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## Policy Brief No. 26

### Food Price Volatility - Implications for Development Policy

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During periods of excessive food price volatility food and nutrition insecurity aggravates for about 800 million people worldwide who are suffering from under-nutrition and micro-nutrient deficiencies. Others who live close to the thresholds of food and nutrition insecurity are concerned, too. It is the poor and vulnerable populations in developing countries that are affected most. Even short-term episodes of hunger may affect health and success in life of children in the long term. Since 2007, global agricultural markets have experienced large price swings, which increased concerns regarding the stability and reliability of the global food system (Figure 1).

Increasing interlinkages between the food, feed, financial and energy markets have considerably contributed to rising and volatile food prices. Another factor contributing to food insecurity and price volatility is climate change. An increase in productivity and resilience of food production as well as properly designed and implemented policies to areas such as agricultural markets, stocks, trade and regional cooperation and social protection can help to minimize the impacts of excessive food price volatility on consumers in developing countries. Thus, measures to prevent and respond to volatility exist. It is a matter of choosing the right policy to determine the best set of measures under the given global and local

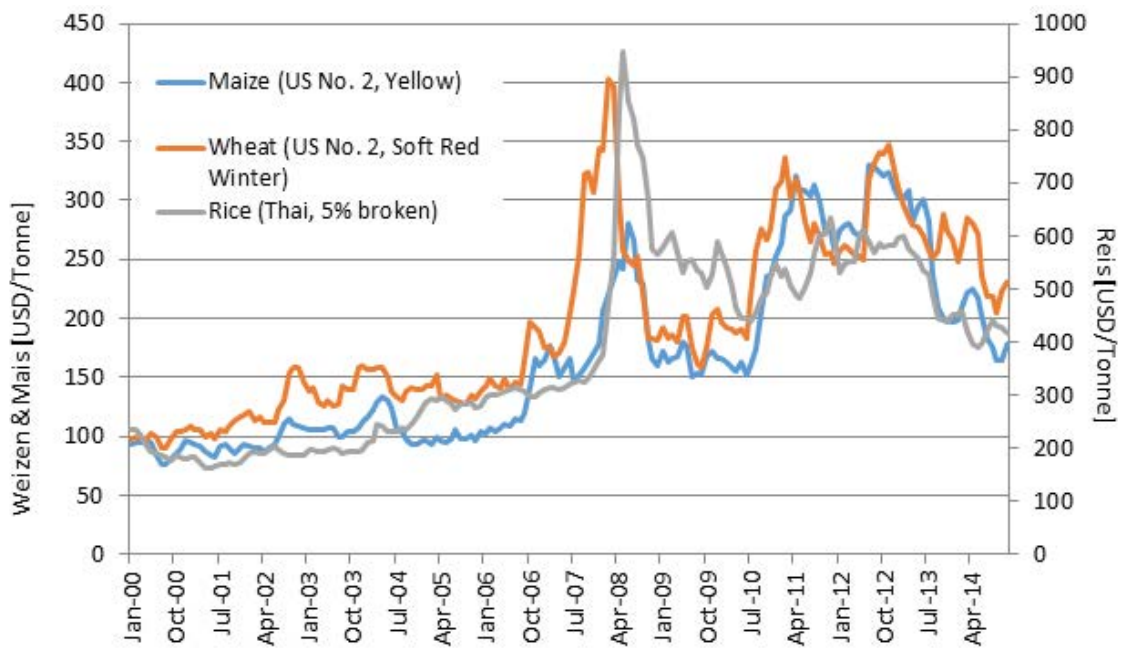


conditions. Some measures are long-term, such as innovations in agriculture, whereas others have short-term effects. However, actions focusing on short-term effects are not able to provide comprehensive solutions. Extreme food price volatility calls for international agreements and global governance arrangements to better facilitate policy direction in relation to food and nu-

trition security.

This Policy Brief analyses the drivers and consequences of price volatility in the food market and the role of policy as a tool to reduce impacts of food price volatility on the poor population. This includes early warning information to detect emerging food price risks and volatility.

