Part 2
Why were high food prices not an opportunity for poor farmers?

Producers in developing countries have faced real declines in prices in most of the last 50 years. The result has been a lack of investment in agriculture and stagnant production. These formed the background to the recent problems in international food system and they also made it more difficult for developing countries to deal with these problems. So, on the face of it, the high food prices, and the possibility that they might persist (even if not at the peak levels reached in early 2008), looked like an opportunity for small poor producers. But was it? Would producers invest and increase productivity and production in response and generate agricultural growth? Most developing country producers are far distanced from what happens on international markets, so increasing food prices there do not necessarily mean higher prices for poor producers. For this to be the case, those high international prices need to be transmitted across national borders and through marketing chains. However, higher output prices alone are still not sufficient. Incentives to invest and produce also depend on how much the costs of inputs such as seeds and fertilizers have risen. Producers need access to affordable inputs. They also need access to affordable credit. Even where adequate incentives are in place, a positive supply response from producers can be blocked by a range of supply-side constraints, especially a lack of transport and market infrastructure for bringing any increase in production to market. In many developing countries, none of these conditions is adequately met. As a result, higher prices on international markets have not triggered a positive supply response by smallholder farmers in developing countries.

Do world price increases reach developing country producers?

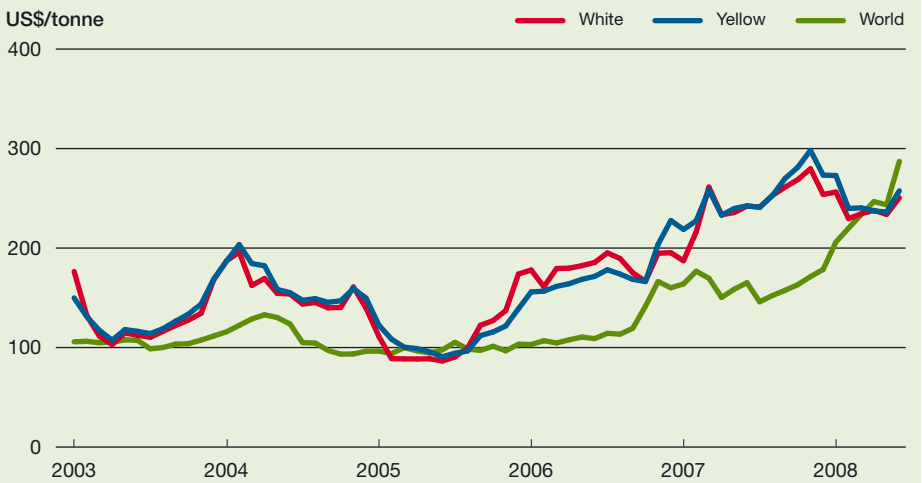
Food prices increased sharply in many countries in line with the international price boom. In others, domestic food prices did not follow the increase in world prices or were slow to adjust. Unless higher prices actually reach agricultural producers in developing countries, those producers will not benefit from increasing prices on world markets and they will have no incentive to increase productivity and production. There are two questions to consider: first, do international price changes lead to price changes at national level; and second, if national prices do change, do they filter through to producers?

In theory, prices in a country that is linked to the world market in a free-trade environment will move together with international prices expressed in the same common currency. If the national price is above the international price, imports will take place until the national price becomes equal to the international price after allowing for any transport costs. Increased exports fulfil the same equilibrating role if the national price is below the international price. Under these conditions, "price transmission" is complete – the price of a commodity sold on competitive world and national markets can only differ by the cost of transporting it. Commodity analysts view fast and complete price transmission as an indication of the efficient functioning of a market. However, in practice, a number of factors can limit the extent to which world price changes "pass through" to the national level.[6]

