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NATIONAL INSTITUTION BUILDING TO FACILITATE ACCESS TO RISK MANAGEMENT MARKETS FOR SMALL PRODUCERS AND TRADERS PARTICULARLY FROM DEVELOPING COUNTRIES AND COUNTRIES IN TRANSITION: ISSUES INVOLVED AND POSSIBLE WAYS TO OVERCOME THEM

Risk distribution after liberalization of commodity marketing and problems of access to risk management markets for developing country entities - illustrated by the example of coffee in Africa

Report by the UNCTAD secretariat

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INTRODUCTION

1. In the proposals of the Group of Experts on Commodity Exchanges, as endorsed by the Standing Committee on Commodities in its second session (February 1994), the UNCTAD secretariat was urged to undertake in-depth research on the problems of access, of developing country entities in particular, to commodity price risk management markets.[1] The two studies that are before the Ad Hoc Group of Experts on Risk Management in Commodity Trade treat different aspects of these access problems. In this document, the issues discussed are linked to national market structures and the institution building needed to facilitate access to international risk management markets to those exposed to commodity price risks[2]. In particular it examines how access to risk management instruments can be enhanced for farmers and smaller traders in countries highly dependent on export earnings from agricultural commodities and which have a relatively underdeveloped private sector infrastructure, and the appropriate role of the government in this regard.

2. The problems and possibilities in commodity export marketing and risk management in higher-income developing countries such as Brazil, Mexico or Indonesia are different, and will not be addressed in this paper. These countries are potentially able to "bundle" the needs for risk management among smaller players in their domestic economies through the creation of national forward or futures exchanges. These would allow larger players to lay off the risks that they take in such exchanges on the international market.[3] There are some African countries where this option is also a real one. For example, the Zimbabwe Commercial Farmers' Union and the Zimbabwean Agricultural Commodities Exchange have established a cash market for wheat, which would allow for easier transmission of risks to the world's futures exchanges[4]. Also the problems faced by mineral and petroleum exporting countries when these exports are handled by one or more large firms are not covered. Again the problems are usually not ones of access but of creditworthiness ratings of these firms with market intermediaries and of suitable internal company control mechanisms for avoiding abuse of trading privileges. The former is covered in the other report; the latter - a fundamental issue in practice - is treated in some detail in annex I.

3. In order to present clearly the problems faced and the possible solutions, this report uses the example of coffee in Africa[5]. Coffee was chosen as it

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[1] "Analysis of ways of improving the efficiency and use of existing mechanisms for the management of risks arising from commodity price fluctuations - Proposals of the Group of Experts on Commodity Exchanges", TD/B/CN.1/10/Add.1, 27 September 1993, paragraphs 13 and 14; Report of the Standing Committee on Commodities on its second session, TB/B/40(2)/13, TB/B/CN.1/19, 1994, Agreed Conclusions adopted by the Standing Committee on agenda items 3,4,5,6,7 and 8, paragraph 13.

[2] The other report (TD/B/CN.1/GE.1/3) concentrates on the issue of acceptability of developing country entities to the intermediaries providing access to international risk management markets, and, in particular, the access problems related to counterparty and sovereign risk.

[3] The creation of domestic or regional exchanges and contracts is one of the issues discussed in the "Joint UNCTAD/World Bank study on risk management in Southeast Asia", prepared for a high-level regional workshop on commodity exchanges organized at Jakarta, Indonesia, 17-19 May 1993.

[4] See K. Hunter, "Raw recruits", *Futures and Options World*, July 1993.

[5] The information on the developments in the coffee sectors of African producers is largely based on the papers prepared for and presentations given during the workshop on "Government policies affecting coffee export marketing", Nairobi, Kenya, 29 November to 3 December 1993.

represents an obvious example of a shift in distribution of exposure to price risks owing to changes in government policies. In many developing countries including most African countries, internal marketing, prices and export marketing of the main agricultural export commodities were traditionally controlled by the government. Prices were either directly regulated, or stabilized through special funds. The government thus took on most of the price risks. Now, producer price regulation has weakened and many stabilization funds have disappeared. While farmers appear to be receiving a larger share of the final price of their product, they are no longer cushioned against the often large fluctuations of world market prices. Exporters, in particular those not working as agents for foreign buyers, are also exposed to large price risks. This shift of price risks from government to farmers and exporters raises a number of questions linked to these entities' ability to cope with their exposure to price risks, to the social acceptability of this distribution of risks, and to their perceived trustworthiness as trading partners in today's trading world. In particular, this paper will discuss the following issues:

(a) Is it economically and socially advisable to let farmers bear the full brunt of world market price volatility ? If not, is there a viable way to operate a minimum price scheme within the framework of a liberalized agricultural sector ? What would be the components of an agricultural policy which empowers farmers (and exporters) to manage themselves the price risks which, in the past, were largely borne by the State ?
(b) Under what conditions will private exporters be considered as good, reliable counterparts by foreign importers, and when they are not, how can this be remedied ?
(c) Can private exporters make full use of the range of marketing and risk management instruments that are, in principle, available to them ?
(d) Are there residual price risks which still fall on the government, and if so, should these and can these be managed ?

Chapter I

COMMODITY PRICE RISK DISTRIBUTION AT THE PRODUCING COUNTRY LEVEL

4. In the last few years, export marketing systems throughout the world have changed dramatically for many commodities, including coffee. African as well as Latin American and Asian governments took at times drastic measures to give a larger role to their private sectors. In the 51 producing members of the International Coffee Organization responsible for 99.5 per cent of the world's exports, the situation in 1985 was the following:[6] 25 countries sold their coffee through boards, caisses, or other state monopolies or near-monopolies;[7] 11 countries had a mixed situation in which state selling cohabited with a private sector; and 15 countries had an entirely private sector.[8] Only eight years later, in 1993, the situation was completely different: three countries still had monopolies or near-monopolies; 10 countries had a mixed system; 38 countries had an entirely private sector.

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[6] Pierre Leblache, "Modern coffee marketing techniques and risk management", paper prepared for the workshop on "Government policies affecting coffee export marketing", Nairobi, Kenya, 29 November to 3 December 1993.

[7] The monopolies and mixed structures include those in countries with a nominally private sector but where government bureaucracy implied that the state had in practice a right of veto on sales.

[8] This includes countries where any public sector body had to compete against the private sector without any privilege or exemption.

5. Until a few years ago, and with only very few exceptions, African governments took the view that their activities in coffee marketing should include taking on the price risks linked to exporting to a world market characterized by highly volatile prices. These governments, through marketing boards and other regulatory agencies, took large price risks, in general managed through the operation of stabilization funds, not through fixed-price forward sales, which usually accounted for only a small part of annual production. Producer prices were usually announced before the start of the season. Private traders were often important within the marketing system, but basically as agents for the government: not only were their margins fixed, they were at times also allotted exclusive purchasing zones. Government intervention meant that there were few price risks for farmers, at least not within any one season, and virtually no price risks for traders: all price risks were borne by the state. Farmers did run some interseasonal price risks, although governments made an effort to keep prices from declining, at least in nominal terms. When farmers were exposed to price risks, it was because government control over the prices that traders actually paid was less than perfect. In effect, the major risk that traders and farmers ran was that of non-payment by the State; a risk that in several countries became very real indeed in the early 1990s, when the funds to subsidize prices at levels above world market levels were no longer available.

6. One important reason for this financial crisis was that, even when producer prices were realistic in relation to world market prices, governments very rarely made any effort to protect themselves against the risks of a consequent world market price decline. Stabilization funds were designed to allow for the subsidizing of the losses made in the marketing chain when producer prices plus marketing costs exceeded prices received for exports. In practice, however, such funds were often exhausted before they could be used for their original purposes. This put the cost of price stabilization directly on government budgets. In 1989-1991, when most governments failed to adapt producer prices to the low world market prices which followed the collapse of the International Coffee Agreement, the stress on government budgets proved too much. Governments solved their liquidity problems by delaying even further their payments to farmers and private sector intermediaries and pressures for a reform of the marketing and pricing systems increased. Within a very short period, most government coffee marketing boards ceased to exist.

