The Influence of Economic Crisis on Early Childhood Development: A Review of Pathways and Measured Impact

Jed Friedman and Jennifer Sturdy

Human capital, understood broadly in terms of skills, both cognitive and noncognitive, as well as capabilities, such as health or social functioning, is one of the foremost determinants of welfare. Increased attention has focused on the disproportionate influence of early life conditions in the production of adult human capital, and various investments in early life have been shown to be highly cost-effective (Bärnighausen and others 2008; Horton, Alderman, and Rivera 2008). These investments also have far-reaching potential for reducing the intergenerational transmission of poverty. Not only do children who develop cognitive and noncognitive skills grow up to be more productive, but increasing evidence shows that improved parental education and skill are subsequently related to improved child survival, health, nutrition, cognition, and education (Helmers and Patnam 2010; Lam and Duryea 1999; Psacharopoulos 1989; Rosenzweig and Wolpin 1994).

One of the major risks to skill formation in children is poverty. Conditions associated with poverty are in turn associated with worse physical health, psychosocial health, and cognitive outcomes observed in children
(Bradley and Corwyn 2002), and the greater cumulative exposure to these conditions or risk factors is associated with significantly lower cognitive development (Sameroff and others 1993). Much recent scholarship has delineated and explored the various interlinkages between poverty and low early childhood development (ECD) outcomes, summarized in chapter 1. This chapter instead focuses on the possible ECD consequences of one important category of impoverishing event: the economic crisis.

As the 2008 global financial crisis has again demonstrated, economic crises are an unfortunate recurring event in the world and can have severe consequences for household livelihoods. Economic crises, defined as sharp, negative fluctuations in aggregate income, are especially common in developing countries (Loayza and others 2007), and the frequency with which they occur has been increasing in recent history (Montiel and Serven 2005). Declines in household and community resources are not the only risks that arise from an economic crisis because of its aggregate nature. At the same time as households cope with the possibility of reduced income from aggregate economic contractions, vital public services may also experience a decline in quality or availability, which in turn may have an additional impact on skill development among children. For example, the economic crisis that hit Latin America in 1982 led to a decrease in public health spending and had a disproportionate effect on the poorest groups (Musgrove 1987).

This chapter reviews the existing rigorous empirical evidence that links economic crisis to adverse ECD-related outcomes. The studies reviewed all involve ex post analysis that contrasts outcomes assessed with population-representative data with equivalent data measured before the crisis period (more speculative studies that infer crisis impacts from previously estimated parameters, perhaps extrapolated from different populations, are not included here). The pre- and post-data bracket an arguably exogenous event, the economic crisis, and so differences in observed outcomes can be ascribed to the influence of crisis as long as the gap between pre- and post-observations is of suitably short duration. Only results estimated to be statistically significant at conventional levels are discussed. Very few of these reviewed studies have directly investigated the influence of aggregate economic shocks on the cognitive and noncognitive skills of young children. However, numerous studies have explored the relationship between economic crisis and intermediate outcomes, such as nutritional status, that play a key role in ECD. This broad literature is summarized herein.

The next section begins with a discussion that delineates the in utero and early life pathways that determine ECD to establish a framework to assess the possible effects of economic crisis on these pathways and ultimately, perhaps, on ECD. The following sections then review the existing evidence
concerning the impacts of recent economic crises on these nutritional and environmental pathways. The chapter concludes with a discussion of policy responses that may serve to mitigate the detrimental effects from aggregate economic shocks.

**Early Childhood Development Pathways**

To understand how aggregate shocks can affect ECD, we first review the determinative mechanisms for ECD. Conservative estimates from Grantham-McGregor and others (2007) suggest that over 200 million children under five years of age living in developing countries fail to reach their cognitive development potential because of a range of factors, including poverty, poor health and nutrition, and lack of stimulation in home environments. It is possible that this burden increases during times of crisis as poverty increases and food security is threatened. However, to investigate this claim more carefully it is necessary to understand the pathways through which poverty influences skill acquisition in children.

Walker and others (2007) list three functional domains in early childhood that affect readiness for school and subsequent school performance: cognitive ability, social-emotional competence, and sensory-motor development. The authors then extensively review the existing evidence to identify risk factors that may inhibit these functional domains. Based on the consistency of evidence, as well as the magnitude of the risk factor in terms of both prevalence and influence on development outcomes, the authors identify four key risk factors that each affect at least 20 percent of children in developing countries: stunting (31 percent of children under age five), iron deficiency (23–33 percent of children under age four), iodine deficiency (35 percent of the population worldwide), and inadequate cognitive stimulation. In addition, the authors argue there is enough evidence to suggest additional risk factors, including intrauterine growth restriction (11 percent of births) and maternal depression (17 percent prevalence).

These nutritional and environmental pathways are summarized in table 2.1, which lists the operational measure of each risk factor and sources of evidence for the inclusion of each risk factor, as well as the measured impacts on ECD. The majority of these measures are nutritional, concerning either the nutrition of the child or the in utero environment, and an existing literature documents the impacts of economic crisis on nutrition; this is reviewed in a later section. Two other risk factors, maternal depression and inadequate cognitive stimulation in the home and community, have been studied far less in regard to potential impacts from economic crisis; the case of maternal depression is also explored in a later section. The next section, however, first discusses the possible
<table>
<thead>
<tr>
<th>Risk factor/Indicator</th>
<th>Summary of evidence</th>
<th>Source (country)</th>
<th>Impact on ECD</th>
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<tbody>
<tr>
<td><strong>Nutritional</strong></td>
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<tr>
<td>Intratuitne growth restriction/Infants at term with low birth weight (&lt;2,500 g; ≥37 weeks’ gestation)</td>
<td>Cohort studies indicate developmental deficits up to age 3 years.</td>
<td>Grantham-McGregor et al. 1998 (Brazil)</td>
<td>Lower developmental levels</td>
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<td>Gorman and Pollitt 1992 (Guatemala)</td>
<td>Lower cognitive scores at age 2 years</td>
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<td>Gardner et al. 2003 (Jamaica)</td>
<td>Poor problem-solving ability at 7 months</td>
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<td></td>
<td></td>
<td>Walker et al. 2004 (Jamaica)</td>
<td>Lower developmental levels at 15 and 24 months</td>
</tr>
<tr>
<td>Childhood undernutrition/Stunting (height-for-age below –2 SD of reference values)</td>
<td>Prospective cohort studies show stunted children have poorer cognitive outcomes. Supplementary feeding trials all show concurrent benefits, although long-term benefits are less consistent.</td>
<td>Berkman et al. 2002 (Peru)</td>
<td>Children with severe stunting in second year of life scored 10 points lower on WISC-R test at 9 years old</td>
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<td></td>
<td></td>
<td>Mendez and Adair 1999 (Philippines)</td>
<td>Children with stunting at age 2 were associated with significant deficits (~0.14 SD) in cognitive test z-scores at age 8 years old</td>
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<tr>
<td>Iodine deficiency</td>
<td>Iodine-deficient groups are consistently shown to have lower development. Maternal supplementation trials are sufficiently robust to establish that iodine deficiency in utero causes congenital hyperthyroidism and poor development in childhood.</td>
<td>Bleichrodt et al. 1987 (Meta-analysis)</td>
<td>Meta-analysis of 18 studies showed IQ scores 13.5 points lower with iodine deficiency</td>
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<td>Qian et al. 2005 (China)</td>
<td>Meta-analysis of 37 studies in China for children under 16 years found IQ scores 12.5 points lower</td>
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<tr>
<td>Iron deficiency/Iron deficiency anemia</td>
<td>Iron deficiency anemia in infancy is associated with short- and long-term development deficits. Supplementation trials show benefits to motor and social-emotional development, with cognitive benefits reported in preschool children.</td>
<td>Grantham-McGregor and Ani 2001 (Meta-analysis)</td>
<td>Longitudinal studies indicate consistently that anemic children (&lt;2 years) continue to have poor cognitive and motor development and school achievement into middle childhood.</td>
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</table>

