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Subsistence farming as a safety net for food-price shocks

Alain de Janvry and Elisabeth Sadoulet

Governments need the capacity to manage price instability and its social consequences; but in countries where people suffer most, they are least able to respond, because of limited fiscal and institutional resources. This article argues that policies used by middle- and high-income countries are unsuitable for poorer, agricultural countries; it recommends instead that these nations promote broader access to land and raise land productivity. The authors explain why instruments used by richer countries, such as those that control prices and cheapen food, fail in poorer countries. They describe the features of smallholder farmers in poorer countries, drawing upon evidence from India, Peru, and Guatemala to demonstrate how subsistence farming can be part of policy responses to the distress of a food crisis in both the short and medium term. They call upon donors to improve their understanding of and support for small-scale, subsistence-oriented farming.

L'agriculture de subsistance comme filet de sécurité face aux chocs des prix des produits alimentaires

Les gouvernements ont besoin de la capacité de gérer l'instabilité des prix et ses conséquences sociales; mais les pays où les gens en souffrent le plus sont aussi ceux qui sont le moins à même de réagir du fait de ressources fiscales et institutionnelles limitées. Cet article soutient que les politiques générales utilisées par les pays de revenu intermédiaire et élevé ne conviennent pas pour les pays agricoles plus pauvres; au lieu de cela, il recommande que ces nations favorisent un accès plus large à la terre et accroissent la productivité des terres. Les auteurs expliquent pourquoi les instruments employés par les pays les plus riches, comme ceux qui contrôlent et réduisent les prix des produits alimentaires, échouent dans les pays les plus pauvres. Ils décrivent les caractéristiques des petits agriculteurs des pays les plus pauvres, en se basant sur des données recueillies en Inde, au Pérou et au Guatemala, pour démontrer comment l'agriculture de subsistance peut faire partie des réponses de politique générale à la détresse accompagnant une crise alimentaire à court et moyen terme. Ils demandent aux bailleurs de fonds de tenter de mieux comprendre et de soutenir l'agriculture de subsistance à petite échelle.

Produção rural de subsistência como rede de segurança para choques do preço dos alimentos

Os governos precisam ser capazes de gerenciar a instabilidade de preço e suas consequências sociais. Porém, em países onde as pessoas mais sofrem, eles são menos capazes de responder

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devido aos limitados recursos fiscais e institucionais. Este artigo argumenta que políticas utilizadas por países de média – e alta – renda são inadequadas para os países mais pobres e agrícolas. O artigo recomenda, em vez disto, que estas nações promovam um maior acesso a terra e aumentem a produtividade da terra. Os autores explicam por que os instrumentos utilizados por países mais ricos, como aqueles que controlam preços e barateiam alimentos, não têm êxito. Eles descrevem as características dos pequenos produtores rurais nos países mais pobres, utilizando evidências da Índia, Peru e Guatemala para demonstrar como a produção rural de subsistência pode ser parte das respostas de políticas à adversidade de uma crise alimentar no curto e médio prazo. Eles clamam para os doadores melhorarem seu entendimento sobre a produção rural de pequena escala e de subsistência e o seu apoio a ela.

La agricultura de subsistencia como amortiguador ante la inestabilidad de los precios de los alimentos

Los gobiernos necesitan métodos para controlar la inestabilidad de los precios y sus consecuencias sociales. Sin embargo, en países donde la población es más vulnerable, los gobiernos están menos preparados para responder debido a sus escasos recursos económicos e institucionales. Este ensayo sostiene que las políticas que se han puesto en práctica en países de ingresos medios o altos son poco aptas para países pobres o agrícolas; por el contrario, recomienda que éstos promuevan un acceso a la tierra más amplio y aumenten la productividad agrícola. Los autores explican porqué los instrumentos utilizados por los países ricos, como el control de precios y el abaratamiento de los alimentos, no dan resultado en los países pobres. Describen las características de los pequeños productores en países pobres basándose en datos de India, Perú y Guatemala para demostrar que la agricultura de subsistencia puede ser una entre varias políticas públicas que respondan a la crisis alimentaria en el corto y mediano plazos. Los autores hacen un llamado a los donantes para que profundicen su conocimiento de, y su apoyo a, la agricultura de subsistencia a pequeña escala.