7. Other factors also argued in favour of a greater role for free market forces. Firstly, as the world coffee market became increasingly competitive, a liberalized system was seen as less rigorous than a closed one: it encouraged a wider diversity of agents, a wider assortment of marketing methods and a higher flexibility and dynamism, as well as a better adaptability to world market changes. With a monopoly system, lack of pressure to improve efficiency and bureaucratic passivity were sometimes impediments to enhanced marketing and export efficiency. Secondly, some countries had problems of illegal coffee exports. As coffee producer prices were set by the government, and prices were different from country to country, a large quantity of coffee could be smuggled to the country with the higher price, particularly when prices differed widely. Liberalization of trade could fight illegal coffee traffic by keeping prices more representative and transparent and by reducing country-to-country price differentials.

8. The new roles of the state in agricultural marketing and pricing seem not to be well defined in many countries. In general, there is a need for activities such as maintaining and developing the quality standards of exports, maintaining and enhancing the image and reliability of export structure (for instance by providing an arbitration procedure in case of dispute or a record of clients' claims against specific exporters), and guaranteeing the fairest possible prices to growers through appropriate but realistic legislation and regulations. Most of these functions are not provided spontaneously by the private sector; however, it is not clear to what extent the new state entities responsible for their countries' coffee sectors have moved in this direction. Also, the links between

exposure to price risks and the capacity to manage such risks appear hardly to have been taken into account in policy formulation.

Chapter II

FINANCIAL PREREQUISITES FOR THE USE OF COMMODITY FUTURES AND OPTIONS BY DEVELOPING COUNTRY ENTITIES

9. Not all the markets in existence are necessarily useful from the point of view of developing country governments and entities (for more on this point, see annex II), and markets that meet all the risk management needs of these governments and entities do not necessarily exist. Therefore, analysis of whether there is a useful market should be the first action taken when considering the development of a price risk management strategy. When there is a useful market, one issue is of particular importance: does the user meet the financial prerequisites for futures and/or options.[9] While certain developing country entities will have fewer problems than others in meeting these prerequisites, they are not necessarily the most exposed to price risks; conversely, those who are most exposed to such risks, such as farmers, do not automatically have the capacity to manage them.

10. This issue of financial strength is of particular importance. As is illustrated in the box below, the use of a futures or options market by an entity exporting coffee worth some US$ 5 million may require, if this entity wishes to hedge all its risks in a straightforward way, an initial outlay of at least US$ 700,000, to which payment for additional margin calls may need to be added. Few developing country entities are likely to be able to put up such an amount from their working capital, and sovereign risk issues will make it very difficult for most such entities to gain access to sufficient credit for undertaking large-scale risk management transactions. Ways to overcome this credit problem, which basically involve the creation of facilities to use commodities as collateral for loans, are discussed in the companion paper, "Counterpart and sovereign risk obstacles to improved access to risk management markets: issues involved, problems and possible solutions" (TB/B/CN.1/GE.1/3). As long as these credit problems are not resolved, developing country entities will have to rely mainly on their own working capital to cover loss-making futures positions, an effort which may be hard to sustain over a longer period. It should be noted that losses on futures should, normally, be equivalent to unrealized profits on physical commodities, but as long as there is no way to convert the value of these physical commodities into cash (e.g. using it as a collateral for a loan), this is a small consolation for those confronted with a call for immediate payment of a margin call.[10] The price volatility of commodities such as coffee, sugar or aluminium is comparable to that of crude oil, so when hedging such commodities, the immediate need for convertible currencies may need to be of a commensurate magnitude. For many countries, it may be difficult to put up this kind of money.

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[9] For a description of the functioning of futures and options, and other market-based risk management instruments, see UNCTAD/COM/15, 13 March 1993, chapter III.

[10] In a simulation for an average-sized oil company importing some 1.2 million barrels of oil a year (worth some US$ 20 million), it was found that to cover a reasonable part of its price risks, this company should have immediate access, within 24 hours, to at least US$ 100,000. The company should be able to draw down this amount day after day; cumulative cash-flow needs over a period of several weeks can then run into the millions of US dollars. See Stijn Claessens & Panos Varangis, *Hedging crude oil imports in developing countries*, World Bank, International Economics Department, WPS 755, August 1991.

A SIMPLIFIED EXAMPLE OF PRICE RISK MANAGEMENT FOR A FARMERS' COOPERATIVE

This example is for a cooperative X which sells to local exporters on behalf of its members, 2 million pounds of arabica coffee in each of the months of October, November and December, at fixed prices which reflect the New York Coffee, Sugar and Cocoa Exchange "C" contract prices minus 10 cts/lb in traders' margins. The cooperative wishes to protect its members against intra-seasonal price declines - that is, assure that the price at the beginning of the season is what farmers will receive as a minimum at the end of the season. For 1987, the cooperative's management proposed a fixed price of 112 cts/lb for the coffee to be delivered late 1987. This was accepted. The cooperative proceeded to sell 345 futures contracts, each for 17,500 lbs, on the exchange. As a security margin, it was requested to deposit US$ 862,500 (US$ 2,500 a contract), in a US bank account. In the following months, prices indeed declined. No additional margin payments were required. In July, prices had gone down so much that the cooperative stood to make a profit of US$ 1.5 million if it sold its contracts. But fearing a further price decline, it didn't do so. When it started selling its first physical coffee in October, futures market prices had risen again to 118 cts/lb. The cooperative received 108 cts/lb for 2 million lbs, and made a profit of 4 cts/lb on the 115 futures contracts it closed out (it was able to buy these contracts back at 118 cts/lb, while it had sold them at 122 cts/lb). In November and December, prices were again up, to 125 cts/lb, and the cooperative made a loss of 3 cts/lb on the futures contracts while it received 115 cts/lb for its physical coffee. In both cases, it had secured the 112 cts/lb fixed price it had guaranteed its members.

In 1988, the management undertook a similar transaction at 116 cts/lb. This time prices increased. The cooperative was called to deposit additional security margins of almost 1 million US$. When the coffee was finally sold and the futures contracts closed out, the higher-than-expected physical market price, of 126 cts/lb, was mitigated by losses of 10 cts/lb on the futures market. But again, the price of 116 cts/lb was secured.

Year	Effective price received (cts/lb)			Maximum margins paid ('000 US$)
	No hedging	Using futures	Using options	
1987	113	112	110	863
1988	126	116	121	1,823
1989	61	140	134	863
1990	79	66	74	2,003
1991	68	76	72	1,343
1992	58	63	59	863
1993	67	59	62	1,523

Initial premiums for at-the-money options are assumed to be US$ 360,000 a year. No margins are paid on option purchases. The "futures" column represents the prices that can be locked in in the month of January of each year. The "options" column reflects the final outcome if in January, at-the-money put options had been bought.

Thus, in 1988, the cooperative lost comparative to a situation in which it wouldn't have hedged. But the members liked the security that hedging gave, and decided to shift to options. Options require a one-off premium, estimated here to be around 6 cts/lb; the total financial layout was thus US$ 360,000, much less than that required for futures. The table above gives the result: the New York prices declined radically during the year, to an average of 71 cts/lb. But on its options, the cooperative made a net profit of 73 cts/lb, and farmers received a total price of 134 cts/lb for their coffee. For the following years, the table compares the prices that would have been received when not hedging, and when hedging with either futures or options, as well as the total financial outlay that would have been necessary when using futures.

Compared to a situation in which it hadn't hedged, in the simplified assumptions used here, over the whole period the cooperative would have made a profit on its option transactions of some US$ 3.6 million, and a similar amount on futures (minus some 0.1 per cent of its sales volume in commission costs, US$ 30,000). In reality, the cooperative would have made even larger profits because, using futures contracts, it could have locked in the contango which prevailed most of the past years. But these profits were largely coincidental: had the trend of prices been upward, hedging would probably have resulted in relatively lower prices. It should be stressed that hedging is primarily a management instrument, not a profit-making tool. It effectively provided the cooperative members with the comfort of price security, which, among other things, allowed them to make better investment decisions.

11. The purchase of **options** is the principal way of using risk management markets without running into cash flow problems. For practical reasons, and in the absence of international action to alleviate cash-flow problems linked to the use of risk management instruments, options may therefore be easier to use than futures, in particular for countries with a poorly developed banking infrastructure.[11] Options, which effectively set a minimum price, also have managerial advantages: one cannot easily be blamed for missing out on a positive development of prices, which is inescapable when one has locked in prices through the use of futures. There is, however, a problem: choice of the right option strike price - in other words, buying the right insurance at a good price. But this problem can be overcome through appropriate, not too complicated, price analysis. The existence of expertise in some local banks in developing countries would also be most helpful (in African countries, the PTA Bank and the Nigerian Export-Import Bank are among those that have been investing in the understanding of options, and in acquiring useful trading and analysis software). Access to options trading is relatively easy to arrange. Even if a local banking intermediary is absent, one can set up, for instance, so-called "limited accounts" with brokers, earmarked for the purchase of options. The financial requirements are generally small: a few thousand dollars in an account in, for example, New York, London or Singapore would be sufficient for the purposes of most exporters.

