


6-8

Food Price Stabilization Policies in a Globalizing World

By:
Shahidur Rashid

**CASE STUDY #6-8 OF THE PROGRAM:
“FOOD POLICY FOR DEVELOPING COUNTRIES: THE ROLE OF
GOVERNMENT IN THE GLOBAL FOOD SYSTEM”
2007**

Edited by:

Per Pinstrup-Andersen (globalfoodsystem@cornell.edu) and Fuzhi Cheng
Cornell University

In collaboration with:

Søren E. Frandsen, FOI, University of Copenhagen

Arie Kuyvenhoven, Wageningen University

Joachim von Braun, International Food Policy Research Institute

Executive Summary

This case examines various aspects of food price instability. It focuses on (1) the sources of price instability, (2) various policy options and the conditions under which they are viable, and (3) experiences with both market-based and non-market-based policy responses to price instability. All sources of price instability—such as inadequate infrastructure, asymmetric information, and incomplete or missing institutions—qualify as market failure. One could therefore argue that an appropriate policy response would be to invest in the critical determinants of well-functioning markets and create enabling market conditions, which in turn improve price stability. But the proponents of direct government interventions have argued that it takes time to develop infrastructure, improve information flow, and build institutions, and hence direct intervention for price stabilization is a legitimate short-run policy response. This is the idea most developing countries adopted when they embarked on food price stabilization policies in the 1960s and 1970s.

Over the years, however, it became clear that such policies are expensive, may be dictated by special interests, and can distort agricultural incentives. These problems were particularly relevant for marketing board-led price controls in centrally planned economies. In Asian countries, most of which adopted dual pricing policies, interventions did produce beneficial results during the early years of the Green Revolution. But recent studies suggest that Asian food price stabilization is plagued by the very problems that the opponents had predicted with their theoretical models. These programs are becoming increasingly expensive, being captured by special interests, and hindering the process of diversification and commercialization. Furthermore, some countries in the region have demonstrated that reductions in public intervention can be beneficial. The Asian countries that adopted liberalization have been able to reduce food subsidy bills, strengthen markets, and allocate more resources to poverty alleviation programs—all without jeopardizing food price stability.

Given the policy vacuum created by liberalization and the increasing affordability of information and communication technologies, recent years have

seen many initiatives in developing countries to set up market-based institutions, such as commodity exchanges, for managing price instability and risks. Some countries have also used international futures markets to protect their domestic market against global market volatility. In most cases, however, these initiatives have not produced the desired results, and addressing price instability continues to be a challenge for many developing countries. This case provides an overview of these challenges with the hope of stimulating critical thinking about policy solutions that can ensure an acceptable level of price stability, especially in low-income countries in Africa.

Your assignment is to consider a low-income, land-locked country in Africa with poor infrastructure and to recommend a set of policies to the government that would ensure an acceptable level of price stability for agricultural commodities. For decades, the country controlled agricultural prices through its marketing boards, which heavily distorted agricultural production incentives. Beginning in 1999 the country started dismantling its marketing boards and liberalizing agricultural markets. With liberalization, however, prices have become more volatile, and there has been increasing pressure on the government to undertake stabilization policies.

Background

Agricultural households in developing countries face a variety of risks. The most visible manifestation of these risks is high food price instability, which, because of its inherent economic and political implications, has attracted the attention of almost all actors in food policy making over the past few decades. Politicians want food price stability irrespective of their ideology; public administrators have struggled to make food price policies work; and researchers have debated the ways and means of ensuring food price stability. All actors agree on one point—the dire consequences of price instability for consumers, producers, and overall economic growth. It is well documented that if the markets for credit and insurance are incomplete, commodity price instability can discourage investments and lead to inefficient

resource allocation.¹ For poor consumers, the consequences of price instability can be severe. Because they spend a large share of their income on food, an unusual price increase forces them to cut down food intake, take their children out of school, or, in extreme cases, simply to starve.² A series of country studies have argued that price instability may result in macroeconomic instability, social unrest, and overall reduction in economic growth.³

Thus, the issue is not finding policy justifications for ensuring price stability, but rather finding appropriate policy instruments and institutions to address it—a subject that was intensely debated in the 1970s and 1980s and has received renewed attention in recent years.⁴ The traditional policy response has consisted of direct government interventions in food markets, through food marketing boards or parastatals, involving price controls and restrictions on both internal and external trade. Beginning in the 1980s, donors and other international agencies began promoting the reform of the food marketing boards and price policies as part of structural adjustment programs. This approach was motivated by the prevailing view at the time that direct marketing interventions in the food sector were too costly to continue. The reform experiences have been mixed, and whether the reforms provided positive price incentives is a subject of considerable debate (Barrett 1997; Jayne et al. 2002; Dorward et al. 2004).

In light of these mixed experiences with structural adjustment programs as well as other global trends, it is being increasingly recognized that food price

instability and risk are important problems in many low-income countries, and finding appropriate policy responses for dealing with these problems has re-emerged as a contemporary policy issue (Byerlee et al. 2006; World Bank 2005). There are at least three reasons behind renewed interest in the subject. First, it is becoming evident that food market reforms have been partial, and in the wake of increased price volatility, many countries are reversing the policies they adopted under the structural adjustment programs.⁵ Second, world grain stock is at historically low levels, and even a relatively small swing in exports or imports from large countries, such as China and India, can send major shock waves through world grain markets. This vulnerability has serious implications for developing countries, especially those that have food deficits and limited capacity to import owing to low foreign currency reserves. Finally, there is growing concern that global climate change is likely to expose poor countries to droughts, floods, and other extreme climatic events that can increase the risk of food price shocks.