KEY WORDS: Governance and public policy; Labour and livelihoods

Bad news–good news for food security

World food prices have become increasingly volatile, with sharp price spikes like those observed in 2008, and instability is likely to persist, because the conditions that have created it remain in place and may well worsen (Abbott 2009). It is therefore important that governments have the capacity to manage price instability and its social consequences. A disheartening observation is that it is in those countries where people are most at risk that governments have the least capacity to respond.

This is the bad news: poor countries have limited policy space to contain the rise in domestic prices, weak fiscal resources to sustain transfers, and limited institutional capacity to manage social assistance programmes. But their inability to respond may be caused by the fact that developed countries and donors have been recommending the wrong policy instruments. The policy instruments used by governments in middle- and high-income countries are not those that governments in low-income countries can easily manage.

The good news is that there may be other policy instruments that governments in poor countries can use to support food security. The most important of these is access to agricultural

land and the potential for rapid growth in productivity on that land. In low-income countries, some 80 per cent of poor people are rural. Typically, more than 90 per cent of poor rural households in these countries have access to land, ranging in size from a garden plot to a small farm. Yet a majority of them buy food because they do not have access to enough land, or high enough yields on that land, to meet their food needs. As a result, they are hurt by rising food prices, even though they are farmers.

Ironically, governments in poor countries have two 'policy instruments' that middle- and high-income countries do not: a poor population with access to land that can easily be expanded, and low land productivity that can easily be improved. Neither is among the policy instruments that are typically advocated in middle- and high-income countries, where the poor are predominantly urban and have no access to land. Taking advantage of them in low-income countries could help to protect a significant proportion of the population at risk from food-price instability.

Why policy instruments used in rich countries work poorly in poor countries

The policy instruments commonly used for short-term responses to a food-price crisis are of two types: those that aim to contain the rise in domestic prices, and those that aim to provide access to cheap food. Governments in low-income countries have difficulty implementing both types.

Instruments that control rising prices

Imposing price and margin controls on food items has generally proved impractical in low-income countries, because food markets are dispersed and prone to secondary transactions that cannot be controlled. This leaves three categories of instrument.

Tariffs. As border prices rise, importing countries can stabilise domestic food prices by reducing import tariffs. This was done by governments in Sierra Leone, Burundi, Cameroon, and Guinea, among others. The World Bank's Rapid Financing Facility was established during the 2008 food crisis and endowed with $1.2 billion, of which $200 million could be used to compensate poor countries for loss of fiscal revenues from tariff reduction (Zoellick 2008). However, since most of these countries had already liberalised trade in agricultural commodities, they gained little (Anderson *et al.* 2008). Import tariffs in countries of sub-Saharan Africa were around 10 per cent at most, which is insignificant compared with the doubling of the border price of rice.

Another trade instrument is export taxes or export quotas. This option, pursued by India, helps the country that imposes it but harms other countries by shrinking the amount traded in international markets. Furthermore, because few low-income countries are net exporters of the staple foods consumed by poor people, reducing exports in order to contain domestic prices is not generally a viable option.

Subsidies. Food prices can also be reduced by subsidies provided to importers or processing mills. Examples of countries that use this option are Egypt and Mexico (see case studies in this issue). For low-income countries, this instrument is of limited use, because of the excessively high opportunity costs of fiscal spending. Most of the benefits of food-import subsidies accrue to those who need it less.

