



Economic Crises and Natural Disasters: Coping Strategies and Policy Implications

EMMANUEL SKOUFIAS *

Inter-American Development Bank, Washington, DC, USA

Summary. — This paper reviews 12 studies presented at a conference examining two broad themes: (a) the interplay between household coping strategies and the impact of crises and natural disasters on various dimensions of well-being (e.g., consumption and child nutrition); and (b) some of the *ex-ante* and *ex-post* strategies that public agencies can adopt so they can be more effective in protecting households and their members from the potentially adverse impacts of aggregate shocks.
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1. INTRODUCTION

Economic crises and natural disasters have been a recurrent phenomenon in the developing world. Recent examples of these type of aggregate shocks abound: the 1995 and 2002 financial crisis in Argentina, the 1994–95 peso (or tequila) crisis in Mexico, the effects of El Niño on Philippines and Indonesia, and the 1998 currency crises in East Asia.

In addition, the frequency and severity of these events seems to have been increasing in frequency and severity (e.g., Von Braun, Vlek, & Wimmer, 2002). The Center for Research on the Epidemiology of Disasters (CRED), collecting data on the number of natural disasters, reports a clear increase in the number of natural disasters reported probably due to changes in global climate. In the Latin American and Caribbean region alone, during 1980–99 there were 38 major droughts, floods, hurricanes, tropical storms, landslides, earthquakes, volcano eruptions and El Niño episodes (IADB, 2000). The same general trend seems to be present for economic crises. In spite of government efforts to reform and improve their efficiency, economic crises arising more frequently due to external rather than internal factors continue to stall the efforts of most developing countries to achieve stable GDP growth. For example, during 1980–98, there have been over 40 episodes where GDP per capita fell by 4% or more in Latin America and the Caribbean (IADB, 2000). Such adverse shocks can lead to very sharp increases in poverty at the country level as evidenced by the numbers presented for selected countries in Table 1.

There is little doubt that the poverty rates reported in Table 1 above provide a one-dimensional view of how household welfare is affected as a result of these adverse economic events. In an effort to generate and disseminate knowledge on economy-wide shocks a conference was organized in November 2001 by the International Food Policy Research Institute (IFPRI) and the Inter-American Development Bank (IADB) with support from the World Bank and the United States Agency for International Development (USAID). The conference titled *Crises and Disasters: Measurement and Mitigation of their Human Costs* brought together a variety of papers examining two

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Table 1. *Economic crises and poverty in selected countries (headcount ratios)*

Country	Before crisis	Year of crisis
Argentina	16.8 (1993)	24.8 (1995)
Indonesia	11.3 (1996)	18.9 (1998)
Korea	2.6 (1997)	7.3 (1998)
Malaysia	8.2 (1997)	10.4 (1998)
México	36 (1994)	(1995)
Thailand	9.8 (1997)	12.9 (1998)
Venezuela	41.4 (1993)	53.6 (1994)

Source: IADB (2000), and World Bank (2001a).

broad themes. The first one relates to the interplay among the *ex-ante* (mitigating) and *ex-post* (coping) strategies of households and the impact of crises and natural disasters on various dimensions of well-being (e.g., consumption and child nutrition). The second covers some of the *ex-ante* and *ex-post* strategies that public agencies can adopt so they can be more effective in protecting households and their members from the potentially adverse impacts of economy-wide shocks and natural disasters.

A particular concern with the nature and design of government responses at times of crises is how programs can play effectively the dual role of providing immediate and effective relief to the households affected by the crisis while at the same time contributing to poverty alleviation in the long run (e.g., Lustig, 2000; Holzmann & Jorgensen, 2001). Poorer households are typically less equipped to deal with shocks, and informal insurance arrangements are likely to have serious limitations especially for shocks that are common to all members of the formal or informal insurance group. In the absence of an effective public safety net system poorer households may use coping strategies that ultimately prevent households from ever escaping from poverty or from reaping the benefits of future economic growth. In order to survive during a time of crisis, for example, poor households may be forced to sell their productive assets, such as draft animals. To the extent that households have limited access to credit and other sources of financing there is a strong possibility that these households may

never be able to replenish their stocks of productive assets, thus remaining in poverty permanently or for years after the passing of the crisis. In addition, during a period of crisis, households may be forced to decrease their investments in the human capital of their children through their lowered ability to provide proper nutrition and health care for their children or by reallocating the time children devoted in school toward earning income.

One unfortunate consequence of these coping strategies is that they may transmit poverty from the current generation to the future generation. Insofar as countries manage to develop social safety nets that effectively insure poor households from the most adverse effects of economic crises and natural disasters, then crisis management programs may also be considered as contributing significantly to poverty alleviation and the economic development of a country.

The papers included in this special issue of *World Development* are directly related to the above issues. A number of the papers analyze rigorously the effects of recent macroeconomic shocks such as the peso crisis in Mexico, natural disasters such as El Niño in Philippines, the recent adjustment process in Jamaica, and the effects of AIDS in Africa, among others. The list of the main questions addressed by the conference papers is both diverse and long. Here is a list of the questions that may be of interest to most readers: Do community characteristics play a role in how a shock affects households? Does a rapid increase in the inflation rate affect the nutritional status of children? Do households have a more difficult time coping with covariant as opposed to idiosyncratic shocks? What are some of the strategies that households use in the case of aggregate shock? Does social capital make a difference in coping with shocks? Do macroeconomic shocks, even if short-lived, have adverse effects in the long run? What types of programs and government actions are required to prevent or mitigate the adverse long-term effects of some household coping strategies? Is a shift of government interventions to an *ex-ante* risk-reduction strategy to be preferred over *ex-post* mitigation and coping programs? Is it possible to design a targeting system that serves the dual roles of alleviating poverty and insurance simultaneously? Are cash transfer programs likely to be less effective at maintaining caloric availability during periods of higher inflation than in normal times? Are cash transfer

programs also effective at maintaining micronutrient availability?

