Market Information Systems in sub-Sahara Africa Challenges and Opportunities

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Abstract

The paper deals with the emergence and rise of market information systems in sub-Sahara Africa as a result of economic liberalization. There has already been an evolution is such systems and no particular system dominates. Various types of market information systems exist today, public or private, all or not linked to a commodity exchange. The rationale of a commodity exchange is discussed, linked to a market information system. They all struggle with problems of sustainable financing. Very few if any good impact studies exist on such systems, demonstrating their effects on market transparency, information asymmetry, the bargaining power of poor farmers and their market access. Dissemination of the information, using traditional (radio) or modern (ICT) tools is crucial in order to reach the farmers. But market information alone is unlikely to catalyze market supply chains. More is needed to enable poor farmers to gain better access to markets in a more sustainable and remunerative manner.
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1. The emergence and rise of market information systems in sub-Sahara Africa

Most sub-Sahara African countries have liberalized their commodity sub sectors as a result of structural adjustment policies and economic liberalization. Market liberalization is the most important change in many tropical agricultural commodities over the past decades.

Historically, internal markets, particularly in many African countries were regulated by marketing board or 'caisse de stabilisation' mechanisms, with the overt purpose of reducing the variability of farm prices. In certain instances, these schemes enjoyed a measure of success, particularly where the macroeconomic environment was one of stable exchange rates, but more usually they served as taxation mechanisms. They also absorbed resources through rent extraction and retarded the response to the secular declines in prices (Knudsen and Nash, 1990) (Akiyama et al., 2001). Often, the

intervention organizations ended up insolvent and, partly through domestic and partly through donor pressure, they have been either abolished or stripped of their powers.

Liberalization was often promoted by multilateral and national aid agencies, in particular the World Bank, the European Union and USAID, but was also in certain cases instigated solely by national governments. These programmes were motivated by a number of distinct concerns, including (Tollens and Gilbert, 2003):

- to reduce the absorption of resources by parastatal intervention agencies;
- to increase the efficiency of commodity marketing;
- to raise prices received by farmers and hence to stimulate increased levels of production;
- to promote the development of modern agribusiness industries.

These objectives have been met with varying degrees of success, but at the same time, a number of problems have emerged. Among these is the concern that market liberalization may result in less transparent marketing and loss of market power by farmers. The need for a performing market information system (MIS) then comes up.

Market information systems (MIS) in sub-Sahara Africa (SSA) thus emerged as a result of economic liberalisation policies and structural adjustment, when governments stopped intervening directly in the markets via marketing boards or parastatal organisations. They were seen as an accompanying measure of economic liberalisation, which was usually promoted by donors and international financial institutions. Although the move to free, liberalised markets where the private sector is the main actor was usually fairly abrupt, MIS were usually introduced somewhat later and usually at the

initiative of donors. There are cases where governments[1] required the set up and operation of a MIS before full economic liberalisation and the retreat of government from market interventions, but these cases are rather rare and usually for exports crops only.

Thus, MIS were usually set up years later after the abolition of marketing boards and in most cases fully financed by donors. They were very much intended to correct the asymmetries created by economic liberalization, giving more bargaining power to farmers, creating a more transparent, open trading environment and fostering more efficient market systems for all stakeholders. Along the same lines, one of the main functions of such MIS was to provide market information to government officials in order to monitor the economic liberalisation and to be able to intervene when required. This was certainly the case in Mali with the liberalisation of the cereals market in 1989 (Dembele and Staatz, 2002). In fact, most early MIS where set up more to serve government than smallholder farmers and traders. They were usually also bureaucratic, under funded, with a lack of participation of the majority of stakeholders in the agricultural sector and unsustainable.

Public sector MIS systems are not widespread - a survey of 120 developing countries by FAO identified only 53 such systems (Shepherd, 1997; a later survey is not available). But most are usually barely functional (Varangis and Schreiber, 2001). This is due to inadequate financing, inability of bureaucrats to collect reliable market information, and reluctance of traders to divulge information for fear of being taxed.

