SAFEGUARDING FOOD SECURITY IN VOLATILE GLOBAL MARKETS

EDITED BY

ADAM PRAKASH

FIAT PANIS

ISBN 978-92-5-106803-8

Cover design by Giancarlo de Pol
Cover photo (centre) ©FAO/Ami Vitale
Typesetting and layout by River Valley Technologies (river-valley.com)

Safeguarding food security in volatile global markets

Edited by Adam Prakash

Food and Agriculture Organization of the United Nations, Rome, 2011

Contents

Overview

This four-part volume gathers together the latest thinking on the issues and controversies surrounding price volatility in global food markets. Drawing from theory, empiricism and heuristic evidence, the book contributes to the debate on the causes, consequences, and challenges of food price volatility. Food security and vulnerability are placed at centre stage, especially in their demands on shaping innovative policy design.

In setting the stage, PART ONE of the book defines the problem and asks why volatility matters. For the purpose of economic enquiry, the book characterizes volatility by the concepts of variability and uncertainty; variability describes overall movement while uncertainty refers to unpredictable movement. As households and planning agencies are able to cope with predictable variation, however, unpredictable changes – or "shocks" – are of primary concern.

Popular discussion often confounds volatility with high prices. It is possible for prices to be high but show little variability, or to be low but variable, but in practice, price levels and volatilities tend to be positively associated. This is largely owing to low carryover, which reduces current availability, exerting upward price pressure, limiting the possibility of using inventories to respond to positive demand or negative supply shocks, and thereby increasing volatility.

Regular price fluctuations – "day-to-day" or "normal" volatility – are both a typical attribute and a requisite for the functioning of competitive markets. The essence of market functioning is that when a commodity becomes scarce its price rises, which induces a fall in consumption and signals more investment in the production of that commodity. Importantly, there is a need to know why prices have risen to counteract the scarcity in an efficient way. But the efficiency of the price system begins to break down when economic shocks give rise to price movements that are increasingly uncertain and precipitous, and in the limit the system becomes largely redundant when prices undergo "extreme volatility" – or "crisis" to use popular terminology. Since when shocks surpass a certain critical size or threshold and persist at those levels, traditional policy prescriptions and coping mechanisms are likely to fail.

Historically, bouts of extreme volatility in global food 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. Being global events, they pose extreme covariate risks, and present the greatest challenge to policy-makers. However, there are signs that portend to the rising vulnerability of the global food system to large, exceptional shocks from a growing number of uncertain sources. Indeed, the stability of the global food system can no longer be taken for granted.

The seeds of crisis sown in past events change little, for instance the 1974 crisis and the 2006-08 turmoil, but time and again, policy-makers and the multilateral agencies have failed

to prevent history from repeating itself. Complacency is partly to blame, but culpability can also be attributed to over-supplied markets and ensuing low prices which dominated the period after the 1974 crisis and further, a new policy doctrine enshrined towards dependence on global markets. By assuming world prices as a reference for measuring economic efficiency, trade liberalization would enhance resource allocation through exploiting comparative advantage. This increased reliance on markets was also concomitant to a progressive withdrawal of the state and intervention schemes from the food and agriculture sector, on the grounds that the private sector was more efficient from an economic point of view.

Against these trends, public and private sectors in both developed and developing countries saw a limited need to invest in agricultural production and infrastructure, as food imports appeared an efficient way of achieving food security. Such perceptions, though, were radically changed when in 2006 prices of most internationally traded foodstuffs began to soar.

Episodes of extreme volatility are a major threat to food security in developing countries. Typically, low-income food-importing countries that are dependent on foreign aid and are characterized by high levels of foreign debt are the most vulnerable to positive food price shocks. The detrimental impact of rising volatility on these economies rests on their structural disposition: poor infrastructure, poor supply response, incomplete markets, weak capacity to import, sovereign risk, dependence on a single dominant staple, and susceptibility to climatic disturbances. Rising volatility can, in countries falling under this typology, increase the incidence of poverty, as well as putting a strain on government expenditure and borrowing, thus worsening debt sustainability. The deterioration of the terms-of-trade may destabilize the economy, thus impeding economic growth.

