

Kingdom of Morocco

Ministry of Agriculture
And Agrarian Reform

PN-ABC-338
15N 25518
USAID/Morocco

Agriculture and Natural
Resources Office

**CEREALS MARKETING REFORM PROJECT
(CMRP--PHASE II)**

**SUMMARY OF ISSUES RELATED TO USE OF AGRICULTURAL
COMMODITY PRICE RISK REDUCTION MECHANISMS WITH
SPECIAL REFERENCE TO MOROCCO**

by

David S. Kingsbury

December 1991

I. INTRODUCTION

The purpose of this paper is to provide a brief overview of the pros and cons of LDC use of the most common agricultural commodity price and volume risk reduction mechanisms (RRM's). These include futures, options, and forward contracts. In addition, the merits of establishing and using domestic RRM's (versus offshore ones such as those bought and sold on the Chicago Board of Trade) are considered.

II. WHY USE RISK REDUCTION MECHANISMS

Importers and domestic processors commonly face two types of risk (Claessens and Varangis, 1991). Transaction risk has to do with the fact that commitment to purchase occurs well before the actual price to be paid is set (for importers this is usually at the time of loading when the FOB price is determined). The time between these two events is roughly 20-50 days. During this time, the importer is potentially vulnerable to changes in the exchange rate and the world price. Long-term risk is more related to planning. Firms (or governments) are unaware of how much money (local currency and foreign exchange) to allocate in the next budgeting period for procurement due to commodity price fluctuations. The duration here is approximately 6-12 months.

In the absence of use of RRM's and depending on domestic pricing policy, these risks may be fully borne by consumers if world prices are directly passed on to them by importers, or borne by the trading company (government) if domestic price is controlled (subsidized or taxed).

Mathieson et al (1989) provide a useful overview of international market volatility in the 1980's. With regard to dollar-denominated commodity prices, the overall pattern in price swings for major commodities in the 1980's was not as volatile as during the 1970's. Moreover, there appears to be a somewhat downward trend in volatility for wheat in the 1980's. However, this is only part of the story for an importer who must make payments to his local bank in domestic currency. Interest rates have been quite volatile with alternating periods of extreme and moderate volatility.¹ In addition, exchange rates exhibit large fluctuations in the 1980's with what seems to be a steadily rising trend in volatility. Therefore, the desirability of managing risk in procuring imports of strategic goods is firmly established. RRM's for dealing with commodity price, interest rate, and exchange rate risk exist through international financial markets. Ideally, an importing LDC could avail itself of all of these RRM's. Unexploited potential exists in the areas of food and oil importation, as well as in debt management.

¹ As measured by the London InterBank Offer Rate (LIBOR).

III. TYPES OF RISK REDUCTION MECHANISMS

This section provides a very brief overview of the major types of RRM's commonly used for hedging agricultural commodity price risk. The emphasis is on highlighting the differences between the various RRM's, rather than on detailing how they work and the various strategies employed by traders as these can be found in numerous texts. RRM's considered include futures, options, and forward contracts.

A. Futures Contracts

The major features of futures contracts that distinguish them from other RRM's are as follows. Contracts are rigidly standardized in terms of quantity, quality, and date and place of delivery. While this limits their capacity to perfectly accommodate the needs of the individual buyer and seller, the goal is to assure that enough market participants will be interested that volume of trade in a given contract-type is large enough to provide competition, market transparency, and promote liquidity. Trading has traditionally occurred in a pit to further ensure competition and market transparency. This is increasingly moving towards computerization. Finally, a futures exchange operates a clearinghouse. All contracts are backed by the resources of the futures exchange. All market participants must deposit a margin requirement to assure fulfillment of their positions. If either party defaults on a contract, the risk is borne by the exchange.

Due to the inflexibility of futures contract specifications, they can not be used as a "perfect hedge" against risk as:

- 1) the settlement date for the futures contract and the date of an individual's cash settlement may differ;
- 2) the commodity or asset specified in the futures contract may differ from the one pertaining to the cash commitment, and;
- 3) delivery locations may differ.

