Future Agricultures

Policy Brief

The short and medium term impacts of rises in staple food prices

Recent years have seen increasing average food prices, severe food price shocks (in 2007/8 and 2010/11), and increasing concerns about the impacts of food prices shocks, high food prices and food price volatility on poor and food insecure people. However, while there is general agreement that food price volatility leads to inefficient resource allocations and adjustment costs, and that high prices are bad for the urban poor (with large staple food expenditures), there has been more debate on the impacts of high food prices on the rural poor. This policy brief

- draws on basic microeconomic theory on the different meanings and effects of changes in staple food prices to different consumers and producers.
- reviews empirical evidence of the effects of the 2008 food price spike on different people.

We find strong evidence that the 2008 food price spike was generally bad for the welfare of the urban and rural poor. In parts of Asia, however, the negative effects of high food prices on many poor people may have been outweighed by the benefits of wider economic growth. This was much less the case in Africa. National and international concern about the short term negative effects of food price spikes has therefore been justified, and there is a pressing need for policies and investments to prevent and mitigate the effects of food price spikes.

1. Micro-economic analysis of food price changes

Food prices are the 'opportunity cost' to an economic actor of food in exchange, consumption or production and are only meaningful relative to income or to other goods and services. Changes in monetary prices then describe opportunity cost changes, provided that (a) monetary prices do reflect real opportunity costs and (b) monetary prices of all other goods, services and factor of production are constant. The first proviso requires use of shadow prices to take account of economic rather than financial opportunity costs in imperfect markets; the second requires use of price indices and 'real' rather than nominal prices to allow for inflationary changes in the value of money.

Price indices are, however, problematic when different incomes and prices of different goods and services experience different monetary price movements: calculation of real price changes for rich and poor consumers requires different indices (Dorward, 2011). Similarly, analysis of the impacts of high food prices should consider how changes in nominal food prices may lead to different changes in the opportunity cost of food relative to different goods and services that are important to different consumers and producers.

In micro economic theory, staple food price increases have two immediate effects. The 'substitution effect' involves changes in relative food and non-food purchase and consumption and the 'income effect' leads to an increase in the total cost of purchases and hence a fall in real income and welfare. Since poorer consumers spend a greater proportion of their income on staple foods, staple food price increases lead to larger proportionate falls in real income and in utility or welfare for poorer consumers.

For producers, food price increases should lead to a lagged increase in food production (the substitution effect) relative to other crops and increased use of inputs and production, provided that capital is available to finance increased input use.

Direct effects of higher food prices may lead to lagged indirect effects, through market interactions and consumption and production linkages. Here lower real incomes of consumers depress their expenditure on local goods and services, and hence depress the incomes of those supplying these goods and services. However, if producer incomes increase then this will have the opposite effect, and there may also be local benefits from their increased spending on local inputs, such as labour.

Since both the direct and indirect effects of higher food prices depress the real incomes and welfare of consumers, a positive effect of food price rises on poverty reduction requires larger stimulating effects from large numbers of producers who

(a) raise production by investing in technical change with an overall increase in labour demand and/or
(b) raise production by increasing total payments earnings to labourers with very low opportunity cost for their labour and/or
(c) gain significant extra incomes that generate positive upstream and consumption linkages that in turn raise rural labour demand and wages.

Where there are significant numbers of less poor farmers who are surplus producers of food and are able to access capital to increase investment in response to higher food prices, then it is likely that these conditions will apply and food price increases may lead to lagged welfare improvements for poor people.

They will not apply, however, where the number of such producers is low. This will be the case in largely urban economies and in poor rural areas with large numbers of deficit producers with limited access to capital.

This analysis is summarised in figure 1, which sets out the features of an economy that are likely to yield lagged positive or immediate negative income and poverty impacts in response to exogenously induced increases in food prices.

- improved producer access to seasonal capital should improve the benefits to surplus and deficit producers without harming consumers
- more equitable land and income distribution are likely to reduce the negative effects and promote the positive effects of high prices.

Analysis of short and medium term micro-economic impacts of food price increases also has to be set in the context of macroeconomic impacts of food price increases.

Figure 1: Factors influencing likely impacts of exogenous food price increases on incomes, poverty and welfare

Positive impacts of high food prices: increased real incomes & reduced poverty		**Negative impacts of high food prices: reduced real incomes & increased poverty**
more access to capital	⟷	less access to capital
more surplus producers	⟷	more deficit producers
more wealthy consumers	⟷	poorer consumers
more wealthy economy	⟷	less wealthy economy
falling input (eg fertiliser) prices	⟷	rising input (eg fertiliser) prices
low price volatility	⟷	high price volatility

Positive or negative impacts are multiplied by strong linkages in the economy and dampened by weak linkages.
Positive or negative impacts are also increased by strong price transmission from external markets

The impacts of high food prices on real incomes and welfare therefore depend on the characteristics of producers and consumers and on the structure or balance of the economy.

