesalers are frequently supplied by counterparts in production zones, and the transactions often are by credit rather than cash. The wholesalers of Koutiala and Sikasso are in the producing zones and purchases are made in the "cash only" rural markets. Koutiala and Sikasso wholesalers

also have greater tendency to borrow money for purchases because they are obliged to advance money to collectors to make the cereals purchases. Specialized wholesalers have a higher frequency of borrowing than nonspecialized, perhaps because they have no other activities from which they can

Table 4.10. Frequency of Borrowing Money to Purchase Cereals, by City and Degree of Specialization, 1986

	Koutiala	Sikasso	Bamako	Mopti	Total
Never					
Specialized	0	2	6	10	18
Nonspecialized	1	0	2	2	5
Total	1	2	8	12	23
Once/Twice per Year					
Specialized	1	1	2	1	5
Nonspecialized	0	0	1	0	1
Total	1	1	3	0	6
Once every 4 months					
Specialized	0	3	3	0	6
Nonspecialized	2	2	2	0	6
Total	2	5	5	0	12
Once or More per Month					
Specialized	0	3	2	5	10
Nonspecialized	0	0	1	0	1
Total	0	3	3	5	11
Once a Week/Every Day					
Specialized	3	1	1	1	6
Nonspecialized	2	0	0	0	2
Total	5	1	1	1	8
Total	9	12	20	19	60

Source: CESA/MSU field surveys

cross-finance cereals purchases, with 36 percent of all specialized wholesalers borrowing more than once a month to

make purchases compared with 20 percent of nonspecialized wholesalers.

The finance survey was conducted in April/May of 1986. The date of the last amount borrowed by respondents varied between December 1985 and May 1986. Table 4.11 shows the mean amount of the last loan to purchase cereals.

Table 4.11. Average Amount of Last Loan Taken by City (CFAF)

<u>City</u>	<u>Minimum</u>	<u>Mean Amount</u>	<u>S.D.</u>	<u>Maximum Amount</u>
Koutiala	100,000	1,156,250	2,050,163	6,150,000
Sikasso	84,000	275,444	202,748	600,000
Bamako	125,000	485,833	328,528	1,000,000
Mopti	100,000	242,857	139,727	500,000
Specialized		389,577		
NonSpecialized		913,000		
N=36				

Source: CESA/MSU field surveys

One can postulate that the amount borrowed varies by the strength of the harvest and the opportunity for market participation. The 1985/86 marketing season, during which the survey was conducted, was particularly lucrative due to the exceptionally strong financial position of OPAM which, for a short period after harvest, purchased a large amount of grain from traders at the official wholesale price, driving up market prices until its funds ran out in March/April 1986. Wholesalers sold to OPAM by borrowing from one another to finance large purchases.

Normally, interest is not charged on cash loans. Of 60 wholesalers interviewed, 30 did not pay interest on their last loan while 14 paid some type of extra charge (16 did not respond to the question).

To conclude, cash transactions are more prevalent at the wholesaler-collector-producer level than at the wholesaler-wholesaler level. Thus, during the 1985/86 season wholesalers in producing areas were the main source of capital for the first handler level. Thereafter, many transactions were carried out on credit.

Time of Purchases and Sales

The cereals trade has the reputation of being seasonal, but the majority of the sample wholesalers claimed to purchase and sell grain during all seasons. Twenty-two percent of the wholesalers in Sikasso purchased cereals only during harvest, while 5 percent of the wholesalers in Koutiala also did the same. All the Mopti wholesalers purchased cereal throughout the year. This lack of seasonality in market participation makes sense, given that Mopti and Koutiala (to a lesser extent) are consuming centers. However, although wholesalers may trade cereals throughout the year, the volume traded may vary seasonally. Data are not available for Bamako.

Sales are less seasonal than purchases, and transactions are made during the whole year. Only 5 percent of wholesalers in both Koutiala and Sikasso claimed to sell

only during the harvest; while the rest of the sample sold all year round. As with purchases, Mopti wholesalers sold throughout the year. Once again, the lack of seasonality in market participation is expected, given that cereals are consumed consistently throughout the year.

Analyzing the data by specialization, there is a more seasonal pattern for purchases by nonspecialized traders. Only one specialized wholesaler claimed to purchase cereals only during the harvest, while 20% of the nonspecialized wholesalers purchased cereal only during the harvest. Both groups, specialized and nonspecialized, made sales throughout the year.

Twelve percent of those wholesalers who entered the market before liberalization purchased cereals only during harvest, while the rest purchased all year round. Out of those merchants who entered the market after liberalization, 4 percent purchased during harvest while the rest made purchases throughout the year. For sales, both groups sold cereals during the entire year.

One of the implications of the seasonality findings is that wholesalers may not be engaging in long-term storage. Instead they are purchasing cereals year-round and selling all year long (with a minority transacting only during the harvest).

Concluding Comments on the Analysis of the 1985/86 Data

This section has provided some basic insight into

market structure for the 1985/86 marketing year. Due to the large number of missing responses, only a rudimentary description has been undertaken.

Many observers and researchers of the Malian cereals market believe that market structure and conduct differ for wholesalers who are specialized versus those who are not specialized. Results from the preceding analysis of the 1985/86 market structure show that nonspecialized traders may engage in more seasonal trade than specialized traders. Specialized traders are more likely to borrow money to purchase cereals and to transact in credit sales and purchases, but other facets of structure appear to be independent of specialization. Structure seems to be determined more by region than by specialization or time of entry.

Time of purchases and sales did not appear to be seasonal except when analyzed by specialization. For purchases, 20% of nonspecialized wholesalers claimed to buy cereals only after the harvest while 2% of specialized wholesalers purchased cereals only after harvest. Because prices are much lower after the harvest, many nonspecialized wholesalers may enter the cereals trade at this time for a short duration, but when supplies dwindle and prices rise, they return to their usual business. This is one way the system has evolved to deal with the seasonality of the trade.

The hypotheses that the business practices of specialized wholesalers differ from non-specialized and those who entered pre-liberalization differ from those who entered post-liberalization will be further developed in the next chapter on conduct. There does not seem to be a great difference between the different strata regarding the structure of their operations. However, due to the high incidence of missing responses, this conclusion should be interpreted with caution.

Structure Based on 1988 Survey

The CESA/MSU Food Security Project conducted another survey in 1988 to determine the evolution of market structure at the wholesale level since 1985/86. This survey utilized similar questions to the survey implemented in 1985/86.

The 1988 survey brought forth several findings. First, many wholesalers had changed categories from non-specialized to specialized. Second, the Bamako survey showed the entry of several new companies into the wholesale market, comprised of large wholesalers grouping together and pooling finances.

In light of the changes highlighted by the 1988 survey, the decision was made to stratify the 1988 data by other variables. The formation and entry of companies in Bamako suggested stratification by type of wholesaler, based on the sales clientele of the wholesaler. It was not feasible to

stratify the 1985/86 survey by this variable because an incomplete survey was conducted in Bamako in 1986, and Bamako appears to have experienced the largest influx of large-volume wholesalers.

It is hypothesized that two distinct, but interrelated, markets exist simultaneously at the wholesale level in Mali. One of the markets is comprised of wholesalers who trade in smaller volumes and may make some retail-level sales; these merchants are referred to as "semi-wholesalers." The other market, comprised of a few large wholesalers, referred to as "wholesalers of wholesalers" in this analysis, transmits cereal to the larger-volume, contractual market and to other wholesalers and semi-wholesalers.

Another hypothesis which emerged as a result of the 1988 survey and from analysis of the 1986 data is that there exists a structural dichotomy between the producing regions and the net consuming regions, with Koutiala and Sikasso situated in the former category and Bamako and Mopti in the latter.

The preceding hypotheses were discussed with project enumerators in the four sample cities. The enumerators supported the proposed hypotheses and identified the wholesalers belonging in each category. The "wholesaler of wholesalers" category is defined as those traders who deal with a consistently large quantity of coarse grains and may sell on contract to organizations and to other wholesalers,

but who never sell retail. The "semi-wholesaler" category is defined as those traders who may trade in smaller volumes of coarse grains, but who also make retail-level sales. The main difference between the two categories is the sales clientele and average volume of total sales.

The survey for 1988 was intended to be a census of all wholesalers in the four sample cities. However, due to respondent fatigue and non-cooperation, the sample for some cities does not consist of the entire population. Therefore, one must use caution when interpreting results from this section since results are applicable to the sample

Table 4.12. Comparison between Sample and Population 1988

<u>City</u>	<u>Sample</u>		<u>Identified Population</u>	
	<u>Wholesaler</u>	<u>Semi</u>	<u>Wholesaler</u>	<u>Semi</u>
Bamako	14	30	18	30
Koutiala	5	3	11	13
Mopti	5	17	6	17
Sikasso	2	8	5	15

Source: CESA/MSU field surveys

but may not necessarily reflect the population at large.

Table 4.12 compares the CESA/MSU sample and the actual population in each city.

Degree of Specialization and Period of Entry

A striking difference between the 1985/86 census and the 1988 census is the increase in the specialization of

wholesalers. Table 4.13 presents the specialization of the 1988 sample.

Table 4.13 shows that semi-wholesalers are slightly more likely to be non-specialized than wholesalers. This finding is consistent with the notion that semi-wholesalers trade in many items to cater to the needs of consumers. Many semi-wholesalers may also be seasonally specialized, trading in cereals exclusively when market conditions are good but diversifying when supply dissipates.

Wholesalers are more apt to specialize in cereals and this supports, albeit indirectly, the hypothesis that

Table 4.13. Analysis of Type of Wholesaler by Specialization and Gender, 1988

	Specialized	NonSpecialized
Semi-Wholesaler	86%	14%
Wholesaler	92%	8%
	<u>Male</u>	<u>Female</u>
Semi-wholesaler	97%	3%
Wholesaler	96%	4%
	<u>Pre Liberalization</u>	<u>Post Liberalization</u>
Semi-Wholesaler	57%	43%
Wholesaler	69%	31%
Total Sample=84		

Source: CESA/MSU field surveys

wholesalers transact in larger volumes of cereals than semi-wholesalers. To enter the cereals trade as a wholesaler

with no sales to consumers, one may need to have a larger quantity available to sell to retailers, semi-wholesalers, cooperatives and others because most of these clients purchase larger volumes than would an individual consumer. Based on this, one may conclude that wholesalers may be better able to invest in market-related functions and capture economies of scale than semi-wholesalers.

The overall trend for the market as a whole appears to be toward specialization, with 88% of respondents claiming to be traders of only coarse grains, as opposed to 65% in the 1985/86 survey. The conclusion, however, must be viewed with caution due to the smaller sample size for some cities. The change in specialization may have important policy implications, which will be explored in a later chapter.

Table 4.13 shows that wholesalers are more likely to have entered cereals trade prior to liberalization than semi-wholesalers. This is a finding one would expect because it may be easier to enter cereals trade as a semi-wholesaler than as a wholesaler, with semi-wholesalers requiring less initial start-up capital. Business at the semi-wholesale level may have increased rapidly after liberalization. The larger investment involved in trading as a wholesaler may have induced would-be traders to begin as semi-wholesalers, but with trade being illegal prior to 1981, the influx of semi-wholesalers occurred after liberalization.

Volume of Cereals Traded

Returning to the hypothesis presented earlier that wholesalers traded in a larger volume of cereals than semi-wholesalers, Table 4.14 presents mean volume of cereals traded by wholesalers and semi-wholesalers in 1986/87. Table 4.14 shows that wholesalers in all four cities have a much higher mean volume than semi-wholesalers. Figures for Koutiala and Sikasso, however, show that the volume difference between semi-wholesalers and wholesalers is less there than it is for Bamako and Mopti. Given the smaller size of Sikasso and Koutiala, the lower volume difference is not unexpected. (See Appendix I for the complete volume analysis for each marketing year.)

Table 4.14. Mean Volume of Cereals Transacted by Type of Wholesaler by City in 1986/87 (Tons)

	Bamako	Mopti	Koutiala	Sikasso
Semi-Wholesaler	186	348	437	238
Standard Deviation	(152)	(218)	(298)	(478)
Wholesaler	2613	1736	1091	752
Standard Deviation	(1548)	(1607)	(445)	(745)
Semi-wholesaler volume as % of wholesaler volume	7%	20%	40%	32%

Source: CESA/MSU field surveys

The distribution of wholesalers and semi-wholesalers in a city also provides insights into the structure of a market. Table 4.15 presents a city-by-city breakdown of the percentage of semi-wholesalers and wholesalers in the population. This table shows that there are more semi-wholesalers than wholesales in all the sample cities. The fact that there are more semi-wholesalers than wholesalers

Table 4.15. Population Distribution by City and Type of Wholesaler, 1988

	Koutiala		Sikasso		Bamako		Mopti	
	N	%	N	%	N	%	N	%
Semi-Wholesaler	13	54%	15	75%	30	63%	17	74%
Wholesaler	11	46%	5	25%	18	37%	6	26%
Population	24	100%	20	100%	48	100%	23	100%

Source: CESA/MSU field surveys

does not come as a surprise. Many wholesalers sell to consumers and are thus considered semi-wholesalers. Also, as mentioned previously, it is easier to enter the market as a semi-wholesaler than as a wholesaler. The highest percentage of traders who are categorized as wholesalers is in Koutiala, followed by Bamako. Given the fact that Bamako is a large consuming center with strong demand for cereals in the form of cooperatives, NGO contracts, and combined employee cereals purchases, a wholesaler could sustain

himself without any retail sales.

Structural Differences Between the Wholesale and Semi-Wholesale Trade

Table 4.16 contrasts the storage practices between wholesalers and semi-wholesalers. The table shows that both types of wholesalers own storage at about the same frequency. The difference occurs, however, when we look at owned storage capacity and see that wholesalers have almost 3 times the capacity of semi-wholesalers. One wholesaler in Bamako has 25,000 tons of storage capacity, which would skew the mean upwards; therefore, this figure is excluded from the analysis.

The difference between the level of storage capacity between the two groups of wholesalers reflects the larger volume of trade undertaken by wholesalers in comparison to semi-wholesalers. When the volume of cereals trade decreases, the storage may be used for other things. When conducting informal interviews in the four cities, the researcher noted that regular business is conducted by many wholesalers and semi-wholesalers from the place of storage.

Looking at storage rental, one sees that about 70% of both groups rent storage versus 40% who own storage. Traders normally own and rent storage simultaneously, so that when quantity stored declines, rental can be discontinued. Overall, mean rental capacity is less than owned capacity, with wholesalers having a much larger rental capacity than that of semi-wholesalers.

Given the uncertainty in Malian cereals production and trade during the past five years, traders still seem to be cautious when investing in marketing-related facilities. It should be reiterated that wholesalers and semi-wholesalers do not store cereals for a long time. Marketing margins presented in a later chapter show that returns from long-term storage are very erratic in Mali. Returning to Table 4.16, it can be seen that 74% of semi-wholesalers (34/46) and 74% of wholesalers (14/19) store cereal for 1.5 weeks or less. This low figure may be a function of the uncertainty of the cereals trade and may be a residual practice from pre-liberalization days when cereals turnover had to be rapid to avoid detection. Sixteen percent of wholesalers and 13 percent of semi-wholesalers store cereal for more than 3 months, with the mean storage period being 4 weeks for wholesalers and 3 weeks for semi-wholesalers, respectively.

Table 4.16. Analysis of Storage Practices Between Wholesalers and Semi-Wholesalers in 1988

	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Own Storage	40%	41%
Mean Capacity (tons)	841 T	335 T
Standard Deviation	1595 T	789 T
Range	30 to 25,000 T*	60 to 3000 T
Rent Storage	74%	72%
Mean Capacity (tons)	220 T	66 T
Standard Deviation	338 T	54 T
Range	20 to 1000 T	20 to 350 T
<u>Length of Storage</u>	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Less than 1.5 weeks	14	34
2 to 8 weeks	2	6
12 to 26 weeks	3	6
N=65 (missing 17)		

Source: CESA/MSU field surveys

*This 25,000 ton figure is excluded from the analysis and means shown in this table.

Table 4.17 shows the employment practices of wholesalers and semi-wholesalers. Please note that more than one response was possible for this question. Wholesalers have larger staffs than do semi-wholesalers. Given the larger overall quantity traded by wholesalers, this finding is not unexpected. Approximately 80% of wholesalers and semi-wholesalers employ permanent personnel, and one may conclude that those without permanent personnel may be smaller volume traders or traders who may hire temporary personnel when the need arises.