Instability in agricultural prices results from a number of interrelated factors. It is important to note that such instability can often be triggered by one factor, like bad weather, and then be accelerated by other related factors, such as inadequate infrastructure and institutions. Broadly, one can divide these factors into four major groups: (1) agroclimatic factors, (2) inadequate infrastructure and asymmetric information, (3) incomplete or missing institutions, and (4) high volatility in the world market.

Agroclimatic Factors

The hostility of Mother Nature has historically been one of the main sources of peasant households' vulnerability. Droughts, floods, and endemic infestations of crops have always played roles in food insecurity and resultant human tragedies. The production from weather-dependent agriculture, as is the case in most developing countries, can be as unpredictable as the weather itself, as shown by the variability in production within and across years. It has been amply demonstrated that yield variability translates into price variability, and the more a country's

¹ For further details, see Newbery and Stiglitz (1981), Timmer (1988), Williams and Wright (1991), Fafchamps (1992), and Barrett (2002).

² Even if these shocks are temporary, they can have long-term economic impacts in terms of nutritional well-being, labor productivity, and survival chances (Hoddinott 2006).

³ This has been a main theme of Peter Timmer's research for more than two decades. For Indonesia, he demonstrated that a stabilized rice price raised the country's growth rates by 16 percent during 1969–1974, by 14 percent during 1974–1979, and by 4 percent during 1989–1991 over what it would have been otherwise (Timmer 1997). For further discussion of the social and political justifications for price stabilization, see Timmer (1988, 1996).

⁴ See Timmer (1988, 1996) and references therein on the debate and World Bank (2005) on recent issues.

⁵ See Jayne et al. (2002) for Eastern and Southern African experiences.

agriculture depends on weather, the more variable yields and prices are.⁶ The reasons are obvious when one observes how prices collapse following a bumper harvest and skyrocket after a crop failure.⁷

Infrastructure and Information

The price of any given commodity is the final outcome of an exchange process we call the market, and the outcome is only as good as the process is able to deliver. Thus, the price of a commodity can be right only if the process of exchange is right. Three critical determinants of an efficient process of exchange (or market) are infrastructure, institutions, and information.⁸ Two examples can help make the point clear. First, the results of the “getting-prices-right” campaign of the 1980s, which involved dismantling parastatals and allowing market forces to determine prices, varied widely across countries. Whereas liberalization led to higher price variability and subsequent policy reversals in some African countries, it was remarkably successful in China and Vietnam—arguably because they had better infrastructure and institutions. Second, famines and acute food insecurity have historically been localized phenomena, and many of them are named after a specific region of a country, such as the Wello famine in Ethiopia and the Bengal and Madras famines in India. The classic example is the Bengal Famine of 1943, which tragically demonstrated how a small decline in food production can trigger massive food insecurity in the absence of infrastructure, information, and risk-mitigating institutions. Food price stabilization policies have their roots in such tragic experiences.

Incomplete Markets: Credit and Insurance

Life always involves risks, but over time the human race has learned how to manage or cope with them. The credit and insurance markets are the outcomes of such human learning. In developing countries, however, these institutions are largely incomplete or nonfunctional, and thus inadequate to address the credit and insurance needs of the vast majority of households. This failure indirectly contributes to agricultural risks and price instability. For instance,

if the credit market functions well, households can borrow to maintain a certain level of consumption or to avoid distress sales in the face of negative income shocks. In many developing countries farmers must sell a portion of their crops immediately after the harvest to pay off loans, pay wages or school fees, or meet other social obligations. This is one of the reasons behind the stylized fact that prices decline after harvest in developing countries. Furthermore, a large body of literature argues that access to credit markets can reduce or delay the loss of productive assets through distress sales, which are detrimental to long-run productivity and growth.

The same argument applies to insurance markets. Farmers in developing countries have great difficulty dealing with weather-related income shocks owing to missing insurance markets. Crop failure due to drought, for example, can force households, otherwise above the poverty line, into poverty because they must sell their productive assets to meet consumption requirements and production costs. As the next section will show, the development of credit and insurance markets is also critical to ensure food price stability through market-based institutions.

The Volatility of the World Food Market

The world staple food market has historically been thin, highly volatile, and heavily influenced by agricultural policies in developed countries (Timmer 1996). This description was particularly true in the 1960s, when only about 6–7 million metric tons of rice, 46 million tons of wheat, and 23 million tons of maize were traded in the world market. The global market has increased in size over time (almost three times its size in the 1960s), but it remains volatile, with intrayear coefficients of variation reaching as high as 20.73 for rice, 16.9 for wheat, and 17.47 for maize over the past two decades.⁹ Many studies have documented that high variability in world prices can be transmitted to domestic markets and worsen price instability. For net importing countries, the financial and balance-of-payments implications can be severe. For example, a sudden increase in food imports may worsen the balance of trade, causing a devaluation of the currency and making imports more expensive in local currency (Hazell et al. 2005).