12. Nevertheless, not all those exposed to price risks may be in a position to obtain access to the finance needed for risk management, in particular when use of foreign currencies is involved. The existence of a proper intermediary structure is thus essential for most developing country actors, in particular for farmers and small traders. The discussion in this chapter shows that the role of such an intermediary structure should not only be logistical (assembling the risk management needs of many small actors in order to lay them off on the international market), but also financial: the intermediaries need to play a credit-enhancing role. Ways of organizing such an intermediary structure, allowing farmers and traders who otherwise would not have the financial strength to access risk management markets to use these marketing tools, will be discussed in the next two chapters.

Chapter III

FARMERS' EXPOSURE TO PRICE RISKS AND POSSIBILITIES FOR RISK MANAGEMENT

A. Farmers' price risk exposure

13. Most agricultural export crops, including coffee, employ a large number of people. They are in general smallholder crops, and often the major source of employment in the countryside, in particular for women. For instance, coffee in Ethiopia provides employment for one quarter of the country's population, or more than 10 million people; in the United Republic of Tanzania, coffee is the main cash crop for about 1.78 million people; in Rwanda, around 510,000 smallholders depend on it, in Burundi, some 450,000. Fluctuations in coffee prices, when they are reflected at the producer income level, have an important effect on the welfare of a very large number of people. Even though farmers may have more possibilities for seasonal and interseasonal price stabilization than

[11] As noted before, margin calls on hedge positions should be reflected in increases in the value of the underlying physical positions; thus, well-functioning banks should be able to increase their lending to companies in order to allow them to pay margin calls. In practice, there are very few developing countries where banks have the required level of sophistication.

has been traditionally thought,[12] it is doubtful whether they are the best placed to bear the full brunt of the world market's instability.

14. The extent to which farmers have been exposed to world market price volatility has differed from country to country. The following graph, which compares for nine African countries the unit value of exports and prices paid to farmers, gives an impression of the way that world market price declines have been absorbed in these countries, and of how risks have been shared between farmers and the various agents in the marketing chain (traders and government). Unit values of exports and prices paid to growers are compared for the months of March, June, September and December for the years 1986 to 1992,[13] with the darkened area showing the amount absorbed by the domestic marketing chain, usually the government. In a number of countries, farmers used to be largely protected against world market price volatility - at least if one assumes that they were paid the official prices. In most of these countries, the government acted as a buffer, decreasing its marketing margin when world market prices were low. For example in Côte d'Ivoire the margin varied from 40 cts/lb in 1987 (and 80 cts/lb in 1986) to around 10 cts/lb in 1991 and 1992, before increasing again to 60 cts/lb in December 1993. Other countries where this happened are Burundi, Madagascar and Rwanda. In Cameroon, farmers received fairly stable prices, while marketing margins also remained remarkably stable, at least from 1988 onwards. In other countries, farmers were more exposed to price risks, both within marketing years and from year to year. This group includes Kenya, as well as Ethiopia, the United Republic of Tanzania and Uganda; this is despite the fact that the last three countries operated minimum price policies.

15. Minimum prices have now been abolished in most countries, and if they exist, they may only provide intraseasonal price stability, rather than stability from season to season. Burundi still maintains guaranteed minimum prices, announced at the beginning of the season, but plans exist to abolish these. In Ethiopia, the parastatal Ethiopian Coffee Purchase and Sales Enterprise buys from farmers at guaranteed minimum prices. In Cameroon, farmers in the robusta zones also profit from a minimum producer price. The disappearance of many minimum price schemes could have been expected to lead to larger fluctuations in the prices paid to growers, with these prices becoming linked to volatile export prices, but this is not clearly visible in the graphs. Only in Ethiopia and Uganda did farmers appear to benefit fully from the increase in prices late 1993. In the other countries for which these recent data are available, most of the price increase seems to have gone into the marketing chain.

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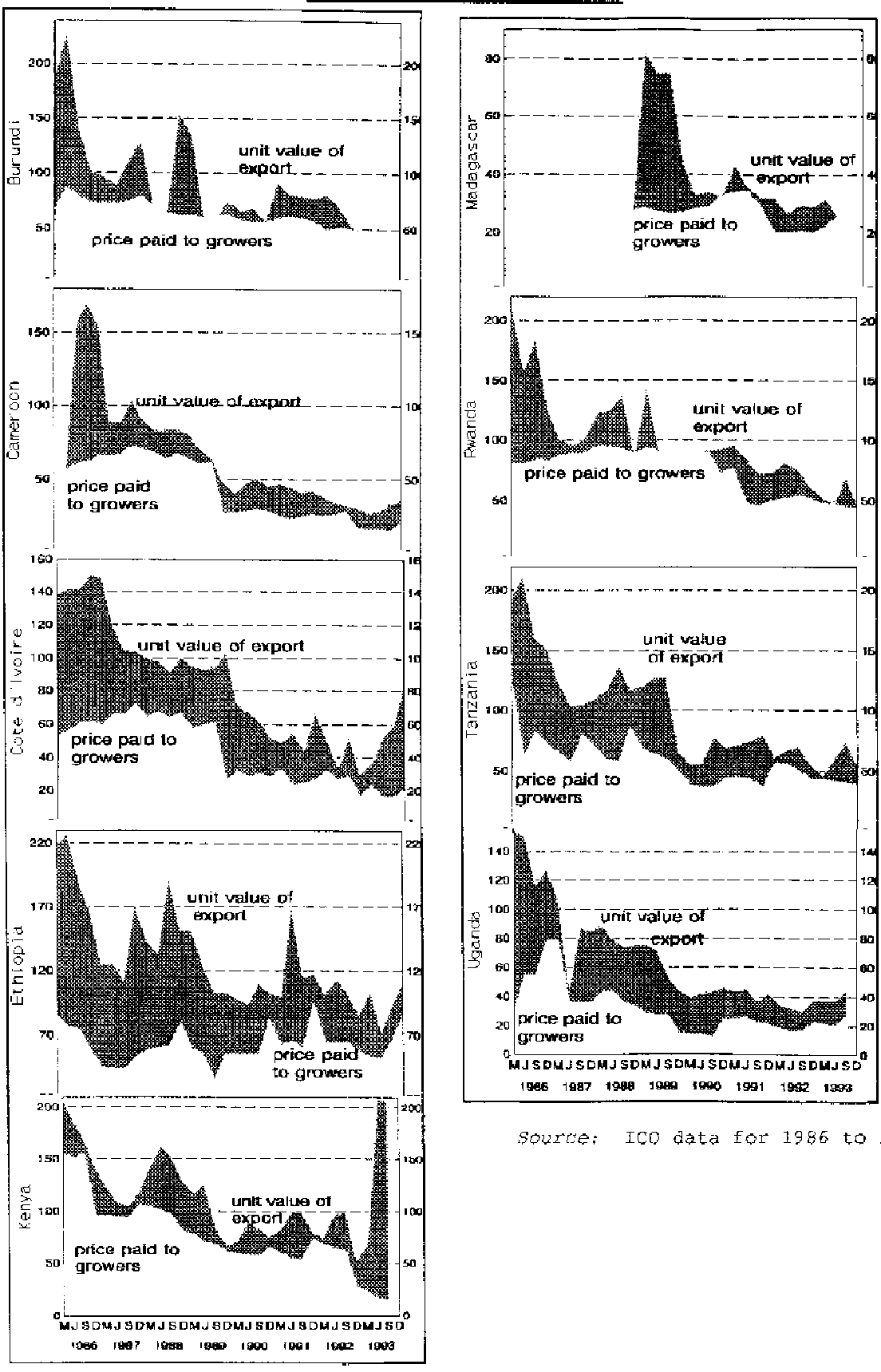
[12] A number of studies suggest that farmers tend to save rather than spend most of unexpected extra earnings when prices boom: this has been found for cocoa farmers in Ghana (B.M. Ingham, "Ghana cocoa farmers - income expenditure relationships", *Journal of Development Studies*, Vol. 9, 1973), coffee farmers in Kenya (D. Bevan, P. Collier and J. Gunning, "Fiscal response to a temporary terms of trade shock: the aftermath of the Kenyan coffee boom", *World Bank Economic Review*, Vol. 3, 1989) and rice farmers in Thailand (C. Paxson, "Consumption and income seasonality in Thailand", *Journal of Political Economy*, 1992).