| Environmental | Cognitive stimulation or learning opportunities | Consistent evidence from intervention studies shows that providing cognitive stimulation or learning opportunities to young children significantly increases both cognitive and social-emotional competence. | Gardner et al. 2003 (Jamaica) | Significantly higher cognitive functioning in young children given cognitive stimulation or learning opportunities. |

| Maternal depression | Consistent evidence from associational studies shows significantly lower cognitive and social-emotional competence in infants of depressed mothers. | Galler et al. 2000 (Barbados) | Reduced levels of cognitive function and higher levels of behavior problems reported in young children of depressed mothers. |

**Source:** Adapted from Walker and others 2007.

**Note:** ECD = early childhood development; SD = standard deviation.
influence of economic crisis on decidedly the most adverse ECD outcome: infant mortality.

**Aggregate Shocks and Infant Mortality**

The most severe condition affecting ECD is infant and early child mortality. Country-level investigations that examine the influence of aggregate economic shocks on infant mortality reveal a mixed picture. Much of the initial evidence was derived from developed economies and concluded that the likelihood of infant survival, like many health indicators, actually improves during recessions. For example, Dehejia and Lleras-Muney (2004) find that infant mortality is generally pro-cyclical in the United States. A variety of transmission mechanisms have been proposed to explain why economic recessions lead to improved child health in developed countries, including reductions in air pollution (Chay and Greenstone 2003), reductions in health-damaging behaviors such as smoking and drinking, and increases in the probability that mothers engage in time-intensive activities such as exercise and prenatal care (Ruhm 2000; Ruhm and Black 2002).

Country-level studies from the developing world have shown a less definitive pattern. Sharp economic downturns were associated with increases in infant mortality in Mexico (Cutler and others 2002), Peru (Paxson and Schady 2005), and India (Bhalotra 2010). However, when looking at the 1997 financial crisis in Southeast Asia, little impact on mortality has been identified in Indonesia (Strauss and others 2004).

One recent comprehensive study of developing countries has identified a clear link between aggregate economic contractions of sufficient magnitude and increases in the likelihood of mortality in the first year of life. Baird, Friedman, and Schady (2010) pool all available Demographic and Health Surveys (DHS) from 59 developing countries around the world to construct a dataset of 1.7 million live births over series of varying lengths, depending on the timing and number of surveys taken, in each country. The authors identify a large negative association between infant mortality in a given year and their measure of crisis—deviations of per capita gross domestic product (GDP) from trend. A 1 percent decrease in per capita GDP results in an increase in infant mortality of between 0.24 and 0.40 deaths per 1,000 children born. On average, the country-specific year-on-year decrease in infant mortality in their data is 2.5 deaths per 1,000 live births; thus, a 1 percent shortfall in per capita GDP from expected trends results in an increase in infant mortality of between 10 and 15 percent of the average annual mortality decline (and a crisis on the order of 7–10 percentage points of GDP completely erases the expected secular gain).

Furthermore, Baird, Friedman, and Schady (2010) identify important heterogeneity within this average relationship between infant mortality.
and economic crisis. The mortality of children born to rural and less educated women is more sensitive to economic shocks, which suggests that the poor are disproportionately affected during most economic crises, and perhaps the poor face important credit constraints that bind in tragic ways during large contractions.

The mortality of girls is also significantly more sensitive to aggregate economic shocks than that of boys. This gender differential exists even in regions such as Sub-Saharan Africa that are not particularly known for son preference and indicates a behavioral dimension where households conserve resources to better protect young sons at the expense of daughters. Finally, the relation between economic shocks and infant mortality is decidedly nonlinear. Figure 2.1 reproduces a figure from the Baird, Friedman, and Schady (2007) working paper that nonparametrically relates

![Figure 2.1 Relation between IMR (Detrended) and Log Per Capita GDP (Detrended)](image)

**Source:** Baird, Friedman, and Schady 2007.

**Note:** Estimated with locally weighted least squares. GDP is measured in year 2000 international (purchasing power parity) dollars. GDP = gross domestic product; IMR = infant mortality rate.
deviations from trend for both the infant mortality rate (IMR) and GDP. For small departures from trend (noncrisis years), little relation is seen between IMR and GDP. However, as negative departures grow in magnitude, that is, as the magnitude of the economic shock increases, the influence on the mortality of female infants is particularly apparent.

Even though the gender difference in mortality response to crises observed in many regions suggests a behavioral dimension related to declines in household income, little evidence is available to illuminate the causal pathway by which economic shocks are translated into elevated mortality. Baird, Friedman, and Schady (2010) leverage birth timing to reveal that it is the economic conditions “around” the time of birth (a three-month window) that appear to be most determinative of survival in the first year of life. However, the pathways by which shocks in this vulnerable period translate into increased likelihood of death are still not clear.

Christian (2010) argues for the importance of maintaining adequate nutrition during crisis periods to avert increases in child mortality and morbidity but does not present evidence that this is a dominant causal channel for elevated mortality. A decline in the quality or quantity of public health services during periods of crisis is another potential mechanism, and Ferreira and Schady (2009) contrast the experiences of Indonesia and Peru to indicate the likely importance of maintaining critical health services. However, the evidence does not extend beyond these two case studies.