Policies at the border affect the extent to which world price changes pass through to national markets. For example, export restrictions or taxes hinder the transmission of price signals. *Ad-valorem* import tariffs, unless they are prohibitively high, allow world price changes to be fully transmitted to domestic markets in relative terms. Therefore, an increase in the international price will result in a proportional increase in the domestic price at all points in time provided that tariff levels remain unchanged. Domestic markets can also be insulated by large marketing margins that arise from high transport costs. Especially in developing countries, poor infrastructure, transport and communication services give rise to large marketing margins because of the high costs of delivering the locally produced commodity to the border for export or the imported commodity to the domestic market. High transport costs and marketing margins hinder the transmission of price signals as they may prohibit arbitrage. Other factors, such as consumer preferences for specific attributes of locally produced food or quality differences between domestic and internationally traded commodities determine the extent to which domestically produced food can be substituted by food purchased in the world market and, thus, affect price transmission. The distinction between short-run and long-run price transmission is also important. Changes in the price in one market may take some time to be transmitted to other markets for a number of reasons, such as policy interventions, adjustment costs, complexity of the marketing chain, contractual arrangements between economic agents, storage and inventory holding, delays in transportation or processing or even simple inertia. As a result, price transmission is rarely complete or rapid.

In the case of maize in Africa, transport costs, a weakening US dollar and consumer preferences hindered the transmission of price signals from the world market, and domestic prices responded slowly. White maize is not readily substituted in consumption with internationally traded yellow maize. Nevertheless, increases in the volumes of maize traded, both formally and informally, across the Eastern and Southern African regions mean that national markets are integrated with one another. Statistical analysis using monthly maize price data for 1998–2008 suggests that both yellow and white maize prices in

South Africa: maize prices

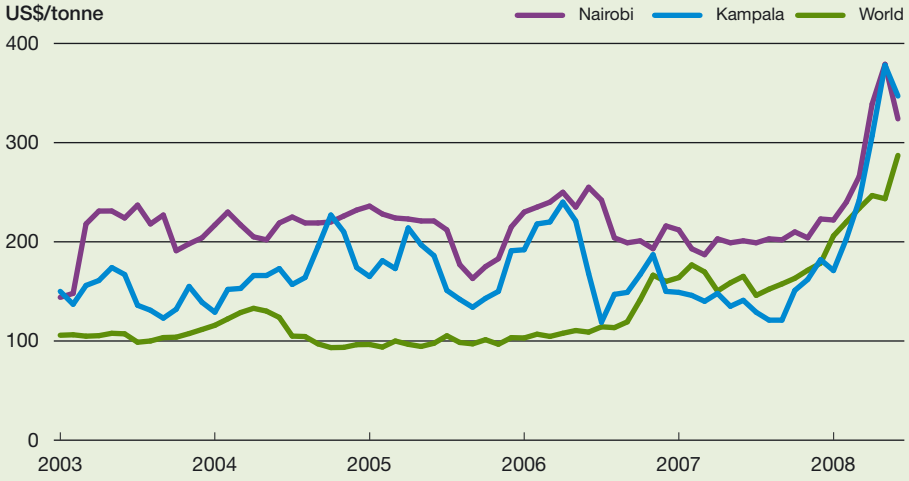


Source: FAO.

[6] A comprehensive review of issues surrounding price transmission is provided in Rapsomanikis, Hallam and Conforti (2006).

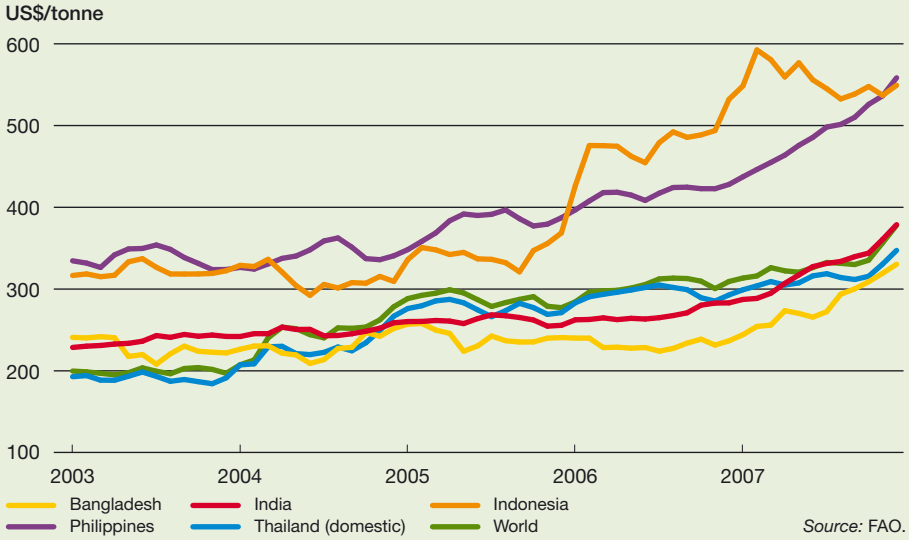
South Africa, the leading maize exporter in the region, respond slowly to changes in the world market price but that world market price signals do pass through across countries in the region. Between June 2006 and June 2008, the average monthly rate of increase in the world market price for yellow maize amounted to 3.9 percent, compared with white and yellow maize average increases of 1.2 and 1.6 percent per month, respectively, on domestic markets.