B. Forward Contracts

Forward contracts are not traded in organized exchanges, but are offered on an over-the-counter basis, usually with commercial banks serving as facilitators. As such, decisions on contract specifications are decentralized and easier to tailor to the needs of buyers and sellers. Unlike futures contracts, forward contracts are not anonymous devices and risk is primarily borne by the parties to the transaction. This limits the liquidity of forward contracts and is only done with highly creditworthy investors. In theory, the greater flexibility of forward

contracts permits formulation of the perfect hedge as it may ideally be possible to tailor the contract so that the commodity and underlying instruments are similar in timing, nature, and location.

C. Options Contracts

Using futures allows locking in a price that protects one from price rises, but does not allow for benefit from price reductions. With options, it is possible to benefit from price reductions, but this asymmetry has a cost: the purchaser is obliged to pay a premium up-front. In brief, the three main differences between futures and options are:

- 1) Futures lock in a price while options contracts limit maximum losses and leave opportunity to take advantage of favorable price movements;
- 2) the buyer has to pay the premium up-front and this may imply significant financing, and;
- 3) The buyer of options faces credit risk from the counter-party but the seller does not as options are not subject to margin calls.

IV. MAJOR CONSTRAINTS TO USE OF FUTURES AND OPTIONS BY LDC TRADING ENTITIES

Claessens and Varangis (1991) outline a number of constraints faced by LDC state trading companies in the use of overseas-based RRM's. Some of these can be avoided by private traders who have greater flexibility in day-to-day decision-making and face fewer political constraints.

A. Cash Flow and Capital Flow Restrictions

Using futures and options requires that traders maintain offshore hard currency accounts for buying, and more importantly, meeting margin calls if participating in futures markets. There are two potential problems here. First, the country's trade regime may prohibit opening offshore accounts. State companies are of course held to this. Government may rigorously enforce this for private companies too. However, government may also look the other way if they are on the road to trade liberalization and such restrictions are viewed as anachronisms, or the government may not have the manpower to effectively police this area. In some Latin American countries, private importers use futures markets although they are technically forbidden to

hold overseas bank accounts. In these cases, the governments simply look the other way.²

The second and related problem is that it will be necessary for trading firms to have ready access to significant amounts of funds on very short notice (i.e. one day) if they have contracts for large volumes. This is necessary for meeting margin calls. For private firms, this implies that only well-established firms with good credit standings can deal in futures. It is more complicated for state firms because they must somehow convince skeptical and already squeezed treasury or central bank officials of the need for this relative to competing claims for civil service salaries and operating expenses. Before overseas RRM's can be used, a procedure must be established to allow central bank staff to quickly approve foreign exchange disbursement to the public trading company.

B. Flexibility of Action

This is essentially a problem for public enterprises. State firms are often unable to make decisions quickly on which contracts to buy and sell. As stated above, such firms may not have direct control over foreign exchange and this can render using overseas RRM's practically impossible.

C. Negative Publicity

This is a problem for both state trading firms and private firms trading on behalf of the state. If the trading entity locks in a futures price and the price then falls, there may be strong public criticism. In a highly charged political atmosphere, this can result in scape-goating, ruined careers, jailing of "evil" traders, and so on. This is hardly symmetric as if the price rises, the traders are unlikely to be proclaimed heroes for having saved the country money. Thus, for the properly cautious public official, there is little positive incentive to aggressively invest in futures for the benefit of the country.

If this is a real issue, Claessens and Varangis recommend using options which allows one to benefit from price reductions (at a premium). In addition, to avoid political fallout and scape-goating, the hedging strategy should have a broad mandate. A high level committee should be set up comprised of officials from various ministries, the central bank, etc. to formally agree on a hedging strategy beforehand.

² Private coffee exporters in Columbia and Costa Rica commonly trade in futures. In theory, they can be jailed for up to a year for operating overseas bank accounts.

D. Legal System

Some governments prohibit use of futures and options by state trading companies. The more common legal hurdle is direct control over foreign exchange. Accounting practices for tax purposes may also need to be redefined so that profit and loss statements correctly reflect a firm's RRM portfolio position and governments do not attempt to collect inappropriate amounts.³

E. Accountability

Checks and balances need to be established to assure that trading performance is regularly monitored. This serves the dual purpose of heading off abuse and assuring that prudent investing strategies are followed.⁴

V. MAJOR ISSUES RELATED TO ESTABLISHMENT OF DOMESTIC RISK REDUCTION MECHANISMS

The most germane current examples from which one can perhaps get guidance on major issues facing establishment of domestic RRM's come from Eastern Europe, and more specifically Hungary and Poland. Their former agricultural production and marketing systems were highly centralized and inefficient. However, price risk was not a concern. In attempting to move to a more efficient and transparent system, price volatility has immediately come to the forefront as a major preoccupation and their fledgling initiatives to deal with price risk have instructional value.