Table 1: Net buyers among smallholder households

Country	Category	Commodity	Net buyers%	Source
Sub-Saharan Africa				
Zambia	Smallholders	Staples	46	World Bank (2007)
Mozambique	Smallholders	Maize	63	Jayne *et al.* (2006)
Kenya	Smallholders	Maize	62	Jayne *et al.* (2006)
Ethiopia	Smallholders	Maize & teff	73	Jayne *et al.* (2006)
Latin: America				
Guatemala	Smallholders	Maize	97	Authors
Bolivia	Smallholders	Staples	70	World Bank (2007)
Peru Sierra	Farmers	Maize	93	Authors
Asia				
India	Smallholders	Rice	74	Authors
Bangladesh	Smallholders	Staples	59	World Bank (2007)
Vietnam	Smallholders	Staples	40	World Bank (2007)
Cambodia	Smallholders	Staples	32	World Bank (2007)
All above				
Unweighted average			64	

Staples include rice, wheat, maize, and beans

Reserves. Countries with large public food stocks can reduce inventories and market food to counteract rising prices, but most low-income countries have little or none.

Instruments that provide access to cheap food

Most middle- and high-income countries responded to the food crisis in 2008 by expanding the coverage of their social safety nets, which are designed to assist the most vulnerable people. Mexico and Brazil use targeted cash transfers that are conditional on children's school attendance and good health practices. Other countries use cash or food transfers such as food stamps. Such programmes succeed only to the extent that target groups can be identified and monitored accurately, and institutional mechanisms needed to do so are costly. Examples include the Single Registry system in Brazil, the Chile Solidario system, the Bono Solidario system in Ecuador, and the Oportunidades programme in Mexico. Typically, these programmes are more effective in addressing the needs of the chronic poor (who can be identified over time) than those pushed into poverty by a food-price shock.

The fiscal cost that such programmes represent to poor countries is huge, as is the challenge of identifying and targeting poor groups when civil registries do not exist and other national databases are out of date or unreliable. Other targeting devices must be employed, such as (a) feeding programmes at schools or maternal and child nutrition-surveillance programmes in health clinics, (b) fair-price shops established in poor neighbourhoods, and (c) employment-generating programmes, such as workfare and food-for-work programmes.

A disadvantage of these programmes is that they target specific segments of the poor population (school children, lactating mothers and infants, adults able to work), leaving many others uncovered by the safety net or unable to join the programme. India's National

Rural Employment Guarantee Act and Yemen's Labor Intensive Projects are examples of successful programmes, which require good administrative capacity for effective implementation. In addition, the geographical dispersion of poor people in rural areas makes them much harder to reach through targeted transfers than urban people.

Clearly, other policy instruments are needed to tackle the problems of poor people in the low-income countries, most of whom live in rural areas. These are discussed next.

Understanding the vulnerability of smallholder farmers

Differentiated policies are needed to improve the food security of smallholder farmers in low-income countries, because they themselves differ. One of the most important distinctions relates to how smallholders participate in markets for the staple foods that they produce. Those who generally produce more of their staple food than they need and sell the surplus are 'net sellers'. Smallholders who typically produce less than they need and purchase the remainder on the market are 'net buyers'. A third category of smallholder ('self-sufficient') breaks even. Other prices held constant, self-sufficient households are not affected by rising prices for staple foods, while net sellers gain. Of the three groups, net buyers are the most vulnerable to food-price shocks.

It is surprising to see how large a share of the smallholder population consists of net buyers. Table 1 summarises available estimates for 12 countries of sub-Saharan Africa, Latin America, and Asia. An unweighted average suggests that the majority are net buyers. In some countries (Madagascar, Zambia) where net buyers represent less than half of the smallholder population, it is worth nothing that the majority are self-sufficient, and thus do not benefit from rising prices for staple foods. In Ethiopia, India, and Guatemala, the vast majority are net buyers.

Combining the World Bank's (2007) estimate that 72 per cent of the active rural population in sub-Saharan Africa are smallholders with the unweighted average share of net buyers reported in Table 1 for this region, we expect some 44 per cent of the rural population to be adversely affected by rising prices for staple foods.