Emerging findings indicate that the negative relation between economic crisis and infant survival is attenuated in middle- and upper-middle-income developing countries, perhaps delineating a bridge where the counter-cyclicality of IMR and aggregate income in low-income countries switches to the pro-cyclicality observed in high-income countries. Miller and Urdinola (2010) observe that child mortality is positively related to the coffee price in coffee-growing regions of Colombia, whereas Schady and Smitz (2010) investigate recent economic crises in 17 middle-income countries and find that IMR rose during only two contractions—in Armenia and Peru—that also happened to experience some of the most severe shocks. Currently, however, in much of the developing world the risks to infant survival are still present. Friedman and Schady (2009) estimate that the 2008 global financial crisis led to 35,000–50,000 excess infant deaths in Sub-Saharan Africa the following year.

**Aggregate Shocks and Nutritional Pathways**

If economic crises affect the mortality of infants and young children, it is highly probable that crisis can also influence the health of surviving children to a substantial degree. One long-standing concern that has received
much of the attention in the literature is the effect of crises on nutritional status. For example, in a speculative exercise that uses data available from the 1997 East Asian crisis, Bhutta and others (2009) model the plausible impacts of the 2008 economic crisis on various infant and child health indicators for the Asia region. While noting the insufficiency of some data, their results suggest maternal anemia rates may increase 10–20 percent, the prevalence of low birth weight by 5–10 percent, childhood stunting by 3–7 percent, wasting by 8–16 percent, and under-five mortality by 3–11 percent. The most notable potential pathway for these impacts is lower quantity and quality of nutritional intake resulting from increased food insecurity and lower household income.

If these adverse impacts have indeed occurred, the implications for ECD outcomes are clear, given that these affected domains are some of the critical developmental risk factors listed in table 2.1. Although the crisis impacts mentioned above are hypothetical based on a model calibrated with historical data, a substantial body of work has investigated the ex post impacts of aggregate shocks on various nutritional measures, including birth weight, child stunting, underweight and wasting, and child anemia. This section reviews this empirical evidence base, and the empirical findings are summarized in table 2.2.

Birth Weight

Low birth weight, defined as less than 2,500 grams at birth, is a significant determinant for infant mortality (McCormick 1985) and reduced developmental outcomes (Gardner and others 2003; Gorman and Pollitt 1992; Grantham-McGregor and others 1998; Walker and others 2004). The importance of such a risk factor in determining ultimate ECD is clear. However, empirical evidence is limited on the causal impacts of aggregate shocks on birth weight.

One piece of evidence comes from Argentina, where the 1999–2001 recession and consequent 2001–02 economic collapse resulted in a 17 percent drop in GDP from 2000 to 2002. Although the economic recovery was relatively quick, the crisis had a potentially lasting effect on human development levels. Cruces, Gluzmann, and Lopez Calva (2010) use data over the 1993–2006 period and leverage regional variation in GDP and health outcomes to estimate a low birth weight to GDP elasticity. For years in which there is contraction in regional GDP, the authors estimate an elasticity of 0.25 case of low birth weight per 1,000 births for every percentage point decline in GDP per capita. Applying this estimate to the growth shortfall from the 2007–09 crisis in Argentina, the authors project an increase in the rate of low-weight births from 68.1 to 70.1 per 1,000. Interestingly, the authors’ estimates find no significant impact from an increase in GDP on
<table>
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<tr>
<th>Risk factor indicator</th>
<th>Summary of evidence</th>
<th>Source</th>
<th>Crisis type, year, and country</th>
<th>Impact on ECD</th>
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<tbody>
<tr>
<td>Intrauterine growth restriction/Infants at term with low birth weight (&lt;2,500 g; ≥37 weeks' gestation)</td>
<td>There is limited empirical evidence on the effects of shocks on infant birth weight; however, the current available evidence suggests increases in the risk of low birth weight. Further empirical research is required.</td>
<td>Cruces et al. (2010) Economic, 2001–02, Argentina</td>
<td>Low-weight births to GDP elasticity of −0.25 per 1,000 births during crisis period</td>
<td>Reduced birth weight between 50–100 grams</td>
</tr>
<tr>
<td>Childhood undernutrition/ Stunting (height-for-age below −2 SD of reference values)</td>
<td>There is evidence of increased stunting from extreme shocks and some more moderate shocks. Impacts are found among those aged under 24 months during the period of exposure, suggesting the youngest are the most vulnerable. However, there is little evidence on the lasting impacts of these increases in early childhood undernutrition, whether catch-up is possible and to what degree.</td>
<td>Strauss et al. (2004) Economic, 1997–98, Indonesia</td>
<td>No negative consequences from 1997 crisis</td>
<td>Reduction of 0.25 z-score at age 4 observed for children born during the crisis</td>
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<td></td>
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<td>Paxson and Schady (2004) Economic, 1988–92, Peru</td>
<td>Reduction of 1.5–2 cm of growth for children 12–24 months, but not older cohort</td>
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<td>Alderman et al. (2006) Civil war and drought, 1982–84, Zimbabwe</td>
<td>Reduction of z-score 0.58 SD</td>
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<td></td>
<td></td>
<td>Yamano et al. (2003) Drought, insect attack, and crop disease, 1995–96, Ethiopia</td>
<td>Reduction of 0.12–0.17 cm for children 6–24 months</td>
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<tr>
<td>Malnutrition Category</td>
<td>Description</td>
<td>Source(s)</td>
<td>Economic Impact</td>
<td>Nutritional Impact</td>
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<tr>
<td>Iodine deficiency</td>
<td>To our knowledge, there is no evidence on the impacts of crises on iodine deficiency.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Iron deficiency/iron deficiency anemia</td>
<td>There is little direct evidence concerning the effects of economic crisis on child or mother micronutritional status, although it is possible that where macronutritional deficits arise due to aggregate income shortfalls, micro-nutritional deficits may also occur. Further empirical research is required.</td>
<td>Block et al. (2004)</td>
<td>Economic and drought, 1997–98, Indonesia</td>
<td>Decrease of 6.1% in child hemoglobin concentration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frankenberg et al. (1999)</td>
<td>Economic, 1997–98, Indonesia</td>
<td>No impact on child or mother hemoglobin levels</td>
</tr>
<tr>
<td>Child malnutrition/wasting (weight-for-height z scores -2 SD or more below the mean)</td>
<td>Although wasting is often used to assess the severity of emergencies because it is strongly related to mortality, we find little empirical evidence on the impacts of aggregate shocks on wasting. Further empirical research is required.</td>
<td>Block et al. (2004)</td>
<td>Economic and drought, 1997–98, Indonesia</td>
<td>Similar to Waters et al. (2003), no impact on weight-for-age. However, wasting increased from 6% to 12%.</td>
</tr>
<tr>
<td>Child malnutrition/underweight (weight-for-age z scores -2 SD or more below the mean)</td>
<td>To our knowledge, there is little empirical evidence to suggest that aggregate shocks impact childhood underweight status, as measured by weight-for-age. Further empirical research is required.</td>
<td>Waters et al. (2003)</td>
<td>Economic, 1997–98, Indonesia</td>
<td>No impact on weight-for-age, although women (potential mothers) with BMI less than 18 increased from 14.1% to 14.7%</td>
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</tbody>
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Table 2.2 Impacts of Aggregate Shocks on Main Pathways for Early Childhood Development Outcomes (continued)