A. The Hungarian Grain Exchange

Anderson and Powell (1990) provide a good description of the operations and major conceptual and practical issues facing the Hungarian Grain Exchange which began operations in January 1990. The exchange has three objectives:

- 1) To create and maintain a marketplace for trading futures and cash contracts for agricultural commodities;
- 2) To service the needs of exchange members, and;

³ For example, an importer hedges wheat for \$150/MT, the spot price rises to \$250/MT, and the government attempts to collect taxes on the spot value as opposed to the locked-in value.

⁴ Claessens and Varangis (1991) outline a prototype monitoring system outlined in appendix 3 of their report.

3) To engage in informational and educational activities.

Hungary currently produces around 8 million MT of coarse grains (of which 7 million MT are corn) and 6 million MT of wheat. The country consumes 5 million MT of wheat, and exports have varied between 0.5 million MT and 2 million MT (mainly to the former USSR). There is 10 million MT of grain storage capacity. The volumes are large compared to most LDC's. If futures contracts are specified correctly, futures trading may be large enough to assure reasonable liquidity of contracts.⁵

The exchange operates as follows. The two contracts currently traded are 20 MT volumes of corn and semi-hard winter wheat (Chicago Board of Trade contracts are for 127 MT for corn and 136 MT for wheat), with longest contracts for 6 months. The exchange also serves as a trading place for spot cash market trades. Futures trading is between members (currently 25 with an eventual limit of 50 after which seats will be bought and sold at negotiated prices). Individuals, not institutions are members (due to a perceived risk of domination by old communist institutions). Every member must post a financial guarantee of approximately \$83,000, and can trade on their own account or on behalf of customers. There is a 0.3% exchange fee for all trades (long and short). Commissions and margins between members and customers are not regulated by the exchange. At present, there is one weekly trading session lasting one hour with an opening and a settlement. Eventually, continuous trading between opening and settlement is desired. Bids and offers are posted on a blackboard and some personal computers on a local area network. The exchange sets minimum and maximum price movements as well as margin posting requirements (about 13% of contract value). All trades go through a clearinghouse where initial margins of cash or securities are posted for all long and short positions. The two contracts specify one designated delivery point and can occur any time within the delivery month (with five days minimum notice), but the exchange allows for price reductions if delivery takes place elsewhere (with any savings shared equally between the parties).

The exchange maintains records of all transactions with closing bids and asks reported in a weekly business magazine and on a teletex system that reaches 100,000 receivers. Anderson and

⁵ Once again, futures can not be traded on thin markets (both in quality and temporal terms) as liquidity is the cornerstone of such contracts. If buying and selling can not be quick and impersonal, then hedgers and speculators will avoid it. For a country like Morocco, the relatively small volumes of wheat bought and sold domestically might make establishment of a domestic futures market unfeasible.

Powell posit that the exchange has contributed to market transparency as evidence exists that exchange prices have become a standard reference for grain price formation and that many more trades based on exchange prices may also be occurring outside of the exchange in order to avoid paying commissions.

At present, the exchange is fully self-regulated as government oversight responsibility has not yet been assigned. To head off market manipulation, any member holding more than 500 contracts in a single month is publicly identified. In cases of a disputed trade, the exchange president makes a determination which may be appealed to a panel of experts.

Anderson and Powell identify the following issues critical to future growth of the exchange:

In the initial stages, volume in a futures market may be determined mostly by speculators, but long-term growth requires substantial industry participation. Therefore, any futures exchange has to actively court and design contracts that meet the needs of producers and processors.

Explicit rules are needed for defining member responsibilities towards clients to insure "the best possible execution" of trades. Abuses include taking care of own-account trading before client trading ("front-running"), and allocating good contracts to one's own account and loser contracts to clients. If gone unchecked, such practices quickly erode confidence in the integrity of the exchange.

Training of potential members and clients is needed in hedging techniques. Also government officials need training so they understand exchange workings, potential benefits, and appropriate government oversight roles.