Table 4.17. Employment Practices of Wholesalers and Semi-Wholesalers in 1988

	Wholesalers	Semi-wholesalers
Mean number of employees	4	2
Employ permanent personnel	81%	78%
Employ family	83%	67%
Hire other employees	47%	33%

Source: CESA/MSU field surveys

Given the importance of the family in Malian culture and trade, the high figure for family employment by traders is not surprising. The data indicate that most of the semi-wholesalers and wholesalers who employ family members employ them as intermediaries for cereal transactions. Table 4.17 shows that approximately half of the wholesalers and one-third of the semi-wholesalers employ non-family members in their business.

Although initial analysis showed a difference in financing by type of wholesaler, subsequent analysis showed that the differences are largely due to regional characteristics, which are correlated with the type of trader. An analysis of the mode of financing by region is presented later in this chapter. The financial structure for traders in all regions may be evolving towards greater availability of institutional financing, due to trader-targeted PRMC loans. Until the 1988/89 marketing season, these loans were designed more for large volume wholesalers,

situated in Bamako. In 1988/89, however, a special effort was made to expand the loan programs and a campaign was undertaken to disseminate loan information to all traders in Mali.

To conclude, findings from this section show that there are some structural differences between the marketing practices of wholesalers and semi-wholesalers, the most important being differences in volume traded, with wholesalers trading in much larger volumes of coarse grains. Wholesalers have more employees in their business than do semi-wholesalers. Wholesalers also have larger storage capacity than do semi-wholesalers, but the length of storage is about the same for both, with the modal value for both groups being 1 to 1.5 weeks.

Differences in Structure between Producing Area Wholesalers and Consuming-Area Wholesalers

A hypothesis which emerged after the 1988 survey and from analysis of the 1985/86 data is that a structural difference may exist between consuming-area wholesalers and producing-area wholesalers. Given the differences in population and economic conditions between the two regions, this hypothesis seems very plausible. However, there appear to be some basic market-related differences between Bamako and Mopti, so analysis for these two cities will be presented individually.

Table 4.18. Analysis of Storage Practices Between Wholesalers and Semi-wholesalers for 1988 Census, By Region and Type of Wholesaler

Producing Area:		
<u>Sikasso and Koutiala</u>	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Own Storage	14%	9%
Mean Capacity (tons)	30	60
Standard Deviation	only one case here	
Range	only one case here	
Rent Storage	100%	91%
Mean Capacity (tons)	72	48
Standard Deviation	66	27

<u>Bamako</u>	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Own Storage	71%	71%
Mean Capacity (tons)	943	362
Standard Deviation	1675	825
Range (tons)	45 to 25,000*	20 to 3000
Rent Storage	54%	54%
Mean Capacity (tons)	617	115
Standard Deviation	388	110

<u>Mopti</u>	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Own Storage	0%	5%
Capacity (tons)	0	only 1 case here
Standard Deviation	0	only 1 case here
Range	0	only 1 case here
Rent Storage	100%	94%
Mean Capacity (tons)	58	60
Standard Deviation	25	38

Source: CESA/MSU field surveys

Note: Mean storage figures for Bamako excludes the one trader who had 25,000 tons of storage.

Storage Practices

Storage capacity and storage access are crucial variables affecting regional cereals flow and cereals supply. Table 4.18 presents regional storage practices for the sample.

Table 4.18 shows that wholesalers and semi-wholesalers in Bamako are the most likely to own storage, with the mean owned storage capacity for both groups in Bamako being much higher than for the other 3 sample cities.

To present a representative mean for Bamako, the calculations for Bamako exclude the wholesaler who owned 25,000 tons of storage. Approximately half of the Bamako wholesalers and semi-wholesalers rent some storage as well, with the mean rental capacity being 617 tons for wholesalers and 115 tons for semi-wholesalers. Owned capacity for both types of traders is higher than the rental capacity figure. For Bamako, storage ownership appears to be a better investment than it does in the other regions. This may be a function of the increasing population and demand for space in Bamako putting upward pressure on rental prices, making storage ownership a better investment than rental. Greater ownership of storage may also explain the longer duration of storage for Bamako traders in comparison to those in other regions. The high mean capacity for both rented and owned storage in Bamako for the two classes of traders may reflect larger volume handled as well as a longer duration of

storage.

The unexpected finding in this analysis is the low incidence of storage ownership among wholesalers in Mopti. With Mopti being the disseminating center to the northern regions, one would expect greater storage ownership. Perhaps due to suspicion harbored by Mopti wholesalers, they may not have been totally open in their responses. The majority of semi-wholesalers and all of the wholesalers in Mopti claimed to rent storage, but the mean capacity of the rented storage was quite low, signifying either that the volume handled was quite low or that the turnover was very rapid.

For the producing zones of Koutiala and Sikasso, only one semi-wholesaler and one wholesaler claimed to own their storage, with the rest of the respondents renting storage facilities. This low incidence of storage ownership may reflect the general liquidity constraint facing the trade. The average mean rental capacity is higher for wholesalers than semi-wholesalers, and this is consistent with the hypothesis that wholesalers trade in larger volumes than semi-wholesalers.

Table 4.19 presents length of storage by region and type of wholesaler. The findings show that Bamako traders store cereals for the longest period of time, with wholesalers storing an average of eight weeks and semi-wholesalers storing an average of seven weeks; the large

standard deviations indicate the existence of some large outliers, skewing the mean value upwards. The findings from the length of storage in Bamako support the hypothesis that Bamako traders may have such a large storage capacity because they store cereal for a long time. One may also suggest that Bamako traders have a better financial base than do traders in the other areas, enabling them to store cereals for a long duration and perhaps take advantage of rising prices. Also, Bamako wholesalers may need more cereals on hand to serve large-scale clients. Many smaller volume traders have an immediate need for cash and cannot afford to store cereals for a period longer than one week.

An unexpected finding in this analysis is that Mopti wholesalers store for such a short time. As stated previously, with Mopti being the disseminating city for the northern regions, one would expect traders here to store for a longer period as well as have more storage capacity. However, the findings may indicate that cereals in Mopti are rapidly transported to the north, rather than staying in the city. Also, Mopti traders may have been suspicious of government intervention and not have responded truthfully to the storage questions.

Producing-area traders store cereals for less than 2 weeks, with wholesalers storing a mean length of 1.1 weeks and semi-wholesalers storing for 1.5 weeks. It can be concluded that in the producing regions, as in Mopti, the

Table 4.19. Length of Storage by Region and Type of Wholesaler, 1988

Producing Area:		
<u>Sikasso and Koutiala</u>	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Length of Storage		
1 to 1.5 weeks	7	9
2 to 2.5 weeks	0	2
Mean Storage (weeks)	1.1	1.5
Standard Deviation (weeks)	.55	.19
<u>Bamako</u>	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Length of Storage		
0 weeks	0	2
1 to 3 weeks	4	8
4 to 8 weeks	2	2
12 to 18 weeks	2	5
24 to 26 weeks	1	1
Mean Storage (weeks)	8	7
Standard Deviation (weeks)	7.4	8.6
<u>Mopti</u>	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Length of Storage		
0 weeks	0	0
Less than 1 week	0	1
1 to 1.5 weeks	5	16
Mean Storage (weeks)	1.2	1.1
Standard Deviation (weeks)	.3	.27

Source: CESA/MSU field surveys

cereals get sold quickly for regional consumption or get transported immediately to consuming areas.

Possession of Vehicle

It was initially hypothesized that producing-area wholesalers owned their own transport while consuming area wholesalers owned their storage. This hypothesis was partially refuted by findings from the Mopti analysis, which showed that no wholesalers in Mopti owned storage. Table 4.20 presents the distribution of vehicle ownership by region and type of wholesaler.

The results show that Bamako wholesalers have a greater tendency to own trucks than do wholesalers in the producing areas. This finding does not support the hypothesis that producing area wholesalers are more likely to own transport. Perhaps the structure is changing for wholesalers in both regions, because findings from the 1985/86 study support the hypothesis that producing area wholesalers are more likely to own transport, with 32% of Koutiala wholesalers and 18% of Sikasso wholesalers having done so.

Table 4.20. Percent of Traders Owning Their Own Vehicle by Region and Type of Wholesaler, 1988

	<u>Wholesalers</u>	<u>Semi-Wholesalers</u>
Producing Area	14%	0%
Bamako	21%	3%
Mopti	0%	0%

Source: CESA/MSU field surveys

Another explanation for the change in transport ownership may be due to the construction of our sample; some of the larger wholesalers were excluded from the sample in the 1985/86 Bamako study and these may be the better capitalized traders who invest more in marketing-related activities than those who were included in the sample. Also, not all the wholesalers in Koutiala and Sikasso participated in the 1988 study and the non-participants may be the better capitalized ones. Regardless of the cause for the findings, it is evident that Bamako wholesalers do own transport. This may suggest that some Bamako wholesalers either send their own trucks to producing areas for supplies or they transport cereals to other cereal-deficit regions.

Mode of Financing

This section will evaluate the hypothesis that a difference exists between the sources of financing available to producing-area traders and consuming area traders, with Bamako traders having easier access to a variety of financial programs.

Distribution of types of financing available in 1988 by region and type of wholesaler are presented in Table 4.21. The table points out the sharp contrast between the producing zones and Mopti with Bamako regarding outside financing. None of the wholesalers or semi-wholesalers in Koutiala, Mopti or Sikasso claimed to use use any type of

Table 4.21. Analysis of Financing Available by Region and Type of Wholesaler in 1988

<u>Producing Area</u>	<u>Wholesalers</u>	<u>Semi-wholesalers</u>
Use Own Capital	100%	100%
<u>If not, who are financers:</u>		
Borrow from bank	0%	0%
Borrow from family	0%	0%
Borrow from other traders	0%	0%
<u>Bamako</u>	<u>Wholesalers</u>	<u>Semi-wholesalers</u>
Use Own Capital	28%	20%
<u>If not, who are financers:</u>		
Borrow from bank	75%	29%
Borrow from family	25%	36%
Borrow from other traders	0%	36%
<u>Mopti</u>	<u>Wholesalers</u>	<u>Semi-wholesalers</u>
Use Own Capital	100%	100%
<u>If not, who are financers:</u>		
Borrow from bank	0%	0%
Borrow from family	0%	0%
Borrow from other traders	0%	0%

Source: CESA/MSU field surveys

outside financing, while most Bamako traders claimed to do so. However, many traders in Koutiala, Sikasso and Mopti buy cereals on credit.

The lack of outside financing reported for 1988 is not entirely consistent with findings from other research and with analysis presented earlier for 1986 (see Table 4.10), which showed that traders in Koutiala, Sikasso and Mopti borrow money to finance cereals purchases. Respondents may have misinterpreted the 1988 question on sources of financing, possibly thinking that it referred primarily to formal-sector financing, such as that offered under PRMC auspices.

Table 4.21 shows that both semi-wholesalers and wholesalers in Bamako use outside capital more frequently than their own revenue to conduct business. The majority of Bamako wholesalers utilize bank financing, with 29% of the semi-wholesalers also borrowing from the bank and the rest borrowing from family and other traders. The fact that the traders in Bamako finance a significant portion of their business with loans may explain the longer duration of storage in Bamako. Because they utilize other financing, they do not have the need to turn over stock as rapidly to recoup their investment. Rather, longer storage may enable them to capture price changes in the market so they can simultaneously repay their loan (with any interest) and still retain some profit due to the price change.

Bamako traders have access to financing from the bank. Formal credit facilities still appear underdeveloped in Koutiala, Sikasso and Mopti. A major problem in these cities is the lack of institutional credit programs. Until traders establish a credit record for themselves with institutional lenders, they may continue to be regarded as poor financial risks and have little credit recourse other than through the informal network of family and friends. Also, when traders utilize only their own capital for financing, they are less able to invest in long-term activities because they need to have a certain portion of liquid funds. Informal discussions with traders and data collected under a PRMC credit study support the hypothesis that traders have little access to bank credit. Another study by the author showed that the majority of Mopti wholesalers who use financing obtained the funds from family (24%) or from other traders (65%) (Mehta, 1988). It is hoped that the PRMC credit programs will ameliorate the credit situation for traders in Koutiala, Sikasso and Mopti.

Wholesalers in the producing zones bear a large part of the burden of financing the marketing of coarse grains. Because grain purchases are made on a cash basis in rural markets, producing-area traders must have access to financial resources to ensure the transfer of cereals to the consumption centers (Dembele, Dione and Staatz, 1986a).

Subsector Concentration at Wholesale Level

The level of concentration in a market provides insights into characteristics of the market such as barriers to entry, price formation and the existence of market leaders. The dimensions of market concentration are the number of sales made by individual firms within the market, the number of employees hired by each firm and the total assets of each firm in comparison to the other firms in the market. All three of these characteristics indicate individual firm size within the broader context of the market in question. Forces that increase concentration over time are scale economies and vertical integration, both of which allow the firm to lower costs, to utilize market power and endow it with even greater capacity to capture resources and expand. The forces that serve to decrease market concentration are market growth, legal restrictions and countervailing forces of power such as the emergence of producer cooperatives to offset the strength of traders (Caves, 1982).

This section will calculate the level of market concentration in Bamako by type of wholesale market and will present the volume of transactions by wholesale market.

An estimate of the total consumption of coarse grains from Bamako is derived from the calculations of the Tufts University/DNSI research team (Rogers and Lowdermilk, 1988) which estimated the annual coarse grains consumption at 64.4 kilos per person. Sixty-four kilos multiplied by the

800,000 population of Bamako yields an estimated annual consumption of 51,520 tons for Bamako. The volume handled by the CESA/MSU sample comprised 40,598 tons in 1986/87, or 79% of this total. However, the volume figures may be slightly misleading because semi-wholesalers sell to wholesalers and vice versa, leading to some double-counting in volume. Total OPAM sales of coarse grains in Bamako during 1986/87 was 3,903 tons, or 8% of estimated consumption. The estimated consumption of home-produced millet, sorghum and maize in Bamako is 4,888 tons, based on figures provided by Rogers and Lowdermilk (1988). (Appendix II presents the detailed calculations used to compute the annual home consumption value.) Adding the OPAM sales and the home consumption estimate to the CESA/MSU sales volume yields a total equal to 96% of the 51,520 ton annual coarse grains consumption for Bamako, leading one to conclude that the CESA/MSU sample volume captured a large percentage of the total wholesale market transactions.

Table 4.22 presents the concentration ratios for the Bamako wholesale market and shows that the "wholesaler of wholesalers" market may be more concentrated than was originally believed, with a small number of wholesalers controlling a large percentage of market sales. This was particularly true for the 1985/86 marketing year, when one wholesaler accounted for one quarter of total wholesale sales and four wholesalers made over half of total sales.

The year 1985/86 was an aberration, however, because OPAM was very active in the market and purchased large quantities on contract from traders. Both the CR1 and the CR4 ratios

Table 4.22. Concentration Ratios for Bamako Wholesale Coarse Grain Trade in 1986/87

<u>Ratios for Bamako Large-Scale Wholesalers</u>					
Marketing Year	Total Sales Volume	Total Sample	CR1 Ratio (%)	CR1 Number	CR4 Ratio (%)
1985/86 b)	29,014 T	13	26%	BBS18 a)	64%
1986/87 b)	34,280 T	13	15%	BBS18	52%
1987/88 c)	8,207 T	14	15%	BBS15	43%
<u>Ratios for Bamako Semi-Wholesalers</u>					
Marketing Year	Total Sales Volume	Total Sample	CR1 Ratio (%)	CR1 Number	CR4 Ratio (%)
1985/86	9,979 T	37	15%	BAN1 a)	38%
1986/87	6,318 T	34	10%	BAS10	29%
1987/88	3,513 T	39	10%	BAS6	29%
<u>Ratios for Bamako Wholesale Market</u>					
Marketing Year	Total Sales Volume	Total Sample	CR1 Ratio (%)	CR1 Number	CR4 Ratio (%)
1985/86	37,875 T	50	20%	BBS18 a)	49%
1986/87	40,598 T	47	13%	BBS18	38%
1987/88	11,720 T	53	11%	BBS15	42%

- a) Identification number of largest volume trader in this category.
 b) The marketing years run from November through October
 c) Data for this marketing year covers the period November 1987 though June 1988

Source: CESA/MSU field surveys

declined somewhat for the wholesale market between 1985 and 1988. However, the figures show some low-grade oligopolistic concentration, with four wholesalers accounting for approximately 40% of sample sales during the last three marketing years. The concentration ratios presented in the table, however, may overstate the degree of concentration because the entire wholesale population was not included in the calculation (see table 4.12).

