

## **Part A**

### **Synthesis**

# **Public Intervention on Markets:** **From Theory to Reality**

## Chapter 1 – Status of the Debate and Background Issues

While the issue of market regulation is not new—one can recall the common agricultural policy during the heyday of the levy/refund mechanism or during that of supply control through the setting of dairy quotas for each farm; one can also recall the establishment of international product agreements and the Common Fund—the debate around the notion of regulation is now situated in a new context that can be described rapidly as follows:

- No one—or almost no one—now denies that the market has a central role in organizing trade on all geographic scales, trade in which billions of farmers and consumers as well as millions of micro- or macro-businesses participate. It is no longer a matter of planning flows or setting prices. For everyone, markets must be able to “live their lives” and continue to be the breath of the economy. This does not prevent one from noting that market deficiencies and failures do exist, that markets can be manipulated, and that the most powerful and best organized actors can subjugate markets. Furthermore, everyone is aware that the economic field in which markets operate and “merchandise” is sold covers only some of humanity’s concerns and cannot be assimilated with the general interest. It is not the market’s job to be concerned with enforcing universal rights, the sovereignty of peoples and nations, the preservation of nature and the common heritage, etc. The expansionism of the market, which operates by turning “things” into “goods” and public goods into private goods, must be contained within the bounds that it is up to lawmakers to define and the public authorities to enforce. There can be, and often is, a contradiction between the dynamic of market expansion and respect for the general interest. There are limits to what is acceptable and what is not that must not be crossed and, in the field of agriculture and food, what is unacceptable is mass hunger, the degradation of the common heritage, and the massive exclusion of hundreds of millions of farmers towards economic and social nothingness. When things get out of hand on the small scale, they can be overcome with aid or social policy, but when there are massive, lasting and cumulative upsets and imbalances, one must envisage tackling the analysis and treatment of the causes of these unwanted changes.

- The globalization of agricultural markets and their financialization have increased in recent years. The integration of markets into a large global market has developed in line with natural market dynamics but also thanks to proactive policies to open geographic borders as well as the struggle against all obstacles likely to hinder trade. This integration was supposed to lessen the volatility of agricultural markets through offset mechanisms between deficit and excedent zones or periods. This assumption has not been confirmed in recent years. This market integration bluntly raises the question of the contagion of market ills, and the measures to take to protect

against them between two or more national markets and between one or more national markets and the global market. In recent years, market integration has been accompanied by strong financialization of agricultural trade. This trade was not of particular interest for international finance, which found more profitable and less risky prospects elsewhere. The crisis in financial markets, agricultural price volatility and the prospects of raising price levels generated strong speculation movements that themselves increase volatility. The instability of financial markets and the strong variations in exchange rates have become major elements in the instability of agricultural markets, and this does not simplify ways to address this instability. P. Chalmin has compared the attempts to stabilize agricultural markets to trying to stabilize the surface of water in a sink in a sailboat navigating a stormy sea! Agricultural markets are increasingly correlated to other markets, for example the energy market. Unable to hope for general stabilization, one must therefore evaluate to what extent it is possible to protect oneself from the instabilities of neighboring markets.

- Everyone, or nearly everyone, believes that the exaggerated volatility of prices and their excessive unpredictability have harmful, even dramatic, consequences for farmers and consumers. For farmers and producers near the poverty line, sudden price hikes or drops can have catastrophic consequences, as we indicated above. But for all farmers, this unpredictability greatly hinders farm innovation and investment, that is to say farm modernization, particularly when these investments require one to commit most of the household's assets or borrow heavily. When a farmer is at the edge of poverty, taking risks is neither responsible nor even possible. It is difficult to correctly measure the scope of the silent dramas occurring in the countryside when poor farmers are faced with the necessity of overcoming this rule of prudence. Because, in most countries around the world, countless peasants are in crisis. For instance, think of the "suicide belt," the districts around Andhra Pradesh and Karnataka in India. There, over the last ten years, several thousand peasants committed suicide, victims of the fall in cotton and groundnut prices and prisoners of the "debt trap" because they had to mortgage their last plots of land. The "center for social development" in Hyderabad mentions seventy suicides every week, 55% of which involving men between the ages of 31 and 45! The dramatic consequences of price volatility are now universally known. More and more experts admit that curing only its consequences without addressing its causes is insufficient. Of course, social and economic urgency – for instance, when many farm are all on the edge of bankruptcy – may call for social policies and safety networks. But beyond such situations, these policies that only mask problems are questionable. On the one hand, they alter market signals, sending producers erroneous information regarding scarcities. On the other, they are costly, with enormous budgetary outlays for the countries that can afford them, but out of reach for the less affluent countries that, indeed, would need them the most.

As a consequence, more and more experts believe that the very causes of the price volatility must be tackled, and, to this end, one must first determine what they are. In chapter 2, the corresponding theory has been revisited. A distinction has been made between two sorts of causes: exogenous and endogenous. Then, in chapter 3, actual policies put in operation in fourteen countries have been evaluated in the light of the

above analysis in order to see to what extent the latter correspond to reality. Finally, chapter 4 describes the actions that have (or could have) been envisaged at the international level. The conclusion is that to improve consumer safety and enable the modernization of agriculture, it is therefore appropriate to envisage placing limits on price volatility—that is to say, negotiate the price ceilings and floors that will determine the bands or ranges that are acceptable for both producers and consumers and sufficiently wide to allow markets to live their lives as markets. To be accepted by all the parties present, these bands/ranges must be negotiated with all the actors concerned. These are sensitive negotiations because these actors usually have conflicting interests, all the more as wisdom would dictate that the bands not be too different from the price levels practiced in international markets if one wants to avoid excessive external pressure and the emergence of a black market economy. Once the ceilings and floors have been set, an authority will still need to have the power and resources to keep prices within acceptable ranges. And, to do so, this authority must have a range of tools that allow it to intervene on both the supply of products—that is to say primarily on national production, imports and de-stocking—and on demand, that is to say first on national consumption, export, stocks and the diversification of agricultural products toward non-food uses. A panoply of measures must, in this way, make it possible to improve the predictability of price changes so as to limit disruptive and self-fulfilling anticipations, a major source of volatility. We shall analyze this panoply of instruments, regulations and measures throughout this study, keeping in mind the fact that cures for the causes of price volatility will not cure other ills. For example they will be inactive in fighting inequalities. The reduction of inequalities requires other cures, for example agrarian reform if the crucial question is land access, or policies supporting poor producers incomes or the most deprived consumers, or fiscal policy allowing wealth redistribution.

- After the food crisis in 2008, the need for market regulation and the necessity of fighting price instability have been accepted by a growing percentage of experts and decision-makers, but doubts remain as to the public authorities' real power to intervene on the factors of market instability, as do fears about government leaders' ability to resist—in certain socio-political situations—the temptation to use this power and these regulatory instruments to serve private, even personal, interests rather than use them to defend the general interest. We shall see that the rigor with which regulatory actions are implemented, the objective and predictable conditions that trigger these actions, and the democratic control of leaders and their actions are decisive, and that for each of these questions, measures must be taken to ensure the credibility of market regulation policies. Nevertheless, these doubts and fears, while they inspire caution, must not cancel the need to fight market instability. Let us say, first, that all the actors concerned by agricultural markets—and even other actors that provide no value added and therefore in theory have no place in these markets—intervene in these markets and do so according to their own interests. This being the case, one can wonder why a public authority mandated to defend the general interest could not intervene to avoid the serious consequences for consumers when prices rise above the ceiling, or the serious consequences for producers when prices fall below the floor price. While we acknowledge this mandate for the political authorities, two questions that we have not

asked remain: that of the authorities' real power to intervene, and that of corruption in the use of regulatory instruments.

Taking into account regulatory bodies' real power and the existence of safeguards to avoid abuses of power is decisive for the design and choice of regulatory instruments. Indeed, at present, there are numerous limits to the affirmation of national sovereignty and, even more, to the emergence of a real international authority; and the safeguards that could emerge as opposition forces are deficient. This is the "policy space" issue being weakly debated in international negotiations.

- Limits to the affirmation of national sovereignty and the emergence of an international authority exist. First, there are the WTO agricultural trade agreements, which serve as the keystone of and baseline for all trade agreements, and which determine what is forbidden and permitted when it comes to trade and public agricultural policy. Then, there are the conditions, notably those that address market openness, imposed by international financial institutions during the negotiation of loans and the repayment of public debt, and during the distribution of international aid. Next, there are the quality of statistics and the ability to analyze very imperfect data and predict changes in the markets. Finally, there is the poverty of public instruments able to allow regulatory action: customs administrations and border control agencies, agencies in charge of verifying compliance with the rules by the various market actors, law enforcement, storage infrastructures, etc.

- The corruption of regulatory instruments exist as well. Market interventions to avoid market instability and keep prices within acceptable bounds create opportunities for corruption or insider trading, especially when intervention decisions—public purchase or sale decisions, allocation of import or export permits, cession of production quotas, etc.—are unpredictable.

### **Issues Addressed by the Study and Organization of the Study**

Should state intervention be limited to creating a conducive environment for private activities through the provision of public goods such as infrastructures and political and economic stability, or are direct interventions of the state on markets sometimes desirable? In particular, is it necessary to allow a real improvement of food security in the world's poorest countries? Or are more market-friendly interventions, such as warrantage or insurance subsidies, possibly combined with ex-post compensation for poor consumers, better suited to the situation.

Is the direct intervention of the state on markets feasible? Or are the difficulties, costs and inefficiencies associated with public interventions combined with the positive impacts on stability expected from trade liberalization in a favorable market environment sufficient to give up direct public intervention? How can the adverse effects of direct interventions on markets be minimized? What conditions need to be met? What modalities will be most appropriate for specific contexts? What kind of institution building should be envisaged?

Several instruments exist. They were extensively analyzed in a study undertaken last year (Galtier *et al.*, 2009) which proposed a typology (Box 1). It is possible to distinguish between public and private instruments and between instruments aiming at minimizing price variability or its consequences. Theoretically, each source of price instability should be treated by a specific instrument. Most of the time, however, it is impossible to apply this recommendation because of the complexity of price formation and the relationships between markets. In reality, various sources of instability generated in several markets are inextricably combined, one reinforcing the other and generating cumulative disequilibriums that spread from one market to another.

In the current study, we will discuss the main controversies related to direct public intervention in markets, first concentrating on theoretical arguments (Section 2) and then comparing theory with reality by analyzing several national experiments used to try to determine the main factors of success and causes of failure (section 3). Finally, the question of what could be done at the international level will be addressed in Section 4.

**Box 1 : Instruments for Handling Food Price Instability: A Typology**

Galtier *et al.* (2009) proposed a framework to describe the different instruments available to handle food price instability. Based on followed objectives and forms of governance, four categories were identified. The objectives sought can be to stabilize prices or manage price risk; forms of governance can be market-based or public.

	Stabilize Prices	Manage Price Risks
Market-based	A-instruments	B-instruments
Public	C-instruments	D-instruments

The central tenet of A-instruments is that the arbitration of market actors causes prices to be homogenized over time, space and between products, which will lower their instability. They include the construction of storage infrastructures, the development of quality standards, and the creation of warehouse receipt systems or exchanges.

Also based on the market, B-instruments are intended to limit the effects of price instability on incomes by enabling economic actors to cover themselves against the risks linked to price variability (futures contracts) and harvests (insurance).

C-instruments aim to stabilize prices by controlling production (input subsidies), regulating imports and exports (variable taxes and subsidies, quotas, bans), and using public stocks.

D-instruments enable household incomes to be supported during periods of high prices (targeted social transfers).

The conclusion of the study is that the strategy based on a combination of A, B and D instruments has not stood the test of time. A-instruments are not enough to solve the chronic price instability problem, which remain unchanged. Private risk management instruments are used very rarely, and safety nets do not successfully prevent the deterioration of vulnerable households' nutritional status. The authors argue for the use of a combination of instruments to fight against agricultural price instability according to its sources.

## Chapter 2 – Price Instability and Market Failures: A Case for State Intervention

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The necessity of agricultural market regulation is a long-standing controversy in economics. Over the last fifty years, development prescriptions have shifted from very interventionist, to liberalized market-led policies. None of these policies have been widely successful in promoting food security, and the existence of failures under both approaches is now widely recognized. This consensus will be the starting point for our analysis. A lot of academic studies have analyzed these topics and the experiments undertaken in the last fifty years. This section aims to point out main areas of consensus and main controversies, and try to document them using economic theory.

### 2.1 Is Direct Public Intervention on Prices Desirable?

#### **The Key Role of Prices: Coordination of Decentralized Decisions**

From a theoretical point of view, standard economic theory tells us that no intervention is needed if markets are functioning properly. In this case, private actors concerned with their own interests only are led to act in such a way that the economic system reaches an optimal situation. In particular, private trade and storage will transfer the necessary quantity of products through space and time; prices will be stable and predictable.

The basic market coordination mechanism is price. Market prices signal buyers' willingness to pay a set amount for a good or a service, and potential suppliers are then willing to incur the costs of supply this good or service if these costs are lower than the price. This is how market economies function, and history has proved the superiority of this system over state-led decisions. Markets then have the difficult task of generating prices able to efficiently drive actors' behavior for the satisfaction of consumers. Prices have the key role of coordinating individual decisions conveying the information necessary for efficient decisions. Any surplus or shortage can be eliminated with market clearing at equilibrium price. In economic jargon, the marginal utility of each consumer equates price, so that it would be impossible to increase the welfare of one consumer without depriving another from the same quantity of happiness. Even more, any intervention on prices at this stage is likely to introduce black markets, bribery, and other illegal behaviors, generating unnecessary rents.

## The Negative Effect of Price Variation

For the above reasons, some agricultural economists consider that lowering price variation may actually be a cost. Yet, the large price variations that can be seen on actual markets have obvious costs too: when a price goes from 0 to 3 in the space of a few months, it is impossible to conclude that such a change reflects a corresponding change in the marginal cost of production. Now, any discrepancy between the price and the marginal cost means that either the consumer or the producer incurs a loss, while the other side benefits. However, elementary economic theorems show that the winners always benefit less than the losers lose. Thus, in this case, price volatility is not a blessing. Moreover, if actors cannot correctly forecast future prices because of price variability, the basic function of markets—i.e. determining prices equating supply and demand and conveying adequate information to actors so that they can make efficient decisions—is not fulfilled.

Another point to be considered is that the mean price level is not the only determinant in producers' decisions. The risk involved in price variations is also important for producers. When there are large price variations, credit will be more difficult to obtain, impeding modernization and capital accumulation. This is especially important for poor farmers in developing countries: they are poor because, due to a lack of capital, the productivity of their labor is low. If they could borrow, they could increase the quantity of capital in operation, and therefore increase productivity. But banks do not grant loans to poor people subject to large variations in the price of their outputs...

The above considerations, thus, cast a new light on the price variation issue. While small, progressive price changes are obviously desirable, large, sudden swings are detrimental, and do not guarantee an optimal state of the economic system, quite the contrary. Indeed, they stand as a major obstacle to the efficient use of existing resources, lowering production, and, in the long run, increasing the mean price level at the expense of the consumer, without any benefit for the producer. In such a situation, according to the most orthodox economic theory, it is the public authorities' duty to correct excessive and unnecessary price variations in order to let the economic system return to path to long-term equilibrium from which it should have never been diverted. This is the basic justification of the State intervention in agricultural markets.

However, while price intervention for stabilization purposes is justified, it has also to be efficient, that is, curing the evil at its root and avoiding unexpected side effects. To achieve such a target, a careful examination of the causes of price variations is necessary. Without such careful examination, one runs the risk of curing only the symptoms at considerable cost without having a deep and lasting effect. Let us now turn our attention on this issue, which is also the subject of controversy.



## The Causes of Agricultural Price Instability

Agricultural markets exhibit very unstable prices. The reason for the high volatility of agricultural prices compared to the prices of manufactured products is a point of agreement among economists: little reaction in demand in response to price variations (called in economic jargon “low elasticity of demand”), high dependence on natural conditions, high transportation and storage costs in relation to the value of the product, and production lags. All these specific characteristics stand as obstacles to smooth market operation, and explain large fluctuations.

The low elasticity of demand means that even large changes in prices will not change the quantities demanded by very much. This is because food is a very basic need. Consumers need a certain amount of calories and proteins. They are willing to give up any other satisfaction to meet this need. At the same time, as soon as the required food objective is met, any other increase in food consumption is deemed futile, thus implying that no consumption increase is to be expected, even for free. For this reason, per capita food demand is relatively constant whatever the price. If price is really too high, a fraction of consumers dies, and some elasticity is added to the demand curve. However, everyone agrees that such a situation is not desirable.<sup>1</sup>

**Furthermore, agricultural markets try to match a fluctuating supply, which is fixed in the short term because of the long production lags associated with high storage and transportation costs, with a rigid demand. In these conditions, a small supply shock results in large price changes.**

All economists agree that this is the basic reason for agricultural price volatility. They disagree strongly, however, on the consequences of this phenomenon and whether or not it justifies public intervention in markets. Because demand is generally seen as relatively stable,<sup>2</sup> the question becomes: what causes supply shocks?

## Self-Regulation Mechanisms

In theory, private storage and trade activities should solve the problem, allowing the dilution of supply variations through space (market enlargement) and time (storage). But, as explained in Box 2, transfer costs from one market to another, through space or time, define a band that can be wide if transport and storage costs as well as risks are considerable. It explains why prices sometimes move independently from one market to

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<sup>1</sup> Of course, the above argument should not be taken too literally. Some foods are “elastic,” for instance goose liver or champagne. An increase in the price of goose liver would certainly decrease the demand for this commodity by a significant amount. But in such a situation, the demand for goose liver would probably shift to other foods, leaving the total demand for calories unchanged. Indeed, because of substitution, it is possible to observe high values for the demand elasticity of a specific product taken in isolation, but this high elasticity does not imply much flexibility in the overall demand for food.