[13] These data are not available for other months.

Unit value of exports and prices paid to growers, in US cts/lb, in different African countries in the months of March, June, September and December, 1986 to 1993



Source: ICO data for 1986 to 1993.

B. Providing access to price risk management markets for farmers

16. Farmers do have certain means to manage price risks.[14] To manage interseasonal price risks, they can save in times of high prices and use their savings when prices are low. To manage seasonal price risks, they can store their crops, and sell them gradually over the year. When the prices for the products being grown appear low, they can cut down on their use of fertilizers, other inputs and manpower, and when prices are low during the harvest season they can decide to restrict the amount they harvest. When prices appear to remain low, they can plant a different crop or uproot their trees, or, if this is forbidden, simply neglect them. Nevertheless, these means for price risk management appear somewhat limited and inefficient in the face of the extent of world market price volatility. Moreover, while some of these may give short-term benefits, in the longer run they can be costly.[15] It would thus not seem advisable to expose farmers fully to world market price volatility without giving them access to additional means of managing price risks.

17. With the size of commodity price risks prevalent in the international economy, it is unlikely that any individual producing entity can carry all these risks itself, without building up unrealistically high reserves. This has been recognized in many developed countries. For example, the Common Agricultural Policy of the European Union and the agricultural policies in Japan have essentially isolated their farmers from carrying any interseasonal price risks, and have also brought very limited intraseasonal price fluctuations for their major domestic crops.[16] In Australia, Canada and New Zealand most major export crops have had centralized marketing boards, in particular for wheat and wool, which removed any incentive for individual farmers to use risk management instruments. This situation is likely to change with the agreement on agriculture in the Uruguay Round and discussions on how to introduce market-based risk management have started in Europe in particular.

18. Economic theory would suggest that one should be looking at ways to externalize risks: to lay off price risks to others who either have price exposure in the opposite direction (for example, while producers are hurt by price falls, consumers would be hurt by higher prices), or to speculators who are keen on taking on price risks. Commodity futures markets offer instruments such as futures and option contracts, which provide the means for such externalization of risks. In particular, options may be of interest for developing country producers, as they are relatively easy to use (see chapter III) and they provide insurance against price declines without impinging on the possibility to profit from price improvements.

19. In the United States, the only major developed country where farmers have been traditionally exposed to commodity price risks, some, usually large-scale,

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[14] Farmers are always exposed to quantity risks. The most common ways of dealing with these are agricultural insurance funds of various sorts. See, for example, UNCTAD, *Agricultural insurance in developing countries*, UNCTAD/SDD/INS/1, November 1992. Also compensatory financing schemes have helped to address this problem from an international perspective.

[15] Without any form of price risk management, quantity reactions are the main way of coping with price changes. This can impose large adjustment costs: e.g., coffee production, once trees are uprooted or maintenance is ignored, cannot easily be brought back to a previous higher level; and if the level of production is volatile, the needed processing capacity will be relatively large while the efficiency of processing facilities will be low.

[16] This is why there are no Europe-wide market-based risk management instruments available for agricultural crops such as grains or vegetable oils in Europe, except for those imported from developing countries such as coffee and cocoa.

farmers do use futures and options markets directly. However, it is unlikely that most farmers in the United States as well as other countries can do this, because they lack the necessary financial size, exposure and knowledge of the functioning of the markets or face problems of access to risk management markets.[17] One way of addressing this problem is to stimulate the development of **intermediary entities** which would provide farmers with access to risk management markets. Indeed, in the case of the United States, cooperatives, processors and traders all act as funnels for coping with farmers' price risk management needs. Several types of intermediaries which are not necessarily mutually exclusive can be considered: **farmers' cooperatives**, **government entities**, **domestic banks**, and **private traders** and **processors**.

C. The role of cooperatives in price risk management

20. Farmers' **cooperatives** or similar farmers' **associations** can be a very viable type of intermediary. Even when government boards or domestic banks offer the possibility to use risk management instruments, these intermediaries are likely to abstain from doing business directly with small farmers and would prefer to operate with an association of a certain size.[18] Farmers' associations could be interested in using risk management instruments for two main reasons. Firstly, such use could allow them to guarantee minimum prices for their members for the season to come, on the basis of prevailing market prices. The ensuing price risks can then be covered by buying put options either from domestic banks or from other intermediaries. Secondly, use of risk management instruments could make it easier to use a commodity as collateral for receiving loans or advance payments because the risks for the institutions providing these credits are lower.[19]

21. The major part of African coffee production is produced by smallholders who were traditionally organized in cooperatives or other associations. In many countries, a need has been felt in recent years to stimulate new farmers' associations to replace the older cooperative structures. It is not unlikely that a number of them will be able and willing to provide a full range of economic services to their members. This development is often promoted by governments, who see in a strong farming sector a necessary counterweight for the increased role of foreign private trade houses.

22. Providing price guarantees and better access to advance payments would appear to be useful services, falling within the realm of an efficient farmers' association's operations.[20] In some countries, it is considered a normal part

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[17] For an overview of these access problems see UNCTAD secretariat, "Analysis of ways of improving the efficiency and use of existing mechanisms for the management of risks arising from commodity price fluctuations", TD/B/CN.1/10, 27 August 1993, chapter III.

[18] The reasons for this preference include considerations such as credit exposure (the credit ratings of small companies are likely to be lower than those of larger ones); ease of identification of the counterpart's activities and financial status; the reduction of administrative and organizational costs through reducing the number of small transactions to be coped with; and the relative size of enforcement costs if the counterparty defaults.

[19] This is the general situation in developed countries. In developing countries, few banks are sufficiently acquainted with this type of secured lending. See Nicholas Budd, "A guide to pre-export financing of physical commodities in origin countries", *International Financial Law Review*, January 1991.

[20] This issue was discussed during the World Farmers Congress, 2-6 May 1994, Istanbul, Turkey. The Congress' Standing Committee on Agriculture in Developing Countries found, among other things, that ways should be sought to allow greater use of risk management instruments by farmers' organizations (para. 14 of the report of the Committee).

of the duties of a cooperative's management. Indeed, a United States court found in 1992 that the directors of a relatively small grain farmers' cooperative had a duty to understand hedging techniques and had, in the early 1980s, "breached their duties by retaining a manager inexperienced in hedging (...) and failing to attain knowledge of the basic fundamentals of hedging to be able to direct the hedging activities and supervise the manager properly..". The directors were held personally responsible for the losses made by the cooperative because the manager did not hedge its sales.[21] In many African countries, farmers' associations already undertake some risk management or risk sharing activities, such as the operation of communal cereal stocks or communal saving activities. But they have not been managing export price risks, which, of course, for the farmers in most countries only became of significance a short time ago. Further institutional development and specific training activities, as well as a positive approach by governments, would appear to be the preconditions for bringing about a growth of the role of cooperatives in risk management.

D. The government as a risk management intermediary

23. A second option would be for the **government stabilization funds** or **marketing boards**, where they still exist, to be restructured to become service organizations for their country's farmers and traders. They could, for example, guarantee minimum price levels, and then, when market prices fall below this minimum, compensate farmers through complementary payments. This assumes that they had covered these price risks through the purchase of options on a foreign options market. For example, cooperatives could take out a "price insurance" with a stabilization fund, paying a certain premium for this, and the stabilization funds could use these premium payments to buy options.[22]

24. Such government bodies have one important competitive advantage over most other possible intermediaries: being government-guaranteed entities, they are less of a risk to their Western counterparts, and thus are likely to obtain much better access to credit. This enhances their scope for undertaking risk management transactions. Also, they would benefit from some advantages of scale: the gathering of market information is one of their normal operations, and this would be of advantage for risk management transactions as well. It should also be noted that if the government considers the provision of minimum producer prices as a useful social goal (e.g. to keep farmers from migrating to towns), government intermediaries would provide an appropriate mechanism for financial transfers (e.g. direct subsidies for the purchase of options, as the United States Government is now granting on a test basis for a number of its grain farmers).[23]

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[21] See Brane v. Roth, Court of Appeals of Indiana, First District, 20 April 1992, *North Eastern Reporter*, 2d Series.