The 1987/88 marketing season was the first one in which some of the larger companies participated. These companies consist of several large wholesalers pooling their finances, and may represent a formidable force in the grain market. The advent of the new companies may indicate that the cereals market is becoming more concentrated, but until complete volume data become available for this faction, one cannot make conclusive statements about this.

For semi-wholesalers, the Bamako market appears much less concentrated, with both the CR1 and the CR4 ratios being lower than for large-scale wholesalers. Again, the CR4 ratio is higher for the year 1985/86, perhaps due to the nature of the harvest and the OPAM buying campaign.

The overall wholesale market in Bamako, including both large-scale wholesalers and semi-wholesalers, appears slightly concentrated and this may be a function of the existence of a contractual market which serves to concentrate volume in the hands of a few. If two separate

markets do exist--the wholesale and the semi-wholesale market--can one, or a few, wholesaler(s) in either market drive prices up or down? It seems unlikely that this could occur in one market because volume leaders exist in both markets. Hence, the threat of the countervailing concentration in the opposing market would probably prevent traders in either market from being able to manipulate prices very much.

Large-scale wholesalers can, and do, enter the semi-wholesale market fairly easily, and cereals flow between the wholesale and semi-wholesale market in both directions. However, the large-scale wholesalers have access to the contractual market, which is difficult for most semi-wholesalers to penetrate because the large average volume of most contracts makes it difficult for semi-wholesalers to bid for them. Easier credit availability via the PRMC credit programs designed for small wholesalers and semi-wholesalers may remove this barrier to the contractual market, and OPAM's new policy of offering smaller-sized contracts may decrease market concentration. The tendency between the marketing years 1985/86 and 1987/88 does seem toward decreased concentration.

Barriers to Entry

Bruce Marion defines barriers to entry as anything that provides established sellers in a market an advantage over potential entrants (Marion, 1986). Five commonly recognized

barriers to entry are absolute cost advantages, economies of scale, high capital costs, product differentiation, and strategic behavior of incumbent firms to prevent market entry. This list is by no means exhaustive, and for developing countries, additional barriers can be identified. Barriers to entry in Mali stem from several things: government policy, family relations, licenses, and economies of size and capital.

When the sample respondents were asked to list the most important barrier to entry into the wholesale trade, the majority listed limited finance, with the second most important obstacle being uncertainty of demand and supply (Table 4.23). Capital is essential for volume expansion, investment in marketing activities and access to the contractual market. Usually, organizational contracts are for a stipulated amount. To supply, for example, 250 tons of millet, a wholesaler would have to have 11,250,000 CFAF (at 45 CFAF per kilo). Usually this is borrowed and paid back within the month. Wholesalers with little access to capital and minimal collateral are unable to borrow such a large sum.

Table 4.23. Barriers to Entry as Identified by the Wholesalers in the Sample 1985/86

	Koutiala	Sikasso	Bamako	Mopti	Total
<u>Most Important Barrier</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>	<u>N</u>
Limited Finance	2	4	6	0	12
Supply Uncertainty	7	3	1	5	16
Demand Uncertainty	-	-	4	8	12
Lack of Family Ties	-	1	2	3	6
Lack of Confidence	-	1	-	-	1
Administrative Process	-	-	2	-	2
Missing	-	1	9	3	13
Total	9	10	24	19	62
<u>Second Most Important Barrier</u>					
Limited Finance	6	-	2	1	9
Supply Uncertainty	-	3	1	3	7
Demand Uncertainty	-	1	5	5	11
Lack of Family Ties	3	3	2	5	13
Lack of Confidence	-	-	1	-	1
Missing	-	3	13	5	21
Total	9	10	24	19	62

Source: CESA/MSU field surveys

Smaller wholesalers without access to large contracts may be impeded in expanding marketing activities because their market volume may be insufficient to recoup the investment. By granting large contracts to a few, OPAM helped foster concentration in the wholesale trade. Beginning in the 1988/89 marketing year, OPAM initiated contracts of varying sizes for traders of large and medium capacity. Also, easier access to credit is enticing more

traders to bid for contracts. The marketing season 1988/89 brought forth 67 traders bidding for OPAM contracts. This is the highest number ever and could be due to the utilization of PRMC credit by semi-wholesalers and medium-sized wholesalers.

Until the 1988/89 marketing season, most of the OPAM contracts were not advertised, and information about their existence was transmitted via "inside channels." Consequently, many wholesalers were unaware of their existence, and large transactions were, again, concentrated amongst a few. OPAM maintained a list of the large traders and notification was sent when a contract was considered. Beginning with the 1988/89 marketing season, OPAM started advertising contracts on the radio with the intention of reaching a larger audience of traders.

Further exacerbating the capital problem is the fact that, like with OPAM and NGO contracts, loans available for traders are not advertised, so only those large wholesalers tapped into the banking system are aware of the existence of loans. A study done for the PRMC in September 1988 showed that 87% of Bamako wholesalers had heard of PRMC credit programs that were available for the 1987/88 marketing season, but only 33% of the Mopti sample wholesalers was aware of their existence (Mehta, 1988). For the 1988/89 season, the PRMC has made greater efforts to diffuse credit program information through the regional Chambers of

Commerce and the radio. Other non-institutional channels for credit do exist, usually in the form of borrowing from family, friends or other traders.

The barrier listed second to capital in Table 4.24 is uncertainty of supply and demand, some of which is due to government action. Changes in market supply resulting from the thinness of the market, erratic weather conditions and inconsistent governmental policy generate price instability. Faced with volatile prices and unpredictable supply conditions, many traders are unwilling to invest in marketing activities such as long-term storage. This reluctance to invest is perceived by the government as an inability of the private sector to meet national long-run cereals demand efficiently; and the government responds with revised policy, which serves to further increase the uncertainty perceived by traders.

The third barrier identified is lack of professional family ties. Wholesalers who have a family background in trade have easier access to capital, as well as a marketing network to tap. In Mali, as in many other developing countries, family links and connections are crucial to getting ahead. Sherman, Shapiro and Gilbert observe that although ethnic and family connections are not cited by traders in Burkina Faso as essential for success, it is easier to pursue a trade relationship with family or someone from the same region or ethnicity (Sherman, Shapiro and

Gilbert, 1986). Information impactedness is a problem in Mali, and having contacts in the right places is very advantageous. Established wholesalers have developed rapport with numerous intermediaries and colleagues.

The final two items mentioned under barriers to entry are lack of confidence and administrative procedures. The former refers to lack of confidence in trading partners (explaining the necessity of family ties for successful business dealings), and the latter refers to the fluctuating legal environment within which traders operate.

Mali has come a long way in recent years in reducing barriers to entry, with reforms in government and OPAM policies and expanded trader credit programs, but further steps need to be taken to promote more competition.

The license required to trade in cereals also represents a potential barrier to trade. Categories for licenses range from A1 to A7, with A1 representing a large wholesaler and A7 representing a retailer. To trade as a wholesaler, one must pay 481,250 CFAF for the license and show written financial records; without written records, the license fee for a wholesaler may be double this amount. The cost for a retail license is under 50,000 CFAF, and a semi-wholesale license costs between 50,000 CFAF and 481,250 CFAF, depending on the scale of activity. Classifications for import-export traders range between C1 and C5. A trader classified as C1, the smallest import-export category, would

pay 550,000 CFAF for his license, while those in classifications C2 to C5 are proportionally higher.¹

Wholesalers also are taxed at a rate of 15% of total monthly sales revenue. However, due to the absence of systematic bookkeeping, this tax may be applied arbitrarily. Therefore, it is related to the risk barrier.

This section has identified the barriers which impede entry into, and growth of, the private cereals trade. After finances, uncertainty seems to be the major item of concern for traders. Uncertainty, as they experience it, is manifested in different forms: i) supply and demand uncertainty, some of which results from inconsistent government action; ii) lack of security of contracts, as reflected by lack of confidence and lack of family ties; and iii) uncertainty about the administrative process. For liberalization to work, these facets of uncertainty need to be addressed by the government and the donors (PRMC). Loan programs to deal with the capital constraint are not enough by themselves to alleviate barriers to entry and expansion.

¹ The Malian government abolished the requirement of having import and export license in June, 1989.

CONCLUSION

This chapter has presented two snapshots of the structure of the wholesale coarse grains market from two different marketing years. Results from this analysis show that specialization has increased between 1985/86 and 1987/88. Specialization and time of market entry do not affect marketing structure to a great degree. Some differences do exist, however. Specialized traders were more apt to borrow money to purchase cereals and to carry out credit sales and purchases. Unspecialized traders were also more likely to engage in the cereals trade only seasonally, compared with the year-round participation of specialized traders. The structure of the trade appears to be more related to the city in which the wholesaler operates than any other stratification variable. Bamako wholesalers have access to a greater variety of financing for trade, they store cereals for a longer duration of time and have a higher propensity to own transport.

There also appear to be important structural differences between semi-wholesalers and wholesalers, the main difference being volume of cereals transacted. Consequently, the coarse grains market may be segmented into two groups, the "wholesalers of wholesalers," who transact in large volume, have easier access to the contractual market, and make no retail sales; and the semi-wholesalers, who transact in lower volumes and sell to retailers, other

semi-wholesalers and consumers. Given this dichotomy, the coarse grains market seems slightly concentrated, but concentration seemed to decline from 1985/86 through 1987/88. It remains to be seen what impact the advent of the new companies, comprised of several large wholesalers pooling finances, will have on market concentration.

Barriers to entry continue to constrict expansion of, and entry into, the wholesale trade. Access to financing appears to be the major barrier in the opinion of traders, encompassing access to credit, bidding for contracts and paying for the license to trade. Market uncertainty also poses a barrier, but this may be more difficult to tackle, given the thin market conditions and erratic weather in Mali. However, the government can attenuate market uncertainty by maintaining consistency in policy and encouraging producers and traders to expand their roles in the market.

CHAPTER FIVE
WHOLESALE CONDUCT

Market conduct can be defined as "a firm's policies toward its product market and toward the moves made by its rivals in that market" with regard to three major areas: i) setting prices; ii) setting product quality and other nonprice policies; and iii) seeking strategic advantage and deterring entry (Caves, 1982, p.48).

Wholesalers in Mali operate under a constant environment of risk and uncertainty. The structure of the market at this level appears somewhat concentrated, with a few large wholesalers having access to credit and large contracts. This chapter will examine the conduct of wholesalers within the context of the existing structure.

The following questions on the conduct of the Malian cereals wholesalers will be explored:

1. How are prices set? How is pricing information transmitted?
2. What are the methods for sharing risk?
3. How do wholesalers deal with the regulatory network?
4. Do they have knowledge of industry rules? How do they deal with economic control agents?
5. How did wholesalers enter into the cereals market?
6. What are the supply sources for wholesalers?
7. What techniques do wholesalers use to expand their

market share?

PRICE FORMATION

Prices have the following functions: information, allocation, rationing, mobilization and distribution (Meier, 1983). Prices synthesize a vast array of market information and signals, while providing insight into market conditions within a country and among its regions. However, the primary function of prices is the allocative function, which distributes scarce resources. In times of increasing demand in one sector, prices will rise in this sector and resources will be channeled to this sector from others.

Marion defines the role of prices as "the way in which, with no one in charge, the continuous process of allocating limited resources to meet unlimited wants occur" (Marion, 1986, p.69). Pricing systems have been classified by Marion into the following groups (based on the original strata of Breimyer): auction, private treaty, administered, and formula. The auction method of pricing is exemplified by commodity exchanges, where participants exchange commodities in loud voices, and is more prevalent in developed countries than in the third world. Private treaty, the second classification, predominates in developing countries and is the system where prices are privately negotiated between the buyer and the seller. This appears to be the method of price establishment for Malian cereals wholesalers, where the

supplier quotes the price and the wholesaler accepts it, haggles for a lower price, or rejects it in favor of another price.

Administered pricing is the third classification, with the seller, the buyer or a third party regulator announcing the non-negotiable price prior to the sale or purchase. This pricing scheme is typified by governmental price fixing, be it a floor price, ceiling price or a price band. The governments of many developing countries try to utilize administered pricing to curtail price hikes of commodities, especially of staple goods. Within marketing channels in the Malian wholesale sector, there historically existed a combination of administered pricing and price mark-up, particularly prior to liberalization. The last type of pricing system is formula pricing, in which the price in any given transaction is established on the basis of a mathematical formula that relates transaction price to one or more indicators of value (Marion, 1986). Formula pricing is rarely used in developing countries.

Pricing Techniques at the Malian Wholesaler Level

Prices in the Malian cereals market are based on private treaty, with supply and demand conditions determining the mark-up at each level in the subsector. However, at the outset of the CESA/MSU surveys, the range within which prices could legally fluctuate was established by the government.

This no longer holds since the decree of November 24, 1987, abolishing official prices for coarse grains. At the rural market level, prices seem to be based on market-day supply and demand conditions. The collector/buyer, acting as an agent for the wholesaler, arrives at the rural market with a pre-determined price ceiling for the producer/seller. However, if sufficient supplies are not available, he may contact his boss to increase the offer price at the rural market level.

Informal interviews conducted in March 1988 suggest that price fixing by collusion is difficult to undertake in Mali at the wholesale level. This hypothesis is supported by the formal survey of April/May 1986, in which the majority of respondents said that one or two individuals could not control prices. However, 28 survey respondents concurred that price leaders may exist, due to the existence of one or two wholesalers who trade in large quantities.

In the 1985/86 census survey, respondents stated that prices were dictated by market supply and demand conditions, with variations in either condition resulting in price fluctuations at all levels. This response from the formal survey was corroborated by the informal interviews conducted in 1988. Several wholesalers referred to the "prix du jour" in consuming regions as the basis for price formation. During the informal interviews, wholesalers stressed that if they wanted large quantities (to honor contracts), they would

have to pay higher prices at the rural market level.

Pricing Information

Information on prices within the different markets is essential to price formation. Most wholesalers have commission agents in supply regions and consuming regions who make sales and purchases on their behalf and provide weekly notification of price changes. The wholesalers interviewed informally in Koutiala and Sikasso reported that their network of agents provides them with sufficient information on prices for supply and demand as a basis for sales and purchase decisions.

During the formal one-shot surveys conducted in 1986, wholesalers were asked questions on the availability of information to assist in price formation. Tables 5.1 and 5.2 present the distribution of responses for price information availability at the sales and purchase levels.

The data reveal that the majority of wholesalers in the sample obtained pricing information about the consumer sales price in the market cities on a regular basis. A sizeable portion of Mopti wholesalers reported never obtaining information for consumer prices, maybe because Mopti wholesalers sell within their own cities and may not seek outside markets.

The breakdown by level of specialization sets forth an anomalous finding. Eighty-five percent of nonspecialized

wholesalers claimed to obtain information daily or weekly for consumer prices, while 66 percent of specialized wholesalers claimed to do the same. Given the existence of the strong network of specialized wholesalers, one would expect them to keep abreast of pricing information more consistently than nonspecialized wholesalers. This is expected, as representatives of Bamako wholesalers visit producing regions regularly. Koutiala and Sikasso wholesalers, or their collectors, purchase supplies from surrounding villages, so knowledge of supply price is necessary for purchase decisions. Turning to Table 5.2 for the distribution of supply price information, the data show that wholesalers also obtain information on supply prices on a regular basis. Once again, many Mopti wholesalers claimed not to be regularly informed on supply prices, which may reflect suspicion on their part towards the survey.¹ The majority of Bamako wholesalers acquired information at the supply level daily or weekly. This is expected, as representatives of Bamako wholesalers visit grain-surplus regions regularly. Koutiala and Sikasso wholesalers or their collectors, purchase supplies from surrounding villages, so knowledge of supply price is necessary for purchase decisions.