⁶ See Anderson and Hazell (1989) on sources of yield variability.

⁷ The consequences of such shocks on the poor are also well documented. See Barrett (2002) for a review.

⁸ Strictly speaking, these are not sources of price instability per se, but the lack or inadequacy of these elements amplifies the degree of instability.

⁹ Calculations are based on data from the U.S. Department of Agriculture Foreign Agricultural Service.

Other Factors Contributing to Price Instability

Two other factors can contribute to food price instability in developing countries. First, most developing countries have social safety net (SSN) programs to provide poor households with access to food. These programs are essential for all countries, irrespective of their level of development. If they are not managed properly, however, their operations can have destabilizing effects on markets, especially if the programs are large relative to the country's food economy. Although the direction of the price change may be different, both food transfers and cash transfers under SSN programs can affect the price. For instance, if beneficiaries receive food under SSN programs, it will lower their effective demand from the market, which in turn will lead to a decline in prices. If it is a cash transfer program, on the other hand, increased income will lead to an increase in demand and, for a given level of supply, an increase in prices. Thus, in either case, the market equilibrium will change, which in turn will change farmers' incentives and traders' arbitrage opportunities.

The other factor is food aid flow. Although the benefits of food aid supply during emergencies cannot be denied, excessive flows can depress market prices to the detriment of local producers, lowering levels of production and farmer incomes. This is particularly true for program food aid, which has historically been driven by the disposal of surpluses in donor countries rather than food security needs and incentives for domestic production in recipient countries. Consider the case of Ethiopia, one of the largest recipients of food aid. According to a conservative estimate, total food aid accounted for 13 percent of cereal use in the country during 1999–2003. The share of food aid in total human consumption is at least twice as high, because in addition to human consumption, cereal use includes feed, seed, and postharvest losses (FAO 2004). Clearly, it is a large share and, depending on the mode of distribution, can produce disincentive effects for both producers and traders.

Policy Options

From a theoretical standpoint, the central rationale for policy intervention to ensure price stability lies in the arguments of "market failure." In fact, three

commonly cited rationales for public interventions in agricultural markets—(1) inadequate infrastructure, (2) incomplete risk-mitigating institutions like credit and insurance markets, and (3) lack of safeguards against external shocks—can all be argued as cases of market failure. The current stock of agricultural price stabilization policies includes both market-based and non-market-based options, with the former generally practiced in developed countries and the latter in developing countries.¹⁰ A summary of available policy options is provided in Table 1, and each of the options is discussed here.

Non-Market-Based Options

In the age of liberalization and globalization, a discussion of non-market-based policies is likely to be labeled outdated and old-fashioned. There are at least three important reasons, however, for such policies to be considered. First, non-market-based intervention does not contradict the theories of market economics. Economic theory tells us that, in the absence of the provision of public goods and services, the invisible hand of the market is incapable of ensuring efficient allocation of resources. In such a situation government interventions can theoretically be justified.¹¹ Second, existing World Trade Organization (WTO) regulations allow developing countries to adopt non-market-based policies, including imposing variable levies within stipulated bands, maintaining strategic food reserves, and giving subsidies for market development. Finally, although they have come under intense criticism in recent years, Asian countries had remarkable success with some of these policies during the early years of the Green Revolution. Table 1 summarizes four such policy options, and three of them are discussed here.

Government involvement in the sale and purchase of food. Direct government interventions, through the sale and purchase of food, have been the main mechanism for stabilizing food prices in developing

¹⁰ In some countries, such as India and Kenya, market-based and non-market-based policy options seem to co-exist. Little is known, however, about how they affect each other.

¹¹ The problem historically, however, has been over-intervening in the market, often resulting from pressure from special interests and rent seeking—a common problem some Asian countries are confronting today.

countries. The two most common forms of policy interventions are marketing board—led price stabilization in many African economies and dual pricing policies in many Asian countries. These methods of price stabilization came under intense criticism in the 1980s and 1990s, because they were found to be extraordinarily expensive and yet ineffective in generating benefits for the poor (Bates 1981; Newbery and Stiglitz 1981; Pinstrip-Andersen 1988).

The dual pricing policies are perhaps the most widely discussed and debated form of agricultural policy in the past four decades. Unlike marketing board—led policies, these policies provided a much-needed boost to agricultural production and received recognition from policy makers, analysts, and academicians.¹² The policy essentially works as follows: ensure a floor price (often equal to the cost of production) and a ceiling price (set by adding certain margins to the cost of production) through public food procurement, stocking, and distribution. The public procurement ensured a floor price (for instance, in the case of a bumper harvest), stocking ensured the meeting of emergency food security needs, and distribution ensured a regular supply of food for social safety net programs for the poor.

Although it may sound simple, implementing dual pricing policies involves coordinating a complex set of policies, building related institutions, collecting highly disaggregated data, and monitoring both domestic and global prices. For instance, many Asian countries have agricultural price commissions that are responsible for collecting relevant data and setting up floor and ceiling prices; food logistics agencies that are responsible for procurement, stocking, and distribution; and a line ministry that designs safety net programs and identifies beneficiaries.

