

THE EXPERIENCE
OF
MALI

by Niama Nango Dembélé, John M. Staatz, and Johny Egg*

* Niama Nango Dembélé is a Malian researcher in the Department of Agricultural Economics at Michigan State University (MSU). He is based at the Office des Produits Agricoles du Mali (OPAM) as a Technical Assistant for the Market Information System. John M. Staatz is an Associate Professor in the Department of Agricultural Economics at MSU. Johny Egg is a Research Associate at the Institut National de la Recherche Agronomique (INRA) in Montpellier, France.

This paper is based on the results of research and technical assistance efforts carried out under the Food Security in Africa Cooperative Agreement between MSU and the Bureau of Science and Technology, and the Africa Bureau of the United States Agency for International Development (USAID). In Mali, the project is also funded by the USAID mission in Mali, and is carried out under the supervision of the Technical Secretariat of the Malian National Food Strategy Commission (CESA). The paper is also based on results of the technical assistance program between the European Community Statistical Office (OSCE) and Mali. Nonetheless, the responsibility for the ideas, comments and arguments presented in this paper belong solely to the authors. In no case are the contents to be interpreted as indicating the official positions of CESA, OPAM, USAID, INRA, or OSCE.

I. INTRODUCTION

The thinness and fragmentation of cereal markets in Sahelian countries increases the marketing risks for any type of market participant, be it governmental or private, because it results in a large variability in prices and market volumes. The thinness of the cereals market makes long-term investment in production and marketing infrastructure very risky.

The uneven distribution of rainfall (in space and time) and -- to a lesser extent -- the fluctuations of world prices, help explain market instability. These risks are compounded by those tied to government interventions, such as the distribution of food aid and changes in market policies or in regulatory procedures. Merchants often do not have information about regulatory procedures concerning marketing, the dates and locations of free food aid distribution, etc.

To encourage private sector investment in the cereals subsector, the government needs to enact measures to reduce such risks. For example, the liberalization of cereals trade within and among Sahelian countries, artisanal or industrial processing of cereals, and the distribution of essential information are measures that tend to stabilize demand and reduce risks linked to marketing operations.

The establishment of an information system allowing equal access to all participants in the cereals subsector is a major step in this direction. Such an information system, through wide distribution of information pertaining to factors affecting the cereals market (price, export and import policies, volume and date of anticipated food aid, distributions, etc.), will contribute to greater transparency in the cereals market¹.

However, given the public-good nature of information, the private sector will not supply the amount of information that is socially optimal and make it accessible to all subsector participants (see Steffen, Dembélé and Staatz). Governmental provision of essential information and adequate infrastructure therefore contributes to making the market less risky, more transparent and able to equilibrate cereals supply and demand over time and space.

This document describes the process undertaken for this purpose in Mali since September, 1987.

¹ A transparent market is one in which all participants have equal access to information necessary for the management of their production, sales, shipping, storage and consumption decisions.

II. THE STEPS OF ESTABLISHING THE MARKET INFORMATION SYSTEM (SIM)

The design and establishment of a cereals market information system in a developing country must, above all, take into consideration the system's sustainability. Its sustainability depends primarily on local financial and human resource capacities (see Eicher). Even if it is possible to establish an information system with external aid, the system's survival in the long run depends on several complex factors.

2.1. The Problem of Establishing a Malian Cereal Market Information System

A 1987 survey of data gathering efforts identified many institutions in Mali that collect data at various levels of the marketing chain and in different areas in the country. Some data were collected on a permanent basis, while others were collected periodically using varying methods (see Dembélé and Steffen). The large number of objectives and varying levels of resources available largely explain the multiplicity of methodologies used by these different data collection efforts.

The multiplicity of methodologies has constituted a serious handicap to data comparability. Consequently, one was confronted by a paradoxical situation in which information needs that could in theory be met were not because of the impossibility of developing a consistent series from existing data.

Compartmentalization of data and the fact that they were reported mainly in internal agency documents also made the information inaccessible to many potential users (see Dembélé and Steffen).

Given the paucity of financial and human resources in Mali and the large number of variables to be recorded, it was necessary to "implement a system that could bring all important, existing data together into a framework that addressed the major questions raised by liberalization" (see Egg, 1988, and Egg and Martinet, 1988).

In consideration of the factors mentioned above, it was decided that the system to be implemented should not be a new institution, but rather a coordinated effort among different existing systems, whose methodologies would then be improved. This new system should also make information accessible to all the different categories of users and avoid duplication in data collection efforts.

2.2. Key Factors in the Design of a Market Information System

From the moment when a market information system for Mali was first conceived, the problems of its management and long-term survival were raised. For instance, there was a need to prevent the system from collapsing as soon as external foreign assistance ended. It was, therefore, necessary to consider all the factors essential to the system's sustainability.

2.2.1. Limited Financial and Human Resources

Financial resource limitations in Mali implied that a cereals market information system needed to be built from existing data collection systems. This meant that there was a need to inventory all market-related data currently collected in Mali, the locations, intervals and methods of collection, the agencies collecting the data and the frequency and methods of distribution of the resulting information.