Analyzing the data in Table 5.2 by degree of

¹Subsequent interviews with wholesalers revealed that in the past, agents of the Office of Economic Affairs (the agency historically in charge of enforcing official prices), has sometimes posed as survey enumerators to obtain information from traders.

specialization, one sees that both the majority of specialized and nonspecialized wholesalers obtain supply level information at least weekly. Survey data lead to the conclusion that wholesalers have an adequate system for pricing information. Both specialized and nonspecialized wholesalers seem to be well informed on price movements in their habitual buying and selling locations.¹

Table 5.1. Frequency of Consumer Sales Price Information by City and Degree of Specialization in 1985/86

<u>City</u>	<u>Daily</u>	<u>Each Week</u>	<u>Rarely</u>	<u>Never</u>
Koutiala				
Specialized	1	3	0	0
Nonspecialized	2	3	0	0
Total	3	6	0	0
Sikasso				
Specialized	0	1	0	0
Nonspecialized	1	0	0	0
Total	1	1	0	0
Bamako				
Specialized	5	5	1	2
Nonspecialized	5	0	0	1
Total	10	5	1	3
Mopti				
Specialized	7	1	1	8
Nonspecialized	1	0	0	1
Total	8	1	1	9
Missing 11				

Source: CESA/MSU field surveys

¹ Ongoing research by OPAM's Market Information System (SIM) has revealed, that many traders desire improved price information on rural markets, perhaps to have a broader range of supply alternatives.

Table 5.2. Frequency of Price Information at Supply Level by City and Degree of Specialization in 1985/86

<u>City</u>	<u>Daily</u>	<u>Each Week</u>	<u>Rarely</u>	<u>Never</u>
Koutiala				
Specialized	0	4	0	0
Nonspecialized	4	1	0	0
Total	4	5	0	0
Sikasso				
Specialized	1	8	1	0
Nonspecialized	0	2	0	0
Total	1	10	1	0
Bamako				
Specialized	1	9	2	2
Nonspecialized	1	3	2	0
Total	2	12	4	2
Mopti				
Specialized	5	1	9	2
Nonspecialized	1	0	0	1
Total	6	1	9	3
Missing	0			

Source: CESA/MSU field surveys

REGULATORY SYSTEMS

Keeping informed on rules and regulations in the cereals market is crucial for Malian wholesalers, as the conditions change continuously. The main information source for the regulatory framework cited by sample respondents was other traders. The second most important source for

commerce/regulatory information was agents of the Bureau of Economic Affairs, the Malian agency which monitors the traders in the market--an interaction often characterized by mutual hostility. The third source cited for information on the regulatory system was the Chamber of Commerce, which implements programs to assist wholesalers (PRMC credit programs), maintains warehouses for cereals storage and maintains a permanent list of licensed cereal traders in Mali.

The Bureau of Economic Affairs was created before liberalization to monitor the market for all consumer goods and implement relevant governmental rules and regulations. Today, the Bureau of Economic Affairs maintains an active role in market monitoring and intervention. Although cereals trade is now legal, traders surveyed in 1985-88 alleged that agents of the Bureau of Economic Affairs still harassed them.

Traders dislike visits by Economic Affairs agents, who go to great lengths to disguise themselves, carrying out operations under anonymity. One cereal trader claims that agents of the Economic Affairs often masquerade as survey takers, thus making traders wary of surveys. Normally during a visit, economic agents will estimate the volume of transactions at the shop and check the accuracy of the scales. During times of fixed prices, agents were sent to various wholesale shops to purchase certain quantities of

cereal to determine whether the fixed price was respected. After observing a violation, the agent would return with a notice, at which time some sort of monetary exchange might take place. Traders allege that agents from the Economic Affairs sometimes interfere even when a violation has not occurred. One Sikasso wholesaler interviewed informally in 1988 said that local wholesalers were perpetually harassed by an agent from Economic Affairs and a large pool of contributions finally stopped the harassment.

Agents from Economic Affairs assess fines on wholesalers for a variety of offenses, ranging from use of inaccurate scales to deviation from the official price. Table 5.3 summarizes the frequency of fines paid by city and level of specialization. Note that the interval measurements are crude and difficult to quantify.

The data reveal that Bamako and Mopti wholesalers were more likely to pay fines than are Koutiala and Sikasso wholesalers, with 10 Bamako respondents (50% of the total) and 11 Mopti respondents (62% of the total) claiming to pay fines at least from time to time. This appears to correspond with the larger volumes handled in these two cities. Specialized wholesalers paid fines at a greater frequency than do nonspecialized traders, with 20 out of 47 specialized wholesalers (43 percent) claiming to pay fines from time to time or often. Five out of 15 nonspecialized wholesalers (33 percent) paid fines from time to time or

often. This latter finding was expected, as specialized wholesalers consistently deal in larger quantities, which may increase their interaction with agents from Economic Affairs.

Table 5.3. Frequency of Fines Paid, by City and Specialization, in 1985/86

	<u>Koutiala</u>	<u>Sikasso</u>	<u>Bamako</u>	<u>Mopti</u>	<u>Total</u>
Never					
Specialized	2	5	5	5	17
Nonspecialized	2	0	1	0	3
Total	4	5	6	5	20
Rarely					
Specialized	1	3	1	5	10
Nonspecialized	2	2	3	0	7
Total	3	5	4	5	17
Time To Time					
Specialized	1	0	6	8	15
Nonspecialized	1	0	2	2	5
Total	2	0	8	10	20
Often					
Specialized	0	2	2	1	5
Nonspecialized	0	0	0	0	0
Total	0	2	2	1	5
Total	<u>9</u>	<u>12</u>	<u>20</u>	<u>21</u>	<u>62</u>
Missing	0				

Source: CESA/MSU field surveys

Table 5.4 presents the frequency of making an arrangement with an agent of Economic Affairs to avoid paying an official fine. Such "arrangements" involve payments directly to the agent. Arrangements are "under the table" and a receipt is not given. Fifty percent of Sikasso

wholesalers responded that they make arrangements often or always with agents; a fairly high percentage, which may indicate that the cost of an arrangement is low in Sikasso.

Forty-four percent of Koutiala wholesalers reported making arrangements with economic agents at least from time to time, while 42 percent of Bamako wholesalers (8 out of 19) said they enter into some type of arrangement with agents of economic affairs from time to time or more frequently. Only 2 out of 19 Mopti wholesalers admitted making an arrangement; it is possible that Mopti wholesalers were more suspicious of this question and may not have responded truthfully.

Analysis of Table 5.4 by level of specialization indicates that more specialized wholesalers claimed to never enter into an arrangement in comparison to nonspecialized wholesalers. A possible explanation for this difference may be the better information network available to specialized wholesalers which keeps them informed on major changes, and for minor infractions, they pay the stipulated fine. Once again, the data should be judged with caution as the sensitive nature of this question may have influenced respondents to be not entirely truthful.

Table 5.4. Frequency of "Arrangements" with Agents from Economic Affairs, by City and Degree of Specialization, in 1985/86

	<u>Koutiala</u>	<u>Sikasso</u>	<u>Bamako</u>	<u>Mopti</u>	<u>Total</u>
Never					
Specialized	3	3	4	15	25
Nonspecialized	1	0	2	2	5
Total	4	3	6	17	30
Rarely					
Specialized	0	1	4	0	5
Nonspecialized	1	2	1	0	4
Total	1	3	5	0	9
Time to Time					
Specialized	1	0	4	2	7
Nonspecialized	0	0	2	0	2
Total	1	0	6	2	9
Often					
Specialized	0	5	2	0	7
Nonspecialized	1	0	0	0	1
Total	1	5	2	0	8
Always					
Specialized	0	1	0	0	1
Nonspecialized	2	0	0	0	2
Total	<u>2</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>3</u>
Total	9	12	19	19	59
Missing 3					

Source: CESA/MSU Field Surveys

In the 1986 survey, respondents were asked the cost of the last fine from the Bureau of Economic Affairs. The average cost for a fine is summarized in the Table 5.5.

Fines are different from arrangements because they are legal and a receipt is provided. The range for fines was large, between 5,000 CFAF and 130,000 CFAF. Bamako wholesalers, followed by those in Mopti, paid the most on

average per fine, and this may be due to the larger volume of cereals they trade. Because all survey respondents did not pay a fine, the number of missing responses for this question was high, with 23 non-responses. Specialized wholesalers paid more on average than nonspecialized traders, and this may be correlated with larger transactions and year-round market participation.

Table 5.6 shows that, as for fines, Bamako traders pay the most for an arrangement. As noted, Bamako wholesalers trade in large volumes, making them more conspicuous. Sikasso and Koutiala have a lower mean amount, perhaps because they do not trade in large volumes of cereal. However, recall that 50% of Sikasso wholesalers claim to make arrangements often or always with economic agents, so the low mean value for an arrangement demonstrates that arrangements are common but amounts are low. The data for Mopti indicates that only 1 trader divulged the cost for an arrangement and may mean that Mopti traders did not respond truthfully to this question.

Comparing the mean cost of a fine with the mean cost of an arrangement, the lure of arrangements becomes apparent. In all four cities, the mean value of a fine was much higher than the cost of an arrangement. Overall, the modal value of an under-the-table arrangement was 37.5% of that of a fine.

Table 5.5. Mean Cost for Fine, by City and Specialization (in CFAF), in 1985/86

<u>City</u>	<u>Minimum</u>	<u>Mean Amount</u>	<u>S.D.</u>	<u>Maximum</u>
Koutiala	10,000	17,500	10,606	25,000
Sikasso	12,500	14,375	1,250	15,000
Bamako	5,000	41,300	48,266	130,000
Mopti	10,000	21,250	12,349	45,000
Specialized		32,571		
Nonspecialized		15,555		
Mode		20,000		
N=37				

Source: CESA/MSU field surveys

Traders complain that even though they comply with regulations and their scales are in order, visits from agents of Economic Affairs continue and may represent the most serious form of rent-seeking harassment they have to deal with. Rather than contest the accusations and risk being shut down, many pay the necessary amount to continue operations.

Table 5.6. Mean Amount of Cost for an "Arrangement," by City and Degree of Specialization (CFAF), in 1985/86

<u>City</u>	<u>Minimum</u>	<u>Mean Amount</u>	<u>S.D.</u>	<u>Maximum</u>
Koutiala	5,000	5,000	5,000	10,000
Sikasso	3,500	4,125	629	5,000
Bamako	6,500	10,692	19,498	65,000
Mopti	0	15,000	0	15,000
Specialized		5,960		
Nonspecialized		3,318		
Mode		7,500		
N=40				

Source: CESA/MSU field surveys

SOURCES OF INFORMATION ON LIBERALIZATION

For policy purposes, an interesting question is how wholesalers perceive the fairly recent market liberalization. Specifically, this section looks at wholesalers' perception in 1986 of:

1. Whether the cereals trade improved as a result of the liberalization.
2. What the benefits of liberalization are.
3. What, if any, constraints still exist for wholesalers.
4. How the constraints identified by wholesalers can be relaxed.

The majority of wholesalers surveyed in 1986 were informed about the liberalization of the cereals market by other wholesalers and by market participants. The advantages of liberalization as identified by survey respondents were no roadblocks, more secure supply sources and lower transaction costs for sales. Respondents also felt that consumers benefited from liberalization via lower prices and a more reliable supply. Based on these responses, one can surmise that wholesalers feel that liberalization has improved the operation of the cereals market from the supply source to the final consumer.

The main problems in cereals trade as identified by respondents stemmed primarily from financial constraints.

As noted in Chapter 4, finances constrain many traders from expanding their operation and taking advantage of anticipated opportunities. Insufficient capital was identified as a major problem along with high taxes, high storage costs, transport costs and slow turnover of cereals. Several respondents claimed that there are still too many economic controls in the market, which impede growth.

Given the problems identified by wholesalers in the 1986 survey, the main solution offered by respondents to alleviate problems in cereals trade was easier access to credit. Twenty-nine out of 56 respondents named this as the first solution. After credit, other suggestions to ameliorate cereals trade were reduction of economic controls, reduction of taxes, liberalization of exports, exclusion of irregular traders, improvement of roads, and abolition of state intervention in the cereals market.

This brief overview of the impact of liberalization as perceived by wholesalers provides some useful suggestions for government and donor intervention in the cereals market. Access to financing appears to be a pressing need, some of which during the past few years has been filled by the multi-donor PRMC group in the form of funds earmarked for trader purchases of cereals. However, more financing may be needed to fulfill the credit demand as identified by wholesalers. Traders' high storage costs and transport costs may also be lowered by designated credit programs,

albeit at some cost to the agencies sponsoring the credit programs. The role for the government as expressed by the wholesalers in this survey should continue to change from direct buying, selling and pricesetting to providing "public goods" such as improved roads and information. Traders were particularly interested in obtaining information on improved storage techniques.

METHOD OF ENTRY INTO CEREALS TRADE

Given the relatively new phenomenon of market liberalization in Mali, the question arises, how do wholesalers enter cereals trade? Is it easy to become a cereals wholesaler?

In the 1986 survey, 31 percent of specialized wholesalers entered the cereals trade because their families were already active in the market. Thirty-eight percent of specialized wholesalers entered cereals wholesaling via some other position in the cereals network, such as working first as an independent assembler, a retailer or an assembler commission agent. Family ties and previous experience in the cereal market may endow a new entrant with easier access to the market network. One may also conclude that access to this network may lower entry costs.

Thirty percent of nonspecialized wholesalers were drawn into cereals trade indirectly while trading in other products. The second most common mode of entry into the

cereals trade by nonspecialized wholesalers was working first as an independent assembler. In both cases, these respondents were still active in their primary specified profession and dealt in the wholesale cereals trade on a part-time basis.

Sixty-five percent of survey participants concluded that there is freedom of entry into the cereals market, with most respondents believing that liberalization opened up entry into cereals trade.

STORAGE PRACTICES

Use of Phytosanitary Treatment in Storage Places

Use of improved storage practices is an important facet of the marketing system to reduce storage losses. Many cereals market analysts believe that Malian traders rarely use either phytosanitary treatments for grain or other improvements in their warehouses.

A one-shot survey undertaken in March 1986 asked respondents whether they utilized any type of grain treatment in their warehouses. Unexpectedly, many wholesalers claimed to use DDT, other insecticides, raticides or fungicides in their storage places to control for destruction by pests. Treatment was used on millet and sorghum, but not for corn. However, the frequency of use and the dosage levels are not available.

Sikasso and Koutiala wholesalers showed a greater

propensity to use such treatments than did wholesalers from the other two cities. The turnover of grain by wholesalers is so rapid for Koutiala and Sikasso that one would not expect them to use such treatments. Thirty-one percent of the wholesalers in Mopti claimed to use some type of treatment for stored sorghum, while none treated stored millet. Thirty-two percent of Bamako wholesalers used some type of treatment for millet, while none treated sorghum. Every Koutiala wholesaler interviewed claimed to use some type of treatment for both sorghum and millet. Sikasso wholesalers opted to treat stored sorghum versus millet perhaps because millet stores better than sorghum (Dioné, 1989, p. 132), with every respondent claiming to use some type of treatment on stored sorghum. The predilection of Sikasso and Koutiala wholesalers to utilize treatment for their storage places may be necessitated by the humid climate. Mopti and Bamako are located in drier areas, which may take a lower toll on stored commodities. The storage places in Bamako and Mopti may also be better constructed than those in Koutiala and Sikasso, making the use of treatment less imperative.

The important finding from this analysis on storage practices is that traders are aware of the need for treatment in their warehouses. This is a first step towards reducing losses from storage. The next step is for policy-makers and technicians to advise traders on dosage levels

and the frequency of fumigation; simply using treatment is not enough. Traders should also receive advice on the health risks involved with the use of fumigation, both for themselves and for the consumers.

CONCLUSION

This chapter has shown that most traders have an adequate information network on prices, in their habitual buying and selling locations, which is provided by agents who travel to supply markets and consumer markets on a regular basis. Information on the regulatory environment may be more difficult to obtain, particularly for new entrants without market contacts, as the most important source for regulatory information cited by sample respondents was other traders. Two agencies, the Chamber of Commerce and the Bureau of Economic Affairs, were also listed as sources of regulatory information. However, the relationship between the Bureau of Economic Affairs and traders is often antagonistic.

Bamako and Mopti traders claimed to pay fines at a greater frequency than traders in Koutiala and Sikasso, which may be a function of the volume of cereals transacted. The mean cost for fines is also higher in Bamako and Mopti. Specialized traders claimed to pay fines at a greater frequency than non-specialized traders, with the mean cost for a fine being higher for specialized traders.

Under-the-table arrangements with Economic Affairs agents seem to be common, especially in Sikasso and Bamako. The mean cost for such an arrangement is much less than that for a fine, explaining the attractiveness of these arrangements.