Section 2 is devoted to summarizing the impact of economic crises and natural disasters and the various strategies households adopt in order to cope with these aggregate shocks. Section 3 is devoted to the second theme of the conference concerning the public actions that can minimize the impact of and exposure to such shocks. Section 4 concludes with a summary of the policy lessons that can be extracted from the papers presented at the conference.

2. IMPACT OF CRISES AND NATURAL DISASTERS AND HOUSEHOLD COPING STRATEGIES

In order to obtain a better perspective on the findings of the papers presented at the conference it is useful to go over briefly how economic crises and natural disasters may affect household welfare. Natural disasters such as floods, droughts, earthquakes, and other weather-related phenomena can affect household welfare through the destruction of physical and human capital stock. In contrast, economic crises can affect household welfare through a variety of additional channels:¹ (a) a slowdown in economic activity that usually translates to a decrease in demand for labor services, a decrease in the probability of finding new employment, an increase in the unemployment rate and a decrease in the level of earnings of individuals already employed (e.g., see Fallon & Lucas, 2002);² (b) changes in relative prices or the removal of price subsidies for staple foods such as rice or wheat. A devaluation of the local currency, for example, is likely to affect the relative price of tradable commodities. Along related lines, an increase in the price of staple foods is likely to lead to a large reduction in the purchasing power (real income) of landless rural and urban poor households who are typically net consumers of food and spend a large share of the budget on these items; (c) cutbacks in the level of public transfers (e.g., Ravallion, 2002); and (d) changes in the value of and returns to assets.

In addition to all the different ways economic crises and natural disasters can affect households, one must also take into consideration the variety of risk management arrangements and risk management strategies that are available for protection (see, for example, World Bank,

2001a). Risk management arrangements include all the informal, and formal (market-based and public) arrangements that have evolved for the purposes of providing some protection for households in the event of a crisis. Risk management strategies, on the other hand, typically cover all the prevention and mitigation strategies that households may implement prior to the crisis event, as well as all the coping arrangements that are available to households after the realization of a crisis (Alderman & Paxson, 1994). Table 2 adapted from World Bank (2001a, 2001b) and from Holzmann and Jorgensen (2001) provides a more detailed exposition of the mechanisms for management of risk from crises and natural disasters.³ For the purposes of designing safety net programs as well as for quickly implementing public interventions during times of crises, it is critical to know the main coping strategies households rely upon at times of crisis.

A distinguishing feature of economic crises and natural disasters from other types of shocks experienced by households is that they affect many households simultaneously. The aggregate nature of these shocks means that many of the informal mechanisms for mitigating and coping with risk become ineffective. This is particularly the case for the informal mechanisms that are group-based (Morduch, 1999). For example, when aggregate demand and employment falls, being a member of an occupational association can be of little help when most of the members of the same occupation are also affected negatively by the shock. Along similar lines, natural disasters affecting whole villages or even regions may put significant strains on local group-based insurance schemes that in more normal circumstances may be quite effective in providing some insurance. In fact, aggregate shocks may also strain market-based coping mechanisms such as borrowing from formal financial institutions. For example, rural financial institutions, the majority of whose deposits are from individuals engaged in agricultural activities, are likely to be unable to serve the role of a lending institution when the majority of the deposits are withdrawn during a period of a harvest failure or a flood (Binswanger & Rosenzweig, 1986).

Considering that safety net programs are either weak or malfunctioning in many developing countries, it is of particular interest to know what are the effects of these adverse events on various dimensions of welfare. Simple as that

Table 2. *Mechanisms for managing risks*

Strategies for	Arrangements using			
	Informal mechanisms		Formal mechanisms	
	Individual and household-based	Group-based	Market based	Publicly provided
Reducing risk	Preventive health practices	Collective action for infrastructure, dikes, terraces		Sound macroeconomic policy
	Migration More secure income sources	Common property resource management		Environmental policy Education and training policy Public health policy Infrastructure (dams, roads) Active labor market policies
Mitigating risk Diversification	Crop and plot diversification	Occupational associations	Savings accounts in financial institutions	Agricultural extension
	Income source diversification Investment in physical and human capital	Rotating savings and credit associations	Microfinance	Liberalized trade Protection of property rights
Insurance	Marriage and extended family	Investment in social capital (networks, associations, rituals, reciprocal gift giving)	Old age annuities	Pension systems
	Sharecropper tenancy Buffer stocks		Accident, disability, and other insurance	Mandated insurance for unemployment, illness, disability, and other risks
Coping with shocks	Sale of assets	Transfers from networks of mutual support	Sale of financial assets	Social assistance
	Loans from moneylenders		Loans from financial institutions	Workfare
	Child labor Reduced food consumption Seasonal or temporary migration			Subsidies Social funds Cash transfers

Source: Adapted from World Bank (2001b).

might sound, the ideal way of addressing that question is very difficult to implement in practice. The aggregate nature of these shocks combined with relative scarcity of longitudinal data on households observed before and after the crisis eliminates the possibility of using the difference-in-differences estimator that is the preferred estimator in the nonexperimental evaluation literature (e.g., Heckman, La Londe, & Smith, 1999).⁴ Given these constraints most research on the impact of economic crises and natural disasters has to rely either on cross-sectional surveys conducted during or after the crisis event, or on short panel surveys that happened to have at least two observations on households with one being before the crisis and the other during or soon after the crisis (e.g., Fallon & Lucas, 2002).