<table>
<thead>
<tr>
<th>Risk factor indicator</th>
<th>Summary of evidence</th>
<th>Source</th>
<th>Crisis type, year, and country</th>
<th>Impact on ECD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>Economic, 1997–98, Indonesia</td>
<td>No impact on weight-for-age</td>
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<td></td>
<td></td>
<td></td>
<td>Economic and subsequent structural adjustment reform, 1990s, Cameroon</td>
<td>Increase in malnutrition for children 0–3 years from 16% to 23%</td>
</tr>
</tbody>
</table>

Pathway: Environmental

Cognitive stimulation
To our knowledge, there is no evidence on the impacts of crises on child cognitive stimulation. N/A

Maternal depression
No study has yet linked a rise in economic crisis–induced adult psycho-social morbidity to adverse child outcomes. This is a clear gap in the literature that needs to be addressed before we can confidently point to maternal depression as another relevant channel for economic crisis influencing ECD outcomes.

Economic, Thailand
Increase in suicidal ideation among recently unemployed adults

Economic, Indonesia
Increase in symptoms related to depression and anxiety among adults

Source: Authors’ compilation.

Note: BMI = body mass index; ECD = early childhood development; GDP = gross domestic product; N/A = not available; SD = standard deviation.
low birth weight, suggesting an asymmetric relation between changes in low-birth-weight prevalence and changes in aggregate income similar to that observed for infant mortality referenced above.

Although not an economic crisis on a large scale, Burlando (2010) combines data from a 350-household survey, as well as 20,000 birth records covering a multiyear period, to demonstrate that income loss associated with a month-long power outage in Tanzania resulted in reductions in birth weights of infants born seven to nine months later. For women who were at most seven weeks pregnant when the power outage began to those who became pregnant two weeks after the end of the blackout, the author observes a reduction in birth weight of between 50 and 100 grams. These birth weights were recorded in the main maternity ward in the urban area of Zanzibar Town, which caters mostly to the urban population hardest hit during the power outage. Explanations such as a change in the composition of hospital-seeking women, prenatal care consultations, and food shortage are ruled out as significant determinants for the difference in birth weight. Although evidence was found of a change in fertility behavior due to the blackout, with a higher number of subsequent births in the affected cohort and an increase in the number of teenage mothers, higher fertility could not explain why low birth weights were observed for women already pregnant during the blackout. The author proposes reduced maternal nutritional intake resulting from the temporary income shock as the main transmission mechanism for reduced birth weights. When compared with other cohorts, data suggest that women who were visibly pregnant during the blackout received insurance from shocks, whereas women who may not have known they were yet pregnant or had conceived during the blackout did not receive the same protection.

**Stunting**

Childhood stunting is primarily an indicator of chronic malnutrition, especially in utero and in early childhood, and is calculated by comparing the height-for-age of a child with a reference population of well-nourished and healthy children. Stunting (height-for-age z scores 2 standard deviations or more below the mean) has a demonstrated increased risk for poorer cognitive outcomes, including performing poorly in school, decreased scores on cognitive function tests (Berkman and others 2002; Mendez and Adair 1999). Stunted children fail to acquire skills at normal rates compared with nonstunted children (Grantham-McGregor and others 1997), and for this reason the impacts of aggregate shocks on childhood stunting may have severe consequences for ECD. The evidence largely, although not exclusively, points to the presence of such impacts from crisis, especially for shocks of the very largest magnitudes.
Paxson and Schady (2004), who use DHS data from 1992, 1996, and 2000 to estimate the impact of the 1988–92 Peruvian crisis on child nutritional status, find that children born at the beginning of the crisis and observed at four years of age in 1992 had significantly lower height (approximately 0.25 z-scores lower) compared with the same aged peers in 1996 and 2000 who exhibited no differences from each other. The lack of data on stunting for the precrisis period makes this finding suggestive but not definitive. In contrast Strauss and others (2004) find no negative consequences from the 1997 Indonesian crisis on stunting when comparing a panel of children measured in 1997 and then 2000 (consistent with the null finding for infant mortality in Indonesia cited earlier).

Using panel data from households living in rural Zimbabwe, Hoddinott and Kinsey (2001) estimate the impact of an extreme crisis, the 1994–95 drought, on childhood stunting. The authors use data from households first interviewed in 1983 to 1984, interviewed again in 1987, then annually from 1992 to 1997. This enables a comparison of height-for-age between children in similar age cohorts in years of average rainfall (measured in 1993 and 1994) with those in drought years (measured in 1995 and 1996). The analysis finds that children aged 12–24 months lost 1.5–2.0 centimeters of growth, with no impact on older children. The evidence suggests that the drought had an impact only on children residing in poorer households (measured in terms of livestock holdings) who are arguably less able to buffer income shortfalls with asset sales. The nutritional effects of the drought for those affected also persisted to the end of the study period, indicating that growth was not able to catch up. In a similar analysis, using data on children’s nutritional status as preschoolers, the nutritional status of their siblings at a comparable age and information on both civil war and drought shocks, the Zimbabwe civil war resulted in a reduction in the child height-for-age z-score of 0.5, and the 1982–84 drought shock resulted in a reduction of 0.6 (Alderman, Hoddinott, and Kinsey 2006).

Yamano, Alderman, and Christiaensen (2003) use data from three national surveys carried out in 1995–96 in Ethiopia to assess the impact of food aid programs on stunting in the presence of crop damage resulting from recent droughts, insect attacks, and crop disease. Through this analysis, the authors find that a 10 percent increase in crop damage corresponds to a 0.12-centimeter reduction in growth over a six-month period for children 6–24 months old. When food aid is controlled for in the analysis, the crop damage corresponds to a 0.17-centimeter reduction in child height, indicating the partially protective effects of such aid. Similar to other findings, no significant impact of crop damage is seen on child growth for children 25–50 months old, highlighting the vulnerability of this younger critical age group (under 24 months) to shocks.
In summary, evidence has been found of increased stunting from extreme shocks, such as drought and perhaps the very large economic contractions witnessed in Peru over the 1988–92 period, although impacts from more moderate crises are somewhat mixed. In addition, little is known about the lasting impacts of these increases in childhood stunting, if catch-up is possible, and if so to what degree.