<sup>2</sup> Even so, the total demand for food and agricultural products does change, first because the number of consumers and their food habits change, and second, because there is a non-food demand for agricultural products. However, these evolutions are generally progressive and foreseeable.

the others, separated by space or time. Within the band, domestic price instability is affected neither by trade nor by storage, and domestic policies have no harmful impacts on commercial partners. Symmetrically, even stable international prices do not provide stable domestic prices within the band.

The most natural explanation for supply shocks is indeed the subject of a consensus among experts: shocks are a result of nature, which creates different conditions for plant growth. Some are “better,” others are “worse” than “normal.” For instance, a drought can decrease yields over large areas. An epizooty can kill a large fraction of cattle. Conversely, a small amount of rain at the right time can increase yields by a surprising amount.

It has been claimed that such events carry their own remedies themselves: when supply is low, prices are high, thus maintaining farmer incomes by offsetting the loss of quantity with the increase in price (and conversely in case of “large” production). This constitutes **natural insurance** against price instability and, in this case, public intervention in markets aiming at stabilizing prices will worsen producers’ situation by destabilizing income. This might be true in a narrow market, where all producers are subject to similar weather conditions. As soon as markets are widened to allow for natural shock dilution, this is no longer true since a given farmer can very well be subject to natural conditions entirely different from those that trigger the change in price. In addition, while such a mechanism might protect farmers’ incomes, it never works for net buyers, which is the status of numerous poor producers in developing countries, and leaves unresolved the situation of consumers, who may suffer from high prices. Thus, this argument should not be invoked to justify blind faith in markets’ capacity for self-regulation.

When shocks are the consequence of nature, it is usually possible to rely on the “law of large numbers” to mitigate their consequences. The law of large numbers says that **many independent small shocks cancel out each other**, in such a way that their sum is null. This is the theoretical basis for insurance. Because each contract is “small” in comparison to the total portfolio held by an insurance company, and because the damages on one contract are independent of those on another, the overall outlay of the company is fairly constant, thus allowing costs computations and the definition of contract prices. Of course, the independence of risks is a prerequisite for insurance: companies never contract risks likely to be tied to each other. For instance, drought is rarely insured, because droughts affect not only one farmer (leaving the others untouched), but all farmers in a region. In this case, the reimbursement of all simultaneous accidents would jeopardize the liquidity of the company, and must be avoided. However, even in this case, insurance can be envisaged if the risk of drought is spread over a very large area in such a way that the weather in one sub-area can be seen as independent from the weather in another sub-area.<sup>3</sup>

This reasoning is behind the doctrine of the WTO and other organizations that says that liberalization is the best way of stabilizing world agricultural commodity prices: **if supply**

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<sup>3</sup> We have to mention that experiments in developed countries have not been encouraging. When there are no subsidies, demand for insurance by farmers has been very low.

**shocks occur because of weather and other fortuitous events, since such events are not spread over the entire world, and most of the time are independent from one region to another, then merging markets at world level should normally secure a fairly stable overall supply, hence a stable world price.** On this point, all economists agree.

The same line of reasoning also applies over time. Droughts (and more generally, weather events or epizooties) are independent from one year to the next, thus allowing for a pooling of risks over a large number of years. Of course, any step in this direction involves financial considerations, since transactions through time implies lending and borrowing. But with a financial system as developed as it is nowadays, this should not be a problem. “Catbonds,” “futures markets” and similar instruments should provide all the necessary facilities for that.

The only difficulty in this case (and the main difference between risk sharing across time and risk sharing across geography) is that physical supply is roughly constant across geography, but not across time. Thus, while financial risk sharing can be efficient in protecting producers’ incomes, it does not resolve issue of consumers facing famine... But this problem can be solved with storage. And, in theory at least, private storage should do the job: to make money, the speculator holding an inventory should buy when prices are low (thus pushing up prices when they are “too low”) and sell when prices are high (thus pushing down prices when they are “too high”).

As explained in Box 2, price stabilization based on these self-regulations mechanisms will be hampered by transfer costs between markets. Because these costs are high for agricultural products, especially in poor countries due to poor infrastructures and high risks, domestic price instability will remain high even if international prices are stable. This emphasizes the need for direct public intervention (C-instrument), on national isolated markets. The facts that prices instability remains high despite market expansion and after more than 30 years of globalization, is therefore explained partly by these costs and partly by an only partial liberalization process as numerous states continue to intervene in agricultural markets.

However, following this line of reasoning, safety nets are currently the main recommendation to protect the poorest from huge variations, while others buy insurance. The social implications of such an option should not be underestimated. To some extent, it implies that a large segment of the population of the poorest countries will be marginalized, because of resource access, if they are not able to leave the agricultural sector. In the current international context, opportunities for development outside the agricultural sector are few and far between.

## Box 2 : Price Transmission Between Markets

The law of one price stipulates that in a perfect world, without transport costs and officials barriers to trade (such as tariffs), identical goods will sell everywhere for the same price if they are expressed in the same currency as a direct result of the profitability of buying a product at a low price on one market to sell it at a higher price on a different market. In reality, transfer costs from one market to another are high for agricultural products. This includes transportation costs and all transaction costs—that is, all costs related to negotiations and contract searching costs, risk-induced costs, and the costs incurred by meeting the licensing or other requirements of rent-seeking government agencies or officials. Market liberalization policies aim at reducing this last kind of cost. But other types of costs remain. They constitute a protection, especially important for landlocked countries, but also for all cases where risk is high. They act exactly as a tariff, making prices in the country higher and then increasing supply and lowering demand, decreasing trade compared to a situation without transfer costs. Overvaluation of the exchange rate also acts in exactly the same way.

Transfer costs determine a price band within which trade is not profitable and domestic prices are not stabilized by the international market. For example if the price is 100 on the international market and transfer costs are 50%, it will not be profitable to import (export) before the price on the domestic market reaches 150 (66). Within the band, which can be wide especially when transport facilities are poor and risks high as is often the case in LDCs, domestic price instability is not affected by trade providing space for domestic policies to deal with this harmful phenomenon without destabilizing external markets.

Domestic markets are connected to the international market when the domestic price equals the upper or lower limit of the band. Then, international price fluctuations will be transmitted to the domestic markets, in proportion to the exchange rate, while the volume of exports or imports will affect the world supply and demand balanced by the international market. If the country has an important share of world trade, this variation may affect the world price. This is not the case for small countries.

It is by this price transmission mechanism that the market is enlarged by trade, with the price equating world supply and world demand and allowing for the dilution of small independent local accidents. The same mechanism is at work when import prices rise, increasing domestic prices when the country is importing or exporting, at the expense of domestic consumers. It is impossible to obtain prices stabilization through international trade without accepting to share the burden of adjustment and thus tolerate some import price volatility. But, as explained above, instability will be removed only if it is generated by shocks related to natural events and resulting in prices exceeding the band. One positive aspect of this phenomenon is that, within the band, a public stockpiling scheme may stabilize domestic prices (let us say between 80 and 120, to continue with the example above) without destabilizing external markets.

The same mechanism applies over time according to storage activities. Transfer costs from one period (which include storage costs but again also risk and other transaction costs) to the next determine a band where private activities aiming at transferring the product supply from one period to another is not profitable and where prices fluctuate independently.

Some instruments aim to minimize transfer costs between markets through space and time, thus minimizing the band where prices fluctuate independently (A-instruments). Decreasing storage and transportation costs will indeed improve the market functioning and decrease price instability. Lowering risk-related costs is, unfortunately, much more difficult.

Price transmission is not limited to vertical linkages. The fundamental role of exchange rates was mentioned above. The importance of the costs of transfer from one market to another indicates a first link with energy markets. Energy markets also determine input prices and therefore production costs. Moreover, the recent development of biofuels creates new strong links between energy and agricultural products. Agricultural product markets are also linked together through to major channels: (i) consumers' choices and arbitrations between products according to relative prices that create a strong link between product prices, with the substitution effect transmitting price variations from one product to another, and (ii) the competition for land and other scarce production factors necessary to agricultural production that generates contagion phenomena.

### **Self-Regulation Failures Related to Expectation Errors**

Another explanation for price vagrancy exists, however. It is based on supply dynamics and the difficulties of forecasting in situations of large price fluctuations. Ezekiel (1938), followed by Boussard (1996) and many others shows how production lags combined with the low demand elasticity and the difficulty of future prices forecasts generate endogenous price instability and that this instability has no chance to be reduced by trade.

Because prices variations are due to either natural shocks, as explained above, or the issuing of a signal that more (or less) supply is necessary to satisfy consumers, it becomes very difficult for actors to decode the information provided by markets. Prices variations are sometimes signals, reflecting changes in fundamentals and requiring supply adjustments but sometimes they are the result of accidents requiring no changes in supply. This problem holds true for both farmers and traders. It occurs on domestic markets and on the international market. In this way, markets do not fulfill their role of providing the appropriate information to actors, leading to coordination failures.

When deciding what and how to produce in what quantity, the producer never knows what the price will be at harvest time. Actually, any economic calculations at planting time have to be made on the basis of "expected" (not "equilibrium") output prices. In case of a discrepancy between the expected price and the real price, the producer may either earn an unjustified reward or receive a dramatic punishment. Bad forecasts generate inefficient decisions; supply will be too high or too low to meet consumers' needs, generating huge prices variations and widespread drop in real incomes.

Another complication comes from the necessity of funding investments (long-term investments such as building a stable, and short-term investments such as buying seeds or fertilizers, with the latter applying in particular in the case of poor peasants, even when they do not trade on markets: in shortage situations, they sometime eat the grain normally reserved to make seed, thus pushing famine back to the following year). If incomes were low last year, money to fund investments this year will be lacking, thus decreasing supply.

In this case, the problem arises because of expectation errors: if, at a certain time, all producers expect a “high” price, they will probably all increase production, often going into debt to do so. It might happen that the overall increase in production goes beyond consumers’ capacity to buy. Prices then collapse. As a consequence, the next year, farmers see price as being “low,” which does not encourage them to invest again, especially as their incomes had dropped, they have to repay their previous loans, and they are short of money. As a result, production is low, prices soar, and so on... This mechanism is called a “cobweb” because the diagram used to illustrate it for on a basic supply and demand scheme actually resembles a cobweb.

The same mechanism affects storage decisions, hampering market operation: too often, speculators drive prices even higher in the case of shortages, and even lower in the case of gluts. This is because they are wrong: they expect prices to rise or fall even more (see Box 3). In these cases, fluctuations are generated by expectation errors due to imperfect information and the major influence of expectations on the commodity price formation process (Mandelbrot, 1973). As already emphasized, this happens on domestic markets as well as on international markets.

### **Box 3 : The Controversial Role of Speculation**

International markets for agricultural products are often coupled with futures markets, which allow the exchange of the risk associated with price fluctuations with a premium through forward contracts. They offer a way to manage price instability. However, transaction costs (especially for small farmers in poor countries) are high and they are better suited to traders than to farmers. Moreover the duration of contracts is around one year, which is too short to allow investment planning. Speculators are key actors on the markets because they are willing to bear the risks other actors like to avoid. When the markets are running smoothly, speculation stabilizes prices, diluting shocks in space and time exactly in the same way that trade and storage do. Because speculation is at the heart of fervid discussions, it is interesting to refer first to its definition. Derived from the Latin word *specular* (to observe), to speculate is to buy or sell in the hope or deriving monetary gain. Useful arbitrations in space and time by merchants belong to this category. They stabilize the prices when markets are functioning well and expectations are accurate, and destabilized it when herd behavior, panics, crashes, and other destabilizing behaviors take place on the market. The heart of the question is still the same: expectations and their accuracy, the fact that they may completely change in a few seconds, and the key role they have in the price formation. The financiarization of the commodity, which is the fact that investors, in their search of uncorrelated assets, recently entered agricultural markets, may magnify the risk of destabilizing behaviors.

Many types of cobwebs have been described in economic literature. But all of them share the fact that they **are not curable by the same recipes** that work for shocks generated by natural events. For instance, while two isolated markets fluctuate in “anti-phase” (high prices in one market correspond to low prices in the other), merging them will just result in phase “synchronization.”

Insurance schemes are not feasible, first because prices are the same for everybody at the same time, thus precluding any geographical risk sharing, but also because there is an almost perfect autocorrelation between two adjacent periods, ruling out any sound financial risk sharing across time.

In presence of this category of shocks, **the market itself is at the origin of fluctuations**. If one wants to avoid these fluctuations, the only possibility is to intervene directly to regulate market operation. The idea is not at all to suppress the market, just to help it play its role of informing producers of consumers' wants and consumers of production difficulty. Various possibilities exist for that, and will be described below. Yet, a very general rule must be pointed out: it consists in creating the conditions so that a minimal supply can occur. If a minimal supply is "sure," then prices cannot soar up to a very high level. And because prices cannot be too high, they also cannot be too low because producers are never encouraged to overproduce. The practical enforcement of this rule depends upon circumstances, especially the scale of the production basins over which it is applied and the capacity of governments to manage imports and exports, as will be seen below. The important thing is that to avoid excessive price volatility, we need to be sure that a regular and sufficient quantity will be provided on markets.

### **Coordination Failures Justify Direct Public Intervention in Markets**

In other words, while liberal recipes stand as the best solution to get rid of shocks from nature, there are other sources of fluctuations that are best cured by State intervention. Unfortunately, in practice, both sources of fluctuations are at work: harvest sizes are affected by the weather, and actors expectations are not always fulfilled. The difficulties involved in accurately assessing the causes of a given price variation is perfectly illustrated by the ex-post analysis of the 2006-2008 price surge (Box 4). As seen above, the problem is that the appropriate remedies are completely different in each case, but the sources of large fluctuations are inextricably intertwined. To cure the first kind of shocks (caused by nature), measures aiming at improving the market operation by providing a better environment for private storage and trade activities and lowering transfer costs through improved information and transparency on markets (A-instruments) are well suited. Insurance could resolve the problem for the remaining instabilities of this kind due to transfer costs (B-instruments). But, for the second kind of instability, generated by the market itself in an uncertain world, direct public intervention in markets is necessary. The importance of agriculture, both as the provider of basic food and as the main source of income for the large majority of the poor, makes ex-post instruments such as safety nets (D-instruments) impossible to use. Beyond issue of human dignity, the governments of poor countries do not have access to the necessary financial resources. It is also worth considering that if safety nets are necessary in cases of extreme events; their use will be far less costly if direct public interventions on markets minimize the probability of occurrence of such events. Moreover, these instruments have the same implementation difficulties as direct public intervention (rent-seeking and so on). This is what makes setting up a sound agricultural and food policy is so difficult.

The controversy turns around the relative importance of the two kinds of instability described above. For some, the instability related to the difficulty of self-regulation in agricultural markets is negligible and, because of the inter-relationships between markets, it is better not to intervene so as to not to transmit price instability to other markets. Compensation, outside the market, could be used, if necessary, for the poorest while others will take out insurance. Coordination failures do not take place. For others, despite the difficulties and costs associated with public interventions, building a conducive environment for private activities is necessary but unlikely to be enough, at least in the medium term. Public intervention is required.

### Price Instability, Dynamics Involved, and the Poverty Trap

Food markets often exhibit very unstable prices. **Does this mean that they are unpredictable?** If not, the worst impacts are concentrated on poor consumers, who often spend more than half of their budget on food, which can be compensated for, avoiding at the same time social unrest and economic instability. Instruments that aim to compensate the poorest, such as safety nets (D-instruments), could then be used. **If so, they lead to inefficient behaviors by actors.** For producers, as explained above, risk discourages investments and even market participation for the poorest. It may explain why some economies seem stuck in a low equilibrium trap (Dorward *et al.*, 2004; Poulton *et al.*, 2006; Timmer, 2000). **Then, in certain circumstances, and at least at a specific stage of development, market-related public policies can be necessary to escape from vicious circle of low labor productivity leading to low incomes and low investments.**

Impacts are also considerable in developed economies as the business is too risky to allow efficient investment decisions. Periods of low prices, generating farm bankruptcies, especially among indebted farmers, are followed by periods of high prices due to scarcity. Even if the impacts on consumers are lower because consumers are richer and consuming highly processed goods in which raw material costs account for a small share of the final price, the general impacts on the economy are not negligible. Moreover this does not allow for progresses in terms of sustainable agricultural development.

The problem of economic policies is not only—and not even primarily—to allocate a fixed supply between consumers but to create conditions such as, in the long run, supply be large enough to smoothly match at least the basic needs of the population with practices not too detrimental to the environment and product safety. At the same time, this target must be hit with an efficient use of existing resources, without squandering them in over-supply. The question, then, is whether a completely free market and large price fluctuations can help reach this target.

In presence of large price variations, capital is often wasted. This is because when prices are high, producers tend to overinvest. When prices fall afterward, they cut production, and part of the investment is left unused (hence, squandered). Most of the time, when prices rise again, the unused share of capital is not usable anymore (or only usable at



high cost), so new capital must be invested again...Obviously, this is not an efficient process. It is therefore detrimental for the general welfare.

These are very strong cases for price regulation indeed, even assuming “risk neutrality.” But the detrimental effects of risks also have to be considered. When planning production on the basis of expected prices, a farmer (or the farmer’s banker) cannot ignore the fact that expectations might not be met: this puts constraints, including precaution, on decisions, and advocates for a prudent use of existing resources, especially credit. In this way, many development opportunities are missed, and the poorer the farmers the more opportunities are missed: the poor are, in general, more “risk averse” than the rich. This may explain (along with the lack of capital) most of the “backwardness” often negatively attributed to traditional peasants. In any case, risk considerations in general prevent resources from being fully utilized.

