

Food Policy In Crisis Management

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INTRODUCTION

People living in developing countries are particularly vulnerable to the adverse consequences of a range of unpredictable, even unanticipated, economic shocks that affect the price and availability of food, and their ability to purchase and produce food for own consumption. Indeed, the *World Development Report 2000/1* emphasizes such vulnerability as an essential dimension of poverty. A wide range of economic crises – e.g., sharp adjustment in countries’ external terms of trade, hyperinflation, volatility in the domestic policy regime – or non-economic disasters – severe climate variation, crop failure, volatility in the domestic policy regime – can dramatically increase vulnerability to becoming food insecure, to not having access to sufficient food, in terms of quality, quantity and diversity, for an active and healthy life without risk of loss of such access.¹ This increased vulnerability applies to both transitory and chronic food insecurity. The former refers to a sudden (and often precipitous) drop in the ability to purchase or grow enough food to meet physiological requirements for good health and activity.² Chronic food insecurity refers to a persistent inability to meet minimum nutrient intake requirements.

In this paper, we review how food policy instruments can be deployed to try to preempt or relieve food insecurity, both chronic and transitory, caused by macroeconomic shocks. We frequently employ the chronic-transitory distinction since the causes of, and appropriate policy measures to address persistent food insecurity, differ in some circumstances from those associated with the transitory components. Nonetheless, the two phenomena are not wholly distinct in terms of causes, manifestations, or policy responses. For example, the same shocks that contribute to transitory food insecurity can lead to disaccumulation of human and physical assets, thereby contributing to long-term declines in food consumption and chronic food insecurity. Negative shocks have the potential to cause a downward spiral, diminishing resiliency and coping mechanisms, and trapping people in long-term poverty. Similarly, even among the chronically food insecure, there is considerable variability in the level of deprivation experienced over time. So the chronically poor are also potential beneficiaries from policies that reduce vulnerability to transitory events; the benefits do not accrue just to the better off among the poor. In fact, reduced vulnerability to shocks and uncertainty may be an important element of escaping chronic food insecurity. For example, less risk may encourage adopting new, and what would otherwise be risky, investment strategies to escape chronic food insecurity. Likewise, reducing the uncertainty of transitory shocks may enable household to avoid costly coping strategies, ranging from consumption loans at usurious interest rates to the sale of productive assets at below long-term equilibrium prices.

¹ While the focus of this paper is on food insecurity, we will also discuss to a lesser degree inter-relationships with malnutrition, which in addition to inadequate nutrient consumption, has its etiology in disease and related child nurturing behaviors. We should also point out that while food security and poverty share many common causes and manifestations, they are not the same. Indeed, it is plausible that families not classified as poor have members that are food insecure.

² We include in transitory food insecurity that which may be seasonal, as well as that which is due to stochastic events that are regular but aperiodic (e.g., severe flooding in Bangladesh, poor rains in the Horn of Africa) or irregular (e.g., conflict in Central Africa or the Balkans).

The limited ability, and the generally poor performance, of developing country governments to assist communities, households, and individuals in response to what we may collectively term “shocks”, motivates this paper. We aim to provide a conceptual framework of food policy responses to macroeconomic shocks and related events that increase vulnerability and/or push the vulnerable below the food security threshold, and to flesh out that framework with select empirical examples. In particular, our concern is focused on the three core pillars of food security:

availability, ensuring an adequate food supply to provide for the nutritional needs of the population;

access, ensuring that incomes (including unearned income from transfers and loans) and food prices together maintain real purchasing power sufficient to ensure the ability to obtain a nutritionally satisfactory diet;

utilization, ensuring that food within the household is used effectively to maintain the health of all members.

The focus on shocks clearly directs much of our discussion to transitory food insecurity, particularly food insecurity that arises from unpredictable events, in contrast to seasonal variability. However, to the extent that the chronically food insecure are most vulnerable to shocks, and that such episodic events and phenomena contribute to chronic food insecurity, we define the domain of our interest more broadly.

Before launching into the substance of the paper, we should clearly explain the scope of this work. The intended reader is a well-trained practitioner, not an academic researcher. So we avoid technical issues of theory or method entirely.³ We aim to provide a practical, conceptual framework, including key questions to ask, indicators to look for, and instruments to consider (and their pros and cons), rather than a comprehensive review of the literature on food policy in crisis situations. Finally, the intent here is not to offer precise prescriptions. The appropriate food policy instrument(s), if any, to use depends heavily on the context. Rather, the objective is to equip readers with a framework within which they can conduct solid analysis of how best to address a given crisis.

DIMENSIONS OF FOOD INSECURITY

Ultimately, food security concerns individuals’ capacity to obtain and use food to ensure satisfactory health. But policymakers necessarily deal at more aggregate levels. So it is important to understand the relationship between different levels of food insecurity, as well as the pathways by which shocks are transmitted from the macro level, through markets and households, to manifest themselves in individual-level food

³ Those interested in more technical details should consult Behrman and Deolalikar (1989), Strauss and Thomas (1998), or Barrett (2001a).

insecurity, and the policy instruments available to slow, ameliorate, or break that transmission. We therefore begin with a discussion of the nature and characteristics of food insecurity and a brief review of the linkages, and thus the transmission process, from the macro shocks and their consequences for national food security, through markets and households to manifestations at the level of individuals. In the next section, we then discuss the range of available food policy instruments. In the subsequent section, we discuss the nature and characteristics of various classes of macro shocks and review the experience to date in applying particular instruments to combat certain sorts of shocks.

Individual Food Security

During the past decade, there has been a growing appreciation that when we discuss any metric of well-being, examining households in the aggregate is not sufficient. Just as it was long ago recognized that aggregate food availability data are poor proxies for household food security, so, too, do household-level food security measures offer poor proxies for the individuals' well-being. The problem becomes more complex, and typically more widespread, the more disaggregated the analysis becomes, in examining intrahousehold resource allocation (Kanbur and Haddad 1994) and inter-temporal food security of individuals within households, or in considering micronutrient deficiencies (e.g., of vitamin A, iodine, or iron) in addition to shortfalls in protein and energy. Children, and to a somewhat lesser extent pregnant and lactating women, are the most

Key Questions About Individual-Level Food Security

- Who:** Who in the household is malnourished? Is there evidence of growth failure and inadequate dietary intake?
- Who in the household is earning income, and whose productivity is potentially adversely affected by nutritional deficits?
- What:** What type of nutrition programs and health/education sources are available in the community? What are the targeting mechanisms and criteria for participation? What are the costs of access?
- How:** How are resources allocated among household members? Is there any evidence of gender/age discrimination and/or differences in preference among decision-making?
- How can food and other resources be targeted to individual household members?
- How can we affect preferences, or the fall back position, of household decision-makers, particularly women who are more likely to invest in children and themselves?

vulnerable to shocks that contribute to reduced food consumption, degradation of diet, withdrawal from school, reduced medical care, and other responses to short-term shocks that can become permanent even after economic recovery. This is because, first, risk-pooling cannot be assumed, and decision-makers in the household may protect older members of the household that have a more powerful voice or contribute more to the earnings of the family.⁴ Second, children are simply less developmentally adaptable; physical growth and mental development may be permanently impaired, particularly in the first thirty months of life, to say nothing of the irreversibility of certain debilitating illnesses and death.

Although food insecurity is perhaps most concrete at the individual level of analysis, policymakers typically have very few, if any, policy levers to turn that directly affect individual-level food security. As we will discuss further below, intervening inside the household is complex and often not feasible. As difficult as it is to target households, directing public transfers to individual members is even more challenging, especially because households will often adjust intra-household distribution of food, health care, and labor demands in response to individual members' participation in programs (e.g., feeding programs at schools or maternal and child health centers) or receipt of external transfers. It would be ethically suspect and likely self-defeating, in terms of sustained effects on individual food security, for policymakers to disrupt intrahousehold arrangements so as to improve their capacity to target individual beneficiaries. So most policy instruments operate at more aggregate levels.

Household Food Security

While our ultimate concern is with individuals, household⁵ level food insecurity will likely remain the nexus of our attention when trying to assess the implications and mitigate the deleterious consequences of macro-scale shocks. The determinants of food insecurity at the household level have been the subject of extensive study. The proximate causes may be best conceived in terms of Amartya Sen's notion of entitlement failure, which was at the heart of his seminal analysis of the causes of famine (Sen 1981). Sen conceived of two key types of entitlements failures. Direct entitlements failures involve a loss of income due to job loss, reduced farm productivity, a fall in wages, or loss of assets that ensured a household's liquidity. Exchange entitlements failures are associated with food price increases that diminish purchasing power for households that depend on markets for their food supply. So household-level entitlements failures may result from supply shortages induced by crop failure or herd loss (e.g., due to drought, flood, or other natural disasters), increased unemployment, changes in the terms of trade, or disruptions

⁴ Maintaining the good health of the primary income earners may not be an irrational or discriminatory coping strategy, especially when viewed in the context of the household's need to defend its long-term livelihood base. Nonetheless, short-term consumption declines may fall most heavily on those children least able, at least in terms of physical robustness, to withstand the shock.

