Overview

This chapter has two main objectives: (1) to summarize the approaches taken by economics, developmental psychology, and sociology to understand the development and protection of human capital; and (2) to integrate these approaches into a comprehensive framework for analyzing the impact of aggregate economic shocks on human development during the critical formative years of a young person’s life, between conception and about 25 years. Shocks matter during these years both because of the biological changes that take place (for example, during the first three years after conception and at the start of adolescence) and because young people begin to engage with social institutions and markets. Setbacks in either dimension of development can be prohibitively expensive or even impossible to reverse.

Empirical studies in economics have examined how negative shocks, including financial crises, can affect the development of human capital among children and youth. The shock is generally identified at the household level, for instance as a sudden and significant decrease in household income or the involuntary unemployment or bad health of a parent.
These shocks may originate in the community or the country, or they may have an international origin. They may be caused by severe weather, natural disasters, or unexpected large fluctuations in demand, supply, or prices. Whatever the cause, households must cope with a sudden drop in available resources. In some cases, the shock can also have significant impact on the need for services, especially health care, which increases the demands on resources at the same time.

Studies in economics of crises in low- and middle-income countries generally focus on school enrollment and attendance, labor market participation, and health-related outcomes such as child growth and mortality. This volume reviews these studies (see chapter 3, 4, and 5). The main message seems to be that there is enormous heterogeneity in the impact of shocks on children and youth. Few of these studies attempt to disentangle the sources of heterogeneity in outcomes beyond some readily available characteristics of individuals and households such as sex, age, demographic composition, and some socioeconomic indicators. In addition, given the data requirements, most of these studies are restricted to examining the short-run impact of shocks. From a policy perspective, however, it is of great interest to identify long-run implications of childhood and adolescent exposure to adversity (see, for example, Lumey and Stein 1997a, 1997b; Stein and Lumey 2000; Almond and Chay 2003; Almond 2006; Goldin 1999; Banerjee et al. 2007; Hoddinott et al. 2008, 2010; Behrman et al. 2009; Maluccio et al. 2009).

The failure to explain adequately the heterogeneity of outcomes and long-term impacts may also arise from the complexity of human development, embedded within an intricate web of subtle and interrelated systems and processes. Standard tools of microeconomics are largely inadequate to produce a comprehensive understanding of such. This chapter thus proposes a strong human development–centered approach allowing us to better understand the variety of short- and long-run impacts of shocks on child and youth development.

The framework developed in this chapter is an attempt to bring together economics with other social sciences—notably, developmental psychology, and sociology—in the study of the impact of economic shocks on young people’s development. The economics discipline currently dominates the policy domain in international development. Incorporating research and methods from other social sciences will arguably yield a broader understanding and a more comprehensive set of analytical and policy tools to protect and enhance human development. These may prove especially important among countries that face
economic crises, with widespread poverty, potential social unrest, and limited resources for constructive intervention.

The global development community has long understood that investments in human development, especially in job skills, are essential for higher productivity and growth. For example, the World Bank's recent publication *Stepping Up Skills for More Jobs and Higher Productivity* (World Bank 2011a) lays out a five-step development process for the acquisition of skills that will lead toward productivity and growth. That document also identifies economic crises and other shocks as potential threats to the skills development processes. However, it takes a narrow view of both the outcomes at risk and the pathways through which they can be affected. An interdisciplinary approach allows us to delve deeper into the human developmental processes. It enables us to identify the vulnerabilities and protective factors that characterize the crucial years of a young person’s life and to understand the complex and interrelated mechanisms through which crises affect human development.

While yielding new insights and tools, combining different disciplinary perspectives has its challenges. The first is to ensure some consistency among divergent vocabularies and concepts. For example, the *Handbook of Child Psychology* and the *Handbook of Population and Family Economics* use different terms to refer to similar concepts, use the same terms for different concepts, or use terms that seem esoteric to other disciplines. We do our best to identify such jargon in advance and explain the terms in an attempt to minimize the confusion where possible (see also the glossary).

A further challenge in bridging disciplines stems from divergent implicit or explicit theoretical assumptions, models, methods, and data that underlie the empirical research. Traditional microeconomics is based on the principle that each person acts rationally in order to fulfill her objectives. This concept has little relevance in psychology and sociology, or at least is not of central importance. A primary objective of this chapter is to identify and discuss such differences in assumptions, models, methods, and data to avoid misunderstandings and misconceptions. To achieve this semantic, conceptual, and analytical clarity, we have made certain simplifications, sometimes omitting an element in one discipline or the other for the sake of intelligibility.

That said, this work is based partly on the important and substantive diversity in perspectives, methods, and understanding that derive from the different disciplines. We hope that this volume will provide an accessible guide and tool for researchers, policy makers, and practitioners to
gain a broader understanding of how crises affect the developing child and to assist in the design of appropriate measures for the protection and promotion of human development.

Finally, in addition to serving an interdisciplinary audience, it is our objective to produce a volume that can address the concerns of policy makers and nongovernmental organizations that may not be interested in working through a highly technical document. We hope that we have attained a middle ground, which covers the fundamental and indispensable aspects in a way that adequately addresses the topic of child and youth development during economic crises.

This framework starts by establishing a common understanding of aggregate economic shocks. The section thereafter outlines the economics approach to human capital formation, following which we introduce concepts and theories from human developmental sciences. We then begin the process of integrating the two approaches to produce a comprehensive framework highlighting relevant transmission mechanisms to deepen our understanding of the impact of shocks on the developmental processes of children and youth. This interdisciplinary approach has implications for policy, which we elaborate on in the final section.

Given the length of the chapter, not every reader will need or feel the desire to read all the sections in equal detail. We encourage readers to make their own decision about which sections are of importance to further their understanding of the subject. Thus, economists are likely to skip the section on “The Economics of Human Capital,” whereas human developmentalists will be prone to omit the section on “Human Development and a Bioecological Model.” However, a rudimentary understanding of both approaches will be fundamental to further integration of approaches in research and policy.

**Shocks, Crises, Business Cycles, Recessions, Depressions, and Busts**

Terms such as *shock*, *crisis*, and *recession* are often used interchangeably and often refer to similar phenomena, without paying too much attention to their actual meanings. To highlight just one conceptual ambiguity, however, a *shock* can be a positive or a negative disturbance. Therefore, while a crisis or recession might be characterized as a negative shock, certainly not all shocks are negative; and even what presents itself as a negative shock for many in a society may be positive for a few in that it opens up new opportunities. A *crisis* is generally associated with
large-scale social dislocation or disruption (see, for example, Elder 1999). *Recessions* and *depressions* are a particular type of negative shock or crisis associated with slow economic growth or contraction. For the purposes of this volume, we define negative shocks to the household as the inability to meet current consumption needs without a significant reorientation of resources.

Shocks can be distinguished by their direction (positive, negative), depth or intensity, duration, ubiquity or idiosyncrasy, frequency, and predictability. Households can experience negative shocks caused by a myriad of factors, ranging from the death of a household member to a currency crisis. Some shocks, such as unemployment, may be related both to individual characteristics and to shared, more aggregate events such as business cycles. Illness or death may hit one sole household because of unfortunate circumstances, or a large segment of the population can be affected by a pandemic or widespread natural disaster. Without examining other factors at the social, household, and individual level, there is no way to predict a priori what impact these shocks will have on the developmental processes of children and youth.

This study is concerned with the negative aggregate or systemic economic shocks that affect groups of households in a particular country or region or households of a particular type. These shocks occur in the wider economy, and are manifest to the household as changes in the terms of trade they face, or changes in demand or in the value of and returns to household assets. These shocks can include financial and credit market crises, declining prices for products sold, increased prices for items purchased, or business-cycle declines. While natural disasters including earthquakes, droughts, and floods and human crises such as wars and epidemic diseases are also aggregate in nature, they are not the central focus of this analysis. We do our best to draw clear distinctions where the data are available.

Some types of shocks may be repeated over time. Deaton (1997) finds that the ability of households to maintain consumption diminishes if there are repeated negative shocks in a short time period. Households can draw on assets to smooth consumption over the course of one drought; a succession of droughts, however, is more difficult to overcome, particularly if they occur close together. Systemic economic shocks are similar. Some degree of repetition makes it possible to learn from experience—to apply the lessons learned during one event to future events—thereby lessening their adverse consequences. Gertler and Gruber (2002), for example, find that households in Indonesia are
better able to insure consumption against more frequent risks such as illness and idiosyncratic unemployment than against rare shocks such as death. Similarly, Rosenzweig and Wolpin (1985) find that older individuals in rural households in traditional agriculture provide insights into dealing with rarer shocks because they have experienced more such shocks in their longer lifetimes than have younger adults and can therefore provide intergenerational benefits.

It may be tempting to define a crisis by its consequences: that is, a crisis is a negative event for which the household is inadequately insured. But that begs the question of the relative efficacy of insurance practices across households, including the success of the household in minimizing exposure ex ante. Clearly, many households are affected by negative changes in prices or demand, but not all suffer equally in their ability to maintain a minimum level of consumption. In general, though—or at least for certain subpopulations, in particular the poor—systemic economic shocks tend to be large and widespread enough to disturb the performance of local consumption smoothing and (informal) insurance mechanisms.¹

**Identification and Measurement**

While natural disasters or wars, for instance, and the causes thereof are comparatively easy to identify, economic crises, including financial crises, and their causes tend to be more ambiguous. In general, assets lose value suddenly and unpredictably in financial crises. These events can include banking panics, stock market crashes, and the bursting of other speculative bubbles (especially for commodities and quasi-fixed assets such as housing), currency crises, and sovereign defaults. Economic shocks in the sense of business-cycle movements are challenging to identify empirically. These are usually defined ex post as a function of manifest changes in aggregate economic growth rather than as a function of structural or policy factors that can be foreseen in advance.

Table 2.1 shows the frequency of negative shocks based on a number of alternative definitions, as well as shocks defined more conventionally as the three-year moving average of growth per capita. We include three measures of shocks: (1) shocks are those periods in which growth is greater than 5 percent or less than −5 percent; (2) shocks are those periods in which growth is outside the global mean plus or minus one standard deviation; (3) shocks are those periods in which growth is outside the country-specific mean plus or minus one standard deviation. For each measure of shocks, table 2.1 also includes the probability with which any country is likely to experience the shock; this probability is naively
Table 2.1  Global Incidence of Shocks, Selected Years, 1946–2010

<table>
<thead>
<tr>
<th></th>
<th>Number of episodes</th>
<th>Number of countries</th>
<th>Years</th>
<th>Mean number of episodes per country-year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic shocks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth &lt; –5%</td>
<td>186</td>
<td>190</td>
<td>1960–2009</td>
<td>0.02</td>
<td>Penn World Tables 6.3</td>
</tr>
<tr>
<td>Growth &gt; 5%</td>
<td>524</td>
<td>190</td>
<td>1960–2009</td>
<td>0.06</td>
<td>Penn World Tables 6.3</td>
</tr>
<tr>
<td>Growth &lt; global mean – 1 sd</td>
<td>325</td>
<td>190</td>
<td>1960–2009</td>
<td>0.03</td>
<td>Penn World Tables 6.3</td>
</tr>
<tr>
<td>Growth &gt; global mean + 1 sd</td>
<td>316</td>
<td>190</td>
<td>1960–2009</td>
<td>0.03</td>
<td>Penn World Tables 6.3</td>
</tr>
<tr>
<td>Growth &lt; within-country mean – 1 sd</td>
<td>506</td>
<td>190</td>
<td>1960–2009</td>
<td>0.05</td>
<td>Penn World Tables 6.3</td>
</tr>
<tr>
<td>Growth &gt; within-country mean + 1 sd</td>
<td>511</td>
<td>190</td>
<td>1960–2009</td>
<td>0.05</td>
<td>Penn World Tables 6.3</td>
</tr>
<tr>
<td><strong>Financial shocks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banking crises</td>
<td>124</td>
<td>161</td>
<td>1976–2007</td>
<td>0.02</td>
<td>Laeven and Valencia (2008)</td>
</tr>
<tr>
<td>Debt crises</td>
<td>63</td>
<td>161</td>
<td>1976–2004</td>
<td>0.01</td>
<td>Laeven and Valencia (2008)</td>
</tr>
<tr>
<td><strong>Social and political shocks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coups, attempted and successful</td>
<td>733</td>
<td>120</td>
<td>1946–2009</td>
<td>0.10</td>
<td>Center for Systemic Peace</td>
</tr>
<tr>
<td>More than 1,000 forcibly displaced people</td>
<td>134</td>
<td>175</td>
<td>1964–2008</td>
<td>0.02</td>
<td>U.S. Committee for Refugees and Immigrants</td>
</tr>
<tr>
<td>Major episodes of political violence</td>
<td>1,671</td>
<td>175</td>
<td>1947–2008</td>
<td>0.16</td>
<td>Center for Systemic Peace</td>
</tr>
<tr>
<td>Armed conflict</td>
<td>1,957</td>
<td>152</td>
<td>1946–2008</td>
<td>0.21</td>
<td>Peace Research Institute of Oslo</td>
</tr>
<tr>
<td>Political interregnum, interruption, or transition</td>
<td>382</td>
<td>175</td>
<td>1946–2009</td>
<td>0.03</td>
<td>Polity IV Project</td>
</tr>
<tr>
<td><strong>Natural disasters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11,188</td>
<td>221</td>
<td>1960–2010</td>
<td>1.01</td>
<td>Center for Research on the Epidemiology of Disasters (CRED)</td>
</tr>
<tr>
<td>Number that are climate related</td>
<td>8,683</td>
<td>221</td>
<td>1960–2010</td>
<td>0.79</td>
<td>CRED</td>
</tr>
</tbody>
</table>

**Source:** Authors.

**Note:** sd = standard deviation.
defined as the total incidence of each type of crisis over the number of country-years in the dataset.