Eastern Africa: maize prices



Source: FAO.

Rice prices in selected countries



Source: FAO.

Maize prices in important markets in Eastern African countries such as Kenya and Uganda also move together with the world price. On average, in the period 2003–08, world price changes filtered across these markets relatively slowly, with maize prices in Kenya and Uganda adjusting fully to world price changes after about seven months. Nevertheless, the large increase in the world price of maize from July 2007 onwards was reflected in both countries, suggesting that adjustment to world market price changes can be fast, especially when such changes occur simultaneously with low stocks or shocks in regional food supply or demand. In this period, the average monthly rate of growth in maize prices in Nairobi and Kampala amounted to 3.7 and 7.1 percent, respectively, compared with a world price monthly rate of 4.3 percent.

In the case of rice in Asia, the impact of world market price changes has varied from country to country, again depending on exchange rates against the US dollar, trade and market policies and the domestic demand and supply situation.

On average, the weakening of the US dollar in 2006–07 partly offset world price increases for a number of Asian countries. For example, in India, the Philippines and Thailand, the appreciation of the national currencies *vis-à-vis* the US dollar blunted world price increases at the border, resulting in different patterns of domestic price behaviour, mainly reflecting national market fundamentals and, in some cases, policy response to the international rice price boom. In India, a major exporter of rice, domestic prices increased at a moderate rate owing to increased production in the 2007–08 marketing season in conjunction with policy measures (implemented in the last quarter of 2007) that effectively banned most rice exports. In net importing countries, the larger part of the increase in domestic prices took place in 2007 and in most cases coincided with increased rice imports. In the case of Bangladesh, food shortages owing to a cyclone and floods in 2007 contributed to significant increases in the domestic price of rice, while in Indonesia and the Philippines, rice

FAO case study evidence on levels of smallholder market participation

Common to all the countries studied is the significant heterogeneity of household status with respect to maize production and sales.

In Kenya, the proportion of maize sold is relatively high at 46 percent of total production. However, while 98 percent of households cultivate maize, only 36 percent sell the product, with 20 percent of households accounting for the majority of sales.

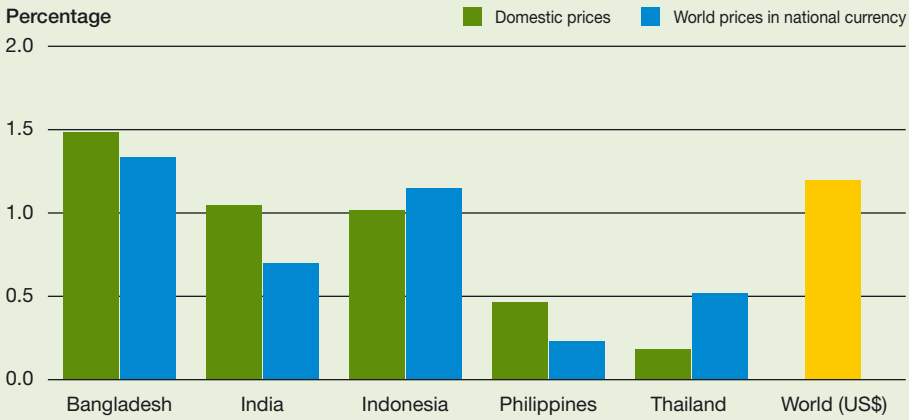
In Zambia, about 80 percent of farm households grow maize, but fewer than 30 percent of them sell the product. Of the total sales, 40–45 percent come from 5 percent of farm households in the smallholder sector. These households tend to have incomes that are significantly higher (8–9 times) and are located in areas more accessible to markets than those households that do not sell.