⁵ Here we define a household as those persons eating from a common pot. But the basic principles apply to any of a variety of other common definitions of a household.

in transport and related market infrastructure, including information failures, that might increase real food prices for buyers or decrease them for sellers.

The nature of entitlements failures varies predictably between rural and urban areas and between agricultural producers, who still comprise a large share of the food insecure in most low-income countries, and non-farmers. Drought, floods, widespread pest infestation or livestock disease outbreaks, and other covariate farm output shocks directly cause loss of assets and/or income for farmers. Rudimentary transport and communications infrastructure generally causes high transactions costs and poor information flow, and underdeveloped rural financial systems typically limit access to credit or insurance with which to temporarily reconstitute purchasing power in more remote, rural markets. So direct entitlements failures can be dramatic among rural agricultural producers, as both private traders and government can be slow to move in to replace production shortfalls at a reasonable price. However, since well under one-half of food production is marketed in low-income countries, all but the smallest net food

Key Questions About Household-Level Food Security

- Who:** Who are the poor? By geographic region? By demographic characteristics (age, gender, ethnicity)? By occupation?
- Who are the net food buyers? Are they able-bodied and thus capable of manual labor?
- Who has access to short-term consumption credit for food and other essentials? Who uses it?
- What:** What liquid assets do poor net food buyers own? What is happening to the markets for these assets and thus to their value?
- What foods do the poor eat that wealthier folks do not eat often in this (these) culture(s)?
- How:** How did poor net food buyers diversify their income sources prior to the shock, if at all? Does this provide effective self-insurance?
- How are poor net food buyers coping with the shock? Have they reduced meal frequency? Portions? Have they sold off productive assets? Migrated?
- How cohesive are households in this (these) culture(s)? Do transfers given to any adult benefit all within the household or does one need to target transfers directly to needs of individuals?
- How widespread are social solidarity or reciprocity networks providing decentralized safety nets? How well are these functioning?

buyer farmers are somewhat shielded from price shocks not associated with yield losses on their own farms. And informal social insurance among kin and neighbors are commonly strongest in rural villages with stable membership and established informal institutions, although social insurance's capacity to cope with sharp, covariate shocks is typically limited. Moreover, in the case of crises originating from macroeconomic disruptions, the very infrastructure problems that leave the rural poor vulnerable to local supply shocks (e.g., drought, flood) partly shield them from price and employment shocks.

In urban areas and among rural landless laborers and the many small farmers who depend heavily on off-farm employment for income and markets for food, exchange entitlements failures are commonly most acute in the wake of severe economic contraction that increases unemployment or with sharp increases in food prices associated with exchange rate depreciation, spikes in international market prices, or national food production failures. The poor in urban slums typically have limited access to social insurance networks and depend on markets for food, for example, for more than 90% of calories in Accra, Ghana (Maxwell et al. 2000). Yet the smallest farmers, especially in more densely populated regions, typically are significant net buyers of food and so experience sharp welfare losses in the wake of food price spikes (Weber et al. 1988, Barrett and Dorosh 1996).

Market failures that threaten food security, however, are not limited to those for food. Volatility in prices and food availability, both seasonally and interannually, are well documented in developing countries (Sahn 1989). Therefore, financial market failures (for credit and insurance) are serious impediments to households' abilities to smooth consumption. Credit and insurance markets are especially subject to market failures in urban slums and remote rural areas, where poor households have the most limited access to other coping mechanisms. Households, particularly in the arid and semi-arid tropics, often keep assets in the form of livestock, so animal markets are also important to ensure liquidity and food security. In areas where livestock marketing systems are poorly developed, as in much of the Greater Horn of Africa, livestock prices commonly plunge with animal productivity, so pastoralists' liquidity evaporates with the milk on which they heavily depend for food, contributing to acute food insecurity problems regularly experienced in that part of the world. Since herd recapitalization is slow and difficult, pastoral households that lose their animals to drought or disease too commonly find that transitory food insecurity turns into chronic food insecurity (McPeak and Barrett 2001).

In all of the discussion of the causes of entitlement failures, vulnerability is the key issue. Except in the most extreme and unusual famine conditions, there is considerable variation in how shocks are transmitted to households and ability of the households to respond. A wide range of factors condition the households' vulnerability – their ability to cushion the potentially adverse effects of shocks. Consider a few determining factors. Perhaps, first, and most obvious is the household's income. The poor are clearly more vulnerable to external shocks. They have fewer fall back options, and already spend the highest proportion of their income on food. Related to the issue of poverty is the crucial question of what assets are available to the household and their

access to credit or insurance. Households who have few liquid assets and who cannot borrow on financial markets are clearly the ones about whom we must worry the most. The demographic composition of the household is also a key factor. What is the ratio of workers to dependents, for example? And likewise, are family members in good health, including children and elderly who are potential drains on constrained resources, and earners for whom the physical condition affects their productivity? Can household members reduce consumption and discretionary activity or alter their consumption bundle, so as to avoid the harmful consequences of reduced access to food?

A related issue to the composition of the household is the structure of earnings. Smallholder households with diversified income portfolios are commonly better able to withstand food yield and price shocks (Reardon and Taylor 1996). One obvious strategy to reduce vulnerability is to rely on household members who migrate seasonally for employment opportunities or on the remittances that come from household members who have permanently migrated. However, income diversification is likely to be less available to households with lower human capital endowments, as well as households that are more capital constrained in general (Dercon and Krishnan 1996, Barrett et al. 2001). Even the search for employment options off-farm, to say nothing of setting up small scale enterprises, can require access to credit that is simply unavailable to many households. This again points to the importance of education and to physical and human capital in determining employment options and returns outside, as well as in agriculture, as a key element of reducing vulnerability.

A more complex question is whether adoption of improved agricultural technologies will reduce or increase food security risks of farmers. In certain circumstances, adoption of yield-increasing modern agricultural technology may increase risk. This is particularly true when high-yielding varieties have a greater vulnerability to drought-induced crop failure. Perhaps even more troubling is that yield-increasing technologies are not exploited because they also risk increasing. Thus, it is clear that vulnerability to shocks and related ability to cope are conditioned by a broad range of indicators of economic and social well being, as well as related issues such as the functioning of product and factor markets, and the dissemination of technology.

A final crucial characteristic is the household's access to various safety nets. This question applies to both state transfers and related interventions (e.g., consumption credit programs, food stamps, and public employment schemes) and those based on mutual assistance relationships and community-based systems of reciprocity and risk pooling. The state's reach is commonly rather modest, especially in rural areas, given the poor financial state of the governments of most developing countries, the difficulty of enforcing contracts, and the fact that institutional structures to design and monitor the range of potential transfer programs are very weak. Informal arrangements at the community level typically prove more important in protecting against food insecurity. However, the fact that risks often covary across households in a community implies stress on the resources of community risk pooling mechanisms. Furthermore, a large number of issues, such as moral hazard and the unenforceability of contracts tend to arise, and reduce the potential effectiveness of the local response to harmful shocks. Governments

and donors need to take care that well-intentioned efforts to provide formal safety nets do not end up primarily displacing informal ones, adding little net increase in coverage.

National Food Security

While household demand is a focal point of our conceptual framework, the shocks of concern in this paper result from international or national events that are transmitted to communities and households through factor and product markets. Adequate food availability at the national level remains a necessary, albeit not sufficient, condition to ensure food security for the population. Food availability, however, is not to be confused with self-sufficiency. Reliance on international trade is a reasonable strategy that does not imply greater risks than a more autarkic approach to ensuring food security. Indeed commercial food trade has historically fared well in stabilizing national level food availability in low-income countries, far better than has food aid, for example (Barrett 2001b). Indeed, one of the most essential components of a successful food policy to deal with crisis situations is ensuring that private intermediaries maintain unrestricted access to international food markets to import in response to emerging market signals.

While commercial trade is certainly an appropriate strategy to reduce exposure to shocks, external aid flows are often required to cope with hard currency financing

Key Questions About National-Level Food Security

What: What is aggregate per capita food availability, including current production, carryover stocks, food aid inflows, and commercial imports? Given losses, distributional inequities, etc., this should be at least 20% greater than the minimal adequate per capita volume to ensure adequate availability for all.