Regular assessment of contract terms is required to best serve conflicting needs of buyers and sellers. The temptation to add new contract types should be avoided as it increases the complexity of operations and detracts from the liquidity of existing instruments.

Smooth functioning of futures markets requires a well-functioning banking sector for: a) having large enough supplies of affordable credit; b) granting credit and assigning securities as collateral (currently grain itself is the collateral in Hungary and this is less than ideal as the value of the grain varies); c) taking possession of the futures position in case of default (this may not be possible under current banking sector regulations), and; d) dealing with margin calls if commodity prices fluctuate widely (margin finance is more specialized than standard approaches to credit control).

A well-defined government regulatory framework is essential. Although the lack of current regulation in Hungary has the immediate benefit of less public control, this carries some risk. If ever there is a scandal of some type at the exchange, public intervention will be ad hoc, inappropriate, and disruptive in the absence of a pre-existing regulatory guidelines. In the Hungarian case, a total absence of regulation of monopoly practices, and a long history of monopolistic state intervention, is a major issue as new firms may attempt to replicate the vertical integration and monopolistic practices of the past.

A final issue concerns the relative attractiveness of local futures market versus using well established overseas exchanges such as the Chicago Board of Trade. Normally, the less risky move would involve dealing with the established Chicago market. However, use of overseas markets involves transportation cost risk, exchange rate risk, and import duties. These may provide enough disincentives so that a local market could be established.

It requires a great deal of careful consideration before deciding to go ahead with establishment of a futures market. Some countries may initially wish to establish a local futures market more out of prestige considerations than rational analysis. The ultimate value of a futures exchange in Hungary may lie more in its role in price discovery than in risk reduction. This is especially important in the former communist countries where finding a market-based reference price for anything has proven problematic.

B. Forward Trading in Poland

Anderson (1990) discusses a forward trading mechanism initiated by the newly created Agency for Agricultural Marketing which is a parastatal marketing board still trying to define its role vis à vis the agricultural sector. The agency maintains a price list at which it is willing to buy grain at certified warehouses on specified dates in the future as well as for spot delivery. At the same time, the agency maintains a price list at which it is willing to sell back (offset) contracts previously established. Parties who have contracted to sell must post some grain as collateral at certified warehouses with the agency taking a lien on the grain. The private party can still sell the grain at some date to another buyer but must follow the necessary procedures to have the lien removed. The combined physical and sales contract would serve as sufficient basis for the seller to get bank loans up to some specified fraction of the grain's value.

This comparatively government-based system raises a number of important issues. The determination of the price list can be done such that the agency never has to take physical delivery of grain, therefore keeping all transactions private. If the agency

price is maintained below the market spot price, no seller will ever deliver grain to the agency. The system can affect incentives to store by varying month-to-month contract prices. During the early stages of market development, this can be set steeply to encourage storage sub-sector development and entry into the agency system. To the extent that it is more attractive to carry grain in the agency system, the agency will suffer losses. Obviously, so as not to be disruptive, the agency should not attempt to subsidize storage. If well designed, this system can be a powerful instrument for developing the private marketing system.

However, significant potential exists to distort market prices if the agency chooses not to respect market forces. Anderson identifies the potential problems of moving from an old parastatal role to a new one:

- 1) The old employees do not possess a free market mindset;
- 2) If existing parastatal storage and milling capacity is large, their economies of scale will discourage private storage, constituting serious barriers to entry to the new system;
- 3) Private entities may have difficulty in gaining access to commercial credit if public crowding out exists, thus perpetuating the dominant public role in agricultural marketing.

VI. MAJOR ISSUES FOR MOROCCO IN ASSESSING POTENTIAL USE OF RRM'S

Issues in this concluding section are gleaned from the discussion in the body of the paper and the author's assessment of how they might be important in the Moroccan context. These are phrased more as questions than statements to reflect my near-total ignorance of the Moroccan agricultural sector and economic environment.

What is the Moroccan government's policy towards private overseas bank accounts? If prohibited (and actually enforced), use of overseas futures markets is not possible. Only domestic RRM's can be used in the absence of policy change.

How great is short-run exchange rate volatility in Morocco? If highly volatile, this increases the risk of using dollar-denominated futures contracts and renders a local alternative more attractive.