We can, however, be sure that:

- high price volatility is unhelpful as it reduces the benefits of high prices to surplus producers without providing any benefits to deficit producers or consumers

2. Macro economic analysis of food price changes

The macroeconomic impacts of high food prices differ between food importing and food exporting countries (with effects analogous to micro-economic impacts on producers and consumers) and also depend upon prior taxes and subsidies and upon any changes in taxes and subsidies made in response to high prices. If high international food prices are transmitted to consumers then inflationary pressures will

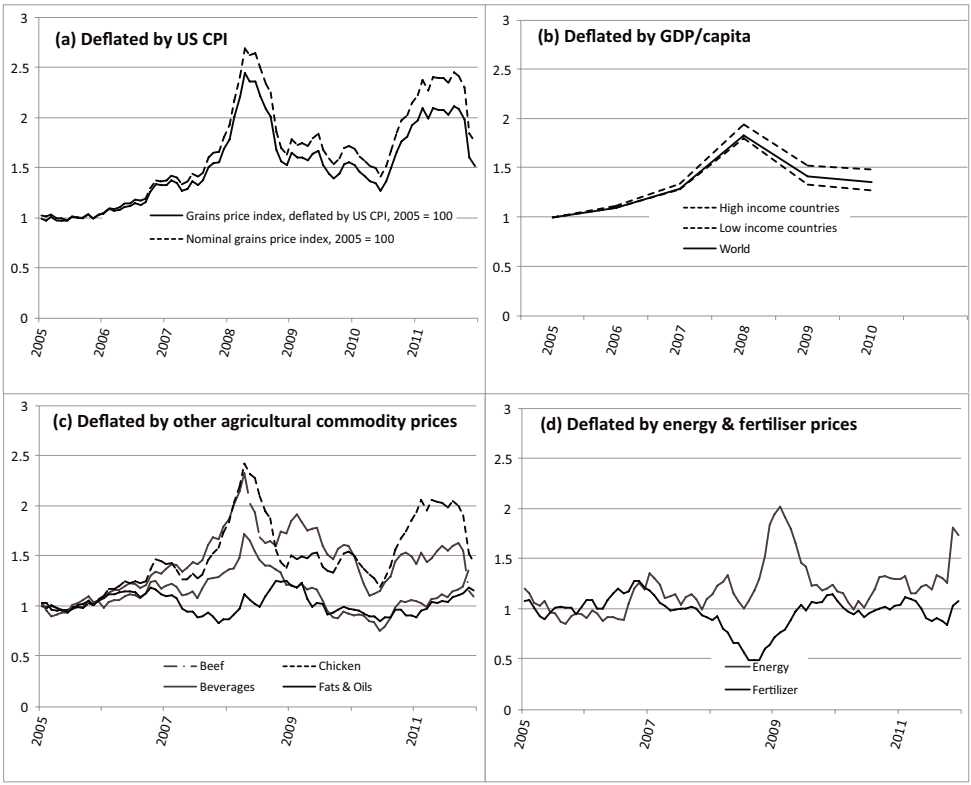
be experienced by both exporting and importing countries. This is likely to affect income distribution between and costs for different sectors and social groups, foreign exchange rates, interest rates and other macroeconomic variables.

For food importers, high food prices increase import bills, adversely affect the balance of payments and put downward pressure on the domestic currency, encouraging inflation. The opposite effects are experienced by food exporters. There are further fiscal effects depending upon taxes or subsidies on food imports or exports, and on the way that these may be changed in response to high international food prices.

3. Recent food price changes

Before reviewing empirical evidence on the impacts of recent food price rises, we begin by examining how food prices have changed in the last few years. Microeconomic theory discussed earlier suggests that we should examine food price changes for consumers and producers against the prices of other products that consumers buy, consumer incomes, the prices of other products farmers can produce, and the prices of farm inputs.

Figure 2: Indexed grain prices 2005-2011 (2005 = 100)



Sources: World Bank, 2012, Bureau of Labor Statistics, 2012

Figure 2 shows the World Bank international grain price index[1] from 2005 to 2010 or 2011 using price measures attempting to represent each of these perspectives.

Nominal international grain prices and real prices deflated by the US CPI (comparing grain prices against prices of other goods and services bought by rich consumers) show increases from 2005, with two spikes, in 2008 and 2010/11. Grain price deflated by GDP per capita (figure 2(b)) shows only the 2008 spike[2]. A much more mixed pattern is shown by figure 2(c) for international grain prices deflated by the prices of other agricultural commodities that farmers might produce, while figure 2(d) again show two spikes for grain prices deflated by oil prices (though these are later than the spikes in nominal or CPI deflated prices). There is a completely different pattern for grain prices deflated by fertiliser prices, with a dramatic fall in 2008 due to a very high spike in fertiliser prices[3].