Despite the lack of academic consensus on the magnitude of these costs, the most compelling cases for the negative effects of high and volatile food prices can be made for its welfare impacts on household food security and the manner by which it overwhelms coping mechanisms and undermines investment incentives. Structural issues preclude good times compensating for the bad times, which leads to irreversibility of impact on societies.

Acknowledging the sheer pressure on global agriculture if it is to meet the challenge of a rising global population - a doubling of food production required in developing countries in the four decades to 2050 - there remains little scope for productivity growth to deviate from this task without instigating further bouts of turmoil. However, achieving this task remains far from certain. Beyond the uncertainty driven by environmental factors, including a changing climate and land degradation, the trajectory of the global food system is no longer in the main determined by the resolution of demand and supply fundamentals. External shocks are emerging from a complexity of sources and are having a profound influence in shaping the agricultural landscape. Many of these shocks transcend international borders, spilling over from other sectors, and have the potential to amplify and perpetuate volatility. Their complexity compounds uncertainty, and is driving vulnerability in food systems.

In this vein, there is a strong case that volatility is both a cause and consequence of vulnerability. The argument is framed in the context of both the resilience and response of food systems to shocks. When shocks are large – exceptional shocks – they can instigate a vicious cycle of rising fragility in response mechanisms that deepen and perpetuate volatility and its negative impacts on food security. The growing exposure of vulnerable countries to bouts of market volatility is a challenge to all, and beckons the question of what policies governments should pursue to cope with an increasingly unpredictable environment, especially in the longer term.

PART TWO reviews past policy responses during episodes of turmoil. It is seen that authorities, including marketing boards in vulnerable food deficit nations, have attempted to

intervene, but in most instances, budgetary constraints and the sheer scale of price increases have precluded any meaningful success at stabilization. Accordingly, interventions have been short-term, limited to the micro-level such as targeted consumer subsidies and safety nets and also to policies at the border, such as lowering tariffs and restraining exports. For illustrative purposes, this section of the book explores how the lack of policy coordination among major producing and consuming countries, instigated exceptional bouts of turmoil in global markets, especially for rice.

Part two also elucidates on the disingenuity of more recent initiatives advocated. These proposals often abound in calling for a return to market management and control, ranging from coordination of supplies, either through national or global buffer stocks, including international commodity agreements (ICAs), to indirect market interventions via so-called "virtual stocks" in organized exchanges. However, such proposals suffer from the fact that any policy that purports to manage the fundamentals of a commodity market, cannot control the actions of myriads of private agents that are a feature of all food markets. Moreover, speculators can normally counteract the actions of all but the most well financed intervention activities.

While it would be incorrect to claim that ICAs failed, they have not had significant success in reducing the volatility of the prices they set out to stabilize. By restricting exports, they probably did succeed in raising prices but this is not helpful in the current context in which the international community wishes to limit food price variability, or at least limit its effects. Many commentators have reverted to public sector storage as a possible response to apparently inadequate private storage. However, public storage crowds out private storage so the mere introduction of a public storage programme increases the problem that it was designed to solve. Public storage is therefore costly; moreover, it is unlikely to be very effective in countering price spikes as the storage authority can only sell what it has previously bought. The knowledge that it cannot counter price spikes will leave it vulnerable to speculative attack. The history of buffer stock storage in the international commodity movements bears out these views.

An important "new reality" of the global food system that has sparked considerable controversy and debate, often polarized, concerns the influence of commodity speculation on food prices. On one side, it is recognized that speculation is crucial to the proper functioning of markets, there is strong conviction that unlimited speculation is not. The central argument here is that once speculation becomes "excessive" - to the point that the marginal benefit of the liquidity that speculators provide exceeds the marginal cost of the damage that they do to the price discovery function - there is need for intervention. As the prices broadcast from the major commodity exchanges reverberate around the world and affect billions of lives, a serious and more directed inquiry into the trading on the international commodity futures markets should commence.