How are dual pricing policies different from marketing board—led price control in centrally planned economies? They differ in three important respects. First, unlike centrally planned economies, food logistics agencies in Asia did not eliminate private trading in the agricultural sector. For example, in the 1970s the food logistics agencies' shares in cereal production in India and Indonesia were only 10 percent and 3.54 percent, respectively

(Rashid et al. 2005). The rest was traded by the private sector. Second, countries that practiced dual pricing policies never imposed production quotas on the farmers, a practice that was common in centrally planned economies. Finally, price stabilization policies in Asia went hand in hand with investments in infrastructure and market development. This approach is evident in the growth trends of road networks, irrigation facilities, and information and communication technologies. It is also supported by the recent studies of food market integration in Asia, almost all of which suggest that cereal markets have become well-integrated in the past two decades, which is remarkably different from the earlier decades when the countries embarked on dual pricing policies.¹³

Strategic food security reserves. The strategic food security reserve (SFSR) is a policy response to food security threats arising from weather-related disasters (such as droughts and floods) or human-induced disasters (such as civil strife), both of which are prevalent in many developing countries in Africa and Asia. In Africa, maintaining SFSRs became a high-profile policy when the African heads of state and government passed a resolution establishing a regional food security reserve during the African Union summit held in Maputo, Mozambique, in July 2003. The rationales for maintaining SFSRs are similar to those for price stabilization, but they substantially differ from those for dual pricing policies. Although the focus of SFSR operation is mainly on emergency assistance and disaster management, dual pricing policies coordinate policy action across economic sectors. In particular, in addition to maintaining security reserves for emergencies (commonly called buffer stocks in Asia), dual pricing policies link farmers, through the minimum price guarantee, and consumers, through SSN, as part of the price stabilization mechanism.

Implementing this policy raises a number of challenges. It can be expensive and have disincentive effects on producers and private traders if stocks are not rotated and released in a timely and market-friendly manner. The direct costs of managing such reserves are easy to understand with a simple example. Suppose that a country maintains 450,000 metric tons of cereal reserves for

¹² See Timmer (1988) and Barrett (2002, section 3) for a review.

¹³ A summary of these studies for six Asian countries is presented in Rashid et al. (2005).

emergency management and that policy makers know, based on historical evidence, that emergencies occur once every four years. Now, international evidence suggests that the average cost of storing one metric ton of cereal is US\$30 per year. That is, the cost of maintaining food security reserves is US\$13.5 million per year or US\$54.0 million (over four years) to address one emergency. These are conservative estimates, because they exclude other costs, such as storage losses, disincentives, or even potential corruption or misuse of the stocks.

Does this mean that one should abandon such policies? The answer, as in any policy debate, depends on country-specific realities. If a country is well integrated with the international market and has the capacity to import, such policies are irrelevant. If, however, a country is landlocked and weakly integrated with regional or world markets, maintaining food reserves may be necessary to save human lives, to which no one can objectively attach a financial value. Thus the objective in such a situation will probably be to find ways to minimize the adverse effects. Four commonly advocated options are (1) announcing the sale or release price before the main planting season, (2) setting the price around the expected import parity price, (3) rotating the stock through sales at import parity and tendering for commercial imports, and (4) strengthening the legal framework to minimize the scope for corruption, such as collusion between traders and officials to exploit the system.

Variable tariffs. International trade, especially involving the private sector, has long been recognized as an efficient means of stabilizing domestic food prices. Trade flows add to domestic supplies in times of shortage (or provide additional markets in times of surplus), with adjustments in tariffs providing a mechanism to influence both traded quantity and prices.¹⁴ The key term in this statement is “adjustment of tariffs.” From the perspective of trade theory, high tariffs on any commodity can create distortions in the respective sectors.

¹⁴ See Minten and Dorosh (2006) for an analysis of rice price stabilization policy in Madagascar; Dorosh (2001) for an example of how private trade with India helped stabilize rice prices in Bangladesh; and Jha and Srinivasan (1999) for an analysis of the welfare and efficiency implications of Indian grain price policies.

Nevertheless, given the weak agricultural base and high instability of world cereal markets, most developing countries cannot afford to leave their agricultural markets completely open. For instance, if a bumper harvest in a country coincides with low import parity prices, domestic prices can be further depressed and farmers may fail to recover their production costs. In a resource-poor, agriculture-dependent country, such an outcome can be a big blow to the economy. This possibility is the underlying reason WTO regulations allow developing countries to apply tariffs within a band. The critical condition required to make this policy viable is a good market information system that can monitor both domestic and international prices, forecast domestic production, and allow for quick decisions on tariff adjustments.

Market-Based Options

The market-based options and institutions used in most developed countries to mitigate price risk evolved in response to the conditions observable in many developing countries today. Writing on the history of futures markets in the United States, Kline (2001, 3) notes:

... grains were typically sown in the spring and harvested in the fall. In the 1800s, this created extreme supply and demand imbalances throughout the year. During the fall, when supplies were plentiful, prices of grains were extremely depressed. Millers had an abundance of new crops to choose from and would pay the lowest price they could. In fact, many farmers were left with cartloads of unsold grains that they were not willing to haul back to their farms. Sometimes the grains were left on the roadside to rot.