**FIGURE 1:**  
Increased volatility since 2007 for maize, wheat and rice  
Data source: FAO GIEWS - Global Information and Early Warning System and Bloomberg Data



### Drivers and causal impacts of food price volatility

There are various causes of food price volatility and its impacts on food security. Figure 2 shows the complex interlinkages and highlights the causal impacts of food price volatility. Food price volatility is deeply related to markets where goods and services are exchanged and where prices

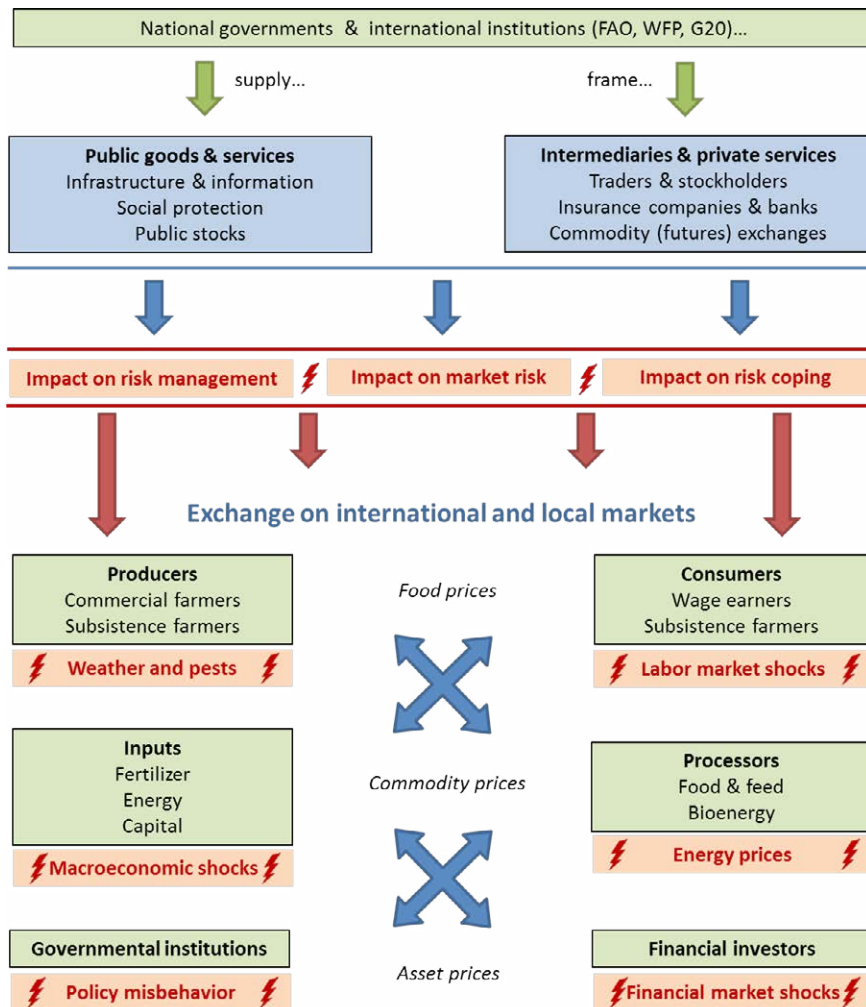
are formed. Thus, food markets cannot be considered in isolation: spatially separated markets are linked through trade whereas food markets are influenced by commodity, asset and financial markets. This can influence trading and allocation decisions of actors who are also involved in food markets. Due to these complex interlinkages and interactions between several actors and economic sectors, food



prices are not the mere result of farmers' supply and consumers' demand. Neither is price volatility solely determined by harvest and income shocks: food and feed processors as well as biofuel refineries form part of the agricultural value chain. Seeds, fertilizers, crop protection and machinery are important inputs to increase agricultural productivity. However, they may also lead to an increase in financial risk because investments have to be paid out of uncertain harvest revenues. Governments and institutions as depicted at the top of the conceptual framework in Figure 2 can intervene

in markets by changing tariffs, imposing export restrictions or by holding stocks, and selling or buying grains, for example. It is crucial to analyze both the demand and supply sides of the world food equation in order to understand food price volatility causes. The causes of price changes can be grouped into three categories (Figure 3):

- Root causes (also known as exogenous shocks);
- Conditional causes (market conditions and political environment); and
- Internal causes (also known as endogenous shock amplifiers).