Analysis presented in this chapter also showed that many traders entered cereals trade via family ties in the cereals trade or via another position in the cereals network. Most wholesalers feel that liberalization has been very positive and has improved the operation of the cereals market.

CHAPTER SIX

PERFORMANCE OF THE WHOLESALE CEREALS MARKET

Market performance is defined as "the economic results that flow from the industry as an aggregate of firms" (Sosnick, 1964, p. 82). The principal aspects of market performance include profits, scale and utilization of plants and firms, sales promotion costs, character of the product and progressiveness. Profits are an important gauge of market performance as chronically high profits may be associated with a monopolistic market structure coupled with high concentration and high barriers to entry.

The preceding list applies more to industrialized countries than to the developing world. One aspect of the profit dimension as extrapolated by Sosnick which is applicable to the developing world is exchange efficiency. Exchange efficiency in Sosnick's definition consists of six aspects. First, transportation costs should not be continuously excessive. Second, economical facilities should exist at assembly points. Third, price formation and the pairing of buyers and sellers should not be unreasonably costly. Fourth, price flexibility should not generate costly search for information, needless livelihoods for speculation or inefficient accommodation to uncertainty. Fifth, prices should be high enough to avoid excessive demand and low enough to avoid undesired inventory

accumulation. Sixth, for a set of prospective buyers and sellers at an assembly point, the ratio of actual to potential gains from trade should be maximized. In a nutshell, exchange efficiency identifies the relationship between market costs and market prices and the ways to reduce costs to lower prices. Prices can be lowered by an effective transportation network; by vertical integration and coordination to reduce transaction costs and information costs; and by provision of marketing-related facilities, such as a system of weights and measures and proper infrastructure. To reflect good performance, prices should not be higher than the accumulated costs incurred at each level in the market combined with a normal profit.

In light of the preceding definition of good performance, the tools frequently used to measure performance in the marketing chain are price correlations between regions and marketing margins, which reflect price changes based on movement between periods or regions. Barbara Harriss describes those measures of market performance as follows: "Market performance represents the relationship between distributive margins and the costs of production of marketing services. In particular, time series data are used to measure the degree of competition in marketing systems" (Barbara Harriss, 1979, p. 198). Harriss, a strong critic of the structure-conduct-performance paradigm, disputes the notion of measuring

performance on the strength of correlation coefficients and marketing margins. However, an infallible performance measure does not exist and an imperfect measure is better than none.

This chapter will begin with background on price information and the important role prices play in the market. Then, the incidence of market integration based on price correlations in Mali will be analyzed and explained. Marketing margins will be presented next, with a brief description of the cost elements used for their calculation.

THE ROLE OF PRICES

Price relationships are used to measure the degree of integration which occurs across markets at a given time. In order for good market integration to exist, goods must flow freely between regions and between markets, which tends to link price changes over space.

Prices integrate the information about future crops and alternative supplies, demand pressures, and storage costs to allocate the supplies currently on hand to present and future periods. At the same time, the temporal pattern of prices established, or the price expectations formed, signal producers, consumers, and the suppliers of storage as to the opportunity costs of their production, consumption, and storage decisions... Price analysis is an indirect approach for determining market efficiency. Efficient marketing systems are characterized by a high degree of price integration--closely correlated movements of connected series of prices--over space, form, and time. However, expectations about future price levels are an important ingredient in price formation (Timmer, Falcon and Pearson, 1983, p. 155, p.170).

Adjustments in market supply and demand conditions or changes in some aspect of the cost structure are reflected in the price of the commodity in question.

This chapter will utilize monthly wholesale and rural market prices to measure market performance calculating price correlations and marketing margins in the four survey cities.

Price Variability

Stiglitz and Newbery identify several factors which cause price variability (Newbery and Stiglitz, 1981). First is demand variability, which stems from income variability and variability in the price of other commodities. Based on informal observation, one can surmise that demand variability stemming from unstable income is fairly important, at least in the short run, in Malian grain price variation. Unstable income has played a role in the Malian macro economic situation, with the majority of governmental employees experiencing a delay in salary payment of two months or more since 1987.

Demand variability based on price changes among coarse grains may occur less frequently than income variability, and may be manifested in the substitution of one grain for another. Substitution between coarse grains and rice occurs in periods of acute shortage, such as when rice imports were blocked in 1988, or when domestic rice production is low and

not offset by increased imports. On the demand side, the situation appears more constant than the supply side, however, and one may conclude that Malian grain demand increases roughly at the same rate as population growth, estimated at just under 3 percent per year (USAID Program Paper, 1987).

The second source that may influence prices is supply variability, which is the main determinant of cereal price fluctuations in Mali. The erratic rainfall of the Sahel poses many problems for production. The southern regions where the sample cities are located receive adequate rainfall, but with high variation between years. A study done by Karen Levine for the World Bank using regression analysis found that rainfall is a significant determinant of coarse grains production at the 1% confidence level; in a simple regression, rainfall accounted for 50% of the variation in millet/sorghum production from 1961/62-1980/81 (Levine, 1983).

The final source of price variability is market intervention by arbitrageurs and the government. Arbitrageurs are market agents who aim to make a profit in the market by buying low and selling high. Armed with information on production and supply and demand conditions, these agents attempt to move the product from low to high price areas. For staple crops in developing countries such as Mali, these agents may improve market integration,

increasing price variability in some markets, but dampening price fluctuations in others and reducing price differences across markets. Intervention by the public sector in Mali has also caused some price variability. First, the special prices for cereals which used to be provided to civil servants and other select groups by the government removed this group from the market, segmenting the market and perhaps resulting in higher market prices than would have been the case if this group had been included in the market. Second, governmental entry into the market to purchase cereals for security stocks reduces the supply of cereal available in the market and may result in higher market prices. However, the main source of price variability due to government action appears to be the unpredictability of those actions.

There are, however, other important factors that affect marketed supply variability for cereals besides rainfall. Since less than 20% of total production is marketed, the situation at the producer level determines the total amount of marketed supply. Even in years of good harvests, producers may not increase sales, preferring to sell only after their on-farm stocks are amply filled to provide for two years of food security. D'Agostino identifies another factor that may affect marketed supply. She shows that farmers sell cereals primarily when they need money--for tax payment or to finance celebrations, such as weddings

(D'Agostino, 1988).

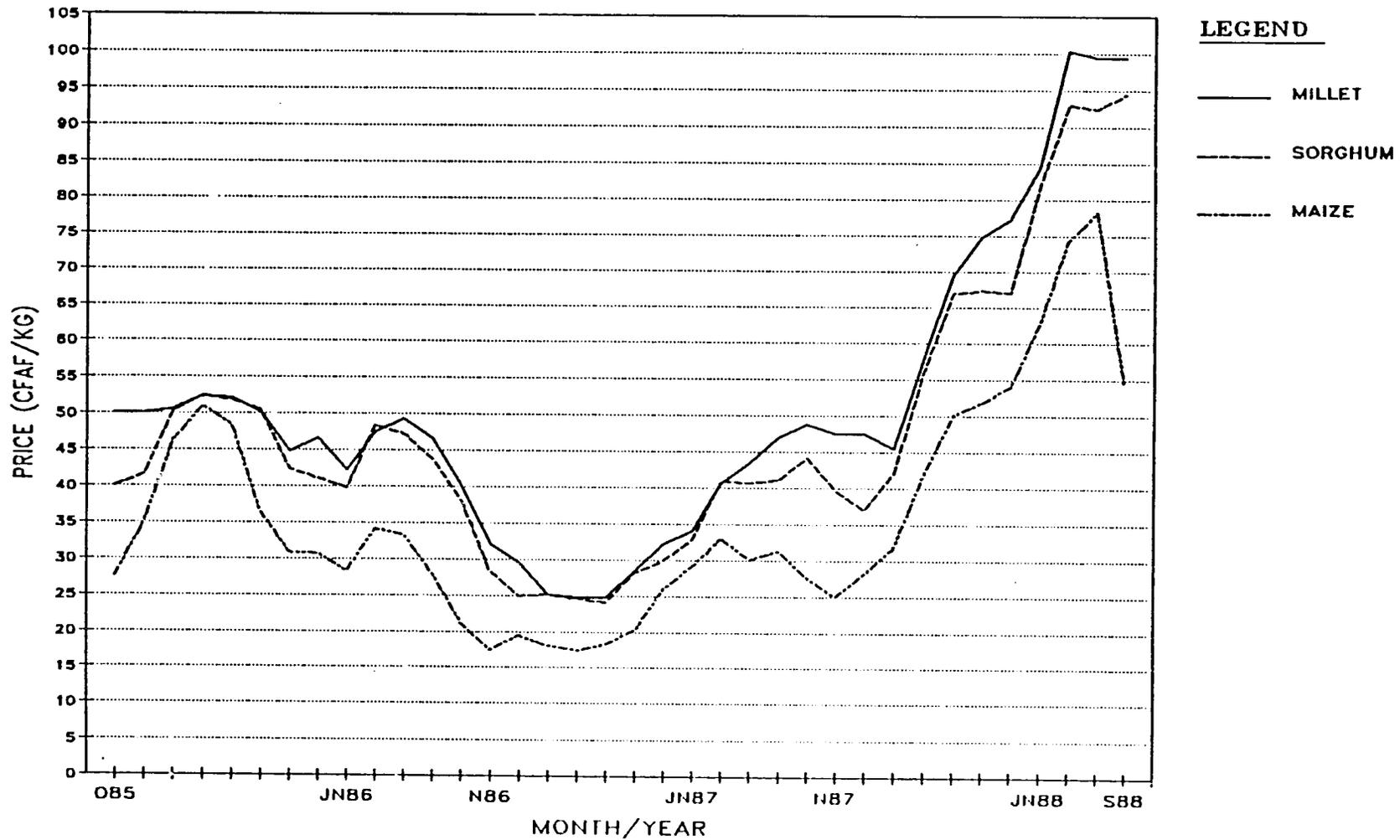
This section has briefly discussed sources of price fluctuations in the cereals market. The discontinuation of the Malian government's policy of supplying civil servants and the army with below-market price cereals removes one source of price variability. However, the root causes of price variability in Mali (erratic rainfall and insufficient marketed surplus) continue unabated and prove to be a formidable challenge for producers, traders and the government alike. Figure 6.1 presents a graphical portrayal of price variability in Mali.

Given this introduction to price variability in Mali, the next section will investigate market integration based on price correlation.

MARKET INTEGRATION

Price correlations between cities reveal the percentage of price changes in one city that is associated with price changes in another city. In an efficiently operating market, absolute price differences between cities will reflect only transportation, processing costs, and other transfer costs. Cities well connected by transport and communication are likely to be well integrated if markets are competitive and information is adequate. Information impactedness, the existence of uncertainty and poor public infrastructure contribute to pricing inefficiency over

Figure 6.1
**PRODUCER PRICES FOR COARSE GRAINS
 IN A MAJOR RURAL MARKET IN SOUTH-CMDT, MALI
 (OCTOBER 1985 - SEPTEMBER 1988)**



SOURCE: CESA/MSU -- NOTE: Prices are for the village of Zangosso

space. Timmer, Falcon and Pearson stress that price analysis is an indirect approach to measuring market efficiency. Prices in all integrated markets are linked by the arbitraging decisions of merchants, and price differentials should reflect only normal transfer costs (Timmer, Falcon and Pearson, 1983). To calculate price correlations, reliable time series data are needed. Low correlation coefficients indicate that the markets are poorly connected by actual movements of commodities from one town to another (Ibid).

The wholesale price data used for the analysis in this section were collected monthly from October 1985 through June 1988. Prices for Sikasso, Koutiala and Mopti were collected by the same enumerator, while two enumerators collected price data in Bamako. Some error may be introduced because prices were not collected on the same day each month.

In Table 6.1, the correlation coefficients for millet, sorghum and maize are presented. The analysis for millet shows that coefficients are strong overall, with those between Sikasso and the other cities being the lowest, possibly indicating that Sikasso may trade less with cities other than Koutiala. The coefficients between Koutiala and Bamako and Koutiala and Mopti are very high, suggesting that Koutiala may be the supply source for these two cities. The correlation coefficients between Mopti and Koutiala are the

highest because Mopti receives a majority of its cereal from Koutiala and the two are linked by good roads. Bamako is located on the fringe of a producing zone so it may obtain a smaller percentage of total supply from Koutiala, explaining the lower correlation coefficient.

Table 6.1. Bivariate Correlations of Wholesale Coarse Grain Prices Between Selected Cities, October 1985-June 1988

<u>MILLET</u>				
	Koutiala	Mopti	Sikasso	Bamako
Mopti	.95	1.00		
Sikasso	.94	.89	1.00	
Bamako	.94	.91	.90	1.00
<u>SORGHUM</u>				
	Koutiala	Mopti	Sikasso	Bamako
Mopti	.92	1.00		
Sikasso	.96	.87	1.00	
Bamako	.93	.88	.91	1.00
<u>MAIZE</u>				
	Koutiala	Mopti	Sikasso	Bamako
Mopti	.74	1.00		
Sikasso	.93	.79	1.00	
Bamako	.76	.73	.84	1.00

The square of the correlation coefficient represents the percentage of price variation in market A which is

associated with price variation in market B. Between Koutiala and Mopti, 90% of the price variation in either market is associated with price variation in the corresponding market for millet. However, between Sikasso and Mopti, the association between price variability is 79%.

For sorghum, the correlation coefficient between Koutiala and Sikasso, .96, is higher than that for millet, perhaps because the sorghum market is not as thin as the millet market (Dione, 1987). Between Sikasso and Bamako, the coefficients indicate that 83% of the price variation for sorghum in one market is associated with variation in the other market, while the association of price variability between Koutiala and Bamako is .86, and that between Koutiala and Mopti is .85. However, the association between price variability for sorghum, like that for millet, between Sikasso and Mopti is lower, at .76, and that between Mopti and Bamako is slightly higher, at .77.

Coefficients presented for maize in Table 6.1 show that of the three coarse grains, the market for maize is the poorest integrated. This may be due to the low proportion of total production, 2.5%, that is marketed (Dione, 1989, p. 131). The highest association for price variability between markets for maize, as for sorghum, is between Koutiala and Sikasso, with an association of 86%. The lowest association is between Mopti and Bamako at 53%, followed by the

association in price variability between Mopti and Koutiala at 55%.

MARKETING MARGINS

Tomek and Robinson define marketing margins as "the difference between the price received by producers and that paid by consumers, and the price of a collection of marketing services which is the outcome of the demand for and the supply of such services" (Tomek and Robinson, 1972, p.119). Three types of marketing margins exist. Spatial marketing margins refer to price margins between locations and include transport costs, storage costs and any commissions or other transfer costs. In an integrated, competitive market, the price differential between two cities should not be greater than the sum of these transfer costs. Temporal margins refer to price differences over time. In a well operating, competitive market, the price change between month A and month B should not be greater than the related storage costs. There is also a margin with respect to changes in form--the price differential between the raw and the processed product.

Marketing costs in Mali include transport cost, storage cost and ownership/transfer commissions for agents, including risk charges, loading and unloading the produce, the cost of the bag, risk premiums, taxes, losses on bad debts, fines and bribes, personnel costs, business overhead costs, the license fee, the cost of capital and physical

losses.

Costs not included in the following calculations due to lack of data include: risk premiums, taxes, losses on bad debts, fines and bribes, personnel costs (beyond the cost of warehouse guards), business overhead costs and the license cost. Hence, the margins calculated below overestimate to some degree the true level of traders' returns. Storage costs include the cost for storage rental or the comparable rental fee for owned storage, the cost for a guard, the cost of capital tied up in inventory, the cost for storage treatment, insecticide, raticide or other fumigation, and physical losses. Dembele, Dione and Staatz estimate the unofficial opportunity cost of capital at 30% per year, and this is used for the analysis, with an 18% rate also used for comparison (Dembele, Dione and Staatz, 1986b).

Table 6.2 presents a breakdown of the monthly cost of storage of coarse grain per kilogram by city. The purchase price used for each city is the per kilo price for March 1986. The assumption is made that total storage capacity is used. For the calculation of phytosanitary treatment cost, an average cost over all locations is used. The data for these costs were obtained from trader surveys conducted in 1986.