This story is similar to what Ethiopian farmers experienced during the harvesting season of 2002, when prices were so low that many farmers allegedly did not find it worthwhile to harvest and hence left their crops in the field to rot. History offers many examples of this sort, but they never translated into policy action to develop market-based institutions in developing countries. The reasons were simple: developing countries did not have the technology and the institutions—such as credit, insurance, and contract enforcement—that are critical for the success of market-based mechanisms. In fact, it was not easy even for

developed countries. For example, although the first forward contract was made on March 13, 1851, at the Chicago Board of Trade (CBOT), it was only in 1972 that the CBOT and the Chicago Mercantile Exchange (CME) developed contracts that were able to hedge against currency and interest rate volatility (Kline 2001).

Now, however, technologies that were beyond the reach of developing countries, such as information and communication technologies, are becoming more affordable; banking and financial sectors can be developed rapidly; and new markets are emerging in Brazil, China, and India. These factors are creating unprecedented opportunities for developing countries to set up market-based institutions. Yet developing countries continue to face difficulties in taking advantage of these opportunities.

Warehouse receipt system. The warehouse receipt system (WRS) is an institutional mechanism to mitigate some sources of price instability, namely credit constraints. As mentioned earlier, one of the main reasons for observed low prices after harvest is the fact that farmers, especially small farmers, are forced to sell a portion of their harvest to pay for laborers, pay off loans, and meet other social obligations. And when agriculture is dominated by smallholders, excess supply is created, which leads to depressed prices or even price collapse in certain years. If farmers were not credit constrained, they could store their harvest and wait for arbitrage opportunities over time. An efficient WRS can help farmers do exactly that. The idea is simple. After the harvest, farmers take their surplus to a designated warehouse and get a receipt indicating the value of the stock, which can then be deposited in a bank to get cash.

Providing farmers with warehousing facilities in developing countries offers an added advantage. In most developing countries, post-harvest losses are high—sometimes as high as 30 percent of gross production. Consider the case of Ethiopia, where estimates of post-harvest losses range from 20 to 30 percent of gross cereal production. Total gross production of cereal in the country is about 10 million metric tons. Assuming an average cereal price of US\$200 per ton, this implies that the country loses about US\$400 million worth of cereals in a given year. With appropriate harvesting, warehousing, and postharvest techniques, these

losses could have been minimized, contributing to the well-being of both producers and consumers.

Commodity exchanges and futures markets. The futures market as it exists today is a contractual arrangement where farmers (sellers) and dealers (buyers) commit to future exchanges of grain for cash. For example, a farmer may agree with a dealer on a certain price to deliver a given quantity of wheat at the end of a pre-fixed time. If the bargain suits both parties, the farmer knows how much she will be paid for the wheat and the dealer knows his costs in advance. The two parties may exchange a written contract to this effect and possibly a small amount of money representing a “guarantee.”

Such contracts have become common and are even used as collateral for bank loans. They can also change hands before the delivery date. If the dealer decides he does not want the wheat, he can sell the contract to someone who does. Similarly, if the farmer does not want to deliver her wheat, she can pass her obligation on to another farmer. The price fluctuates depending on what is happening in the wheat market, and the participants can use the price information to react accordingly. In simple terms, this is how commodity futures work, but successful implementation requires (1) a system of grades and standards, (2) a large domestic market, (3) well-functioning credit and insurance markets, (4) a strong legal environment for contract enforcement, and (5) good information and communication infrastructure.

Given these stringent viability conditions, can such a system work in a developing country? If the current Western level of sophistication is taken as standard, the answer is probably “no.” Going back in history, however, offers grounds for optimism about the prospect. For example, in the mid-1800s, when commodity exchanges evolved in the United States, all the viability conditions listed were either missing or at a low level of sophistication. Yet the institutions evolved and even flourished over the past century and a half.¹⁵ Thus, if history is any indicator, commodity exchanges do have potential. The key challenges will be coping with small market size (most African countries have small markets)

¹⁵ The evolutionary path was not smooth though. The organization of commodity exchanges was held responsible for every inflationary and deflationary spiral, which led to two congressional investigations, in 1947 and 1948 (Baer and Saxon 1949).

and creating an enabling legal and regulatory environment, which many countries lack.

Crop insurance and weather-indexed insurance. Crop insurance is an income stabilization mechanism, not a price stabilization scheme per se. Crop insurance comes in various forms—such as weather-indexed insurance, insurance against crop failure, and insurance against natural calamities and drought—and can be either a market-based or a non-market-based mechanism, depending on how a particular program operates. It can be termed market-based if it is self-sustaining with farmers buying the contract at a market-determined premium. On the other hand, it is a non-market-based mechanism if premiums are subsidized or paid either by governments or by their development partners. Two questions are pertinent in this regard: Can crop insurance markets be feasible and self-sustaining in developing countries? And if they need to be subsidized, what justifies the subsidies? Hazell et al. (1986) deal with these questions extensively. Their answer to the first question was that, even in developed countries, crop insurance was not fully sustainable and involved large subsidies. Referring to developing countries, they wrote:

...the costs of multiple risk crop insurance tend to be particularly high in developing countries. Large numbers of small farmers and wide diversity of agricultural practices greatly adds to administration and inspection costs. Poor data on actuarial risks and a lack of skilled personnel also hamper the writing and enforcement of contracts (Hazell et al. 1986, 295).