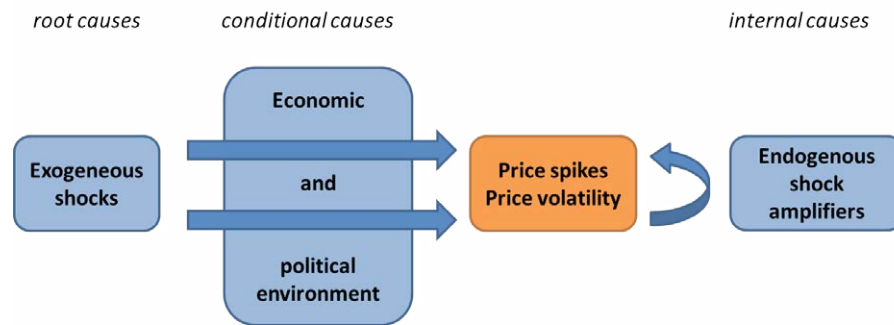


**FIGURE 2:** Conceptual framework of the causal impacts of price volatility. Source: Kalkuhl, Braun und Torero (2016)



**FIGURE 3:**  
**Framework of the causes of global food price volatility and spikes.**

Source: Kalkuhl, Braun und Torero (2016)



The root causes include extreme weather events, oil price shocks, economic and demand growth as well as economic shocks. The conditional causes include the concentration of production and export and a lack of information and transparency, for example. The internal causes can include excessive speculation and financialization of agricultural commodities (see Box 1), discretionary trade policies (export bans, aggressive imports) and food stocks-to-use.

### Food price volatility consequences

#### Excessive food price spikes can result in social unrest

Periods of excessive price spikes have led to social unrest, for example in Africa, where a correlation between social unrests and food crises caused by excessive volatility could be observed. During the global food crisis period of 2007-08 a higher number of food riots occurred on the continent.

#### Volatility can influence behavior

Volatility can have an impact on the behavior of governments, producers, consumers, processors and traders who might

have difficulties in coping with excessive volatility. This leads to further policy misbehavior and misallocation of resources (see Figure 2). Our research found that increased volatility on international markets had weakened the supply response to higher prices of global production. Hence, global food supply has not fully responded to higher prices as producers are reluctant to take on increased market risks.

#### International food price volatility can also affect domestic food markets

Price shocks and dynamics at the global level are transmitted to local food markets. Millions of poor consumers in developing countries are exposed to shocks in international markets. Price changes at global markets serve as an important indicator for local food security risks, although the latter are also shaped by local supply conditions and the institutional environment to provide insurance and social assistance.

#### Higher food prices reduce the real income of poor consumers

Poor consumers spend a large percentage of their income on food. So when food prices rise, this becomes an issue. The poorest are hardly able to reduce their calorie intake



any further. Instead, they often cut expenditures on other domains such as health or food quality, which ultimately can lead to micronutrient deficiencies. Whereas poor consumers become even more vulnerable under such circumstances, others such as net-sellers can benefit from higher food pri-

ces. However, market instabilities make it difficult for farmers to forecast crop prices during a harvesting period. This lack of information becomes particularly severe for farmers who are living far from markets and have no access to information technologies such as mobile phones and radio.

### Financial markets, food commodities and speculation

Following the stock market crash in 2002, commodity futures emerged as a popular asset class within investment portfolios for several financial institutions and the general investment community. Consequently, speculation activities significantly increased. Speculation has been criticized for being responsible for the commodity price boom in the 2000s. Figure 4 sketches the rapid growth of trading in commodity futures and options in the last years (see GLOSSARY for technical terms).

Speculation is an important feature of derivatives markets as it mitigates the hedging need, provides liquidity to the market, facilitates risk sharing and, in general, allows markets to perform their institutional role. Speculation is thus a necessary part of financial markets. Excluding food commodities completely from speculative transactions would be counterproductive as it would impede the price identification process and would even increase volatility.

It is not speculation that matters for destabilizing markets, but speculation in excess, i.e., speculation far above the hedging needs that causes prices to differ from “economic fundamentals”. In this context, laws and regulations become

particularly important to the development of sound financial markets. The 2008 food price crisis arose also because the deeply flawed global financial system exacerbated the impacts of supply and demand movements in food commodities.

Reforming the global financial system should therefore be seen as part of the agenda to achieve food security, particularly within poor net food-importing countries. The passage of Dodd-Frank Act (or Wall Street Reform) under Barack Obama's Presidency on July 21, 2010, was an encouraging step in this regard. With specific relation to agricultural commodities, the Dodd-Frank Act set “strong measures to limit speculation in agricultural commodities”, which materialized in tighter and more elaborate position limits on exchange-traded contracts of 28 commodities.