4. Empirical evidence on welfare impacts of recent food price changes

Two types of 'empirical evidence' on the impacts of recent food price increases are found in the literature: studies of changes that people have experienced and simulations that model the effects of food prices changes on people's livelihoods and welfare. Studies that have attempted to directly measure the effects of food prices changes on people's livelihoods and welfare have found[4]

- that high food prices commonly increased poverty and malnutrition (especially in young children), in both rural and urban areas, with the poorest households worst affected, including many female-headed households;
- variation between countries and areas, with poverty increases in some exporting countries as well as importing countries, with local influences on prices often critical;
- some (a minority) who gained from higher food prices (better off farmers able to benefit from rapidly-rising prices and those with loans to repay if inflation led to falling real values of loan repayments);
- that impacts of food price rises are critically affected by their timing relative to seasonality (as it affects prices, wages, livelihood opportunities, food stocks, etc) and relative to other changes in the economy (for example changes in other commodity prices, in livelihood opportunities in other sectors);
- little evidence of an economic environment putting upward pressure on wages; and
- that grain price increases may reduce consumption of important micro-nutrients but not calories if households reallocate spending from a more diverse diet to maintain calorie consumption.

Headey, 2011, using results from the Gallup World Poll conducted before, during, and after the 2007/08 crisis, finds that food inflation led to an increase in global self-reported food insecurity while economic growth led to a reduction in this. Overall, global self-reported food insecurity fell from 2005 to 2008 as the benefits of economic growth outweighed the problems posed by high food prices. This was because the negative effects of limited food price increases in China and India (due to export controls) were outweighed by the effects of rapid growth in these countries.

Negative impacts of high food prices are also found with simulation models, but since these models do not generally allow for the counteractive effects of economic growth in China and India, there is less agreement on the scale of changes in food insecurity and poverty

incidence in 2008. However Aksoy and Hoekman, 2010 argue that producer gains from higher prices for food and cash crops can benefit many poor rural households as a result of second order effects pushing up wages. Unfortunately the basis for generalising these conclusions to include the effects of staple food price increases is very weak as no valid and relevant evidence that supports this is provided from any low income countries.

4. Conclusions

Theory and empirical evidence on the short and medium term impacts of food price increases on different producers and consumers are broadly complementary and consistent as summarised earlier in figure 1.

- Staple food price increases have had serious effects on the poor in national or local economies which have experienced high food price shocks without broad based growth processes, with poor net buyers of food, in both rural and urban communities, most negatively affected.
- Impacts are affected by changes in food prices relative to the prices of different commodities and incomes important to poor and less poor producers and consumers
- There are weak theoretical grounds and empirical evidence for second order benefits from high staple food prices in poor rural economies.
- Short term impacts are serious but can be ameliorated by economic growth and, for international food price increases, by limited price transmission.
- Findings that the effects of food price rises have not been accompanied by such bad global increases in poverty and food insecurity as initially estimated should not detract from recognition of the very serious impacts they have had for very large numbers of very poor people in poor countries (on the depth of poverty as well as its incidence), and the need for policies and action to address this.

These conclusions support national and international concern about the short term negative effects of food price spikes, and the pursuit of policies and investments to prevent and mitigate the effects of food price spikes. Arguments for these policies are strengthened by consideration of (a) the detrimental effects of food price volatility and (b) the long term effects of high food prices – on the welfare and productive potential of neo-natals and young children affected by malnutrition and on processes of wider economic growth and development. They also support calls for better measures of the effects of food prices on the welfare of poor people.

End Notes

[1] International grain prices are summarised using the World Bank Development Prospects Group 'cereals' price index. This hides considerable diversity in shorter term price fluctuations between maize, wheat and rice, but shows well the broad patterns which are common to all the main grains.

[2] GDP per capita data were not available for 2011 at the time of writing, and the annual average for 2010 masks the increases in grain prices in late 2010.

[3] Changes in international prices shown in figure 2 may not represent changes in prices for consumers and producers in different countries, if domestic prices are affected by taxes and subsidies, are relatively isolated from world prices due to tariffs or transport costs, or if producers are affected by subsidies and by changes in subsidies that affect the relative profitability of producing different commodities. Changes in global GDP per capita do not represent changes in income for different groups, due to differences in economic performance between countries and differences in incomes between groups within countries.

[4] Full references are provided in Dorward, 2012 available at http://eprints.soas.ac.uk/13478/

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This policy brief summarises the main arguments from a working paper available at http:/ /eprints.soas.ac.uk/13478/

Acknowledgements:

This Policy Brief was written by **Andrew Dorward** for the **Future Agricultures Consortium.** The series editors are **Beatrice Ouma and Elaine Mercer.** Further information about this series of Policy Briefs at: **www. future-agricultures.org**

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FAC appreciates the support of the UK Department for International Development (DfID)