[22] When it started to liberalize its agricultural policy in 1992, the Mexican Government decided to set up an agency that would, among other things, fulfil the role of a risk management intermediary. This entity, called "Apoyos y Servicios a la Comercialización Agropecuaria" (ASERCA), provides intra-season price protection to cotton farmers on a voluntary basis. Farmers pay a fee to ASERCA for protecting the price of a certain expected production and ASERCA in turn protects itself by buying put options on the New York Cotton Exchange. Farmers sell their cotton themselves, but when world prices drop, ASERCA reimburses them the profit on the options. ASERCA also is active in wheat, maize and soyabeans futures and options, to lock in the amount of subsidy it has to pay to the end users of these products (who are compensated for the difference between the Mexican guarantee price for these grains and the international price).

[23] See, for instance, George Gunset, "Futures may be cheaper option than farm subsidies", *Chicago Tribune*, 4 February 1993.

E. Developing country banks as risk management intermediaries

25. **Local banks** (whether nationally owned, subsidiaries of foreign banks, or regional banks) can also become active intermediaries. Commodity price risk management instruments are financial instruments, and banks would be logical intermediaries in providing access to risk management markets. In effect, when government regulations do not prevent this, well-functioning banks usually provide a gateway to currency and interest rate risk management instruments for their clients. The knowledge and contacts thus acquired should make it easier for them to enter into the commodity price risk area. Banks also serve their own interests in providing commodity price risk management instruments: they can help to make credit arrangements of various types (e.g. pre-harvest credits; pre-export credits) more secure, and thus increase a bank's potential for profitable business. Many local banks already have direct contracts (through electronic links such as the Swift system) with banks in Europe and the United States, so in terms of required infrastructure they are relatively well placed. One possibility for them is to limit their risk management activities to those of a pure intermediary type (that is, acting as a "broker" and credit line provider for their clients, but immediately placing all orders with Western banks or brokers). They could also choose to play a more active role, acquiring the necessary knowledge, software and hardware for managing their own portfolio of futures and options positions. Two African banks, the Nigerian Export Import (NEXIM) Bank and the PTA Bank (active in most southern and eastern African countries) have followed the latter route, and it is useful to discuss their actions in some detail.

26. Both the PTA Bank and the NEXIM Bank introduced what they called price guarantee contracts (PGCs) in late 1993.[24] A PGC is in effect a put option, protecting those who take out the contract against negative price changes on overseas futures markets. They are being sold by the banks in conjunction with their commodity trade financing activities. The banks think that this service will strengthen their trade finance activities. Both banks have chosen to be more than just an "introducing broker". Instead, they will trade an active option portfolio in the hope that this will help to reduce variable costs. To make this possible, they have invested in computer hardware and software, and have trained their personnel. These banks have found that the costs of introducing these systems amount to less than US$ 0.5 million,[25] which is low compared to the volatility of commodity trade flows from the countries involved; for example, taking the average weekly coffee exports from the United Republic of Tanzania, coffee prices are so volatile that earnings can easily move by US$ 100,000 from one week to another.

F. Domestic traders as vehicles for farmers' price risk management

27. In a situation where competition among the **traders** buying crops from farmers is strong, access of traders to risk management instruments would in all likelihood immediately be reflected in prices and marketing conditions for farmers.[26] Usually traders buy from farmers at spot prices. This can be a one-off price, or an advance, with a premium to be paid when world market prices at the time of exports are sufficiently high. In both cases, traders will tend to pay a relatively low price to farmers, especially when they have no means to manage the risks of a price decline between the time of purchase and the time of exports. A trader who is able to eliminate this risk will have a competitive

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[24] Information provided by the PTA Bank at the workshop on "Government policies affecting coffee export marketing", Nairobi, Kenya, 29 November to 3 December 1993.

[25] Information provided by Commodity Risk Management S.A., Geneva.

[26] Such is the case in the United States of America, where traders and processors give farmers the choice of a whole range of marketing mechanisms, made possible because these intermediaries can lay off their price risks on risk management markets.

advantage: he will be able to pay a higher price or higher advance, and will thus increase his turnover. If other traders want to survive, they have to follow his example. This development has occurred in Costa Rica, for example, where a few trading companies, using options to cover their price risks, started to give much larger than usual advance payments to farmers. Traditionally, they advanced 40-50 per cent of the expected final export price to farmers. This may appear low, but in effect, coffee price volatility in recent years has been so high that during three of the last 15 years a number of Costa Rican exporters and millers went bankrupt when coffee prices unexpectedly and strongly declined. With the use of options, exporters/millers were able to advance up to 80 per cent of the expected final price, and this has now become a general practice.[27]

28. To make traders transmit the benefits of risk management to farmers requires the fulfilment of three essential conditions. Firstly, a competitive environment. Many studies in Africa have found that competition between traders is rather weak. There are few local traders (a situation not unrelated to the long-time government monopoly), and a lack of financial means prevents these traders from fighting aggressively for market shares. The dominance of a limited number of subsidiaries of foreign trade houses also does not provide for much competition. The second condition is that several of the traders are large enough to be able to buy options on foreign exchanges[28]; or, if the traders themselves are not large enough to carry the implicit and explicit fixed costs of direct use of risk management instruments, that there are other intermediating agencies, that is, banks or a government board, or even foreign businesses which would allow smaller traders to buy options locally from them. Interestingly enough, there are several African countries where some traders are sufficiently large to consider using options. For example, the United Republic of Tanzania has some fourteen traders who export over US$ 1 million worth of coffee a year. Thirdly, conditions need to be such that traders can actually use foreign option markets; that is, they need the knowledge to do so, and government policies need to be sufficiently permissive. In both respects, there may still be problems to be overcome.[29]

G. Promoting an appropriate framework for farmers' price risk management

29. The combination of these possible intermediaries which works best in a country depends on its economic and institutional conditions. Also intermediaries are in many cases complementary rather than mutually exclusive. In a number of countries, state entities may not be the ideal candidates in the long run, but may the only ones able to fulfill this role in the short run (while stimulating the private sector). In general, it would appear advisable to make farmers co-responsible for minimum price guarantees: that is, farmers themselves should indicate their interest in receiving minimum prices, and should pay for this possibility. This can be achieved by domestic banks or government entities offering "price insurance" to cooperatives and large farmers, or by traders offering higher advance payments in exchange for, possibly, a lower additional final payment. In any case, either a well-developed and competitive private trader network, a modern banking system, or a good cooperative system would appear necessary to make such a minimum price scheme feasible. In countries where

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[27] S. Claessens and R.C. Duncan (eds.) *Managing Commodity Price Risk in Developing Countries*, John Hopkins University Press/World Bank, 1993.

[28] Which would basically imply that they are able to initiate and maintain contacts with foreign brokers; and are able to immobilize a few thousand dollars in a foreign bank account.

[29] See TD/B/CN.1/10, 27 August 1993, chapter III for a discussion of the necessary local conditions.

any one of these conditions exists, it would seem feasible to overcome the various operational difficulties and implement a system of sound risk management practices, giving farmers the price protection that governments have long recognized as being essential to maintain a viable agricultural sector.

Chapter IV

THE ROLE OF LOCAL PRIVATE TRADERS IN A LIBERALIZED EXPORT TRADE SYSTEM

A. Recent changes in the roles of private traders and in the risks to which they are exposed

30. In the wake of the demise of many of the state entities controlling commodity exports, including coffee, the importance and autonomy of private traders has grown strongly, and the auction system has been revived in many countries. Private traders now account for the majority of coffee exports in all of Africa's major coffee-producing countries, with the exception of Ethiopia. There are basically two systems: exporters collect their own coffee inland, or eventually through other traders; or exporters acquire their coffee at an auction, with farmers' cooperatives and state entities responsible for most of the domestic collection and marketing. Cameroon, Côte d'Ivoire, Madagascar, Uganda and Zaire fall in the first group, Burundi, Ethiopia, Kenya and the United Republic of Tanzania in the second.