Despite these bottlenecks, a general answer to the second question is that subsidizing such a scheme can be justified at an early stage of development based on the argument of market failures. In the early 1980s there was growing interest in crop insurance in developing countries in Asia and Latin America, as well as a push from international organizations like the Food and Agriculture Organization of the United Nations (FAO), the United Nations Commission on Trade and Development (UNCTAD), and the Inter-American Institute for Cooperation on Agriculture, but very few countries (only Brazil, Costa Rica, and Mexico until the late 1980s) experimented with the policy.

Experiences with Various Policies

Food price stabilization programs in developing countries have been largely non-market-based—that is, they are implemented through direct government interventions. The most widely discussed and debated options are dual pricing policies, adopted by many Asian countries during the Green Revolution, and marketing board-led price controls in centrally planned economies. On the other hand, although they have been in existence for more than a century, market-based risk management instruments (such as warehouse receipts or commodity exchanges) have been introduced only recently in developing countries. For the sake of brevity, this section provides only brief reviews of experiences with dual pricing policies in Asia and recent initiatives instituting agricultural commodity exchanges.¹⁶

Experiences with dual pricing policies. Most Asian countries embarked on agricultural price stabilization programs in the 1960s. Although implementation approaches varied, the economic realities and the underlying policy justifications were similar across countries. All the sources of price instability described in the “Background” section were significant: agriculture was largely weather dependent, infrastructure was inadequate, risk management institutions were virtually nonexistent, and most countries were food deficient and hence food aid dependent. Therefore, policy thinking in all countries converged toward promoting agriculture to attain food self-sufficiency and improving agricultural markets. With the fortunate appearance of Green Revolution technology, policy makers became convinced that the objectives were achievable with appropriate government interventions that could mitigate the risks and uncertainties of new technology.

Dual pricing policies (ensuring floor and ceiling prices) were an outcome of that thinking. The main goals were to increase production, scale up social safety net programs, and maintain buffer stocks to ensure national food security. Alongside these efforts, governments also made investments to improve input supply, credit facilities, and rural infrastructure. The initial successes of these policies were remarkable in terms of increasing production, strengthening social safety net programs, and

¹⁶ For a review of experiences with marketing boards in Africa, see Bates (1981).

fueling overall growth (Rashid et al. 2005; Cummings et al. 2006).

Experiences over the years have varied, however, as some countries continued with the policies despite changes in the rationales that justify such interventions. Based on findings from six Asian countries (Bangladesh, India, Indonesia, Pakistan, Philippines, and Vietnam), a recent study concludes that the broad rationales for public intervention in these countries have changed over the years, although some countries continue to implement price stabilization policies more or less the same way as they did in the 1960s.¹⁷ The study shows that domestic markets are now well integrated, farmers have adopted new technologies, world cereal markets have matured, and all countries have adequate foreign currency reserves to participate in world markets at times of scarcity. The study further finds that although continued parastatal-led price policies have resulted in staggering increases in costs, liberalization has had beneficial impacts on the countries (Bangladesh and Vietnam) that pursued reforms.

Thus, the central message from the Asian experiences is that policy contexts are dynamic and policies need to be adjusted as contexts change. Many Asian countries failed to do so, which resulted in staggering amounts of subsidies and a distorted incentive structure for agriculture.

Experiences with agricultural commodity exchanges.

The use of market-based instruments began only recently in developing countries. With the exception of pilot initiatives for weather index-based insurance and warehouse receipts, the focus has been mainly on setting up commodity exchanges. Although commodity exchanges have been in existence for more than a century, the recent interest in setting them up in developing countries is triggered by (1) the need for alternatives in the wake of market liberalization and (2) the enhanced availability and affordability of information and communication technologies. In many countries, governments historically played key roles in providing market information, facilitating trade, and setting prices. With liberalization, there was a vacuum in these services, and many countries felt a need for price discovery and an efficient trading mechanism—needs that can ideally be met by

commodity exchanges. As a result, commodity exchanges have grown rapidly across the developing world over the past decade.

A recent UNCTAD review, however, suggests that experiences have been mixed. The key message from this review is that although the Asia-Pacific region, led by China and India, has succeeded in promoting commodity exchanges, Africa fared less well. In particular, except for South Africa, commodity exchanges either failed or had limited success in other countries in the region. This outcome is clearly discouraging for African countries, where both yield variability and price variability are among the highest in the world. This finding has two important implications. First, the failure of market-based instruments will give governments a reason to reverse policies and return to those that are detrimental to market development and agricultural growth. Second, since such instruments succeeded in countries with higher levels of development (Brazil, China, India, and South Africa) and failed in others, it may be that a majority of developing countries are not ready to rely on commodity exchanges, or other market-based instruments, for managing price instability.

This suggests that some form of non-market-based mechanism might be necessary before these countries can rely on market-based options for food price risk mitigation. The question is, how? Historically, public interventions have had problems related to excessive control, which induces inefficiencies, and the capture of policies by special interests over time. Now development practitioners have almost half a century of experience to help them refine policies and design government interventions in supportive and market-friendly ways. Two considerations are worth noting in this context: (1) leveling the playing field for both the private and public sectors and (2) stabilizing prices within a broad band, not at fixed levels.