It is likely that the Trump administration will introduce amendments to the Dodd-Frank Act or even cancel it. Currently, a Commission has been entitled to produce a report on the Dodd-Frank Act's future. In the EU, the legal framework of the financial market reform (MiFID) is under concluding revision.

**GLOSSARY**

**Derivative markets:** Financial markets that deal with trading of derivatives. Derivatives refer to a group of instruments that derive their value from an underlying asset, such as commodities, foreign currencies, or interest rates. Futures, options, swaps are types of derivative instruments widely used for hedging or speculative purposes. Derivatives can be traded through exchange markets or over-the-counter (OTC) markets.

**Futures:** Standardized derivative contract to buy or sell a fixed quantity of a particular asset such as a commodity, a currency, bond or stock at a pre-determined price in the future. The contract can be physically settled, through delivery of the underlying, or cash settled.

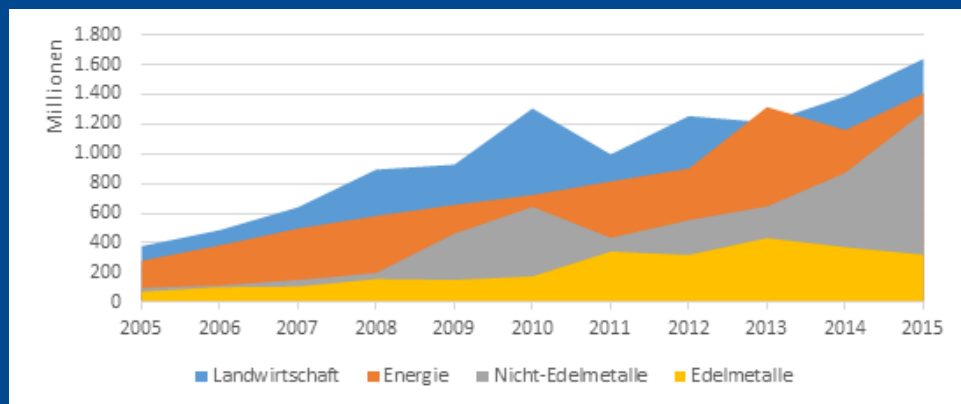
**Hedging:** Selling or buying derivatives contracts to manage risks of price changes in the commodities directly related to the operator's core business. For example, a producer of wheat could use futures contracts to lock in the price and later deliver the crop so to prevent losses from potentially unfavourable future price changes.

**Liquidity:** Liquidity reflects how easy or difficult it is to buy or sell a particular asset, such as a commodity derivative, without affecting the price significantly. Liquidity is characterized by a high level of trading activity. Assets that can be easily bought or sold are liquid assets.

**Option:** Derivative contract offering the buyer the right, but not the obligation, to buy or sell a financial asset at an agreed-upon price during a certain period of time or on a specific date. Option contracts are often used in commodities, securities and real estate transactions. The main difference between futures and options is that options give the holder the right to buy or sell the underlying asset at expiration, while the holder of a futures contract is obligated to fulfil the terms of his contract.

**Position Limits:** Pre-set limits defining the maximum number, or value, of derivatives contracts a specific class of traders can hold in one particular underlying security at a particular moment.

**FIGURE 4:**  
Trading volume.  
Number of futures  
and option contracts  
traded  
Source: *Elaborations  
on FIA, 2017* Y-axis  
Trading volume



Policy action:  
Reducing volatility

**Improving information**

Improving the information base about global agricultural markets and the trans-

parency of commodity markets has been an important goal of the international community. The Agricultural Market Information System (AMIS), established in

<sup>2</sup> AMIS was launched in 2011 by the G20 Ministers of Agriculture following the global food price hikes in 2007/08 and 2010. AMIS provides a platform to coordinate policy action in times of market uncertainty.



2011 as a G20 initiative, aims to enhance information transparency in order to align policy responses in times of crises. Investment in an information platform that brings together different data and incorporates a bottom-up method for data collection would surely improve such systems.