31. Auctions are becoming increasingly important in Africa: in the case of coffee, an auction has been newly introduced in Burundi, and existing auctions have increased in importance in Ethiopia and the United Republic of Tanzania. They are often used when domestic marketing is dominated by either government entities or cooperatives. This is because auctions allow the bringing together of the crop of a country, such as coffee, for sale to the private sector, which often comprises agents of foreign trade houses. Theoretically, and often in reality, auctions have increased revenues for the state and/or for the growers.[30] However, they also have an important drawback as their operations preclude any forecast of the coffee availability to a given exporter. Therefore, either an exporter is prevented from making long-term commitments such as regular sales over an extended period, or, and this is what happens in practice, exporters are left in total uncertainty as to the price they will have to pay for the commodity they have sold ahead. In this situation more than in any other, price protection for the exporter is indispensable if he is to have any surety about his future business.

32. Nowadays most traders are not fully protected against price risks by government stabilization activities. Only in Côte d'Ivoire and in the robusta sector in Cameroon is there still such protection. In both cases, a stabilization fund is used to subsidize exports when minimum producer prices plus agreed marketing costs exceed the world market price.[31] Except in Kenya, local traders were not accustomed to having exposure to price risks, and many have found it difficult to adapt. According to the scarce information available, exporters are in effect now agents of foreign trade houses, and have thus replaced state guarantees on their marketing margin by foreign company guarantees. In the absence of other ways to manage price risks, purely nationally-based companies find it difficult to compete.

33. Also the traders responsible for exporting the crops previously exported by

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[30] Auctions provide a certain degree of price transparency and of market openness, which can help to bring in new traders when prices are too low. See Robert A. Feldman and Rajnish Mehra, "Auctions: theory and applications", *IMF Staff Papers*, September 1993.

[31] The system in Côte d'Ivoire is currently under review with the assistance of the European Union and the World Bank.

state entities find themselves confronted with a world market which is no longer like it was ten or even five years ago.[32] For example, on the side of coffee roasters and traders, there has been a growing concentration of purchases and sales, while on the exporters' side, the marketing system has become highly fragmented. Thanks to the multiplication of air links, the increased availability of telecommunication facilities, and the development of industry forums like the International Coffee Organization, trading links have become much more diversified, leading to a growing fungibility of coffees from different origins. Hence, the role of "coffee world market prices", that is, the prices formed on the Coffee, Sugar & Cocoa Exchange (New York) and the London Commodity Exchange, has grown. Trading practices have changed, with fixed price spot and forward contracts declining in importance compared to so-called differential pricing. These changes put a heavy burden on coffee exporters: to remain competitive, they have to adapt.

34. Faced with the current difficult circumstances in commodity markets, good marketing is now a real imperative for all exporters. Good marketing includes such behaviour as reliability, respect for contracts, quality consciousness, and flexibility. One important way to increase flexibility and reduce the temptation to default on contracts is to adapt to new pricing methods. For example, in world-wide coffee trade, the trend is one of reduced reliance on fixed prices in forward contracts, in favour of price-to-be-fixed pricing clauses (prices remain open as long as the exporter does not fix them). African exporters are to a large extent lagging behind in this evolution. As long as they are not operating on a fixed margin, or on an agent-basis for a foreign trader, traders in Africa, as elsewhere, run intertemporal price risks. Time elapses between the moment that they buy the commodity from farmers and the moment that they sell it to a foreign buyer. It is not infrequent that traders, confronted with world prices which have declined since they bought the commodity, postpone their sales in the hope of better prices. Also, they may be contacted for a sale while they do not have the required product in stock; they then run the risk that, if domestic prices increase, they will not be able to buy the necessary commodity from farmers in order for them to fulfill their contract. When they cannot lay off their price risks on the market or, for instance, with a government agency, traders tend to react to these risks in four ways. They build a risk premium into the price that they pay to farmers (that is, farmers get relatively low prices); they refrain from transactions that they deem too risky, such as selling a commodity that they do not yet own (that is, they forego commercial opportunities); they operate stocks that are larger than commercially and financially optimal (tying up their working capital, and incurring storage costs); and they tend to sell mainly on a "spot" basis, thus foregoing the often large premium on forward sales which prevails in the world market.

B. Private traders and counterparty risks

35. Forward contracts were the traditional way of price risk management for government marketing boards, which ensured in this way at least part of their earnings. With the privatization of export systems, the scope for this traditional means of price risk management has declined. As is remarked in a recent World Bank report, "this is because with market liberalization, forward sales are likely to diminish as counterparty risk may become larger when dealing with new private exporters."[33] It should be noted that even if private exporters are able to enter into fixed-price forward contracts, government regulations may

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[32] See Pierre Leblache, *op. cit.*.

[33] S. Satyanarayan, E. Thigpen, P. Varangis, *Hedging Cotton Price Risk in Francophone African Countries*, World Bank, International Economics Department, International Trade Division, Policy Research Working Paper 1233, December 1993.

prevent them from doing so. For example, in Ethiopia, contracts for several shipments over a longer period are rare because of National Bank restrictions on this type of sales. Foreign buyers, when confronted with a relatively large default risk, naturally react by building a risk premium into the price that they pay to the country's exporters, which in turn deprives the exporting country of valuable export earnings. It should be noted that in some countries which have retained minimum prices for farmers, governments are trying to promote forward sales. For example, in Cameroon and Côte d'Ivoire, efforts are currently being undertaken to promote such sales but these are likely to reduce export earnings as long as parallel measures to counteract counterparty risk problems are not taken. One way to make exporters more acceptable as counterparts is the creation of a guarantee system among exporters. In such a system, all exporters would have to be registered, and would have to deposit a certain part of their turnover into a special guarantee account. If one of them defaults, the money from this account will then be used to secure the fulfilment of his export contracts.

36. Exporters often rely heavily on their foreign counterparts for finance. Due to the fact that in general local interest rates are much higher than international interest rates, the majority of exporters work on a pre-financing basis. For example, in Burundi, the overseas buyer transfers the value of his imports within four days from the date the local exporter has purchased the coffee from the auction floor. The exporter only has to pay the coffee he bought at the auction within seven days, so in effect, he does not need any separate financing. This also helps the country to receive its foreign currency early (payment-on-delivery would mean a delay of three to four months, the time necessary to ship the coffee and undertake the necessary payment procedures). But on the other hand, it limits the local exporter's margin, and ultimately, the country earns less foreign currency.

37. Quality control problems, larger counterpart risk and a pressure to sell fast for cash flow reasons, as well as lack of experience in export marketing would all appear to indicate that new private exporters are likely to obtain a lower price and less beneficial marketing conditions than the former marketing boards. This is indeed reported by many international traders doing commodity business with Africa. However, a lack of adequate data, and the complication that a large part of export business from African countries is now effectively in the hands of foreign companies, make this impossible to verify.

C. Ways to enhance access of traders to risk management instruments

38. Enhancing access to risk management markets would stimulate the competitiveness of local exporters, ameliorate the flexibility of those traders who do not act on an agent-basis for a foreign buyer, reduce counterparty risks, and improve access to credit. There are several ways of helping traders become more acceptable counterparts and get access to risk management instruments. Firstly, in many countries domestic banks can play a major role in assisting local traders. However, this has not been a normal function for many of them and they lack experience in financing trade and risk management activities beyond being a conduit for government budget transfers to marketing boards, and are often reluctant to accept commodities as collateral for loans. There is therefore likely to be a lag in response from local banks until the trade sector is seen as a good risk for loans. Secondly, a government body or an exporters' association can take the responsibility for helping individual exporters to overcome the barriers they face. Activities of such a body can include the organization and coordination of training activities, the provision of information including real-time price information, and, where possible, a credit-enhancing role. This credit-enhancing role can be direct, such as by converting lines of credit of domestic banks into foreign credit lines which can then be used for risk management, by intermediating in the purchase of options, or by setting up a mutual guarantee scheme. This last option is being considered in Cameroon. Credit enhancement can also be indirect, for example through the provision of training on ways to improve access to credit, and the identification of legal barriers at the country level which hinder access to credit.

39. One potentially useful role for the government would be to keep its marketing board or stabilization agency as a "guarantor of last resort" for various forms of sales, a function it could fulfil for as long as it takes private exporters to build up good relations of trust with foreign buyers. This function could be linked without much problem to that of quality control, another export service that is also difficult to transfer to the private sector from one day to another. Such government guarantees for contract fulfilment would build confidence in the country, and would result directly in lower costs of trade for the international buyer.