The two papers related to impact employ some new ways of evaluating the impact of a crisis on a variety of dimensions of household welfare. The paper by Datt and Hoogeveen, uses cross-sectional household survey data for 1998, to assess the distributional impact of the recent economic crisis in the Philippines. A distinguishing feature of that survey is that it also includes direct questions on the crisis, where households were asked if they were adversely affected by the crisis in five different ways including loss of job, reduced wages and drought or El Niño. The answers to these questions allowed the authors to distinguish between households experiencing three mutually exclusive categories of shock: (i) labor market shock alone; (ii) El Niño shock alone and (iii) joint labor market and El Niño shock. Keeping in mind that the answers to the questions are subjective, their results suggest that the impact of the crisis was modest, leading to 5% reduction in average living standards and a 9% increase in the incidence of poverty, with higher increases indicated for the depth and severity of poverty. Moreover, the largest share of the overall impact on poverty appeared to be attributable to the El Niño shock as opposed to shocks mediated through the labor market. Both household and community characteristics mattered to the differential impact of the crisis, with the poorer households being less able to protect their consumption.

The paper by Handa and King investigates the effects of the September 1991 liberalization of the exchange rate in Jamaica on the weight for height of children, which is an indicator of a child's nutritional status that is insensitive to short-term fluctuations in living conditions.

Using eight years of nationally representative repeated cross-sectional survey data for 1989–96, they control for a number of observable child and parental characteristics and then carefully disentangle the impacts of a child's age, date of birth, and measurement date on child wasting (or weight for height). Their estimates indicate that in the aftermath of the liberalization of the exchange rate, children, and particularly those in the urban areas, weighed significantly less than comparable children few months later. The authors also find that the elasticity of weight for height z-score with respect to food price inflation was very high, which suggests that adjustment policies which bring about sudden and large changes in the inflation rate can have real effects on children's nutritional status.

As discussed above, the extent to which aggregate shock impact on household welfare is intimately related to their capacity to cope with shocks. The paper by Carter and Maluccio uses panel data from children in South Africa to explore in more detail how successfully households cope with shocks. Carter and Maluccio examine the effects of shocks on child nutritional status (measured by height-for-age z-scores) by paying particular attention to whether households have a more difficult time coping with covariant as opposed to idiosyncratic shocks and whether access to "bridging social capital" facilitates household capacity to deal with idiosyncratic shocks. Their findings reveal that households are unable to insure fully against idiosyncratic risk and that community-level shocks have little or no direct effect on household level outcomes. Instead, community-level shocks appear to affect households indirectly by straining the effectiveness of informal sharing mechanisms. For example, the damage to child nutritional status from household-level losses appears to be greater in communities that experienced large losses. Households in communities with more social capital, however, seem better able to cope with idiosyncratic shocks.

The overall picture emerging from the last two studies suggests that macroeconomic shocks, even if short-lived, may also have adverse consequences on the prospects of future generations.⁵ A number of studies provide evidence that child malnutrition is correlated with lower school achievement, and attainment, lower health as an adult and lower wages and productivity as an adult (e.g., Glewwe, Jacoby, & King, 2000). To the extent that such links are

strong and prevalent than public actions that prevent deterioration in the nutritional status of children and maintain access to health services during periods of crisis may not only serve the role of a safety net or insurance but also contribute to poverty alleviation and inequality reduction in the future.

The findings that economic crises have an adverse impact on child nutrition naturally raise the question as to whether household coping strategies also have an impact on other forms of human capital such as child schooling and work. The available evidence on this question suggests that this is also the case. One of the first studies on this topic by Jacoby and Skoufias (1997) finds that child school attendance decreases as a consequence of the shocks experienced by poor rural households in India. Duryea (1998) for Brazil, and Skoufias and Parker (2002) for urban Mexico, both find similar negative effects on school attainment rather than just attendance. Finally, Flug, Spilimbergo, and Wachtenheim (1998), using aggregate crosscountry panel data find a significant negative correlation between secondary school enrollment rates and income or employment volatility.

In contrast to these earlier findings, the evidence presented in two of the conference papers suggests that the effects of crisis on household education spending and schooling seem to be much milder. McKenzie, for example, finds that school attendance rates actually rose among 15–18 year olds during the Mexican crisis. One possible explanation for such a finding is that aggregate shocks give rise to opposing income and substitution effects determining children's school and work behavior. On the one hand, decreases in real household income, usually following a depreciation of the domestic currency and increases in the domestic inflation rate, lead households to shift their children out of schooling activities toward work. On the other hand, decreases in real wages during periods of crisis lower the price (or the opportunity cost) of schooling inducing households to keep their children in school. Within this framework, the question of whether it is the negative effect of income or the positive substitution effect of wages that dominates can only be determined empirically.⁶

The paper by Duryea and Arends-Kuenning examines these issues in more detail. Using large repeated cross-sectional surveys from Brazil over a 20-year period (1977–98) they examine the determinants of the decision to

work and/or attend school. Controlling for household income and other child and parental characteristics, they find that for 14–16 year old boys in urban Brazil, the marginal effect of wages on the probability of attending school (being employed) is negative (positive) during the years of “normal” economic growth. Thus during normal years children are more likely to leave school when labor market conditions improve and wages increase. But during periods of an economic crisis, the size of the marginal effect of wages on the probability of attending school is significantly lower which suggests that during a crisis period there are forces at work tending to decrease the negative relationship between wages and schooling.⁷ In fact, during crisis years the “normally” positive effects of wages on children's work seem to be completely nullified.⁸ The recent findings suggest that the question of whether economic crisis and disasters lead to decreased child-schooling remains to be settled. It would not be surprising if both the direction and the magnitude of the effect of aggregate shocks on child schooling and work turns out to vary from country to country depending on the level of urbanization and the financial and economic development.

Additional coping mechanisms are investigated in the paper of McKenzie who uses the repeated cross-sectional surveys from Mexico. The coping mechanisms examined (in addition to the changes in child schooling mentioned above) include adjustments in household structure, changes in fertility, changes in household labor supply, and interhousehold transfers. McKenzie's findings confirm that households rely on a portfolio of strategies rather than one single strategy to cope with risk. In the case of Mexico it seems that the primary coping strategies used were declines in fertility (with approximately 1 in 20 households postponing having a child), and interhousehold transfers (transfers received from abroad increased). Only small changes were detected in household structure and in household labor supply.