This inventory revealed that almost all of the identified information needs could be met using the collection efforts already employed by several government institutions. What remained to be done was to harmonize the methods and intervals of data collection in the existing systems, broaden the geographical collection area and adapt the publication frequency and methods to different user needs.

Such an approach conserves a developing country's scarce resources, as the system will be built using already existing local data collection activities. The approach also takes advantage of the experience already acquired by local personnel working in the institutions responsible for the data collection.

Still, external financial and technical assistance is essential in getting the system started. Certainly, harmonizing collection methods, targeting the distribution of information to different users, and coordinating the activities of different information gatherers will impose additional costs on some agencies, whose budgets will not be adequate to cover these expenses. Centralizing the data within one institution requires resources to process, analyze and distribute the information. These supplemental costs initially have to be covered by outside funding.

Similarly, harmonizing the collection methods and designing and implementing an information system can put local abilities to a severe test if there is no available technical assistance. Nonetheless, the technical assistants should not undertake the design and implementation of such a system by themselves, but should work in close collaboration with the local personnel in every aspect of system design. Collaborating in this manner offers excellent training for host-country (and foreign) personnel. Instituting such a training policy will develop an autonomous local analytical capacity (see Weber et al.).

2.2.2. Identification of Users' Needs

Setting up an information system required proper identification of the potential users and their specific information needs. Differences in motivation among the different users of the data mean that each user category needs a different type of data. For example, producers need, among other things, to know prices in nearby rural markets and large urban centers, whereas grain merchants need to know, among other things, the dates and locations of food aid distributions, the availability of credit for rural marketing, etc.

Those different information needs imply that the method and frequency of distribution of information should be a function of the type of user targeted. To reach producers, for example, one must use rural radio, broadcasting in local languages. Some urban-based users can be reached through written publications. It must be noted, however, that the needs of producers, merchants and consumers can only be met through the distribution of current information, while decision-makers need both current data and the results from analyses using historical data. Whereas some users' needs can be met with simple statistical data, others may require more in-depth analyses on the dynamics of production, marketing, or consumption.

The information system should, therefore, include an analytical capacity, in addition to the publication of simple price data. It is also necessary to build long-term local analytical capacity into the dynamics of the production and marketing structures.

2.2.3. Institutional Location of the System

Within a developing country's administrative structure the institutional location for a market information system is important for two essential reasons. First, the system should be located where it can most easily reach decision-makers, diffuse applied research results, and most easily

identify the decision-makers' informational needs. Second, the system should have a location within the administrative structure that assures the credibility of both the data collected and the information published.

In other words, the system should be protected from any manipulation that might destroy its credibility and divert it to serving purely administrative tasks. The choice of a managing institution for the system should, however, also take into account the institution's experience in data collection.

2.2.4. Size of the System

The institution responsible for managing the system should eventually be able to collect or centralize all data identified as important. Initially, however, it is necessary to limit the amount of data to be collected, centralized and distributed. This implies that one should begin with a relatively simple system that is capable of collecting, analyzing and distributing essential information. Even if a more complex system would conform more closely to standards of professional statistical practice, such a system may prove incapable of providing information in a timely manner.

For this reason, one must avoid carrying statistical professionalism to excess, which tends to sacrifice rapid diffusion of information to statistical precision. The failure to strike such a balance explains, in part, the inability of statistical agencies to generate timely information for decision-making in some African countries. The value of information for a decision-maker is not always tied to its statistical precision, but to its availability when the decision must be made.

III. METHODOLOGICAL APPROACH IN ESTABLISHING THE SIM

This establishment was gradual. Following the recommendations of the June 1987 National Seminar on Cereal Policy a transitory system was established in March 1988, coordinating three existing surveys: 1 prices and markets; the Canadian Development Agency System, the CESA-MSU-USAID Food Security System and the OPAM system.

This first phase required a definition of the place of the MIS within the national administration. OPAM was selected as the agency responsible for MIS management. In December 1988, a national seminar on "Food Security and Cereal Market Information System"² allowed an evaluation of a transitory system and a shift to the permanent MIS. This seminary played an important role in the establishment of the MIS. For one thing it allowed for a meeting of producers and users of information (current and potential) revolving around a technical discussion of the system's main components. For another, it provided a legal framework to the MIS, guaranteeing its continuity since the seminar's recommendations were to be adopted the following month by the council of ministers.

The permanent MIS really started only in April 1989 under financing from the PRMC donors and support for the FAO for the training of OPAM agents. The early warning system (SAP) joined the data collection efforts, and a transitional phase has been planned for the gradual withdrawal of the ACDI and CESA-MSU-USAID projects.

² The December 1989 Seminar was organized by the PRMC (Programme de restructuration du marché céréalier), and the Orientation and Coordination Committee of the Ministry of Finance, with assistance from the OSCE and from the European Center for Development Policies (CEGPD).

3.1. Institutional Location of the SIM

OPAM was chosen to manage the cereals market information system because, as its direct role in cereals marketing decreased following liberalization, OPAM was becoming the major tool for government production and provision of public goods for the cereals market (see Steffen, Dembélé and Staatz).

As the State's key policy instrument for cereal marketing, OPAM, placed under the powerful Ministry of Finance and Commerce, OPAM was the best choice to reach decision makers through the distribution of MIS results.