Other Nutritional Outcomes

Pongou, Salomon, and Ezzati (2006) use pooled cross-sectional Cameroon DHS data from 1991 and 1998 to estimate the combined effect of economic crisis and subsequent government adjustment programs (which reduced public expenditures) on child malnutrition. Child malnutrition is defined in this analysis as underweight (weight-for-age $z$-scores 2 standard deviations or more below the mean) for children under age three. The data cover a period of increasing poverty at least in part due to economic crisis and related reductions in public expenditures, and so the authors are able to test how malnutrition may be affected by an aggregate shock, as well as how this impact may be mediated by economic status and accessibility to formal health care.

The authors find that underweight status for children under age three increased from 16 percent in 1991 to 23 percent in 1998. Declines in economic status and health care accessibility were both correlated with an increase in malnutrition in urban areas, with the children of educated mothers the most protected from adverse changes. In rural areas, reductions in health access, but not economic status, were correlated with an increase in malnutrition, and children born either to low-educated mothers or into poor households experienced the largest increases in underweight status. However, what is not clear from the analysis is whether this change in health access was due to a reduced ability to pay on the part of households or a reduced ability of the health system to provide care.

A handful of studies have documented the impact of the 1997 Indonesia crisis on other health outcomes that can be ultimately linked to child development, including micronutritional deficiencies and general access to health care. Waters, Saadah, and Pradhan (2003) examine the impact of the 1997–98 East Asian crisis on health utilization and outcomes in Indonesia. During the crisis, inflation was at an annual rate of 58 percent, food prices increased an estimated 80 percent, and the overall poverty level increased from 11 to 20 percent. Utilization of public facilities declined 8 percent, while private facility utilization declined 4 percent from 1997 to 1998. The authors found no impact of the crisis on child nutritional status, as measured by weight-for-age. However, evidence for the same period was found for slight decreases in women’s body mass index (BMI)
Using nutritional surveillance data from rural Central Java, Block and others (2004) also estimate the impact of Indonesia’s 1997–98 drought and financial crisis on child health outcomes. The authors decompose data trends into time, age, and cohort effects using 14 rounds of data from December 1995 to January 2001. The authors argue that failure to control for age and cohort effects will substantially underestimate the impact of the crisis on nutritional outcomes. Similar to Waters, Saadah, and Pradhan (2003), the authors find no impact on child underweight status (weight-for-age). However, they find large and long-lasting impacts on other measures of nutritional status, including wasting (weight-for-height z-scores 2 standard deviations or more below the mean) and micronutrient status. The analysis shows that prevalence of wasting doubled from 6 to 12 percent, with limited recovery by 2001. The effects on mean hemoglobin concentration from December 1996 to July 1998 show a decrease of 6.1 percent. With larger impacts on hemoglobin concentration in children born or conceived during the crisis, it appears that maternal malnutrition was an additional pathway for increased risk of iron deficiency anemia in children. This conclusion is validated through observed decreases in egg, dark green leafy vegetable, and cooking oil consumption at the household level.

Micronutritional deficits such as iron or iodine deficiency are two of the six ECD risk factors in table 2.1; however, little further direct evidence has been identified concerning the effects of economic crisis on child or mother micronutritional status, although it is possible that where macronutritional deficits arise because of aggregate income shortfalls (see above), micronutritional deficits may also occur. The only other evidence on child anemia and crisis also derives from the 1997 crisis in Indonesia. Strauss and others (2004) and Frankenberg, Thomas, and Beegle (1999) find no change in hemoglobin levels of children or mothers, although the relatively limited frequency of data collection may not have been able to identify the impacts observed in Block and others (2004). This is an area for further inquiry.

Aggressive Shocks and Environmental Pathways

Psychosocial morbidity, especially maternal depression, is yet another risk factor for ECD (Sohr-Preston and Scaramella 2006). Factors associated with poverty such as unemployment and increased material risk are also associated with poorer adult psychosocial health, at least in developed countries, thus highlighting another causal channel linking poverty with potentially lower ECD measures. In the United States, low-income respondents have lower odds of having no psychosocial disorder relative to high-income
respondents (odds ratio [OR] = 0.6), as do respondents with less than a high school education relative to college graduates (OR = 0.3) (Kessler and others 2005). In a series of studies sponsored by the International Consortium in Psychiatric Epidemiology, the odds of experiencing two or more (comorbid) disorders in the past 12 months increase with declining income and education in Canada, the Netherlands, and the United States, but not in Mexico (WHO International Consortium in Psychiatric Epidemiology 2000).

Researchers have taken an interest in investigating the causal mechanisms and direction of this observed association. Competing theories include the social causation hypothesis, whereby low socioeconomic status leads to mental disorders through pathways such as stress and relative deprivation, and the drift or selection hypothesis, in which mental ill-health leads to declines in socioeconomic status via reduced educational and occupational attainment. This distinction is relevant for understanding the possible impacts of economic crisis on ultimate ECD outcomes, because the selection hypothesis would preclude strong effects of crisis on parental psychosocial well-being whereas the social causation hypothesis would allow for it.

Several tests of these theories, all based on data from developed countries, suggest that both mechanisms are probably relevant. A New Zealand-based study (Miech and others 1999) finds that internalizing disorders (anxiety and depression) do not affect subsequent educational attainment, whereas externalizing disorders (conduct and attention deficit disorders) do. Social causation effects explain the relationship between anxiety disorders and educational attainment, whereas both causation and selection effects apply to conduct disorder. Johnson and others (1999), following a cohort of young children in New York State for almost 20 years, find support for the social causation hypothesis for anxiety, depressive, disruptive, and personality disorders, whereas disruptive and substance use disorders appeared to select respondents into lower educational attainment. The root cause behind social causation may very well be stressors related to perceptions of loss of autonomy rather than low income per se; for example, indebtedness is a greater predictor of depression and anxiety than low income levels in the United Kingdom (Jenkins and others 2008). This is a suggestive finding that may be salient for understanding the psychosocial impacts of economic crisis on adult caretakers of young children.