As traded food security commodities are now firmly established in the investment class of financial assets, **PART THREE** of the book examines the role of information and expectations by investors in destabilizing the price system. In particular, how "excess volatility" might arise given the behavioural dimensions of markets when traders possess diverse information. Though much of what is conjectured in part three has intuitive appeal, given that data supporting theoretical mechanisms and underpinning behaviour are unobservable, this limitation confounds testing hypotheses in standard models and so robust empirical evidence is by and large absent. An important, though fairly self-evident point, is that if "fair price" or "fundamental value" could be observed, it would be straightforward to measure the

excessiveness of volatility in prices. Only a new methodological approach - one that analyses orders and transactions, segregated by trading types - can start to separate fact from fallacy.

In addition to extreme volatility as an outcome of irrational behaviour, it is also seen that the phenomenon could equally be a rational response to when working stocks fall critically low. In regimes of high volatility that are determined by the level of inventories of leading international suppliers, "bad news" creates "panic" and has a much more dramatic impact on the market behaviour and sentiment than when stocks are ample. More generally, analysis in this part of the book shows the importance of stocks (via the competitive storage model) in explaining the most prominent features of the dynamics of commodity prices, including episodes of isolated price spikes and conditional high price volatility. As for policy, it might be tempting to infer that the corollary of this conclusion would be to increase inventories *per se* to prevent turmoil and crisis. While this may be true to diffuse the prospect of isolated turbulence in domestic markets, or if Malthus proves to be right, in that global scarcity in food markets becomes critical, ample and highly liquid *commercial* stocks held by major grain exporters appear a necessary and sufficient condition to instil confidence in world markets and to lessen the probability of future bouts of extreme volatility. This point also adds credence to the earlier conclusion that private non-distortionary stockholding in the market place has a far more effective role than does public stockholding.

Given the realities of the current world food system and the absence of, or at best limited, success of past interventions, **PART FOUR** argues the need for a new policy dialogue. Beginning with the multilateral trading system, World Trade Organization rules and disciplines are much less effective in situations of high world market price than they are in cases of depressed prices. This asymmetry is largely a consequence of the original objective of this system that aimed at disciplining situations leading to depressed prices in world markets adversely affecting exports. Thus, domestic and export subsidies, as well as import barriers, have been the target for reform, while policies that have the opposite effect (such as export taxes and prohibitions) have been largely tolerated. But the extent to which the fundamentals of world food markets have changed, the multilateral rules must adjust accordingly to be able to address trade issues that arise when food is no longer cheap. This would also add to the credibility of the system and foster an environment conducive to more trade openness on the part of importing countries, to the extent the latter are assured that the world market is a reliable source of supply, both in periods of plenty and in periods of relative scarcity.

In addition, under the present aggregate minimum commitment of the Food Aid Convention, diverting food aid resources away from their prioritized use may seriously compromise the timely availability of resources for meeting pressing emergency needs as well as the needs of chronically food-insecure populations. The present Convention offers little room for providing any relief to countries facing difficulties from high food prices. It follows that serious consideration should be given in the renegotiation of the Convention to raising its aggregate minimum commitment.

Multilateral agencies have responded to past turmoil in both food and financial markets by establishing global safety-net schemes with the objective of assisting countries in financing food imports. These schemes have been valuable, but they were set up as crisis response measures and for a limited duration. As high and volatile prices look likely to continue, what is now required is a longer-term response, with emphasis on established market mechanisms. One approach, reliant on the purchase of call options, provides a promising way forward. This approach would enable vulnerable food importing countries to limit the impact of volatility in world food prices on their domestic markets and could be integrated with national food security structures. It would constitute a natural extension of trade-based

policies recently advocated by multilateral donors. A structure through which multilateral agencies would intermediate optionality, such that costs and ownership remained with the countries themselves, would be appropriate. Taken together with an agreement to limit use restrictions on food exports, the market-based approach can re-establish food security on a trade basis and obviate the need for costly national food stockpiles.

The world, however, needs a greater understanding of the characteristics, role and possibilities of futures markets in today's globalized environment. A global contract with multiple delivery ports containing safeguards against "excessive speculation" and assurances of commercial viability could help remedy the current market shortcomings. A hybrid quote system of dollars, and say, Special Drawing Rights could prove to be an interesting test case for commodity pricing, and would assuage sharp currency-related price movements in markets.

