



### Market Based Commodity Price Risk Management

#### Module 1

#### Session 1 - Commodity Price Risk Assessment in Developing Countries

Production and marketing of primary commodities play a dominant role in most developing country economies. Unpredictable fluctuations in commodity prices cause various problems, including inadequate investment, firm and cooperative failures, and the persistence of poverty in small-scale commodity-producing households.

Participants in the commodity supply chain are subject to financial risk due to both price risks and physical risks to harvest quantity and quality. Producers typically hold long positions in the commodities they are producing or storing. They run the risk of prices falling before they can harvest and sell. Producer organizations, including cooperatives, often set a price to be paid to their member producers at the beginning of the season. This puts them in an open long position, and subject to the risk of price declines. Traders and processors often buy before they have a contract to sell or sell before they have a contract to buy. So traders and processors can be exposed to the risk of price declines or price increases, depending on whether their net open position is long or short. Governments are also impacted by price risk through budget shocks, requests for intervention, and the resulting social and economic instability.

A variety of strategies exist for managing price risk. Physical strategies such as open position monitoring, marking to market, and back-to-back trading, can provide simple and effective reductions in risk exposure. Forward contracts can also provide a flexible approach to managing price risk by offsetting an organization's open positions. Contract farming is a current trend in agricultural commodity production that reduces the price risks for both producers and processors. Futures and options trading provide an additional market-based approach to commodity price risk management and the role of these financial contracts is covered in Session 2.

#### Case Study 1 - Price Risk Hedging By Coffee Cooperatives in Peru

This case study describes a Peruvian coffee cooperative that has developed and implemented a price risk management strategy that includes trading exchange traded futures contracts. The advantages of managing price risk at the cooperative level in Peru are: a) there is sufficient volume and financial reserves to allow access to the international futures exchanges; and b) the benefits of the reduced price risk are passed on to the member producers.

#### Module 2

#### Session 1- Managing Commodity Price Risks Using Exchange-Traded Financial Contracts

Futures and options exchanges generate important information about commodity market conditions and provide participants in the commodity supply chain with useful tools for managing price risk exposure through hedging.

Hedging with futures attempts to lock in an effective purchase or sale price for an open physical position. It does this by creating a futures position that is opposite to the open physical position, so that when the futures price and the local physical price move in the same direction the futures

and physical positions produce offsetting returns and overall profits are protected. In this case the cost of protecting profits from unfavorable price movements is that you have to be willing to give up the extra profits that would have occurred if instead prices had moved in your favor. Alternatively, hedging with options attempts to put a floor under losses from unfavorable price movements while allowing the hedger to participate in part of the gains from favorable ones. The cost of this price insurance is the option premium.

Hedging effectiveness depends, among other things, on the amount of basis risk and physical position risk. Basis risk refers to the extent to which the futures price and the local price for the physical commodity move together. Physical position risk refers to the extent that the anticipated physical position is actually realized. Hedging with futures contracts usually provides the most risk protection and leads to the most stable and predictable profit stream. But options contracts are frequently viewed as a more attractive alternative because of their insurance feature that allows the hedger to participate in the gains when commodity prices move in their favor. Options also have the advantage that liability is limited to the option premium, while futures expose traders to essentially unlimited liability for additional margin calls. Options may therefore often be preferred in developing countries environments where access to credit may be limited and constrained.

### **Case Study 1 - Hedging Maize Import Price Risks In Malawi**

This case study describes the evolution of a program to hedge maize imports in Malawi using physical call options (i.e. options to buy physical maize and have it delivered to Malawi). The advantage of the physical call options over financial options in this application is that not only is price risk reduced but also the actual availability of maize product is ensured during times of domestic production shortage.

## **Module 3**

### **Session 1 - The Role of Government in Market-Based Price Risk Management**

Managing commodity price risk through market-based hedging instruments can lead to more stable and predictable cash flows, which generate a number of benefits, including increased investments, better adoption of new technologies, improved food security, and so on. Together, these effects can enhance economic growth and development and reduce the negative impact of economic fluctuations. Hence, the government has a vital role to play in facilitating the growth of hedging opportunities in developing countries. Many of the investments required to make this happen have public good attributes and so may be underinvested in by the private sector.

Governments in developing countries can help participants in the commodity supply chain implement hedging strategies using futures and options contracts by reducing key barriers related to lack of knowledge, scale of production, access to credit, basis risk, and legal and regulatory standards. Governments can also use market-based risk management instruments directly to protect against short-run food and humanitarian crises, but care must be taken not to crowd out private sector growth and development.

Market-based price risk management usually cannot eliminate income risk completely, because of basis risk and physical position risk. Nor can hedging be used for all commodities, because futures and options markets are not available for all commodities and all locations. But facilitating private sector access to these tools can help governments accomplish broad development objectives including economic growth, food security, and poverty reduction.

## **Case Study 1 - Futures Exchange Development And Evolution In China**

Today, commodity futures exchanges have not yet emerged in many developing countries for a variety of reasons. First, marketing institutions for primary commodities can be underdeveloped, especially in countries with a strong history of central planning. Second, the legal structure is often not strong enough to ensure the market can be regulated sufficiently to provide reliable incentives to participate. Third, business size is generally small which leads to high transaction costs and precludes participation by those who cannot meet minimum contract size requirements. Fourth, underdeveloped transportation and storage facilities make delivery difficult. Last but not least, information cannot flow efficiently due to poor communications infrastructure and low education level of market participants.

Government can play an active role in establishing and facilitating the development of futures markets in developing countries. In the following we consider the case of China, where the government has become involved directly in the development of the China Zhengzhou Commodity Exchange (CZCE), the first ever futures market in China. The case shows how the government was able to establish a futures market in a speedy and efficient way. The case will also discuss how the other two futures exchanges in mainland China—the Dalian Commodity Exchange, (DCE) and Shanghai Futures Exchange (SHFE) were introduced, as they were developed in much the same way as CZCE.

### **Readings**