What impediments, if any, do domestic financial and trade policies pose for private intermediaries who might import more food?

What foreign reserves or lines of credit are available to the state or to private traders to finance near-term food imports?

What safety net programs were in place prior to the crisis?

How: How are private traders responding to the crisis? Are they moving food into or out of food deficit regions? Why?

How much spare communications, storage and transport capacity are there to increase the flow of food into or pre-positioning of food stocks in food deficit regions? How physically secure are stocks or shipments against theft or spoilage?

constraints to increasing food imports. Poor countries often have neither the foreign reserves nor the ability to borrow on international financial markets to respond to food availability shocks by increasing import expenditures in the face of a domestic crop failure or rising international prices. Concessional balance of payments support can play an important role, whether in the form of food aid or financial assistance.

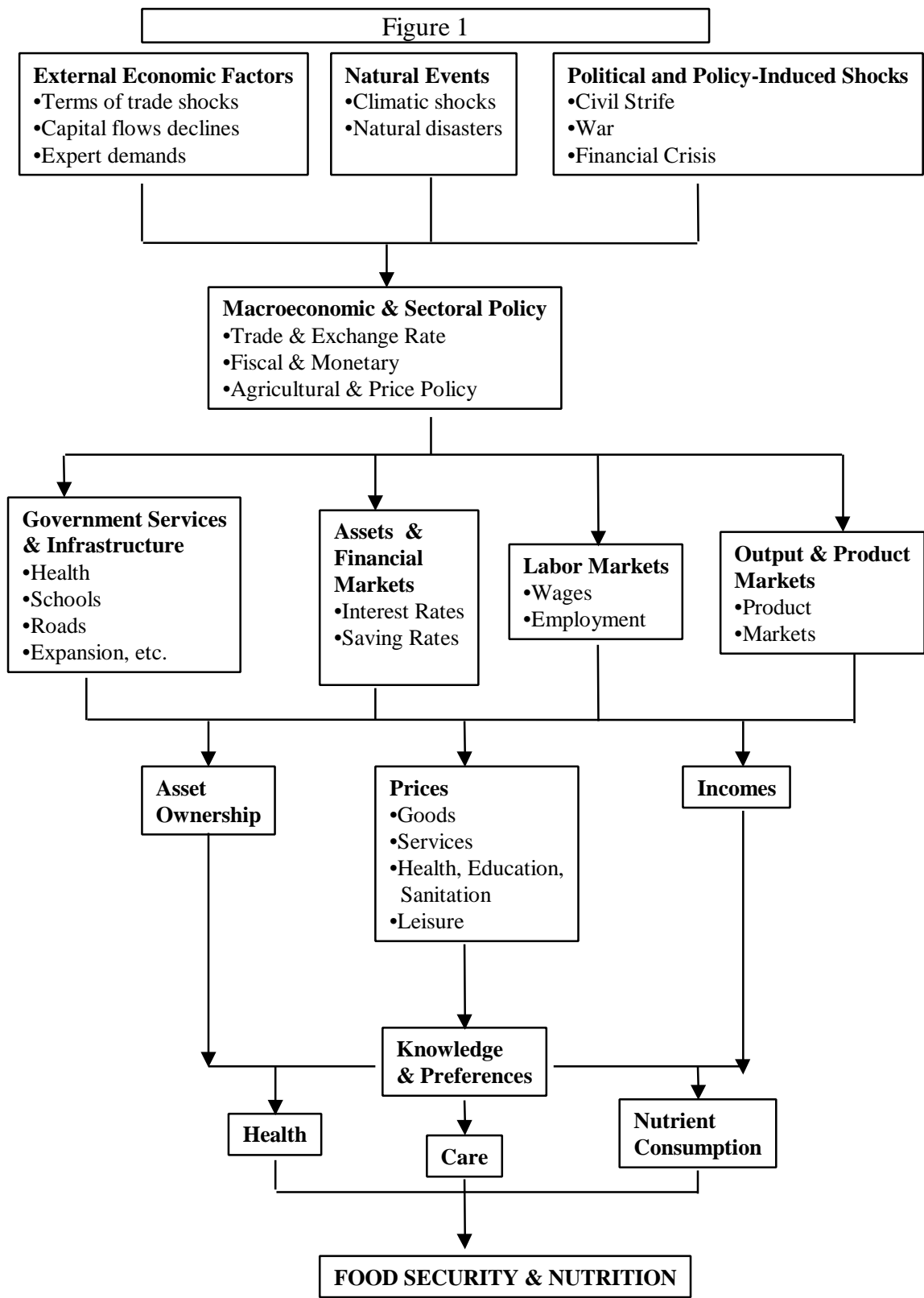
However, it is important to keep in mind that while national availability problems can often be tackled with well-timed external assistance – and food-related assistance commonly arrives with an excessive lag (Barrett 2001b) – availability is but a necessary condition to food security. Food access and food utilization, the other two pillars of food security, require other interventions. They commonly pose a formidable challenge where poor infrastructure impedes private sector response, especially if transport and communications networks in the most affected regions have been adversely impacted by the crisis (e.g., civil strife or natural disasters).

CONCEPTUAL FRAMEWORK: SHOCKS TO FOOD SECURITY

As a point of departure for understanding the impact of shocks on food security, we begin with a highly stylized figure that elucidates the pathways between shocks and food security (Figure 1). To begin, we emphasize that while there are myriad different shocks that low- and middle-income countries can experience, we address here only covariate shocks, or those that affect large cohorts together. All but the most vulnerable households can usually buffer themselves well against modest covariate shocks of short-to-moderate duration (Alderman and Paxson 1992, Webb and Reardon 1992, Barrett 2001a). Sustained or severe shocks – what might be reasonably termed “crises” – are the problem we address.

Starting at the lower end of the figure, we see that the proximal causes of household food security and nutritional status are incomes, consumption, health, and care behavior. Working backward, care behavior is governed by opportunity costs of time and the related time budget constraint. Health status is affected not just by levels of consumption, but by access to safe water and sanitation facilities. And likewise, consumption of nutrients is not only an appropriate indicator of food security but is an essential input in the production of adequate nutrition.

Income, prices of commodities and leisure, assets, as well as social services, including health care, education, and clean water, acting in combination, determine the level of consumption, health outcomes, as well as care behaviors, as mediated through knowledge and preferences. Transfers and subsidies can directly affect these factors by affecting prices of goods and services. But of greater importance are the asset and financial markets, product markets (for food and non-food goods), and labor markets (including wages and employment), which affect prices faced by households, and the households’ incomes and stock of assets.



Before reaching the top of the figure that depicts the types of shocks that interest us, the mediating effects of both macroeconomic and sectoral policy are highlighted. Of particular importance are prevailing trade and exchange rate, fiscal and monetary policies. Quite simply, sound macroeconomic management, both prior to and in the face of economic shocks, is crucial to mitigating adverse effects on food security of the population. This includes avoiding overvalued exchange rates, large fiscal deficits, and lax monetary policy; and ensuring a regulatory environment that promotes fair and transparent banking practices, secure property rights, and so forth.

Beyond getting the macroeconomic fundamentals right, other sectoral policies also matter, particularly in agriculture. The characteristics of agricultural technology and related investments in research and extension will in part determine both the level of and the ability to cope with shocks. So, too, will investment and policy decisions regarding agricultural markets. Better infrastructure and low transaction costs will help cushion the adverse effects of shocks. Generally, liberalized markets and healthy private sector competition are essential ingredients to efficient marketing, which in turn will mitigate the price and supply swings that arise from shocks. This implies limited government involvement in price determination, for the most part focused on strategic interventions such as price stabilization over a broad price band, information dissemination, and similar roles to promote competition and avoid market failure.

The mediating mechanisms between macro and sectoral policies and household level issues, as shown in the figure, are most clearly depicted in terms of market functionings and outcomes, particularly the effects of shocks on product prices, wages and employment, and asset and financial markets. In the case of output and product markets, the major concern is that shocks contribute to events that result in rapid inflation. Increases in the price level, and/or shifts in relative prices, can thereafter result in higher costs of purchasing an adequate amount of food. In terms of shocks causing lower wages and employment, we are concerned about a significant drop in real incomes. Of paramount importance is labor market flexibility. Even if real wages fall, as they commonly do during crisis, the ability to continue to work and find alternative employment will generally enable households to cope with temporary shocks. Unemployment is a more serious problem than lower real wages. And a contraction in wealth and asset ownership, due both to the decline in the value of assets owned and to disaccumulation, is of critical concern. Likewise, stresses on credit markets due to increased demand to smooth consumption declines; and to lower supply as savings evaporate, further impairs the ability to cope with covariate shocks. Similarly, the shocks alluded to above also can affect the overall health of the public sector, and, in particular, the ability to raise revenue and finance social and economic infrastructure as well as public sector employment. As this ability is compromised, so, too, does the risk of declines in household command over resources.