Growth-related shocks are defined as distinct episodes in which the phenomenon is observed, which can comprise multiple sequential years. For example, while there were only 186 separate country episodes in which the moving average of growth was less than −5 percent per year, there are 432 country-years.

It seems safe to conclude that natural disasters and social and political crises happen much more frequently than financial crises or large economic shocks in general. In addition, it is worth mentioning that large (>5 percent) positive shocks are almost three times as likely as large negative economic shocks (<−5 percent), whereas smaller positive and negative fluctuations seem to mirror each other, indicating business cycles rather than crises. Note that these numbers convey no information about what caused gross domestic product (GDP) to rise or fall. This is a combination of the economic structure, assets, policies, and integration into the world economy: for example, the impacts of a banking crisis and a weather shock on a primarily agricultural economy are likely to differ considerably. More important, there will be significant heterogeneity in the way that different segments of the population are affected by different shocks. Farm households are different from rural nonfarm households and even more different from urban households engaged in the service sector.

Similar shocks may be experienced and perceived differently across societies and across different groups within societies. These variations will partly be determined by the coping strategies available, and this in turn will partly determine how the shock affects them psychologically. For instance, the psychological impact of shocks will differ whether one believes that unemployment is a function of one’s own characteristics or of events and circumstances beyond one’s control. A recent comparative survey of Israel and the United States found that Israelis are more likely to perceive unemployment as structural, whereas Americans are more likely to blame the unemployed themselves. For middle-class Israelis, the experience of unemployment does not affect their core identity; middle-class professionals in the United States, however, interpret unemployment very differently, because their definition of self is more deeply tied to their work status (Sharone 2011). Expectations also color the experience of shocks. Poor families in Brazil may view the loss of a child as a terrible but commonplace event, while parents in societies with low infant mortality and low birth rates may experience that
death as a more profound tragedy (Scheper-Hughes 1993). Context and history play an enormous role in the social and individual perception of and responses to shocks; the definitions of possible, appropriate, or optimal responses; and their impact on individual mental and physical health and social resilience (Hall and Lamont 2009; for more detail on social resilience, see box 6.2).

Whether an economic shock leads to a political and social crisis, as was the case for example in the 2001–02 financial crisis in Argentina, depends largely on how people perceive the changes and alternatives available to them. Importantly, political and social crises do not require actual economic contraction: a shock that merely lowers growth rates below what is expected, or that is combined with perceived changes in income distribution, may have significant social and political consequences. Among youth in France, for example, the most recent global crisis was perceived as an accentuation of a broader trend of economic and social decline (Chauvel 2010).

In sum, the profound shifts in the economic, political, and social structure that often accompany economic crises lend urgency to the topic of child and youth development. As pointed out previously, human development, or the formation of human capital, has been studied in an array of disciplines using a variety of indicators, methods, and sources of data. We thus turn to outline the dominant approaches in modern day social and behavioral sciences, starting with the economics of human capital and proceeding to the human developmental sciences.

The Economics of Human Capital

To economists, human development is the result of accumulated investments in growing children, including nutrition, education, stimulation, and care, in a supportive environment that allows the child to flourish. The microeconomic framework leads to empirically testable hypotheses about the determinants of human capital investments and the impact of shocks, policies, and environments on investment behavior and outcomes. We begin this chapter with the economic model of the production of human capital, which illustrates these determinants and outcomes and demonstrates how different human resource investments interact both contemporaneously and over time. We conclude this section with a framework for considering policies related to human capital investment and finally discuss the strengths and weaknesses of the standard economic approach.
Before we discuss the production of human capital, we describe the benefits of human capital; that is, the reason why a family (or a firm) might want to enhance the human capital of its members in the first place. Becker's Woytinsky Lecture (1967) provides a simple but useful and widely used framework to help think about these investments from the perspective of families or individuals at a particular point in time. It is important to note, however, that the investor (for example, the child's parents) may not be the sole beneficiary of the returns to these investments.\textsuperscript{2} We will return to this agency problem later on. At this point, we will explore how private and societal resource management interacts through markets and policies to determine private human capital investments and the returns to those investments in the presence of shocks.

Economic models usually assume that families decide whether to invest in the human capital of their children in part because these investments are expected to yield payoffs today or in the future. The decision on how much to invest is based on their expectations of the net returns to the investments.\textsuperscript{3} Other things equal, higher expected private benefits and lower expected private costs will encourage greater private investment. The optimum private investment is achieved at the point where the present discounted value of the expected marginal private benefit equals the present discounted value of the marginal private costs.\textsuperscript{4,5} The value of these marginal private costs and benefits can vary across households in the same environment and even across individuals in the same household. Age, sex, birth order, genetic predispositions, different levels of health and life expectancy, and other personal characteristics lead families to differential valuations of marginal returns and differential investment decisions, even across siblings within the same household. These differences are even greater across households, where the marginal private costs can differ considerably. For example, households differ in their access to credit, in their ability to ensure consumption in a crisis, or in the information to which they have access when making investment decisions.

The family produces outputs that it either sells or consumes, and it does so in a systematic way that transforms inputs into outputs. This systematic relationship between inputs and outputs can be described as a production function. A production function is a technical relation that gives the maximum output that can be produced with a given set of inputs by a firm (or by the household or other production unit). For example, the output might be a firm's production of wheelbarrows and the inputs might be labor, physical capital in the form of machine tools and buildings, and intermediate inputs such as steel, wood, plastic, and
rubber. Or the output might be wheat, and the inputs might be seeds, soil, fertilizer, pesticides, water, and labor. Or the output might be child health, and the inputs might be nutrients, genetic predispositions, stimulation, parental time, environmental health conditions, and aspects of health care. The production function in itself does not say anything about whether the inputs actually used are the best combination of inputs, given the decision maker’s objectives. But production functions are essential parts of economic models of behaviors related to human capital investments within the larger contexts of individuals’ or families’ objectives, the markets and policies they face, and the assets they have at the time that decisions related to human development are made.

We write the production function for the output \( Q_f \) of firm \( f \) to highlight the role of some attributes of worker \( i \) in firm \( f \), including innate characteristics \( (G_{if}) \) and human capital that reflects previous human resource investments such as learning skills at home or in school \( (H_{if}) \) that might reflect past shocks, given similar attributes of other workers in the firm \( (L_f) \), capital stock of the firm \( (K_f) \), firm management capabilities and organization \( (M_f) \), and technological knowledge \( (T_f) \):

\[
Q_f = Q(G_{if}, H_{if}, L_f, K_f, M_f, T_f).
\]

All these variables can be vectors with multiple elements. Human capital, for example, can be interpreted to include education (whether from formal schooling, training, work experience, or on-the-job learning), physical and mental health, personality, and psychological states, and social relations—although the literature of empirical economics focuses primarily on the schooling and training components of education, with physical health a distant second.

The firm’s production function (or that of the relevant production unit) is of key interest in determining, say, the impact on adult productivity of investments in children and youth and the shocks that in part determine such investments. Similarly, the productivity of a worker, the human capital that the adult worker possesses, is itself a function of the investments made in that worker when he or she was a child. It is useful to think of the stock of human capital as an outcome of a similar production function, which transformed inputs (education, nutrition, care, and stimulation) into outputs (human capital). And since human capital is multidimensional—encompassing, for example, both cognitive skills and self-discipline—one can imagine a multiplicity of production functions, each mapped to a specific outcome. These production functions reflect the cumulative impact of human capital investments from conception to the time of measurement and include the impact of any shocks or crises.
that affect the inputs invested or their effectiveness in producing human capital (see, for example, Todd and Wolpin 2003, 2007).

**Dynamic and Life-Cycle Aspects of Human Capital Development**

Since human capital production is an ongoing process, the examination of production functions may shed some light on how human capital investments at different stages of development can mitigate the impact of shocks over time.

**Dynamic complementarities.** According to Heckman (2006), human development exhibits increasing returns in the forms of dynamic complementarities and self-productivity. In other words, skills beget new skills, and capabilities foster future capabilities; new capabilities build on a foundation of capacities that were developed earlier. The downside to this is that it is often difficult to recover from early injuries. Later investments can complement previous ones, but may likely not substitute completely for earlier insults. Whether investments in the production of human capital are substitutes or complements is critical to the decision and the returns to investment. The hypothesis of limited substitutability between earlier and later investments has received recent empirical support (see, for example, Cunha and Heckman 2007; Cunha et al. 2006; Heckman 2006). It is clear that the returns to human capital investments in later adolescence depend critically on earlier investments and that remediation, while not impossible, is comparatively expensive (Knudsen et al. 2006).

Human capital investments in an individual over time can be viewed as a continuous sequence of investment decisions, each one reflecting not only factors (such as shocks) prevailing at that moment, but also expectations about the future, the outcomes of past decisions, and the experience of past crises. The decision to continue in postsecondary schooling, for example, is determined by the youth’s innate capabilities; past investments in the youth’s human capital (and thus the youth’s current stock of human capital at the time of the postsecondary schooling decisions); current prices such as tuition and fees and the wage rates that reflect the cost of not working in order to attend school; and expectations about the future returns to postsecondary schooling. All such investments are made under uncertainty and in the presence of unanticipated past and current shocks, as well as future expectations.

Dynamic complementarity has significant implications for investment decisions taken by governments, firms, and families. If negative
shocks reduce human capital investments, or adversely affect the level of human development in a person, the costs in terms of forgone human development and economic productivity may accumulate over time, since lower human capital investments today reduce the returns to any future investments. There is a present loss in the returns to past investments at the time of the crisis, and there is a future loss, relative to the higher level of skills and the higher returns that might have been achieved in the absence of the crisis. This is a public as well as a private calamity: both the society and the family lose the benefits from greater productivity and income in the long run. This path-dependence implies that a crisis can cause families and societies to underinvest in human capital, leading to lower growth, further reducing the returns to investment, and so on.

**Critical periods.** The notion of path dependence or dynamic complementarities takes on even greater importance if there are critical windows of opportunity for certain investments. If negative shocks reduce investments during sensitive periods in human development, the long-run costs of forgone human development and economic productivity may be even higher. As will be explored in more detail in the section “Human Development and a Bioecological Model,” human development is marked by “stage-salient” tasks. If these tasks are not mastered by certain ages, they are costly to make up later in life, and their absence makes it even more difficult to master more complex skills. Cunha and Heckman (2007) review some of this evidence in both animal models and human development (see also Knudsen 2004).

**Implications for Empirical Estimation of Human Capital Investments**

The simple framework below systematizes six critical common-sense considerations for empirical investigations of the determinants and effects of human capital investments.

First, the marginal benefits and marginal costs of human capital investments in a particular individual differ, depending on the point of view from which they are evaluated:

- Because of externalities (that is, effects on others that are not transferred through markets, such as knowledge spillovers or congestion arising from overcrowding), or capital and insurance market imperfections, the social returns may differ from the private returns.
Because there may be a difference between who makes the investment decision (for example, individual children’s parents) and the individuals in whom the investment is made, differences in incentives for investments in one individual rather than another may result, for example, from traditional gender and birth-order roles in household responsibilities such as old-age care for parents.

Second, human capital investments are determined by many individual, family, community, market, and policy characteristics, only a subset of which are observed in datasets available for analyzing human capital determinants and effects. To identify correctly the impact of observed characteristics on human capital investments, we must control for the correlated unobserved characteristics. For example, children with better family backgrounds may have greater innate abilities of the types that increase economic success and may grow up in more supportive environments and attend higher-quality schools. In that case, if we observe only family incomes and parental schooling and not the children’s abilities or the community and school characteristics, the usual research procedures and observational data are likely to overestimate the impact of family background on such investments.