In Mozambique, production and sales are also highly concentrated. Ninety percent of households in the central region produce maize but only 24 percent sell it. In the southern region, 59 percent produce but only 4 percent sell maize, and the average amount sold is only 150 kg per household per year. Five percent of households account for 80 percent of sales nationally.

In South Africa, 18 000 commercial farmers account for 90 percent of grain production, with the remaining 10 percent accounted for by 3 million smallholders.

The differentiation across households is likely to become more distinct as average landholding sizes continue to fall. In Malawi, smallholdings have fallen from an average of 1 ha to less than 0.7 ha in the past 30 years. In an "average" year, only 20 percent of maize production is marketed.

Average monthly changes in domestic and world rice prices, 2006–2007



Source: FAO.

imports rose in order to meet the increasing demand for food.

Even if there is transmission of international price changes to the national level, this does not necessarily mean that price increases will reach all producers or consumers, although consumers in urban areas may be more quickly exposed to price increases. How much producers are affected depends on the extent to which they participate in local markets and the extent to which local markets are linked with broader national, regional or international markets. It cannot be assumed that there is strong spatial price transmission and significant smallholder market participation in well-integrated markets. In many developing countries, these assumptions simply do not hold.

Smallholders are generally engaged in a different value chain from more commercial farmers. The latter may be linked to large grain-trading, processing and retailing firms, commodity exchanges, networks of integrated silos, millers, and supermarket retailers, sometimes with transnational firm ownership, accessible market information, large transaction volumes, well-specified grades and standards, and legal systems that accommodate more sophisticated contracting arrangements. This contrasts with the more informal chains in which smallholders are typically involved and which are characterized by spot market transactions, small percentages of production sold off the farm, weak road and communications infrastructure, weak information systems and limited coordination between input delivery, credit and sales.

There is considerable evidence that smallholders in Eastern and Southern Africa are only entering local-level markets as sellers of grain to a rather limited extent. Throughout the regions, the proportion of maize producers who are actively selling maize into local markets is low and there is often a greater level of participation of producing households as *purchasers* rather than as *sellers* of maize.

Given the limited market participation by smallholders, it follows that price increases may not have much effect on production incentives for many rural households who are not participating in markets to any significant extent as sellers. Compounding this is the fact that many producers are effectively isolated from regional or international markets as a result of weakly integrated markets. In such cases, price increases at those market levels will have no effect on the situation of smallholders. Econometric studies of market integration and price transmission in Africa tend to confirm this view.

Prices increased but so did costs

Whatever improvement higher product prices might have made to the incomes of producers, increases in input costs have worked against it or even cancelled it out. Input costs have been increasing steadily for some years and many farmers saw rising output prices as a temporary respite from diminishing margins over costs until input prices shot up dramatically in 2007, outpacing output prices.

The dramatic increase in oil prices that began in 2003 has had a profound effect on all economic sectors, including agriculture. Increases in fuel prices have raised the costs of producing agricultural commodities both directly by raising the cost of far power and transport, but also indirectly because oil is an important cost item in fertilizer production. The increase in energy prices has been both rapid and steep, with the Reuters-CRB energy price index more than tripling since 2003.

The US dollar prices of some fertilizers (e.g. triple superphosphate and muriate of potash) rose by more than 160 percent in the first few months of 2008 compared with the same period in 2007. This rate of increase in the price of fertilizer was greater than the rate of increase in prices for agricultural products.

The ratio of output to input prices provides a broad indication of how farm profitability is changing. The steady increase in input prices in the last decade has led to a declining trend in this ratio. Increasing productivity can offset the negative income consequences of a declining ratio but this did not happen in most developing country agriculture, especially in Africa. The ratio deteriorated sharply with the sudden major increase in fertilizer prices in 2007. Furthermore, there is some evidence that, while output price increases are not completely and rapidly transmitted to producers, increases in the prices of inputs, especially where these are imported, are passed on fully and quickly.