One of the first investigations of household coping strategies to the AIDS epidemic in Uganda and other similarly affected countries in the region is the paper by Deininger, Garcia, and Subbarao. As the authors document, the AIDS crisis has swelled the number of orphans at risk, and led to a large increase in the magnitude of child fostering by households. These coping strategies, in turn, have changed the

nature of risks faced by households and communities, and may threaten the care-giving capacity of communities. An examination of the impact of orphanhood on child education and health outcomes using household data revealed that although foster children in Uganda did not experience a serious disadvantage in education, they were at a disadvantage in terms of health outcomes including immunization health. The authors also show that households fostering orphan children consume less, save less and invest less. These observed trends are likely to have serious macroeconomic impacts on aggregate savings and investment in the economy.

Undoubtedly, there is a lot of room for public interventions to minimize exposure and impact of economic crises and natural disasters. The paper by del Ninno, Dorosh, and Smith serves as a bridge to the next topic of the conference regarding the role of public actions at times of crises. del Ninno, Dorosh, and Smith examine not only the coping strategies of households but also the role of public policies and markets following the 1998 flood in Bangladesh. At their peak, the 1998 floods covered two-thirds of Bangladesh, causing severe damage to the major rice crop and threatening the food security of tens of millions of households. Their study highlights how the combination of suitable government policies including an earlier trade liberalization, well-functioning private markets, public, and NGO interventions and effective private coping strategies was successful at preventing a major post-disaster crisis. The impacts of the floods on flood-exposed households are examined using a panel data set covering 750 households in three rounds over a 13-month period. The study finds that private sector borrowing, a major household coping strategy, played a key role in helping households to maintain consumption.

3. *EX-ANTE* AND *EX-POST* PUBLIC ACTIONS TO MINIMIZE EXPOSURE TO AND IMPACT OF SHOCKS

The recent experiences of a number of Asian and Latin American countries with financial crises has generated a large and growing literature on safety nets particularly within multilateral agencies. The survey of Blomquist, Cordoba, Verhoeven, Moser, and Bouillon (2002) focusing on the lessons learned from how various governments in Asia and Latin America responded to the crises identifies at

least two key principles that should guide the design, formulation and implementation of public responses. In the first place, public responses are likely to be more effective if they are based on programs and mechanisms that are in place before a crisis occurs. When safety net programs are not in place prior to the incidence of a crisis the difficulty of public efforts to protect households in the midst of crisis rises exponentially. During a crisis, constraints multiply due to the severe scarcity of fiscal resources, the lack or weakness of institutional capacity to act quickly, the lack of instruments, and severe information problems. Second, it is essential that the programs are targeted, provide adequate protection to the poor, avoid creating a culture of dependency among beneficiaries, and are consistent with economic incentives and overall targets of fiscal policy.

Table 3 presents some of the instruments available to governments in the event of an economic crisis or a natural disaster. The list of instruments includes cash transfer and public work programs, unemployment assistance, wage and commodity price subsidies, targeted human development or cash transfer programs conditioned on school attendance and regular visits to health centers, service fee waiver, food and nutrition programs, micro-finance and social fund programs. Table 3 also describes the targeting method commonly used with each particular type of intervention, discussed in a bit more detail below, and the advantages and disadvantages associated with the intervention. Clearly, the variety of instruments available suggests that governments have to make some very difficult choices. A number of the papers presented at the conference provided some excellent illustrations of how governments can make more informed choices on the type and nature of the safety net programs they implement and how to help households cope with crises and natural disasters.

As a start, the paper by Owens, Hoddinott, and Kinsey provides an interesting analysis of drought shocks in Zimbabwe focusing on the potential effects of shifting government interventions from *ex-post* mitigation and coping programs to *ex-ante* risk reduction programs. The *ex-post* response is assumed to mirror the principal policy of the government that provided targeted grain loans augmented by a small supplementary feeding program for children under five. The *ex-ante* strategy is assumed to consist of additional capital and extension services provided to households in the survey

Table 3. *Public sector interventions in response to crises and natural disasters*

Intervention type (typical programs)	Beneficiaries	Common targeting methods	Advantages	Disadvantages
Cash transfers (family allowance, poor unemployed and elderly assistance, disability assistance)	<ul style="list-style-type: none"> —Poor families, women and children —Working poor including informal sector —Disabled —Poor elderly —Other vulnerable groups 	<ul style="list-style-type: none"> —Means and proxy means and/or —Categorical 	<ul style="list-style-type: none"> —Do not distort prices —Transfers are fungible, can directly meet critical household needs 	<ul style="list-style-type: none"> —Can distort incentives to labor market participation —Transfers are fungible, subject to unintended household uses —Implementation is information intensive
Public works (labor-intensive, usually infrastructure development projects)	<ul style="list-style-type: none"> —Poor unemployed and underemployed including informal sector —Poor agricultural workers during off seasons 	<ul style="list-style-type: none"> —Self selection (by setting program remuneration below the minimum wage) and —Geographic 	<ul style="list-style-type: none"> —Can be implemented or adapted quickly after crisis onset provided capacity exists —Program size can be easily reduced once the crisis is over —Needed infrastructure is created or maintained 	<ul style="list-style-type: none"> —Can distort incentives to labor market participation —Substantial leakage to nonpoor depending on program design and targeting methods —Difficult to administer, tradeoff between infrastructure development and poverty alleviation objectives
Unemployment assistance (unemployment benefits, severance payments)	<ul style="list-style-type: none"> —Formal sector unemployed 	<ul style="list-style-type: none"> —Coverage determined by eligibility and employer/employee contributions 	<ul style="list-style-type: none"> —Provides immediate assistance to eligible beneficiaries in the event of a crisis —Has automatic countercyclical financing characteristics 	<ul style="list-style-type: none"> —Can distort incentives to labor market participation —Difficult to adapt quickly due to qualification and contribution requirements —Biased to urban formal sector
Wage subsidies	<ul style="list-style-type: none"> —Formal sector unemployed, working age youth, usually poor 	<ul style="list-style-type: none"> —Targeting by firm type, industrial category, firm size, and/or age of the worker 	<ul style="list-style-type: none"> —Can be implemented quickly after crisis onset 	<ul style="list-style-type: none"> —Substantial negative incentive effects for employers