Turning to the relatively sparse evidence from developing countries, the linkages between poverty and poor psychosocial health in the developing world are less clear. Patel and Kleinman (2003) find significant associations between socioeconomic status (broadly interpreted) and common mental disorders in 10 out of 11 developing-country studies, and Das and others (2007) review population-representative samples from five developing
countries and find no association between consumption-based poverty measures and psychosocial health. Nevertheless, the emerging evidence base suggests that negative (or positive) life shocks are linked to worse (or improved) psychosocial health among adults in developing countries (Das and Das 2006; Stillman, McKenzie, and Gibson 2009), which indicates that it may not be poverty per se that is linked to an increased likelihood of poor mental health, but rather transitions into poverty and the conditions associated with transition.

The handful of studies looking at the psychosocial impact of economic crises in developing countries find them to be severe. In Thailand after the 1997 financial crisis, rates of suicidal ideation rose dramatically among the recently unemployed (Tangcharoensathien and others 2000), and panel data from Indonesia find a dramatic rise in symptoms related to depression and anxiety, particularly among the groups most adversely affected, such as the less educated, urban, and landless populations (Friedman and Thomas 2009). Figure 2.2 reports the prevalence of anxiety and depressive symptoms in a population-representative panel of adult individuals taken at three points in time: 1993, before the crisis; 1998, immediately after the crisis; and 2000. The rise in psychosocial morbidity is apparent in all ages over the crisis period, and this increase appears to be sustained even as other measures of economic welfare such as household income and consumption have largely recovered by the year 2000.

The Friedman and Thomas (2009) study may be the most directly applicable to establishing some link between economic crisis and worsened parental depression and other psychosocial morbidity. However, no study has yet attempted to link a rise in economic crisis–induced adult psychosocial morbidity to adverse child outcomes of any sort. This is a clear gap in the literature that needs to be addressed before we can confidently point to maternal depression as another relevant channel for economic crisis influencing ECD outcomes. In one suggestive study, Costello and others (2003) exploit a natural experiment in the form of an income supplement to American Indian families from a new casino to test the social causation hypothesis. The casino opened in the middle of a longitudinal study on child and adolescent psychiatric morbidity in North Carolina, lifting a sizable proportion of American Indian families out of poverty during the study. Before the casino’s opening, psychiatric morbidity was more common among children of persistently poor families and of families who would later exit poverty relative to children of families that were never poor. After the casino opened, symptoms in children of previously poor households fell to levels matching those of the never-poor, whereas symptoms of the persistently poor children remained high. The effect was specific to conduct and oppositional/defiant disorders; no effects were observed
Figure 2.2 Incidence of Sadness or Anxiety in Each of the Three Survey Years among Indonesian Adults, by Age of Respondent

Source: Friedman and Thomas 2009.
for anxiety and depression. Unfortunately, measures of cognitive skills of the children were not included in the study.

A similar result was also identified in Mexico among beneficiaries of the conditional cash transfer program Oportunidades (Opportunities). Ozer and others (2009) investigate the effect of program participation on child behavior by exploiting the randomized rollout of the pilot program and find a 10 percent decrease in oppositional or defiant disorders among beneficiaries but no change in symptoms related to anxiety and depression. Aizer, Stroud, and Buka (2009) find a robust negative link between maternal stress during pregnancy, as measured through cortisol levels in the blood, and subsequent educational attainment of those infants exposed to elevated levels of cortisol. This last finding is particularly relevant because it suggests that even transitory crisis impacts on the psychosocial health of pregnant mothers can have long-lasting impacts on children. Further work is necessary in a variety of settings to definitively establish and quantify the ECD impacts of crisis that operate through the psychosocial health of the mother; however, the variety of work cited here suggests that this pathway may indeed be an important one by which economic crisis affects ECD.

**Long-Term Consequences of Economic Crisis**

An important question related to any possible ECD consequence of economic crisis is that of duration of impact. Duncan, Brooks-Gunn, and Klebanov (1994) and McLoyd (1998) argue that it is the conditions associated with persistent rather than transitory poverty that result in low levels of child development and subsequent adult functioning, at least for U.S. populations. Because crises are by definition transitory events (although severe ones can last several years), do any of the influences on risk factors discussed in previous sections have an impact on the individual that lasts into later childhood, adolescence, and, ultimately, on into adulthood? That conditions in early life can have long-term consequences for health (Barker 1992; 1995), education, and socioeconomic outcomes for individuals is well established. Case and Paxson (2010), using a within-family estimator, find that children who are born heavier and longer score higher on cognitive tests later in life, attain more education, are more likely to be employed, and earn more, conditional on employment. Grantham-McGregor, and others (2007) look at the effect of stunting and poverty on both school attainment and learning and come to a similar conclusion: Stunted children have poorer performance in school, with an estimated reduction of 0.7–0.8 standard deviation on test scores (a reduction equivalent to two years of schooling). With the assumption that every year of schooling is equivalent to an increase of 9 percent in adult annual income,
the authors estimate a loss in adult income from being stunted of between 22 and 30 percent. If an economic crisis leads to lower birth weight or stunting among children during the critical period of in utero development and the first two years of life, as suggested by the material reviewed previously, then crisis will likely lead to lower cognitive skills or earnings for that same cohort later in life.

Direct observations of long-term impacts of crisis, however, are rare. One recent study provides evidence on the medium-term impacts of economic crisis on child nutritional status, as measured by height-for-age, as well as one direct measure of early childhood cognitive development, a vocabulary test score—indeed, this is the first study to our knowledge that directly investigates impacts of economic crisis on cognitive measures. Hidrobo (2010) observes children who were three years old or younger during the 1998–2000 economic crisis in Ecuador first in 2003 (when they were three to five years old) and then again in 2005 (at between five and seven years of age). The author identifies the impact of the crisis by comparing sibling differences in outcomes across households exposed to the crisis with other sibling sets observed at similar ages but not exposed to the crisis, where crisis exposure is determined by birth month and province. The author proposes three major pathways through which the crisis can affect child health and cognitive development: (1) reductions in household real income, (2) reductions in the amount of time parents spent at home, and (3) decreases in the health environment. The author finds that one year of crisis exposure resulted in a significant decrease in height-for-age by 0.1 standard deviation, as well as a reduction in vocabulary test scores of 2.4 points (corresponding to a 3 percent reduction). The author also examines how exposure to the crisis may vary by age and finds that the largest negative impact on height is found for children 12–17 months old during the crisis period, whereas the impact on the cognitive development measure is largest for those 18–29 months old over the crisis period.

Hidrobo (2010) investigates possible heterogeneous impacts of the crisis and finds that rural farming households were able to better protect their children as measured by height-for-age, but not by the vocabulary score. This suggests that although farm households were somewhat insured from a reduction in food consumption experienced by other households, they may not have been as protected from the deterioration in the general health environment and may also have experienced reduced parental time at home. Similarly, households with access to health centers, and presumably free health services and food supplements for children, were significantly more protected from the impacts of the crisis on child height-for-age, but not for the vocabulary score. This finding emphasizes that multiple causal pathways are determinative of ECD (table 2.1), and economic crises can adversely affect several pathways
simultaneously. Effective protection policies implemented in the wake of an economic crisis would need to consider all of these transmission channels to be most effective.