Changes in output and input prices for selected products and inputs (percentage)

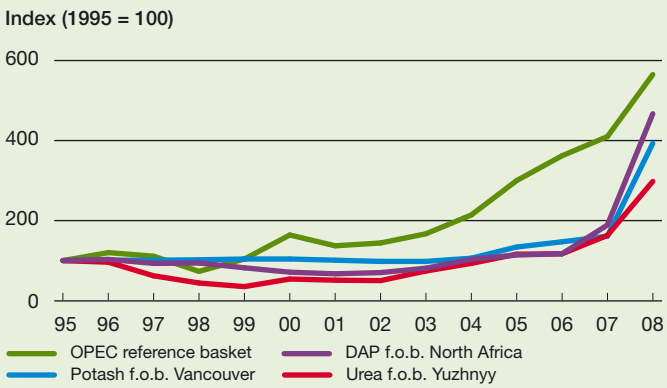
(Jan–Apr)	Meat	Dairy	Cereals	Oils	Sugar		Food price index[1]
2008–07	9	49	80	94	23		52
2007–06	5	35	32	29	–39		12
(Jan–Apr)	Ammonia	Urea	CAN	NPK	DAP	IRAC crude oil[2]	Input price index
2008–07	82	31	85	213	163	70	99
2007–06	4	29	15	41	33	–3	19

[1] Food price index: beans, butter, cocoa, cottonseed oil, hogs, lard, maize, steers, sugar and wheat. Input price index: ammonia, urea, CAN, NPK, DAP and IRAC crude oil.

[2] Imported Refiner Acquisition Cost (IRAC) of crude oil in the United States of America.

Sources: For food items: FAO for meat, dairy, cereals, oils and sugar composites; and FAO and CRB for the food price composite index. For input items: FAO-AGP, Yara and Energy Information Administration.

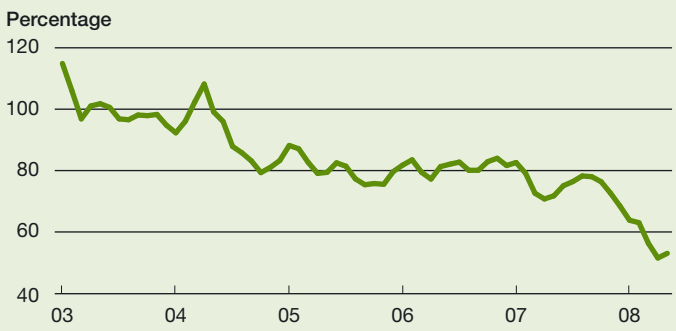
Crude oil and fertilizer price indices



Note: DAP = diammonium phosphate;
OPEC = Organization of the Petroleum Exporting Countries.

Sources: International Fertilizer Association and OPEC.

Output to input price ratio: food vs inputs



Note: Output and input price indices are unweighted geometric means of the relative nominal prices of the individual commodity prices. The relative price of each commodity is the nominal price over the base period price (2003 = 100).

Sources: For food items, FAO and Commodity Research Bureau;
for input items, FAO, Yara and Energy Information Administration.

Supply-side constraints

If price incentives do materialize, the lack of integration into markets of many small producers prevents them from responding. In many developing countries, the structure of smallholder agriculture has a significant impact in constraining supply response and it is changing – land–labour ratios are declining as population increases – in a way that could further lower smallholder producers' capacity to respond to higher prices. Evidence from Eastern and Southern Africa shows that there is a high concentration of marketed maize among a small number of households (in some countries, 2 percent of households supply 50 percent of the total volume of marketed maize), and other smallholders are not making the investments needed to generate surpluses for sale on even moderately sized holdings (3–4 ha). In Uganda, smallholder agricultural production dominates, with farmers with an average landholding of less than 2 ha accounting more than 90 percent of total food production. Smallholder farmers account for about 80 percent of agricultural production in Ghana.

Throughout Africa, smallholder agriculture is often characterized by low productivity, rudimentary technology, minimal use of inputs (including fertilizers), problems with marketing systems and high crop losses. Agricultural yields have remained relatively unchanged, with much farming conducted by the elderly with little or no knowledge of modern farming practices. The incentives for investment in terms of adequate and stable levels of profitability have been lacking, but there are also significant constraints to the adoption of improved technologies, such as shortage of locally improved seeds, planting materials and other inputs. Although access to inputs has improved in some countries following reforms, with more licensed dealers and smaller quantities available for purchase, input use by smallholders remains low and constrains productivity.

The small quantities of products available to sell and a frequent lack of organization among smallholders to bulk these together into more economic volumes, together with the high cost of marketing owing to weak infrastructure and communications, mean it is not surprising that supply response to better prices is weak. Yet without that supply response, funds are not generated for investment. Throughout the production and marketing chain, a lack of access to affordable credit further limits the feasibility of productivity-improving investments. These constraints need to be overcome to allow a significant supply response, and policy interventions are needed to break out of this vicious circle that traps small producers in poverty.