This is the basic rationale for direct intervention on markets. Far from negating the virtues of a liberal economy, they should be designed to increase the quality of the messages carried by prices in order to inform producers of consumers’ desires, and inform consumers of the difficulty in producing, without forgetting externalities which are not carried out by the markets as widely explained by economic theory.

Finally, every one agrees on the fact that private activities such as storage and trade are necessary, and that the provision of public goods in the form of infrastructures is essential to allow markets to function as well as possible. **The controversy is whether or not it is enough to avoid coordination failures.** Empirical evidence all over the world seem to prove it is not (Dorward *et al.*, 2007), but some argue that this is due to a partial liberalization process that discourages private activities (Kerralah *et al.*, 2002; Jayne *et al.*, 2002).

When referring to the coordination failure associated with price instability, it is impossible to manage this type of failure through ex-post instruments aiming at compensating the losers because coordination problems affect the whole system. Food prices are indeed key variables, determining wages, employment and inflation in less developed countries, as well as social peace and political stability. The risk is therefore systemic, and the option of ex-post compensations, as a safety net, becomes too expensive.

All these considerations explain why a purely economic approach may lead to the conclusion that large and sudden price variations are not efficient and should be avoided as much as possible. It does not mean that price signals must be neglected: obviously, techniques and preferences vary over time and relative prices must vary to indicate these changes to producers and consumers.

However, these evolutions are generally smooth, and take a long time to become significant, thus leaving ample room for progressive adaptation. For instance, the long-term trend of dropping agricultural prices (something between 1% and 5% per year) reflects technical progress for the benefit of consumers. But it is not the kind of price

variation facing most farmers, especially in poor countries. Most commonly, a given agricultural price goes from 1 to 2 and then to 0.5 in the space of three years. What message does this send to producers? How can they interpret it

### **Which Level for Action?**

When public interventions should be envisaged, one has to decide at which level. Should it be a task for an international authority, a local community, a government, or a group of regional governments?

As pointed out in Boxes 2 and 4, there are no (or very few) completely independent markets, whether geographically or over time. Any decision taken at any level at any time is likely to impact other entities, at the same instant or at another time.

For instance, during the 2007-2008 crisis, some governments decided to cut rice exports in order to maintain domestic prices at reasonable levels as far as possible. They undoubtedly increased the world-wide penury, which let prices soar to incredible levels. They were severely condemned by the world public opinion for doing so. At the same time, they not only protected their own citizens as consumers, but they also avoided too much enthusiasm among their producers for increasing production next year. And that was sound, given the fact that the price of rice decreased by a large amount the following year. Indeed, because they were large operators, by doing so, they helped stabilize prices in the year after the peak.

#### **Box 4 : Ex-Post Analysis of the Causes of the 2008 Price Spike**

Over the period 2007-2008, most international agricultural prices doubled or even tripled. Milk was the first product to be affected, with the quick increase taking place during the spring of 2007, followed later in 2007 by spikes in wheat and maize prices. The price of rice, the last commodity to be affected, skyrocketed in a very short period during the first half of 2008. Almost all agricultural food products were affected with the exception of sugar. Tropical products and meat fared better than grains. A few months later, prices began to drop. The sudden rise in prices and the sharp drop a few months latter were unexpected. At the time, neither economic models nor international institutions predicted the price spike; experts were mainly concerned about the long term downward trend in agricultural prices.

Several studies have analyzed ex-post the possible causes of the food price spike. The main causes that have been identified are: (i) rapid economic growth in certain developing countries such as China and India which, together with higher incomes, led to a nutritional transition and increased demand for grains; (ii) adverse weather conditions in certain key production regions such as Australia and eastern Europe; (iii) a weak US dollar; (iv) high oil prices leading to higher production costs for agricultural products; (v) biofuel production; and (vi) speculative behavior (see, among others, Abbott *et al.*, 2008, 2009; Von Braun J., 2007). There is a widely shared opinion that these different causes act together and that it is difficult to evaluate the impact of each one individually. Using the Aglink model, Dewbre *et al.* (2008) found each of these factors to be equally important. The resulting impact, when all shocks are combined, is much lower than the price increase that was seen, underlining the fact that other mechanisms may have been neglected in the analysis.

#### Some Causes Are Controversial

Headey and Fan (2008) argue that neither the argument involving growth in middle-income countries—China and India do not show trade deficits for agricultural products over the period—nor the weather shock argument—the fall in output in several countries in 2007 was offset by increased production in other countries (Argentina, Kazakhstan, Russia, United States) and ultimately world grain production declined by 1.3% in 2006 but increased by 4.7% in 2007—are convincing.

Several studies have focused on the biofuel explanation. As underlined by Keyzer *et al.* (2008), it is clear that in the context of a scarcity of fossil fuels, biofuel production increases competition for land, fertilizer and labor. Moreover, the policy adopted results in high production subsidies for biofuels, and generates a completely rigid demand that bears a significant share of the responsibility for the food crisis. Some experts stressed the fact that, while the explanation is convincing for maize, it is less persuasive for wheat and rice (Headey and Fan, 2008). But Mitchell (2008) explains how the substitution effect induced by land competition for crops not directly concerned by the demand for biofuels may generate contagion phenomena.

Another controversial issue is the role of speculation in the process. In the press, financial speculation has often been accused of being responsible for the price spike. It is true that increased financial activity took place at the time of the price rise but the causal link is not at all clear. One must remember that higher volatility necessarily induces speculation because of speculators' function in markets (bearing risks). Consequently, as underlined by Headey and Fan (2008), speculation may be a symptom more than a cause of price volatility, "*l'écume sur la vague*" (the foam on the wave) (Chalmin, 2008). Despite several studies, it is difficult to assess precisely the role of speculation in the phenomenon, underlying the difficulties in economics of discriminating between alternative processes. As underlined by Gilbert (2008), uninformed speculation may be destabilizing and generate explosive price behavior. A new class of actors has entered commodity markets through index-based investment, viewing commodities as an asset comparable to others. The money involved may be substantial. However it is difficult to evaluate its influence on the price boom.

Finally explanations focusing exclusively on fundamental factors leave an important share of the price hike unexplained. Moreover, the rapid rise in prices followed by the quick fall some months later suggests a bubble phenomenon. Piesse and Thirtle (2009) explained the rice price increase by panic leading to export bans from major exporters, and underline that such behavior is costly for the world community.

On the other hand, Boussard, Gérard and Piketty (2008) show a model that, in 2005, predicted the phenomenon fairly well from purely endogenous relations and market mechanisms, without requiring any other assumptions such as drought, biofuels, changes in consumption, or speculation. It has been said that their model was a good predictor only by chance, just as a stopped clock indicates the right time twice a day. Yet, this model at least does not contradict the "endogenous hypothesis." In addition, similar results have been found with another model (Munier, 2010).

This observation leads to the conclusion that a world authority should be in charge of the problem. Yet, there are objections. The most important is that it will be very difficult to determine the proper international prices or bands of prices. Whatever steps are taken to stabilize markets, they will generate instant private rents or preclude private gains. Moreover, as seen above, international price stabilization will not affect a large share of domestic price instability, the portion that takes place within the band defined

by transfer costs from one market to another. Because most poor consumers face very high transaction and transport costs, large price fluctuations will remain in poor countries sucking them into the poverty trap. Furthermore, local communities do not have the logistical and financial capacity to regulate markets. For these reasons, the practical level for action is national governments or groups of governments. However some supports of the international community are needed. It will be addressed in the fourth section.

At present, national governments are largely deprived of power because of the multiple international agreements in force. In particular, the WTO ban on most technical measures to stabilize domestic markets is a serious impediment in this regard. The WTO agreements should therefore be revised to allow governments to define the agricultural policies necessary to improve food security. In this respect, one must emphasize the fact that, according to jurists, the Marrakech treaty provides almost all the necessary provisions to allow government intervention if it is deemed necessary, so that a formal renegotiation of the treaty would probably not be necessary. Only a strong reversal in how it is enforced should be envisaged.

## **2.2 Is Price Stabilization Feasible?**

While direct public intervention in agricultural markets seems necessary under certain circumstances, the success of such intervention is, however, dependent on political and institutional conditions. Inadequate or untimely public interventions discourage private activities in commercialization (eviction effect) and generally decrease efficiency. Sometimes, they even increase uncertainty (Jayne *et al.*, 2006). It has been demonstrated that, in a context of price jumps, public intervention aimed at containing the leap could indeed worsen it, because of a lack of predictability (Chapoto and Jayne, 2009; Nijhoff *et al.*, 2002; Mwanauo *et al.*, 2005). The private sector cannot operate in an environment where governments intervene in a discretionary and unpredictable way making prices even less stable (Byerlee *et al.*, 2006). State intervention is in this case seen as lowering efficiency by limiting local competition and private sector development. State interventions also generate rent-seeking behaviors and are the sources of maneuvers expected to serve the interests of specific actors. Thus, political economy consideration of existing contradictory interests and institutional contexts is necessary to understand food price policy designs and implementation as well as the difficulty of reforming agricultural markets (Jayne *et al.*, 2002).

These analyses, applied to price stabilization policies, are consistent with more general analyses of the forms of governance that prevail in policy elaboration and implementation. They insist on the capacity of diverse stakeholders (governments, lobby groups, etc.) to meet their objectives. At the World Bank, Kaufman considers that society engagement and state performance form the two pillars of good governance (Kaufman *et al.*, 2005; World Bank, 2005). His works led to the definition of six governance indicators that measure "government capacity to formulate and implement policies in an efficient way" and the "respect of citizens and [the] state for the institutions that govern their social and economical interactions."

Somewhat summarized, these works suggest that the processes through which food price stabilization policies are elaborated and implemented can count as much that the content of these policies (how things are done counts as much, and maybe even more, that which things are done), and that, as a result, we have to analyze the forms of governance that drive policy elaboration and implementation. How is food price stabilization elaborated? What are the specific interests served by these policies? Which stakeholders participate (or not) in policy elaboration processes? How are food price stabilization policies implemented? Are these policies predictable enough? Are they effectively enforced by the State and respected by private actors? Among the many institutional factors that influence the ability of policies to smooth price volatility, three can be distinguished: policy effectiveness, policy predictability, and policy appropriateness to a plurality of interests.

### **Policy Effectiveness**

Policy effectiveness is related both to the financial capacity of States to implement policies and to States' capacity to control policy enforcement and compliance (dissuasion and punishment of policy-circumventing strategies).

### **Policy Predictability**

Policy predictability is linked to the State's capacity to elaborate and implement policies in a transparent way, so that private actors can correctly anticipate government actions and position themselves on food markets.

### **Policy Appropriateness to a Plurality of Interests**

Policy appropriateness to a plurality of interests is related both to the capacity of private actors to define and represent their interests and to the capacity of the State to take into account these interests (pluralist system of interest representation, control of corruption and rent-seeking behaviors, arenas for discussion and negotiation, enhancement of capacity-building programs among different stakeholders, etc.).

In short, state interventions should be based on collaboration between public and private actions. They should be rules-based and relatively predictable, as well as credible, which implies sure and flexible access to financial resources and expertise. To be legitimate, intervention has to be the result of actors' discussions and negotiations, which in turn means that institution-building for organizations such as farmers' organization may be a necessary prerequisite. Rent-seeking behavior should be avoided as much as possible through transparency, the existence of press/media freedom, and exemplary punishment of adverse behaviors.

These institutional factors are likely to express themselves differently according to the level in question, given that prevailing stakeholders are different. In the next section, we will illustrate how these factors influence policies' ability to reduce food price volatility at the national level. At the regional and international levels, the prevailing stakeholders are different from those that are most influential at the national level. As a result, governance issues tend to differ a lot.

If we want to analyze the processes of elaborating and implementing food price stabilization, we need to consider a wide variety of stakeholders. For example, at the international level, States, traders, experts and non-governmental organizations influence these processes and should be taken into account. Considering States, we need to consider a great variety of stakeholders as well. In broad outline, we can distinguish between: (i) “high income states” that tend to support agricultural revenues (employment and farm problem, producer-side) and “low income states” that are more likely to defend food security (urban food problem, consumer-side); (ii) between “importing” and “exporting” states; (iii) between “small” and “large” states related to international trade, etc.

Policy effectiveness, predictability and appropriateness to a plurality of interests have much to do with the forms of coordination that prevail on the international level. Crucial governance issues arise. If one decides to regulate food prices at the international level through policies, should forms of coordination rely exclusively on intergovernmental agreements? How can one ensure policies’ long term financing, enforcement, transparency, and capacity to serve the general interest? Nowadays, there is no relevant international organization to ensure these four conditions (they are not covered by the mandates of either the World Trade Organization or the Food Agriculture Organization). Proposals have been made on setting up a new organization, the International Food Safety Agency, but many questions remain as to how to ensure this new organization’s effectiveness.

### **Theoretical Aspects: A Few Concluding Remarks**

Finally, a consensus exists as to the difficulties and costs associated with state interventions in agricultural markets. The subject of controversy is the consequences of these difficulties and costs, and the way forward. For some experts, all of these considerations, added to the facts that high transaction costs hamper market operation and that public budgets are scarce, point to the argument that it will be more useful to invest in public infrastructures (roads, health, education) and in agricultural research and extension than in food price stabilization (Cumming *et al.*, 2006). While some agree that di-

rect public interventions may be useful because of the harmful effects of price instability, they argue that direct public intervention is associated with so many adverse effects that the cure is worse than the disease.

For others, coordination failures justify intervention, especially in LDC countries because of the dynamic gains to be expected in economies stuck in the poverty trap. Building an environment conducive to private activities is necessary but unlikely to be enough. In this case, direct public intervention in market is required.

## Chapter 3 – Lessons from National Price Stabilization Experiences

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One of the main reasons for State withdrawal from agricultural markets in the mid-1980s was the poor efficiency and high cost of public intervention. As a result, it is useful to consider past and current experiences with price stabilization policies and derive lessons from them. A precise analysis of past experiences may indeed help define public interventions that maximize positive impacts and minimize adverse effects. This is the main objective of this section.

Fourteen case studies on price stabilization policies<sup>4</sup> in a wide range of (geographical, socio-economic, and political) contexts and periods have been analyzed in order to identify key factors of success and the reasons for failures. Then, some recommendations are formulated for the proper implementation of price stabilization policies and for further research on new possible areas for public policy.

### **3.1. A Wide Variety of Contexts and Objectives but Few Combinations of Policy Measures**

Over the past decades, price stabilization policies have been implemented in numerous countries and in widely different national contexts and periods. However, developing countries generally experienced the same historical trend in public policies: (i) strong public interventions until the mid-1980s, (ii) state withdrawal and priority given to the market until the end of the 1990s, and finally (iii) a return to public intervention in recent years. This evolution is in line with recommendations by international institutions, at least for the two first periods. It therefore underlines the importance of the official positions of these institutions.

The direct objectives pursued by interventions are diverse and highly dependent on the economic and social profile of each country. Low Income Countries tend to fight against the “poverty trap” and/or to protect consumers from soaring prices (i.e. Madagascar, Mali, Zambia, Kenya, and Malawi). Most Middle Income Countries seek to maintain low consumer prices in order to fight against urban poverty and promote the industrialization process, taking advantage of the improvement in competitiveness allowed by low wages (e.g. Thailand, or Indonesia). They also try to encourage agricultural production and a higher level of food independence through the incentive of relatively high producer prices (India and Indonesia). The objective can also be to protect the most vulnerable and malnourished people while specifically supporting

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<sup>4</sup> See the list of countries, products and periods under analysis in Appendix 1.

smallholder farming (e.g. Brazil). Finally, High Income Countries seek to protect their agriculture from external shocks in global markets in order to maintain their food independence, protect employment (e.g. the United States, the European Union, and Canada) and more generally aim to promote multi-functional farming (i.e. the European Union).

Domestic food price volatility in these countries can have different causes. Climatic factors affecting national production (for example, periods of drought in African countries can lead to large drops in national cereal production) tend to call for public interventions aiming at improving the operation of the domestic market (e.g. information systems, rural infrastructures, standardization, etc.), and opening borders for a better markets integration. Endogenous instability due to anticipation errors by players may call for other policies aiming at directly acting on marketed volumes in relation to demand and thus controlling boarders and using public stocks. International food price volatility may also lead countries to implement trade regulation measures, when small “price taker” countries are affected by price variations in international markets. In the fourteen cases studies we led, it is difficult to determine the relative weight of these different sources of domestic food price volatility: it is most likely that they both played a role. This partly explains why different kinds of interventions have been implemented.

Beyond the diversity of national experiences, broad characteristics in the content of implemented policies can be underlined.

Policies combine various instruments. This means that instruments are never implemented in isolation, but are always part of a package<sup>5</sup> (policy mix). The table in Appendix 2 presents the wide range of instruments implemented and how they are combined in most of the fourteen cases studies. Following the typology of the ECART study (see Box 1 and Galtier et al., 2009), they consist primarily of “C” instruments (that is, instruments aiming at minimizing price instability through public intervention).

In particular, two main policy mixes are used in most of the cases under analysis:

- (I) trade regulation through quantitative restrictions + production support (input subsidies, farm credit, agricultural extension, etc.) + buffer stock used to define a price band (India, Indonesia, Malawi, Thailand, and Zambia); and
- (II) trade regulation (through tariffs or quantitative restrictions) + production support (Mali, Guinea).

These two kinds of combinations of instruments aim at balancing supply and demand. When prices are considered to be too high, an increase in supply on the domestic

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<sup>5</sup> See Appendix 1 for information on the combination of instruments used in each country under analysis.



market is obtained by encouraging production or imports and limiting exports, as well as by releasing public stocks if available. When prices are considered to be too low, supply reductions can be achieved by (i) limiting imports and production through set asides or price level adjustments relative to inputs costs; and (ii) limiting producers' deliveries to the market (facilitating storage by producers).