Commodity price subsidies (food, energy, housing)	—Poor and extreme poor families, especially the urban working poor	—Self-selection (by subsidizing only basic staples)	<ul style="list-style-type: none"> —Can reach individuals with variety of skills and experience —Potentially low administrative costs, depending on delivery mechanism —Can be implemented or expanded quickly after crisis onset 	<ul style="list-style-type: none"> —Biased to urban formal sector —Distorts commodity prices and use —Substantial leakage to nonpoor depending on commodity consumption patterns —Often biased to urban populations —Difficult to remove once established due to interest group pressure
Targeted human development (conditional transfers such as school attendance or preventative health care receipt linked to cash transfers)	<ul style="list-style-type: none"> —Poor students —Poor families with access to health services 	<ul style="list-style-type: none"> —Geographic and/or —Categorical and/or —Means or proxy means and/or —Community (together with one of above) 	<ul style="list-style-type: none"> —Can improve school attendance and/or health care use —Supports income of the poor —May promote human capital development 	<ul style="list-style-type: none"> —Effectiveness influenced by existing education/health infrastructure —Extensive monitoring and compliance costs
Service fee waivers (school fees, scholarships, health care)	<ul style="list-style-type: none"> —Poor students —Poor families with access to health services 	<ul style="list-style-type: none"> —Geographic and/or —Categorical and/or —Means or proxy means and/or —Community (together with one of above) 	<ul style="list-style-type: none"> —May promote human capital development 	<ul style="list-style-type: none"> —Effectiveness influenced by existing education/health infrastructure —Limited evidence of long-term impact on school attendance or health

Table 3 (continued)

Intervention type (typical programs)	Beneficiaries	Common targeting methods	Advantages	Disadvantages
Food and nutrition (school feeding, supplemental feeding and nutrition for young children and women)	—Small children, pregnant and lactating mothers	—Geographic	—Can be effective in alleviating hunger, increasing school attendance for poor children	—Limited beneficiary group
	—Children attending schools in poor communities	—Means or proxy means —Self-targeting	—May promote human capital development	—Resource intensive —Substantial benefit leakages depending on targeting method —Often biased to urban populations
Microfinance (microenterprise credit, seasonal rural, and emergency credit for the poor)	—Poor microentrepreneurs	—Means and proxy means and/or	—Promotes physical capital accumulation in poor communities	—Limited beneficiary group
	—Poor women	—Geographic and/or	—May increase household income	—Administratively costly
		—Individual project quality	—Benefits of public resources may be enhanced by multiplier investment effect	—Biased to rural populations —Limited application to economy-wide crises because of procyclical demand for microcredit
Social funds (small scale infrastructure development, microenterprise support, community-based social services)	—Poor families, women and children	—Geographic	—May promote human and physical capital accumulation in poor communities	—Difficult to implement or adapt quickly after crisis onset
	—Poor unemployed and under-employed		—High degree of community involvement in project selection and implementation	—Often biased to rural populations

Source: Adapted from Annex II of Blomquist *et al.* (2002).

only two years prior to the incidence of the 1994–95 drought. Using their estimated effects of additional extension services and capital stocks on net crop income, the authors then estimate the effect of higher crop incomes on the holdings of agricultural tools and livestock (assuming that net private transfers are not crowded out). As shown in the paper, the re-allocation of funds from an *ex-post* response to shocks to an *ex-ante* intervention is successful at reducing poverty in nondrought years while at the same time allowing households to build up additional stocks of livestock that help buffering consumption in the aftermath of the 1994–95 drought. Thus shifts to *ex-ante* policy responses to potential shocks promise to be welfare enhancing as well as poverty reducing.

One of the main problems of designing targeting mechanisms during a crisis or natural disaster is that identifying the “newly” poor could be difficult and very costly. Household income is known to be very volatile, and thus an important percentage of the population of a country move in and out of poverty periodically, even in noncrisis environments (Baulch & Hoddinott, 2000). This continuous inflow and outflow of households from poverty places an important challenge to targeting systems based on proxy means testing, categorical and geographic targeting, and even community-based targeting (e.g., see Grosh, 1994). Most of these targeting systems are designed to identify the structurally poor and thus fail to identify the temporary poor generated by crisis.

The paper by Sumarto, Suryahadi and Pritchett on Indonesia highlights clearly the importance of adequate targeting systems when designing programs that help households cope with crises. The two primary contributions of the paper are the formalization of the concept of dynamic benefit incidence and the evidence presented on the difference that program design has on both static and dynamic benefit incidence. The static benefit incidence of a program is typically measured by examining the proportion of the population of households or people covered by the program as one moves from lower to higher deciles (or quintiles) of the distribution of household *current* consumption expenditures. If one were to use a graph, then coverage may be represented by the height and targeting by the slope as one moves to higher quintiles of the distribution of consumption. According to the authors, dynamic benefit incidence can be defined along similar by adding a third dimension (or axis) to the static inci-

dence graph consisting of deciles or quintiles of the distribution of *changes* in consumption from period to period (or consumption expenditure shocks). Using these concepts the authors analyze the static and dynamic benefit incidence of two social safety net programs (collectively known as *JPS*) in Indonesia: an in-kind targeted transfer program that sells subsidized rice to households based on administrative criteria and a set of public employment schemes based on self-targeting. The timing of the 100-village survey and its panel features permit the authors to compare the static and dynamic benefit incidence of these two programs during the period of financial crisis and increased poverty in Indonesia (see Table 1).

