Diverting grain from animal feed and biofuels

Can it protect the poor from high food prices?

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- Diverting grain from animal feed and industry to human consumption has been proposed as a response to cereal price spikes.
- ODI research, however, finds that grain diversion may not necessarily ease the impact of price spikes on the poorest people.
- Nonetheless, it may have some impact in relation to certain countries, particularly if complemented by other measures.
In a world where global cereal price spikes hit the poorest and most vulnerable people first and hardest, more than one-third of the world’s cereal production (38%) is currently used for animal feed or industrial use, including biofuels. Diverting grain from such uses to human consumption has been suggested as a way to dampen the impact of volatile cereal prices on the poor (Wright 2009, 2011a, 2011b).

Economics and international trade conditions determine whether such a scheme is feasible in different countries. ODI research suggests that conditions for a grain diversion scheme look most promising in the US, which produces enough grain to deliver benefits for global food prices and for the poor, and where there is potential domestic support for such diversion.

However, grain diversion does not seem to be feasible as a standalone policy: it would have to be combined with other policies to be effective and operate as a short-term policy to protect poor people during cereal-price spikes.

**Background**

The prices of cereals on international markets have become more volatile since 2007. The drought in the US Midwest in 2012 pushed maize and wheat prices up, raising the spectre of global price spikes. Higher prices for the staples on which the poorest and most vulnerable people rely threaten those least equipped to cope.

One highly-touted way to handle such volatility is to store more cereals, so that falling supplies or increased demand can be met by releasing stocks, rather than rationing cereals through higher prices.

However, keeping stocks is expensive, costing around $15 per tonne per year. If we stock another 70 million tonnes as insurance against the unexpected, it would cost more than $1 billion each year even though the stocks would rarely be needed.

There is an intriguing alternative. Of the 2,100 million tonnes of cereals produced annually, 800 million tonnes or more is used to feed animals or for industry, including biofuel, equivalent to close to 40% of total production. Of the major cereals consumed by people, maize and wheat use the greatest volumes for feed and industrial uses as they are more versatile than grains such as rice. Could some of this be diverted to human use, temporarily, until a price spike passes by? Worldwide, had around 10% of feedgrains been diverted in this way in 2008, it may have prevented that year’s price spike.

**Key questions**

In exploring the potential of grain diversion, we focused on six questions.

- Could maize and wheat for livestock and factories be used for human food?
- Could grains be diverted internationally, regionally, or only at country level?
- What policies would be used?
- What compensation would be needed for operators of animal feedlots, ethanol distilleries and other industries that use grain?
- What other issues affect the feasibility of grain diversion?
- How does it compare to other ways to tackle problems caused by price spikes?

To answer these questions, we established parameters of a grain diversion intervention that would:

- be short-term (a maximum of six months, or until a price spike eased, whichever period was shorter);
- be a last resort, for use in crisis situations where those on lower-incomes face serious nutritional problems because they cannot afford staple grains;
- divert only food-grade grain from livestock or industry;
- use legislation available to governments, in a transparent and consultative way.

**Key findings**

**Grain diversion can probably work in technical terms.** At international level it was clear that most grain going to animal feed could be used for human food (Codex Alimentarius, undated). However, this may be less true at national level where technical specifications are less rigorous for some characteristics of feed and industrial grain. There may also be consumer preferences in different countries for different grains (FAO, 1997).

The costs to governments of compensation for grain diversion appear lower than those of other options, including existing support to farmers in the US and EU (Smith, 2012; Abrams, 2012; Europa, undated).

**But the scheme is largely irrelevant for LICs.** Intuitively, it would make sense to target countries with significant populations of hungry or poor people. In reality it would only have the potential to work in countries with substantial volumes of cereals fed to animals or used for biofuels, where people’s diets include relatively large proportions of maize and wheat, and with the capacity to implement such a scheme. In effect, this rules out most LICs. Mexico and South Africa fulfilled the criteria for animal feed and the US for biofuels.
Even in most non-LICs, international trade and economics make it difficult to implement grain diversion for animal feed. When we looked at animal feed in Mexico and South Africa, we found a major obstacle. Both countries have reasonably open trade regimes and are price-takers on the international market, so reducing domestic demand for grain – by cutting demand for animal feed – would not affect domestic prices. Given market incentives, traders in South Africa would probably export the saved feed, Mexico would merely reduce its imports. Poor and vulnerable consumers in these countries would not benefit. In South Africa, however, while the export of feed would not necessarily affect domestic or world prices, it could make available more maize for import by neighbouring countries with large numbers of poor people, thereby reducing prices temporarily in those countries.