The choice of OPAM raised several concerns about its ability to preserve the data's objectivity since OPAM itself was responsible for monitoring the movement of market prices in order to forecast and curb sudden increases in prices. Merchants might not trust OPAM and hence not report accurate prices, but also that OPAM might possibly manipulate information for its own benefit. After 20 months of experience, however, it became clear that these fears were ill-founded and that the OPAM market information system was well accepted by merchants. Nonetheless, in order to guarantee that the analysis of the cereals market remains as objective as possible and that the other institutions involved in analyzing and formulating food policies participate in the discussion of the bulletins, it will be necessary to assure that the analysis function of the SIM be guaranteed its independence (from OPAM as well as any other administrative structure.)

3.2. The Transitory Information System (SIT)

The SIT mandate was to:

- provide a concrete framework for reflection on the establishment of a permanent information system;
- train staff in the institution identified to manage the permanent system;
- harmonize the methods of data collection from the three former surveyed systems, in order to broadcast information on prices at different levels of the marketing chain, and over most of the country.

3.2.1. Data Collection

The SIT survey components were chosen according to the experience each provided in terms of data collection and the nature of the information they gathered.

The OPAM system had collected consumer price data in the regional capitals since 1981. The ACDI system collected data on producer prices, the volume of transactions carried out by merchants, and the importance of cereals exchanges between different markets and regions in the country. The CESA-MSU-USAID Food Security Project recorded producer prices in rural markets and in several towns, the quantities purchased by rural market assemblers, the prices in certain cities, as well as the quantities bought and sold by wholesalers.

SIT staff decided to initially limit data collection to a level commensurate with its data-entry and processing capabilities. Therefore, the SIT collected data on producer and consumer prices. Producer prices were collected for millet, sorghum, maize, paddy rice, parboiled rice and white rice. Consumer prices were collected for millet, sorghum, maize, RM40 rice (40% brokens) and BB rice (100% brokens). Producer prices were collected in 4 rural markets and in 9 assembly markets for

millet, sorghum and maize. Prices for paddy rice, parboiled rice and white rice were gathered in 2 major assembly markets, and consumer prices were collected in the 9 most important urban centers.

3.2.2 The Institutional Organization of the SIT

Coordination of SIT activities was done by the ACDI representative. The working group set up within the SIT therefore had one representative from each of the three systems that made up the SIT: one from ACDI, one representative from the National Statistical Service (Direction Nationale de la Statistique et de l'Informatique [DNSI]) and one from the Statistical Office of the European Community.

This technical working group was to discuss all technical aspects and conceptualize how the permanent information system should be established. It also had the benefit of technical contributions from foreign specialists, in addition to the results from experience of market information systems in other African countries, such as Senegal and Burkina Faso.

The Committee of Orientation and Coordination (Comité d'Orientation et de Coordination [C.O.C.]) and the PRMC became the agencies that made the key policy decisions concerning the SIT. They were regularly informed about the working group's efforts and regularly received the SIT's periodic publications on prices.

3.2.3. Equipment and Personnel Available

The CESA-MSU-USAID project assigned a cereals market analyst to OPAM (Niama Nango Dembele), who was in charge of helping institutionalize within OPAM a capacity for entry, processing and analysis of price data. This was urgently needed to insure continuity in the operation given the upcoming completion of the ACDI and CESA-MSU-USAID projects.

This was accomplished through on-the-job training of two OPAM agents, supplemented by training on theoretical aspects of agricultural marketing. The OPAM agents were directly linked to all considerations and discussions regarding the design and establishment of the system.

The SIT received contributions in equipment and financial resources from the Statistical Office of the European Community (OSCE), the CESA-MSU-USAID project, OPAM, and the PRMC.

3.2.4. Main Achievement of the SIT: Harmonization of the different methodologies

Harmonization of the three different systems' data collection methods was the most important achievement of the SIT. The approach used for coordinating these systems could be applied to other Sahelian countries.

The differences in methodologies used by these three systems had made it impossible to combine the data obtained from the different systems for analysis. The lack of comparability of the data derived from differences in: (a) the transaction levels for which price data were obtained, (b) the sample from which the data were gathered, and (c) the frequency of data collection.

3.2.4.1. Definition of the transaction level

Producer prices were collected at two different levels by the ACDI and the CESA-MSU-USAID project. The CESA-MSU-USAID project recorded prices for the first transaction level, that is, prices for exchanges between producers and rural assemblers. ACDI, on the other hand, recorded "producer prices" primarily at the second level in the marketing chain--between rural assemblers and assemblers from redistribution points. The "producer prices" thus recorded by ACDI were over-estimated because they included transaction costs incurred between the rural market and the redistribution market (the rural assembler's profit margin and transportation costs).

Consumer prices recorded by OPAM were subject to the same problems. Wholesale, semi-wholesale and retail prices were frequently confused with one another because the enumerator did not make a distinction among the three categories. Under these circumstances, the average consumer prices published were often under-estimations.

To compensate for these inconsistencies, the SIT asked ACDI to record producer prices only for transactions between merchants and producers in redistribution markets or for assemblers' purchase prices when they were interviewed while reselling to other merchants.

OPAM was asked to record prices observed by enumerators during retail transactions. If, at the time when the enumerator was present, there were no transactions, the enumerator then asked retailers and several consumers present in the market the prices they had observed in the market during that day.