At the top of Figure 1, we show the three main types of non-policy shocks that transmit through the economy to affect food security outcomes. These include external economic factors over which the government exerts limited short-term influence, most important of which are terms of trade shocks. Declines in external capital flows and

falling export demand will have similar consequences and transmission mechanisms in terms of the impact of food security.

Among the most prominent of terms of trade shocks are sharp and rapid changes in oil prices. The consequences of such shocks have important differences for oil importing and exporting countries. In the case of the former, the higher prices and consequent real income losses associated with higher domestic oil prices among importing countries are well documented.

A booming export sector can also cause problems for the remainder of the economy. This occurred in the 1970s in Cameroon, when the price of oil increased dramatically. An analogous situation occurred in Ghana. The boom sector in that case was foreign aid, not oil. In either case, as the capital enters the economy, it presents a problem to the extent that it is spent on imports, or domestic goods and services. Higher aggregate demand, in turn, contributes to inflationary pressures, exchange rate appreciation, and, subsequently, a squeeze on domestic credit. These outcomes have potentially deleterious impacts on food security of vulnerable groups, especially as food prices increase and there are reduced export opportunities for low-income cash crop producers.

A greater concern is perhaps the effect of terms of trade shocks manifested by declines in the prices received for exports. Important differences exist between those exports for which producers can and do substitute inputs (e.g., mainly annual crops) to mitigate effects of the shock and other exports for which substitution options are limited (e.g., oil, minerals, perennial crops).

The degree of vulnerability to terms of trade shocks is determined by the export and import profile of a country, and more specifically, the share of affected products in the overall export/import share and the price elasticity of the import/export good. In the case of oil imports, for example, these elasticities are generally quite low. Likewise, export supply of primary products, particularly minerals and export crops such as coffee and cocoa, are generally quite price inelastic. Thus, in a country like Malawi, where three-quarters of its exports are tobacco, or in Niger where two-thirds are uranium, there is a high degree of vulnerability to declines in the price of their major export.

Regardless of what precipitates a terms of trade shock that reduces export prices (or raises the price of a key import such as oil), they are not favorable events and will contribute to economic contraction in the short-term. However, the impacts of such shocks on the well-being of poor and vulnerable households are determined in large measure by the policy response. More specifically, macro policymakers can either respond to a terms of trade shock through foreign exchange rationing and the related policy of placing foreign exchange restriction for imports, or by allowing the exchange rate to depreciate. The latter is generally preferred on both efficiency and distributional grounds, despite that, as emphasized above, there is no cost-free adjustment to such external shocks. Rather, the question is which approach will be more harmful to most of the poor. Exchange rate depreciation has in some circumstances been shown to have

harmful effects primarily on urban households, including the poor – see the story about the devaluation of the west and central African CFA in Box 1. The question we need to address, however, is the counterfactual that compares the response to shocks, or unsustainable account imbalances, through exchange rate adjustment of foreign exchange rationing. And similarly, in making that evaluation, we need to examine the effects of the entire vulnerable population, including that in rural areas where the food insecurity tends to be concentrated. In this context, the results in Box 2 are clear and differ from the partial equilibrium and more spatially narrow focus discussed in Box 1. Despite the fact that exchange rate depreciation contributes to higher prices for imported food and lower overall growth in the economy, for most of the poor, often including those in urban areas, allowing the foreign exchange rate to depreciate may be a better alternative to implicit tariffs on imports that will create economic rents as a result of the foreign exchange premium.

In addition to the pronounced and rather sudden price changes that we generally associate with terms of trade shocks, the persistence of terms of trade shocks are sometimes underestimated by governments who unwisely incur excessive debt; and rates of investment often shift significantly, leading to long-term changes in employment and wages (Bevan et al. 1990, Deaton and Miller 1995). Cases of multiyear embargoes on livestock due to disease (e.g., foot and mouth in southern Africa or Ethiopia) can cause sustained low prices for producers. And likewise, the necessary foreign exchange rate adjustments that occur in response to a long-term decline in exports contributes to a secular and potentially harmful increase in imported food prices.

Subtler forms of shocks can also portend food security risks for the vulnerable. For example, a rapid increase in inflation induced by a serious breach of fiscal discipline can lead to hikes in food prices as well as lower investment and currency overvaluation. Excessive pre-election expenditures by an incumbent political party trying to gain an electoral edge, or a policy

Box 1: Currency devaluation and urban food consumption in west Africa

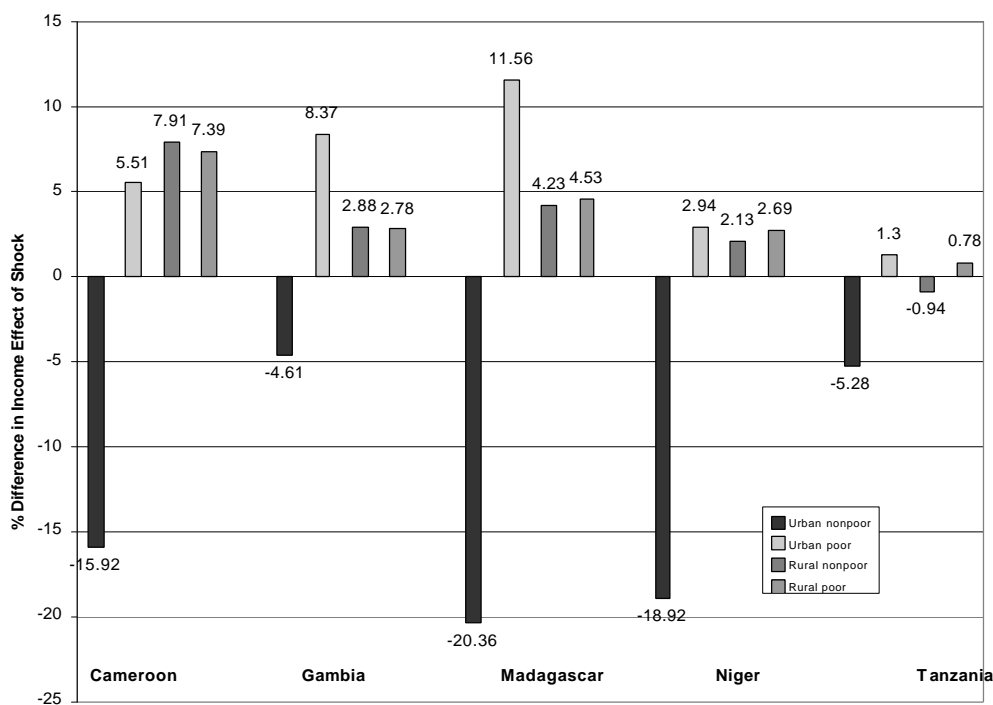
In January 1994, the fourteen countries of the CFA franc zone in central and west Africa devalued the currency from 50:1 to 100:1 parity against the French franc, the first such devaluation in 47 years. Household survey data from Burkina Faso, Côte d'Ivoire, Mali and Senegal, reported in the October 1999 special issue of the journal *Food Policy*, showed that massive currency devaluation had significant effects on urban food consumption. The main effect came through induced price increases of 20-70 percent, which affected coarse grains such as millet and sorghum as much as it did imported and domestic rice. Total cereals intake among urban populations fell, and dietary diversity dropped precipitously, especially in meat, milk, edible oils, and fruits and vegetables, with both effects concentrated especially among poorer subpopulations. In the absence of strong preexisting safety nets, relatively few food policy instruments were deployed to cushion the blow for the most vulnerable.

Source: Reardon (1999)

Box 2: Adjusting to Negative Price Shocks

Terms of trade shocks will have different effects on income and income distribution, depending on the prevailing trade and exchange rate regime. Counterfactual policy simulations for five African countries—Cameroon, Gambia, Madagascar, Niger, and Tanzania—show that both urban and rural poor households benefit when countries adjust to negative shocks through relying on liberalized trade and exchange rate policies.

**FIGURE 2. Adjusting to a Terms of Trade Shock:
Import Quotas vs. Real Exchange Rate Adjustment**



While these countries differ along most dimensions, they are also similar along dimensions such as the relative importance of agriculture, the concentration of poverty in rural areas, and their degree of economic openness. As rents formerly acquired by the urban non-poor disappear in the wake of economic reforms, the costs of importable goods fall, and there is a more efficient allocation of resources. This increases demand for unskilled labor and results in higher real wages. In addition, in all of these countries, there are substantial numbers of vulnerable households who are small holders engaged in export crop production. As the real exchange rate depreciates, their incomes rise.