Development of physical infrastructure appears to be of particular importance in most developing countries. Well-developed transport, communication, storage and marketing infrastructure can facilitate the selling of output and the buying of inputs. Numerous FAO case studies from all over the developing world show that deficiencies in transport infrastructure are a major constraint, limiting access to domestic, regional and international markets.

Credit markets facilitate production, consumption smoothing and the development of new enterprises. They are an important mechanism to assist the poor in adjusting to a new economic environment. Limited access to financial services (both credit and savings) has exacerbated vulnerability to shocks. However, most Structural Adjustment Programmes have reduced the availability of credit to rural households and raised its cost.

FAO studies report widespread difficulties for farmers in accessing credit. Small-scale farmers in Cameroon have little access to credit. Microfinance

institutions were set up in 1992, but they remain poorly distributed throughout the country and sometimes lack good managerial practices. Smallholder farmers in Malawi face credit constraints, with microfinance institutions tending to emphasize finance for off-farm business activities, and much of the available agricultural credit is confined to the tobacco sector. Small- and medium-scale traders in the United Republic of Tanzania cannot access the credit that would enable them to purchase stocks of produce and sell out of season at higher prices. Some farmers have shifted away from the production of cash crops such as cotton because food crops can more easily be sold on cash terms. In Uganda, the only source of credit for rural dwellers is the microfinance industry, which favours non-agricultural activities. Attempts are currently underway in Uganda to develop financial services that meet the needs of the rural population and integrate them into the national financial system. In Guatemala, agricultural credit availability is low and declining. Most available credit is channelled towards export products (traditional and non-traditional) with little support for basic grains production. Guyana has attempted to overcome the problems concerning obtaining acceptable forms of collateral security faced by many small farmers. The Institute of Private Enterprise Development (IPED) was established in 1986 as a local non-governmental organization (NGO) to provide loans to small entrepreneurs. It uses a cross-guarantee system, whereby each member of a small group is liable for the debts of the others. The IPED has been instrumental in facilitating output increases for a number of small producers. On the other hand, the experience with government credit provision schemes in Peru was not positive, with massive losses in capital reported. Most of the credit to the agriculture sector now comes from commercial banks, and there was a dramatic reduction in the number of small farmers supported by the formal financial system during the 1990s.

Can developing country farmers respond to high food prices?

It is claimed that the recent high food prices present an opportunity for the agriculture sector in developing countries to increase production, raise incomes and re-establish itself as an engine of growth. While there is some evidence that output responds positively to real price increases and negatively to decreases, this is not always found to be the case. A wealth of FAO case study evidence shows that price increases alone are not enough to increase productivity and supply. In a review of 150 episodes of price and production changes in the recent past, FAO found that only in 66 percent of cases was the response in the direction expected, with 34 percent of cases either reporting an increase in production when prices were falling or a decrease in production when prices were increasing. Overall, the picture is mixed regarding how developing country farmers are likely to react to high product prices.

What is clear is that higher output prices alone are not sufficient to encourage a significant expansion in food supplies. A significant supply response requires investment to increase smallholder productivity. Expanding production into new land will not be enough to meet future food needs. In order to match the global demand for affordably priced food by 2050, annual food production must increase by more than one percent annually, and an estimated 80 percent of the increase will have to come from growth in yields. Moreover, productivity-led increases in food and agricultural production will increase not only farm incomes, but will also stimulate backward and forward linkages in the rural economy and lead to a reduction in poverty.

Significant supply response based on productivity improvement requires a favourable and stable incentives environment in which higher commodity prices are transmitted to the farm level and producers have access to affordable inputs and can deliver their output to market. This requires addressing the various structural constraints that limit smallholder productivity – rudimentary technology, lack of access to modern inputs and credit, poor marketing and transport infrastructure, and ineffective rural services and institutions. Effective government policies have a role in ensuring that the necessary conditions are met. For example, successes in transforming agriculture in India were based on state support to credit, inputs and irrigation infrastructure, which the market had failed to provide. However, the wrong policy choices can block the transmission of higher prices to producers, stifle incentives and discourage supply response.