3.2.4.2. Choosing the Traders' samples

Both the ACDI system and the CESA-MSU-USAID project were carrying out complete censuses of all buyers present in the market when prices were recorded. The entire population of assemblers was therefore used in the survey.

OPAM's system, on the other hand, did not use any systematic sampling techniques in its price data collection. The enumerator usually recorded one observation per collection point and per urban center.

Therefore, given the fact that OPAM worked in the large urban centers, a sampling method was created exclusively for OPAM. This method consisted of recording all the points of sale for cereals in each urban center. The points of sale were then classified according to the volume of transactions. Depending on its importance, one, two, three or four observations were made. The average from the total of these observations then became the average for the urban center.

3.2.4.3. Frequency of data collection

OPAM collected price data every ten days, but the other systems collected data weekly. To allow the SIT to publish complete information in one release, OPAM was requested to collect weekly data. Furthermore, the Food Security Project was asked to transmit its data more frequently.

It should be noted that coordinating these different methodologies imposed supplementary costs on OPAM and on the CESA-MSU-USAID project. In collecting weekly data, OPAM made four to five trips per month instead of three, as in the past. Also, the time needed to execute each survey increased because the number of observations had been increased. The Food Security Project also incurred additional costs by transmitting data weekly.

3.3. Establishing a Permanent SIM

The establishment of the permanent Market Information System (SIM) was preceded by lengthy discussions during the December 1988 seminar, to define and better specify the system's objectives. This seminar played a major role in bringing together producers and consumers of information gathered by the system.

Four commissions were created to analyze in detail various aspects of an MIS: The first had to identify data to be collected according to users' needs, the second worked on the design of an analytical framework and on the identification of a sample of markets, the third dealt with harmonization of methods of collection and processing of data, the last worked on institutional issues for the management of the information system.

Working from the experience acquired during the SIT these commissions were able to define precisely the objectives, methods, and organization of the SIM (See Republic of Mali 1988 and CEGDP, 1989).

3.3.1. Objectives of the information system

The SIM's objectives were the following:

- harmonization of data collection methods, information distribution, analysis and interpretation;
- data centralization to ensure the widest possible publication and distribution;
- organization of the access to information for all participants (decision-makers, private-sector participants, producers, etc.);
- coordination among information gathering agencies.

Thus, the SIM is not primarily an information gatherer. Its data collection responsibility involves collecting only complementary information, not available elsewhere. This approach offers the advantage of allowing the SIM to benefit from the experience gained by other data collection agencies, and to form a data bank at a low cost, avoiding duplication of effort (see Dembélé and Steffen 1988).

3.3.2. Data to be Centralized or Collected

Data were identified according to user needs: producers, merchants, consumers and institutional decision makers. However, given the impossibility of satisfying all user needs at once, certain essential data were given priority³.

Initially, the SIM was supposed to focus on centralizing producer and consumer price information on millet, sorghum, maize, RM40 rice (40% broken), BB rice (100% broken) and paddy rice. Beginning in 1990, information on imported and parboiled rice will also be collected. The SIM also is to provide information about the general supply situation for cereals in different markets. Currently, the system processes approximately 3,000 data per week for its different publications.

³ For a complete description of SIM characteristics and organization, refer to the paper by Dr. Abdoulaye Sall: "L'Enjeu du SIM à travers l'expérience du Mali".

Eventually, the SIM should also supply information on world prices and prices in neighboring countries, production levels, the cereals deficit, imports and exports, food aid, and regulatory measures concerning grain marketing. Furthermore, the SIM should also be able to evaluate the level of merchant stocks and the extent of the cereals trade in different parts of the country. The SIM should also eventually be able to use its analytical capacity to better inform decision-makers about the dynamics of production, marketing and consumption, and on the medium term impact of cereal policies.

3.3.3. Analytical Framework and Market Typology

For a better understanding of price movements, and, generally, of markets, it was necessary to place the main determinants of price formation in their spatial context. This required the identification of four major trade networks or axes in the country.

A survey was carried out to prepare for the national December 1988 seminar with merchants and farmers; it allowed the identification of assembly, redistribution or transit markets, consumer markets and border markets were identified for each axis (see Amselle and Bagayogo, 1988). The market typology thus defined includes collection, transit, consumption or border (or intra-regional) markets to be followed on a regular basis.

An inventory was then made of data collectors already involved on the markets selected. In this way, the early warning system (SAP/AEDES) joined the SIM efforts by committing itself to following 11 markets located in deficit areas.

The selected market typology corresponds to different levels in the grain marketing chain. Knowing the prices at each level allows one to calculate "subsector accounts" for each cereal trade axis. Decision-makers can use these figures to derive the marketing costs by axis and the margins realized by each market participant.

3.3.4. Publication Policy

The SIM focuses primarily on satisfying the needs of two broad user categories: decision-makers and private economic agents (including traders, farmers, consumers, and cooperatives).

3.3.4.1. Policy makers

For policy makers and institutional users of SIM data, the distribution channels are largely the written press and SIM bulletins. In the written press, the data are published every two weeks in the official newspaper *L'Essor*. These data are accompanied by a brief discussion of how market prices and supply have evolved recently.

