



# Price Volatility in Agricultural Markets

Evidence, impact on food security and policy responses

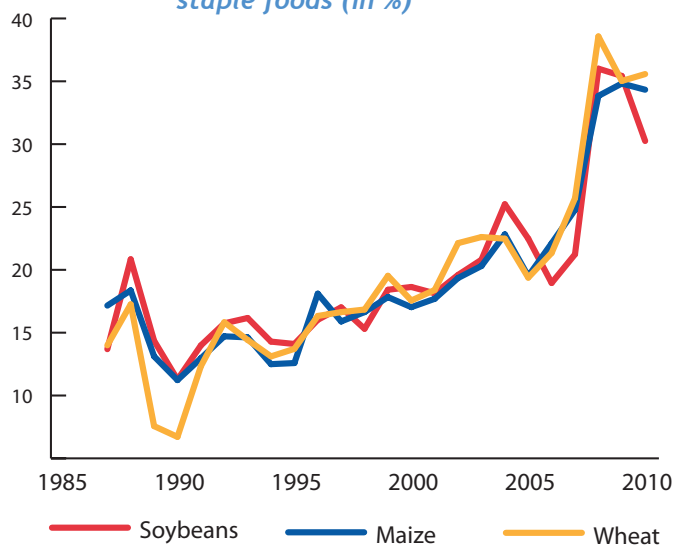
Recent bouts of extreme price volatility in global agricultural markets portend rising and more frequent threats to world food security. To reduce countries' vulnerability, policies should improve market functioning and equip countries to better cope with the adverse effects of extreme volatility.

## Variability and uncertainty

Volatility indicates how much and how quickly a value changes over time, for example the price of a commodity. While this concept may seem obvious, a precise definition of volatility is elusive and measurement prone to subjectivity. In economic theory, volatility connotes two principal concepts: variability and uncertainty; the former describing overall movement and the latter referring to movement that is unpredictable.

Price fluctuations are both a normal attribute and a necessary requisite for competitive market functioning. The essence of the price system is that when a commodity becomes scarce its price rises which induces a fall in consumption and more investment in the production of that commodity. However, the efficiency of the price system begins to break down when price movements are increasingly uncertain and subject to extreme swings over an extended period of time.

**Figure 1:** Implied price volatility of selected staple foods (in %)



Source: FAO (2010)

Note: Implied volatility represents the market's expectation of how much the price of a commodity might move in the future.

- Volatility in agricultural markets seems to have increased
- Extreme price movements of agricultural commodities pose a threat to world food security
- Policy measures should improve market functioning and increase countries' resilience to shocks

Historically, bouts of such extreme volatility in agricultural commodity markets have been rare. To draw the analogy with natural disasters, they typically have a low probability of occurrence but bring with them extremely high risks and potential costs to society.

## Global food system vulnerable

There is emerging consensus that the global food system is becoming more vulnerable and susceptible to episodes of extreme price volatility (Figure 1). As markets are increasingly integrated in the world economy shocks in the international arena can now transpire and propagate to domestic markets much quicker than before.

Increased vulnerability is being triggered by an apparent increase in extreme weather events and a dependence on new exporting zones, where harvest outcomes are prone to weather vagaries; a greater reliance on international trade to meet food needs at the expense of stock holding; a growing demand for food commodities from other sectors, especially energy; and a faster transmission of macroeconomic factors onto commodity markets, including exchange rate volatility and monetary policy shifts, such as changing interest rate regimes.

What is more, financial firms are progressively investing in commodity derivatives as a portfolio hedge since returns in the commodity sector seem uncorrelated with returns to other assets. While this 'financialisation of commodities' is generally not viewed as the source of price turbulence, evidence suggests that trading in futures markets may have amplified volatility in the short term.

## Low income countries suffer most

Extreme price volatility comes at a cost, since market actors will have difficulty planning ahead and adjusting to the fluctuating market signals. As unpredictable changes, or "shocks", surpass a certain

critical size and persist at those levels, traditional policy prescriptions and coping mechanisms are likely to fail.

Episodes of extreme volatility—especially large, unexpected price upswings—are a major threat to food security in developing countries. Their impact falls heaviest on the poor, who may spend as much as 70 percent of their income on food. The lack of dietary diversification aggravates the problem, as price increases in one staple cannot easily be compensated by switching to other foods.

As for farmers who are highly dependent on commodities for their livelihoods, extreme volatility can result in large income fluctuations for which they have little or no recourse, such as savings and insurance. The delay between production decisions and actual production creates additional risks, as farmers base their investment and planning on expected future prices.

### Coherence and coordination are key

In past episodes of extreme volatility, policy interventions have frequently failed, since budgetary constraints and the sheer scale of price increases have generally precluded any meaningful success at stabilisation. Accordingly, interventions have been short term, limited to the micro level such as targeted consumer subsidies and safety net programmes, or even counterproductive, such as export restrictions which compounded uncertainty and undermined the role of trade. Many countries also tried to use food reserves to buffer volatility, but these have proven unmanageable, costly and ineffectual, especially if shocks lasted for extended periods of time.

Instead of engaging in isolated measures, authorities should seek better coherence and coordination in their policy responses. These must yield both greater assurances of unimpeded access to global supplies, and improved confidence and transparency in market functioning, especially in the major commodity exchanges. An improved public global surveillance system on export availabilities and import demands would help temper uncertainty and enable countries to equip themselves better before the full impacts of crises transpire. Such measures would also help stabilise the market.

In addition, more reforms of existing instruments, such as the Compensatory Financing Facility and the Exogenous Shock Facility of the International Monetary Fund, could help vulnerable countries cope during times of crisis by providing global safety nets. These instruments need to act *ex ante* by providing import financing or guarantees with minimal or no conditionality to alleviate the burden of credit and foreign exchange constraints, which have afflicted countries' ability to meet food needs in past crises.

Safety nets at the international level are not the only option. Countries themselves need to explore or reinforce measures to protect the most vulnerable, including through emergency food reserves. Such reserves should not try to fight volatility, but to mitigate its consequences by providing poor people direct access to food. In the long run, countries can lower their vulnerability by raising agricultural productivity for a diverse set of crops that proves both competitive and sustainable, as well as by promoting dietary diversification.

### Further information

- **Price Volatility and Crises in Global Food Markets** (preliminary title), FAO, forthcoming in 2011
- **FAO Food Outlook, November 2010**  
[www.fao.org/giews/english/fo](http://www.fao.org/giews/english/fo)
- **World Food Situation Portal**  
[www.fao.org/worldfoodsituation](http://www.fao.org/worldfoodsituation)

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