Third, to identify the impact of human capital investments, we must also control for individual, family, and community characteristics that both determine the human capital investments and have direct effects on outcomes independently of their impact on investment decisions. Failing to make this distinction leads us to conflate the impact of the human capital investments with the effects of individual, family, and community characteristics that directly affect the outcomes of interest and are correlated with the human capital investments. For example, innate ability directly affects both the decision to invest in a child’s schooling and the wages the child earns when he enters the labor market. In this case, it is difficult to separate the impact of education from the impact of the child’s underlying ability, and naïve estimates are likely to be biased.

Fourth, estimated determinants and effects of human capital investments apply to a given macroeconomic, market, policy, social, and regulatory environment. The actual returns may change substantially with changes in that environment, such as those associated with improving domestic markets, opening up an economy to international trade, relaxing regulations on migration, or lessening discrimination in labor markets. As
a result, evaluation of current and future human development programs and other policies based on historical data is difficult, unless the historical data allow us to identify the stable parameters in underlying structural relations that determine behavior (for example, production functions and preferences). Reduced-form estimators such as demand functions, which combine production and preference parameters and responses to current and expected future market changes, are likely to be unstable in the case of changing environments, policies, or prices.

Fifth, policy makers and outside analysts may find the impacts of changes in policies hard to predict. If families face a policy change, they can adjust all of their behaviors in response—with cross-effects on other outcomes, not only on the outcome to which the policy is directed. Subsidized school feeding programs, for example, are in effect an income subsidy to the family, which the family can divert in part at least to whatever use it wishes (more consumption of alcoholic beverages, for example, or new clothing for other family members) by cutting back on family provision of food to the recipient child.

Sixth, it is important to understand when the shock occurs in the course of a young person’s life and what sort of investments were made in the past. Schooling history, for example, will affect the returns to the family’s current investments in education and also the probability that the young person will be in school given external shocks. Past investments encourage current investments, by making current investments more productive, partly because previously mastered skills make the acquisition of further skills more efficient.

Estimation of demands for human capital investments sensitive to these considerations can help address a number of relevant questions, including what the impacts of shocks—past, present, or expected in the future—are on human capital investments and how such factors as household behaviors, social networks, markets, community characteristics, and policies may mitigate or exacerbate such effects. Good estimates of these relations are useful for the design of effective policies to protect human capital and minimize the impact of shocks. Challenges to obtaining good estimates include avoiding biases due to unobserved or omitted variables that are correlated with the outcome, measurement errors, and unrepresentative samples. In addition, estimates of the impact of policies on human capital outcomes are generally conditional on other variables, policies, or circumstances. To the extent that these also change, they will influence the impact of the policies being examined.
Framework for Policy Choices Related to Human Capital Investments

Policies determine an important part of the context in which individuals or families make decisions about human capital investments; what the pioneering developmental psychologist Bronfenbrenner (1979) calls the “macro-system.” And policy changes can significantly alter the context in which individuals make human capital investments, effectively shifting the marginal benefits and marginal costs for private human capital investment decisions, thus changing the optimum level of these investments for individuals and families. In this way, policies can affect the total aggregate level of human capital, which determines the efficiency or productivity of citizens as workers, as well as its distribution across different people, families, and groups, who each make decisions in the face of different environments and contexts.

Efficiency and distribution. A situation is efficient (in terms of welfare) if no one person could be made better off without making someone else worse off. Or, to turn this statement around, in a state of welfare inefficiency, at least some people could be made better off with the same resources and technologies without making anyone worse off. This concept of efficiency can refer either to the welfare of different individuals at the same point in time or to individuals at different points in time. Inefficiency may arise from “market failures” or “policy failures.” Market failures may be caused by externalities (that is, contagious diseases or knowledge spillovers), increasing returns to scale over the relevant output range (so that private profit-maximizing prices do not reflect the true marginal social costs), or public goods (in which case at least some of the benefits to investing in an individual accrue to others who do not make the investment). Policy failures include restrictions on prices (for example, on wages, school tuition, and health services) so that they do not reflect social marginal costs, or restrictions on entry and exit in markets, especially in services. These restrictions can give rise to incentives to set prices different from social marginal costs and to socially inefficient levels of investment in human capital.

Distribution is a major policy motive distinct from efficiency. A very efficient economy might have a very undesirable distribution of resources. Society might want to ensure, for example, that everyone attains basic human development levels even at some cost in efficiency or productivity.
Choosing among policies. For many reasons, private decisions relating to human capital investments, including responses to shocks, may not be efficient within a particular market and policy environment. The most commonly cited sources of inefficiency are externalities (that is, effects transmitted other than through market prices), imperfect markets (for example, markets for human capital investments, insurance, and information), and coordination problems. Concerns also arise over distribution, most commonly the command over resources of the poorer and more vulnerable members of society. These have been among the stated motives for human development policies, although some policies purported to benefit the poor may primarily benefit middle- and upper-income families (for example, general subsidies for tertiary education).

The gain from making an inefficient market in human capital investment more efficient does not in itself point toward the best policy for inducing human capital investments at desirable levels. The range of possible interventions and policies is large, including governmental fiats and regulations, governmental provision of or subsidies for human development services, price incentives in the market for human capital investments, price incentives in other markets, changing institutional arrangements in various markets, and more.

Three important considerations should guide choices among alternative policy changes:

- First, policies have costs—not only the direct public sector costs of implementation and monitoring but also private costs, including distortions introduced by policies that may encourage socially inefficient behavior. These include time costs for individuals and the distortionary costs of raising revenues to finance the fiscal expenditures necessary for policy formulation and implementation. In some cases, such costs are estimated to be considerable (see, for example, Devarajan, Squire, and Suthiwart-Narueput 1997). In fact, the costs may be so large that it is not desirable to attempt to offset some market failures by policies. But, if it is desirable to do so, a case can generally be made for instituting policy changes directed as specifically as possible to the distortion of concern because that lessens the distortion costs introduced by the policy. The less well focused the policies are, the more widespread and more substantial the distortion costs of the policies themselves are likely to be, in addition to any distortion costs from raising revenues to finance the policies.
Second, significant *information problems* make it unclear exactly what effects policies have, particularly in a rapidly changing world. This factor is an argument in favor of policies that are as transparent as possible, such as price policies (through imposing taxes or subsidies). Furthermore, society has a strong rationale for subsidizing the collection and provision of more information—for example, about human development—because the private sector is not likely to provide the information optimally. Information has “public goods” characteristics so that the marginal cost of providing more information is near zero and possibly declining. As a result private providers cannot cover their production costs except by restricting the quantities provided and charging a price above the low marginal social costs.8

Third, as noted above, distribution is a concern separate from efficiency. Moreover, there well may be *trade-offs* between policies that increase efficiency and those that promote distributional ends, for example, between increasing human capital for people who can achieve the greater productivity effects and increasing human capital for the poorest.9 Although society might wish to ensure that everyone has basic access to human development resources, as noted earlier, it is also presumably desirable to ensure that everyone has this basic access at as little cost in productivity as possible.

Possible complementarities between pursuing efficiency and pursuing distributional objects, however, may result in “win-win” policies. For instance, imperfections in capital, insurance, and information markets are more likely to affect human capital investments of poorer members of society than those of the better-off, so that making these markets more efficient may benefit primarily poorer people. There is some evidence, though not uniform, that inequality in itself causes health and developmental problems, particularly in those less well-off; in that case, reducing inequality by shifting resources to poorer people may make investments in health and human development more effective (see Marmot and Wilkinson 1999; Deaton 2003). But whether trade-offs or complementarities dominate efficiency and distributional policy motives, we should choose the most efficient policies as possible that still ensure that basic distributional targets are met, rather than ignoring efficiency considerations in pursuit of distributional goals.
Summary of the Economics Approach to Human Capital

The standard economic model of human capital has a number of strengths as a framework for investigating the impact of economic shocks on human development. These include a structure for establishing the optimum level of human capital investments and for analyzing how households make changes in investments in response to changes in policies and markets. These changes to behavior may imply that even short-run crises can have significant long-run consequences if there is limited substitutability between earlier and later investments in human capital development. The model also provides major criteria for policy evaluation, as well as to a number of challenges in empirical estimation, given important unobserved variables and other measurement problems. The model as usually applied, however, tends to abstract from the subtle and complex characteristics and interactions considered in the human development literature. For example, the role of personal traits such as perseverance and self-efficacy, the importance of school and teacher quality, and the characteristics of parenting have only recently been examined in empirical microeconomics. These factors have been at the core of the approach to which we turn in the next section; they complement and enrich the standard economic model and greatly expand our understanding of the processes involved in the development and protection of fundamental human capital.

Human Development and a Bioecological Model

Can we productively complement the standard economic model for how people make decisions about human capital investments and for how they respond and adapt to changes in their environment, for example, in a financial crisis? We now consider whether and how human developmental approaches can help enrich the analysis by more integration with the standard economic approaches.

Human Development: An Introduction

The literature from the human developmental sciences provides more comprehensive conceptual and operational definitions of human development than the economic literature typically does (see, for example, Gottlieb, Wahlsten, and Lickliter 1998; Lerner 1998; Baltes, Lindenberger, and Staudinger 1998). In essence, according to Thelen and Smith, “The theory of development is based on very general and content-independent
principles that describe the behavior of complex physical and biological systems” (1998, 258). Thus, development can only be understood as (1) “the multiple, mutual, and continuous interaction of all the levels of the development system, from the molecular to the cultural”; and (2) “as nested processes that unfold over many time scales, from milliseconds to years” (Thelen and Smith 1998, 258). In other words, human development refers to change over time, and time is typically characterized as chronological age. Age is not the cause of development; it is just a frame of reference. More specifically, development comprises interactions among various levels of functioning, from the genetic, physiological, and neurological to the behavioral, social, and environmental. Human development is a permanent exchange among these levels. And the more mature the person, the more influence and control the person has over the organization of these interactions.

Human developmental science attributes the driving force of development to so-called proximal processes: stimulating, regular face-to-face interactions over extended periods of time with people, objects, or symbols, which promote the realization of the genetic potential for effective biological, psychological, and social development. For example, parents influence and shape their children through parenting behaviors, role modeling, and encouraging certain behaviors and activities for their children.

Bronfenbrenner’s bioecological model (figure 2.1) is well suited to illustrate some important dimensions of these human developmental processes, as it captures the complexity of human development as an intricate web of interrelated systems and processes. A basic tenet of the bioecological systems’ theories of development (Bronfenbrenner and Morris 2006) is that child and youth development is influenced by many different “contexts,” “settings,” or “ecologies” (for example, family, peers, schools, communities, sociocultural belief systems, policy regimes, and, of course, the economy). The model is able to account for multiple face-to-face environments, or settings, within the microsystem of a person (for example, family, school, peers); how relations between settings (mesosystem) can affect what happens within them (for example, interactions between school and family); and how settings within which the individuals have no direct presence (exo- and macrosystem) can affect settings in their microsystems (for example, how parents’ experiences at their workplace affect their relationships within the family) (Bronfenbrenner 1979). Thus, this model allows the analysis of the lives of people, “living organisms whose biopsychological characteristics, both as a species and as individuals, have as much to do with their development as do the
environments in which they live their lives” (Bronfenbrenner 1995, 8). We will elaborate in more detail on the various systems and settings of this model later on.

A central question in scientific research on how ecologies influence development is how macrosystem contexts and events (for example, aggregate economic shocks) influence intermediate (exo- and mesosystem) contexts, which in turn influence the settings or contexts within the developing person’s microsystem, settings within which the person has face-to-face interactions or proximal processes. Aggregate economic shocks are thought to affect the ecology of human development by hitting the macrosystem, as depicted in figure 2.1.

This model is integrative and interdisciplinary, drawing on and relating concepts and hypotheses from disciplines as diverse as biology, behavioral genetics and neurobiology, psychology, sociology, cultural anthropology,
history, and economics—focusing on and highlighting processes and links that shape human development through the life course (Bronfenbrenner 1995). In particular, this model relates to the economic model of human capital investments outlined earlier in many, but not all, respects. It provides a complementary framework for understanding how shocks affect human development understood as complex systems of interactive processes between developing individuals and their surroundings. As such, bioecological developmental models have the potential to enrich or expand the standard economic approach to human capital outlined earlier in this chapter.

In what follows we will expound on human developmental processes and how these are nested within a complex set of systems and settings. “Domains,” “processes,” and “context” provide a convenient organizational structure for discussing the complex topic of human development.