Decreases in supply can be combined with increases in demand (public stocking, facilitating private stocking of products). In this case, "C" instruments are generally combined with "A" instruments (that is, instruments aiming to stabilize prices through private interventions), leading to a combination of public and private actions. In such a context, buffer stocks enable the government to directly increase or decrease the quantities available on the domestic market. Countries that do not use buffer stocks are generally engaged in structural adjustment programs (e.g. Mali in recent years) or have weak institutional and administrative capacities (e.g. Guinea).

Some countries use also "D" instruments to act on the demand side, particularly in case of food crises. This is the case of India where consumption subsidies directly focused on the target population in order to resolve the potential conflict between consumers' and producers' interests.

In Brazil, programs benefiting both specific groups of producers and specific groups of consumers (Agriculture's Food Acquisition Program, PAA) have been implemented. Some products from smallholder farms are purchased at a subsidized price and distributed to vulnerable groups of consumers.

**Burkina-Faso** mainly used "A" instrument through its "fonds de lissage", a risk mitigation fund combined with "C" instrument (input subsidies). Concrete implementation modalities vary widely across countries (Box 5).

#### **Box 5 : Diversity in Price Stabilization Policy Design and Implementation**

**Indonesia** sets a price band associated with external trade restrictions through the Bulog. The producer price and the input price/producer price ratio are used to monitor the production trend and mitigate the problem of excessive producer incentives and accompanying costs. The width of the price band was also seen as a key parameter. It was progressively widened with the development of private trading activities, in order to avoid eviction effects. Bulog procurement generally concerned only a small volume (around 10%) of marketed rice production. Rice prices were maintained near the level of international prices during the period 1970-1997. Government intervention proved to be highly reactive to the changing context during that period. Strong efforts have been made to significantly strengthen the logistical capacity and managerial procedures of the Bulog. Extensive analytical studies on key parameters (size of margins between floor and ceiling prices, size of buffer stocks needed, etc.) have been conducted.

By contrast, after the economic crisis in 1997-1999, producer prices were kept 30% higher than international prices in spite of the negative effects on the poorest and the absence of additional reserves of productivity.

In **Burkina Faso**, since 2006, the guaranteed producer price in the cotton commodity chain has been connected to the international price. However, with rising fertilizer costs, food inflation, and dropping international cotton prices, the real floor price for producers is not high enough to ensure sufficient earnings and encourage production, in spite of producer price smoothing. Consequently, producers are replacing cotton with maize in crop systems.

In **Guinea**, the “Fédération des Paysans du Fouta Djallon” (the Fouta Djallon farmers’ federation) organizes the negotiation of the producer floor price between producers’ groups and traders at the start of each agricultural campaign. Technical elements are considered during the negotiations such as production costs and inflation. The floor producer price varies from one year to the next, but all producers know the price in advance (predictability). This policy leads to a dramatic increase in potatoe production from 150 to 16000 tons over the last twenty years.

In **Zambia**, guaranteed producer prices through public purchases are higher than the current prices on wholesale markets, providing strong incentives for producers.

In **Thailand** and **India**, because of lobbying pressure, the guaranteed producer price is too high, disconnected from the international price, and generates excess supply. In India, the growth rate in maize production was lower during the liberalization phase (1991-2004) than during the periods of heavy government intervention in 1964-1990 and 2005-2010. Real prices for consumers tend to have fluctuated more during the liberalization periods than the do nowadays.

On the contrary, in **Malawi**, due to escalating costs (massive stocks accumulated in state warehouses or exported at a loss) and financial constraints in the 1980s, the Agricultural Development and Marketing Corporation (ADMARC) was often unable to defend the minimum support price for maize (as well as the ceiling price in the 2001-2002 crisis). The price band was annually revised and moved closer to international parity prices. Support producer prices were reduced or withdrawn in many areas, and this lead to development of parallel and illegal markets. Such a process also occurred in the 1970s in Madagascar and Mali, leading to a stagnation of production levels and an increase in imports.

In **India** in the 1970s, there was no difference between the guaranteed producer price for food sale operations to vulnerable groups through public storage (tool targeting consumers) and the support price for production (tool targeting producers). With the continuously rising support price (disconnected from international trends) and excessive public purchases, such confusion in targeting the population and pricing policies had negative effects on the food inflation rate.

### 3.2. Factors of Success or Failure

Case studies show a number of successes in terms of production levels, price stabilization, yields, consumer protection, and independency from the world market. Indonesia, for instance, shifted from the world largest importer of rice in the 1970s to a self-sufficient country in the mid 1980s.

A virtuous circle sometimes appears in poor countries stuck in the poverty trap, where the risks involved in production activities result in a strong supply response (see Box 6). Labor productivity and agricultural incomes tend to improve, provided that there are productivity reserves. Reserves of productivity may come from technological innovations such as the green revolution (improved seeds, high yield varieties) or from an increase in capital (public capital, like irrigation facilities or private capital bought by farmers through investment). While more capital often implies that less labor is used, the rising incomes associated to this increase in capital implies higher demand for non-agricultural goods and services as well, which offers employment opportunities in non-agricultural sectors. When the product under stabilization is an important part of consumers' diets, the price of food tends to fall, but producers' incomes do not drop because larger amounts of products are sold. The food policy dilemma is thus solved.

#### **Box 6 : The Key Impacts of Productivity Improvement**

In countries such as Indonesia, India, Zambia, Kenya and Malawi, the green revolution made new gains in productivity possible: improved seeds and high yield varieties of wheat, rice and maize. In **Indonesia**, new technology was available to allow labor productivity growth, and the stabilization of rice prices was one component of rice modernization. The other components were: a technical package (distribution of high yield varieties, provision of fertilizers and pesticides at a highly subsidized price), rural infrastructures (irrigation systems, roads, schools, market places, communication systems, electrification, public health facilities), extension services, education, etc. In **Malawi**, positive trends in maize production and yields in the 1983-1993 period can be explained by the implementation of a package of public policies including breeding programs, investment in agronomic research, extension, seed distribution systems, rural infrastructures, ADMARC's interventions, and fertilizer and credit delivery. Since 2005, the dramatic increase in maize production is also partly due to the dissemination of a technical package through the Agricultural Input Subsidy Program (vouchers for buying inputs at a subsidized price).

In a context of state withdrawal such as in **Guinea**, support production actions combined with seasonal prohibitions on potatoes imports have been implemented by farmers themselves, organized within the Fédération des Paysans du Fouta Djallon. The Federation has developed numerous services for its members: providing certified seeds and fertilizers at acceptable interest rates, extension, management advice, hydro-agricultural infrastructures, storage capacities, rural roads, etc.

It must be stressed that implementing these "green revolution" techniques requires large quantities of capital (improved seeds, fertilizers, and waterworks). It would not have been possible for peasants to get access to such inputs without credit, and access to credit would not have been possible without a minimum of output price stability. One might notice, however, that repeated access to credit also depends on harvest risks and input costs. Producer price policies have to take into account input costs if they want to maintain producers' revenues and their capacity to access credit. This is why policies combining output prices and input costs are particularly interesting.

However, a large number of factors are at stake, and instruments are combined, which means that the observed positive social and economic changes cannot be attributed to

price stabilization policies alone. Moreover, some measures have had negative unintended consequences that call into question the sustainability of the policies involved: increasing costs, inefficiency of state activities, eviction effects on private operators, large-scale corruption (see Box 8).

Several types of factors of success or failure for price stabilization policies can be identified and classified in two broad categories: (i) technical-economic factors, and (ii) political-institutional factors: policy effectiveness and predictability, consultation and negotiation among actors, problems related to rent seeking and corruption. They will each be addressed in turn.

### **3.2.1 Technical and Economic Factors**

The appropriate choice and calibration of instruments are critical in the success or failure of market regulation. This appears to be a very complex task that requires precise technical expertise. Case studies reveal four key points: (i) the level of the floor and ceiling prices, (ii) the impacts of initial endowment in factors, (iii) storage and financial capacities, and (iv) costs and management of over-supply.

#### **Floor and Ceiling Price Levels**

The level of the floor price (in relation to input costs) will encourage or discourage production. It has to be adjusted according to the context of the country. Poor importing countries will encourage production, especially if the product is a staple food. In theory, the band has to follow international trends (see Box 5) but, in the case of low international prices and very poor countries where most of the population is engaged in agriculture, it would be worth considering initially maintaining prices at a higher level. For many agricultural producers who are net buyers in developing countries, the issue is to both keep food prices low for consumers and maintain food prices at an encouraging level for producers (adjusted to production costs). In these situations, fertilizer subsidies could be an interesting option: they can make it possible to maintain an encouraging price for producers without raising prices for consumers.

Exporting countries should take care of their impacts on the international market and of rising costs related to increasing production (see Box 12). In order to reduce the risks associated with agricultural activities (see chapter 2), the floor price has to be publicly announced at least before the crop year starts.

The price band has to be wide enough so as not to discourage private operators. The gap is highly dependent on transport and storage costs in the country. A gap of 50% between the floor and ceiling prices would generally be sufficient to avoid the eviction effect.

Another question relates to the use of pan-territorial or differentiated regional prices: the former may be easier to implement but the induced effects on remote areas, which are in this way advantaged, must be taken into account; the latter make it possible to take into account transport costs and have less negative impacts on traders. The Malawi case study illustrates a situation where, because of high transportation costs, pan-territorial food prices tend to maintain production in some areas where it would not be profitable without pan-territorial prices.

### Impacts of Initial Endowment in Factors

It is worth noticing that price stabilization policies may have detrimental effects when the initial distribution of productive resource is very unequal (see Box 7). This kind of policy will benefit producers who are well endowed in land and capital more than others. Those who have the largest farms and the best links to the market are in a position to increase their marketable surpluses. In contrast, the price stabilization policy will not have any effect on farmers not trading on markets at all because their access to land is so limited that they do not produce enough to sell. For this specific population, other measures, such as free input distribution or income diversification support, have to be implemented. The question is slightly different for net buyers who sell their harvest and have to buy products at a higher price during the year. For them, price stabilization policies would improve their situation and maybe allow them to become net sellers. This underlines that pricing policies should not be addressed independently from other policies. Policy coherence needs to be sought in order to be sure that the pricing policy is pro-poor. The issue of inequalities in the distribution of production resources must be addressed in a serious way. In some cases, policies targeting specific sectors of the population may be an appropriate solution even if this involves complex institutional matters, as will be seen below.

#### Box 7 : The Importance of the Initial Distribution of Productive Resources

In **Zambia, Kenya and Malawi**, a large proportion of producers are net buyers.

In **Zambia**, a large share of producers do not have produce enough to sell surpluses. What is more, they never sell and therefore cannot benefit from a price stabilization policy. Since land distribution is very unequal, only the larger producers benefit from the policy at the expense of the smaller ones. Cereal consumption indicators show there has been little—or no—progress in food security and the increase in production is mainly exported while 40% of the population is affected by malnutrition.

In **Malawi**, agriculture generally consists of small-scale farmers. A critical issue is the very smallness of cultivated tracts of land (less than 0.5 ha per farmer). In this case, free input distribution programs seem to be very successful in terms of increasing maize production. These programs enable intensification, even for farmers who are not linked to markets but who will depend on the development of extra-farm activities to see an increase in their incomes.

In **Kenya**, agriculture is characterized by a dual structure: the top 10% of farms account for 85% of all domestically marketed maize, while 62% of rural smallholders are net maize buyers. Given this structure, the National Cereals and Produce Board (NCPB) policies designed to increase the domestic price of maize in 1995-2004 had the effect of transferring income from three million

urban consumers and almost sixteen million small-scale farm households (net maize buyers) to five million small-scale farmers in a high potential area for maize and a few thousand large-scale maize farmers (net maize sellers).

In **Brazil**, since 2002, in the context of very unequal distribution of production factors and incomes and a high percentage of the population in a situation of poverty, Agriculture's Food Acquisition Program (PAA) has been targeting specific population groups:

- small-scale family farmers, with a clear objective of strengthening smallholder farming (productivity and product quality) by purchasing products at a fair and stable price; and
- vulnerable consumers (through school restaurants, hospitals, associations, etc.) with a clear objective of improving access to food for the poorest, both in terms of quantity and quality (in particular, the distribution of milk for children).

However, such targeting requires strong administrative capacities (definition of criteria, registering, controls, etc.) that generally do not exist in LDCs.

### **Storage and Financial Capacities**

The size of public storage capacity and the access to flexible resources are fundamental parameters because the state has to be able to buy enough products to maintain the advertised floor price. As will be argued below, the credibility of the policy is of utmost importance. This implies that the state does what it has promised to do and therefore that it has access to sufficient financial resources and storage facilities. Storage could be the result of a public-private partnership where the state contracts with private actors for a given amount of storage. Such arrangements get private actors involved in the policy process and reduce the costs associated with public activities (generally higher than private actors' costs).

### **Costs and Management of Over-Supply**

When reserves of productivity exist, production may rise very rapidly and result in surpluses. This makes storage more expensive and the export of surpluses more difficult. It might generate adverse effects on the world market. Because many countries were not able to properly manage costs, they had to withdraw from market regulation. When a country shifts from importer to exporter position and when domestic prices are higher than international market prices, the issue of how to deal with surpluses takes on the utmost importance. In the past, this has often been managed through export subsidies at very high cost (European Union) or through international food aid (United States). Such policies create unfair competition and may damage the local production of trading partners (see Box 8). Policy adjustments are therefore crucial to avoiding excessive costs. This could be done by decreasing the level of floor prices (but at the cost of bankruptcies if farmers had to go into debt), quantitative limits on production or measures such as contract farming (see below), which provide a guaranteed floor price for only a predetermined quantity of production.

While food price stabilization policies' costs such as public storage are high, they have to be compared to food price instability costs (social costs derived from food price instability for producers and/or consumers). These later costs are difficult to estimate and further research is needed to carry out cost-benefits analyses of food price stabilization policies that consider the welfare of tax payers, producers and consumers alike.

It also seems inefficient to maintain high prices to support an agricultural production for which a country does not have any competitive advantage (and that would not be competitive without the price support system if subsidizing exports is not considered). However, we have to consider the case of countries that do not currently have any competitive advantages and the expected side effects of allowing agricultural development through sound agricultural policy.

Surpluses are not necessarily a problem and quantitative limitations on production are not necessarily relevant when surpluses are considered from a regional perspective for instance. Intra-regional trade therefore requires political consensus among countries as to which country has comparative advantages for a given production and could supply the region, which is not an easy task (see below).

#### **Box 8 : The Crucial Question of Cost Management**

The difficult transition from importer to exporter is illustrated by the cases of Indonesia, Zambia, Malawi, and the EU.

In **Indonesia**, Bulog has experienced a dramatic increase in its costs, especially when it has to manage surpluses (\$30 million US per year in 1969-1974, \$80 million in 1970-1984, then \$90 million in 1993-1994, and even \$200 million when export subsidies are included), which has almost lead it to bankruptcy. However, Bulog had access to financial reserves partly because of the increase in the price of oil. Moreover, rising costs (due to large stocks, subsidized exports when there were surpluses and subsidized imports when there were production deficits) led to reforms and adaptations by Bulog: reconsideration of the floor price, removal of fertilizer subsidies and the ceiling price announcements. In **Indonesia**, the policy option was to act on the relative prices of inputs and production.

In **Malawi**, it seems that because adjustments were not made in time, stocks accumulated, surpluses were exported at a loss, and the costs involved with the storage policy increased, putting the state in the position of not being able to provide price support in some remote areas.

**Zambia** benefited from revenues generated by copper.

In the **EU**, for some products surpluses were exported at subsidized prices that created unfair competition with producers based in importing countries. For sugar and milk, quantitative restrictions were combined with the price stabilization policy allowing supply management.

Similarly in Canada prices support is associated with production quotas targeting the national consumption level

In **Guinea**, potato surpluses can be exported to neighboring countries. In this case, exports tend to enhance a regional integration process, and can partially replace imported potatoes from other regions.

In **Brazil**, it seems that the program purchasing products from smallholder farms avoids the adverse effects of over production by limiting the amount of direct support per farmer and per year.

The question of cost management is also critical in situations other than surplus management. In **Mali**, for instance, the Office in charge of managing the intervention stock has had difficulties accessing financing. Two public buffer stocks exist in Mali, but none of them has proper financial capital: stocks managers have to search for credit before buying cereals. In a situation of rising prices, this implies both delays and a smaller scale of intervention, which ultimately undermines stocks' capacity to overcome price raises. This occurred in Mali during both the 2005 crisis and the 2008 crisis, when only 28,000 T and 53,000 T were able to be destocked, which was insufficient to really influence price levels.

This in-depth analysis of countries' experiences allows for the following recommendations to be formulated.

The ability to properly design policies and set a number of technical parameters is a key factor in ensuring the effective functioning of price stabilization policies. Their adequacy to the specific economic, social and institutional context of each country and each government's objectives, and the ability to foresee and adapt to changing contexts are key factors for success. This therefore requires high technical capacities and access to a large range of information and analyses. It is important to evaluate in advance the impacts of policies on the various types of households and possibly which sub-population to target.

Clear differentiation between long-term and short-term objectives and good understanding of substitution effects between products (which depend on the nutritional features of the products as well as food habits) are necessary. Pricing policies should be part of a coherent set of policies involving several instruments. Policies should accompany, but not replace, private operators. States should have the means to implement their policies, in particular sufficient financial resources and expertise to shape, implement and adjust actions.