What proportion of wheat imports are concessionary food aid? Prospects of large quantities of cheap PL 480 wheat are an

obvious damper on commercial imports using the Chicago Board of Trade. This in no way implies that food aid is risk-free. Although it may not be possible to lock in a price too far in the future, the benefits of cheap credit may be perceived to outweigh reduced risk from use of futures.

With regard to commercial imports, what proportion of wheat imports are commercial spot market versus forward contracts with exporters? What is average length of time for forward contracts? The Moroccans may feel they are very good negotiators for multi-year contracts and may have developed ties to some international companies that include various concessions. This would dampen enthusiasm for using RRM's.

Are other commodities (and assets) traded by the GOM by other ministries such as Finance? If there is some experience in the use of hedging mechanisms for interest rates or exchange rates, this will make the educational process a bit easier. However, if there has been no use of commodity futures to date, there probably hasn't been any use of financial futures because they have not been around very long.

What is the current wheat market structure (i.e. concentration at the processing, wholesaling, and importing levels)? This has implications for the possibility of collusion in a domestic futures market.

What are estimates of domestic wheat volumes that might be traded through a local futures market? Volume must be fairly large to assure the liquidity of contracts. While one can reduce specified quantities to be delivered in a standardized contract, there will be a threshold below which it is impractical to go because of the high transactions costs of dealing in small quantity contracts.

How distorted are domestic consumer and producer prices from world prices? If these diverge widely from world prices, use of offshore futures for hedging domestic transactions will not be successful. Hedging is feasible when the futures price and the price of the commodity being hedged can be reasonably assumed to converge as contract maturity approaches. If there is no close correlation between these two price movements, then the system breaks down. The bottom line is that futures will rarely be of much use in an illiberal economic policy environment.

How healthy is the domestic banking sector? Any of these RRM's, be they overseas or domestically-based, implies relatively easy access to credit at market-based rates by credit-worthy clients. It also implies that the banking sector have the capacity (and freedom) to objectively determine credit-worthiness and be able to deal in a fairly wide variety of financial instruments. Substantial crowding out of domestic credit by

government will greatly reduce the potential effectiveness of use of RRM's.

In conclusion, it is evident that setting up a domestic futures exchange is an exceedingly complex and expensive undertaking. In its early stages, such an institution is very fragile. Establishing trading procedures adapted to local realities, maintaining the liquidity of contracts, properly defining the regulatory role of government, and safeguarding against manipulation by a few large traders are by no means straightforward tasks. Establishing a local futures market (as opposed to trading Chicago futures and options) may be appropriate in the presence of serious exchange rate risk and unreliable transport routes for international trade. For a country such as Morocco with good communications networks and port facilities, tapping into Chicago contracts is probably the best bet for now. The only major drawback is the size of Chicago futures contracts (5,000 bushels or 136 MT for wheat) which would prohibit trading by all but the largest traders.

Further study should focus on clearly specifying characteristics of the Moroccan agricultural sector that might make use of risk reduction mechanisms appropriate, and identifying the policy changes that would be required to enable producers, processors, and importers to take better advantage of them. This should be closely coordinated with the World Bank which has considerable expertise and training capacity in RRM use by LDC's.

RERERENCES

- Anderson, Ronald. (1990). "The Transformation of Polish Grain Marketing." In An Agricultural Strategy for Poland. Report of the Polish - European Community - World Bank Task Force. December.
- Anderson, Ronald, and Powell, Andrew. (1990). "The Hungarian Agricultural Commodity Exchange and Liberalization in Hungarian Agriculture." Draft. The World Bank. September.
- Claessens, Stijn, and Qian, Ying. (1991). "Risk Management in Sub-Saharan Africa," Policy, Research, and External Affairs Working Paper No. 593, the World Bank, February.
- Claessens, Stijn, and Varangis, Panos. (1991). "Hedging Crude Oil Imports in Developing Countries," Policy, Research, and External Affairs Working Paper No. 755, the World Bank, August.
- Mathieson, Donald, et al. (1989). "Managing Financial Risks in Indebted Developing Countries," IMF Occasional Paper No. 65. The International Monetary Fund, June.
- Peck, Anne E. (1982). "Futures Markets, Food Imports, and Food Security," AGREP Division Working Paper No. 43, the World Bank, September.
- Thompson, Sarahelen. (1983). "The Use of Futures Markets by Less Developed Countries for Commodity Exporting," AGREP Division Working Paper No. 65, the World Bank, March.