Source: Sahn, Dorosh and Younger (1998)

shift that induces a dramatic and adverse response in equities markets, may precipitate the type of economic crisis that will work through the economy to threaten food security.

While the breakdown of fiscal discipline represents a policy shock squarely in the domain of policymakers, perhaps the most widespread manifestation of economic crisis as a result of domestic policy failure is found in financial crises, such as those that affected Mexico, Russia, and Southeast Asia in the late 1990s. In all three cases, collapse of financial institutions and the consequent inflation and massive depreciation resulted in substantial economic contraction. Here, too, the state bears much responsibility, even though some would prefer to thrust all the blame on external capital flows over which they exert little or no control.

For example, in Southeast Asia, the prices of tradable foods – most notably rice, the staple food in the region – skyrocketed with the collapse of exchange rates in countries such as Indonesia, Korea, and Thailand in 1997-98. This hurt net buyers, especially the urban poor and small farmers. The monetary shock was compounded in Indonesia by a severe (El Niño-related) drought that also depressed incomes for many medium-sized farmers who usually generate significant crop surpluses, and thus, might otherwise have gained from the rise in food prices.

The effects of such crises are felt not just – perhaps not even primarily – through increased food prices, which after all raise the real incomes of many small farmers among the poor. Currency devaluation associated with financial crisis also inevitably lead to increased prices for imported medicines, fertilizers, and fuel, thereby driving up the cost of health care, key purchased agricultural inputs, and of moving goods between ports and interior locations. Where the direct food price effects hit urban areas hardest, while benefiting many rural households, these other effects commonly hit rural residents hardest because they have poorer access to health care, and market intermediation costs heavily influence their real incomes. Also, financial crises lead to interest rate spikes and credit rationing, particularly to poorer consumers who are less creditworthy and to small businesses. The credit market effects of financial crises can thereby impede both current

Box 3: Economic crisis and food consumption in Russia

Russia's economic crisis in 1998-9 began with the government's default on its short-term debt and ensuing massive devaluation of the ruble. This sparked large-scale capital flight, accelerating inflation and the collapse of many domestic financial institutions. With food prices up sharply, food imports down, consumer wealth reduced, and increased unemployment, food consumption fell sharply throughout the country and life expectancy dropped, an almost unprecedented event in an industrialized country. The United States and the European Union responded with substantial food aid commitments of roughly five million metric tons. Still, crisis grips the country, and reduced food subsidies and continued sluggishness in the country's agriculture sector necessitate continued reliance on food aid to ensure minimal aggregate food availability.

Source: USDA (2000)

consumption and investment, with these effects falling disproportionately on the poor. Safety net programs are designed explicitly to cover such contingencies.

These macroeconomic shocks sometimes have muted effect, if any, on the poorest rural populations who are largely detached from the commercial economy and remain heavily dependent on subsistence production. But such populations typically represent a small, often declining, share of the food insecure. Likewise, despite the formidable crisis that Indonesian households confronted, considerable labor market flexibility mitigated what would have otherwise been a devastating impact on wage earnings. Of particular importance was the role of women in supporting family income in the face of tremendous reductions in hourly wages. Women entered the labor force in greater numbers during the crisis to protect their families. Although the strategy of women entering the work force and men finding new employment in the informal sector was thus partially successful in protecting family incomes, this resilience was more pronounced among upper income groups. The poor, particularly those outside of the subsistence sector, were hardest hit (Smith et al. 2000; Thomas, Beegle, and Frankenberg 2000).

Beyond the policy-induced shocks represented by recent financial crises for which domestic economic policy assumes varying degrees of responsibility, there are other types of political shocks over which policymaking apparatus has little influence. The experiences in Africa involving political instability and internal strife, as well as border and regional wars, are the most acute manifestations of political failure. These conflicts have had devastating impacts on African countries, for which there is no satisfactory economic policy response either at the macro or micro level that can mitigate the considerable adverse impact on the poor.

In addition to these external economic influences, natural events, including both climatic shocks such as drought, and natural disasters, such as earthquakes and typhoons, represent large covariate shocks that are of concern to this paper. Such shocks can hit irrespective of the extent to which the individual household is integrated into the national macroeconomy. The most serious effects obviously involve loss of lives, but even short of excess mortality, these shocks can adversely affect food consumption and nutrition patterns, thereby causing negative, permanent effects on household structure and children.

Natural disasters and conflicts generate more than just food output losses. Often, more importantly, livelihood losses to low-income producers are commonplace. Net food buyers are especially severely affected since their welfare, unlike that of net sellers, is increasing in yields but decreasing in prices, and natural disasters and civil strife tend to drive yields down and prices up. Insofar as civil strife and natural disasters disrupt transport and communications and thereby retard the manufacturing sector, they can also contribute to increased unemployment, thus stressing vulnerable urban populations.

Two crucial differences exist between macroeconomic shocks, on the one hand, and natural disasters and civil strife, on the other. Both typically have an adverse effect on the purchasing power of vulnerable subpopulations and, therefore, invite interventions

to defend the food security of the poor. But natural disasters and civil strife almost always result in decreased domestic food availability, so significantly that inflows of food are often required. They also commonly involve logistical disruptions that hamper food distribution efforts, whether because of conflict or due to bridge, rail, and road damage. Thus, although donors and government need to evaluate carefully whether distribution of food itself is advisable in the context of macroeconomic shocks – given that the public sector and charities compete directly with the private sector in such cases, and the private sector can deliver food if recipients are given purchasing power – in the case of conflict and disasters, there is often a distribution vacuum into which nongovernmental organizations (NGOs) and the government must step, and aggregate food availability is commonly insufficient. The main issues are then (1) timeliness of response, as international donors have a poor record of delivering food aid in a timely fashion during crises (Barrett 2001b), and (2) the potential use of food aid as a weapon of war (Stewart 1998).

Sometimes, natural disasters and macroeconomic crisis strike simultaneously, posing especially severe challenges. For example, over the course of half a dozen years from the mid-1990s, North Korea experienced floods, drought, and the termination of its special trading relationship with China and the former Soviet Union. Each of these shocks contributed to massive macroeconomic dislocation and food production shortfalls. Maize yields fell by more than half, and dietary energy supply fell by more than 20% (World Food Programme 1999). Food aid became a main instrument of international assistance although delivery and verification protocols proved difficult to negotiate, and many agencies have been unable to work in hard hit areas due to government movement restrictions. The long-run nutritional effects of the multi-faceted crisis in North Korea are still not fully known.

Although these effects are usually felt quite unevenly across different regions within the country, different sectors within the economy, and different quantiles of the income or wealth distribution, from a policy viewpoint, our main concern is with covariate shocks that affect large segments of the population. But even among those, for example, who are not adversely affected by shocks –for example, urban households who do not witness the type of catastrophic crop losses that affect farmers – indirect effects are commonly significant and do affect all, albeit not to the same degree. This demonstrates the importance of market integration and that price transmission matters (Alderman 1993, Barrett 1997).

POLICY INSTRUMENTS

Whereas the framework described above is useful as a point of departure for examining how macro-shocks are transmitted down through national, community, household, and subsequently individual access to food, we next turn to a more detailed consideration of the specific policy instruments available to try to interrupt that path of transmission. Appropriate policies can mitigate the impacts of a crisis on the food

security of vulnerable subpopulations. There are four key issues in identifying effective food policy instruments in crisis management.

? ? Targeting: How effectively does the intervention reach the intended beneficiaries?

This will commonly depend on the means of targeting employed. Some interventions use administrative targeting, in which prospective beneficiaries are subjected to means tests to establish that they indeed need assistance. Other strategies employ indicator targets, in which all members of a clearly identifiable subpopulation are eligible to receive a transfer, irrespective of need. Examples include school feeding programs for children and free food distribution to hard-hit locations. Still others use “self-targeting”, in which no administrative restriction is placed on the identity of beneficiaries, but receipt of the benefit is made costly in time, money, or appearances, making the transfer less attractive to the non-poor who are not as time- and budget-constrained and for whom the disutility associated with stigma is great. Examples include subsidies of inferior foods consumed almost exclusively by the poor and public employment schemes such as food-for-work programs where wages are set low, thereby only attracting the indigent or economically depressed. (See Besley and Kanbur 1988, Alderman and Lindert 1998, Besley and Coate 1998, or Barrett 2001a for more details on targeting.)