[1] In Cameroon, when the government moved to economic liberalization of the Arabica coffee marketing and export, with the withdrawal of the National Cocoa and Coffee Board in 1992, under impulse from USAID, a prior condition was the operation of the Arabica Market Information System (AMIS) in order not to "abandon" Arabica coffee farmers. Such a MIS was seen as necessary to provide countervailing power to the smallholder coffee producers in their negotiation with private coffee buyers and traders. The same happened in Côte d'Ivoire when the "Caisse de Stabilisation" (Caisstab) withdrew from buying up directly cocoa and coffee in 1999. The Caisstab was given new functions, including the provision of market information.

Most countries that liberalised their food markets thus had a MIS at one time or another, usually almost totally donor financed for a fixed period of time, and usually run by what remained of the former marketing board or parastatal organisation. After donor financing ran out, the system usually withered away for lack of financing. Especially large distribution of the collected information suffered, as distribution via the media, either conventional (radio, newspapers), or modern (ICT), is usually fairly expensive as the media themselves (press, radio, TV, telephone) were wholly or partly privatised. Sometimes the MIS became part of the famine early warning system, supported by FAO, with the distribution of the information primarily focused on government officials and donors. In that case, weekly or even monthly price averages per product and per market were computed, thus abandoning the real role in creating on a daily basis transparent markets. It is also typical that in Anglophone countries the Ministry of Agriculture is in charge while in Francophone countries, the Ministry of Commerce. In many countries, the mistake was made to extend the coverage of products too rapidly, including cement, imported products, etc., making the system too cumbersome and heave to manage. Few are the systems that were simple, reliable, regular and consistent over time in the collection and distribution of the information after donor financing ended. In many systems, prices were disseminated only once a week, over national radio and in the major newspaper, but this is usually inadequate and ineffective.

Almost all MIS were market price information services only, not commodity exchanges. But in Eastern and Southern Africa, certain MIS also operate as a commodity exchange, such as the Kenya Agricultural Commodity Exchange (KACE) and the Malawi Agricultural Commodity Exchange (MACE), which is modelled after KACE. Both rely

mostly on modern ICT tools for the dissemination, in particular SMS messages via cell phones. KACE and MACE are the only MIS that combine market price information with a commodity exchange information service. This is in fact a cash exchange, with spot delivery, not operating via appointed brokers, and not taking ownership of the produce being exchanged. This is really a big institutional innovation in agricultural marketing. Until recently, only ZIMACE (Zimbabwe Agricultural Commodity Exchange; US$ 572 million turnover in 2001) was the only successful cash commodity exchange operating in Africa, with accredited brokers who took ownership of the produce. Member subscriptions of brokers to ZIMACE covered total costs and made the exchange viable, until monetary instability forced the exchange to close in 2003. In Uganda, the Uganda Commodity Exchange started operating, largely financed from donors. But volume of trading across the floor is very low. The exchange is now sponsoring a Warehouse Receipt Systems Bill before parliament in order to facilitate commodity exchange trading by a strict legal environment and the use of grades and weights.

There is only one futures exchange for agricultural commodities in SSA, the South African Futures Exchange (SAFEX), mainly for hedging purposes for maize, wheat and sunflower. A futures exchange requires a much higher value of trade than a cash exchange, as well as a wide range of participants, including speculators. Forward or futures markets require grades, standards, contract law and ethical practices, in order to reduce transaction costs. This is the case already in more sophisticated business environments with a complex array of institutions, which are absent in most countries in sub-Sahara Africa. In many countries in fact, transaction costs are very high, and can be so high that farmers and traders may choose not to engage in the market. Farmers might

choose to produce for subsistence purposes if they cannot agree on satisfactory prices, or when there are doubts about when or whether they will be paid agreed prices. Under such circumstances, the market fails to operate (Nigel Poole, 2001).