SIM bulletins are of three types: weekly, monthly and quarterly. Weekly and monthly bulletins provide information on short-term price movements as well as information on market supply. The monthly bulletin also shows price changes from one month to the next. From now on, this bulletin will also include a 12-month price series, and a short article on a topic pertaining to the current agricultural season.

Quarterly bulletins offer a more complete analysis of seasonal price movements. It starts with an analytic synthesis of market prices and trends over the previous three months in the markets covered by the SIM. The price level for the last month in the quarter is then compared to the price level for the same month in the previous year. All additional available information explaining price movements is incorporated into this analysis.

The second part of the bulletin provides a detailed analysis of several markets per identified traders' network or marketing axis. The evolution of producer and consumer prices within individual marketing axes is analyzed in detail. The last section of the bulletin gives additional, complementary information about the current marketing year, regulations, agricultural current credit programs, import prices and prices in neighboring countries, when available.

In the next few months, the quarterly bulletin will become semiannual. The frequency of publication was changed in order for the analysts to be able to refer to a longer period since the beginning of the marketing year. By looking at a longer period, they could see more clearly the effects of different policies on the evolution of market prices. Experience had shown that with a quarterly bulletin it was not only impossible to see the effects on prices of various policies, but it was also difficult to pull together all the information necessary for market analysis. This change will allow the SIM analysts to save time and thus be able to devote more effort to improving the reliability of the data by having the time to verify enumerators' data collection and reporting procedures in the field (see 4.2. and 4.3. below).

3.3.4.2. Private Sector Operators

This group of SIM information users includes merchants, farmers, consumers and cooperatives. To reach this group, the SIM has relied primarily on radio and television. However, the SIM has also contacted the rural written press, which prints in local languages for producers.

The SIM data are broadcast on the radio in French and in several local languages, while the television broadcasts are made only in French and Bambara. The broadcasts are weekly and cover the evolution of producer and consumer prices during the current week as compared with the previous week and with supply conditions in the markets. The lowest and highest priced consumer and rural markets are also named.

In addition to the radio and television broadcasts on the evolution of prices, another SIM radio program begun at the end of 1989 covers general information on cereals marketing of interest to the private sector. This information can include, for example, the official regulations covering cereals marketing, the problems faced by grain retailers, the problem of varying grain quality, the use of the price information published by the SIM, etc.

Publications are therefore targeted to certain user groups and can be adapted to changing needs. Thus, there are plans for future radio broadcasts about regulatory measures in the cereals market in order to inform the private sector better and re-establish trust between merchants and the government. The SIM could also eventually furnish specific, personalized information to certain clients for a fee.

To preserve client loyalty, information should be as complete and understandable as possible for the targeted user. It should also be current and distributed in a timely, reliable manner. For this reason, the SIM has avoided broadcasting on the radio and in the printed press average (mean) prices, which would be meaningless to many listeners. In place of mean prices, the SIM publicizes the range of prices found in the market as well as the most commonly observed price. This has the advantage of making the SIM data consistent with traditional Malian marketing practices, which involve the buyer and seller haggling over prices. For example, the same merchant can propose different prices to different clients for the same product on the same day.

The information distributed by the SIM should also allow policy makers to respond to their immediate policy concerns (see Weber et al., 1988). This is especially important for decision-makers who expect current information that is relevant to prevailing policy questions. Users of the

system will be discouraged by delays in information distribution or by information that is presented in an overly technical manner.

It is also important to implement from the start a two-way flow of communications between the system and its users. Such a dialogue between the system and its users ensures against the collection of data that do not meet any particular users' needs.

3.3.5. The Information System's Impact

Because the information system was developed so recently, it may be too soon to assess its impact on marketing policy. However, the system's publications have already contributed to and had positive effects on cereals supplies in urban areas. The radio broadcasts of SIM price data have had a real impact on consumers (notably, those in Bamako) have benefitted from lower prices in certain markets due to increased competition, and many merchants are using the SIM data to help decide where they will buy or sell grain.

By monitoring and publishing consumer price information, the system drew attention to the problems in supplying the city of Kayes. Since the beginning of the 1988/89 season, this area had seen prices higher than the national average. This observation led the national news media to inquire into the reasons for these higher prices.

Their inquiry revealed the following causes:

- Illegal imports of rice from Senegal and Mauritania were discontinued following measures taken by the government during late 1988 to control smuggling. In addition, importers were required to buy from the Office du Niger the same quantity of domestic rice that they import ("twinning");
- Most economic agents in the region have very limited financial resources, causing them to operate on a small scale. This raises the unit supply price for millet, maize and sorghum consumed in the Kayes area;
- Kayes is far removed from the surplus agricultural areas of the country, and this increases transportation costs for merchants coming from other towns;
- Clandestine exports of millet, maize and sorghum to Mauritania were tolerated by government authorities in order to allow local producers to receive higher prices for their grain.

The causes of higher prices in Kayes, as revealed by the media through the information system's publications, has led administrative and political leaders in this area to begin to question the validity of the rice import policy.