Evidence from three countries

Applying the methodology described in de Janvry and Sadoulet (2008) to data on household purchases and sales of food in India, Guatemala, and Peru, we simulated the impact of the price changes in rice, maize, and wheat relative to the Consumer Price Index (CPI) between March 2006 and July 2008.[1] We estimated that 83 per cent of farmers in India, 91 per cent in Guatemala, and 85 per cent in Peru, who are net buyers of the staple foods whose prices increased, 'lost' during the 2008 global food-price crisis. Thus, not only did 100 per cent of non-farm households suffer from this crisis, but so did the vast majority of smallholder farmers. When we consider the percentage of poor people who are rural, this means that farmers represent 44 per cent of the total population of poor people who were negatively affected by the food price crisis in India, 65 per cent in Guatemala, and 73 per cent in the Sierra and Amazon regions of Peru.

This is the main message from this study. Because world poverty is mainly rural, because most of the rural poor are smallholder farmers, and because a majority of smallholders are net buyers of rice, wheat, and maize, they should have been at the forefront of concerns about the impacts of a global food-price crisis. They were not – in part because these data are not readily available, and in part because donors and governments have used instruments that are ineffective.

Production for home consumption as a social safety net

Boosting smallholder production for home consumption can mitigate the social costs of the food crisis. The more quickly smallholders can respond to price spikes by substituting home production for purchased foods, the better. Policy instruments are needed that can become effective as early as the next harvest. Because poverty and market failures are major causes of low productivity in smallholder production, addressing these problems can have large impacts. The following instruments are particularly effective for smallholder farmers, but they should be put in place *before* food-price crises occur.

Access to seeds, fertilisers, and livestock

For farmers who participate infrequently in markets and have little cash, vouchers are one means of improving access to the inputs that raise productivity. Vouchers can be supplied to targeted farmers and redeemed at input shops, thus supporting rather than hindering the development of the private sector. Fertilisers can be fairly effective in increasing the productivity of labour as well as land. For farmers who have only recently acquired rights to land, such as those who were previously tenants, vouchers can be exchanged for start-up packages of tools and equipment. Access to a water point, or to small-scale irrigation, is essential for farmers who have the capacity to reallocate fields and labour from rain-fed cereals to nutritious, high-value crops, such as fruits and vegetables. Local non-government organisations, community-based organisations, and producer organisations often have a comparative advantage in diagnosing and facilitating the efforts of part-time farmers, whose needs often vary tremendously by village. Another vehicle is the Community Driven Development (CDD) framework, which has already been established in countries such as Zambia and Haiti to provide local public goods such as roads, sanitation, healthcare, and education. Organisational platforms such as these can be used to implement 'next harvest' programmes with local participation, targeting support and mobilising local social capital to enforce rules.

Livestock are an important source of food and marketed surpluses in subsistence farming, in part because they can act as substitutes for land. Under its Brazil-inspired Zero Hunger programme, Nicaragua distributed farm animals like pigs, cows, chickens, and ducks to smallholders, along with technical assistance. To increase chances of survival, provision of livestock was accompanied by veterinary services.

Access to financial services

For net buyers who are strongly integrated into the cash economy because, for instance, they have steady jobs in agriculture or the rural non-farm economy, new lines of credit can facilitate access to seeds and fertilisers, even if they produce for home consumption. Microfinance instruments are needed if property rights do not allow farmers to pledge assets as collateral, or if they cannot afford to put collateral at risk (Boucher, Carter, and Guirkinger 2007). Because a vast majority of part-time farmers have never had access to credit and insurance, relaxing their liquidity constraints can have large payoffs. There are a number of new technologies for providing financial services, such as mobile banking.

Access to more land

Access to even a small plot of land can be quite effective in putting household labour with few alternative employment opportunities to work productively. The land-rental market is the main

institution that is suited to this purpose. Land-rental markets can be stimulated through diffusion of information about rental opportunities and (formal or informal) registration of contracts to protect property rights. Access to peri-urban garden plots can contribute significantly to the food security and dietary diversity of households, drawing on labour time with low opportunity costs. This approach has been followed in many countries, including Europe and the United States after World War II. A more recent example is a programme in El Alto, Bolivia, which provides access to individual and collective food plots, including start-up kits of tools, fertilisers, and seeds.