### **3.2.2 Political and Institutional Factors**

Considering the processes by which policies are defined and implemented, different factors play a decisive role in the policies' ability to smooth food price volatility. The case studies led in different national contexts reveal that perverse effects can occur when policies:

- are not very effective,
- are not very predictable, and
- do not reflect a plurality of interests.



The **low effectiveness of policies** is a factor that can undermine policies results, particularly in low income countries characterized by weak state capacity and/or legitimacy. In these contexts, announced price policies tend not to be effectively implemented or to be by-passed by private actors (who are not punished for by-passing them). Indeed, the low effectiveness of policies can be attributed to either low financial capacities or low enforcement control. Financial capacities are a crucial determinant of policies' successes in the case of stock regulation, as seen above, and production enhancement measures, while enforcement control is a crucial determinant of policies' successes in the case of trade control. Drawing from the Malian case, Box 9 gives an illustration of the importance these factors can have in policies' results. The Mali example can be extended to other low income countries that either lack financial capacity and autonomy (dependency upon foreign aid) or can barely enforce the compliance with policies (corruption and by-passed policies). These situations call for recommendations in terms of State capacity building, and are consistent with the recommendations made by the Organization for Economic Cooperation and Development (OECD) and by the World Bank in "fragile states".

#### **Box 9 : Policy Effectiveness: Financial Capacities and Enforcement**

The **Malian** government implemented food price policies through trade control measures (export restrictions, import tariff wavers) and marketing measures (input subsidies, food security stocks). However, these measures did not always have the expected effects because of poor public financial capacities (see Box 8) and reduced enforcement.

During the 2005 and 2008 crises, exports were banned in Mali, but this decision was not respected by private operators who decided to export illegally across unsupervised borders or through informal agreements with customs officers. Due to a low capacity for enforcement and punishment, the government could not end these illegal exports and act upon price levels.

Other countries that do have proper and consequential financial capacities can, on the contrary, better ensure their policies' enforcement and control. This is the case, for example, in **Zambia** and Indonesia where the high public cost of regulating prices is respectively covered by revenues from the copper and petroleum industries. In Brazil, the implementation of a complex program such as the PAA was possible thanks to the State's strong administrative capacities and because the State devoted significant financial and human resources to the program.

The **low predictability of policies** is a second institutional factor that can undermine policies' ability to smooth food price volatility. This refers to the degree of transparency in the information the state provides on what policies have been decided. When this information is transparent, private actors can correctly anticipate state actions and take them into account in their own actions. However, when the information is not very transparent, private actors can hardly anticipate what the State's actions will be and may prefer to act as if policies were simply absent. This eviction effect is particularly strong in the case of trade control policies. Drawing from the cases of different East African countries, Box 10 illustrates the importance of policy predictability in determining policy results. These situations call for the encouragement of transparency in policy processes.

### Box 10 : Policy Predictability

Studies conducted in **Zambia, Kenya and Malawi** show that the volatility of maize prices was exacerbated by discretionary policies. The unpredictability of trade policies led to diminished interest by private actors in marketing and trade functions, and resulted in situations where prices fluctuated more than necessary. In Zambia, in 2001 and 2005, drought led to price fluctuations that were exacerbated by government interventions: the government advertized maize imports to contain rising prices, but publicly supported imports were arranged too late and uncertainties about the level and pricing of these imports limited private imports, resulting in very large increases. The story is similar in Malawi and Kenya. In Malawi, for example, exports were banned in 2006 and 2007, despite above average harvests, worsening maize prices situation for net maize sellers. In Kenya, in 2008, delays in government imports pushed maize prices higher and maize prices stayed at very high levels in late 2008 despite the tumbling of world prices (a state of emergency was declared in January 2009 and the import duty was finally lifted).

On the contrary, when policies are relatively transparent, private actors can anticipate public actions and position themselves in markets efficiently. **Madagascar**, with the running of the Rice Platform, is a good illustration of the positive influence predictable policies can have on price regulation.

The fact that *policies may not reflect a plurality of interests* is the third factor identified through the case studies that may undermine policies' results. In some countries, policies can be assimilated to the attribution of rents to a limited number of actors (Zambia for example, see Box 11), while in other countries policies seem to be more legitimate and are the result of dialogue and/or negotiation processes where different actors have the capacity to represent and defend their interests (Madagascar for example, see Box 11). These examples call for greater attention to the influence that private actors do indeed have in policy making processes. Recommendations should focus on the enhancement of transparent and pluralist systems of interest representation but they must take into account the capacity of actors to effectively represent and defend their interests in dialogue and negotiation arenas as well. In some cases, capacity building programs are needed to ensure actors participate in these policy making processes.

### Box 11 : Policy Appropriateness for a Plurality of Interests: Dialogue Processes as the Key ?

In **Zambia**, maize trade and marketing policies tend to benefit a small number of actors, and as a result their redistributive effect can be questioned. Pan-territorial prices benefit net seller producers only (and not to the smallest producers who are net buyers), and are strongly influenced by the Zambian National Producers Union. Import licenses are attributed selectively to industrial millers and traders, who tend to maintain close relationships with government officials. There are no official dialogue and negotiation arenas, and marketing and trade policies are defined in a way that is not transparent.

In **Madagascar**, rice marketing and trade policies have been discussed since 2005 within a "dialogue platform" where the different actors of rice sector are represented, and where market information is analyzed. Since then, domestic markets have stayed relatively calm in comparison with international markets. Guinea provides another positive example of when

discussions between actors led to the implementation of private measures that regulated the operation of potato markets.

In Brazil, the proactive participation of different stakeholders (farmers' cooperatives, enterprises, social control councils and committees, etc.) has been one of the reasons for the success of the Agriculture's Food Acquisition Program (PAA).

While the implementation of mutual information processes seems to be a promising innovation, accompanying policies aimed at strengthening actors' capacities have to be encouraged as well in order to help actors better define (expertise) and defend (negotiation) their interests.

Effectiveness, predictability, and appropriateness for a plurality of interests: these three factors influence policies' ability to lower food price volatility. The case studies led at national level highlight their influence, which depends on the political instruments considered (see the Table in Appendix 3).

At the regional scale, the experience in West Africa tends to demonstrate that these political and institutional factors are particularly critical for attaining the positive results expected from regional integration (see Box 12).

#### **Box 12 : Advantages and Limits of Regional Integration for Addressing Food Price Volatility**

Today, regional integration processes, which are seen as a powerful driver for development, tend to be growing stronger, particularly in Africa.

In theory, many advantages are expected from regional integration (De Melo, 1993; Hugon, 2005), which could be favorable for price volatility reduction compared to actions at the national and international levels. Here, one can mention a wider and more competitive market, economies of scale and better allocation of resources, a more stable and predictable institutional environment (national policies are "locked" within common policies, national lobbies are limited), standardization and "commoditization" of regionally exchanged products, reduction in transaction costs (due to geographical, socio-economical, and cultural proximity) compared to the international market, etc.

In West Africa, ECOWAS is currently reflecting on how to address food price volatility in the framework of its Common Agricultural Policy (ECOWAP). Reflection focuses on both common trade instruments (which is a fundamental part of regional integration and quite advanced), and regional cooperation to manage food security stocks and social transfers. Indeed, the regional dimension of food crises in West Africa, as illustrated in 2005, encourages countries to start building a regional approach to the management of food price peaks.

However, the economic heterogeneity of West African countries, the different sensitivity to imports (less for landlocked countries or the CFA franc zone), the divergent interests, differing points of view on trade, and the relative newness of the integration process make it difficult to see the advantages of regional integration. For instance, the Free Trade Liberalization Scheme adopted in 2004 is far from being effective (there are still many obstacles to trade within the region), and the finalization of a Common External Tariff is facing considerable difficulties.

## **The Desirability and Feasibility of Public Intervention at the National Level: Some Concluding Remarks**

The analysis of past and current experiences with market regulation reveals some encouraging successes and allows one to highlight some common features in these experiences. Management of agricultural price instability has to be part of a larger agricultural policy designed according to the specific context and objectives of the country in question. A wide range of instruments exists and combining these instruments in policy mixes is recommended. To avoid the excessive costs often linked to public intervention, instruments can be implemented by private operators under public supervision rather than exclusively by public actors.

All the problems faced by rural areas today will not be solved by market regulation. Other measures will be necessary, but reducing risk appears to be a condition for increasing labor productivity and incomes in poor areas. Measures aiming at improving market operation (information, discussion, standardization, etc.) as well as measures mitigating the negative effects of price volatility (such as social transfers) are complementary to market regulation. They will not be enough.

Some of the desired features of market regulation can be drawn from national/regional experiences. The desirability of price stabilization is highly dependent upon the general situation of each country, and policy design must be context-specific. If one seeks to replicate experiences, then many factors have to be considered, including the country's level of development, the proportion of the population in the agricultural sector, the external trade balance, the location of production areas, land distribution, transportation facilities, and the institutional and political contexts. Regulation has to be flexible, part of a broader agricultural policy that is constantly adapted to changing conditions in world markets and domestic production. This implies having a team of experts to analyze the situation and a wide range of information available.

Policy success in poor countries is highly dependant on the existence of productivity reserves. These reserves may come from technological innovation or better access to capital. The later can be obtained through the provision of public goods such as irrigation facilities or inputs subsidies. The problem is generally the cost of this kind of policy when public funds are scarce. In order to keep flexibility in the system, the policy should not aim at maintaining a completely fixed price. Rather, it should allow for a relatively wide and flexible band between floor and a ceiling prices in which the private sector can operate. This band has to be adapted over time in function of domestic and international conditions, which supposes extensive expert analyses. State interventions should be rules-based and relatively predictable; the stabilization agency should have flexible and sure access to financial resources. To be legitimate, the policy must consider the opposite interests of the actors involved, and has to be the result of discussions and negotiations among actors.

Collaboration between public and private actions seems very relevant. In particular, physical handling of commodities could be left to private firms, even if the latter receive

a State price guarantee. Private-public partnership could also be considered for storage: public actors (central states) would act as “project owner” and decide whether to buy or release stocks while private actors (banks, producers’ organizations) would act as “project supervisors” and sell or buy food and cover the financial cost of holding stock according to public decisions (contract between the State and private actors). This makes it possible to simultaneously solve two problems associated with public intervention: excessive commercialization costs and the eviction effect.

Price stabilization mechanisms (based on a price band defended through storage and imports under public supervision) or public contract farming (which guarantees prices for predetermined quantities attributed to peasants’ organizations) are efficient ways to stabilize prices. With the first option (price stabilization based on a price band), it is necessary to control external trade unless the price band is always included in the band defined by transfer costs from or to the international market. In this case, speculative attacks by the regulation agency are also avoided. If large fluctuations in international prices move the domestic band out of the band defined by transfer costs, trade regulations are necessary. This could be done by quantitative restrictions such as import licensing or variable tariffs, adjusted to maintain the domestic band within the larger band defined by transfer costs between the domestic and international markets.

With the second option (contract farming), controlling external trade is not necessary because the guaranteed price concerns only predetermined quantities of products. Another advantage of this solution is that it allows one to target specific categories of farmers.

However, the problem associated with quantitative measures is that they are often associated with bribery and rent-seeking behaviors. As stated above, some paths forward exist: rules-based, transparent public interventions combined with clear and prompt action against corruption, and capacity building ensuring that the different kind of actors are able to defend their interests may make it possible to define institutions and mechanisms to minimize these adverse effects.

It has to be noticed that the compatibility of such measures with WTO rules is not guaranteed. Price stabilization instruments such as buffer stocks or guaranteed prices should generally be lowered (they are included in the “amber box” of trade-distorting subsidies). Public stocks can only be maintained as part of a food security policy, and if they do not aim to support production through producer prices that are higher than international prices (see the WTO’s Agreement on Agriculture (AoA), Appendix 2). Structural stabilization instruments on import prices such as variable levies are strictly forbidden (AoA, Article 4:2), and import price bands have been challenged in the Dispute Settlement Body (the Argentina-Chile dispute). Only punctual measures such as the AoA’s Safeguard Clause (SGS) allow for the increasing of tariffs beyond bound rates. Moreover, since many developing countries under structural adjustment did not notify price stabilization and non ad-valorem protection instruments (e.g. specific customs duties, tariff-rate quotas, etc.), they are no longer allowed to introduce these

instruments. Many developing countries are also not allowed to use the SGS because they used ceiling tariff rates.

However, some flexibility exists for developing countries in the WTO arena, especially the least-developed countries. Customs duties can be modified since they remain below the bound level (this is very relevant for countries that have relatively high bound tariffs and are not subject to structural adjustment constraints). In addition, WTO rules are not fixed and the current negotiations, while they do not call into question the liberalization trend, offer an opening to get more policy space for the use of some instruments. Some (“small”) developing countries have used or still use non-WTO compatible instruments with nearly no risk of complaints. Finally, regions such as West Africa—if ECOWAS becomes a WTO member—are also little exposed to WTO complaints.

More market-friendly measures, such as the warehouse system or insurance, have the advantage of being clearly WTO compatible. However, they induce costs for farmers without significantly decreasing risks, and therefore do not seem to be as efficient as price stabilization mechanisms or contract farming.

## Chapter 4 - What Role for the International Community?

*Bricas N. , Daviron B. , Galtier F.*

Obviously, managing domestic price instability is the government's responsibility. However, various considerations tend to indicate that some support from the international community may be needed:

1. The *governments of many developing countries lack reliable information on international markets.*

2. *Many developing country governments' resources are too limited to fund price stabilization policies or policies aiming to mitigate the effects of price instability (safety nets and other related D-instruments).*

3. Rising international food prices can reduce the currency reserves of importing countries (Sarris, 2010). For some countries, this may imply *rationing food imports*. For others, it can generate a deficit in the balance of payments and *a decrease in the exchange rate*, inflation, and a loss of purchasing power for consumers. This problem affects only countries with low currency reserves and/or countries for whom food imports account for a large share of the balance of payments.

4. The policies developed at the national level to reduce the transmission of international instability to domestic markets (e. g. variable levies on imports, export restrictions) are not always effective because of their budgetary cost and the difficulty some states have in effectively controlling their borders. Moreover, their use is bound by WTO rules. In addition, these policies can increase international price instability. In the case of crisis, restricting exports can cause *shortages* such as the one some importing countries experienced during the 2008 crisis. Policies that aim at insulating the domestic market narrow the international market and, as a consequence, make it more vulnerable to climate shocks. This can increase international instability and thereby increase countries' incentive to insulate their domestic markets (Keynes, 1942). This phenomenon has been seen since 2008 with the strong development self-sufficiency policies and land grabbing. Hence, there is a need for international rules to arbitrate between countries' need to protect themselves from international instability and the need to lessen the destabilizing effects generated by these policies.

These considerations lead to the conclusion that some actions at the international level must be considered to complement the actions at the national and regional levels. We will first present a brief historical analysis of how the problem of price instability has been addressed at the international level. Then, we will discuss what support the international community could provide in the coming years. We will distinguish between different types of support: the provision of public goods, transfers to the governments of some developing countries, and the setting up of international rules.

#### 4.1. Historical Analysis of Price Volatility

International food price volatility has a history. Its characteristics (magnitude), its causes, and the solutions imagined to deal with it have changed over time. Food markets have undergone structural transformations that have changed the way international prices are determined and the role they play in balancing world production and consumption.

Since WWII, several attempts to regulate international food markets have been made by international cooperation structures. Initially, food markets were characterized by:

- widespread overproduction and/or production factor surpluses;
- a disconnect between domestic prices and international prices organized by agricultural policies; and
- a shared objective of national self-sufficiency (except, of course, for tropical products) that implied limited involvement in international trade.

Two radically different approaches followed one another.

The 1960s and 1970s were the golden age of international commodity agreements. The aim was to stabilize (actually support) international prices based on international stocks and/or export quotas. At this time, international cooperation was seen as a matter of dealing with how nation-state oligopolies coordinated the collective management of production surpluses. This was the very purpose of international commodity agreements.

From the mid-1980s to the mid-2000s, overproduction was still the problem, but the proposed solution was instead to organize a general and coordinated dismantlement of agricultural policies that isolated domestic markets from international markets. WTO negotiations were organized with this aim. Because of the increasing involvement in international trade (as exporters or importers), the disconnect between domestic and international prices was becoming increasingly costly for national budgets. Of course, international price stabilization (and price support even less) was not an explicit objective of the WTO negotiations. Yet, the liberalization process was expected to eliminate overproduction and thereby raise prices (one can recall the meticulous estimate of the impact of the WTO negotiations on international markets!). Moreover, an open world market was supposed to absorb production shocks easily.

More than twenty years later, the resulting situation is very different from what had been expected. First, the dismantlement of isolating agricultural policies is clearly incomplete. Some countries did it (the EU, the USA) but other—bigger and bigger—countries (China, India) did not. Second, overproduction did vanish, as illustrated by the low level of world stocks. But the current world supply and demand situation rises two questions:

- Is the current period still characterized by structural overproduction as it was during most of the decades following WWII? Are agricultural frontiers not nearing their end? Is the age of cheap energy not coming to a close? Are the booming Asian economies that generated an increase in food demand radically new?



- Is it really possible to ensure some international price stability without a degree of overproduction? Is overproduction necessary to have a volume of stocks that is big enough to “absorb” production shock?

It is still too early to elaborate a full interpretation of this renewed volatility. Two different and opposite interpretations can be adopted:

- The 2007/08 crisis can be seen mostly as a transition crisis signaling the strains generated by the incompleteness of the liberalization process. In some countries domestic prices are still too disconnected from international prices. Public agencies are still too active in food storage to allow private actors to invest in the business. Accordingly, liberalization must be pushed further.