Furthermore, the information system revealed the incompatibility between the Office du Niger's rigid price structure and market liberalization for paddy rice. The Office du Niger markets the rice it receives from producers as payment in kind for irrigation fees, inputs, etc. However, this rice is valued according to a fixed price schedule that does not correspond to market conditions. For instance, the introduction of private rice hullers lowered paddy processing costs, so that Office du Niger paddy sale price were above free market level. Therefore, in the 1988/89 season, merchants who were required to sign purchase contracts with the Office du Niger in order to import rice were later unable to sell their rice on the market.

An information system, through its publications, can thus help to improve decision-making by increasing decision-makers' knowledge about the operation of cereals markets. In this case, discussions on the marketing campaign were enhanced by the information system's insights about

supply problems in certain areas and the inappropriateness of the rice import policy and price structure set by the Office du Niger.

Mali's recent experience with its information system has demonstrated that potential demand for market information exists in developing countries. However user demand can go beyond the system's ability to supply information in the short run. Under these conditions, if the system tries to respond to all these demands, it runs the risk of compromising the reliability of its basic information and delaying its dissemination. It is therefore important to have in place a plan, from the very beginning, to increase the system's capacity to supply market information as the demand for such information grows.

IV. OVERCOMING THE CURRENT WEAKNESSES OF THE SIM

In the current phase, the Malian information system's main asset is clearly the willingness of concerned parties to improve it. This willingness stems mostly from the dynamic set in motion by collaborative efforts of data collection, dialogue with decision makers, and by relations gradually established with traders. This is because producers of information are motivated by the expectation of data users, private operators are eager to inform enumerators when they know they may obtain useful information in exchange, and decision makers are willing to support a system attempting to fulfill their requirements.

Such a context, favorable to the development of SIM activities is rare enough in Sahelian countries, and deserves emphasis. It translates into a constant willingness of the SIM team and of their partners to question the reliability of data collection, the efficiency of analysis and publishing, to improve the system.

It is from this standpoint that a national workshop was organized in December 1989 to make an assessment of SIM, one year after the seminar which launched the permanent system.

This workshop drew upon several recent efforts. The SIM itself carried out evaluation missions to gauge the capacity of OPAM agents to organize market surveys on their own, after support from the ACDI, and MSU-CESA-USAID networks. In addition, two studies sought to assess the impact of the SIM, and to better define users' needs: the first, conducted by the food security MCU project, surveyed traders' opinions; the second, organized by the SIM with ORSTOM and OSCE support sought to obtain the opinion of institutional users. Finally, an external evaluation of the SIM was done last November (see Egg, 1989). These various efforts have led to the identification of the current system's weaknesses and to suggest improvements.

Evaluations have revealed that the current system's success is actually resting on a fragile basis. In fact, the experimental phase is far from being over. Several years of consolidation and retuning will be necessary to guarantee that the operation is a success and that the system is built on solid foundations.

The SIM's current shortcomings are due mostly to the low reliability of price data and to the irregular monitoring of markets. However, these shortcomings stem themselves from underlying institutional problems and from the choice of methods used in data collection.

4.1. Shifts in Basic Orientations

The SIM implementation over 1989 reveals two important shifts away from the orientations recommended by the December 1988 seminar.

Firstly, the seminar had underscored the need for autonomy of management in SIM, to ensure both flexibility and speed in execution. Yet, the SIM unit, which is part of OPAM's food security division, still did not have this autonomy in late 1989.

Furthermore, two compensating mechanisms to the insertion of the SIM into the OPAM structure had been planned: the COC consultative commission, and the technical committee; these did not function. The COC consultative commission, chaired by the Ministry of Finance, is OPAM governing body. It was supposed to review the SIM analytical bulletin before publication, and to examine management issues. The fact that this commission did not play its role vis-à-vis the SIM made the latter even more dependent from OPAM. The SIM technical committee, which was to meet under chairmanship of the national directorate for statistics and data processing (DNSI), was to ensure that rigorous and more harmonized methods were being used. It did not function, thus depriving the SIM of a wider forum for debate on survey methods.

Following this lack of management autonomy in SIM, and the non-functioning of the structure's other two components, a significant shift took place with respect to the seminar recommendations: the SIM has become an OPAM system rather than being a system based at OPAM, under joint supervision of several partners.

Furthermore, the SIM was to be based on a relatively light survey of markets, but due to ambiguities in the methodology recommended at the December 1988 seminar, this basic orientation was not followed.

The seminar had recommended that data on prices be gathered according to the type of market involved (collection, transit, consumption, border markets). In this view, price collection on each type of market could be limited to the price consistent with the market type. However, the seminar recommended that the nature of dominant transaction be determined. This would have prevented price interpretation errors in cases where a collection market would become a consumption one during the year. In practice, it turned out that the nature of dominant market transactions changed much more frequently than expected (within a month, or even from one week to the next). Taking these changes into account implies collecting a variety of prices on markets concerned. Faced with this problem, the SIM team decided to collect on all markets samples of information on all types of transactions (collection, regrouping, retail sales). This introduced an important shift compared to the original design: evolving from a relatively light survey to a ponderous one, having to handle a large volume of data (see Egg, 1989).

4.2. The SIM's Current Weaknesses

To improve the information system, it is important to precisely identify its weaknesses at each level of implementation. In December 1989, a number of reasons contributed to the relatively low quality of SIM data.