Thus, with market liberalisation, many poor smallholder farmers were disempowered, unaware of the evolution of market prices, easily exploited by unscrupulous middlemen (Kherallah et al., 2002). This was the case particularly for poor farmers in more remote areas, far from large markets, selling only a small surplus of their harvest. When before they enjoyed some protection from government instituted minimum buying prices and had a guaranteed market, they now have to find a buyer and are in a very weak negotiating position. Typically, they sell immediately after harvest when prices are rock bottom in order to pay some outstanding debt. And also typically they have to buy back later in the season, in the hunger period before the next harvest, when their stocks run out, and when prices are at their seasonal highs. It is either buying back at high prices, sometimes from the same trader, or eating up the reserved seeds for the next planting, thus permeating the vicious poverty traps. Typically, poor smallholder farmers are net buyers of food as their own production is insufficient to cover their own needs. They sell low and buy high, thus permeating their poverty and vulnerability over time, and coping through money earning activities off-farm by working on farms of better off farmers, by day labouring, by receiving remittances from family members in cities or abroad or by undue borrowing of money from moneylenders.

Thus, market information and commodity exchanges can be powerful instruments to inform farmers about market conditions and prices, to find willing buyers, to empower them by making the transactions more equal and fair, to inform them about the optimal

timing of buying and selling, to induce them to store optimally and to plan ahead, making better informed optimal production and marketing decisions. This thus helps to break the vicious poverty trap, inducing resilience and better coping mechanisms, and reducing inequality in the markets.

2. Objectives and purposes of a market information system

The main objective of a public MIS is to enhance competition in the market by increasing market transparency for all market participants, and in particular the weakest who are smallholder farmers. Thus, a MIS means empowerment of farmers by strengthening their bargaining power in order to increase their share of the retail proceeds of their produce (Shubert, 1988) (Robbins, 1998) (Giovannucci, 2003).

Market transparency is a condition for effective competition and good marketing performance in liberalized markets. It can be defined as the degree of information that farmers, cooperatives, traders, exporters and market control institutions, including the government, have about parameters relevant to their decision making. Adequate knowledge of prevailing prices, quantities, qualities and conditions of sale in the markets are indispensable for rational production and marketing decisions (Shepherd, 1997).

From the farmer's point of view, market transparency allows them to adjust their production and consumption decisions, to derive the proper incentives from the market and to adjust their sales strategy in order to maximize their welfare. From a macro-economic point of view, market transparency allows vertical coordination in the marketing chain whereby price signals play their proper role in adjusting production and consumption such that maximum efficiency is attained and overall welfare is optimized. This results in maximum economic growth in the economy.

Transparency in agricultural markets results in the following effects:

- the farmers receive the proper production incentives, will adjust their production accordingly and will seize on market opportunities;
- information can improve the bargaining position of the weaker participants in a marketing system who are usually the smallholder farmers;
- competition is enhanced, resulting in fair prices and equity for all participants;
- market information signals profit opportunities and thus creates incentives for market participants;
- seasonal and erratic price variations will be reduced and arbitrage between markets will take place, thereby reducing price differentials between markets. In completely transparent and efficient markets, price differentials reflect only transaction costs (mainly transport costs) between markets;
- overall risk is reduced for all market participants, resulting in more stable markets, improved long term planning and investment decisions;
- improved government regulation of markets: better agricultural and marketing policies and public investments as governments will be adequately informed about market conditions and performance.

3. The rationale for a commodity exchange linked to a market information system

Most MIS in Africa limit themselves to market prices information. This is the essence of a MIS. But KACE and MACE also have a commodity exchange service through offers and bids, which are prominently displayed on blackboard and which are disseminated via SMS and the Internet. This is a big institutional innovation, unheard of

until now. This could really be a major institutional breakthrough in the reform of agricultural markets in Africa. There is presently a lot of emphasis on "getting markets right"[2]. Is this part of the answer? What is the nature of such a commodity exchange? Is there really a need for it? Is there strong growth potential in it? Is the sequencing right?

The hypothesis which is proposed here is that there is a need for a commodity exchange service because either functioning wholesale markets are absent, are operating poorly or involve too high transaction costs to be made use of (Tollens, 1997). This forces much of the trade to be within narrow networks, across short distances, with small lot sizes, and with limited arbitrage over time. Well functioning wholesale markets were never created in Kenya, Malawi or Uganda after economic liberalization. This is a case of market failure as efficient and well functioning markets will not spring up by themselves. This requires the deliberate action by either governments, other authorities or the private sector. But as well functioning markets are characterized by the free rider principle – everybody benefits from them without being forced to pay for the setting up and operation – nobody really has an incentive to invest in them, thus requiring public action.