- Alternately, the 2007/08 crisis can be interpreted as evidence that the liberalization process is not viable. No government can accept exposing its population to “foreign” instability, and international markets are intrinsically unstable. Accordingly, the crisis confirms that China’s and India’s refusal to link their domestic prices to international prices is relevant.

It would be very useful to discuss these two perspectives and reach a consensus on how to interpret the 2008 crisis in order to design policies to manage price instability. But building such a consensus will take time. We can assume that after a period of surpluses, we are entering a period of scarcity or, at least, of greater tension in international markets (booming demand from emerging countries, rising oil prices, etc.). The IPCC’s 4<sup>th</sup> report assumes that climate change will affect agricultural production, not only changing land use in each region of the planet, but also increasing instability. “It is very likely that hot extremes, heat waves and heavy precipitation events will become more frequent.” (IPCC, 2007.) In any case, 2008 was not an isolated incident, and international markets seem to have durably become more unstable. In such a context, what are the possible strategies and available or possible instruments to manage this instability at the international level?

**Box 13 : Some Facts on the Evolution of International Wheat Prices during the 19<sup>th</sup> Century**

**Throughout the 19<sup>th</sup> century, wheat prices tended to converge and stabilize in the Atlantic economy.** This is clearly illustrated by Tables 1, 2 & 3 that show current monthly wheat prices (in dollar per quintal) in New York and Liverpool. Table 1 shows the overall trend from 1800 to 1913, and Tables 2 and 3 show “enlargements” of Liverpool prices at the beginning and the end of the long 19<sup>th</sup> century.

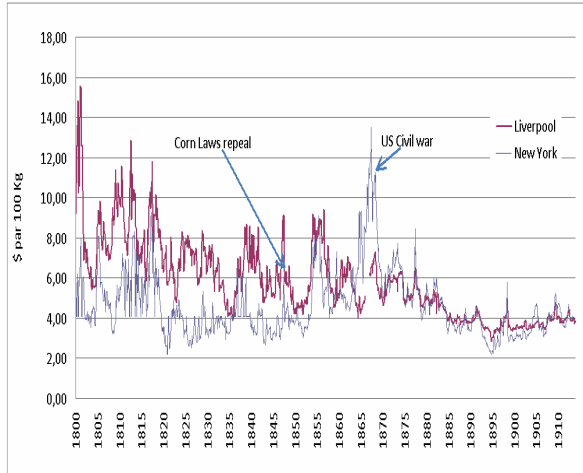
Prices in New York and Liverpool show an obvious convergence. At the beginning of the century, prices in Liverpool were frequently double New York prices. Then, they tended to converge and become synchronized. O’Rourke and Williamson (O’Rourke and Williamson, 1999) have demonstrated that this price convergence could be seen in all of the Atlantic economy.

Moreover, price stabilization is remarkable. The phenomenon is particularly pronounced in Liverpool (see Tables 2 & 3). At the beginning of the 19<sup>th</sup> century wheat prices could double or be halved in a few months. By WWI, price volatility had been markedly reduced—to less than 25%. An astonishing stability could be seen between 1897 and 1907.

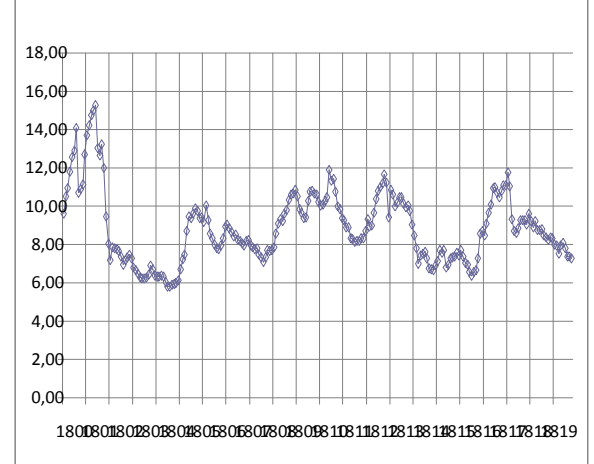
How can this degree of price stabilization be explained? The enlargement of the market can be mentioned, but it is certainly not the only factor. Various institutional innovations contributed. Cereal standardization, starting in Chicago in the 1850s (Cronon, 1991) helped to reduce substitution costs between origins and then helped to increase the number of suppliers. The creation of futures markets, which followed the creation of standards, and the building of telegraph networks lowered information and storage costs. At the end of the

19<sup>th</sup> century, English wheat importers—like African rice importers at the end of the 20<sup>th</sup> century—may have adopted a price stability strategy to promote the consumption of imported food. Whatever the explanation, price stability prevailed in a time of victorious free trade when, at least in the United Kingdom, no public policy influenced price formation.

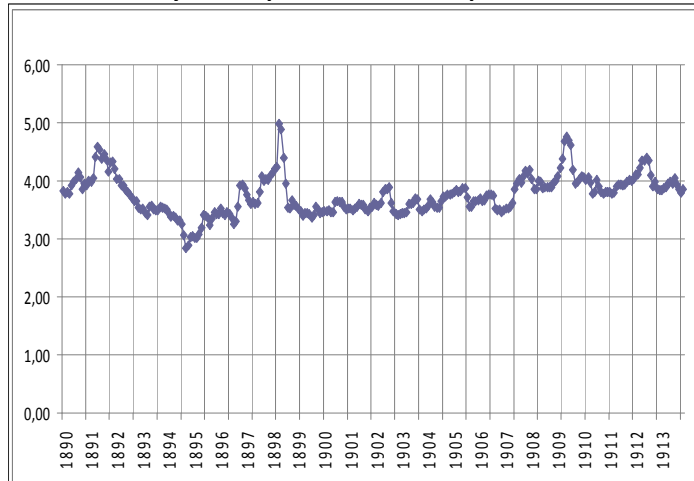
**Table 1 : Monthly Wheat Price on the Liverpool and New York Markets 1800-1913**



**Table 2 : Monthly Wheat Price on the Liverpool Market 1800- 1820**



**Table 3 : monthly wheat prices on the Liverpool market 1890-1913**

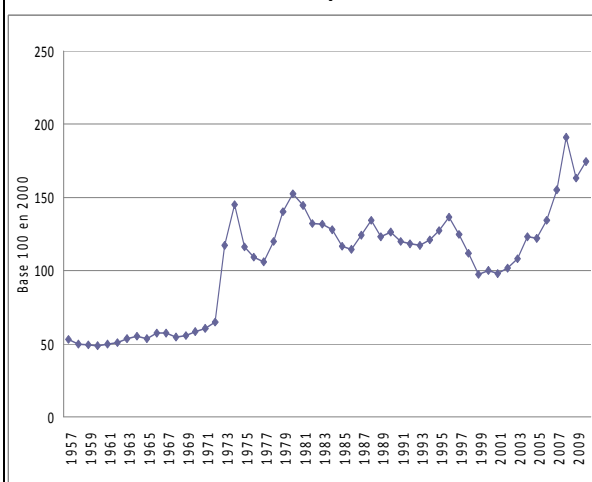


Source : The data used in this box come from David Jacks who produced an amazing compilation of wheat prices in the 19<sup>th</sup> century (see his internet site <http://www.sfu.ca/~djacks/data/publications/publications.html>)

### Box 14 : International Food Price Volatility since WWII

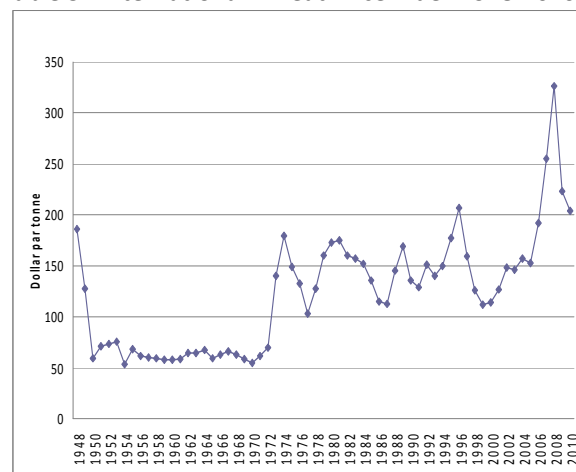
From WWII to the 1980s, food markets were characterized by the omnipresence of governments and a policy norm of domestic-centered food markets. Using different kinds of instruments (caisse de stabilisation, variable levies, export or import quotas, public purchases, food aid, etc.), governments organized an almost complete disconnect between domestic and international prices. Domestic price stability was adopted as an objective worldwide. Foreign trade was subordinated to attaining it. Exports and imports were synonymous with surpluses and deficits that needed to be eliminated to guarantee domestic market equilibrium. From this standpoint, domestic stability was guaranteed by transferring domestic instability to the international market. During this period, international markets operated like canal locks between national markets. They handled the transfer of products without calling into question the level and stability of prices in domestic markets. Despite the residual nature of trade (and despite the teachings of economic analysis), the international prices of most food products displayed marked stability from the end of the 1950s to 1972 (Tables 4 & 5). This is explained by the structuring of the international markets as hierarchic and/or co-operative oligopolies. Indeed, management overseen and centralized at the national foreign trade level gave the country (or nation-state) the status of basic unit on international food product markets. Furthermore, the mastery of foreign trade was accompanied by states' taking control of stocks, that is to say shifting market power from firms to states. In this context, practically all the international markets took on the structure of nation-state oligopolies

**Table 4 : International food price index 1957-2009**



Source : IMF

**Table 5 : International Wheat Price Index 1948-2010**



Source : IMF

Then, a number of cooperation features emerged in these oligopolies during the decade following the Korean War: the FAO Consultative Sub-Committee on Surplus Disposal, international agreements on wheat and coffee, the Food Aid Convention, the GATT regulation on dairy products, and so on. These institutions were usually based on a solidly established hierarchy between countries and the presence of an uncontested leader. The cooperation in product institutions was amply completed by the residual supplier strategies used by this/these dominant country/countries: USA-Canada wheat duopoly, USA for maize, soybean and rice, New Zealand on the milk market, Brazil for coffee, etc. To guarantee international price stability, these countries acted as residual suppliers and adjusted their exports to their competitors' exports and took on the world storage burden.

The early 1970s featured the start of a period of marked price instability on food product markets. This instability first took the form of a series of price leaps affecting all commodities markets one by one. Crises in demand (the oil producing countries, the USSR and China) have often been highlighted to explain this period of price tension. However, the exhaustion of the market leader countries' stabilization capacities does more to explain the large price hikes than sudden import demands. As was shown by subsequent events—in contrast with the alarmist diagnosis of the time—the shortages that occurred were not caused by an

increasing scarcity of global resources but by changes in the policies of the leader countries. The main reason for the low level of world agricultural product stocks at the start of the 1970s was the reversal in the (storage and production) policies of the leader countries that, from the end of the 1960s onwards, refused to cover the entire cost of stabilizing international markets.

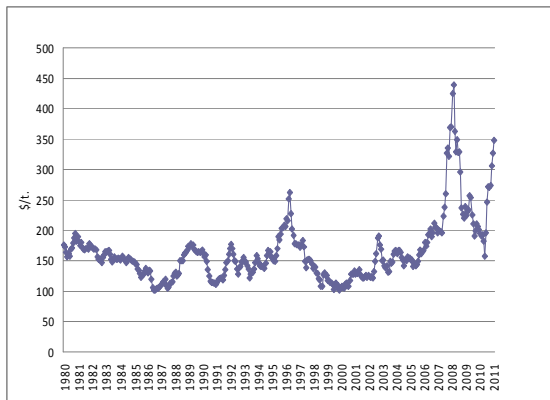
The change in the markets in 1982 (the date of the start of the recession in the United States and the international financial slump) from a situation of shortage to one of surplus—resulting from the fall in import demand—abruptly revealed this lack of a stabilizing mechanism and the disappearance of the safety net that had been provided by the storage policies of the leader countries. At this stage, the oligopolistic structure of the markets was not called into question, but most of the oligopolies were destabilized, whether they concerned tropical or temperate products. The start of the 1980s marked the beginning of fierce competition when new exporters (the European Union and the “New Agricultural Countries” such as Brazil, China, Thailand, etc.) joined the list of suppliers. International prices reflected this new situation immediately. Even though the surpluses were not as substantial as those of the 1960s, prices fell sharply on a scale unequalled since the depression in the 1930s. The fall in international prices came with a fragmentation of international food markets provoked by the differentiation of the price conditions offered by exporting countries. This differentiation obscured the very low level of the prices actually used in the transactions. For commodities such as wheat and coffee, actual prices varied by a factor of between one and two according to the destination.

In developing countries with no financial reserves, the fall in international prices caused the bankruptcy of numerous state marketing boards and triggered the wane of post-WWII state interventionism. For developed countries and their domestic agricultural market systems, the fall automatically resulted in a skyrocketing of the cost of support and revealed the mismatch between the “domestic-centered” model and the excessive involvement in foreign trade.

The opening of the Uruguay Round negotiations in 1985 marked OECD countries’ awareness of the impossibility of continuing with the domestic-centered model. Even though the Uruguay Round negotiations did not come close to achieving the total dismantling of the agricultural support mechanisms in developed countries, the tariffication principle has clearly called into question the disconnect between domestic markets and the international market: while domestic prices remained distinctly higher than international prices, they were now supposed to vary in line with world prices. This revision of agricultural policies negotiated in a multilateral framework took place at the same time as a more rapid, sudden withdrawal in the developing countries that had “adopted” structural adjustment policies. The reduction of import barriers and the closing of state marketing boards were much faster and more radical within this framework. Thus, a clear reunification of the world market (or part of the world market as we shall see) was accomplished from the mid-1980’s to the mid-1990’s.

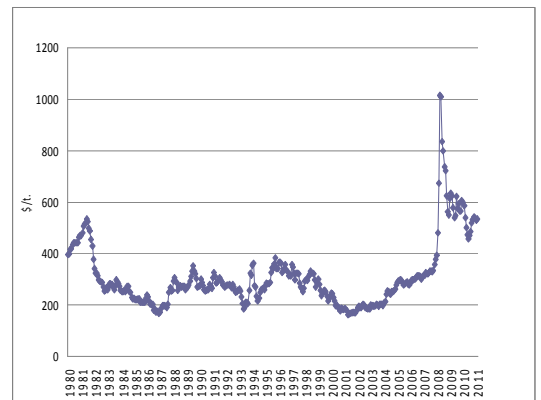
Then, a short period of international price stability began that could be associated with the end of the trade war brought about by the Marrakech agreement. But this stability (Fig. 6), particularly visible in the rice market (Fig. 7), was short-lived. From 2005 on, prices on most of commodities markets started to creep up; they then began to skyrocket in 2007, doubling or trebling within the space of a few months. The price explosion was immediately followed, in mid-2008, by a dramatic fall though they remained higher than they had been before the spike.

**Table 6 : Monthly International Wheat Prices 1980-2010**



Source : IMF

**Table 7 : International Rice Prices (5% FOB Bangkok) 1980-2010**

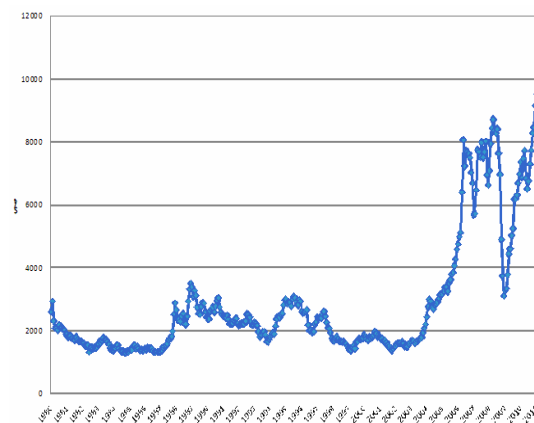


Source : IMF

In addition to its impressive scale, the current international food price volatility has two specificities :

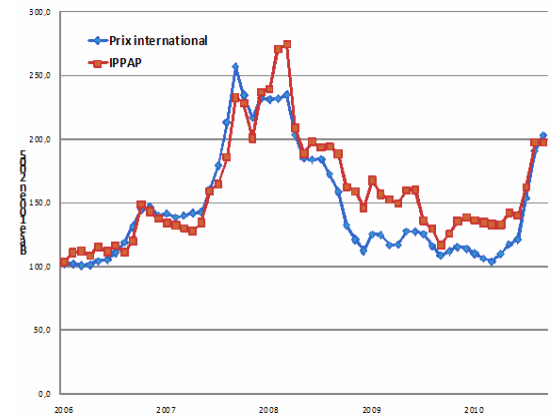
- It is part of a general destabilization of commodities markets, which is frequently illustrated by the oil market but that many other commodities—like copper (Fig. 8)—are also experiencing.
- As a result of liberalization policies, it was transmitted to many countries where farmers had for decades been sheltered from international price volatility. Thus, it was felt by many more actors than the previous periods of volatility. France is a very good illustration of such a country (Fig. 9). It should be noted that some countries, and not just the smallest (China and India for example, Fig. 10 & 11), have kept the disconnect from their domestic markets intact.