Although Hidrobo (2010) provides evidence that the negative impacts of a crisis may persist three to five years after recovery, do the consequences of crisis during early childhood extend far into adulthood? The relative lack of long-run longitudinal studies in developing countries has limited this area of inquiry. However, numerous studies identify important long-term impacts of climatic shocks and extreme disruptive events, such as famine, that link impacts measured in adulthood to event exposure on the basis of date and location of birth. These studies may shed light on the long-term impacts of at least the most severe crises that can result in dramatic nutritional declines. Maccini and Yang (2009) demonstrate that positive weather conditions around the time of birth for the 1953–74 birth cohorts in Indonesia decreased the likelihood of female self-reported poverty and poor health, increased female height, and completed years of schooling, as well as improved economic status. Negative shocks early in life can also have long-term negative consequences for adult outcomes. Alderman, Hoddinott, and Kinsey (2006) use aggregate shocks, such as civil war and drought, as an instrument for preschool nutritional status. The authors estimate that preschool malnutrition results in loss of stature, schooling, and potential work experience for a total estimated loss of lifetime earnings of around 14 percent.

Two studies of famine reveal particularly detailed findings. In Almond and others (2007), the authors explore the long-term economic, health, and marital outcomes for individuals affected by the 1959–62 Chinese famine. The authors use month and year of birth, as measured in the 2000 Chinese census, as the base measure of exposure to famine, which is then supplemented with a measure of famine intensity as identified by geographic variation in overall death rates. Focusing on cohorts born in 1956–64, the authors find that greater famine intensity is associated with a higher likelihood of being illiterate (8 percent more likely for women and 9 percent for men), not currently working (3 percent for women and 6 percent for men), and disability (13 percent for women) in 2000. Additionally, men exposed to the famine period as young children were 9 percent more likely to be financially dependent on other household members and experienced higher rates of mortality, as defined by survival to age 40.

One challenge for the Almond and others (2007) analysis is that the three-year duration of the Chinese famine makes it impossible to distinguish between the consequences of exposure to the famine in utero separated from exposure during the first years of life. However, Neelsen and Stratmann (2010) are able to use the eight-month Greek famine of late 1941 to early 1942 to distinguish the long-term effects of undernourishment
at specific ages: in utero and first and second year of life. Using data from the Greek National Population Housing Census, the authors include 11 cohorts born between 1936 and 1946. For these cohorts, the authors observed them when 25–36 years old in 1971 and then again at 10-year intervals for the next three decades. Using a regression discontinuity analysis, the exposed groups are the 1940 birth cohort (exposed during the second year of life), 1941 birth cohort (first year of life), and 1942 birth cohort (in utero), with 1936–39 and 1943–46 cohorts included for comparison purposes.

The findings are similar to those from Almond and others (2007), as the authors estimate that being exposed to famine conditions at a young age lowers the likelihood of being literate, likelihood of completing upper secondary schooling, and total number of years of education. For those exposed in the second year of life, the authors find a reduction of 0.5 percentage point in literacy, as well as reductions in upper secondary and technical schooling of between 1.3 and 1.8 percentage points. For this cohort, a reduced total attainment in education between 1.2 to 1.4 months is also seen, as well as reduced occupational prestige.

The cohort most affected by the famine appears to be those in the first year of life when the famine struck. Reductions in literacy range from 0.4 to 1.1 percentage points and are significant for all rounds of census data. The negative impact on upper secondary and technical schooling completion is 1.8–2.4 percentage points, with years of education reduced 1.4–2.4 months. A significant reduction is also found in the occupational prestige of adults from this birth cohort. The cohort least affected by the famine was the exposed in utero 1942 cohort, which shows no significant reductions in literacy, although years of education are reduced 1.3–1.7 months, with similar reductions in occupational prestige. The authors suspect that positive selection through fertility as well as mortality may explain the mitigated negative impacts for this cohort; however, this requires further study.

In summary, clear long-lasting adult life consequences are found from extreme temporal events such as famine and drought, but as yet little evidence from more moderate (and arguably typical) economic crises exist. The results from the relatively milder Ecuador crisis find impacts lasting up to five years into late childhood, and future longitudinal studies may be able to trace out these impacts further into young adulthood. The clearest pathway through which these lifelong effects occur is again nutrition, especially nutrition during the critical period of very early childhood. The studies cited here have found evidence for stunting and low-birth-weight impacts, at least in the Latin American crises experienced by Argentina, Ecuador, and Peru, and these same nutritional deficits have been linked to lower subsequent cognitive outcomes in a variety of settings. It is thus probable that crises can have long-term ECD-related outcomes operating through these channels. The Ecuadoran study also suggests the importance
Discussion and Policy Responses

This chapter has reviewed the pathways through which ECD outcomes can, in principle, be impacted by economic crisis. These pathways include elevated mortality, reduced nutritional intake, and degradations to the home, school, and health environment. The chapter then reviewed existing rigorous empirical evidence, where rigor is defined as contrasting population-representative outcomes taken from points measured both before and after the plausibly exogenous crisis event. These studies are summarized in table 2.2. Empirical evidence suggests that infant mortality and poor nutritional status, measured through low birth weight, stunting, underweight, and wasting, increase in times of economic crisis in a variety of settings. This suggests salient short-run risks for ECD in the face of aggregate shocks. When reviewing the evidence on longer-run outcomes, the picture is not as definitive, except in the case of the most extreme shocks such as famine. However, sufficient evidence is available on the importance of nutrition at critical ages to suggest that any crisis-induced malnutrition will also have long-run consequences.

Many questions remain unanswered. The findings on mortality suggest an important gender component, with female infants being more vulnerable. Infants born to rural and less-educated mothers are also more likely to die during crisis. Does this same heterogeneity arise when looking at the nutritional and other ECD-related influences of crisis? Evidence from Ecuador suggests that food-producing rural households may be able to buffer much of the nutritional consequences of a financial crisis, so heterogeneity may very well exist along a variety of dimensions that are important to the design of protective policies. This possible heterogeneity in crisis impacts needs to be carefully explored in multiple settings. Even less is known about how crisis affects nonnutritional pathways. Although nutritional deficits at critical ages appear to have long-lasting consequences, what about consequences from a transitory deterioration in the stimulative environment or the psychosocial health of caregivers? The evidence for these questions is in a very nascent stage. Understanding how, and in what context, crisis affects each individual risk factor is a research priority if countries wish to design effective policy responses to the apparently inevitable future macroeconomic shocks.