**Domains.** It is widely understood that human development has many distinct and important dimensions, or domains (Alkire 2002). Fundamental domains of development are not generally hierarchical (one is not more important than others), irreducible (fundamental dimensions cannot be reduced to other dimensions), or incommensurable (they cannot be adequately compared to each other). Nonetheless, in the practical world of science, programs, and policies, some domains receive more attention than others. In the scientific study of child and youth development, three domains—physical, biological, and neuroanatomical development; cognitive, language, and academic development; and social, emotional, and behavioral development—have received much more attention than have moral, spiritual, and religious development or artistic and aesthetic development. The program and policy world parallels the scientific world in placing greater emphasis on children’s physical, cognitive, and social-emotional development, roughly aligned with the domains of health, education, and social-emotional or psychosocial well-being.

Each of these three fundamental domains is a complex system of complex subsystems. These systems emerge and evolve over the course of human development and are complexly interrelated to other domains of human developmental systems and subsystems. The “organizational systems” perspective on human development focuses on these fundamental domains and strives to account for how advances or lags in one domain affect and are affected by advances or lags in other domains. For example, the evidence reveals that nutrients by themselves do not suffice
to bring about even purely physical, biological, or neuroanatomical development and thus that development can be significantly delayed and even irreversibly compromised in the absence of other factors crucial to development, such as a secure attachment relationship and other proximal processes (Corrales and Utter 2005). The bioecological systems’ perspective on human development examines how different contexts, settings, experiences, and events affect different domains of child and youth development.

The implications of multiple and interrelated domains of development for this study are clear. Examining the impacts both within the physical (health), cognitive (educational), and social-emotional (psychosocial well-being) domains and across these domains will likely enrich efforts to understand the impact of economic shocks on child and youth development.

**Processes.** Put very simply, children’s development is the result of proximal processes; of participating in increasingly complex reciprocal interactions with people, objects, and symbols in their immediate environments (their microsystem contexts) over extended periods of time (represented by the chronosystem) (Bronfenbrenner 1994a). Thus, according to Bronfenbrenner’s definition, “a microsystem is a pattern of activities, social roles, and interpersonal relations experienced by the developing person in a given face-to-face setting with particular physical, social, and symbolic features that invite, permit, or inhibit engagement in sustained, progressively more complex interaction with, and activity in, the immediate environment” (Bronfenbrenner 1994b, 39). Examples of settings within the microsystem are families, neighborhoods, day care centers, schools, playgrounds, and so on within which activities, roles, and interpersonal relations set the stage for proximal processes as crucial mechanisms for human development.

The heterogeneity in individual outcomes thus stems from systematic variation in individuals’ characteristics and environments and in the nature of the developmental outcomes under scrutiny, which jointly determine form, power, content, and direction of proximal processes (Bronfenbrenner 1994a). Thus, proximal processes determine the capacities of individuals to (1) differentiate perception and response; (2) direct and control their own behaviors; (3) cope successfully under stress; (4) acquire knowledge and skills; (5) establish and maintain mutually rewarding relationships; and (6) modify and construct their own physical, social, and symbolic environments (Bronfenbrenner 1994a). Proximal processes are thought to be the most important influences on children’s development.
Of course, not only do microcontexts affect children and youth, but also children and youth affect their microcontexts. Children and youth and the microcontexts transact (see Sameroff 2009 for a transactional model). Insecurely attached children are more emotionally demanding for stressed parents to care for, and children slowed in language development stimulate less verbal exchange with adults. Economic shocks are likely to have an impact on these transactional, bidirectional systems of influences between children or youth and their immediate environments. This view of human development as transactional places heavy design and data demands on studies of the underlying mechanisms or pathways of influence, including studies of the influence of economic shocks on child and youth development.

**Context and the interplay of systems and settings.** In the bioecological model, contextual effects are manifested in a complex interplay of the micro-, meso-, exo-, and macrosystems. The ways these systems interact and influence each other can contribute to an understanding of how shocks to the macrosystem, such as a financial crisis, can disrupt the developmental process as it is transmitted to various settings in a child’s *microsystem*. Household socioeconomic status, neighborhood characteristics, and school environments, just to mention a few, will determine the quality, frequency, and intensity of proximal processes. For instance, there is a significant body of literature that looks at how household poverty and hardship affect child development (see, for example, Duncan and Brooks-Gunn 1997). Neighborhood and community contexts and their influence on children have also been studied extensively (see, for example, Brooks-Gunn, Duncan, and Aber 1997). For instance, although family socioeconomic status is correlated with well-being and human development, it is not clear if socioeconomic status *causes* variations in health and well-being or if personal characteristics and dispositions of individuals influence both their socioeconomic status and their future socioemotional well-being and behavior (Conger, Conger, and Martin 2010, 687; Mayer 1997). In addition, studies have started to unravel the pathways through which poverty affects child and youth development, ranging from the availability of quality prenatal and perinatal care, exposure to environmental toxins such as lead, less cognitive stimulation at home, harsh and inconsistent parenting, to lower teacher quality (McLoyd 1998). Furthermore, various studies have compared the implications of temporary versus chronic deprivation and how the impact differs according to life stage of the developing person (see, for
accounts, Elder 1999; McLoyd 1998; McLoyd et al. 2009). In other words, a temporary drop in socioeconomic status during a crisis may have markedly different long-term implications depending on the age of the child.

A *mesosystem*, according to Bronfenbrenner, “comprises the linkages and processes taking place between two or more settings containing the developing person,” such as the relations between home and school (1994b, 40). He notes that “it is formed or extended whenever the developing person moves into a new setting” (1979, 25). The main distinction between the meso- and the microsystem is that in the microsystem activities, social roles, and interpersonal relations are confined to one setting, whereas the mesosystem incorporates the interactions across the boundaries of at least two settings (Bronfenbrenner 1979, 209). The mesosystem is structured by institutions that have taken-for-granted rules for interaction and that shape expected behaviors with the help of shared norms. Institutions may be mutually reinforcing or in tensions with one another, as when the implicit rules for gaining status among peers are at odds with standards of behavior valued by schools and with rules facilitating educational achievement (Carter 2007; Warikoo 2010).

Settings in the mesosystem can enhance (or diminish) people’s developmental potential when (1) a transition is made together with a group of others that they have engaged with in previous settings (versus alone) (for example, transition with a group of peers from kindergarten to school); (2) when roles and activities between two settings are compatible (or incompatible) and encourage (or discourage) trust, positive orientation, and consensus on goals, as well as a balance of power in favor of the developing person; (3) when the number of structurally different settings is increased (or decreased) and others are more (or less) mature or experienced; and (4) when cultural or subcultural contexts differ from each other\(^{11}\) (Bronfenbrenner 1979, 209–23).

An *exosystem* refers to “the linkages and processes taking place between two or more settings, at least one of which does not contain the developing person, but in which events occur that indirectly influence processes within the immediate setting in which the developing person lives” (Bronfenbrenner 1994b). An example of such an exosystem setting would be the parent’s workplace, in which the child does not interact directly, but which could indirectly, through parental stress, job loss, or the like, influence family dynamics and thus the developing child. Consequently, a causal sequence of at least two steps is required to qualify as an exosystem. The first step is to establish a connection
between events in the external setting, or exosystem, which does not include the developing person, to processes in the microsystem, which does include the person, and, second, to link these processes to developmental changes in the developing person (Bronfenbrenner 1979). Important to note in this context is the ability of the child to influence parents just as much as parents influence the child, and this influence can reach far beyond the family into settings of the child’s exosystem (Bronfenbrenner 1979).

Research to date has focused on three prominent exosystems that are particularly likely to influence the developmental processes of children and youth through their influence on the family, school, and peers: parents’ workplaces, family social networks, and neighborhood-community contexts (Bronfenbrenner 1994b). To illustrate, Kohn’s research (see, for example, Pearlin and Kohn 2009) demonstrated that the beliefs, standards, and expectations parents face at work, for example concerning their autonomy or dependency, is what they bring home and essentially expect the same from their children. As a result, parents who were always subdued at work have a tendency to subdue their children. This factor may help explain intergenerational transmission of values. Economic shocks can have a tremendous effect on exosystems, affecting not only the workplaces of parents but also the situations of those who do not have work. Several functions of work—such as organization of the day, income, and social status, among others—can be affected.

The macrosystem captures “the overarching pattern of micro-, meso-, and exosystems characteristic of a given culture or subculture, with particular reference to the belief systems, bodies of knowledge, material resources, customs, lifestyles, opportunity structures, hazards, and life-course options that are embedded in each of these broader systems” (Bronfenbrenner 1994b, 40). These include the laws and regulations, political economy, economic markets, and public policies of the societies within which the developing person is embedded. Incorporating the macrosystem takes the analysis beyond the identification of class, ethnic, and cultural differences in child-rearing practices and outcomes and incorporates the phenomena of aggregate economic shocks. Of particular interest are dynamic aspects of “ecological transitions,” such as investigations of how social and economic changes affect children’s and youths’ development and how they adapt to such changes in the macrosystem. (We will return to these questions later on.)

While Bronfenbrenner refers mainly to cultural aspects of the macrosystem, a society’s cultural frameworks, politics, and institutions are all
closely interrelated and mutually reinforcing. Thus, the process of change can be induced through several channels or entities, the result of which will be a “complicated set of interlocking physical and social relations, patterns, and processes” (Martin, McCann, and Purcell 2003). Put another way, the macrosystem can be interpreted as “space” that Lefebvre defined as an “unavoidably social product created from a mix of legal, political, economic, and social practices and structures” (Lefebvre 1991). Individuals draw on these cultural tools that their environment puts at their disposal, or that they choose to make sense of challenges and imagine effective solutions. They also find strategies for action by observing the behaviors of those around them and the consequences of their actions.

The bioecological model is flexible enough to accommodate cross-national variations in the weight given to various aspects of human development influenced by the local culture (for instance, the greater emphasis on self-esteem, self-actualization, and individualization characteristic of the American upper-middle class; see Markus 2004). It also takes into consideration meso- and macrolevel conditions for collective human development, including shared myths and narratives that buttress the individual sense of self and capabilities (see, for example, Hall and Lamont 2009).

Similarly, the bioecological model is capable of capturing “experiences.” Proximal processes and other interactions are “experienced by the developing person,” which is meant to indicate “that the scientifically relevant features of any environment include not only its objective properties but also the way in which these properties are perceived by the persons in that environment” (Bronfenbrenner 1979, 22). Experiences in this sense are individual (and collective) constructs of the “objective,” which determines an individual’s (and a group’s) capacity for making meaning and for self-representation (Hall and Lamont 2009). Experiences, while in part determined by the individual’s personality, are embedded in local culture and customs; thus, understanding the cultural frameworks and narratives that shape the relationships and processes within and between settings and systems is crucial to recognizing factors that enhance or weaken the resilience of a developing person.

One example of the cultural or contextual variability in the meaning of experience comes from the empirical literature on the influence of parenting styles on the development of children’s academic and social-emotional competencies. Early research indicated that authoritative parenting (which combines warmth with firm control) promoted greater child competence than did authoritarian (low warmth, very high control)
or laissez-faire (low warmth, low control) parenting (for reviews, see Baumrind 1989, 1991). But subsequent research observed race, ethnic, and neighborhood differences in the influence of parenting styles on child competence. In a sample of African American and Latino-American parents living in dangerous inner-city neighborhoods, authoritarian parenting behaviors were associated with less adolescent delinquency than authoritative parenting behaviors (Florsheim, Tolan, and Gorman-Smith 1996). This pattern of findings has led child developmentalists to believe that “high control” parenting has greater adaptive value in more dangerous neighborhoods and may be “experienced” by children in a different way in those contexts (Furstenberg et al. 1999; Garcia-Coll et al. 1996; McLoyd 1990; Rodriguez and Walden 2010). (We will return to the subject of resilience and culture later.)

Finally, only recently have the theory, measures, and mathematical models been available to enable the rigorous empirical study of child and youth development in context. As pointed out previously, children and youth are embedded in and transact with each other in and across contexts. Consequently, the study of peer and other spillover effects in human developmental science has grown, as it has in the social sciences, although many of these studies do not convincingly control for what determines the individuals with whom one interacts. These advances are directly relevant to improving our understanding of the impact of economic shocks on child and youth development.

To reiterate, the human developmental process consequently depends on more than the available resources, prices, policies, and parental preferences for investments in their children. From a human development perspective, if we are to fully understand the effects of economic shocks on child and youth development, we must track the influence of economic (macro) shocks on exo- and mesosystems and in turn on children’s microsystem contexts and the proximal processes—that is, the reciprocal interactions between children and immediate contexts—that are the drivers of human development.