**Table 8 : International Copper Prices 1980-2010**



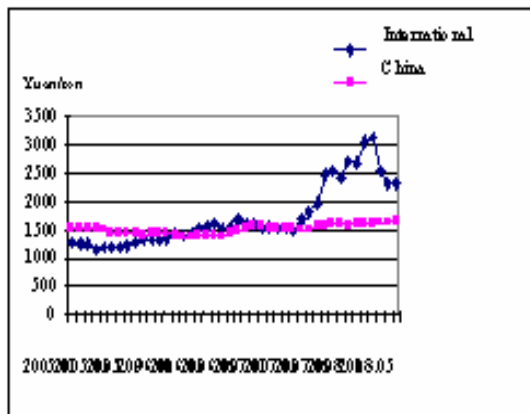
Source : IMF

**Table 9 : Wheat Prices on the International Market and France's Domestic Market 2006-2010**



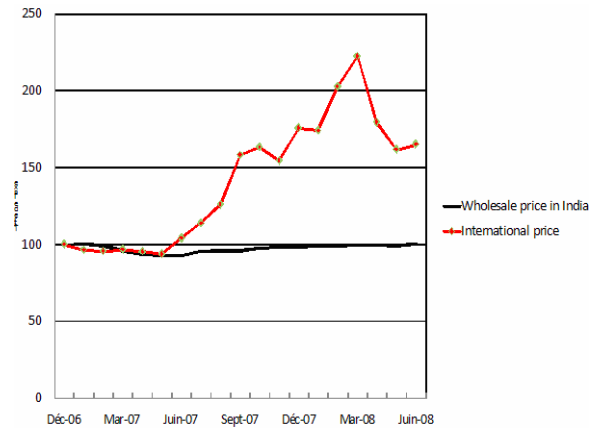
Source : IMF

**Table 10 : Wheat Prices on the International Market and China's domestic market 2005-2008**



Source : OECD

**Table 11 : Wheat Prices on the International Market and India's domestic market 2006-2008**



Source : OECD

#### 4.2. What Can the International Community Do?

In order to discuss an agenda for the international community, it may be useful to distinguish between the three main functions of public action:

- the provision of public goods like information in order to improve coordination and decision-making;
- financial aid or transfers (from one country to another); and
- setting, monitoring and enforcing common rules for national policies.

##### a) The Provision of Public Goods

As far as price instability is concerned, the role of public goods is to allow for better operation of international markets by making them more transparent and by improving the quality of price expectations. Transparency can reduce endogenous instability (speculation, panics, cobweb effects, etc.). Hence, the public good that should be provided by the international community is **information to make the (physical and derivative) markets more transparent**. Speculative bubbles and panic dynamics are fueled by the lack of market transparency. As far as derivatives markets are concerned, the problem mainly affects OTC products. One solution could be to develop OTC standards and widely disseminate aggregated information on OTC activities. Regarding physical markets, some data are already disseminated widely for free by the USDA, the FAO, and the International Grain Council. However, the analyses of these data (provided by private companies) are often expensive. As a result, there is a lack of knowledge on the future evolution of market fundamentals (production forecasts, evolution of the agricultural and commercial policies of the main exporting and importing countries, and other prospective information). This information should be comprehensive enough to allow poor countries to estimate the evolution of import and export parity prices (this means that international prices should be included as well as exchange rates and freight costs). This information could be produced and disseminated by the International Grain

Council (for cereals) and/or by the FAO's Global Information and Early Warning System (both do so partially already). Moreover, many private and public operators, especially in developing countries, do not have a capacity for market intelligence, either because information on international markets is expensive or because they do not have experts able to analyze it. Technical support for national and regional Market Information Systems (MISs) is required in developing countries. MISs will improve private and public stakeholders' expectations and, by so doing, reduce speculation and panic behaviors on both derivative and physical markets (including government behaviors such as export bans).

#### **b) Transfers**

Transfers could solve the problems induced by the effect of international price spikes on the currency reserves of some importing countries (rationing of food imports, decrease in the exchange rate). It could also offset the lack of public funds necessary to manage domestic price instability.

**Food aid.** Food aid is a way to mitigate the effects of price spikes on low-income countries and vulnerable households. This tool refers to food aid in general with its different modalities: distribution of free food rations, cash transfers, targeted subsidies, vouchers, food for work, cash for work, etc. The objective is to allow low-income countries to maintain their import levels and allow poor and vulnerable households to maintain their food consumption levels despite price increases. This tool is, of course, necessary. But, since the Niger crisis of 2005, we know that this tool has proven itself to be insufficient to protect poor households from food insecurity (Michiels & Egg, 2008; Michiels et al., 2008; Blein & Egg, 2009). Moreover, it can cause market distortions in developing countries (food price drops that affect poor farmers).

**Technical and financial support to the governments of developing countries to help them to use derivatives markets.** The idea is to help the governments of developing countries hedge against price spikes on international markets. This has been proposed many times by experts (Faruqee et al., 1997; Dana et al., 2006; Sarris et al., 2010). Theoretically, it should work. But this tool has serious limitations. First, for some products (like rice), there are no relevant futures markets for hedging. Second, for other products, price hikes remain a basis risk in line with the fact that the price of imported food products is only partially correlated to futures prices (because of differences in quality). In practice, there is only one experience with such an anti-risk policy. In 2005, the government of Malawi bought a call option on maize from a South African bank (indirectly, this option was related to the SAFEX). The experience was presented as a success story: it allowed Malawi to import maize at a relatively low price compared to Zambia. However, in spite of its "success," this experience has never been implemented again by either Malawi or any other country. This experience also showed that strong public sector support is a necessary condition to allow governments to use derivatives markets: the government of Malawi received strong technical support from the World Bank and the cost of the call option was covered by DFID (Galtier et al., 2009, pg. 124).

**Credit facilities.** Credit from private stakeholders is not relevant in this case: countries are in deep trouble and need to receive credit very quickly. So, some public sector support is necessary. The IMF proposes two types of facilities: the Compensatory Financing Facility (CFF) and the Exogenous Shocks Facility (ESF). The first one (CFF) has

not been used since 2000 because of the very strict conditions for its use. The second one was used by a few countries in 2008 to mitigate the effects of international price spikes on oil and food products: Ethiopia, Kenya, Kirghizstan, Malawi, Mozambique and Senegal (FAO, 2010). According to some experts, these facilities are not sufficient and other credit facilities are necessary. For instance, Sarris (2009) proposed developing a Food Import Financing Facility (FIFF).

**A public mechanism to stabilize the food import bills of specific developing countries (STABIMP).** The idea is to offset the rise in food bills due to international price spikes. The STABEX negotiated by the EU and ACP countries could be its model. This tool (which could be called STABIMP) should target low-income and/or countries highly dependant on food imports.

**An international fund to finance national or regional price stabilization policies in developing countries.** To apply to this fund, the countries should comply with some governance requirements (a code of practices to guarantee the transparency and predictability of interventions).

Further research is needed to compare the performance of these tools. To a certain extent, they are complementary. Given the reluctance to use and the difficulty of using hedging tools, it is better not to rely on them alone. Moreover, an instrument that can help countries ex post (in the case of a price spike on the international market that generates a balance of payment problem) is needed. Therefore, there is a need for credit facilities or a STABIMP. These tools can be complementary if the countries that can apply to each of them are different. An international fund also seems necessary to allow poor developing countries to develop stabilization policies.

Whatever the tool, strong public sector support is needed, even for private tools. Hedging tools are B-instruments (theoretically private). But, as shown by the Malawian experience, strong public sector support (both technical and financial) is necessary to stimulate its use. Credit facilities are also B-instruments, but for countries in a difficult situation with regard to their balance of payments, the tools should be managed by a public institution (such as the IMF).

### **c) Setting, Monitoring and Enforcing Common Rules**

The role of common rules is to reduce instability on international markets (i) by restricting destabilizing behaviors by states and private operators and/or (ii) by developing specific collective interventions to stabilize prices.

In the first category, we have:

**Derivatives Market Regulation.** Many measures can be implemented, the main ones being to establish position limits for non-commercial operators and tax derivatives transactions (a Tobin type tax). The first measure may seem better as it would not affect commercial operators (those who are in situation to use derivatives to hedge price risks) directly. It has also already been implemented (by the Chicago Board of Trade from the 1930s to the 1990s) and has proved to be effective to contain over-speculation and reduce the probability of bubbles. Other measures (linked more to the organization of derivatives markets) are also needed. For instance, it may be necessary to set up a market authority (when one does not exist) and harmonize sanctions for market abuses.

**Regulations on the use of food products to produce biofuels (flexible biofuel mandates).** Theoretically, the development of biofuels could have a stabilizing effect on



cereals prices. Indeed, it could make the demand for cereals more elastic (more sensitive to changes in cereal prices). At the same time, however, energy price spikes (fuel, oil, etc.) can generate cereal price spikes. According to some experts, this is what happened in 2007-2008 (Christiaensen, 2009). In practice, the biofuel cereal supply is not flexible but bound by “biofuel mandates”. Fixed mandates eliminate the stabilizing effect of biofuels in the case of a price shock on the cereal market. But the mandates can act as a buffer on the transmission of price spikes from the energy market to the cereal market (Wright, 2009). For this to happen, the mandates must be adjusted to reduce the flow of cereals used for biofuels when cereal prices rise. This is already partially the case in Brazil. In the USA, a 2008 law makes it possible to modify the mandates. Generally speaking, since the biofuel industry is subsidized, it is possible for governments to control it. The technical feasibility of variable biofuels mandates should be investigated because an unstable supply could endanger the sustainability of the biofuel industry.

**Creating an international clearing house (International Grain Clearing Arrangement or IGCA).** The idea is to secure the enforcement of contracts on the physical market (between exporters and importers). The idea is as follows (Sarris, 2009): at the international level, there is no legal body with the jurisdiction to guarantee that contracts will be enforced. The only sources of confidence between sellers and buyers are (i) their desire to maintain their reputations, and (ii) the clearing houses of commodity exchanges. These clearing houses have two limitations. First, there is a basis risk if the product needed by an operator is only partially correlated to the exchange’s prices (because of transport costs and/or because of differences in quality). Second, the clearing houses only guarantee financial compensation, not the physical delivery of the product. The goal of the IGCA would precisely be to overcome these limits. The IGCA would proceed by developing links between existing commodity exchanges and their respective clearing houses. In order to guarantee that physical supplies at various exchanges are available to execute international contracts, some of the financial reserves of the clearing houses that would be members of the IGCA could be transformed into physical stocks, for instance by holding warehouse receipts. According to Sarris (2009), the required level of stock at any given time would not be more than 1 million tons of grain equivalent, which means that the amount of money managed would not exceed US\$200 million. This tool aims to reduce private speculation on the physical market. However, three limits may reduce the scope of the IGCA. First, if the governments of the countries where the warehouse receipts systems are based implement export bans, this could make the physical release of stocks impossible. This problem can be managed by specifying that export bans on staple food products cannot apply to the IGCA’s holdings. Second, appropriate exchanges must exist in different regions of the world. Third, most food commodity importers would need to hedge their purchases in these exchanges.

**Regulations on exports restrictions.** Currently, countries exporting food products have the right to restrict their exports as much as they want, including banning exports completely as many did during the 2007-2008 crisis. This is unacceptable because this type of behavior pushes up international prices. Some experts have proposed forbidding export bans and other measures aiming to restrict exports (Lin, 2008). But this solution is not acceptable to exporting countries as the international high-level summit held at

the FAO in Rome in June 2008 showed. Indeed, they need to protect their populations from food price spikes on the international market. The solution seems to be to allow countries restrict to their imports but only in order to maintain sufficient availability to feed their populations. This means forbidding export bans at the WTO but allowing export quotas with the amount of the quota indexed on the needs of the population (consumption – production – stocks). This type of measure could take advantage of the experience of how food aid amounts are decided in the countries subject to climate crises. Based on a calculation of the estimated food balance that determines a country's degree of food deficit, the volume of imported food aid is estimated. Following the same logic, the minimum volume that should remain available in the country can be estimated. Of course, the excess should not be banned from export.

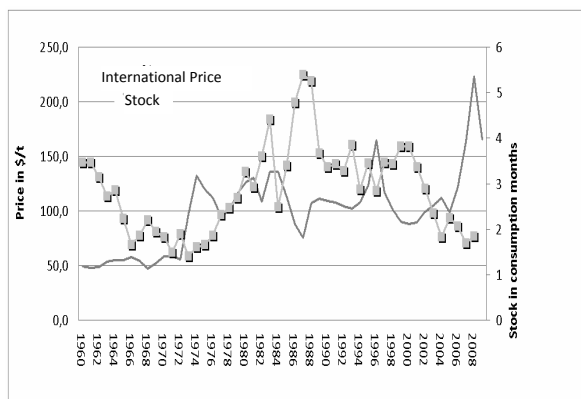
**Regulations on land grabbing.** Following the 2008 crisis, many private stakeholders and states purchased or rented land in other countries to secure their own supplies. This kind of behavior can generate food security problems in the countries where the land is located. It can also narrow the international market considerably and, as a result, more it more unstable. Some international rules on these practices are required.

Generally speaking, these rules will reduce some sources of price instability. One alternative option (but not the only option) is to develop collective interventions to fight against these sources. In this second category, we have:

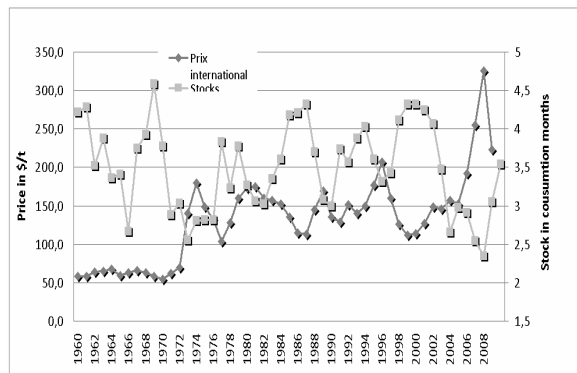
**International public grain stocks.** Empirically, cereal price spikes on the international market have always occurred when world stocks were very low (Tables 10 to 12). This is consistent with the idea that physical stocks are a solution for all sources of instability. They can buffer the effects of bad harvests, mitigate the cobweb effect, and discourage speculative bubbles and panic movements. This means that maintaining sufficient level of stocks is a good way to prevent price spikes on international markets.

The problem is that private stocks are sub-optimal because storage is a risky activity. In order to show that private storage is optimal, Williams & Wright (1991) had to hypothesize that farmers and traders were risk neutral. This hypothesis may be realistic for US economic agents because they have the opportunity to hedge price-risk on futures markets, but it is not realistic for many developing countries. This means that some kind of public storage is necessary to attain stock levels that are high enough to prevent price spikes.

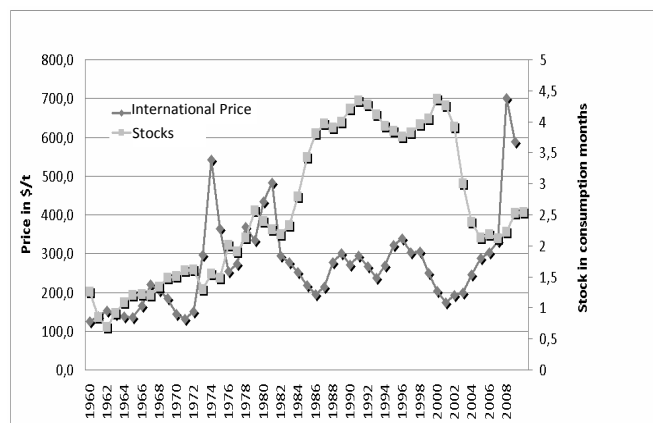
**Table 12 :International Corn Prices and Stocks**



**Table 13 : International Wheat Prices and Stocks 1960-2008**



**Table 14: International Rice Prices and Stocks 1960-2008**



However, governments may lack sufficient incentive to develop public stocks. Most of the time, countries that maintained high level of public stocks did so to attain the objectives of their internal agricultural policies, not to stabilize international markets. Yet, many countries (especially the USA, the UE and China) have been changing their agricultural policies for the last 20 years in ways that imply much lower stock levels (Mitchell & Le Vallée, 2005).

As a result, an international agreement is necessary to share the burden of storage (Lin, 2008). Otherwise, each country would be encouraged to act as a free rider, trying to benefit from the storage of other countries without contributing itself. There are two ways of organizing such burden sharing. The “hard version” is to develop international public stocks for cereals (and maybe other food products). This can be done using national storage facilities. In this case, part of the national public stock is managed by an international organization. The “soft version” is an agreement in which each country commits itself to maintaining at least a level of stock sufficient to cover x months of its own consumption. Part of this stock should be held by public agents (since private stakeholders may have an incentive to amplify price spikes through speculative activities).

This type of measure is subject to two criticisms. The first criticism relates to the high cost of stocks. Indeed, immobilizing large quantities of food products has high technical and financial costs. Nevertheless, if doing so makes it possible to avoid price spikes on the international market, the benefits probably outweigh the costs. The second criticism deals with the difficulties involved in organizing the governance of international stocks. This difficulty is said to have been illustrated by International Commodity Agreements or ICAs (Gilbert 1996). These ICAs are said to have encountered all sorts of problems, with the main problem being the development of plethoric stocks (cocoa) and the breaking of agreements following disagreements between exporter and importer countries (coffee). It is important, however, to discuss the relevance of these criticisms. Indeed, the ICAs aim first to maintain the prices rather than stabilize them, and most of the problems they encountered come from this. The ICA experience does not conclusively prove that it would be impossible to manage an international public stock whose aim was limited to price stabilization. Of course, the price band that determines public stock

purchases and sales would need to be updated regularly in order to follow long-term trends in international prices.

**International land reserves.** Sarris proposed the constitution of land reserves managed by the international community. These land reserves would be cultivated only in case of international price spikes. If it is less expensive to manage fallow land than deal with physical stocks, this is a way of lowering the cost of price stabilization. However, there are two inconveniences. First, beginning cultivation takes a certain amount of time and cannot offset a climate accident. Second, this measure may generate a cobweb effect: high prices may encourage cultivation of the reserves, leading to production excesses the following year pushing down prices. In this case, international land reserves could increase international price instability.