Sumarto, Suryahadi and Pritchett find that although the employment creation schemes had smaller average participation than the rice program, they had a much better static as well as dynamic benefit incidence than the sales of subsidized rice. Thus the employment-creation schemes distributed benefits to the households that were poorer initially and households that suffered negative shocks, thus fulfilling both a transfer and an insurance role. As discussed by the authors in more detail, these findings have potentially serious implications on the nature and design of social safety net programs.

The two roles of transfer and insurance provided by natural disaster relief funds are examined in more detail in the paper of Morris and Wodon. As the authors argue, the allocation of natural disaster relief funds can play only a limited role in helping the poorer households more. The reason for this lies in the nature of emergency aid typically provided at a time of a natural disaster. The bulk of emergency aid consists of food, clothing and medicine, while the need for these goods is relatively similar between households. As a consequence there is only limited scope for providing more relief to those who suffered greater losses or who are poorer following a disaster. Morris and Wodon use household survey data collected in the poorest areas of Honduras six to nine months after Hurricane Mitch to examine how relief effort was allocated. They find that the targeting of the relief program was primarily based on the size of asset losses experienced by households and much less on the level of household assets prior to the hurricane. Thus the allocation of relief funds is found to be motivated by insurance considerations. But when it comes to the amount of relief received, they show that it is not significantly related to the size of asset

losses experienced by households, thus confirming the authors' hypothesis that the nature of emergency aid limits one's ability to adjust aid according to the size of the loss experienced.

The papers summarized above do not consider cash transfers as a possible alternative for public interventions for coping at times of crisis. Yet cash transfers at times of crisis and natural disasters targeted toward the most vulnerable households may offer the least costly and most rapid mechanism for helping households. The paper by Skoufias addresses the question of whether the calorie income elasticity, an important parameter summarizing the sensitivity of caloric availability to changes in household income, remains the same or changes during periods of radically different relative prices. Using data from the 1996 and 1999 SUSENAS surveys in Indonesia he finds that the income elasticity of the demand for total calories is slightly higher during the year of the crisis compared to its level in 1996. This suggests that the potential effectiveness of either cash transfer programs aimed at protecting *caloric availability* within households at a time of crisis are not likely to diminish as a result of changes in the price environment faced by households. At a broader level this finding also suggests that structural parameters estimated using cross-sectional data from a normal economic environment continue to be very useful in describing economic behavior even at times of crises and higher inflation.

Caloric availability, however, is not equivalent to micronutrient availability. Households for example, may shift toward foods that are rich in calories, such as cassava and other root crops, at the expense of micronutrient-rich foods such as fruits and vegetables (e.g., see Block *et al.*, 2002). In an effort to shed some light on the sensitivity of micronutrient availability to changes in income, Skoufias also investigates the relationship between income and calories from cereals (which are rich in calories and low in micronutrients) and calories from other foods (excluding cereals and root crops). The latter analysis reveals that the income elasticity for cereals as a group increases while the calorie income elasticity for other foods decreases. Thus as the purchasing power of income decreases, pushing households below the minimum level of calories required for subsistence, households tend to allocate a higher proportion of a marginal increase in their income to cereals. This finding suggests

that while cash transfer programs targeted to poor households near subsistence levels are still effective in protecting caloric intake, they must be complemented with programs that protect basic micronutrient intake.

The last paper in this group by Quisumbing considers two additional and closely related factors determining the relative effectiveness of public interventions. The first one concerns the source of food aid and whether different forms of food aid have different impacts on the nutritional status of children. The second one concerns the identity of the food aid recipient. A growing body of empirical literature suggests that the effect of public transfers such as food aid may differ depending on the identity of the transfer recipient. In fact, a number of human capital investment programs such as the PROGRESA program in Mexico have deliberately targeted cash transfers to women on the grounds that resources controlled by women are associated with better educational and nutritional outcomes of children (e.g., Skoufias, 2001).

Using a panel data set from Ethiopia, Quisumbing examines the determinants of participation in and receipts of food aid through two programs: free distribution (FD) and food-for-work (FFW). FD receipts, which are not conditioned on work effort, can be considered analogous to an increase in nonlabor income. FFW opportunities, on the other hand, may be considered as reflecting a change in the wage rate as well as improvements in women's outside options according to the increasingly accepted collective model of the household (e.g., see Haddad, Hoddinott, & Alderman, 1997). The effects of FD and FFW on child nutritional status are found to differ depending on the modality of food aid, and the gender of the child. Both FFW and FD have a positive effect on weight for height of children. In particular, households appear to invest proceeds from FD in girl's nutrition, while earnings from FFW are manifested in better nutrition for boys.

4. CONCLUDING REMARKS AND LESSONS FOR POLICY

The aggregate nature of economic crises and natural disasters implies that many of the informal mechanisms for mitigating and coping with risk, and in particular those that are community-based, may become less effective. Under such circumstances households may be

forced to rely on self-insurance strategies that are particularly costly in terms of current as well as future welfare.

Knowledge and better understanding of the main coping strategies of households is very useful for setting the priorities for public programs and safety nets. Many of the papers in this special conference issue contribute in this effort by describing the variety of coping strategies used by households in different countries and by examining how successful they were at protecting household welfare. Mexican households, for example, decreased their fertility in response to the tequila crisis (McKenzie). Rural households in Bangladesh borrowed more soon after the 1998 floods (del Ninno, Dorosh and Smith); Ugandan households resorted to fostering orphan children of relatives dying from AIDS (Deininger, Garcia and Subbarao), while South African households were found to cope with the crisis by relying on local support networks (Carter and Maluccio). Yet most of these coping strategies do not appear to be completely effective at protecting households. Poorer households in the Philippines, for example, were found to be less able to protect their consumption as a result of the recent economic crisis and El Niño shock (Datt and Hoogeveen). At least two of the papers in the conference (Handa and King; Carter and Maluccio) provide strong empirical evidence that the self-insurance strategies used at times of crises are associated with lower child nutrition in the short-term (measured by weight for height) and in the long-term (measured by height for age). Households fostering orphan children in Uganda are found to consume, save and invest less while orphan children were at a disadvantage in terms of health outcomes and immunizations. Yet surprisingly little evidence was found regarding the potentially adverse effects of aggregate shocks on the schooling of children in Brazil (Duryea and Arends-Kuenning). Even in Uganda where the AIDS epidemic has increased dramatically the number of orphans and the incidence of fostering, foster children do not appear to experience a serious disadvantage in education (Deininger, Garcia and Subbarao).