? ? Speed: How quickly can the policy deliver benefits to target subpopulations? Crises, almost by definition, occur during periods of disequilibrium. The natural responses of fiscal cycles, induced shifts in employment, and investment patterns, etc., have not had time to play themselves out fully. Yet the high frequency need for good nutrition means that people can be permanently injured by relatively brief periods of disruption. Measures to cushion the vulnerable in times of crisis must be rapidly implementable in order to be effective in bridging to a more predictable time in which equilibrium is restored. Donors remain quick to provide concessional food in the event of emergencies, either directly to government or to NGOs working in a country. Until the world food crisis of 1973-74, food aid to address emergencies represented less than ten percent of global food aid distribution until the world food crisis of 1973-74; today it comprises more than half of all flows. While emergency food aid flow volumes have remained reasonably stable over the past two decades, non-emergency food aid flows have fallen sharply. Sometimes donors and government need to pre-position food in places where infrastructure is poor due to limited port capacity, usability of roads (perhaps seasonally due to rains) or lorry availability. This often raises costs of storage (for reasons including degradation and theft), but improves the timeliness and targeting of transfers when they are needed.

? ? Cost: What is the cost of the intervention in terms of administrative overhead to program and deliver benefits and in terms of distributions to unintended beneficiaries? Given a limited budget for supporting those affected by crisis, the greater the share spent on administrative overhead, the less that can be used to cushion the blows felt by the vulnerable. As suggested above, cost is not only driven by the magnitude of the crisis, but by the nature of the response. Narrower targeting has an administrative cost as well as a cost in terms of errors of exclusion. Political

support may also be eroded by too narrow a set of beneficiaries. These factors must be weighed against the cost of leakage, implied by more errors of inclusion and lower administrative costs. Similarly, speed of response must be weighed against the resources devoted to the crisis. Pre-positioning will reduce the total availability of food aid, but may make what is available more effective.

- ? ? Intra-household issues: The identity of the individual(s) to whom the subsidy or transfer accrues will have potentially important effects on how it is used, and who benefits within the household. First, there is strong evidence to reject the neo-classical model that relies on the assumption that all family income is pooled and allocated to maximize a single objective function. Instead, while empirical studies have avoided detailing the specific model of intra-household allocation, there is strong evidence that some sort of bargaining model underlies the observation that women tend to allocate a greater share of income under their control to child goods and consumption of inputs into health. The results of previous research implies that directing transfers to women will usually result in greater investments in women and children than in adult males, and in young girls rather than young boys. Second, there is conflicting evidence whether transfers that have a specific purpose, or come in a form other than cash, tend to self-target recipients better than untied cash transfers. This so-called “intra-household flypaper effect” explains why transfers, in the form of school feeding programs or child allowances, may not be shared equally by all household members, as the neoclassical theory of income pooling would predict.
- ? ? Form of transfer: Although donors are typically keen, for various reasons, to provide food aid, this is usually a very costly option in situations where aggregate food availability is not an issue. Not only does food take longer and cost more to ship, but it also is less fungible for many recipients who clearly prefer to receive cash so as to be able to buy foods of choice, inputs for their own farms, or health care or education, as their particular situation demands (Drèze and Sen 1989, Barrett and Clay 2000). Various experiments with cashing out food stamps in the United States (i.e., providing the cash value of the stamps instead of requiring the purchase of food) show that there is no consistency in findings about whether food consumption is significantly reduced by changing the form of the transfer (Barrett 2001a; Devaney and Fraker 1986; Butler, Ohls and Posner 1985). There is scant evidence as to whether these effects exist in low-income settings, although the experience from Sri Lanka seems to show no benefit to food security of transferring income in the form of stamps rather than cash (Edirisinghe 1987). Since food is only one input into the production of good health and nutrition and investment in productive capital is frequently the best way for individuals to defend or improve their long-run food security, it is by no means clear that current food consumption is the best measure of the benefits derived from transfers meant to improve food security and nutrition.
- ? ? Medium of transfer: Donors and government typically want to get explicit credit for transfers and so are commonly reluctant to use private sector channels, including NGOs, to distribute benefits. Yet the reach of central, and even local, governments is often quite limited in low-income countries. So, if a significant share of intended

beneficiaries reside in hard-to-reach areas not well serviced by government, it will typically be less costly and quicker to contract with NGOs working in the area to distribute transfers than to establish a government distribution center. Moreover, creating new government distribution centers creates a new constituency in need of future operating funds and can displace private sector intermediaries, both for-profit and not-for-profit. It becomes difficult to close down centers once opened, and government need not perform services that the private sector can provide at reasonable cost and quality.

? ? Political economy: Is the policy politically feasible and sustainable, and how susceptible might it be to “elite capture”, i.e., the diversion of benefit to those least in need of assistance in response to a macro shock? Leakage to non-target households may indeed be a prerequisite to developing a constituency for an intervention with the primary objective of reaching the food insecurity.

In briefly reviewing a range of policy instruments available to cope with crisis situations, we touch on these seven key issues.⁶ It should be noted that there are typically tradeoffs involved among these criteria. For example, programs that can be implemented rapidly – such as subsidies of inferior foodstuffs or public employment guarantee programs – are likely to miss important vulnerable subpopulations. Measures likely to omit fewer intended beneficiaries – such as price stabilization efforts, generalized subsidies of staple foods, or geographic targeting to hard hit towns and cities – commonly are high cost, involve significant leakage to unintended beneficiaries, and once in place, can acquire a formidable political constituency in support of their continuation, making it difficult to transition to more precisely targeted, lower cost support mechanisms. Such tradeoffs need to be assessed explicitly in the design of food policy programs in time of crisis.

Food Subsidies

Food subsidies are among the most widespread mechanisms used in the low-income world to attempt to advance food security objectives (Pinstrup-Andersen 1988, Alderman 1991). The efficacy of food subsidies in crisis situations derives fundamentally from the ease of implementing the system using existing distribution channels. The government need only make payments per unit sold to wholesalers, or other intermediaries, on presentation of verifiable sales records. Unlike public employment programs or food price stabilization efforts based on strategic reserves or buffer stocks, universal food subsidies generally require little in the way of new administrative or logistical efforts and do not set up a competition between the private and public sectors. Rather, subsidies can help the government use and develop the private sector’s capacity to distribute food to vulnerable subpopulations at lower than market costs.

Among food subsidies, we distinguish between universal subsidies and those that are targeted to specific groups of vulnerable households and individuals. Universal food

⁶ For a more comprehensive review see Barrett (2001a).

subsidies⁷ tend to benefit the non-poor considerably more in absolute, albeit not relative, terms. Although the poor generally spend a greater share of income on food, the wealthy tend to spend a larger amount on food. Hence, universal food subsidies are often expensive means to reach food insecure individuals. But as a temporary tool for blunting the effects of crisis on the food access of the poor, transitional food subsidies can be effective, even if not well targeted. Furthermore, we have learned that, contrary to widespread belief, untargeted transfers may end up being more progressive than those that aim to reach the poor (see Ravallion and Datt 1995).

To the extent that a mechanism can be identified that limits leakage to the non-vulnerable population, food subsidies will be more efficient, *certeteris paribus*. However, targeting has its costs. First, targeting erodes political support as the constituency narrows. Second, as the specificity increases with more stringent targeting criteria, there is a commensurate increase in sensitivity. Fewer of the vulnerable will benefit, as type two errors of exclusion rise with tighter eligibility. And finally, the better the targeting, the higher the administrative costs. One-quarter or more of the value of subsidies is often allocated to administration, with targeting being an important element of this high share of overhead.

In terms of targeting and related delivery mechanisms, subsidizing inferior goods is conceptually most elegant. In practical terms, few self-targetable commodities exist, although in practice, some successes have been achieved particularly through identifying lower qualities of commodities that are attractive primarily to the poor (Sahn and Desai 1995, Rogers and Swindale 1988).⁸ Alternatively, subsidized food can be targeted using a variety of other techniques, such as means testing and geographic targeting. While the former presents formidable challenges, particularly among poor rural households that are heavily dependent on own production, the effectiveness of geographical targeting has been increasingly challenged. When inequality is decomposed, intra-regional variation proves far greater than the inter-regional contribution (Elbers, Lanjouw and Lanjouw 2000), implying that geographic targeting leads to considerable errors of both inclusion and exclusion.