### **Regulating excessive speculation**

Excessive speculation has the potential to increase the risk of food price volatility. Therefore, policies should be directed at curbing it. This can be achieved by increasing the transparency of actors and transactions by introducing appropriate reporting obligations. Because grain and oilseed markets are so closely connected to speculative activities in financial markets, agricultural commodity markets should not be exempted from relevant regulation of banking and financial systems. An important alternative could be to strengthen responsible investment approaches of the financial sector. During a food price crisis, temporary constraints on commodity markets could be imposed. With the Directive on Markets in Financial Instruments (MiFID), the EU has established important measures regarding the transparency and monitoring of financial markets. This Directive is currently under revision in order to improve the functioning of the financial markets and to ensure a high degree of harmonized protection for investors. Changes due to come into effect (MiFID II) in January 2018 can help to reduce excessive price development in food markets.

### **Stocks, trade and regional cooperation**

With unreliable international markets, some governments turned to distortive

trade restrictions and others sought to become more self-sufficient. These measures are often an expensive way to reduce vulnerability due to international market shocks. Regional grain storage for West African countries and for member states of the Association of Southeast Asian Nations (ASEAN) can help to stabilize food supply and reduce costs. Strategic food reserves, particularly if regionally coordinated, can be efficient in overcoming temporary supply shortages without distorting the sustainability of local markets.

### **Biofuels and energy prices**

Energy prices have proven to be an important determinant of food price spikes and volatility in two ways. Prices of energy-intensive inputs increase while the price for energy rises. The rise in costs in turn leads to a decline in profitability and production. As a consequence, supply decreases. The original biofuel boom based on expected increasing prices for fossil fuels in 2005 to 2011 has significantly contributed to price volatility and temporarily extreme price dynamics in grain markets. Biofuel policies such as indirect and direct subsidies and biofuel mandates in the United States and the European Union were ill-designed and only corrected with delay. However, flexible biofuel policies can also help stabilize prices and reduce volatility. Flexible biofuel mandates allow for relaxing the blending requirement in years of excessive food price dynamics if compensated for in normalized years by bringing agricultural products to food and feed markets instead of biofuels.

<sup>3</sup> Tadesse, Algeri, Kalkuhl, von Braun (2014) Drivers and triggers of international food price spikes and volatility. Food Policy. <http://www.sciencedirect.com/science/article/pii/S0306919213001188>



### Climate change and technological change

Climate change is strongly connected to food security and price volatility and mitigating climate change affects food systems. Reducing emissions in the agricultural sector causes changes in land-use and cultivation systems. These trade-offs can be dealt with most effectively when policies address climate change and food security with the same priority. Policies should directly address the reduction of greenhouse gas emissions and foster investments in climate change adaptation, infrastructure and technological advancement in seeds and cultivars.

### Social protection and nutrition policies

Actions related to agricultural production, trade and reserves are necessary but not sufficient for overcoming a food and nutrition security crisis. As volatility is inherent in agricultural markets, health and nutrition risks must be addressed through social protection and responsive health services. Priority policy actions which can be combined and adjusted to the situation are called for in the following areas: 1) Social protection and nutrition actions to ensure the basic nutrition security of the vulnerable; 2) protective actions, such as cash transfers and employment programs, to mitigate short-term risks; and 3) preventive health and nutrition interventions to avoid long-term negative consequences. In addition, governments can improve nutrition-specific approaches by focusing on the functioning of the financial sector in ensuring there is improved access for the poor to financial services.

### Further global governance action

International extreme food price volatili-

ty calls for global governance action that requires fundamental institutional arrangements which are currently lacking. A legitimate and innovative set of strategic bodies is required to help coordinate actions. Global nutrition policy needs an organizational home, and should not be split among different agencies (FAO; WFP; WHO; UNICEF; WTO). This approach should allow for a legalized policy authority to facilitate policy direction in relation to food and nutrition security. This global governance institution should not only address current trends, but also have a perspective on future decades, in order to recognize uncertainties and opportunities.

This Policy Brief is based on the peer-reviewed book "Food Price Volatility and Its Implications for Food Security and Policy", edited by Matthias Kalkuhl, Joachim von Braun, and Maximo Torero, and published by Springer as an open access title. (Freely) downloadable as a PDF or in HTML: <http://link.springer.com/book/10.1007%2F978-3-319-28201-5>.

This Policy Brief was developed within the project „Analysis and Implementation of Measures to Reduce Price Volatility in National and International Markets for Improved Food Security in Developing Countries“, which is funded by the German Federal Ministry of Economic Cooperation and Development (BMZ).



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