Chapter V

THE EXPOSURE OF A GOVERNMENT TO PRICE RISKS IN A LIBERALIZED COMMODITY TRADING SYSTEM

40. Until recently, many governments of developing countries, particularly in Africa, were directly and strongly exposed to the fluctuations of the prices of their major export commodities. Not only did they make up the deficits in stabilization funds out of the general budget when commodity prices declined, but also a large part of their tax earnings came from export taxes on commodities. For example, in the mid-1980s, taxes on coffee accounted for 30-40 per cent of government tax earnings in countries such as Ethiopia and Uganda. Recently, with the fall in coffee prices and shifts in government taxation policy, taxes on coffee have become somewhat less important, although still accounting for about 10 per cent of government tax income in, for example, Cameroon or Ethiopia.

41. Many stabilization funds have disappeared in recent years. While the argument often used for abolishing stabilization funds is that they were economically unsustainable, there were also problems related to past experience with the raiding of the funds' resources for other purposes. Finance-related difficulties with stabilization funds have not been limited to those in Africa, but have occurred also in other countries and at an international level, for example with the European Union/ACP Stabex facility. Commodity price volatility is so high that any stabilization fund is likely to become exhausted at one time or another, unless it levies unrealistically high taxes on exports in normal years. But there is no reason for well-designed stabilization funds to use only accumulated savings as the way to manage price risks. The use of market-based price risk management instruments can help make the operations of a stabilization fund easier to manage.[34]

[34] Commodity prices move in an asymmetrical way: long periods of relatively stable prices are interspersed with short periods of strong price movements. It is during the periods of strong price movements that stabilization funds tend to run into problems. This can be prevented by the purchase of out-of-the-money options which are rather cheap. See D.F. Larson and J. Coleman, "*The effects of option-hedging on the costs of domestic price stabilization schemes*", World Bank, International Economics Department, WPS 653, April 1991; and S. Claessens and P. Varangis, "*Oil price instability, hedging, and an oil stabilization fund - the case of Venezuela*", World Bank International Economics Department, Working Paper No. 1290, April 1994.

42. While exposure of governments to commodity price risks would appear to have diminished in recent years, even in a fully liberalized trading environment the government is still exposed to a number of risks,[35] in particular:

- The risks of macroeconomic price shocks: "Dutch disease" effects; misallocation of investments; reduction of overall investments;
- The risks of reduction of foreign exchange reserves through uncontrolled speculation on foreign risk management markets;
- The risks of social unrest due to price shocks;
- The direct and/or indirect risks of reduced taxation income.

43. The example of the United Republic of Tanzania shows that the risk exposure of governments can be rather direct. The Government has a pre-financing arrangement for its oil imports. This pre-financing arrangement is secured through coffee export proceeds: the country sells part of its coffee to a specific group of traders, who then reimburse the banks. If coffee prices decline, the Government has to procure and export a larger amount of coffee to reimburse its debt.[36] As securitization arrangements have already been built into the financing, it would be relatively easy to eliminate most price risks (that is to fix, through an over-the-counter commodity swap, the amount of coffee which has to be paid for each barrel of oil), but this is not done yet.

44. A government has a legitimate interest in managing the various price risks to which it is exposed. One important reason for doing so would be to facilitate its own budget planning.[37] Macroeconomic price shocks can be dealt with to a considerable extent through macroeconomic policies (a monetary absorption policy of the Central Bank; or other fiscal and monetary measures, currency and capital controls, and real exchange rate corrections). However, such macroeconomic policies can result in a serious disruption of the economy and significant resource misallocation, and they are therefore rarely the most appropriate type of measures for managing commodity price fluctuations. Market instruments can be used for the same purposes, but without these distortionary effects.[38]

45. The risks of losing foreign exchange reserves through uncontrolled speculation on commodity markets can, in a liberalized economy, be addressed only by clear rules on what private traders can do and what is forbidden, and

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[35] The discussion in this paper concentrates on export price risks. Import price risks are also large, and similar arguments for undertaking commodity-price stabilization activities can be made. Changes in prices of imported foodstuffs or imported fuels can have a large influence on consumer welfare and, indirectly, political stability. The most efficient way to manage these risks is in all likelihood through use of market-based instruments, rather than through variable taxation and/or direct State subsidies.

[36] See R. Khijjah and C. Sonyi, "*Government policies affecting coffee marketing - the Tanzania experience*", paper prepared for the workshop on Government policies affecting coffee export marketing", Nairobi, Kenya, 29 November to 3 December 1993.

[37] It should be noted that these risks need to be actively managed, rather than only forecast and taken into account in government planning. Experience shows that commodity price forecasts are notably unreliable. For example, the World Bank found that the coefficient of variation of the actual commodity prices from its forecast prices, for only a one-year horizon, was about 25 per cent. Also, resorting to international lending to balance out changes in commodity export earnings is difficult in practice: for most developing countries, access to credit is particularly difficult when commodity prices are low.

[38] See Stijn Claessens & Ron Duncan, "Case studies in commodity price risk management and finance: an overview", in S. Claessens and R. Duncan (eds.), *op. cit.*.

consequently, monitoring of their operations. For example, the uncovered sale of options (which can give rise to large foreign exchange losses) should in many cases be restricted, and measures should be taken to reduce the chances for avoiding taxes. Some type of risk management unit within one of the central government agencies could fulfil this monitoring task.[39] Colombia has set up such a unit; in other countries, such as Chile, all futures market operations have to be reported to the Central Bank and be justified as legitimate, trade-related hedges. Failure to undertake some monitoring operations, especially when the use of market-based risk management instruments is relatively new and most users are inexperienced, can be very expensive.[40]

46. If taxes on commodity exports are still of large importance for the government budget, the negative impact of price declines on government taxation income can, at least in the short term, be overcome by government operations in futures, options and swaps; similar practices have become current in a number of national and regional governments highly dependent on taxes on oil sales.[41]

47. In all cases, the starting point is a systematic analysis by governments of the price risks to which they are exposed, and then the development of measures which would allow them to manage these risks. A good vehicle for such actions may well be a special unit, bringing together the expertise of a number of ministries and the Central Bank, which identifies price risks and sets targets for the degree to which price risks should be managed. The actual management of risks could be centralized within one unit (e.g., a government marketing support agency, which anyway has to possess good knowledge on risk management, can act as an agent), but it may be more effective if the directly concerned government bodies are made responsible for managing their own risks. A good complement to this government action would be the stimulation of awareness in the private sector of the risks to which traders, processors and farmers are exposed, and the stimulation of intermediary institutions which would allow the management of price risks.

CONCLUSION

48. Many governments have abolished most of the structures and institutional arrangements that gave shape to their commodity marketing and pricing policies. While such changes are welcome in that they have reduced the burden of an inefficient marketing system on the farmers, they have run into problems in two main areas: they do not take into account the degree to which the private sector is ready and able to take over in an efficient manner export marketing activities from the State; and secondly, they have returned the burden of world market price volatility to those who are least able to manage it, that is, farmers and small

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[39] This was one of the recommendations of a recent Economic Commission for Africa (UNECA) seminar. See UNECA, Report of the Seminar on the Review of Africa's Debt Situation and the Impact of Declining Commodity Prices on Africa's Capacity to Grow and Service its External Debt, E/ECA/TRADE/93/24, November 1993, recommendation to the Conference of African Ministers of Finance, no. 4: "that Governments of African countries should be encouraged to establish risk management units in the Ministry of Finance or the Central Bank to serve as a focal point for any activity in the risk management area." See also UNECA, Report of the Fifth Session of the Conference on African Ministers of Finance, Libreville, Gabon, 1-2 March 1994, E/ECA/TRADE/94/3.

[40] See annex I.

[41] For example Mexico, and the US states of Texas and Wyoming. Other countries, US states and other government entities protect part of their fuel purchasing bills through hedging programmes, e.g. Brazil, Chile, Honduras, Delaware, Massachussets, and several US municipal entities.

traders.