KACE and MACE are very unique in the sense that they are also genuine commodity exchanges besides their market prices information services. But usually, commodity exchanges in more advanced economies operate through brokers or traders which take ownership of the produce to be traded. This is also the concept behind ACE, which at one time in Zimbabwe (ZIMACE) had nearly 600 million $ business per year, just trading agricultural commodities, and which will now start in Malawi, and later also

[2] See in particular the writings of Dr.Eleni Gabre-Mahin, formerly with IFPRI, now with the World Bank. She particularly emphasizes the three I's in getting markets right: infrastructure, institutions and incentives.

in other African countries. It is also the case in the Uganda commodity exchange. In KACE/MACE, only an exchange service is offered through information provision, and neither KACE nor MACE take ownership of the products to be sold and bought. They are only a go-between between sellers and buyers, without being real brokers or traders.

If there were well functioning central or terminal wholesale markets, farmers or farmer groups and cooperatives and even middlemen would simply take the produce to a wholesale market and sell there. In principle, you can always sell in a wholesale market because they are self-regulating or rather self-clearing through the price discovery mechanism. In a well functioning wholesale market, prices always equilibrate supply with demand and result in market clearing. The price discovery mechanism and the market clearing feature are central to wholesale markets (Tollens, 1997). This is why they are so ubiquitous in more developed economies. In the case of Kenya, Malawi and Uganda, it is exactly the absence or poor functioning of such wholesale markets following the abolition of the marketing boards and the impossibility to buy and sell in markets because of high transaction costs that give rise to the need and viability of a commodity exchange.

It is to be noted that the major food staples in Kenya and Malawi, maize and beans, and bananas in Uganda, are not the commodities most submitted to the commodity exchanges. In Western Kenya, the cereal banks take care of the wholesaling function in the market, filling an institutional void as the large millers are either located in Nairobi or Mombasa. In the case of Malawi, cereals are sold directly to the large private millers in the country, bypassing the commodity exchange. In Uganda, bananas are traded in the many open wholesale/retail markets which are everywhere in the country. KACE and

MACE have had a lot of success for perishable commodities such as tomatoes, cabbages, eggs, honey, potatoes for which the wholesaling function is absent in the markets.

One could say that there are two alternatives to the commodity exchange service:

- the functioning of a wholesale market, strategically located and with clear rules and regulations to facilitate the wholesale function, such as the use of weights and norms, market price information, arbitrage, and a minimum of infrastructure;
- direct contracting between the ultimate buyer, such as a supermarket, and the producers-sellers, individually or preferably grouped. This is the supermarket model[3] which is gaining prominence in the major cities of Eastern and Southern Africa, particularly for perishable commodities such as fruit and vegetables[4].

The conclusion is that the commodity exchange function has room to develop to the extent that the two above alternatives are non-existent or not feasible. It is only because wholesales markets are not functioning, or because the wholesale function is so poorly executed that producers come to KACE/MACE for the commodity exchange. In that respect, KACE/MACE are fulfilling a useful function and are an institutional innovation.

4. Lack of impact evaluation of MIS

One expects large positive impacts from MIS. Especially poor farmers in developing countries have generally poor access to markets and are in a weak bargaining position. The absence of easily accessible market information for farmers leads to lack of market transparency, low bargaining power, low and highly variable prices, coexistence of surplus and deficit areas due to weak spatial integration of markets, high risks, low

[3] See Tom Reardon, David Weatherspoon and David Neven from Michigan State University on the rise of supermarkets in eastern and southern Africa.