**Stage-Salient Human Developmental Tasks**

When asking the question of how some event, such as a crisis, influences a young person’s development, we need to have a common understanding of what the indicators of optimal development in a particular context should be. Some developmental outcomes may be more normative, or applicable across contexts, and others more context specific, reflecting cultural preferences and expectations. Nonetheless, positive child development has been
conceptualized in a sequence of so-called stage-salient developmental tasks. According to Aber and Jones (1997, 398),

Stage-salient developmental tasks are those newly emergent tasks which children must face (in particular social/cultural contexts) using their most recently developed capacities and which are critical to children’s immediate and long-term adaptation. They represent the cutting edge of development where individual differences in the quality of adaptation and development are easily discerned.

A well-accepted description of stage-salient issues was developed by Sroufe (1979). For this volume, we have adapted and consolidated these for reasons of simplicity and cultural transferability. Table 2.2 shows the stage-salient developmental tasks by age as they are presented in chapters 3, 4, and 5.

Over the past two decades, it has become increasingly clear that variation over time in the emergence of stage-salient human development issues is based in part on both the developmental course of human brain development and on children’s age-graded progression through settings in which they live (their microsystems). Thompson and Nelson (2001) summarize a wealth of evidence on the variation over time in brain cell migration (prenatally), myelination (over the first 10 years of life), and synaptogenesis (over the first 18–25 years of life)(see figure 2.2). Children’s transactions with their ecologies both influence and are influenced by brain development in a highly predictable fashion (see for more detail box 3.2). Correlated with both the emergence of stage-salient issues and the stages of brain development are the increasing expansion and differentiation of the settings in their microsystem from family and parental care, to nonparental care, to school, to nonfamily, and to

| Table 2.2 Stage-Salient Human Developmental Tasks, by Age |
|---------------------------------|---------------------------------|
| Age (in years)                  | Stage-salient developmental tasks                                      |
| 0–1                            | Establishing (secure) attachment relationships                        |
| 1–3                            | Learning to explore and communicate                                    |
| 3–5                            | Learning to self-regulate thoughts, behaviors and emotions              |
| 6–12                           | Learning and reasoning, developing interpersonal and social problem-solving skills |
| 13+                            | Establishing autonomy (renegotiate relationships), forming identity, setting and achieving goals |

Source: Authors.
Figure 2.2  The Developmental Course of Human Brain Development by Months, Years, and Decades

18–24 prenatal days

- Cell migration (6–24 prenatal weeks)
- Myelination (~2 months to 5–10 years)
- Neurogenesis in the hippocampus (the dentate gyrus)


Note: This graph illustrates the importance of prenatal events, such as the formation of the neural tube (neurulation) and cell migration; critical aspects of synapse formation and myelination beyond age three; and the formation of synapses based on experience, as well as neurogenesis in a key region of the hippocampus (the dentate gyrus), throughout much of life.
nonschool youth settings in communities and workplaces. This coordinated unfolding of stage-specific human developmental tasks, brain development, and settings explains why any serious risk, adversity, or threat (including economic shocks) is likely to have different impacts on children at different ages and stages of development.

In the bioecological model, the chronosystem, which refers crudely to the dimension of time, captures the sequence of these stage-salient human developmental tasks. The chronosystem captures both the age or life course of the developing person and the changes in the context over time. In addition, the interconnections between the various contexts are not static but change across historical periods of time. Adding this dimension allows us to (1) enrich the modeling of dynamics in economic behavior and decision making about human capital investments over the life course; and (2) map exogenous events, such as economic shocks, that might affect the context and therefore the development of children and youth along their life-course trajectory; highlight critical periods in the human developmental process; and thus identify those most vulnerable and in need of attention at a particular point in time. Thus, the chronosystem also incorporates, the idea of “path dependency”: that is, what happens to people when economic shocks hit them depends on the stage of their life span and what transpired before. Thus, in his work *The Children of the Great Depression*, Elder (1998) finds evidence in support of the “life course” principles: (1) individuals’ life courses are embedded in and shaped by historical times and places that determine their experiences throughout their lives; (2) impacts on human developmental processes depend on the point in time a succession of life transitions or events occur in a person’s life; (3) the interdependence of people’s lives leads to the expression of social and historical influences through this network of shared relationships; and (4) human agency enables individuals to construct their own life courses through choices and actions available within the constraints and opportunities of history and social circumstances. Each of these principles has implications for how to conceptualize and model the influences of aggregate economic shocks on child and youth development.

A shock can thus produce a dramatically heterogeneous impacts within a group of people who differ only a little in their chronological age or in their stage of development (see, for example, Elder 1999).

Another example refers to the stage of cognitive development a child has attained when the shock occurs; the further along that child is in his
or her cognitive development, the more possibilities he or she has for thinking about the good side of things. Bleak future prospects, however, may incur sadness or even depression. A divorce is a case in point. The family conditions that typically lead to divorce may differentially affect children according to how old they are during the period of family turmoil (Hetherington 1989). Recent research indicates that young children who experience a divorce have a greater risk of behavioral problems and anxiety than do children whose parents divorce during adolescence, in part because they may be less capable of accurately assessing the causes and repercussions of a divorce. Adolescents, however, face a greater risk of academic problems than younger children, perhaps because of the increasing importance and demands of the school context as children mature (Lansford et al. 2006).

The examples outlined in this section highlight the complex ways in which the chronosystem transacts with other stage-salient contexts to affect development. Many stage salient developmental tasks are very context specific, depending on perceptions and expectations of what a child should be capable of at what age. Thus, one will need to adapt the list of tasks in table 2.2 to account for contextual differences. Nevertheless, the use of stage-salient developmental milestones allows us to monitor progress and identify developmental delays and threats to healthy development. This is particularly useful when analyzing the impact of economic crisis on the developmental progress of children and youth and will allow us to identify particularly vulnerable groups of young people. Nevertheless, a great deal of heterogeneity in outcomes remains seemingly unexplained.

**Heterogeneity, Resilience, and Differential Susceptibility**

Over the past decades, interest has grown in the concept of resilience as a way to explain some of the heterogeneity in child development. Resilience has become a central topic, particularly when analyzing child development under adverse circumstances, such as poverty and economic crisis. Behavioral scientists made the important observation that some children seemed to develop “normally” under risky conditions. They expanded their research agenda to include the correlates and markers of good adaptation among young people at risk (genetic or environmental) and to uncover the processes and regulatory systems that produce these correlates and markers (Masten 2007). More recently, the focus has shifted to prevention, intervention, and policy to support children at risk (Masten and Obradovic 2006).
While the concept of resilience can and often is applied to any functional system, in developmental science the term most frequently refers to individuals (Masten and Obradovic 2006). It has also been applied to larger social systems, however, such as families, communities, or schools. In popular terms, a child is seen as being resilient when he or she is seemingly unaffected by a highly adverse situation, experience, or event. From a developmental perspective resilience is defined as positive adaptation or development in the face of past or current risk, adversity, or threat (see figure 2.3). This term refers both to positive adaptation to adverse changes in the environment—for example, school achievement in the face of poverty—and to “internal integration,” such as psychological well-being in the face of a history of exposure to violence (Masten and Obradovic 2006). Resilience does not refer to variation in exposure to risk, adversity, or threat. Nor is it a simple, direct influence on positive adaptation or development (protective process).

Adaptation is multidimensional and developmental in nature. For example, success in the mastery of tasks in one developmental period forecasts future success, while success or failure in one or more domains can have cascading consequences leading to problems in other domains of adaptation. Thus, interventions to promote mastery of such tasks will decrease the incidence of developing behavioral and emotional problems and increase success in school and related areas (Masten and Obradovic 2006).

**Figure 2.3  Distinction between Resilience and Risk Reduction and Protection**

Source: Aber, personal communication.
Resilience factors and processes moderate the impact of risk, adversity, or threat to adaptation or development. A resilience perspective raises the question, Why do some children, youth, and families demonstrate positive adaptation or development in the face of aggregate economic shock while others do not? In general, cases of low risk and poor adaptation are much less common than cases of high risk and good adaptation, possibly “indicating the adaptive and self-righting bias of development in a species shaped by eons of natural and cultural selection” (Masten and Obradovic 2006, 20).

Prior theory and research have distinguished several sources of resilience along different dimensions of human ecology. These include (1) biological and genetic sources at the individual level (for example, Belsky et al. 2009; Bakermans-Kranenburg and Van Ijzendoorn 2007; Bakermans-Kranenburg and Van Ijzendoorn 2011; Rutter, Moffitt and Caspi 2006); (2) psychosocial sources at the relationship level (for example, Rutter 1987; Kim-Cohen et al. 2004); and (3) cultural, systems, and policy sources (for example, Wright and Masten 2005). In other words, resilience stems from processes at various levels of interaction in the bioecological model, from genes to the greater environment. Masten (2009) argues that sources of resilience are deeply rooted in fundamental biological, interpersonal, and sociocultural systems of human adaptation in the face of risk, adversity, or threat. Based on research in advanced economies (particularly the United States), she has identified a short list of resilience factors (see box 2.1).

More recent research on genetic and other physiological sources of heterogeneity has identified a phenomenon termed differential susceptibility. While not to be equated with the concept of resilience, it has unearthed novel insights into gene-environment interactions and how a genetic predisposition or other physiological characteristic renders some individuals more sensitive to environmental influences, both for better and for worse. Researchers have found compelling evidence that some individuals react more strongly to negative as well as positive influences, based on an underlying physiological predisposition (see, for example, Bakermans-Kranenburg and Van Ijzendoorn 2007; Bakermans-Kranenburg and Van Ijzendoorn 2011; Belsky et al. 2009; Belsky and Pluess 2009; Pluess and Belsky 2009; for more detail on differential susceptibility, see box 3.2). This lends reason to believe that economic crises may affect some individuals more than others and that the right policies may have a stronger positive effect on these same individuals.

As box 2.1 aptly shows, resilience is not only about individual genetic predisposition and psychological resilience but also about collective tools
for self-valuation. These tools are made available by the environment and linked to messages that institutions provide groups and individuals about their relative worth, status, and social contribution. For example, a study of Mexican immigrant families in California during the recent recession showed that strong ethnic and cultural identity and a sense of belonging increased resilience in individuals and communities (Conger and Stockdale 2011). Tools for producing and sustaining collective recognition or positive collective identity are key to developing resilience and have received particular recognition and attention in the sociological literature (for a more detailed account on social resilience, see box 6.2) but have also been recognized in the psychological and disaster response literature. The literature on cultural sociology, collective memory, and the media helps us better understand how management of social identity is enabled and constrained by various groups of actors, including nongovernmental organizations, governments, and social movements, among others (Lamont, Fleming, and Welburn, forthcoming). Adopting a historical perspective is crucial to understanding how a group makes sense of its past and defines
its aspirations, challenges, and possible future trajectory, with possible impact on physical and mental health. We will return to this discussion later on when talking about the policy implications stemming from a deeper understanding of resilience in the face of risk, adversity, and threat.

**Framework for Policy Choices Related to the Human Development Perspective**

As noted earlier in this chapter, the standard economic model directs attention to the role of economic efficiency and distribution in guiding policy decisions. The human development model, by comparison, directs attention to the issues of mediation, heterogeneity of response, and non-market influences as guides to policy.

**Transmission mechanisms (mediation).** The bioecological model of human development emphasizes not only the macropolicy and the household but also the exo-, meso- and other microcontexts of child and youth development. In keeping with this perspective, a bioecological perspective asks how an aggregate macroeconomic shock affects households both directly and indirectly: that is, how the aggregate shock may affect other macrocontexts (cultural beliefs, for example), exocontexts (employment, education, and health systems, for example), and meso- and microcontexts (such as parent and youth workplaces, schools, and neighborhoods).

As much as possible, policy recommendations should be based on a solid empirical understanding of how aggregate shocks affect these mediating contexts that in turn affect child and youth development. Each malleable link in the transmission progress becomes a potential target for policy intervention.

**Heterogeneity of response (moderation).** The degree to which the macro-, exo-, meso-, and microsystem changes induced by shocks or policy shifts influence child and youth development depends on the extent to which they affect those critical proximal processes that drive development. As we have noted, these proximal processes are highly context and child specific, and difference in adaptive behavior to both shocks and policies vary widely. Consequently, a developmental perspective could influence policy by challenging the assumption that one size will fit all. It raises the potential value of tailoring policy to some extent on the basis of key sources of heterogeneity, or resilience, in response to
both shocks and policies. The reality of the heterogeneity of adaptation suggests developing a range of policy responses that explicitly account for the predictable heterogeneity in child and youth contexts and proximal processes.