The complexity of the new marketplace has placed exceptional demands on accurate and timely information on commodity developments and on the external drivers which influence market outcomes. It is argued that among the root causes of recent price volatility was the lack of reliable and up-to-date information on crop supply and demand and export availability. The problem is widespread. Despite the increase in the volume of raw data and the greater speed of transmitting information over recent years, the capacity to analyse the mass of often conflicting and variable-quality data and to disseminate the resulting analyses has not kept pace, particularly in the public, free-access sector. Furthermore, at the national level, the capacity of many countries to collect and process basic agricultural data has often deteriorated, and public statistical services have difficulties undertaking such forward-looking exercises as crop forecasts, let alone comprehensive supply/demand analyses and trade forecasts. More widely, traders' inability to give proper weight and context in processing new information may lead to an over- or under-reaction in price response. Therefore, a corollary of enhancing information provision in the public domain would be both to improve the efficiency of the price system as well as gearing-up countries towards impending turbulence.

Another issue that requires urgent addressing concerns biofuels, especially those derived from food staple crops. Expansion of biofuels that is unpredicted, or so rapid that it outpaces the ability of the economy to accommodate it, reduces carryover stocks of grains and oilseeds, raises food price levels and increases the threat of further price spikes in response to any unforeseen short-run disturbance. If, as is likely, these policies are maintained and even expanded, their worst effects might be mitigated by food security call option agreements. If designed carefully and implemented before a new, possibly much more serious, food price spike occurs, such contracts could facilitate a diversion of commodities away from energy use to maintain the consumption of vulnerable populations during times of scarcity. They might also help to reduce pressure on global prices when undertaken by wealthier countries with significant food or feed-based biofuels industries and thus mitigate price hikes. These options are not a universal solution to the food security challenge and the exact nature of such contracts and their implementation would need to be tailored to the needs of specific markets. Prudent humanitarian food policy would seek to mitigate the effects of such spikes to the well-being of poor grain consumers in affected developing countries, whether exporters or importers. "Diversion option contracts", triggered at a certain price level for grains used as biofuel feedstocks could be part of such a policy.

Countries themselves can do a great deal to shield food security given the prospect of turmoil. Part four devotes considerable attention towards operational guidance on establishing social safety nets, emergency reserves, self-targeting and other schemes to

protect those most at risk. In view of the adage that "the best cure for high prices is high prices", similar guidelines on implementing "smart subsidies" to incentivize production and to improve supply response are also presented.

Recognition that food insecurity is, above all, a manifestation of poverty, this book concludes with a call for greater investment in agriculture. Around 75 percent of the poor live in rural areas and many depend on agriculture for their livelihoods. They eke out a living on farms of often less than two hectares, work as small entrepreneurs or earn meagre wages in the agriculture-related processing, storage, seed or feedstuffs sectors. They are poor because they rely on too few and too unproductive assets. A profound and prolonged lack of investment in agriculture has restrained the overall productivity of the sector, sometimes to the extent that it no longer stands as a viable base for poverty reduction. A lack of investment has also reduced the ability of farmers to cope with price volatility. Moreover, the cyclical tendency of investment flows appears to have pronounced price peaks and troughs.

Investment needs are assessed, instruments identified and financing possibilities sketched out in programme proposal to reach a world free of hunger by 2025. By setting an annual target, a feasible trajectory is cast for necessary action. A twin-track approach of affording vulnerable societies access to more productive resources and support by safety nets is presented in the programme. The programme also promotes the adoption of more sustainable production methods and investment in the conservation of natural resources, institutions, infrastructure and job creation in rural areas outside of agriculture. It invests in people and physical assets alike; it addresses both the need to raise output and productivity and the need to improve the sustainability of production methods. Furthermore, given the impossibility to sequence public investments counter-cyclically, the programme suggests that public investment should be allocated in equal instalments. If implemented, a natural corollary of the programme would be to lower the vulnerability of those most at risk from exogenous shocks, both weather-related and economic ones, especially those which lead to irreversible harm to societal systems and human capital.

A way forward

When global systems fail, it is improbable that the actions of individuals alone will provide the necessary resolve. A coherent and effective system of governance of food security at both national and international levels is warranted. Global governance is concerned with reaching consensus in optimal policy choices and policy coordination. Global governance has important implications for shaping a more stable market environment; for instilling greater confidence, predictability and assurance in markets; for guaranteeing access to food by low-income food-deficit countries and for better equipping governments to the challenges that lie in the wake.