Leveling the playing field essentially means not empowering government agencies with regulatory supports, such as monopoly control, movement restrictions, and preferential access to credit. On the other hand, stabilizing prices within a band implies moving away from fixed pan-territorial and pan-seasonal pricing, which most countries have practiced, toward seasonally adjusted pricing. The problem with fixed pricing is that it can be dictated by special interests. For instance, in India the floor

¹⁷ See Rashid et al. (2005) for details.

price is set at the full cost of production, which includes the opportunity costs of labor, land, and equipment. As a result, over the years floor prices have gone up so much that floor prices in some months are higher than market prices. This outcome clearly contradicts the very logic for the government's intervention, which is meant to protect farmers from extreme price swings, not to guarantee profits. If floor prices were set at the variable costs of production, the band would have been larger, selling to government would not have been so lucrative, and the private sector could have participated in the market.

Assignment

Your assignment is to consider a low-income, land-locked country in Africa with poor infrastructure and to recommend a set of policies to the government that would ensure an acceptable level of price stability for agricultural commodities. For decades, the country controlled agricultural prices through its marketing boards, which heavily distorted agricultural production incentives. Beginning in 1999 the country started dismantling its marketing boards and liberalizing agricultural markets. With liberalization, however, prices have become more volatile, and there has been increasing pressure on the government to undertake stabilization policies.

Additional Readings

- Anderson, J.R., and Hazell P.B.R., 1989. *Variability in Grain Yields: Implications for Agricultural Research and Policy in Developing Countries*. Baltimore, MD: Johns Hopkins University Press for the International Food Policy Research Institute.
- Barrett, C. B. 2002. Food security and food assistance programs. In B. L. Gardner and G. C. Rausser, eds., *Handbook of agricultural economics*. Vol. 2, *Agricultural and food policy*. Amsterdam: Elsevier.
- Byerlee, D., T. S. Jayne, and R. J. Myers. 2006. Managing food price risks and instability in a liberalizing market environment: Overview and policy options. *Food Policy* 31 (4): 275–285.
- Pinstrup-Andersen, P. 1988. Introduction. In P. Pinstrup-Andersen, ed., *Food subsidies in developing countries: Costs, benefits, and*

policy options. Baltimore, MD: Johns Hopkins University Press for the International Food Policy Research Institute.

- Timmer, C. P., W. Falcon, and S. R. Pearson. 1983. *Food policy analysis*. Baltimore, MD: Johns Hopkins University Press for the World Bank (Chapter 4, pp. 189–211).

References

- Baer, J. B., and O. G. Saxon. 1949. *Commodity exchange and futures trading: Principles and operating methods*. New York: Harper and Brothers.
- Barrett, C. 1997. Liberalization and food price distributions: ARCH-M evidence from Madagascar. *Food Policy* 22 (2): 155–173.
- . 2002. Food security and food assistance programs. In B. L. Gardner and G. C. Rausser, eds., *Handbook of agricultural economics*. Vol. 2, *Agricultural and food policy*. Amsterdam: Elsevier.
- Bates, R. 1981. *Markets and states in tropical Africa: The political basis of agricultural policies*. Berkeley: University of California Press.
- Byerlee, D., T. S. Jayne, and R. J. Myers. 2006. Managing food price risks and instability in a liberalizing market environment: Overview and policy options. *Food Policy* 31 (4): 275–285.
- Cummings, R., S. Rashid, and A. Gulati. 2006. Grain price stabilization experiences in Asia: What have we learned? *Food Policy* 31 (4): 302–312.
- Dorosh, P. 2001. Trade liberalization and national food security: Rice trade between Bangladesh and India. *World Development* 29 (4): 673–689.
- Dorward, A., J. Kydd, J. Morrisson, and I. Urey. 2004. A policy agenda for pro-poor agricultural growth. *World Development* 32 (1): 73–89.
- Fafchamps, M. 1992. Cash crop production, food price volatility, and rural market integration in the third world. *American Journal of Agricultural Economics* 74 (1): 90–99.