**Nonmarket influences.** Another way in which a human development perspective offers unique guidance to policy development and evaluation is by identifying and empirically testing the influence of nonmarket factors in explaining the impact of aggregate shocks on child and youth development. For example, the transition from adolescence to young adulthood is a period of rapid development of individual identity. Personal, social, and other identities are built in response to opportunities and challenges in youth environments. Thus, for example, developing an identity as a “worker” in a crisis period of high unemployment is very likely to be quite different from that during a stable period of low unemployment. The market affects identity development by making certain opportunities or growth paths available, and identity development influences labor market activities in the future; but identity development is a nonmarket process of child and youth development and determinant of how shocks affect development. Other key nonmarket influences, such as parental stress and mental illness, can also serve as a target for policy action in response to aggregate shocks. (We will illustrate how mediation, heterogeneity in adaptive behavior and nonmarket influences help guide policy decisions in chapter 6 of this volume.)

**Summary of the Human Developmental Model**

The human development model has several strengths as a framework for investigating the impact of aggregate economic shocks on human development. These include identifying a broader set of child and youth developmental outcomes that could be affected by shocks; using a life-stage approach to understand variation in the biological and brain sensitivity to shocks; identifying nonmarket influences and specifying multilevel transmission mechanisms through which shocks affect child and youth development. Based on these insights, the field of human development has built a rich history in systematic rigorous evaluations of experimental interventions designed to enhance human development in the face of adversity.

Empirical research based on these strengths holds considerable promise for identifying and testing new policy interventions on child and youth development (see Alderman 2011 for an example focused on early childhood policy efforts of the World Bank). In addition, it bears substantial
potential to further our understanding of how conventional welfare and safety net programs affect recipient children. Further examples will be raised in the chapters of this book that review the empirical literature.

The human development model has serious limitations, however. The data and design demands necessary for empirically testing features of the model, while not insurmountable, are very high. In comparison to the economic model, the human development model has no framework for evaluating trade-offs among investment and policy options. Research in human development has advanced the methods of longitudinal research and statistical approaches to modeling growth and change. But too often developmentalists infer causality from temporal precedence. Fortunately, econometric and truly experimental approaches to causal inference are increasingly being adapted by developmentalists (see Duncan, Magnuson, and Ludwig 2004). The next section discusses how to move toward an integration of the economic and human development perspectives that is more than the sum of its parts.

**Shocks, Transmission Mechanisms, and the Dynamics of Human Development**

The two perspectives discussed here—the economic and the human developmental—clearly differ in some important respects. The usual representation of the standard human capital model, for example, does not incorporate specific measurable constructs at the multiple levels (micro-, meso-, macro-, and chronosystem) emphasized by the bioecological model, or the importance of interactions among these levels. The usual representation of the bioecological model does not incorporate roles of individual and family choices within a dynamic forward-looking framework, and raises a range of estimation issues for obtaining empirical knowledge and rationale for policy choices. But the two approaches are also complementary in important respects, which promises greater gains in understanding the impact of shocks on child and youth development through integrating the insights of both these approaches.

Economic models emphasize how individuals, families, firms, and other agents make decisions to achieve a set of goals, under constraints imposed by the relevant budgets, physical environments, production functions, networks, prices, and policies. Shocks affect decision making partly by altering the external conditions and constraints under which households operate as well as by changing the resources available to them. We must understand the mechanisms through which shocks are
transmitted to the household—that is, which conditions and constraints change and how the value of household resources changes—to identify factors that exacerbate or mitigate the impact on the household. These transmission mechanisms influence the decision about human capital investments in children and youth. These mechanisms reflect both those factors exogenous to the household and those that are the consequence of previous decisions made by the household, for example, whether to invest in insurance measures. Beyond the household, these factors include decisions made by national governments, local social institutions, and even other households to moderate the transmission of shocks through the economy. For example, the local impact of natural disasters may be affected by previous investments in conservation made by one’s neighbors; and the stability of informal mutual insurance schemes is partly the result of the investments made by the members of the local community.

The bioecological model depicts how the developmental processes of children and youth are affected by the settings within their microsystems and how those settings relate to each other (the mesosystem), and to factors in the exo- and macrosystems. Therefore, a negative shock, or a disruption within one of the systems or settings, could have potentially harmful (or potentially beneficial) effects on human development in different domains and at different points in the life cycle. Shocks that hit the macrosystem (for example, a recession) may transmit through children’s exosystem (for example, their parents’ workplace through parental unemployment), to their microsystem (such as their families and homes). The same shock may simultaneously severely curtail government spending, leading, for example, to a drop in resources for education, increased teacher absenteeism, and other changes that affect children’s microsystems through other channels.

**Transmission of Aggregate Economic Shocks**

Aggregate economic shocks often emanate from fluctuations in international markets, and a country’s border policies will have an important impact on the transmission of these shocks to the domestic economy. At one extreme, a perfectly closed border will isolate the domestic economy entirely from such shocks by prohibiting all international economic exchange. But this approach is unsustainable because of its impact on growth, and closed borders are likely to be porous in any event. Moreover, the movement of nominal prices and exchange rates through international trade and international flows of resources can absorb or reduce the impact of shocks experienced in the domestic economy due to fiscal
policies, weather, and other factors. At the other extreme, global shocks enter the domestic economy unhindered by constraints on the movement of capital, goods, or factors of production. Most countries lie somewhere along the spectrum between these extremes.

In general, border policies temper the transmission of global shocks to the domestic economy. For example, a country might buffer its economy from fluctuations in the international commodity markets in which it sells a significant share of its exports by taxing export revenues when the relevant international commodity prices are high and investing the proceeds in assets that can be drawn upon when commodity prices are low. Such schemes are difficult to operate in part because of strong pressures to use the high-price “windfalls” immediately, but some countries (Chile, for example, with its copper) appear to have implemented such a strategy quite successfully. Another example is a policy strategy that restricts international financial capital movements, particularly large, short-term flows that can be huge in comparison with most individual economies.

Within the economy, shocks are transmitted to households through their effect on markets and prices, especially for credit, inputs and products, labor and employment, and household assets. Crises can change the demand for and the relative prices of the goods and services exchanged in markets. For example, a household can suffer both a drop in the demand for the goods it produces and a drop in the demand for its labor, as well as changes in the prices offered for these commodities. At the same time, the prices of goods consumed or used by the household in production can increase. In other words, the terms of trade—the relative value of what the household sells and what it purchases—can shift adversely. The net impact of relative price changes will be determined by the position of the household in the economy (whether it is engaged in traded or nontraded activities, whether it is a net buyer or a net seller of goods) and by the ease with which it can reallocate its resources in response to the price change. Such terms-of-trade shocks can be particularly devastating for countries that rely on the export of primary commodities (see, for example, Cogneau and Jedwab 2010 for Ghana).

Changes in terms of trade may be strictly exogenous to a trading country, for example, reflecting falling demand among trading partners, but such changes may also reflect domestic inflation and exchange rates. The devaluation and inflation that marked the Asian crisis of the late 1990s eroded real wages and savings and drove up the prices of imported food, fuel, and agricultural inputs. In some cases, governments also controlled food prices, which depressed the returns to agriculture (Knowles, Pernia,
and Racelis 1999). In principle, devaluations will improve the terms of trade for people engaged in the production of tradable goods, as happened in Africa during the 1980s and 1990s (Sahn 1996). Again, for the household, the net impact will depend on its position in the economy, whether it produces tradable or nontradable goods and whether it is a net seller or buyer of specific goods.

Economic downturns and the reduced demand for goods and services lead to lower labor demand and lower labor income to the household, whether through layoffs, reductions in hours worked, or reduced wages (see, for example, Smith et al. 2002 for Indonesia; McKenzie 2004 for Argentina; Lustig 1998 for Mexico). Particularly hard hit were Eastern Europe and Central Asian countries (World Bank 2011b) and young workers (Cho and Newhouse 2011). Globally, young people make up about a quarter of the world’s population but about half of its unemployed. Some young people can take many months or even years to find employment. Changes in labor demand can have serious long-term consequences for young people who are trying to negotiate the transition to employment. In Bosnia-Herzegovina, youths’ difficult entry into the labor market led to lower earnings later in life (Fares and Tiongson 2007). Long spells of unemployment can discourage youth from remaining in the labor force and prevent them from obtaining the early experience, skills, and social capital they need to be successful in the labor market. Initial failure to find a job can lead to persistent joblessness, lower satisfaction, lower productivity, and lower lifetime earnings (World Bank 2006).

Public services for welfare and human capital (health, education, safety nets) can change as government revenues and budgets are altered by shocks. Lower current revenue can force a reduction in the public financing and provision of services and in the allocation of public resources across activities and investments. Social spending in Chile fell by 20 percent between 1981 and 1986, for example, and the poorest 40 percent of families were particularly hard hit (Bourguignon and Morrisson 1992). (See Knowles, Pernia, and Racelis 1999 for Thailand and Stalker 2000 for Indonesia.) Finally, severe shocks can affect the structure and functioning of social institutions—both those that mediate relationships across individuals within communities and those that might serve to safeguard households in the event of aggregate crises. Tighter international credit markets will constrain government borrowing to finance domestic spending, while tighter domestic credit markets will constrain households’ responses to shocks, making it more difficult to ensure consumption by
borrowing. Households are likely to compensate by disposing of assets or making other decisions that affect longer-term development and growth.

The significant increase in domestic social spending over the past decade has led to great improvements in social and welfare outcomes, but social spending also exhibits considerable volatility, especially among the poorest countries (Lewis and Verhoeven 2010). Fortunately, governments seem to have become more sophisticated in managing crises, protecting core social sector and safety net spending. Some evidence indicates that, although the growth of social spending fell during the most recent crisis, real levels of spending were maintained, especially in middle-income countries (Brumby and Verhoeven 2010). However, there are significant differences across countries and regions. Preliminary evidence from the most recent global recession suggests that social safety net programs, which were comparatively uncommon in previous crises, also played a considerable role in protecting people from the worst consequences of the crisis (World Bank 2009).

Aggregate shocks often affect all members of a household’s risk-sharing networks, rendering traditional safety net arrangements ineffective. Carter and Maluccio (2003) find that households in South Africa are unable to insure against economic shocks when others in their community also suffer large losses. McKenzie (2003) finds that traditional informal mechanisms were largely ineffective in the face of income loss during the Mexican peso crisis of 1995. Economic hardship can disrupt bonds among households as well as larger social networks and erode social capital, especially if fault lines emerge between different ethnic, religious, or racial groups. Crisis increased religious and ethnic tensions and riots in Indonesia, for example, and eroded family and community ties in the countries of the former Soviet Union (Ferreira, Prennushi, and Ravallion 1999). Some evidence also suggests that as incomes fall and unemployment rises, crime and violence increase (Ferreira, Prennushi, and Ravallion 1999). Qualitative research conducted in Bangladesh, Indonesia, Jamaica, Kenya, and Zambia in early 2009 yielded reports of increased drug and alcohol abuse and crime, lower social participation, and greater tension among ethnic and social groups (Hossain 2009).

Whether shocks originate in international or in domestic markets, domestic policies can buffer such shocks through countercyclical revenue and expenditure policies, particularly ones directed at the more vulnerable members of society where vulnerability refers not only to poverty but also to salient life-cycle stages. In some cases (Chile, again, in part using copper revenues), governments have been able to provide fairly effective
social safety nets to protect the more vulnerable members of society during economic shocks. The effectiveness of such policies, of course, depends on responses among both market and nonmarket institutions. The fewer rigidities there are in the markets (for example, policy-induced restrictions on hiring and firing labor and geographically segmented markets) and the greater the effectiveness of various forms of formal and informal insurance, the less likely a shock is to affect human capital investments among children and youth.

The adjustments to the shocks experienced at the microlevel, or adaptive behaviors in the household, can be modeled as if individuals are making choices in order to achieve some goals, subject to a number of factors that may be affected by shocks. For both individuals and households, these behaviors will have unanticipated consequences and will have both short- and long-run effects. Moreover, the decisions made by individuals and families in the face of a crisis are also influenced by any precautionary arrangements or other decisions that governments and households themselves had made ex ante to buffer future shocks. Governments, for example, could put in place strategies to buffer against fluctuations in commodity exports as noted above, or households could begin saving in good times so that they have resources to spend in bad times. These decisions interact, so that households may feel less compelled to self-insure if they are confident that the government will provide insurance for them. Similarly, governments will be less anxious to provide insurance if they know that households have themselves fairly well covered in the event of a shock.

Transmission within a Bioecological Systems Model

From a human capital investment point of view, policy makers are interested in household poverty because children are affected by the economic conditions of the household. Household resources are shared among household members, not necessarily equally, but in the pursuit of idiosyncratic objectives (see, for example, Manser and Brown 1980; McElroy and Horney 1981; Behrman, Pollak, and Taubman 1982; Thomas 1990, 1994; Brooks-Gunn, Duncan, and Maritato 1997). It is therefore important to understand the intrahousehold dynamics of the decision-making process.