Other than universal price subsidies on inferior goods, some form of delivery mechanism is required for targeted food subsidies. Most prevalent has been reliance on some sort of rationing. Ration distribution is not necessarily synonymous with targeting, as all households can be eligible to receive rations. This is a story that quite often exists in wartime, where entire quantities of commodities are distributed via ration systems and the entire population is eligible to receive a quota. However, more often than not, rationing is accompanied by some sort of targeting, allowing designated households to purchase a quantity of a rationed commodity at below market clearing prices. In these cases, parallel markets exist alongside the ration system. A variety of delivery mechanisms have been employed in ration systems. These range from reliance on special distribution centers to the use of tied coupons or stamps for particular commodities.⁹

⁷ Technically, these imply that prices clear the market, and there is no rationing.

⁸ Besley and Coate (1991) present a model for self-selection by income of low quality goods.

⁹ Examples include tortilla stamps in Mexico and food stamps in Sri Lanka.

Similar along most dimensions to rationing schemes are food stamp programs. Here, the quota is usually valued in terms of currency units rather than a specific quantity. The extent to which these ration systems are targeted once again varies widely, and there is little inherent in the choice of food stamps that makes targeting more difficult or easier than a quota system.

It is possible to subsidize not only food directly, but instead or in addition to food, subsidize the transactions costs of private traders. This can be especially effective as a device to help extend the reach of private marketing agents into more remote areas, either to facilitate the sale of liquid assets (e.g., cattle) or the delivery of imported grains to hard to reach locations. Transport subsidies are often appropriate for addressing natural or political shocks in remote areas. For example, in the 1992 southern African drought, donors successfully reallocated project funds to subsidize transport, storage, and infrastructure improvements in support of private sector movement of food to areas of need. This effort helped forestall widespread food insecurity in one of the more serious droughts to strike the region in the past century.

Transport subsidies' efficacy is often reduced, however, in crises of macroeconomic origin. Rural farm households in more remote regions are somewhat buffered against nationwide food price spikes or reduced domestic demand and formal sector employment. A notable exception, however, arises in the case of exchange rate or terms of trade shocks that cause the price of importable staple foods or transport costs to increase precipitously, hurting food access among net buyer households in areas distant from port. For example, when oil prices skyrocket, driving up private intermediaries' costs, the rational response of the private sector is to reduce deliveries to more distant regions. It may, therefore, be reasonable at times for government to subsidize deliveries into more remote food deficit regions.

A final consideration in assessing the opportunities for and potential impact of food subsidies is the question of whether the transfer is infra-marginal. In practice, most examples of ration systems and food stamps involve subsidies that are infra-marginal to the purchasing decisions of the household. That is, they still rely on the parallel or open market for some purchases (or home production) of the rationed good. This has the drawback of reducing the potential nutritional benefits to the household, as basically, the subsidies are operating through income, not price effects. To the extent that marginal prices can be affected in the design of a subsidy, the program will have a greater potential for raising food consumption and improving food security. Generally, such marginal subsidies require greater financial resources, and as such, may not be realistic.

Other Transfers

Beyond the types of food related subsidies discussed above, a number of other non-pension government transfers in cash or in kind are also worth considering. Some, such as employment insurance and various types of means tested cash transfer, are essential ingredients in the safety nets in richer countries, but are less widespread in

poorer ones. The possibilities for inefficiencies due to corruption, lack of financial reserves, and problems of targeting and administration may preclude certain options, particularly cash transfers, in poor countries. However, other options such as the use of maternal and child feeding programs and school feeding may be particularly applicable in poor countries, since such facilities are among those with the greatest reach and with personnel most committed to the needs of the local population.

In the case of the food and/or cash distribution through health clinics, the main advantage is that targeting criteria can be developed in terms of vulnerability defined on nutritional grounds, or related criteria such as pregnancy and lactation. Transfers can either be targeted toward individuals within the family, or the family as a whole. Furthermore, there is some reason to believe that health workers and NGO workers will be relatively more effective at identifying the food insecure and possibly do a better job in screening than other administrative entities under the control of the state.

There are several feasible designs for school feeding programs, ranging from programs that feed children in school to those such as Bangladesh's food for education program that provide food to families whose children attend school. An added benefit of such programs is that, in time of crisis, at the margin they encourage children to remain in school, thereby helping children's future prospects and improving long-term food security at the same time as they satisfy immediate needs caused by a crisis. One clear limitation of these programs is that unless there are children in school, vulnerable households are not reached through this mechanism. This excludes the elderly, families with pre-school children, the most indigent families for whom the opportunity cost of sending children to school is too high, and families who are displaced and with children too ill or infirm to attend school.

A second limitation of most school feeding programs is that usually the size of the ration is small relative to the needs of the family. Likewise, there is considerable evidence of expected leakage in the form of substitution (i.e., household reallocation) and sharing with other household members (Beaton and Ghassemi 1982, Anderson et al. 1981, Devaney and Fraker, 1986), although recent evidence from the Philippines indicates a strong intra-household flypaper effect associated with school feeding. Also, the administrative burden of schools involved with food preparation and distribution, especially when some means testing is involved, is often a distraction for already overburdened staff.

Beyond the use of clinics and schools as a means of transferring resources to households, cash transfers also represent a potentially useful means of responding rapidly to adverse shocks. Recent studies from countries as diverse as Ethiopia, Mexico, and Mozambique have shown the viability of means testing cash transfers to the poor and their effectiveness in raising living standards. In fact, no disadvantages relative to the distribution of food have been noted in these experiences.

Public employment programs

Public employment programs, often known as employment guarantee schemes (for instance, the well-known Maharashtra Employment Guarantee Scheme in India), or workfare programs, have often proved effective in absorbing able-bodied workers who lose their jobs in time of macroeconomic downturns or natural disasters. Food aid has been increasingly directed toward supporting such employment schemes through food-for-work projects. Indeed, some governments, such as Ethiopia, have committed to using the vast majority of their food aid receipts for food-for-work projects. Such programs generally work best where: (1) factor markets in land, labor and credit function reasonably well, (2) program wages are set slightly (say 5-10%) below prevailing market rates, (3) program employment is available at all times, naturally expanding in time of crisis but not requiring an administrative launch to begin to absorb displaced workers, and (4) projects are proposed by local communities to ensure relevance (von Braun 1995, Ravallion 1999, Barrett and Clay 2000). Employment programs by construction, however, cannot assist those who cannot work for reasons of physical disability, insufficient household labor endowments, or cultural activity restrictions. Likewise, they are less prone to assist families with young children, at least in comparison with, say, mother and child, and school feeding. Of course, criteria for participation, such as the requirement there are children in the household under 15 years of age, can be added, helping target programs to the most vulnerable in the population – young children and women of child-bearing age.

Government-funded public employment programs played a vital part in absorbing surplus labor displaced during the 1997-98 economic crisis in Indonesia, Korea, and Thailand and have been regular features in drought relief in the Greater Horn of Africa over the past decade. By emphasizing infrastructure improvements such as rural roads, such programs can also help reduce private sector marketing costs, thereby dulling not only the labor earnings shock of the crisis for some, but also the price shock for a larger population.

In considering the use of employment guarantee schemes, a large number of programmatic considerations must be taken into account. First, are public employment schemes required to compensate for lack of access to jobs, or instead, is the need for such efforts based erroneously on statistics collected solely in the formal sector? As discussed previously, a flexible labor market will enable many to protect themselves by switching into self-employment, raising hours worked, and making other adjustments that may be sufficient to weather downturns associated with shocks. The second consideration is whether public employment, as opposed to other active labor market policies, such as unemployment insurance, is the optimal policy approach. These types of alternatives are likely to be particularly useful in transition economies and middle-income countries, less so in poorer countries. Third, there is the issue of dealing with the tradeoffs between short-term labor creation objectives and longer-term asset building objectives. Making this calculation is inherently difficult, but the tradeoff is real. And an important element that enters into the calculation is not just whether assets with reasonable rates of return are constructed, but whether they are constructed in areas where the poor might enjoy

significant ongoing benefits from them, either as residents or workers. That is, we need to be cognizant of both who are the short-term beneficiaries in terms of wages paid, and who the longer-term beneficiaries are in terms of reaping the economic returns from the newly constructed infrastructure. To the extent that returns to infrastructure that benefit the rich exceed those of the poor, consideration ought to be given to cost-recovery or user charges for the infrastructure created by the projects, so that the expense of the program covers just the short-term employment benefits of intended, poor beneficiaries. Fourth, and related to the issue of public works versus alternative uses of scarce resources, is the need to avoid squandering valuable resources on poorly designed projects without the necessary complementary inputs and managerial oversight to ensure that the assets created yield a reasonable rate of return. Fifth, one must keep in mind that public works programs often generate far more gross increase in employment than net increase, once one accounts for foregone wages and home production resulting from participation in workfare schemes. These have been shown to be substantial in some instances, resulting in little net economic gain to the household (Ravallion 1999).