During crisis periods in developing countries one often finds calls for donors and governments to maintain public health expenditures to protect
maternal and child health. Although in many countries civil service salaries in the health sector are protected, nonsalary expenditures, such as drugs and infrastructure investment, are the most likely to decline during a crisis. While richer countries tend to exhibit counter-cyclical government spending, low-income countries often curtail government spending in a crisis (Lewis and Verhoeven 2010). This has implications for the ability of facilities, particularly at the primary health level, to maintain quality service delivery. Maintaining the pre-crisis levels of government health expenditures is therefore desirable; however, health spending by itself does not guarantee that pro-poor services will be protected (World Bank 2009).

Evidence addressing the potential protective effect of maintaining or increasing supply-side activities during a crisis is severely limited. However, Indonesia is one example where the supply-side response to the 1997 crisis appears to have been a critical factor in the protection of child health. The Indonesian government instituted several health-related policies in the crisis aftermath, including a supplementary feeding program aimed at maintaining the nutritional status of children under five years old, with a particular emphasis on children under two. Giles and Satriawan (2010) find that this program had a significant protective effect on the height-for-age of children aged 12–24 months during the crisis period and that longer exposure to the program, because the program start date varied by region, resulted in ever greater protective effects. They find no impact for children of other ages.

Another protective effort by the Indonesian government was a health card program that served as both a supply- and demand-side policy aimed at mitigating the observed decrease in utilization of key health services. The health card was distributed to households identified as those most vulnerable to the disruptions from the financial crisis and provided household members free services at public health facilities, including outpatient and inpatient care, prenatal care, and assistance at birth. Those facilities that provided subsidized care received additional financing to compensate for the increase in demand. Pradhan, Saadah, and Sparrow (2007) find that utilization of outpatient facilities would have fallen further in 1999 if the program had not been introduced. The authors argue that a considerable portion of the program impacts are a result of the increased facility financing, rather than the demand-side aspects of the health cards. In addition, although the distribution of health cards was pro-poor, the actual benefits of the program (for example, increased utilization) were stronger for the wealthier quintiles, suggesting these households were more likely to benefit from the increased financing in the public health facilities.

In a similar vein, evidence from Thailand shows that the government was able to counteract decreased demand for health services during the 1997–98 crisis through an expansion of the social insurance program. During this
time, health care utilization in Thailand actually increased (Waters, Saadah, and Pradhan 2003). Besides the two examples of Indonesia and Thailand, though, little additional evidence links maintenance of public sector spending to protected health and development outcomes. Future research on this issue will be especially beneficial to the global community’s efforts to design effective supply-side-oriented protection policies.

By contrast, a more substantial body of evidence suggests that policy interventions directed at the demand side can be useful in mitigating the effects of economic crisis, especially if they are already in place at the outset of a crisis or can be rapidly established. Fafchamps and Minton (2007) use data from Madagascar to demonstrate how an unanticipated macro-shock can result in an immediate decrease in health service utilization due primarily to reduced real incomes. The authors find that a removal of user fees resulted in a 22 percent increase in health service utilization. Although this is not an argument for universal removal of user fees, it suggests that removal of user fees for a limited period of time maintains utilization when household poverty is the main driver behind a decline in access to services.

For the purposes of mitigating adverse impacts of economic crisis on ECD outcomes, health care utilization is, of course, just one concern. As detailed in previous sections, nutritional status is a primary pathway for ECD outcomes. For this reason, policy makers need also look toward interventions that directly target household consumption, especially food consumption, during times of economic crisis. Food for Work (FFW) or Cash for Work programs may provide immediate relief to households during crisis periods. As discussed in Gentilini (2007), the transfer selection, whether cash or food, should be based on a thorough and comprehensive assessment of local capacities, including careful analysis of market conditions. However, little evidence is available on which mechanism, or whether a combination of the two, may be the best to mitigate adverse effects during crisis on child nutritional outcomes. Although evidence suggests that FFW programs in Ethiopia improved food security, improved targeting is required to maximize program benefits (Gedamu 2006; Gilligan and Hoddinott 2007).

In terms of ECD pathways, limited evidence is available concerning the impact of FFW programs on child nutritional status. The Ethiopian FFW program did have a positive impact on child weight-for-height (Quisumbing 2003). In Indonesia, a pilot FFW program introduced to mitigate the adverse effects of the 1997–98 crisis transferred rice, cooking oil, and legumes to participant households. However, a program evaluation found no impact on the principal outcome of interest, child and maternal anemia rates, suggesting that to affect micronutrient status the FFW program should have provided foods linked to iron intake (Moench-Pfanner and
others 2005). This underscores the argument that food transfers not only need to be well targeted but also well constituted to address the wide range of ECD pathways.

Another widespread protective policy tool is the conditional cash transfer (CCT) program. A large body of evidence is at hand on the positive impacts of CCT programs on health and education in a variety of contexts (Fiszbein and Schady 2009; Gertler 2004; Schady and Araujo 2008). Although the evidence base is not as extensive, CCT programs have also demonstrated positive impacts on child height (Fernald, Gertler, and Neufeld 2008, 2009). Macours, Schady, and Vakis (2008) provide evidence on the potential for CCT programs to yield improvements in ECD outcomes through several diverse pathways. In Nicaragua, the conditional cash transfer program Atencion a Crisis (Attention to Crisis) provided payments conditional on school-aged child enrollment and attendance as well as preventive care visits for preschool-aged children. Parents were also exposed to informational campaigns concerning the importance of nutrition in household food choices. The CCT program resulted in significant gains for a variety of cognitive and noncognitive outcomes. Child recipients of the program experienced increases of 0.13 and 0.17 standard deviation in social-personal and language measures, as well as a gain of 0.22 standard deviation in receptive vocabulary. In terms of the causal pathways influenced that explain these gains, the program shifted household expenditures toward more diversified diets and more nutrient-rich food for young children, as well as stimulation materials such as books, paper, and pencils. In addition, beneficiary children were found to be more likely to have had a self-reported growth check-up and to have received vitamins, iron, and deworming medicine. Thus, the provision of additional directed resources can propel households to invest more in the early development of their children. Presumably if programs of this nature are already in place before the onset of crisis, they should serve to mitigate the most deleterious effects of crisis on child health, nutrition, and cognition. In addition, these programs can serve as a platform to deliver well-targeted enhanced services deemed necessary in a crisis aftermath.

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The Influence of Economic Crisis on Early Childhood Development |