4.2.1. Low Reliability of Information

Was due mainly to:

- lack of training/supervision of market survey enumerators by the central SIM and SAP teams;
- lack of accuracy in the traders' sampling method, and, for certain markets, in calculations of average prices from observations on prices per kilo and prices per local units of measure;
- delays in availability of budgets for OPAM enumerators and, mainly, in the deliveries of means of transportation (mobyettes);

- the length of the data transmission chain, which included 2 radio transmissions, 3 written transcriptions on summary forms, plus data entry for SPSS processing;
- the lack of coordination between OPAM and SAP teams.

Many of these problems stemmed from the fact, mentioned previously, that the SIM team did not enjoy flexibility in implementing its various activities.

However, these weaknesses were not always apparent to the public, since data deemed unreliable by the SIM team were not published. This led to another type of problem: the lack of continuity in the published time series on certain markets, which rendered the information useless for decision making, given the need to monitor medium and long term price trends.

4.2.2. Irregular Monitoring of Certain Markets

Aside from the fact that several markets in the planned sample were not monitored, there was a serious lack of regularity in publishing information on monitored markets. This was due mainly to:

- effects on SIM of the OPAM reorganization: reassignments of agents monitoring certain markets, lack of resources at the field level following budget cuts (even though these were provided for in the SIM budget itself)...
- difficulties in data transmission mentioned above, especially for data sent by the SAP, which had to rely twice on the national administration radio network.

These problems could not be considered as transient: they stemmed from a fundamental and structural cause, the lack of operational and budgetary autonomy, preventing the SIM to offset the consequences of OPAM's reorganization.

4.2.3. Incomplete Information for Decision Makers

If the SIM is to become a useful instrument for decision making, users will need additional information, provided on a regular basis. Especially useful information would include, for instance:

- prices of other types of rice (parboiled, imported);
- data on cereal flows, supply conditions on markets and, if possible, stocks;
- information currently existing, but not available from one source, on: regulations, food aid, OPAM tenders for bids, world prices, prices on the markets of neighboring countries...

4.2.4. Lack of Efficiency in Data Publication

Although considerable efforts have been applied to multiply the means of publishing information, these could still be improved:

- weekly and monthly price tables were not clearly understandable;
- distribution of the weekly report was not fast enough (for lack of a messenger in the SIM team);

- the quarterly bulletin did not draw enough from possible benefits of analysis. The short intervals between publication allowed neither for the necessary long term perspective in market analysis nor for the time needed to gather all information explaining price formation.

4.2.5. Too Great a Dependency on OPAM

This did not apply to the survey system, but rather to data analysis. On the one hand, there were some objections to having price data analysis and interpretation in a national agency in charge of market interventions. On the other hand, it seemed important that such analysis truly become the product of common reflexion by concerned partners.

4.3. Proposals for Improvement

In 1990, efforts must revolve around improving the quality of information: it must become more reliable and regular. To reach this objective, the independent SIM evaluation of November 1989 made the following proposals on the system's various components (see Egg, 1989).

4.3.1. Data Collection

To improve the data collection system, the following appears necessary:

- replacing the random sample of traders by a sample based on reasoned choice;
- no longer mix the prices per kilo and the prices per local unit of measure on calculations of mean prices;
- to reduce the volume of information collected, at least the volume of information to be transmitted rapidly, to allow for the gathering of additional information;
- to do so, eliminate markets for which monitoring is overly difficult, items under-represented in current transactions on the markets of certain areas (e.g. cases where there is only one instance of a cereal transaction);
- to improve coordination between the SIM/OPAM and SAP teams;
- to examine the possibility of adding a wholesale traders' survey about cereal flows between the main regrouping markets, and especially;
- to give priority to field level training and supervision activities.

4.3.2. Data Transmission

This is currently the main bottleneck. Its improvement will require:

- installing radio transmitters in all concerned areas (cercles) to provide a direct link with Bamako;
- reducing, at least for the time being, the volume of informations transmitted to gain better control of the process;
- improving collaboration between the SIM/OPAM and SAP teams.

4.3.3. Publication of Information and Market Analysis

Improving the quality and rapidity of information flows only require technical measures. On the other hand, certain changes will be required to broadcast regularly more complete information based on fuller analyses. To do this, the evaluation suggested:

- that the monthly report be strengthened: in addition to monthly price data it could include 12-month price series (each month could cover a different traded item), a section of informations on regulations, food aid, international prices... and finally, a short analytical note on specific issues of the ongoing agricultural season;
- that the analytical bulletin only appear at the end of the agricultural season, having thus enough perspective to analyze the evolution of the market, and the impact of policy reforms;
- that the domain of analysis be broadened, to include data on cereal production collected elsewhere;
- that the SIM establish informal links with other research groups, such as the IER (Institut d'Economie Rurale), to ensure continuity of analytical quality in the system;
- finally, that the SIM consultative commission be reactivated, to broaden the scope of concertation for data analysis.