In combination these findings suggest that aggregate shocks, even if short-lived, are also likely to have irreversible consequences on the prospects of future generations. Public actions that prevent deteriorations in the nutritional status of children and maintain access to health services for poor and vulnerable households

deserve top priority. Should such interventions also include incentives for families to keep children in school? While there is scattered evidence pointing to the affirmative, the absence of any solid evidence from the papers presented at the conference can only suggest that this issue deserves further investigation.

Having shed some light on the priorities of interventions at time of crises and natural disasters the conference papers also addressed the deeper issues related to the timing and the guiding principles that can increase the effectiveness of public interventions in protecting households welfare. A number of important findings stand out. First, *ex-ante* risk reduction programs offer “a bigger bang for the dollar” relative to *ex-post* mitigation and coping programs since they appear to be welfare enhancing as well as a poverty reducing (Owens, Hoddinott and Kinsey). Second, government led reforms such as an earlier trade liberalization combined with well functioning private markets, public and nongovernmental organizations (NGOs) interventions have the potential of being successful at preventing major crises as was the case in Bangladesh after the 1998 floods (del Ninno). Insofar as governments have the foresight and the discipline to adopt such strategies there are serious opportunities for reducing the adverse effects of crises.

Third, programs that target the structurally poor do not necessarily reach households that can be affected by economic crises and disasters. If poverty alleviation programs are to also serve the role of providing insurance, it is necessary to adopt appropriate targeting mechanisms. Targeting based on administrative criteria, proxy means tests, or categorical variables do a relatively better job at identifying the households that are “permanently” poor than those who are actually hurt by the crises. In contrast, self-targeting systems typically associated with employment generation and infrastructure maintenance and creation programs appear to be possess the advantage of providing both insurance and transfer (Sumarto, Suryahadi and Pritchett).

Fourth, the nature of the aid that a program provides may also constrain the extent to which a program can help poorer or more needy households. Emergency aid, for example, consists mainly of in-kind transfers such as food, clothing and medicine. To the extent that the needs for these goods are the same across households, there is only limited scope for

providing “more” relief to those who suffered greater losses or who are poorer following a disaster (Morris and Wodon). Targeted cash transfers, on the other hand, seem to offer a quick and flexible alternative that could be distributed at a lower administrative cost than in-kind transfers, and may be easier to tailor according to the losses of the affected households. At least for the instances where the objective is to prevent a deterioration of the caloric availability at the household level, the higher calorie income elasticity among poorer households and the insensitivity of the elasticity to changes in relative prices ensure that a well-targeted cash transfer program will have a greater effect on the caloric availability of poorer households (Skoufias). To the extent that the availability of micronutrients is also of primary consideration then cash transfer program may need to be complemented by programs that protect micronutrient intake.

Finally, the design of crisis relief and social safety net programs directed to specific members of households, such as children or pregnant women, must also take into consideration the intermediary role of families (Quisumbing). Person-specific transfer programs run the risk of having a lower effect on the intended individuals due to reallocations of resources within families over which policy makers have no direct control.

In recent years a number of countries, including Bangladesh, Brazil, Colombia, Mexico, Honduras, Jamaica, and Nicaragua, have shifted their national poverty alleviation strategies toward cash transfer programs targeted to poor households and conditioned on households investing in the nutrition, health and education of their children.⁹ Moreover, the transfers associated with these programs are deliberately targeted to women on the grounds that resources controlled by women are associated with better educational and nutritional outcomes of children. The preceding findings suggest that programs of this type provide a good foundation toward the creation of social safety net systems that could be quite effective at times of crises. Governments, for example, can ensure that child nutrition, child health and child schooling of the already poor households are minimally affected by the crisis, by changing the amount of the cash transfer to the poor households already in the program. However, these programs do not have the built-in flexibility to expand coverage to households falling below the poverty line during times of crises. It is hoped that the papers in this special issue make a useful contribution toward the effort to combine long-run poverty alleviation with effective relief during periods of crises.

NOTES

1. A more detailed discussion of these issues can be found in Chapter 9 of the 2001 WDR, in Ferreira, Prennushi, and Ravallion (1999) and in Baldacci, de Mello, and Inchauste (2002).

2. It is important to keep in mind that in the case of a decrease in the value of the domestic currency, producers exporting goods and services are likely to increase production and demand for labor as demand for their products from abroad increases.

3. It should be noted that the mechanisms for managing risks listed in Table 2 are general enough as to be also applicable to other types risk such as those related to health, crime and violence, and the environment.

4. For an example of a study using the double difference estimator to evaluate the impact of financial crises see Baldacci *et al.* (2002). It should be noted, however, that the double difference estimator in this paper relies on country-level time series observations

from a number of countries some of which experienced a financial crisis, instead of panel data at the household level.

5. Related evidence on the adverse effects of droughts and civil wars on child height-for-age *z*-scores can be found in Hoddinott and Kinsey (2001) and Alderman, Hoddinott, and Kinsey (2002), respectively.

6. The discussion above presumes that schooling is a normal good and a simple static model of time allocation between productive and nonproductive (school) activities. If one is willing to acknowledge that schooling involves intertemporal tradeoffs, then one must also take into account the role of credit markets and insurance (e.g., Jacoby & Skoufias, 1997).