It is often assumed that parents make the decisions about their children’s human capital investments and that such decisions are thus subject to parental preferences. However, a child, especially the older he or she gets, has considerable influence over these investments or their realization,
and the wishes of the growing child may not be consistent with the wishes of his or her parents. This problem of *agency* will yield significant variation in human capital investments across families and cultures, reflecting differences in preferences and the influence of individuals in household decision making.

Similarly, expectations of familial obligations across generations will influence parents’ willingness to invest in their children. In the face of sudden changes in constraints, the household may protect human capital investments in one child over another, leading to, for example, systematic differences in educational investments for boys and girls. In many countries, traditional gender roles as well as expected gender-based differences in the returns to human capital investments heavily influence the division of resources among family, household, or kin members. These differences in productivity may reflect differences in access to markets and other discriminatory practices and not inherent differences in ability. Thus, it is important to understand the mediating influence of social institutions, within and outside the market for human capital, both directly on the decision-making processes within households and on the impact of shocks on these decisions.

The bioecological, or human developmental approach, emphasizes transmission, or mediation of shocks through a broad range of social institutions, not merely through the economic resources available to the family for consumption and investment. Shocks also affect proximal processes within a developing person’s microsystem through changes in the macro-, exo-, and mesosystems.

**The household and proximal processes.** Households make a wide range of adjustments in response to constraints caused by shocks, with consequences often unanticipated by policy makers. As noted earlier, economic models tend to emphasize decisions made in response to changing prices and resources, recognizing possible important externalities. Other disciplines emphasize other changes—such as the levels of stress, substance abuse, and violence in the presence of increased economic hardship and pressure—that are likely to affect the behavioral and emotional functioning of parents and consequently of child and youth development (Conger, Conger, and Martin 2010).

Studies of family stress, for example, find that poverty or economic hardship is not by itself the cause of “negative” development. Rather, worsening intrafamily relations, exacerbated by economic hardship, have negative effects on child development (for more detail see box 4.1). In
other words, it is the engagement or disengagement of family members and their ability to cope with stress that create the link between exogenous shocks and psychosocial outcomes. For example, even if households are able to maintain income in the presence of a negative shock, child and youth development may be affected because of increased family stress,\(^{13}\) which may be manifest in increased domestic violence, increased substance abuse, parental depression, or changes in family structure (such as divorce, the departure of some household members, or the incorporation into the household of additional people).

Human development is largely driven by family processes that actualize the genetic potential for effective physiological and psychological growth and functioning. Because shocks can cause significant disruption in the environments in which these proximal processes need to happen, they could, if the environment becomes too unstable, significantly reduce the effectiveness of those key processes, “with corresponding disruptive effects on psychological functioning” (Bronfenbrenner 1995). What follows are a few concrete examples of how shocks might influence intermediate systems, microsystems, and hence children’s development:

- Economic crises can increase parental stress and depression. Depending on the timing and severity, an increase in a mother’s stress and depression may reduce her sensitivity and responses to infant cues, which may in turn reduce the probability that the infant will develop a secure attachment relationship (see Campbell et al. 2004; Coyl, Roggman, and Newland 2002). This failure to develop a secure attachment during the early years of a child’s life has been linked to myriad negative outcomes, such as decreased psychosocial well-being (for example, depression and anxiety; see Goodman and Gotlib 1999) and socioemotional development (such as self-esteem, social anxiety, antisocial behavior, self-efficacy; see Hammen et al. 1987), which may in turn affect educational achievement, labor market outcomes, and mental and physical health (see Heckman, Stixrud, and Urzua 2006).

- The same paths of influence, from macroeconomic shock to parental stress and depression, could reduce the frequency, complexity, and meaningfulness of verbal exchange between mothers and their very young children and could in turn slow growth in children’s language development.
Unemployment, often of the primary breadwinner (father), has also been shown to increase stress, frustration, and depression, which can increase parental substance abuse, domestic violence, and family abandonment. Substance abuse reduces parental attentiveness and often increases domestic violence. While the effect of parental inattentiveness or lack of sensitivity has been noted, studies have also documented the severe negative effects that domestic violence and family abandonment have on children (Holt, Buckley, and Whelan 2008).

Households in which a primary earner loses a job may be tempted to add workers to substitute for the lost income (for Mexico, see, for example, Skoufias and Parker 2006). This decision can affect children within the household in different ways, depending on their age. Where traditional gender norms still predominate, small children may be left in the care of elder daughters (Benería and Roldan 1987) or in another child care arrangement. The effect that this separation from the primary caregiver can have on a very young child depends on the quality of care and stimulation the child receives from the alternative caregiver (Belsky et al. 2007). Either way, the influence parents have on the development of their child decreases with the amount of time the child spends in secondary care settings.

**Developmental processes, life course, and the chronosystem.** Household financial stress affects children’s development differently at different ages (Bronfenbrenner 1979; Elder 1999; Elder and Caspi 1988). Furthermore, differences in historical contexts will have their own effects on developmental processes. In other words, the basic premise of the chronosystem is that from a developmental perspective, it matters at what point in a person’s life course a shock happens; changing environments over time affect the developmental process differently; and the life stage and the changing environment interact in various ways. Shifts in the microsystem can affect proximal processes, and the long-term impact of these shifts depends on the life stage of the developing child. For example, when a shock decreases the availability of the primary caregiver during the first 6-12 months of a child’s life, the child may be unable to form a safe attachment with possibly long-lasting consequences. If a shock happens, however, when the child is a little older, decreased availability of the primary caregiver may not have the same consequences.

In addition, the impact of proximal processes on children’s neurocognitive and affective-behavioral functioning also depends on the stage of
children’s brain and neurophysiological development (see for more detail box 3.2 and Shonkoff et al. 2012). And severe nutritional deficiencies during gestation (see Tobi et al. 2009; Susser, Hoek, and Brown 1998; Susser et al. 1996 for studies of the Durch Hunger Winter) and the first 24–36 months of life have significant and substantial effects on a range of outcomes such as cognitive skills and wage rates and on the nutritional status of the next generation 30–40 years later (Hoddinott et al. 2008; Behrman et al. 2009; Maluccio et al. 2009), whereas nutritional deficiencies at a later stage do not seem to have the same lasting consequences.

To the extent that families are aware of this, decisions to invest and how to respond to crisis will be forward looking. Families may also have a sense of the importance of dynamic complementarities in investments: the idea that early investments increase the returns to investments later in life (Cunha et al. 2006; Cunha and Heckman 2007). Similarly, families may engage in precautionary savings in anticipation of expected future shocks, in order to smooth both consumption and human capital investments in their children. Whether households take precautionary actions depends not only on individual characteristics, such as subjective discount rates, but also on the extent to which formal and informal capital and insurance markets as well as social safety nets facilitate such smoothing. The dynamic nature of these investments means that it may take a long time to realize the returns on investment, and this increases the uncertainty of those returns. This uncertainty arises partly from the difficulty of predicting what the future labor market will be and partly from the basic agency problem caused by the intergenerational nature of these investments.

**Transmission through other settings and systems.** In addition to individuals and households, the functioning of other settings and systems affects the options and the human capital outcomes of interest through interactions, for example, with peers, and other spillover effects. The behavior of individuals in peer groups, communities, and schools and health and human services institutions directly influences human capital development in the microsystem. Entities more removed from children and youth, including social networks such as neighborhood, civic, and religious associations, may also provide a supportive environment.

How shocks affect settings in the exosystem or macrosystem differs greatly across contexts. For example, Paugam (1996) notes that negative shocks such as unemployment are more associated with a deterioration of social relationships (marital breakdown, lack of private support at work, and deterioration of familial relationships) in France, Germany, and
the United Kingdom than in Denmark, Italy, and Spain. Much less is known about how negative shocks affect the deterioration of social relationships in low-income countries. The experience of shocks and their impact on social relationships is not monolithic and varies in part according to the meaning of community and representations of the reciprocal rights and duties that citizens and family members have in relation to one another. These may be mediated by a shared definition of community, based, for instance, on notions of autonomy and self-reliance or on a notion of solidarity, shared human dignity, blood ties, or kinship (Lamont 2000; Silver 1994). These societal scripts influence the impact of crises on individuals and on the social, symbolic, and material resources they believe they are entitled to and can draw on in times of vulnerability.

According to many social analysts (see, for example, Silbereisen, Ritchie, and Overmier 2010; Silbereisen and Tomasik 2010; Noack and Kracke 1997), we are in a period of accelerated change, socioculturally but also economically, particularly because of increased economic volatility. Nonetheless, regardless of how drastic the change, the fundamental institutions of a society are generally not affected much in the short run. For example, the transformation in Eastern and Central Europe did not change the fact that all the status hierarchies in these societies were built on a merit system based on credentials and accomplishments. Only the criteria for achieving such status changed (see, for example, Silbereisen and Wiesner 2000). The social status hierarchy based on experience, credentials, diplomas, seniority, and such represented a constant in spite of the changes in the political and economic systems. Put differently, a shock can create an imbalance or a mismatch between the roles and livelihoods people expected or desired to take on and the actual current situational imperative they perceive (Pinquart and Silbereisen 2004; Tomasik and Silbereisen 2009), inevitably shifting the equilibrium and requiring a whole range of adaptations, both behavioral and psychological. The household’s experience of the aggregate shock is in part determined by the experience, behavior, and decisions of its neighbors. Human development occurs among communities of people whose behavior is mutually influential and which may serve to exacerbate shocks, if destructive behavior leads to further destructive behavior. For example, individuals may respond to negative shocks by increasing the depletion of commonly held network resources. However, shared experiences may lessen the impact, if a solution to the common governance problem is found and the shock induces a counterresponse and raises a sense of solidarity—for example, “in these hard times, let us all work together to support one
another.” Furthermore, the effects of unemployment on mental health are less severe if aggregate unemployment is high. This is referred to as the “social norm effect” (see, for example, Clark 2003). In the face of crises, people—especially adolescents—often seek support and encouragement from their peers and to try to make meaning of the situation. In the absence of healthy role models or peers, such newly formed relationships may have negative effects and lead to negative adaptive or deviant behavior.

Thus, it is helpful to think along the lines of the resilience factors presented in box 2.1 that may stem from biological, genetic, and social sources, as well as from interactions between genes and the environment (for more detail, see box 3.2). The success of potentially powerful adaptive systems, such as attachment or self-regulation, will depend on the context and the resources available in that context. Maintaining positive relationships with parents, teachers, or mentors or having a well-developed self-regulatory system will have a protective effect on the developing child. Adaptive success will depend on how successfully the developing child has mastered previous stage-salient tasks, especially the development of major adaptive systems, and on how supportive the environment is and what resources it provides. In addition, while the child’s own adaptive system is of primary importance, the adaptive responses of people in his or her environment will also influence the resilience and development of the child.

For example, families and family life affect child development. However, intrafamilial interactions, between parents or among parents and children, are generally not measured or observable in most socio-economic datasets. Education, however, influences family life; being better educated typically means that one has more resources of various kinds, including stronger conflict resolution strategies, wider future opportunities, and the like. Better-educated adults are generally better equipped with tools to help them manage a family and are also better equipped to minimize or mitigate the effect of hardship on internal family relations and consequently on children (see also Behrman et al. 1980; Behrman and Rosensweig 2002, 2004; Yoshikawa, Aber and Beardslee 2012; Gershoff et al. 2007).

Institutional and cultural resources also help buffer individuals and communities against shocks. These resources enable and constrain different responses or adaptive behaviors to shocks and make them more or less likely across contexts. For example, the predictable availability of comprehensive social services helps an individual choose from among a
range of strategies to cope with unemployment or other forms of crisis. In addition, individuals will also respond to the targeting mechanisms used in the distribution of public support services: a means-tested program will engender a different perception of state assistance and its availability and behavior than a universal program.

Individual and collective interpretations or perceptions of events, such as economic crises and subsequent adaptations, are rooted in shared definitions of rights and mutual obligations in the community as well as in standards for cooperation and individualism. Awareness of a shared commitment to developing and managing common property and resources, such as a public housing complex, may also affect how individuals deal with collective violence or other forms of social disorder (Small 2004). Conversely, in communities with low expectations about collective governance, individuals experience more fear and perceive their environment as more threatening (Sampson 2006), and these perceptions will trigger responses different from those in close-knit communities with higher expectations.