49. It is generally recognized that it is economically and socially **not** advisable to let farmers and small traders bear the full brunt of world market price volatility. Also, as these actors are not in a position by themselves to lay off their price risks to others, the economy as a whole would be exposed to large risks. Small traders are usually seen as risky counterparts, and those buying commodities from these traders tend to discount prices to reflect the risks that they take. This report has identified the possible components of an agricultural policy which empowers farmers, and exporters, to manage themselves the price risks which, in the past, were largely borne by the State, without building a new, top-heavy government infrastructure. It appears that where the private sector is relatively underdeveloped, stabilization funds or other government marketing support agencies can serve a useful purposes as a risk management intermediary without being actually active in exporting commodities. In many countries they would appear as the best candidates currently available for addressing the problems facing farmers and local traders: exposure to high price risks, lack of access to credit, and lack of access to modern marketing instruments. To play such a role, these funds or agencies would need to be market-based, providing services to the private sector and laying off most of their risks on the international market. This intermediary role by the public sector need not be seen as a substitute for more effort to build up the private financial intermediation sector (local banks) and to train private traders and farmers' cooperatives in modern marketing techniques. Provided that an appropriate institutional and regulatory framework is in place and competition among traders is strong, private traders are likely to be able to accommodate over time the need of small producers for commodity price risk management. Competition among traders is a precondition for forcing them to resort to marketing methods more favourable to farmers, including paying higher advances, (which can be sustained by the use of options) or providing faster payment (which can be made possible through the use of futures).

50. The potentially important role of cooperatives and other farmers' associations in providing access to risk management for small farmers needs to be emphasized. Individual farmers are highly unlikely to gain direct access to risk management markets, but farmers' associations, through the provision of price guarantees and, if they so desire, the operation of stabilization funds, can provide them with indirect access. Private traders can also benefit from self-organization - for example, the provision of guarantees against default by an association of exporters can help to make a country's exporters more reliable in the eyes of potential buyers. Financial intermediaries, in particular domestic banks, also need to be strengthened.

51. To develop the above types of activities will require a reorientation of government policies in many, if not most, developing countries and economies in transition, as well as major training efforts. But without such efforts farmers will remain vulnerable to price volatility, especially price falls, the power of large foreign trade houses will be strengthened while locally-based traders will be prevented from functioning properly, export receipts at the country level will be less stable and probably lower than otherwise possible, and governments will continue to be confronted with unexpected and difficult-to-manage price shocks. The social and economic consequences of neglecting to develop mechanisms for price risk management, as an alternative to minimum producer price policies and as a way to improve the reliability of a country in international commodity trade, can indeed be large.

Annex I

THE RISKS OF RISK MANAGEMENT AND WAYS TO COPE WITH THESE RISKS

1. Risk management instruments are potentially powerful instruments to obtain more price security, secure budgets, improve marketing, and enhance access to credit, but they are also potentially dangerous if not used prudently. Several risk management instruments have very high leverage. That is, with a relatively minor financial input, one can make major profits. One can also make major losses. Most people would think they would qualify for the first category, but in reality, experience shows that up to 95 per cent of speculators (that is, those who undertake risk management transactions in the hope of gains if prices move in the right direction) make losses in the long run. Speculative losses are in no way limited to unsophisticated users. Large losses in recent years include companies[42] such as Allied Lyons, a major British food concern (an estimated loss of US$ 269 million in foreign exchange speculation); Showa Shell, Japan (US$ 1.05 billion lost in foreign exchange speculation); Germany's Metallgesellschaft, a large mining and trading concern (losses of over US$ 1 billion in the oil futures, options and swaps markets); and Codelco, Chile's state-owned copper mining company (more than US$ 200 million losses in the copper, gold and silver futures markets).

2. While these experiences should caution anyone from approaching the issue of risk management imprudently, they should not be used as an argument against risk management. Commodity prices are highly volatile, and if one does not manage one's risks, high losses are also possible - be it in physical trade or otherwise. Thousands of companies throughout the world are using risk management markets without running into major problems. But risk management activities have to be properly set up, within a good company control and management framework. This should prevent legitimate hedging from turning into excessive speculation. Excessive speculation can result from three types of problems. First, incompetence is a frequent source of trading losses. Traders may mistakenly take the wrong side of the deal (selling a contract when they should be buying one), or they buy contracts that are open to the risks of market manipulation (spot month contracts). Such a mistake initiated the huge loss of Codelco, mentioned above, which was exacerbated because the systems of checks and balances within the company were not properly adhered to. The second, and most important, source of problems lies within the company's management. The tendency to think that one knows better than the market is often large, and the result may be that one takes excessive positions without taking into account the risks that these positions imply. If no proper systems are installed within the company to evaluate these implicit risks, or the management ignores these indicators, the company may after some time find itself in a position of large losses - the situation of Metallgesellschaft. The third possible problem, less frequent than one might think, is fraud and embezzlement by the trading staff. Ways to avoid such abuse are quite well known, and not very difficult to implement.

3. In conclusion, the management of entities using risk management instruments should take its responsibilities seriously: set up a clear risk management strategy; determine trading limits; create the needed competence throughout the company; create absolute and clear rules within the company; distribute responsibilities in such a way that people can be held accountable for their actions; provide and enforce stringent control mechanisms; provide for proper risk analysis and evaluation methods; and maintain, as managers, tight supervision of risk management activities. This is, necessarily, a time-consuming process.

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[42] Simon Brady, "Allied-Lyons' deadly game", *Euromoney*, April 1991; Kim Hunter, "Shell's poor Showa", *Futures and Options World*, April 1993; See for example "MG's financial crisis illustrates dangers of inattentive hedging", *Oil Daily*, 11 January 1994; "Metallgesellschaft - not so clever", *The Economist*, 15 January 1994; and "Codelco says error cost it $200 million", *International Herald Tribune*, 31 January 1994; "Fraud charges for Codelco trader", *Futures and Options World*, April 1994.

Annex II

BASIS RISK ASPECTS OF RELEVANCE TO THE USE OF COMMODITY FUTURES AND OPTIONS BY DEVELOPING COUNTRY PRODUCERS

1. Before deciding to use an organized risk management market, exporters need to identify whether or not there exists a useful price risk management market. For example, the fact that there is a cotton futures market in New York does not imply that cotton exporters from Francophone West Africa or Uzbekistan can viably use this market to manage their risks. The correlations between New York No.2 cotton prices and the spot prices received for the cotton from these countries are low, and hedging would bring relatively low benefits in terms of reduced earnings volatility.[43] The New York exchange has recently introduced a contract based on northern European cotton prices, which provides lower basis risks for these cotton-exporting countries, but the liquidity of this contract is still so low that it is doubtful whether this new contract can be used for large-scale hedging of a country's cotton exports. Cotton exporters from many countries thus are faced with the problem that even if they want to hedge, there are no futures markets which are really useful for them. The problem may be less acute for commodities for which the world market is better integrated (e.g. cocoa, coffee, sugar, many metals), but still, developing country entities will have to determine on a case-by-case basis whether the spot prices for their commodities move in a way similar to those on futures markets.[44]

2. Basis risk problems can be overcome on the over-the-counter market, as long as a viable reference price mechanism exists (as is the case, for example, for cotton). Intermediaries such as banks and brokerages can tailor-make a risk management instrument for the needs of the developing country. This type of tailor-made product is offered in oil markets, but it is still very rare in other commodity markets. For example, instead of managing the price risks of fuels in the United States (which is, implicitly, what one does when using the New York Mercantile Exchange contracts), one manages price risks of the Far East market, where the country in question buys its fuels. The intermediary lays off its main risk on the New York market or in any other way, and carries the basis risk itself until it has found another party which is willing to take it on. Whether this type of tailor-making will be expanded to non-oil markets in the near future is very difficult to say; to a large extent, this may be a chicken-and-egg problem, and in this respect, international organizations may serve the role of catalyst for getting such markets off the ground.

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[43] P. Varangis, E. Thigpen, S. Satyanarayan, *The use of N.Y. cotton futures contracts to hedge cotton price risk in developing countries*, World Bank, International Economics Department, International Trade Division, 4 January 1994.

[44] Several studies of this kind have been done by the World Bank. See, in addition to the study mentioned above, Stijn Claessens & Panos Varangis, *Hedging crude oil imports in developing countries*, World Bank, International Economics Department, WPS 755, August 1991; and several of the papers discussed in M.L. Debatisse *et al.*, "Risk management in liberalizing economies: issues of access to food and agricultural futures and options markets", World Bank, Europe & Central Asia Regional Ofice; Middle East & North Africa Regional Office, 12220 ECA, 30 November 1993.