4.3.4. The SIM's Institutional Position

In this area, three changes appear necessary:

- the SIM should be connected directly to the office of OPAM's Director General, to reduce administrative steps, and to increase the system's flexibility;
- the central SIM team must be in charge of overall SIM budgetary monitoring;
- the SIM consultative commission to the COC must be reactivated. The evaluation proposed that it consist of the following: DNSI, DNAE, PRMC, OPAM, IER, OSCE, SAP, SIM, and Chamber of Commerce. In this commission a discussion moderator, such as OSCE, could be identified, to provide permanent liaison between the SIM and other members of the commission.

These suggestions, and others, have been debated during the national workshop on the SIM organized at OPAM last December. During this workshop, many improvements to the system were decided on. However, all participants clearly felt that such changes should not be abruptly brought on, and that the successful implementation of the SIM depended upon the following of a gradual improvement process.

V. CONCLUSION

One of the main objectives of cereals market liberalization is increased efficiency in the marketing system. To do so, however, agricultural products must be traded in markets that are competitive and less risky for all participants. Without competition and lower risk in the private marketing

system, producers and consumers may not benefit from any increase in efficiency, and private monopoly may simply usurp the government as the extractor of surplus from agriculture.

It is, therefore, the responsibility of the government to decrease risk in cereals markets by making them more transparent, encouraging more competition in the process of price formation, and preventing the formation of monopolies. The provision of information to all market participants so they can make better decisions is one of the most important conditions for ensuring such market transparency.

Market information systems become an essential step to accompany liberalization because they encourage market transparency and competitive pricing. However, establishing a market information system involving several providers and users of information must be viewed as a long process rather than a one-time event. This process first provides an opportunity to convince decision-makers, through empirical research results and not just theoretical hypotheses, of the need for an information system. It then allows for a gradual broadening of the system's data collection and dissemination capacity. Finally, this approach allows the system to be based upon needs expressed by the system's users and allows a better information dissemination policy.

The establishment of an information system allows a country to develop its own data collection, processing and distribution capacities to provide current cereals market information. In addition, the country's resources can be economized by drawing upon already existing information collection agencies instead of creating new ones. The experience in Mali has shown that this type of approach is better adapted to a developing country where financial and human resources are very limited.

In order to make a market information system more useful for decision makers, it is important that it focus attention on problems specific to the current marketing year. For example, the current marketing year for cereals in Mali is characterized by large market surpluses. The information produced and published by the SIM should therefore contribute to improving marketing credit programs and OPAM bidding procedures as well as help reveal possible export markets.

Here one can see clearly the capacity of the SIM to help improve market performance: once it has the capacity to communicate information about prices in neighboring countries or once it can publicize bids for grain coming from these countries, the SIM will become a true instrument of cereals policy. The policy context today is favorable for the SIM to develop in this direction: the CILSS/Club du Sahel seminar in Lomé in November, 1989, put regional grain trade on the food security agenda for West Africa. This current seminar provides an opportunity to arrange a regular exchange of market information among the CILSS member countries.

REFERENCES

AMSELLE Jean-Loup and BAGAYOGO Dramane "Cereal Market in Mali and Information System of Private Traders". Bamako : OSCE, November 1988.

CEGPD (European Centre for Political and Development Management) "Information System of Cereal Market in Mali : Seminar on the adoption of the Follow-up of Pricing on the Cereals Market in Mali, Bamako, December 1988. Maastrich (Pays-Bas), 1989.

DEMBELE, Niama Nango avec la collaboration de Philip STEFFEN.

"Approche Méthodologique pour la Mise en Place d'un Système d'Information au Mali." Document de Travail No. 88-01 du Projet Sécurité Alimentaire CESA-MSU-USAID. Bamako: Ministère de l'Agriculture, Institut d'Economie Rurale, Secrétariat Technique de la CESA, mars 1988.

EICHER, Carl K. "Sustainable Institutions for African Agricultural Development." La Haye: Working Paper No. 19, International Service for National Agricultural Research (ISNAR), février, 1989.

EGG, Johnny.

"Système d'Information sur le Marché des Céréales au Mali (SIM): Propositions pour la Mise en Oeuvre." Rapport de mission du 24 mai au 4 juin 1988. Bamako: juin 1988.

"Rapport d'évaluation du Système d'Information sur le Marché des Céréales au Mali (SIM)." Préparation de l'Atelier National sur le SIM du 14 au 16 décembre 1989. Bamako: OSCE, INRA-ESR, 10 décembre 1989.

République du Mali, P.R.M.C. et C.O.C. "Séminaire sur le Système d'Information du Marché (6-9 Décembre 1988). Rapport de Synthèse et Recommandations." Bamako: 1988.

STEFFEN, Philip avec la collaboration de Niama Nango DEMBELE et John STAATZ. "Une Critique des Rôles Alternatifs pour l'OPAM sur le Marché Céréalière à travers des Concepts des Biens Publics." Document de Travail No. 88-02 du Projet Sécurité Alimentaire CESA-MSU-USAID. Bamako: Ministère de l'Agriculture, Institut d'Economie Rurale, Secrétariat Technique de la CESA, septembre 1988.

WEBER, Michael T., John M. STAATZ, John S. HOLTZMAN, Eric W. CRAWFORD and Richard H. BERNSTEN. "Informing Food Security Decisions in Africa: Empirical Analysis and Policy Dialogue." American Journal of Agricultural Economics 70, no. 5 (décembre 1988): 1044-52.