Technical assistance

Despite the obvious fact that making use of modern inputs and agro-ecological farming practices requires technical assistance, subsistence agriculture has long been neglected by extension services, particularly with respect to gender dimensions. Producing for home consumption does not mean that productivity-enhancing, purchased inputs cannot be used – if other sources of household income can be tapped. Cost-effective methods for disseminating technical information require working through grassroots organisations and making use of modern information technologies and management systems. Much remains to be explored in terms of innovative approaches for delivering agricultural advisory services to part-time farmers, both under normal and crisis conditions.

Food-for-work programmes

Immediate relief can be provided through food-for-work programmes managed with a Community Driven Development approach. The labour mobilised in these programmes can be applied to water works and to soil-conservation programmes that are essential to improving the productivity and resilience of farming communities to climate shocks. Food-for-work programmes can be launched at the scale of the community, as in the Ethiopian productive safety net programme.

A longer-term policy perspective

In low-income countries where markets fail, administrative capacity is weak, and fiscal burdens are great, subsistence farming can be a feasible and more economical means of protecting the food security of many vulnerable, poor people than the policy instruments used by richer countries. The economics of crisis response via subsistence farming makes sense, because subsistence farmers have ready access to land, extra labour, and low productivity. Our estimates based on detailed data from India, Guatemala, and the Sierra and Amazon regions of Peru show that the approach can benefit a very large share and sometimes a majority of the country's poor households affected by a price spike. The correspondence between poverty and subsistence agriculture can be expected to be even larger in sub-Saharan Africa. However, subsistence farming should be complemented by other safety-net approaches for poor people who cannot engage in subsistence production, such as the sick, women-headed households with scarce labour, and the elderly.

Subsistence farming should not be viewed as a competitive equilibrium. In the longer run, it should vanish as anything other than a healthy hobby. Advocating subsistence farming is thus a second-best instrument to be pursued when price shocks are recurrent, rural poverty is extensive, financial services are incomplete, and capacity to protect the poor from price spikes through first-best instruments is too costly. 'Farm-financed social welfare' was advocated

under crisis conditions in the United States in the 1930s (Owen 1966). 'Return migration' to subsistence farming has been part of the policy response to the food and financial crises in countries such as China and Yemen.

Successful productivity gains in subsistence farming can also open the door to subsequent entry into commercial farming for smallholders with sufficient productive assets and access to efficient markets. This process starts with sale of a marketed surplus of food, and can evolve towards production of more lucrative food or non-food high-value cash crops based on competitive advantage. Ultimately, specialising on competitive advantages and trading in efficient markets offer a more effective way of achieving food security than production for home consumption. Using subsistence farming for food security is thus part of a transition that will eventually make it redundant. Today, however, and for the foreseeable future, a very large fraction of humanity will not achieve food security in the context of volatile international food prices without a productive subsistence-farming sector.

Conclusion

When food prices spike, most poor people in vulnerable low-income countries suffer. Policy instruments used by high-income countries are ineffective in low-income countries, where markets fail and the fiscal and administrative capacity to implement them is limited. Other approaches are needed. In this respect, low-income countries have a strategic advantage: most of the poor people in these countries have or could have access to at least a plot of land, and could make a much more productive use of it that than they currently do. Subsistence farming can be part of a policy response to the distress of a food crisis in both the short and medium terms, but it has not received due attention and is poorly understood by governments and development agencies. Here, we have stressed the importance of household production for consumption as an effective complement to formal safety nets when food prices rise, including entry into subsistence farming for non-farm households in both rural and peri-urban areas by providing access to land. The recent food crisis was a stark reminder that continuing to neglect the role that agriculture – both commercial and subsistence – can play for development will have untenably high, and yet fully avoidable, economic and social costs.

Note

1. In Peru, we used data from the Sierra and Amazon regions, where the rural population is of greater importance.

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