- FAO [Food and Agriculture Organization of the United Nations]. 2004. FAOSTAT.
<http://apps.fao.org/faostat/default.jsp>.
- Hazell, P., P. Carlos, and A. Valdes, eds. 1986. *Crop insurance for agricultural development: Issues and experience*. Baltimore, MD: Johns Hopkins University Press for the International Food Policy Research Institute.
- Hazell, P., G. Shields, and D. Shields. 2005. The nature and extent of domestic sources of food price instability and risk. Paper presented to the workshop "Managing Food Price Instability in Low-Income Countries," Washington, DC, February 23–March 1.
- Hoddinott, J. 2006. Shocks and their consequences across and within households in rural Zimbabwe. *Journal of Development Studies* 42 (2): 301–321.
- Jayne, T. S., J. Govereh, A. Mwanaumo, J. K. Nyoro, and A. Chapoto. 2002. False promise or false premise: The experience of food and input market reform in eastern and southern Africa. *World Development* 30 (11): 1505–1527.
- Jha, S., and P. V. Srinivasan. 1999. Grain price stabilization in India: Evaluation of policy alternatives. *Agricultural Economics* 21 (1): 93–108.
- Kline, D. 2001. *Fundamentals of the futures market*. New York: McGraw-Hill.
- Minten, B., and P. Dorosh. 2006. *Rice markets in Madagascar in disarray: Policy options for increased efficiency and price stabilization*. Africa Region Working Paper Series No. 101. Washington, DC: World Bank.
- Newbery, D., and J. Stiglitz. 1981. *The theory of commodity price stabilization: A study in the economics of risk*. Oxford: Clarendon Press.
- Pinstrup-Andersen, P. 1988. The social and economic effects of consumer-oriented food subsidies: A summary of current evidence. In P. Pinstrup-Andersen, ed., *Food subsidies in developing countries: Costs, benefits, and policy options*. Baltimore, MD: Johns Hopkins University Press for the International Food Policy Research Institute.
- Poulton, C., J. Kydd, S. Wiggins, and A. Dorward. 2006. State intervention for food price stabilization in Africa: Can it work? *Food Policy* 31 (4): 342–356.
- Rashid, S., R. Cummings, and A. Gulati. 2005. *Grain marketing parastatals in Asia: Why do they have to change now?* Markets, Trade, and Institutions Division Discussion Paper 80. Washington, DC: International Food Policy Research Institute.
- Timmer, C. P. 1988. *Agricultural prices and stabilization policy*. Development Discussion Paper No. 290. Cambridge, MA: Harvard Institute for International Development.
- . 1996. Does BULOG stabilize rice prices in Indonesia? Should it try? *Bulletin of Indonesian Economic Studies* 32 (2): 45–74.
- . 1997. Farmers and markets: The political economy of new paradigms. *American Journal of Agricultural Economics* 79 (2): 621–627.
- Williams, J. C., and B. D. Wright. 1991. *Storage and commodity markets*. Cambridge: Cambridge University Press.
- World Bank. 2005. *Managing food price risks and instability in the context of market liberalization*. Washington, DC.

Table 1: A Synopsis of Options for Food Price Stabilization

| Policy options | Implementation approach | Viability conditions and country experiences | Challenges / downsides |
|---|--|--|--|
| <i>Non-market-based options</i> | | | |
| Dual pricing | Enforce floor and ceiling price; maintain buffer stocks; support SSNs; open market sales in case of price spikes. | Requires highly disaggregated info system on prices (domestic and world) and costs of production; well-designed SSNs; supplementary regulations. Worked well in the early years of Green Revolution in Asia. | It is expensive and likely to be dictated by special interests. If practiced for prolonged periods, it impedes growth of private sector. |
| Strategic food security reserves | Maintain food reserves to manage emergencies; no formal enforcement of floor and ceiling price. | Requires management and analytical capacity in the implementing agency; efficient stock management; timely and market-friendly distribution and procurement. | Difficult to manage; high costs of operation; can destabilize markets. If the size is large, it can crowd out private storage and limit arbitrage. |
| Variable levies | Adjust import tariffs / export tax depending on domestic production and market conditions. | Requires good market intelligence on both domestic and world markets; capacity of the relevant authority to make quick decision and enforcements. | Can potentially be dictated by special interests; if governance is weak, lobbyists can influence the tariff decisions; does not work if a country is poorly linked with world or regional markets. |
| Subsidizing private storage | Public-private partnership; private sector uses public storage at subsidized price. | Requires limited availability of private storage and existence of large private stock from either individual traders or farmers' organizations; rule-based management to prevent traders / officials from colluding. | There is significant rent-seeking potential if government officials and private agents collude; can be politically unacceptable. |
| <i>Market-based options</i> | | | |
| Warehouse receipts | Farmers, traders, or processors take grain to a warehouse and get receipts, which are then used as collateral for borrowing from bank. | Requires grades and standards; strong legal environment for contract enforcement; well-functioning credit and insurance markets; volume of storage. Works well in combination with commodity exchanges. | Appropriate regulatory, legal, and business environment must be built; well-functioning credit and insurance markets needed. Potential for moral hazard, rent seeking. |
| Commodity exchange and futures markets | Sellers and buyers commit to future exchanges of grain for cash. For example, a farmer can agree with a trader on a price to deliver to him 500 tons of maize at the end of a predefined time period. If the bargain suits both parties, the farmer knows the exact price and the trader knows his costs and benefits. | Requires an enabling legal and regulatory environment; strong financial sector; functioning credit and insurance markets; systems of grades and standards; sizable domestic markets. | The biggest challenges for most African countries are lack of an enabling environment and small market size (trade volume). |

| | | | |
|-------------------------------------|--|---|---|
| Weather-indexed insurance | It is not a price stabilization instrument per se but can mitigate the price spikes and weather-related income shocks. Insurance policies are sold (or subsidized by the government or donors) to farmers. If the index falls below certain level, farmers are paid for the crop loss. | Requires strong legal and financial institutions; disaggregated rainfall data to create weather index. | Requires strong analytical and forecasting capacity. Formulating payout amount can be complicated by agroclimatic conditions. Potential for moral hazard. |
| International futures market | Developing countries use international futures markets to manage risks. | Requires participation of large farmers, traders, or intermediaries (such as farmers' organizations); or direct participation of the government. Has proved successful in some countries, such as for cocoa in Ghana and coffee in Guatemala. | Requires significant training and capacity strengthening of participating groups, including the government officials in the executing agencies. |

Source: Compiled from various sources.