Table 6.2. Monthly Costs of Storage of Millet (in CFAF/kg) Based on Average Storage Capacity for the Month of March 1986, and a 30% Annual Interest Rate

<u>Koutiala</u>		<u>Bamako</u>	
Rental/Guard	0.14	Rental/Guard	0.36
Treatment	0.65	Treatment	0.65
Capital Cost	1.38	Capital Cost	1.80
Losses	<u>.23</u>	Losses	<u>.30</u>
Total Costs	2.40	Total Costs	3.11
<u>Sikasso</u>		<u>Mopti</u>	
Rental/Guard	0.22	Rental/Guard	0.16
Treatment	0.65	Treatment	0.65
Capital Cost	1.55	Capital Cost	1.63
Losses	<u>.26</u>	Losses	<u>.27</u>
Total Costs	2.68	Total Costs	2.71

Looking at the cost table, we see that Bamako has the highest cost structure, followed by Mopti. Koutiala has the lowest cost, followed by Sikasso. The high monthly storage cost for Bamako is partly explained by the high rental cost for storage. Sikasso also has a high rental cost, while Koutiala's rental cost is the lowest among the four sample cities. Bamako and Mopti have the highest annual capital cost and annual loss estimates because they have the highest purchase prices.

Temporal Margins

Table 6.3 shows the lagged temporal margins by city for millet adjusted for storage costs, using the assumption that

Table 6.3

Lagged Temporal Margins for Millet Adjusted by Storage Costs 1985-88,
(CFAF/kg)

	Koutiala	Sikasso	Bamako	Mopti
1985 December	10.16	7.24	9.93	0.61
1986 January	8.27	7.27	10.13	1.31
February	6.93	8.75	12.07	-0.62
March	3.14	10.08	7.05	1.64
April	-0.69	8.63	-1.08	0.54
May	10.20	0.52	7.62	0.04
June	9.71	11.02	2.83	4.39
July	20.65	10.21	11.60	11.68
August	10.88	7.46	7.23	2.20
September	-6.00	14.12	11.25	-5.71
October	-3.00	-5.07	-1.37	-8.74
November	-2.53	8.77	-4.59	-6.15
December	10.94	7.26	4.77	2.41
1987 January	4.58	4.36	3.56	-0.62
February	5.87	5.10	7.07	2.98
March	11.69	7.24	7.56	5.57
April	9.73	11.49	7.88	1.58
May	3.81	10.93	7.04	11.43
June	12.72	16.41	9.41	10.63
July	13.76	25.00	10.97	13.05
August	7.39	4.79	14.08	2.29
September	10.83	11.82	5.54	-1.63
October	7.38	10.26	7.55	0.43
November	6.75	4.42	1.06	5.13
December	-1.42	-0.17	-1.80	-2.54
1988 January	18.53	-5.60	9.71	12.60
February	28.17	16.44	19.66	24.20
March	19.67	12.86	49.07	10.04
April	10.44	9.53	-0.21	5.41
May	9.64	12.83	3.55	1.13
June	37.32	32.86	47.35	33.34
	Koutiala	Sikasso	Bamako	Mopti
Mean 85/86	5.64	7.42	6.05	0.10
St Dev 85/86	7.32	4.84	5.48	5.11
Mean 86/87	8.79	9.92	7.21	4.44
St Dev 86/87	3.13	5.79	3.25	4.66
Mean 87/88	17.48	11.25	18.19	12.03
St Dev 87/88	11.85	11.44	20.11	11.84

wholesalers purchase millet one month and sell it the following month. The table is based on the following equation:

$$\text{Margin}_t = \text{Sales Price}_t - \text{Purchase Price}_t - \text{Total monthly storage cost}_t^1$$

Mopti has the lowest temporal margins, which is consistent with the earlier finding that Mopti traders engage in very little storage. The table shows that monthly margins for all four cities increased during the hungry season, between the months of June and August, but that the increase was especially great in Sikasso for 1987. This anomolous occurrence is difficult to explain. With the lagged analysis, all four cities (Sikasso to a lesser degree) experienced extremes in temporal margins, varying between very high profits and negative returns, reflecting volatile monthly prices.

After the hungry season, the margins begin to decline around September/October, when some of the new harvest starts to filter into the market, causing prices to fall. The low margins continue until December/January, when sales prices start to increase. For Sikasso, the lagged margin for January 1988 is very low, showing that the purchase price was high in December but sales price for January was low. For the other three cities, the lagged margin for this

¹ Storage costs for each month include the capital cost calculated on the basis of the purchase price of the preceeding month.

low. For the other three cities, the lagged margin for this time period jumps substantially, indicating that sales prices for January 1988 were a great deal higher than purchase prices for December 1987.

The lagged margins for millet for all four cities are very high for most of the first six months of 1988. This partly reflected the mediocrity of the 1987/88 harvest. Much of the produce may have been marketed by February 1988, when the margin starts its upswing. Another cause for the sharp increase in the lagged margin may be the reduction in the supply of rice. Rice imports were stopped in March 1987. Rice was particularly scarce after January, 1988, because the Office du Niger did not have sufficient funds to buy rice and little rice was milled. Consequently, consumers may have been substituting coarse grains for rice; explaining the rapid increase in prices. It was also rumored that illegal exports of grain were being made at this time to Burkina Faso, Cote d'Ivoire, and Mauritania. If this speculation is true, the exports further reduced the supply of grain causing prices to rise. Unofficial sources claim that 2,000 tons of millet were exported to the Cote d'Ivoire during the 1987/88 marketing year from the Koutiala region and over 1000 tons more went from Kayes to Mauritania.

Table 6.4 shows the lagged temporal margin by city for sorghum. Once again, the temporal margins are very erratic,

Table 6.4

Lagged Temporal Margins for Sorghum Adjusted by Storage Costs, 1985-88
(CFAF/kg)

	Koutiala	Sikasso	Bamako	Mopti
1985 December	5.91	7.05	5.53	-3.53
1986 January	6.82	5.34	18.26	-2.36
February	5.31	6.11	NA	-9.62
March	4.93	7.62	19.02	3.85
April	-4.06	3.46	2.49	-27.97
May	5.12	-0.17	4.59	-3.50
June	10.17	10.43	3.98	1.01
July	19.91	10.73	11.96	9.26
August	7.21	-2.42	6.54	-4.17
September	-5.83	3.14	10.87	-4.53
October	-3.12	5.12	0.35	-5.61
November	-2.00	3.11	-5.30	-8.74
December	9.52	4.96	5.57	3.13
1987 January	2.97	6.05	4.04	0.26
February	4.62	3.34	6.28	1.92
March	5.54	9.94	4.72	2.98
April	8.38	3.94	5.94	-2.91
May	4.31	11.25	7.06	9.28
June	8.45	15.88	14.45	10.24
July	12.22	20.45	12.68	10.87
August	6.24	1.63	15.73	0.39
September	6.49	4.94	6.87	3.92
October	4.81	4.41	7.67	-9.93
November	4.28	4.75	2.10	3.77
December	-2.30	0.86	-2.01	0.02
1988 January	20.14	15.98	14.59	8.78
February	24.70	18.35	16.97	18.07
March	11.20	8.26	21.44	4.92
April	0.49	3.30	6.59	-5.45
May	7.35	14.95	8.90	-1.88
June	39.67	27.90	39.26	39.14
	Koutiala	Sikasso	Bamako	Mopti
Mean 85/86	4.20	4.96	7.12	-4.66
St Dev 85/86	6.86	3.72	7.03	8.62
Mean 86/87	6.49	7.63	7.76	2.83
St Dev 86/87	2.56	5.43	4.07	5.57
Mean 87/88	14.46	12.80	15.11	9.09
St Dev 87/88	13.68	8.67	12.14	14.22

showing high positive returns as well as extreme negative returns. Returns are particularly erratic for the 1985/86 marketing year, a year which experienced a large OPAM buying campaign, possibly leading to greater price volatility. The peak temporal margins for sorghum, as for millet, occurred during the hungry season between June and August. Temporal returns are very high for the first few months of 1988, again, probably due to the nature of the harvest and consumers' substituting coarse grains for rice, which was in short supply.

Lagged temporal returns to maize are presented in Table 6.5. Once again, the temporal margins for maize are as erratic as those for millet and sorghum. Mopti experienced the largest difference between margins, ranging from a loss of 11.8 CFAF/kg in October, 1986 to a positive return of 54.2 CFAF/kg in December 1987. Maize consumption is lower than consumption for millet and sorghum, with most maize being consumed in the producing zones prior to the harvest of millet and sorghum.

To conclude, the lagged temporal margins for all crops for all cities are very erratic. The highest temporal margins occur during the pre-harvest months known as the hungry season, when supplies may be low and prices high.¹ Temporal margins for 1988 were especially high, perhaps due

¹ If traders' inventories are low at this time, then the per-kilogram margins presented here are overestimates, as they are calculated assuming full utilization of storage capacity.

Table 6.5

Lagged Temporal Margins for Maize Adjusted by Storage Costs, 1985-88
(CFAF/kg)

	Koutiala	Sikasso	Bamako	Mopti
1985 December	7.46	6.92	2.84	6.70
1986 January	7.57	6.25	4.06	5.84
February	2.58	4.08	13.32	5.84
March	1.97	7.61	12.55	10.84
April	-0.64	2.57	-1.19	NA
May	6.70	-1.62	4.94	NA
June	0.66	15.40	1.38	-5.86
July	7.16	4.26	10.70	12.56
August	3.80	11.38	-1.86	5.50
September	-5.27	-1.72	2.05	5.84
October	2.80	7.02	-4.17	-11.78
November	3.34	4.18	-20.83	NA
December	9.08	0.03	5.16	NA
1987 January	7.01	7.55	-4.80	NA
February	3.36	2.45	6.74	NA
March	6.09	4.77	-5.43	NA
April	8.34	6.48	14.20	NA
May	3.39	8.26	NA	NA
June	9.46	18.34	NA	NA
July	-1.28	13.44	NA	NA
August	7.61	9.88	32.83	NA
September	2.56	9.90	6.31	NA
October	-1.28	-4.28	2.68	NA
November	1.24	5.34	-2.42	NA
December	5.05	1.58	-9.84	54.19
1988 January	16.44	15.09	10.63	NA
February	21.42	17.12	16.67	NA
March	15.10	8.11	12.31	2.59
April	2.36	3.69	-12.56	2.11
May	4.43	16.49	7.51	-1.02
June	27.13	24.96	35.27	30.51
	Koutiala	Sikasso	Bamako	Mopti
Mean 85/86	3.18	5.53	1.98	3.94
St Dev 85/86	3.66	4.64	8.73	7.35
Mean 86/87	4.63	6.85	6.27	NA
St Dev 86/87	3.68	5.72	11.81	NA
Mean 87/88	13.13	12.43	8.57	NA
St Dev 87/88	8.76	7.70	15.04	NA

to the nature of the harvest, the poor supply of rice and the possible export of cereals to neighboring countries.

Returns to Storage

Policy makers in Mali have long debated whether long-term storage should be undertaken by wholesalers. Wholesalers will not store for long periods unless they realize profits from such storage. Chapter 4 showed that Malian wholesalers store cereals for a short time. This may be caused by price uncertainty and supply variability.

Table 6.6 presents a breakdown of returns to storage for a five-month period between November 1985 and March 1986. The total cost of storage for this analysis includes the rental for the storage place, the cost for the guard phytosanitary treatment, a 5% annual loss estimate and the opportunity cost of the invested capital. Again, all costs are not included in this analysis, so the actual return may be overestimated. At the 30% annual opportunity cost of capital, wholesalers in Koutiala, Bamako or Mopti would experience negative returns if they undertook cereals storage during this time. Only Sikasso shows a positive return for this time period at the 30% rate of capital. Even at an 18% annual interest rate, all three cities show a negative returns. The low return to storage is due to the high purchase price which emerged at this time as a response to strong intervention by OPAM. Normally, prices during November and December are low because this period follows

TABLE 6.6

Temporal Margins for Millet Purchased November 1985
and Sold March 1986 (CFAF/kg)

Length of Storage Five Months

	Koutiala	Sikasso	Bamako	Mopti
1. Purchase November 1985	50.7	56.1	66.8	70.6
2. Sales Price March 1986	59.2	73.0	78.0	71.5
3. Gross Margin (2 - 1)	8.4	16.9	11.2	0.9
4. Cost of Storage (30%)	11.4	12.5	14.8	14.4
5. Net Margin at 30% (3 - 4)	-2.9	4.3	-3.6	-13.5
6. Cost of Storage (18%)	8.8	9.7	11.5	10.8
7. Net Margin at 18% (3 - 6)	-0.4	7.2	-0.3	-9.9

harvest.

Table 6.7 presents the return for storing over the period April 1986 to July 1986, with only Sikasso showing a negative return at both rates of capital. Wholesalers in the other three cities would have received positive returns (above the opportunity cost of capital) if they had stored cereals between April and July 1986. This positive return is a function of the higher sales price during the hungry season.

Table 6.8 presents the returns to storage for the time period November 1986 to March 1987. As mentioned previously, prices during November are usually lower than the rest of the year because the harvest has just occurred. This was true for the cities of Koutiala, Bamako and Mopti. Sikasso, however, showed a much higher purchase price in November. Consequently, at both a 18% and a 30% rate of capital cost, Sikasso wholesalers would have been confronted with a large loss had they attempted to store during this time period. Price changes between November 1986 and April 1987 were not sufficient to result in a positive return (above the opportunity cost of capital) to wholesalers in Mopti and Bamako for investment in storage during this time. Only Koutiala showed such a positive return to storage.

The temporal margin estimate shown in Table 6.9 for the time period April 1987 to October 1987 shows a positive return to storage for all four cities at both rates of 6.7,8

Table 6.7

Temporal Margins for Millet Purchased April 1986
and Sold July 1986 (CFAF/kg)

Length of Storage four Months

	Koutiala	Sikasso	Bamako	Mopti
1. Purchase April 1986	48.6	62.4	61.3	63.7
2. Sales Price July 1986	67.6	69.2	75.0	74.6
3. Gross Margin (2 - 1)	19.0	6.7	13.7	10.9
4. Cost of Storage (30%)	8.8	10.8	11.2	10.7
5. Net Margin at 30% (3 - 4)	10.2	-4.0	2.5	0.2
6. Cost of Storage (18%)	6.9	8.3	8.7	8.1
7. Net Margin at 18% (3 - 6)	12.1	-1.5	4.9	2.8

Table 6.8

Temporal Margins for Millet Purchased November 1986
and Sold March 1987 (CFAF/kg)

Length of Storage Five Months

	Koutiala	Sikasso	Bamako	Mopti
1. Purchase November 1986	23.5	50.6	47.6	37.1
2. Sales Price March 1987	36.1	43.1	51.4	42.3
3. Gross Margin (2 - 1)	12.6	-7.5	3.8	5.2
4. Cost of Storage (30%)	7.4	11.7	12.0	9.5
5. Net Margin at 30% (3 - 4)	5.2	-19.2	-8.2	-4.2
6. Cost of Storage (18%)	6.2	9.2	9.6	7.6
7. Net Margin at 18% (3 - 6)	6.4	-16.7	-5.8	-2.4

Table 6.9

Temporal Margins for Millet Purchased April 1987
and Sold October 1987 (CFAF/kg)

Length of Storage Seven Months

	Koutiala	Sikasso	Bamako	Hopti
1. Purchase April 1987	32.3	40.9	44.8	37.5
2. Sales Price October 1987	58.3	72.2	72.6	63.0
3. Gross Margin (2 - 1)	26.0	31.3	27.8	25.5
4. Cost of Storage (30%)	12.1	14.4	16.2	13.3
5. Net Margin at 30% (3 - 4)	13.9	16.9	11.6	12.2
6. Cost of Storage (18%)	9.9	11.6	13.1	10.7
7. Net Margin at 18% (3 - 6)	16.1	19.7	14.7	14.8

capital. This may be a function of the mediocrity of the harvest, resulting in higher prices. Also, all the produce from the new harvest may not be in the market by October, so sales prices may be high at this time.

Table 6.10 shows the returns to storage for the period November 1987 to March 1988. The harvest was not spectacular, as revealed by the high post-harvest purchase prices for Bamako, Sikasso and Mopti. Only Koutiala seemed to experience a low purchase price in November 1987, but when that price of 49.5 CFAF is compared with the purchase price of the previous November of 23 CFAF, the poor harvest of 1987 becomes apparent. The sales price for all cities was high in March 1988 and a wholesaler would have obtained high positive returns had he undertaken storage for this time period.