7. Interestingly, Duryea and Arends-Kuenning find that the marginal effect of household income on the probability that a child attends school and/or works is the same during a period of crisis as in normal economic

conditions. This is consistent with the findings of Skoufias on the sensitivity of the calorie-income elasticity in Indonesia.

8. In fact, Schady (2001) also finds that children exposed to the 1988–92 economic crisis in Peru completed more years of school.

9. The list of such programs includes *PROGRESA* (recently renamed *Oportunidades*) in Mexico, *Bolsa Escola* and *Bolsa Alimentacao* in Brazil, *Programa de Asignacion Familia* (PRAF) in Honduras, *Red de Proteccion Social* (RPS) in Nicaragua, *Food for Education* in Bangladesh, *Familias en Accion* and *Empleo en Accion* in Colombia and *PATH* in Jamaica.

REFERENCES

- Alderman, H., Hoddinott, J., & Kinsey, B. (2002). *Long term consequences of early childhood malnutrition*. Unpublished manuscript, IFPRI, Washington, DC.
- Alderman, H., & Paxson, C. (1994). Do the poor insure? A synthesis of the literature on risk and consumption in developing countries. In E. Bacha (Ed.), *Economics in a Changing World*. New York: St. Martin's.
- Baldacci, E., de Mello, L., & Inchauste, G. (2002). *Financial crises, poverty, and income distribution*. IMF Working Paper WP/02/4.
- Baulch, B., & Hoddinott, J. (2000). Economic mobility and poverty dynamics in developing countries. *Journal of Development Studies (Special Issue)*, August.
- Binswanger, H., & Rosenzweig, M. R. (1986). Behavioral and material determinants of production relations in agriculture. *Journal of Development Studies* (April), 503–539.
- Block, A. S., Keiss, L., Webb, P., Kosen, S., Moench-Pfanner, R., Bloem, M. W., & Timmer, C. P. (2002). *Did Indonesia's crises of 1997/98 affect child nutrition? A cohort decomposition analysis of National Nutrition Surveillance data*, Fletcher School of Law and Diplomacy, Tufts University.
- Blomquist, J., Cordoba, J. P., Verhoeven, M., Moser, P., & Bouillon, C. (2002). Social safety nets in response to crisis: lessons and guidelines from Asia and Latin America. In *OECD, Towards Asia's Sustainable Development: The Role of Social Protection* (pp. 297–332). Paris: OECD.
- Duryea, S. (1998). *Children's advancement through school in Brazil: the role of transitory shocks to household income*. Inter-American Development Bank, Office of the Chief Economist, Working Paper No. 376, July.
- Fallon, P., & Lucas, R. E. B. (2002). The impact of financial crises on labor markets, household incomes and poverty: a review of evidence. *The World Bank Research Observer*, 17(1), 21–45.
- Ferreira, F., Prennushi, G., & Ravallion, M. (1999). *Protecting the poor from macroeconomic shocks: an agenda for actions in a crisis and beyond*. Mimeo.
- Flug, K., Spilimbergo, A., & Wachtenheim, E. (1998). Investment in education: do economic volatility and credit constraints matter? *Journal of Development Economics*, 55, 465–481.
- Glewwe, P., Jacoby, H., & King, E. (2000). Early childhood nutrition and academic achievement: a longitudinal analysis. *Journal of Public Economics*, 81, 345–368.
- Grosh, M. (1994). *Administering targeted social programs in Latin America: from platitudes to practice*. Washington, DC: The World Bank.
- Haddad, L., Hoddinott, J., & Alderman, H. (Eds.). (1997). *Intrahousehold resource allocation in developing countries: methods, models, and policy*. Baltimore: Johns Hopkins University Press for the International Food Policy Research Institute.
- Heckman, J. J., La Londe, R., & Smith, J. (1999). The economics and econometrics of active labor market programs. In O. Ashenfelter, & D. Card (Eds.), *Handbook of labor economics, vol. 3A*. Amsterdam, The Netherlands: North Holland.
- Hoddinott, J., & Kinsey, B. (2001). Child health in the time of drought. *Oxford Bulletin of Economics and Statistics*, 63, 409–436.
- Holzmann, R., & Jorgensen, S. (2001). Social risk management: a new conceptual framework for social protection and beyond. *International Tax and Public Finance*, 8(4), 529–556.
- Inter-American Development Bank (2000). *Social protection for equity and growth*. Washington, DC: IADB.
- Jacoby, H., & Skoufias, E. (1997). Risk, financial markets, and human capital in a developing country. *Review of Economic Studies*, 64(3), 311–335.
- Lustig, N. (2000). Crises and the poor: socially responsible macroeconomics. *Economia*, 1(1), 1–19.
- Morduch, J. (1999). Between the state and the market: can informal insurance patch the safety net? *The World Bank Research Observer*, 14(2), 187–207.
- Ravallion, M. (2002). *Who is protected? On the incidence of fiscal adjustment*. World Bank Working Paper, February.
- Schady, N. (2001). The (positive) effect of macroeconomic crises on schooling and employment decisions taken by children in a middle-income country. *Paper presented at the Crises and Disasters Conference*, IFPRI, Washington, DC, November 13–14.
- Skoufias, E., 2001. The impact of PROGRESA on the welfare of rural households in Mexico Research Report. Washington, DC: IFPRI.
- Skoufias, E., & Parker, S. W. (2002). *Labor market shocks and their impacts on work and schooling: evidence from urban Mexico*. IFPRI-FCND Discussion Paper #129, March.

- Von Braun, J., Vlek, P. L. G., & Wimmer, A., (2002). *Disasters, conflicts and natural resource degradations: multidisciplinary perspectives on complex emergencies*. ZEF Bonn. Center for Development Research. Annual Report 2001/2002.
- World Bank (2001a). *World Development Report 2001/01 attacking poverty*. New York: Oxford University Press.
- World Bank (2001b). *Social protection sector strategy: from safety net to springboard*. Washington, DC: World Bank.