All of this implies that if rapid and short-term transfers to needy households are the imperative, it is important to look at the trade-offs between public works and universal income transfers. Under certain circumstances, even if the latter are not means tested, straight transfers may prove to be the best option. The leakage to the non-poor may be less costly than poorly designed public works schemes or schemes where infrastructure built benefits the non-needy. Likewise, universal transfers have the additional advantage that there is commonly greater political support for the program. During times of crisis, it may not be feasible to gain support among the less vulnerable to support programs among the most vulnerable.

Price stabilization

Until the 1980s, many governments maintained strategic food reserves or buffer stocks that were used to stabilize food prices as a defense against price spikes, often due to macroeconomic shocks that could threaten the food security of poor net food buyers. Commodity price stabilization efforts came under much criticism in the 1980s, especially over the expense of storage, the effects on producer incentives, and the government's place in the marketing channel. (Newbery and Stiglitz 1981, Knudsen and Nash 1990). Yet the principle of strategic release of staple grains to dampen food price increases that can undercut the food security of vulnerable populations (especially in urban areas where populations may riot) retains considerable appeal to many governments.

If price stabilization is to be pursued, both the means and the subject food need to be considered carefully. The traditional model of holding large stores of surplus grain for release in time of crisis has proved expensive and prone to political manipulation in most places (Pinckney 1989, Knudsen and Nash 1990). Perhaps a better design, although it has been less widely attempted and thus less well tested in practice, is to exploit variable import tariff rates, wherein the tariff falls as the world price rises, thereby dampening the effect of world market price shocks on domestic food prices. In general, it makes sense to focus on stabilizing just one widely traded staple grain as consumer and trader

substitution effects appear to propagate the price stabilization into other food product markets effectively, as shown by evidence from Ghana (Alderman 1993) and Madagascar (Barrett 1997).

Credit

When incomes fall and/or food prices rise – i.e., induced increases in food prices are not wholly offset by subsidies or price stabilization measures, and decreased incomes are not fully compensated by increased transfers – then increased access to credit can be an effective tool to defend pre-existing food consumption levels and patterns. At the macroeconomic level, this is the rationale for food-related international lending facilities such as the IMF’s Compensatory and Contingency Financing Facility which provides temporary balance of payments assistance to countries hit with a food import price shock or an adverse export price shock (Huddleston et al. 1994). Food-importing nations need lines of credit with sufficient grace periods and repayment periods to bridge the crisis, preferably, but not necessarily, on concessional terms.

At the household and individual level, credit for consumption can likewise be valuable in defending food security. But such credit is exceedingly rare, other than in very short term (e.g., three month or less) loans from informal lenders. The record is spotty at best for subsidized loans administered in an attempt to help individuals bridge a crisis. Even the more recent “microfinance revolution” has a mixed record, at best, in this area (Morduch 2000). More can be done to help keep short-term crisis from turning transitory food insecurity into chronic food insecurity by ensuring poor households can recapitalize quickly after losses. In the case of macroeconomic shocks, this typically involves skills retraining programs to help the newly unemployed transition to other sectors of the economy. In the case of natural disasters and civil strife, this often involves loans for restocking livestock herds or replacing lost seed, fertilizer, or equipment necessary to rehabilitate one’s productive capacity.

Micronutrient Interventions

Many donors and governments focus on ensuring individuals’ access to sufficient calories and protein in an attempt to preempt macronutrient deficiencies in vulnerable populations. It is important, however, to keep micronutrients in mind as well. And the substitution effects induced by income losses and real food price shocks can often lead vulnerable persons to modify their diets in ways that largely maintain calorie and protein intake but sacrifice essential micronutrients. For example, households suffering unexpected unemployment commonly exhibit a significant decrease in consumption of meats, dairy products, fish, and fresh vegetables, while increasing intake of coarse grains and tubers. Such induced changes in consumption patterns can lead to sharply reduced intake of iron, vitamin A, vitamin D, and other essential vitamins and minerals.

Micronutrient fortification and supplementation can therefore be important tools for combating crisis-related micronutrient deficiencies. For example, distribution of high-

dose vitamin A capsules among high-risk subpopulations of children in Indonesia appears to have been effective in preventing blindness despite a sharp increase in the relative price, and therefore a precipitous drop in consumption, of vitamin A-rich foods such as animal products, fortified margarine and noodles, and green, leafy vegetables (Helen Keller International).

DISCUSSION AND CONCLUDING COMMENTS

This paper has considered the impact of shocks on food security, with an emphasis on how adverse events are transmitted through the economy to affect the ability of households and individuals to access and utilize food necessary for good health and unimpaired physical work. The impact of shocks on food security are determined by a combination of factors. Prominent among them are the characteristics of the economy, the nature and causes of the shocks, the macroeconomic and sectoral policies in place at the time of the shocks, and the response of governments and donors to the shocks. While the wide spectrum of all the above elements precludes developing any simple matrix to capture the complexity of real world events, some generalizations and cross-cutting themes emerge from our discussion above.

In terms of economic structure and characteristics, there is little doubt that countries that have a high concentration on one or two primary product exports, and a high dependency on primary product imports, particularly oil or aid, are most vulnerable to exogenous terms of trade shocks. This is particularly true when the price elasticity of these commodities is low. Likewise, semi-arid countries and those with high variability in agricultural output due to rainfall fluctuations are particularly vulnerable to exogenous natural shocks.

There is considerable scope, over the medium to long term, to alter economies' structural characteristics that condition the degree of food insecurity felt by a population. Perhaps the most important medium- to long-term answer in dealing with covariate shocks is simply economic growth. As the East Asian experience following the 1997-98 crisis plainly shows, shocks need not have severe, widespread, long-term consequences. Reasonably well functioning food, labor, and financial markets; reliable infrastructure; and preexisting safety nets reduce the scope of needed public response and make such response more rapid and effective. This simply attests to the importance of dedication to structural improvements for economic development in improving capacity to weather calamities. Just as wealthier individuals have an easier time riding out a crisis, so too do nations with higher levels of development have an easier time shielding their populations from food insecurity in times of crisis.

More discrete efforts can also help by reducing the severity and duration of a food security crisis precipitated by economic shocks. Longer term measures such as promoting export diversification, for example, or alternative fuel sources, can be made explicit policy objectives. Similarly, investments in agricultural technology, such as improved irrigation systems, research and extension systems that promote adoption of drought-

resistant crop varieties, and improved information and market infrastructure that lowers transaction costs, all alter the inherent vulnerability of the food sector to exogenous shocks. In addition, well-functioning financial markets will enable households to smooth consumption and enhance their food security. Passive labor market policies that promote workers responding to market signals, and more active policies that provide unemployment and short-term benefits to the displaced, are also agenda items for consideration.

Planning for, and responding through short-term measures to an emerging food security crisis also increases pre-crisis preparedness. First, there is the issue of reconnaissance. Surveillance systems, and other forms of monitoring of key economic and social variables can help identify an emerging crisis. Preexisting safety nets also reduce the scope of needed public response and make such response more rapid and effective. Crisis planning goes beyond issues of logistics and administration, to include financial planning on the part of government. Making sure that there are strategic reserves, not just of food but money, requires foresight and discipline on the part of the treasury. It is also the case that the effectiveness of intervention strategies is predicated not only on good social service infrastructure, but on good roads and transport systems and other structural features that enable rapid response to emerging crisis.

Institutional coordination and cooperation is also imperative, particularly in responding rapidly and effectively to emerging food security crises. Governments and donors must work with, not against, each other. In addition, there is a crucial role for civil society in crisis planning and management. Established coping mechanisms, including social insurance networks, natural mobility/migration patterns, and private marketing and financial channels will almost certainly be of equal, if not more importance than state- and donor-sponsored responses.

Finally, responding to shocks needs to be more than a series of ad hoc measures on the part of the state, donors, and civil society. Instead, in order to ensure sufficiently prompt and substantial coverage for the most vulnerable, donors and governments must work with community leaders and organizations to develop a sequence of instruments. There is typically a tradeoff between the speed with which an instrument can have an impact and the accuracy with which it can be targeted to the vulnerable. This commonly implies the need for broad coverage programs (e.g., temporary price stabilization or subsidies) with a scheduled phase-out in favor of narrower, targeted programs (e.g., direct feeding or public works programs). At the same time, there is a need to be wary of the political economy of crisis-oriented interventions. Explicit exit or phase-out strategies of broad based programs need to be considered from the outset. Otherwise, the potential arises for capture of the benefits of crisis management long after the crisis has receded.

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