The pressing issues emerging from this book that require governance at the global level are as follows:

Strengthening market signals for global price discovery: Commodity investment in organized exchanges has emerged as an integral part of the global food system. As an asset class, commodities that are key to food security, may be vulnerable to the behavioural dimensions of investors, whom on average as reflected by market outcomes, do not always fulfil rationality. Trading that pays little regard to market "fundamentals" can distort signals arising from these exchanges. Therefore, a challenge is how to enhance the price discovery function of international commodity exchanges. Clearly, trading behaviour that gives rise to excessive volatility does not contribute to this function. Furthermore, as with any financially traded asset, there is a need to ensure that commodities are

accorded with the same level of jurisprudence and regulatory provisions across all commodity exchanges that are important for global price discovery and trade.

Introducing global grain contracts on exchanges: Large international exchanges could construct global contracts for grain and oilseed markets that would complement their current product offerings. Instead of tracking prices that converge with cash values in a single geographic area, global contracts could track "cheapest to deliver" commodities by designating delivery points all over the world.

Strengthening global market intelligence: An improved public global surveillance system on export availabilities and import demands would help temper uncertainty in organized markets that play a role in global price discovery. It would also enable countries to equip themselves better before the full impacts of crises transpire.

Ensure the supply and demand of grain-based bio-fuels are market compatible: Countries with support regimes for biofuels need to review such policies in the light of their impact on food security. As a market compatible instrument, call options with domestic biofuel producers could be introduced which would guarantee the mutually advantageous diversion of grain from biofuels production to enhance food security in crises.

Strengthening trade rules and making them symmetric for instilling greater confidence in global markets: crisis and turmoil at the global level can abruptly erode the confidence in market functioning. Liberalization will reallocate a country's exposure away from domestic shocks towards global shocks. For many governments, this was brought home to them in past episodes that found that reliance on trade for food security objectives is likely to fail in exactly those circumstances in which it is required. But global shocks will be significantly lessened if countries restrain from discretionary export bans and import restrictions.

Reform the Food Aid Convention: The present Convention provides insufficient scope in giving relief to countries that are vulnerable to episodes of high food prices. Consideration must be given by the FAC to raise aggregate minimum commitments during such episodes.

Enhance global safety nets: Reforms of financing facilities under existing institutions, could help vulnerable countries cope during times of crisis by providing global safety nets. These institutions need to act *ex ante* rather than *ex post*, e.g. by providing import financing or guarantees to alleviate the burden of credit and foreign exchange constraints that have afflicted countries' ability to meet food needs in past crisis.

At the national level, there is no single catchall solution for framing optimal policy design, for there exists substantial heterogeneity among countries in terms of their stage of economic development, dietary patterns, in agri-climatology, in geography (e.g. proximity to seaports) and net-trade statuses. Even within countries, the proportion of the population who are landless, the urban-rural composition of the population and expected changes to the ratio over time will also have an important influence on policy design. The challenges to be addressed if we are to build resilience and to protect the most vulnerable against global turmoil can nonetheless be generalized as follows:

Investment: Improving overall productivity of a diversified basket of food staples, supported by investments in research and development, infrastructure promoting irrigation and drought resilient crops and their hybrids through incentive frameworks.

Market completeness and institutional capacity to manage risk: Enhancing the role of financial institutions in providing smallholders with access to credit and instruments for managing risks.

Protection: Providing social safety nets for the most vulnerable, including emergency reserves and self-targeting schemes.

Futures and call options to manage risk: Strengthening and promoting market-based non-distortionary instruments to instil greater predictability in import expenditures. Exploring national call options for diverting value-added indigenous crops to food systems in emergencies.

Returning to the analogy between natural disasters and food crises, clearly any form of prevention is much costlier after a major disaster, than before it, but perceptions about the need for prevention are strongest only after a disaster not before it. It is this fundamental

problem of "cognitive failure" that must be overcome at a global level if the world is to be assured of a governance structure that will avoid crises in food markets and ensure smooth flows of food to all.

Adam Prakash
Statistics Division (FAO)