**An international virtual stock.** The idea is to be able to counter-speculate on derivatives markets in the case of speculative bubbles (Von Braun & Torero, 2008). This proposal has been highly criticized. Indeed, it is difficult to implement. There are two reasons for this. First, it is difficult (or even impossible) to estimate the price band that separates “normal” prices from bubbles. Second, this virtual stock may be subject to speculative attacks. Accordingly, the stock should be large enough to prevent such speculative attacks. This implies very expensive stocks. Even with very large stocks, this instrument is still very risky: the probability of losing a large amount of money is high. This makes it difficult to mobilize the international community. Last but not least, the same result (reducing speculative bubbles) can be attained in a more effective, less costly and less risky way by regulating derivatives markets.

To summarize, two categories of tools should be implemented. The first category consists of ex ante tools. Their aim is to reduce some sources of price instability by restricting destabilizing behaviors on the part of states and private operators. The tools in the second category are ex post tools. They are ways of lessening the destabilizing effects of the different sources. Both categories complement each other.

Moreover it should be noticed that some tools are generic: they can have a stabilizing effect on many sources of instability. This is especially the case of international public tools (physical stocks) that are a way of fighting climate shocks, cobweb effects, speculation and so on. Other tools are more specific to some sources of instability, or can even reduce some sources of instability while increasing other sources (for instance, international land reserves may amplify the cobweb dynamic). Hence, we have two approaches: developing a wide range of specific tools (to cover most of the sources of instability), and developing international public stocks (or, at least, an agreement on sharing the burden of storage among countries). These two approaches can be complementary.

Last but not least, it should be noted that national and international initiatives to manage international price instability are complementary but may also be contradictory. Indeed, reducing international price instability may sometimes be achieved to the detriment of countries' capacity to protect themselves from it (and vice-versa).

Both strategies are necessary, however. International price instability needs to be lowered in order to avoid the development of widespread protectionism (self-sufficiency strategies) that would lead to inefficient resource allocation and drive up the average price of food. Moreover, such protectionism would narrow the international market and, by so doing, make it more vulnerable to climate shocks (that increase price

instability). This phenomenon has been noted since 2008 with the strong rise in international land grabbing. It is also necessary to reduce the shortsighted strategies developed by countries to protect themselves from international instability. Because these strategies (especially export bans) increase international instability, their scope should be reduced.

At the same time, there is also a need to allow the countries to control their import and export flows. Indeed, stabilizing international prices is not enough to stabilize the price of imported food products as these prices also depend on exchange rates and freight costs. Moreover, controlling imports and exports can also be useful in solving domestic instability due to internal causes (such as bad harvests). It is a much less costly alternative to using large national public stocks.

#### 4.3. Elements to Take into Account when Designing an International Governance System to Manage Price Instability

All the available or possible instruments to manage price instability require international governance. Many institutions already exist but they do not always have a mandate to take charge of these instruments.

In order to design international governance, it can be useful to distinguish between the three main functions of this governance:

- The first function is to provide **public goods** like information and knowledge in order to improve coordination and decision. HLPE has been commissioned by CFS to provide a conceptual framework to manage price instability and assess different strategies and instruments. This will be done in 2011 but will not become a permanent analysis capacity like the intelligence unit proposed by Von Braun & Torero. Permanent information flows and updated diagnoses are needed and could be provided by International Commodities Bodies.
- The second function is to manage financial aid or **transfers** from one country to another. This means determining which countries would provide, which countries would receive, what amounts would be involved, and what implementation conditions would be required. The OECD is an example of the type of institution that could fulfill this function.
- The third function is to set, monitor and enforce common **rules** for national policies. These rules could apply to international trade, the regulation of derivatives markets, land grabbing, and the use of food products to produce biofuels. Ad hoc mechanisms could be designed to enforce these various rules. Another option would be to rely on the WTO's Dispute Settlement Body (as Von Braun and Torero have proposed for the enforcement of an international virtual stock, for instance).

Finally, in any international institution, countries are organized into geographic or economic groups. These groups are not always relevant to how international markets affect their food security. One solution could be to organize country groups based on shared interests from this standpoint (for example: food insecure countries that are highly dependent of international markets; large food-exporter countries, etc.). These groups, and particularly of the group made up of the more vulnerable countries, could defend their position in several international forums.

# Conclusion

## **Agricultural price volatility is problematic.**

Price volatility refers to erratic fluctuations, variations of such magnitude and frequency that instead of sending signals to agents as market fluctuations do, they exceed producers' and consumers' capacity to adapt (OECD, 1982).

Excessive fluctuations in agricultural prices harms:

- vulnerable consumers because they threaten consumers' food security (in the case of price hikes);
- farmers because they make the profitability of investments extremely variable, limiting incentives to intensify production and causing bankruptcies (when prices collapse); and
- national economies, because they threaten their fragile equilibriums. Indeed, for the poorest nations, agriculture's preponderant role as a source of income and the proportion of household spending devoted to agricultural products generate a risk likely to spread to the entire economy (systemic risk).

Agricultural price variations are not harmful in and of themselves: the problem is volatility. Indeed, price variations are, in principle, signals that enable actors to adapt their behaviors to the state of market fundamentals. In the case of erratic fluctuations (see the definition of volatility above), these signals are obscured, which causes agents to allocate their resources sub-optimally, and sometimes even causes panics that amplify the initial imbalances. Volatility must be viewed over different lapses of time depending on the actors concerned.

## **The problem of price volatility cannot be resolved by treating its symptoms alone; its causes must also be cured.**

Until now, the recommended approach for tackling excessive price volatility has sought to limit its negative effects:

- by promoting private mechanisms allowing different economic operators (producers, traders, para-state offices, etc.) to protect themselves from price risks (futures contracts, insurance);
- by providing government support for vulnerable households (safety nets: consumption subsidies, food grants, monetary transfers); and
- by using macro-instruments (STABEX, IMF facilities) to provide ex-post support to governments.

This approach aiming to cure only the symptoms has, however, shown its limitations. Private risk management instruments are not very widespread, notably in developing

countries, and safety nets, in addition to being potentially very costly, have generally not been able to offset food security problems when prices skyrocket.

The insufficient and inoperative nature of measures aiming only to limit the negative effects of price volatility calls for the joint implementation of mechanisms aiming to limit price volatility by acting directly on its causes.

**The causes of price volatility are multiple and intertwined.**

There are numerous causes of agricultural price volatility. For agricultural price volatility on the domestic level, one can distinguish between:

- exogenous causes, mostly natural in origin (climate events, pests), that have a strong impact on agricultural production levels (notably in developing countries where intensification is low), and over which agricultural market actors have little influence;
- endogenous causes, that is to say causes within agricultural markets themselves, which are linked to (i) the behaviors of actors—producers, intermediaries, consumers, governments—who are in a situation of uncertainty, (ii) to the specific characteristics of these products (production times, cobweb effects, land rents, storage and transport costs) on the supply side as well as (iii) the characteristics of the demand (not very reactive because the product is a staple good, subject to export restrictions so as to ensure domestic supply);
- causes imported from other contexts (international price volatility) or other sectors over which agricultural market actors have little to no influence (exchange rate variations, changes in oil prices, the shift of investments from classic financial markets to agricultural markets, etc.).

The causes of agricultural price volatility, described here for domestic markets, also have an effect on international agricultural commodities markets. Thus, while international price volatility is a cause of imported volatility from the standpoint of countries or regions, it too has endogenous and exogenous causes.

These causes are intertwined and mutually reinforce each other during feverish periods. While some causes, notably exogenous causes, may be the source of a price hike, other causes can amplify this hike. For example, the sharp price hike in 2008 on the physical and financial markets of many countries seems to have been the result of a combination of several factors listed above (increased demand, natural hazards and a temporary supply deficit, a low level of stocks, an oil price spike, export restrictions, financialization on agricultural commodities derivatives markets, rising uncertainties).

**The causes of price volatility are likely to have a stronger effect in the future.**

The interplay of the fundamentals of the agricultural supply and the agrifood demand makes it so that agricultural price volatility is likely to be greater in the future. Indeed, food markets will remain tense because of rapid growth in demand (population growth, urbanization, the growth of agrofuel) and slower growth in the agricultural supply

(productivity reserves to exploit under the constraints of more costly fossil energy and respect for the environment). In short, the multiple causes mentioned above are likely to accentuate agricultural price volatility in the future.

- Exogenous causes. According to the Intergovernmental Panel on Climate Change (IPCC), climate change will very probably lead to the multiplication and aggravation of natural weather hazards.
- Endogenous causes (within the market). It is possible that the reduction in public stocks, added to the growing financialization of futures markets for foodstuffs will make price forecasts more difficult for the actors in these markets and, ultimately, lead to greater price volatility.
- Imported causes. Heightened trade interdependency (country accessibility, smaller transfer costs) could lead to greater sensitivity of domestic prices to the volatility of international prices. International price volatility could itself be increased by the fact that the countries that are influential in international trade are becoming increasingly sensitive to climate risks (overlapping of exogenous and imported causes).
- Causes imported from other sectors. The stronger link between the prices of food and energy products has increased the risk that instability in the oil and natural gas markets will be transferred to food products. Similarly, there is the risk that the growing financialization of agricultural markets and the fluctuations in exchange rates may exacerbate agricultural price volatility.

**Treating the causes of price volatility implies public intervention in conjunction with private mechanisms (the market alone is not enough).**

To contain agricultural price volatility, the choice of instruments should be made in function of the causes of volatility.

For instance, in theory, the market can be used to limit price volatility in the case of natural instability. The development of commercial trade is justified by the possibility of relying on the “law of large numbers” since deficits from one zone can be offset by surpluses in another zone. In this case, economic operators can use insurance-type instruments to cover their risks. Public intervention will nevertheless be necessary to compensate for market operation difficulties.

In the case of endogenous instability, however, only public regulatory intervention is an effective way to lessen uncertainty and its unwanted effects (control of foreign trade, stock management). Taking care of sufficient and stable volume supplies and stock is as important as price stability.

In practice, however, it is impossible to distinguish exactly what proportion of price volatility comes from natural, endogenous or imported causes. Public intervention aiming directly to limit agricultural price volatility is therefore necessary.

In all cases, to limit agricultural price volatility, it would be good to seek to improve agricultural market operations through public investments (infrastructures, information



systems) and through recourse to private mechanisms enabling better matching of supply to demand over space and time (private storage, warrantage, etc.).

**Acting on the international scale is necessary but insufficient (one must also intervene in domestic and regional markets).**

Several points argue strongly in favor of envisaging intervention on the international scale even though price instability is far from limited to this scale. Action can be taken on both its effects and causes.

Although the majority of the population in developing countries feed themselves with local products, rising prices on international markets have a serious effect on urban populations in heavily importing countries. In addition, although the relative stability of agricultural prices on international markets prior to 2007 did not have a stabilizing effect on the price of local products in domestic markets, the 2008 crisis showed that a sharp price spike could destabilize domestic markets. Some instruments, such as special safeguard mechanisms or the removal of import taxes, are used by vulnerable countries to protect themselves. They are, however, relatively constrained by the international trade rules established at the WTO, notably as regards tariff instruments. Even though LDCs are rarely brought before the WTO's Dispute Settlement Body (DSB), these rules should be relaxed for them. Systems for insuring against strong price hikes for importing countries are being studied, but the margin for action provided by these instruments drops with repeated shocks.

It therefore seems necessary to find the means to act on the causes of excessive price instability in these markets rather than merely attempt to offset their effects after the fact.

Several possibilities can be studied:

- Improve transparency of and access to market information, both in regard to stock levels and the various operators' positions equally.
- Foster the creation of public and/or private stocks in order to maintain a stock-to-consumption ratio that would reassure markets, and coordinate international actions in this area. These questions must be analyzed in greater detail.
- Supervise export restrictions. Export restrictions are legitimate tools for exporting countries that want to protect their populations from sharp price hikes. However, in a tense market, they help destabilize the market and accentuate price hikes. International coordination and the setting of rules on these measures are desirable; their implementation conditions require in-depth analysis.
- Harmonize and regulate commodity derivatives markets so that they best reflect physical fundamentals. The role and scope of excessive speculation in agricultural price volatility are highly controversial, especially since these markets have become very complex and opaque. Nevertheless, it seems that a consensus is emerging on the greater correlation between commodities derivatives following market financialization and on the need for some degree of regulation in derivatives

markets. The regulation movements underway in the United States and the European Union raise the question of global harmonization of regulations for these markets.

Once again, intervening in international markets will not be enough given the challenge of stabilizing the price of local products on domestic markets.

**Intervening in domestic and regional markets implies mobilizing a combination of instruments.**

The analysis of various national experiments revealed a certain number of cases in which intervention lowered price volatility and made decisive progress in the fight against poverty and food insecurity. In these cases, two price regulation instruments were used to keep prices within a dynamic band:

- buffer stock management (smoothing over time), and
- control of one's foreign trade (smoothing over space).

These instruments to regulate the operation of agricultural markets directly must not be envisaged in isolation, but as integral parts of an overall institutional environment, in addition to measures setting an ambitious overall policy for rural areas, and in collaboration with the private sphere. In all cases:

- The provision of public goods (infrastructures, transportation, communications) is necessary to facilitate market operations and create an environment that is conducive to the development of private activities.
- By lowering uncertainty and creating a conducive economic environment, direct public action on markets should facilitate the operation and development of private risk-coverage instruments.
- "Safety net" mechanisms aiming to ensure direct transfers to the most vulnerable households are necessary.

Thus, a combination of instruments is necessary. The instruments must notably act on both the causes and effects of agricultural price volatility, mobilize both public and private actors, and intervene on the national and international levels.

**The implementation conditions of market regulation instruments are crucial.**

The case studies conducted showed that certain conditions are crucial to the capacity of the instruments set up to limit agricultural price volatility effectively.

- Policy decisions must be based on solid expertise: in successful experiences, the intervention relied on a dynamic price band system based on international prices. It is necessary to adapt intervention levels constantly and avoid over-production.
- Managing intervention costs (and possible excess costs in the case of strong incentive measures) is a crucial consideration.

Price stabilization policy implementation conditions are decisive for these policies' capacity to limit price instability. Indeed, the case studies revealed situations in which policies aiming to limit price volatility turned out to be ineffective (no reduction in price volatility) or harmful (increased volatility).

Comparative analysis of the case studies showed that, in order to avoid these harmful effects, the government must:

- have sufficient access to the financial resources necessary to implement the announced policies;
- be able to monitor compliance with the policies set up by minimizing avoidance strategies; and
- be able to ensure that the policies set up are predictable so as to avoid crowding-out effects.

These three conditions (financial capacity, enforcement capacity, and predictability) depend on the capacity of the government (or, when appropriate, the public authorities of regional unions) to set up policies effectively and transparently.

One way to improve policy effectiveness and predictability is to create structures to foster consultation and negotiation between public and private actors. This must be accompanied by capacity-building programs so as to ensure that each type of actor has the ability to defend their interests (asymmetry problems).

#### **Some potential lines of action deserve further study.**

Analysis of national experience with lowering agricultural price volatility revealed a range of points that require further analysis.

- Reflection—unique to each nation and based on consultation among actors—on what constitutes “excessive” agricultural price volatility is necessary. When should price volatility be seen as abnormal, as socially unacceptable? This will make it possible to determine intervention levels.
- The cost of agricultural price regulation instruments is often put forth as an argument in favor of no intervention, notably when it comes to public stocks. However, few studies provide information on the benefits linked to the existence of these stocks: cost-benefit analysis must be developed for the various possible instruments. Consideration of all the inter-related factors in the economy calls strongly for the production of detailed analyses, and modeling would then make it possible to clarify the assumptions as to how the economy operates and synthesize the results.
- Analysis has revealed the importance of public and private partnerships in regulating agricultural prices. The analysis of these partnerships must be continued, notably in line with information dissemination (improving access to information so as to limit anticipation errors) and stock management (designing contractual frameworks to work with private operators to minimize the cost of public storage and crowding-out effects).

- Analysis has shown that, when prices skyrocket, the countries used a combination of border measures and buffer stock management. It is necessary to adjust WTO rules to encourage countries—particularly the poorest countries—to implement ambitious agricultural policies to fight food insecurity and poverty (policy space).
- The regulatory framework for financial markets—especially agricultural commodity derivatives markets—must be studied so as to define mechanisms that help limit speculative bubbles.
- International coordination and the setting of rules are desirable so as to improve transparency and available information, particularly on stocks, ensure the preservation of a stock-to-consumption ratio able to reassure markets, and provide guidance for export restriction measures. Their implementation conditions require in-depth analysis.
- It would be good to re-examine the complex question of the feasibility of levying extremely low taxes on transactions to both discourage excessive speculation and help the poorest countries finance their agricultural policies.

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## Appendix

### Appendix 1. Countries, products and periods studied

	Thailand	India	Indonesia	Guinea	Burkina	Madagascar	Mali	Kenya	Zambia	Malawi	USA	Canada	EU	Brazil
Products	Rice	Wheat rice	Rice	Potatoes	Cotton	Rice	Rice	Maize	Maize	Maize	Maize	All agricultural products		
Periods	1950-2009	1947-2008	1968-2002	1992-2009	1971-2009	1973-2009	2004-2009	1930-2009	1930-2009	1947-2008	1929-2010	1944-2009	1957-2009	2002-2010

### Appendix 2. Pursued policies

		Thailand	India	Indonesia	Guinea	Burkina	Madagascar	Mali	Kenya	Zambia	Malawi	USA	Canada	EU	Brazil
Frontiers measures	Import control			X	X		X	X	X	X	X				
	Export control	X	X				X	X			X	X	X	X	
Domestic measures	Buffer stock	X	X	X					X	X	X	X		X	
	Input subsidies	X	X	X	X	X	X	X		X	X	X	X	X	
	Harvest credit	X					X								
	risk mitigation fund					X									
	Security stock	X						X	X	X					X
	Consumption subsidies		X			X	X				X		X	X	X