Table 6.11 presents the temporal margins between March 1988 and June 1988. Once again, the returns are very high at both rates of interest for all cities. The hungry season begins in June/July, which may explain the elevated sales price. Also, as mentioned previously, the shortage of rice may have forced consumers to substitute millet for rice, and the illegal exports of cereals may have further eroded the domestic cereals supply.

The temporal margins presented here show that wholesalers do not always make high profits nor do they always experience losses. Rather, the margins from cereals

Table 6.10

Temporal Margins for Millet Purchased November 1987
and Sold March 1988 (CFAF/kg)

Length of Storage Five Months

	Koutiala	Sikasso	Bamako	Mopti
1. Purchase November 1987	49.5	60.1	63.8	62.1
2. Sales Price March 1988	93.5	88.2	120.3	101.0
3. Gross Margin (2 - 1)	44.1	28.2	56.5	38.9
4. Cost of Storage (30%)	11.2	13.1	14.4	13.1
5. Net Margin at 30% (3 - 4)	32.9	15.1	42.1	25.8
6. Cost of Storage (18%)	8.7	10.1	11.2	10.0
7. Net Margin at 18% (3 - 6)	35.4	18.1	45.3	28.9

Table 6.11

Temporal Margins for Millet Purchased March 1988
and Sold June 1988 (CFAF/kg)

Length of Storage Four Months

	Koutiala	Sikasso	Bamako	Mopti
1. Purchase March 1988	79.30	79.74	99.66	95.11
2. Sales Price June 1988	123.27	125.22	139.01	136.94
3. Gross Margin (2 - 1)	43.97	45.48	39.35	41.83
4. Cost of Storage (30%)	12.42	12.79	15.68	14.35
5. Net Margin at 30% (3 - 4)	31.55	32.69	23.67	27.48
6. Cost of Storage (18%)	9.25	9.60	11.69	10.54
7. Net Margin at 18% (3 - 6)	34.72	35.88	27.66	31.29

storage are erratic and unpredictable. The findings belie the traditional view of traders receiving high profits. Returns to storage in Mali are uncertain overall, especially for long periods of time. Therefore, Malian wholesalers operate very rationally by rarely engaging in long-term storage.

Spatial Margins

Spatial margins measure the difference in prices between markets and may include storage, transport, and other transfer costs. Spatial margins help indicate whether price differentials between two areas are sufficient to encourage spatial arbitrage. The next series of tables present spatial margins for millet between the rural market where the purchase is made and the urban wholesale-level sale. The tables are all based on the following assumptions: storage takes place for 2 weeks in Mopti, Koutiala and Sikasso, and 1 month in Bamako. The produce is purchased on the rural market the first week of the month. Results from this analysis should be interpreted with the understanding that a 30% opportunity cost of capital is assumed, an estimate which was used by Dembele, Dione and Staatz (1986b) in much of their analysis of the wholesale data. The actual value for capital will vary by wholesaler. The cost figures used in the calculation of spatial margins also come from previous analysis done by Dembele, Dione and Staatz (1986b).

Table 6.12 presents the spatial margin from Zangasso to Bamako via Koutiala for the marketing season 1985/86. The net returns are positive for the wholesaler who purchased a kilo of millet, stored it for two weeks and transported it to Bamako. Storing the grain for one month in Bamako incurred additional costs of 3.0 CFAF/kg., but the wholesale price rose enough during that period to more than offset those costs, leading to a net margin for the Bamako wholesaler of 9.6 CFAF/kg.

Table 6.13 shows the spatial margin from Zangasso to Bamako via Koutiala for the 1986/87 marketing season. A wholesaler who bought the millet in Zangasso, transported it to Koutiala where it was stored for 2 weeks, and then transported it on to Bamako would have lost money even if he had no opportunity cost on his capital. Transport, handling and storage costs elevated the total costs above the wholesale purchase price in Bamako. However, with storage for one month and handling in Bamako, the net margin is positive because the sales price at the wholesale level in Bamako is higher than the total accrued costs, which include storage and handling.

Table 6.14 presents the spatial margin between Zangasso and Bamako, via Koutiala for the beginning of the marketing year 1987/88. The net margin for the millet upon arrival in Bamako from Koutiala is positive, indicating that the purchase price in Bamako is higher than the total cost of

Table 6.12

Costs and Returns to Moving 1 kg of Millet
from Zangasso to Bamako via Koutiala
(purchased Dec. 1985 and sold Jan. 1986)

Cost Item	CFAF/Kg
1. Purchase price of millet (Zangasso) Dec 1985 wk 1	49.91
2. Price of sack	0.25
3. Loading Zangasso	0.60
4. Transport Zangasso-Koutiala (2500 CFAF/Ton)	2.50
5. Unloading Zangasso	0.60
6. Total cost delivered to Koutiala	53.86
7. Monthly Storage Costs Koutiala	
Storage Rental & Guardian & Treatment	0.79
Opportunity Cost of Capital 30% per year	1.25
Annual 5% Loss	0.21
Storage cost 2 weeks (Total Monthly Cost/2)	1.12
8. Loading Koutiala	0.60
9. Transport Koutiala-Bamako (5000/CFAF Ton)	5.00
10. Total cost delivered to Bamako	62.83
11. Purchase price Bamako (wholesale) Dec 1985	68.07
12. Net wholesale margin Koutiala (11 - 10)	5.24
13. Unloading Bamako	0.50
14. Monthly Storage Costs Bamako	
Storage Rental & Guardian & Treatment	1.01
Annual 5% Loss	0.29
Opportunity Cost of Capital 30% per year	1.70
Storage cost 1 month	3.00
15. Total accrued cost in Bamako as of Jan 1986	71.57
16. Wholesale sales price Bamako (Jan 1986)	81.20
17. Net wholesale margin (Bamako)	9.63

Table 6.13

Costs and Returns to Moving 1 kg of Millet
from Zangasso to Bamako via Koutiala
(purchased Nov. 1986 and sold Dec. 1986)

Cost Item	CFAF/Kg
1. Purchase price of millet (Zangasso) Nov 1986 wk 1	37.46
2. Price of sack	0.25
3. Loading Zangasso	0.60
4. Transport Zangasso-Koutiala (2500 CFAF/Ton)	2.50
5. Unloading Zangasso	0.60
6. Total cost delivered to Koutiala	41.41
7. Monthly Storage Costs Koutiala	
Storage Rental & Guardian & Treatment	0.79
Annual 5% Loss	0.16
Opportunity Cost of Capital 30% per year	0.94
Storage cost 2 weeks (Total monthly cost/2)	0.94
8. Loading Koutiala	0.60
9. Transport Koutiala-Bamako (5000 CFAF/Ton)	5.00
10. Total cost delivered to Bamako	49.84
11. Purchase price Bamako (wholesale)- Nov 1986	47.55
12. Net wholesale margin Koutiala (11 - 10)	-2.29
13. Unloading Bamako	0.50
14. Monthly Storage Costs Bamako	
Storage Rental & Guardian & Treatment	1.01
Annual 5% Loss	0.20
Opportunity Cost of Capital 30% per year	1.19
Storage cost 1 month	2.40
15. Total accrued costs in Bamako as of Dec 1986	50.45
16. Wholesale sales price Bamako (Dec 1986)	53.71
17. Net wholesale margin (Bamako)	3.26

Table 6.14

Costs and Returns to Moving 1 kg of Millet
from Zangasso to Bamako via Koutiala
(purchased Nov. 1987 and sold Dec. 1987)

Cost Item	CFAF/Kg
1. Purchase price of millet (Zangasso) Nov 1987 wk 1	45.99
2. Price of sack	0.25
3. Loading Zangasso	0.60
4. Transport Zangasso-Koutiala (2500 CFAF/Ton)	2.50
5. Unloading Zangasso	0.60
6. Total cost delivered to Koutiala	49.94
7. Monthly Storage Costs Koutiala	
Storage Rental & Guardian & Treatment	0.41
Annual 5% Loss	0.19
Opportunity Cost of Capital 30% per year	1.15
Storage cost 2 weeks (Total monthly cost/2)	0.88
8. Loading Koutiala	0.60
9. Transport Koutiala-Bamako (5000 CFAF/Ton)	5.00
10. Total cost delivered to Bamako	58.17
11. Purchase price Bamako (wholesale) Nov 1987	63.81
12. Net wholesale margin Koutiala (11 - 10)	5.64
13. Unloading Bamako	0.50
14. Monthly Storage Costs Bamako	
Storage rental & Guardian & Treatment	0.94
Annual 5% Loss	0.15
Opportunity Cost of Capital 30% per year	1.60
Storage cost 1 month	2.69
15. Total accrued costs in Bamako as of Dec 1987	67.00
16. Wholesale sales price Bamako (Dec 1987)	63.87
17. Net wholesale margin (Bamako)	-3.13

purchasing and moving the cereal from Zangasso. However, the costs added after storage in Bamako increase the value of the cereals above the wholesale sales price, resulting in a net negative return.

The spatial margin between Zangasso and Mopti via Koutiala for the beginning of the 1986/87 marketing season is presented in Table 6.15. The wholesale purchase price in Mopti was quite low for the month of December, with the result being that a wholesaler who transported the cereal from Zangasso via Koutiala to Mopti would have had a higher value-added price than he would have received for his millet. The wholesale sales price almost covered the cost of two weeks storage in Mopti, but the net return was still negative. However, the opportunity cost of capital is included at 30% and the returns to this transaction would have been positive at a lower capital cost.

The spatial margin for the beginning of the marketing year 1987/88 is presented in Table 6.16. The millet purchase is made in Zangasso, transported and stored in Koutiala, with the final destination being Mopti. The spatial margin for this last year has a high positive return for all locations. Once again, this may be a function of the poor harvest and the non-availability of rice, resulting in higher prices for millet.

This analysis has shown that spatial arbitrage earns less than 30% annual return on capital, and in some

Table 6.15

Costs and Returns to Moving 1 kg of Millet
from Zangasso to Mopti via Koutiala
(purchased Dec. 1986 and sold Jan. 1987)

Cost Item	CFAF/Kg
1. Purchase price of millet (Zangasso) Dec 1986 wk 1	32.85
2. Price of sack	0.25
3. Loading Zangasso	0.60
4. Transport Zangasso-Koutiala (2500 CFAF/Ton)	2.50
5. Unloading Zangasso	0.60
6. Total cost delivered to Koutiala	36.80
7. Monthly Storage Costs Koutiala	
Storage Rental & Guardian & Treatment	0.41
Annual 5% Loss	0.14
Opportunity Cost of Capital 30% per year	0.82
Storage cost 2 weeks (Total monthly/2)	0.68
8. Loading Koutiala	0.60
9. Transport Koutiala-Mopti (5000 CFAF/Ton)	5.00
10. Total cost delivered to Mopti	43.08
11. Purchase price Mopti (wholesale) Dec 1986	37.63
12. Net wholesale margin Koutiala (11 - 10)	-5.45
13. Unloading Mopti	0.50
14. Monthly Storage Costs Mopti	
Storage Rental & Guardian & Treatment	0.88
Annual 5% Loss	0.16
Opportunity Cost of Capital 30% per year	0.94
Storage cost 2 weeks (Total monthly/2)	0.99
15. Total accrued costs in Mopti as of Jan 1987	39.12
16. Wholesale sales price Mopti (Jan 87)	38.91
17. Net wholesale margin (Mopti)	-0.21

Table 6.16

Costs and Returns to Moving 1 kg of Millet
from Zangasso to Mopti via Koutiala
(purchased Dec. 1987 and sold Jan. 1988)

Cost Item	CFAF/Kg
1. Purchase price of millet (Zangasso) Dec 1987 wk 1	46.18
2. Price of sack	0.25
3. Loading Zangasso	0.60
4. Transport Zangasso-Koutiala (2500 CFAF/Ton)	2.50
5. Unloading Zangasso	0.60
6. Total cost delivered to Koutiala	50.13
7. Monthly Storage Costs Koutiala	
Storage Rental & Guardian & Treatment	0.79
Annual 5% Loss	0.19
Opportunity Cost of Capital 30% per year	1.15
Storage cost 2 weeks (Total monthly cost/2)	1.07
8. Loading Koutiala	0.60
9. Transport Koutiala-Mopti (5000 CFAF/Ton)	5.00
10. Total cost delivered to Mopti	56.80
11. Purchase price Mopti (wholesale) Dec 1987	57.02
12. Net wholesale margin Koutiala (11 - 10)	0.22
13. Unloading Mopti	0.50
14. Monthly Storage Costs Mopti	
Storage Rental & Guardian & Treatment	0.81
Annual 5% Loss	0.24
Opportunity Cost of Capital 30% per year	1.43
Storage cost 2 weeks (Total monthly cost/2)	1.24
15. Total accrued costs in Mopti as of Jan 1988	58.76
16. Wholesale sales price Mopti (Jan 1988)	72.09
17. Net wholesale margin (Mopti)	13.33

instances traders don't even receive any positive return on capital (see Table 6.14). These findings lead one to conclude that returns to arbitrage are risky and not all that high on average.

CONCLUSION

This chapter has examined some indicators of the performance of the cereals market at the wholesale level. Price variation is caused by forces beyond human control such as rainfall and insufficient marketed surplus, as well as by controllable forces such as governmental policy. The easing of inconsistent governmental intervention should promote some price stability and allow price dictation by market forces. However, cereals prices will continue to fluctuate due to basic supply and demand constraints.

Data on price correlations show that sample markets are well integrated, with millet and sorghum markets being better integrated than markets for maize.

Calculations of temporal and spatial marketing margins demonstrate that returns are very inconsistent and wholesalers are not guaranteed a profit. Storage and related activities are risky because wholesalers are not assured a net positive return.

CHAPTER SEVEN
CONCLUSIONS AND IMPLICATIONS

The preceding chapters sought to clarify the structure, conduct and performance of the Malian coarse grains market at the wholesale level. These chapters presented a snapshot of the market at two points in time, 1985/86 and 1988. In reality, structure and conduct are in constant flux, adjusting to the incremental process of grain market liberalization. This chapter will present the summary of major findings and their policy implications.

SUMMARY OF FINDINGS

Specialization

The results show that specialization in grain trading has increased with liberalization, with a higher percentage of traders claiming to be specialized in 1987/88 than 1985/86.

Data from the 1985/86 surveys were analyzed by specialization and time of market entry. There seemed to be few differences in business structure that were correlated with these stratification variables. Specialized traders appear to trade in larger volumes of cereal. Results from Chapter 4 also show that nonspecialized traders appear to engage in the cereals trade in a more seasonal manner than

their specialized colleagues. Structural differences also existed between the two categories for financing, with specialized traders having more credit sales and purchases.

A number of conduct differences between the various categories were presented in Chapter 5. For example, during the periods covered by the surveys, specialized wholesalers paid a higher mean amount for fines and under-the-table arrangements with agents of the Bureau of Economic Affairs. This may be due to higher volume handled by specialized traders and to their year-round market participation, both of which would increase interaction with agents of Economic Affairs.

Structural Differences between Wholesalers and Semi-wholesalers

The results from the preceding analyses identify two main variables influencing wholesale structure, the type of wholesaler and the region of residence.

Semi-wholesalers are more apt to be nonspecialized, and more seasonally active, than large-scale wholesalers. Large wholesalers, on the other hand, are more likely to have entered cereals trade prior to liberalization. Liberalization opened the market to new entrants, and many of the new entrants began as semi-wholesalers, since this required less investment than wholesale trade.

Almost by definition, wholesalers transact in larger volumes of cereals than do semi-wholesalers, which helps

them compete for contracts with governmental and non-governmental organizations. Due to their larger volumes, wholesalers also have greater owned and rented storage capacity than do semi-wholesalers. Length of storage for wholesalers and semi-wholesalers, however, is brief, with the majority of each group typically storing grain for less than one-and-a-half weeks. Wholesalers have larger staffs than semi-wholesalers--once again, probably a function of the larger volume transacted.

Semi-wholesalers constitute a larger proportion of the wholesale population in the sample cities. This may be due to the easier entry into cereals trade as a semi-wholesaler than as a wholesaler.