Complementary policies might be needed to protect those most vulnerable to higher cereals prices. In both countries, grain diversion would only work if complementary trade management policies were deployed, which would be unpopular. It would mean controlling grain exports for South Africa, and an unlikely combination of compulsory import quotas and export bans for Mexico.

Trade restrictions would address much of the problem, at least for South Africa, removing the need for further action. However, using trade bans to deal with the problem would raise prices in South Africa’s export markets across the region, disrupt regional markets and perhaps reduce incentives for farmers to replant. The scope for grain diversion would be limited to crises where action is vital and where there is a perceived need to ration demand for feedstock to guarantee supply and reduce consumer prices.

In other situations, providing higher-value cash transfers may be enough. Both countries have cash transfers for target groups at risk of extreme poverty that could be increased when cereals prices spike (Barquera et al., 2006; SASSA, 2011). Whether they could be extended to people sliding into poverty because of rising prices is less certain, and depends on how quickly and robustly more beneficiaries are identified.

It seems that grain diversion would involve quite complicated policies, while simpler measures could protect those most vulnerable to higher cereals prices.

The large volumes of maize used for biofuels in the US make it more promising, as there is domestic support for some change (to lower feed prices for the domestic livestock industry (Schafer, 2012)) and enough grain to have a major impact on global food prices.

But there are possible constraints. First, a grain diversion scheme would need to be coupled with flexible mandates to avoid penalties for fuel companies failing to hit US ethanol-blending targets. However, flexible mandates alone will not necessarily compel ethanol producers to stop making ethanol, or stop refiners blending it, if the relative prices of maize and oil make it profitable (McGurty and Robinson, 2012): recent US experience shows that more ethanol is being consumed than is mandated, despite the rise in the domestic maize price (Tyner et al., 2012).

Voluntary contracts that reward switching maize from biofuel production could encourage the release of maize for other uses. This would also encourage less efficient producers with lower margins to drop out of production first.

But we can’t stop there. If option contracts lower maize prices, while oil (and ethanol) prices are unaffected, this would increase the profitability of ethanol production for remaining producers. If they have spare capacity, they could expand production, increasing demand for maize and putting upward pressure on maize prices.

So, a scheme needs complementary policy measures. A variable tax could be placed on ethanol sales to close the gap between ethanol and oil prices (Tyner et al., 2012), related to triggers such as the domestic maize stocks:use ratio. Alternatively, limits could be placed on total maize use by the domestic ethanol industry, relating to the previous year’s use. Several other issues might need consideration:

- Oil refiners may not have the flexibility to reduce their ethanol intake (Tyner et al., 2012). US refiners use ethanol as an oxygenate to produce high-octane petrol. What would it cost to reduce the amount of ethanol and could this be factored into compensation? How quickly could refiners use less ethanol?
- A measure adopted by some, but not all, individual producers could undermine supplier reliability and client relations within the ethanol industry. Appropriate solutions may need discussion with the industry itself.
- While a temporary diversion of grain from biofuels would increase available maize and wheat for other uses, livestock producers would face reduced availability of dried distillers grains with solubles for livestock feed.
- Less ethanol production means more fossil-fuel use, unless replacement ethanol is imported, which could push up petrol prices, particularly if the food-price spike is linked to a rise in oil prices.

Policy implications

We conclude that grain diversion is unlikely to lower domestic prices in price-taking countries with relatively free trade or cushion vulnerable people in developing countries against cereals-price rises.

It might work in landlocked countries with natural trade protection through high transport costs, but few of these have major animal feed industries: most are poor countries where almost all cereals go to human use.

There are some caveats. Our first-round analyses compare the effectiveness of policies by looking at
what would be needed if just one policy were adopted. In reality, policies can be combined. So, for example, when South Africa faces a cereals-price spike, it could divert grain from beef feedlots to complement increased cash transfers and possible export restrictions. However, the impact of export restrictions on the poor in neighbouring countries would need careful examination.

In the case of the US, a large maize producer that uses maize for ethanol and that has a major impact on global prices, the scheme could have traction if it satisfies domestic policy objectives and is backed by complementary policies. If combined with flexible mandates, it could be a sharper policy instrument than flexible mandates alone, while benefiting poor people in developing countries.


References