[4] In one particular case in MACE, because an oral contract between a large fresh vegetables grower and a supermarket broke down, MACE became the vehicle of exchange between the same two parties.

produce quality and high losses, high transaction costs and insufficient production to satisfy consumer demand. This is part of the all pervasive poverty traps in poor countries, the vulnerability and lack of resilience of poor farmers. All this is well described in the economic literature. Moreover, the New Institutional Economics theory emphasizes market information and vertical coordination in the supply chain of buyers and sellers. It is at the core of transaction cost economics whereby information asymmetry in markets is the main reason why markets perform poorly and why transaction costs are so high.

One main feature of nearly all MIS operating or having operated in sub-Sahara Africa is that no real impact evaluation was ever made. In many cases, the MIS is seen as very successful, as in the case of Mali, or FOODNET in Uganda[5], but no real impact evaluation on the various stakeholders, especially smallholder farmers, consumers, and traders was made. Of course this requires a specialised survey and detailed knowledge of the before-MIS situation, and is thus an expensive exercise. But without such an impact evaluation, it is impossible to determine the market efficiency effects, the reductions in transaction costs and the improved market integration that have undoubtedly occurred. Have poor farmers obtained better market access and improved prices? Have price adjustments between spatially separated markets been more rapid and efficient through profitable arbitrage? Has the response to market shocks been more rapidly and fully? Has the price discovery process by farmers, traders and consumers

[5] In the case of FOODNET Uganda, a survey was done on the intended beneficiaries, but only qualitative information was collected: knowledge of FOODNET and access to market information, usefulness, frequency of listening to the radio, field technicians' visits, etc. All respondents acknowledge that market information was a very important input in their short-term decision-making. The information was used to negotiate for better prices, to access market trends, make comparison with previous seasons to make decisions on which crops to grow (Ferris and Robbins, 2004).

been more efficient and rapid? All these questions beg for an answer. It is usually assumed that when farmers and traders receive the market information, then these expected outcomes will be forthcoming. The only published reference in the scientific literature on this subject was found for The Philippines in 1992 (Mendoza and Rosegrant, 1992).

4. Conclusions

MIS are an accompanying measure to economic liberalization, in order to create more (price) transparency and to foster price competition. Particularly producers who are in an unfavorable bargaining position with buyers may benefit the most from it. Empowerment of their bargaining position in a liberalized market is one of the major aims. If a MIS succeeds, thousands of small producers will receive (marginally) higher prices, not a spectacular result, but important by aggregation in terms of poverty alleviation, income and welfare of smallholder families.

Market information is a perishable commodity. But information is also power, and information asymmetry in primary commodity markets dominated by smallholders is usually quite important, to the detriment of producers. Timely, accurate and representative market information is a powerful tool in the empowerment of farmers in a liberalized marketing system.

No dominant model for a national MIS has so far emerged in SSA. The MIS in effect are all in various stages of development in the different countries. At the same time, commodity exchanges are operating or are being set up, all or not linked to MIS. Sustainability of MIS in SSA remains a major problem. Most still depend on donors for their financing. Most governments do not see the need to finance them, although they are

providing important public goods. They are also a business development service opportunity for the private sector. Public-private sector partnerships are probably the best institutional arrangement, but there are very few if any examples of that in SSA. It is also recognized that market information alone is unlikely to catalyze market supply chains. More is needed to enable smallholder farmers to gain better access to markets in a more sustainable and remunerative manner, such as the use of weights, grades and quality standards and bulking of produce. It was noted that very few if any real impact studies on MIS have been done in SSA. We thus do not really know what their real effects and outcomes are on agricultural commodity marketing. Post market liberalization, one of the major challenges remains poor access of farmers to markets and market development. Workable innovations in market institutions are badly needed and market information systems and commodity exchanges are one such innovation. But they have to be tailored and adapted to the country context and needs by those who are going to use them.

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ACRONYMS

ACE	Agricultural commodity exchange
FOODNET	Agricultural market Information system of Uganda
ICT	Information and Communication Technologies
KACE	Kenya Agricultural Commodity Exchange
MACE	Malawi Agricultural Commodity exchange
MIS	Market Information system
SAFEX	South African Futures Exchange
SMS	Small message service
ZIMACE	Zimbabwe Agricultural Commodity exchange (closed)