Regional Differences in the Structure of the Wholesale Market

Capital markets are poorly developed in Mali, as shown by the large proportion of traders utilizing their own financing. The capital market is even more unequally distributed among the regions, with financial institutions centered mainly in Bamako. A study undertaken for the PRMC revealed that only 1 Mopti trader for the 1987/88 marketing season (out of 15 respondents) had a bank account, versus 22 out of 34 in Bamako (Mehta, 1988). Hence, without an established credit record, traders applying for institutional credit programs may be considered poor financial risks. Traders in Koutiala, Sikasso and Mopti

claimed to borrow money for cereals purchases, but the main source of funds seems to be family or other traders, rather than the bank. Bamako traders claimed to use bank financing, with more wholesalers than semi-wholesalers claiming to do so. The PRMC has made special efforts to disseminate information about loans and make funding available to wholesalers and semi-wholesalers in Koutiala, Sikasso and Mopti for the 1988/89 marketing season, prior to which loans for cereals were dispersed very unequally regionally.

To finance their cereals trade, many traders borrow from family or colleagues or they buy and sell cereals on credit. Bamako and Sikasso wholesalers purchase more cereals on credit than do traders in Koutiala or Mopti. Most of these credit purchases probably are from wholesalers in Koutiala. Koutiala and Mopti traders undertake more sales on credit than purchases, the former selling on credit to Bamako, Mopti and Sikasso wholesalers and the latter to wholesalers in the north and the east of Mali.

There exists a correlation between region and storage characteristics. Wholesalers in Sikasso, Koutiala and Mopti are less likely to own storage facilities, with the majority of respondents in these cities claiming only to rent storage. Mean storage capacity is much lower in these three cities than in Bamako. Duration for storage is also much shorter, between 1 and 1.5 weeks, while Bamako traders store

for a longer period, with a few storing for upwards of 3 months. The storage differences between Bamako and the other three areas may be a function of finances. When one's own funds are used for working capital, turnover needs to be quick so that day-to-day needs can also be met. However, when outside funding is used, particularly at a subsidized interest rate, a trader can afford to hold onto stocks until prices rise, depending on the cost of these funds.¹ It is clear that bank loans carry interest rates less than the estimated opportunity cost of traders capital used in the margin calculations in Chapter 6.

A higher proportion of Bamako wholesalers also own their own trucks than do the traders in the other three areas, indicating that Bamako traders may play a major role in spatial arbitrage.

Barriers to Entry

Data indicate that financial constraints pose the greatest barrier to entry, but other barriers also exist. The prevalence of risk and uncertainty deters traders from investing in marketing-related activities. Price instability stemming from erratic supply and demand conditions and inconsistent government policies may also

¹Millet prices for January 1989 stood at 75 CFAF per kilo in Bamako, an unusually high post-harvest figure in spite of a large harvest. Market analysts suspect that the easier access to PRMC credit was enticing traders and producers to withhold cereals from the market until prices rose.

discourage many traders from committing large investments to marketing operations, particularly long-term storage.

The long-standing policy of OPAM and NGO's to award large contracts to established, large-volume traders has limited entry into the lucrative contractual market. In 1988/89, OPAM revised its policy and included contracts of various quantities. However, as a precautionary measure, 5% of the value of the contract has to be deposited with OPAM at the time the bid is made to demonstrate to OPAM that the trader is a serious bidder. Five percent may not appear to be much, but to new entrants and smaller traders, this may represent a barrier, however justified OPAM may be in requiring such a bond. Hence, the grain contracts market, despite policy changes, may continue to elude smaller wholesalers and semi-wholesalers.

A third barrier to entry stems from cumbersome and slow administrative and legal procedures in Mali. The cereals trade has expanded rapidly after liberalization and many of the new, smaller-volume entrants have limited access to the formal and informal cereals network, which is so essential for credit availability, market information and governmental policy changes. Without a network of suppliers, collectors, clients and civil servants (in strategic departments), traders may remain on the periphery of the market unaware of price movements, supply conditions and changing rules and regulations. The inception of the SIM (Systeme

d'Information sur le Marche Cerealier) in OPAM in 1989, which disseminates cereals prices and market-related information weekly on the radio throughout Mali, should help lower this barrier.

Concentration Ratios

Increased market concentration may be one outcome of the existence of many barriers to entry and the poor development of the capital markets in Mali. Analysis presented in Chapter 4 on concentration ratios demonstrated a moderate degree of concentration in the coarse grain wholesale market in Bamako. Over the period 1985-88, the trend appeared to be a gradual decline in the ratios, but 1988/89 is the first year which has experienced active participation by companies made up of traders pooling finances. The entry of these new larger firms may reverse the trend, but more evidence is needed to make a definitive conclusion.

While some increase in average volume handled by traders might allow capturing economies of scale (e.g., in transport), there are also dangers of market concentration. Clearly, the continuing evolution of market structure should be monitored closely.

Market Conduct

Prices in the cereals market are dictated by supply and demand conditions, with little direct price control by

traders or producers. Analysis in Chapter 5 showed that many traders have agents who keep them informed on prices in rural, wholesale and retail markets on a weekly basis.

Wholesalers are still perplexed by the changing administrative and regulatory environment within which they operate. During the period covered by this research (1985-88), traders continued to report harassment from agents of the Bureau of Economic Affairs for noncompliance of legal requirements--many of which are in constant flux and of whose existence traders are often unaware.

When violations of rules enforced by the Bureau of Economic Affairs occurred, traders often had to pay a fine, the amount varying by the severity of the infraction and the region of residence, with Bamako and Mopti traders reporting the highest average fines. Under-the-table arrangements with agents of Economic Affairs may be more attractive due to the lower mean cost for an arrangement in comparison with a fine.

Market Performance

Results outlined in Chapter 6 show that prices are very unstable in Mali due to the vagaries of the weather, which lead to variations in market supply. Unpredictable government intervention, too, serves as a price destabilizer.

Despite the seasonal volatilities in price, cereal traders engage in sales and purchases throughout the year,

with only the occasional wholesaler trading exclusively after the harvest. Major markets in the south of Mali are generally well integrated and prices move together, with markets for sorghum and millet being better integrated than that for maize.

Spatial arbitrage of cereals by wholesalers occurs in all areas covered by the surveys. Temporal arbitrage by wholesalers is less frequent and is undertaken more in Bamako than the other three sample cities. Marketing margins presented in Chapter 6 show that returns to storage are erratic and cereals storage is risky in Mali.

POLICY IMPLICATIONS

This section presents implications of the research results for market liberalization, OPAM and governmental market intervention, and the role for the PRMC in improving the operation of the cereals market.

Regional Policy

Bamako, as the seat of colonial French Soudan and later as the post-independence capital, continues to receive a disproportionate share of market investments. Armed with the theory of staple crops as a wage good, policy makers have focused on Bamako as the national locus of consumption and invested more resources there, but by doing so, the important role played by the other markets for national food security may have been overlooked. Focus should instead be

placed on the unique role played by each market in food security, with appropriate programs implemented to enhance their roles.

The producing zones of Koutiala and Sikasso and the disseminating region of Mopti would benefit from credit programs and training programs targeted at transport and storage ownership and use. The former may improve cereals flow throughout the country (especially to the north) and the latter may lead to longer-term storage with fewer losses. If institutional credit were as readily available in these areas as it is in Bamako, one may conjecture that traders in the other three cities would be encouraged to invest in marketing facilities and engage in longer-term storage.

Analysis in Chapter 5 showed that every Koutiala and Sikasso wholesaler claimed to use some type of phytosanitary treatment in his storage warehouse. Programs aimed at advising these wholesalers on the proper dosage levels and frequency of treatment may reduce annual storage losses, help protect public health and spark these traders' interest in other marketing facilities.

Market Liberalization Policy

Findings from this research show that liberalization has encouraged market entry, increased cereals specialization, and, according to traders, reduced transaction costs and consequently improved efficiency. The

process, however, must be viewed as on-going and policy-makers should not assume that because liberalization has been started, continued policy changes are unnecessary. The functions of liberalization as identified by Kydd and Scarborough were presented in Chapter 1. How effective has liberalization in Mali been in meeting the outlined characteristics? A major step for market liberalization was the theoretical discontinuation of official prices for coarse grains, which allowed traders to establish prices based on market supply and demand conditions rather than on an artificially established price by which traders were, often, unable to recoup costs. The role of OPAM, too, has been modified, further allowing price determination by market forces. Yet, the rules for OPAM intervention should be consistent from year to year to convince traders that OPAM will no longer disrupt the functioning of the market. State control of cereals trade has been loosened, but further actions are needed to assure that traders are not unjustly harassed by agents of the Bureau of Economic Affairs. In addition, policy makers and donors could encourage traders to invest in marketing activities by continuing credit programs, encouraging NGOs and OPAM to let contracts in smaller lots so that more traders can bid for them, and, most importantly, maintaining consistent direction in cereals policy.

Other Policy Measures

Results from this research identify credit as a major constraining factor in the coarse grain trade. Without adequate financing, traders cannot expand their operations, and the regional and volume inequities which exist between traders will be perpetuated. The credit schemes implemented under the auspices of the PRMC should help fill this need, but the programs need to be routinely evaluated to ensure that the targeted population is reached and program mandates are not violated. Donors should also consider raising interest rates to more accurately reflect the opportunity cost of capital in Mali, rather than subsidizing interest rates, which serves to concentrate loans among a few recipients. Because interest rates are low on many formal credit schemes in developing countries, the lender tries to transfer part of the loan transaction costs to the borrower, lends to those who present very little default risk, requires high collateral, tries to increase the average size of loans made, and excludes new borrowers (Adams and Graham, 1984).

Policy makers and the PRMC should reassure cereals market participants, producers and traders alike, that liberalization is permanent and the government will not assume total control of the market as attempted in the past. Traders harbor a fear that cereals-related policy will be changed radically in the future, maybe tomorrow or maybe

next year. Consequently, many traders are slow to invest in marketing functions and activities. The government, seeing that traders are slow to invest in marketing, interprets this as a sign that traders cannot fill the void it left, and changes policy to ensure food security. When the policy is thus changed, traders, seeing their worst suspicions and fears realized, are even more convinced that they should not invest too much in cereals marketing. The self-fulfilling suspicion feeds on itself and may immobilize all parties. The rise in cereals specialization demonstrates that traders are slowly increasing marketing activity and with proper encouragement and assistance, this trend should continue.

Price Policy

Although official coarse grain prices have been discontinued and price movement is based on market conditions, the main objective of the Malian government as outlined in Chapter 1 continues to be stable real income for consumers, interpreted as low prices for staple goods, and increased grain production to achieve self-sufficiency. The mandate for the Bureau of Economic Affairs clearly states that prices have to be kept within the reach of consumers. In light of this, one may query that if prices rise beyond the reach of the average consumer, would official prices be reinstated? Malian salaries are modest, with the mean salary ranging between 35,000 and 40,000 CFAF. Rogers and Lowdermilk estimate that food represents a substantial share

of total urban expenditures, ranging from 47% in Koulikoro to 75% in Gao (Rogers and Lowdermilk, 1988, p.5).

Given the modest per capita income in Mali and the high estimated food expenditures, the governmental objective of maintaining food prices within the reach of consumers is a very valid one. However, efforts should continue to increase grain production in the case that another drought occurs to ensure that the government is not forced to resort to fixed market prices again.

AREAS FOR FURTHER RESEARCH

The analysis of the CESA/MSU wholesaler data has provided a snapshot of the structure of the wholesale cereals market in 1985/86 and 1988, a market whose operation until now was unclear and for which few data were available. This study has also helped to conceptualize areas for further research that may contribute to greater expansion of knowledge on trader behavior and illuminate areas for policy intervention.

One area that warrants further research is the cost structure of wholesalers. This was covered lightly in this study, but due to its complexity, sensitivity and difficulty of quantification, a detailed study needs to be done of this aspect. The structure of fixed and variable costs of traders has implications for market operation and performance and having a better idea of them would improve

understanding of trader standard operating procedures.

Another area that emerges from the analysis for further research is storage patterns and stock levels at the trader level. It is known that traders store for a short time. We have hypothesized the causes of this as limited finances and a traditional standard operating procedure based on preliberalization patterns. However, there is uncertainty about other variables which influence storage decisions. More importantly, little information is available on the level of trader stocks, a very important aspect of storage in the eyes of the government, OPAM and policy makers.

A third area that warrants examination is the effect of taxation policy on traders' standard operating procedures and on market efficiency. A plethora of taxes exist in Mali, but these may be applied arbitrarily, encouraging traders to hide the full scale of their activities. If traders are circumventing the full payment of taxes, the government is losing that revenue. Furthermore, if tax collectors make under-the-table arrangements with traders to reduce the taxable amount, a considerable flow of revenue is generated into the unofficial market. Greater understanding of the relationship among taxation, market regulation and the cereals trade will provide policy makers with a very useful tool for macroeconomic analysis.

An important area which warrants further exploration for long-run cereals policy is the stabilization of market

prices. Given the volatility of cereals production in Mali and the thinness of the market, cereals marketing will continue to be a risky business. Furthermore, the experience of 1985/86 demonstrated that the state does not have the financial capacity to stabilize prices via a buffer stock (Staatz, Dione and Dembele). Other means to make the market less residual need to be considered, including the development of easier-to-prepare forms of cereals, the development of a grain-fed livestock industry and opening up the borders for freer trade within West Africa.

APPENDIX I.

MEAN VOLUME SOLD BY TYPE OF WHOLESALERS, CITY AND MARKETING YEAR (IN TONS)

	<u>Year</u>	<u>Mean</u>	<u>Standard Deviation</u>	<u>Sample Size</u>
Bamako				
Semi-Wholesalers				
	1985/86	239	310	37
	1986/87	186	152	34
	1987/88 **	53	61	39
Wholesalers				
	1985/86	2232	2106	13
	1986/87	2613	1548	13
	1987/88 **	264	291	14
Mopti				
Semi-Wholesalers				
	1985/86	203	214	27
	1986/87	348	218	19
	1987/88 **	41	75	26
Wholesalers				
	1985/86	1445	1285	5
	1986/87	1736	1607	5
	1987/88 **	247	369	6
Koutiala				
Semi-Wholesalers				
	1985/86	259	168	11
	1986/87	437	298	7
	1987/88 **	78	85	7
Wholesalers				
	1985/86	967	372	5
	1986/87	1091	445	5
	1987/88 **	148	130	5
Sikasso				
Semi-Wholesalers				
	1985/86	74	91	15
	1986/87	238	478	10
	1987/88 **	104	304	8
Wholesalers				
	1985/86	157	64	2
	1986/87	752	745	2
	1987/88 **	295	493	2

* The marketing year runs from November through October

** Coverage of 1987/88 figures through June 1988

APPENDIX II

ESTIMATION OF THE LEVEL OF CONSUMPTION OF HOME-PRODUCED COARSE GRAINS IN BAMAKO

Rogers and Lowdermilk estimate average per capita consumption of home-produced millet, sorghum and maize for Bamako, Koulikoro, Sikasso, Mopti and Segou as follows:

Percentage of Households Consuming Home Produced Grain

	Level of Consumption of Home-Produced Grain			
	<u>None</u>	<u>< Purchases</u>	<u>= Purchases</u>	<u>> Purchases</u>
Millet & Sorghum	36.8	18.8	12.9	1.5
Maize	95.9	2.6	1.5	0

Hence, 33.2% of the population of these cities consumes at least some home-produced millet and sorghum, and 4.1% consumes home-produced maize.

Rogers and Lowdermilk further estimate the average per capita coarse grain consumption for these cities as follows:

Millet/Sorghum	=	4.53 kg per mo. x 12 mo.	=	54.3 kg/year.
Maize	=	.84 kg per mo. x 12 mo.	=	10.1 kg/year.
Total	=		=	54.4 kg/year.

To estimate the total consumption of home-produced coarse grain in Bamako, assume that one-third of the total annual consumption for those families reporting reporting consumption of home-produced grain is met by home production. The estimated population of Bamako is 800,000. Home consumption is therefore estimated as follows:

Millet/Sorghum:	$54.3 \text{ kg} \times \frac{1}{3} \times .332 \times 800,000 = 4,778 \text{ tons}$
Maize:	$10.1 \text{ kg} \times \frac{1}{3} \times .041 \times 800,000 = 110 \text{ tons}$

Total estimated coarse grain consumption for Bamako can be calculated as follows, using average per capita consumption figures as reported by Rogers and Lowdermilk:

64.4 kg of coarse grains consumed per capita x 800,000 = 51,520 metric tons. In contrast, the total estimated volume covered by the CESA/MSU data analyzed in Chapter 4 is:

40,598	CESA/MSU from the sample of wholesalers and semi-wholesalers
3,903	OPAM sales
<u>4,888</u>	Consumption of home-produced grain
49,389	tons, or 96% of the estimated consumption calculated above.

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