Along the same line, the cultural frames through which the poor are construed, and how they perceive themselves, also influence how they understand their own plight and develop approaches for addressing their situation. These collective experiences and perceptions can vary across ethnic or racial groups. In other words, the same environment and event may be interpreted and constructed differently by different groups. In the United States, for instance, Latinos are also more prone to help one another find jobs than are African Americans, a phenomenon that has been linked to observations that African Americans have a comparatively stronger sense of self-reliance (Smith 2010), as well as the view that this has adverse effects on their ability to find jobs.

Different definitions of individual and collective goals and different interpretations of experience can lead to different perceptions of the range of choices and options available. For instance, in an environment where socioeconomic achievement is the sole measure of success, low-income populations are doomed to perceive themselves as losers. However, if their environment also values, for example, “morality” as a highly recognized basis for human worth, low socioeconomic status or unemployment may have markedly different psychological implications for the individual who perceives himself to be living up to high standards of morality (Lamont 2000). Along the same lines, if a group has historically been characterized by low socioeconomic achievement, expressive aspects of collective identity (history of struggle and resilience, cultural
tradition, intellectual production, and the like) may be particularly valued and become a source of positive identification, pride, and strength. This response is tied to a shared definition of collective identity or to “symbolic communities” of “people like us.” These factors have to be taken into account, as they provide recognition and support in a moment of crisis, a sense that one is not alone and that one’s experience is understood and shared by others, and a belief that one can develop individual and collective strategies in response to problems. This collective identity may also lead to the development of distinctive skills or modes of coping by which the population can create a sense of achievement. In other words, cultural intimacy and support in time of crisis and vulnerability can play an important role in enhancing resilience.

Policy Implications of an Integrated Approach

So far, part I has reviewed the fundamentals of human developmental science and economic theory of human capital development and investment and explored how the impacts of systemic economic shocks can be better understood through an interdisciplinary framework combining the two approaches. The purpose of this exercise is to identify policies and interventions that best protect children and youth from the negative consequences that crises might bring. In addition, responses to shocks should not only mitigate the impact, “providing immediate and effective relief” (Skoufias 2003, 1088), but also be designed to alleviate poverty in the long run, reduce susceptibility to future crises, and halt the intergenerational perpetuation of poverty. Programs that protect households from the brunt of a crisis should include features that promote healthy child and youth development. For this, we must fully understand the transmission mechanisms or pathways through which shocks reach the developing person as outlined above. A drop in income does not necessarily affect a child, if it does not change the dynamics within and between settings of its microsystem. In other words, whether a drop in income will affect a child depends partly on how it affects proximal processes, such as interactions between parent and child, between teacher and child, or among peers.

The impact of shocks on systems and on young people will vary according to the context in which the shock occurs. The context is affected by political, economic, institutional, historical, and cultural factors that shape and are shaped by the policy environment. Social policy can then shield vulnerable populations from serious impacts through stabilizing
incomes and consumption and maintaining public spending on services such as schools and health care. Social policy also influences collective resources, cultural frameworks, and repertoires that affect the ability of individuals to understand, adapt, and cope with the situation they find themselves in. For example, the impact of a transfer or social support program on the child will depend on who within the household receives the transfer. In some contexts, money in the hands of women rather than men is more likely to be spent on children (Benería and Roldan 1987; see also the papers in Haddad, Hoddinott, and Alderman 1997). In addition, certain design features and targeting strategies could also increase family tensions, when intra- as well as extrafamilial relations are altered and power distributions shift, or when receipt of the transfer is conditioned on some behavior that might be controversial within the household (see, for example, Greenberg, Dechausay, and Fraker 2011). Thus, the context can affect vulnerability and resilience (see box 2.1). Conger and Stockdale (2011) find in a sample of Mexican immigrant families in California that a strong ethnic and cultural identity and a sense of belonging contributed significantly to an individual’s and a community’s resilience during the recent recession.

Finally, the impact of the shock will depend on its timing, with regard both to the person’s age and to the historical time. Contexts and vulnerabilities change over time, and the impact of the shock will differ according to the person’s stage of development as well as the historical context in which a shock occurs.

This conceptual framework provides a set of principles that informs the design and implementation of interventions to achieve both efficiency and distributional goals in the face of an economic crisis. The insights gained by taking a human-developmentalist approach can—among other benefits—improve short-term outcomes, augment long-term outcomes, increase cost-effectiveness of crisis response, or improve political viability and postcrisis sustainability. This approach leads to three main overarching principles, or tools: nested points of entry, substitutability, and targeting.

**Nested Points of Entry: Breaking Transmission**
This chapter outlined how a systemic economic shock can transmit from the global or national level through various systems and settings and ultimately affect an individual child. The pathways through which a shock is transmitted to the individual child provide a number of possible options, or nested points of entry, for interventions aimed at breaking the
transmission of the shock. For example, a fall in income can create stress within the family in domains other than consumption and subsistence. Unemployment is often accompanied by a loss of status and feelings of inadequacy and hopelessness, often resulting in depression and anxiety. Depression can lead to substance abuse, domestic tension, and violence, as well as to changes in family dynamics. Policies may aim at replacing lost income, providing employment, or a combination of both. However, such transfer or public works programs are often accompanied by unforeseen externalities, and design features will determine the impact they have on children’s development (see, for example, Huston et al. 2005). As these changes in individuals and the family happen in subtle and unexpected ways, interventions to provide information and support as the family deals with the crisis can be as important as income transfers in helping families maintain effective and positive parenting behavior and healthy relationships among partners and children.

Alternatively, an intervention could deliver services directly to the child in support of the factors driving the developmental processes. For example, we know that parental stress can hinder the cognitive and socioemotional development of children through various channels as children attempt to cope with that stress. Thus, we might want to consider a mother-child intervention to help the mother cope with the stresses induced by a crisis and maintain positive parenting.

An adolescent on the verge of transitioning to work, in contrast, may be affected by economic shocks through nonfamily influences. For example, changes in labor market opportunities might clash with previously formed perceptions and aspirations about work, which could negatively affect a youth’s future orientation (see, for example, Silbereisen 2000). An intervention might aim to provide guidance and resources to support the development of identity and future orientation during such difficult times.

Considering resilience factors as outlined earlier (see box 2.1) may prove helpful for policy makers, because they provide something like a menu of nested points of entry that could be targeted to help buffer children and youth from the adverse effects of aggregate shocks. Chapter 6 will provide some concrete examples of evidence-based interventions that have proved effective at fostering positive adaptation in the face of risk and adversity.

**Substitutability**

A solid understanding of how children are embedded in different contexts and settings at different ages and stages of development—and being able to recognize how these settings might be affected by a
shock—enables us to identify a range of effective alternative policies, or substitutes,\textsuperscript{14} in cases where the actual threat to development is difficult to address directly. For example, in some countries, social norms might restrict programs aimed at influencing parenting styles and interfamily dynamics; intervening in child-rearing practices may be perceived as an invasion of an exclusively private domain and thus politically and socially unacceptable. Alternatively, introducing special programs in schools may effectively reach young people and have positive impacts despite obstacles or confounding family difficulties. However, it must be noted that family responses may diminish the benefits of interventions delivered to the children. For example, the net impact of school feeding programs may be less than the value of the school food package if the household responds by giving the beneficiary child less food at home.

Of course, relevant settings are very much age and context specific. Applying a bioecological systems perspective as was discussed earlier in this chapter will guide the identification of alternative settings in which interventions might be introduced. For example, school-age children, and adolescents to an even greater extent, spend more and more of their time outside the family setting, providing a range of substitutes for family- or household-based interventions. It will be more challenging to reach the unborn and very young children who do not attend day care or out-of-school children and youth. Possible substitutes for those cases and ways in which to reach the “unreachable” are discussed in chapter 6.

The sources of resilience listed in box 2.1 can help us identify alternative settings for public action and thus a range of possible substitutes. It must be remembered that interventions in one setting can spill over into others. A program that directly affects schooling or health care provision, for example, will likely indirectly affect perceptions and behaviors within the family, such as those relating to parenting and other intrafamily relations; conversely, parenting practices and other family-related contextual variables will influence the impact of an intervention in school. In other words, settings, or contexts, interact, and this interaction may be more relevant than the main effect of any one context alone. For instance, research has demonstrated that the same parenting styles lead to different child development outcomes in safe as opposed to dangerous communities (see Florsheim, Tolan, and Gorman-Smith 1996; Brody and Flor 1998; Chao and Tseng 2002). Similarly, parenting styles may interact with ethnic differences in family socialization processes and actual or perceived educational and occupational discrimination (Steinberg, Dornbusch, and Brown 1992).
Targeting

Targeting of safety nets and other interventions relates to the questions raised earlier in this chapter in the section on efficiency and redistribution and usually focuses on some indicator of well-being, such as household income or some proxy for income. Targeting has direct and indirect costs, and it is not always the case that sharper targeting is preferable. More accurate targeting requires more information and more monitoring, and it may diminish support for programs among those who might benefit from looser targeting (see, for example, van de Walle and Nead 1995; Cornia and Stewart 1995; Sen 1995). Moreover, during times of crisis, effective safety net programs need to be rolled out quickly. The delays associated with identifying eligible people can be substantial (Sen 1995). Governments therefore often resort to self-targeted programs, in which participants self-select to take part, such as public works programs where the wage offered is no greater than the prevailing market wage or food programs in which the food distributed is considered inferior (by preferences and not nutritionally).

However, as observed earlier in this chapter, children and youth may be affected through channels other than household income. Targeting based strictly on income may therefore miss large numbers of vulnerable children and young people who are at risk of suffering severe adverse long-term effects but who do not satisfy conventionally defined or easily observable targeting criteria. Furthermore, self-targeted public works programs for parents may not be the most effective at ensuring healthy child and youth development (see, for example, Morris et al. 2001; Gennetian et al. 2004; McLoyd et al. 2011). Parental workfare programs are also unlikely to adequately address specific developmental issues and the consequences arising from prolonged unemployment spells of youth transitioning to work (see chapters 5 and 6).

Moreover, targeting based on some indicator of poverty may have significant psychological costs in self-respect and respect perceived from others (Sen 1995), which can influence a person’s abilities and affect confidence and achievement. This can influence younger children indirectly, through parents’ feelings of self-worth or empowerment, and older children or adolescents more directly, as they gain awareness of their family’s situation (see, for example, McLoyd et al. 2011).

The developmental approach provides tools to address some of the political economy concerns of targeting. Programs can be designed for specific age groups (for example, infants, primary school children, and out-of-school adolescents); settings (for example, households, schools, or youth
centers); levels of aggregation (for example, individual households or communities); or resilience factors (for example, children without extended family networks or with poor self-regulation skills). Universal programs targeted to particular age groups may be preferable to income-based targeting, if we know which age groups are especially vulnerable and why. For example, the unemployment of a parent in a middle-income family can create considerable stress without threatening subsistence and can significantly affect a child’s development. However, transfers to families not under severe economic duress may be both ineffective and very expensive, and thus politically unjustifiable. In this case, targeting support services at a different setting could provide a viable alternative for protecting children in a crisis. For example, depending on its focus and content, school-based programs involving all children can help counter the negative effects of a stressful home situation. Furthermore, programs open to all youth experiencing difficulties can not only provide a supportive environment and opportunity to acquire skills but also foster networks and the behavioral or social skills that all youth need to make the transition to productive adulthood. Broadly targeted programs for youth can increase social cohesion and a sense of solidarity by uniting youth from different socioeconomic backgrounds, as well as reducing the stigma associated with participating in the program.

Alternatively, programs could target on a basis of selective or indicative prevention. Selective prevention is based on specific criteria associated with high risk of negative outcomes, whereas indicative prevention identifies subjects who already show early signs of behavioral or socioemotional problems. Selective preventative targeting, for example, may be based on indicators such as high-risk neighborhoods (“Moving to Opportunity”),15 or high-risk single mothers (“Nurse Family Partnership”).16 Alternatively, or in addition, “Friends of the Children,” a long-term mentoring program, for example, uses an indicative preventative approach that targets children with weak self-regulation skills identified by behavioral markers early on in day care or school settings.17

Concluding Remarks
This chapter presents a concerted effort at integrating the economic human capital approach with that from human developmental science to enhance our understanding of how aggregate economic crises, particularly in developing countries, affect children and youth. We developed a conceptual framework that enables us to improve our understanding of the empirical work and the policy choices reviewed in the remaining chapters.
The effectiveness of generating and interpreting new empirical work, and designing and testing new policy responses, will be the real tests of the utility of this framework. Under the assumption that most readers will be more familiar with the economic approach, we have focused relatively more on the human developmentalist perspective. However, we hope that those approaching this subject from either perspective (or neither) will have gained an appreciation of both, as well as an understanding of how they are complementary and can enhance the design of programs designed to protect and promote young people’s development.

In sum, considerations of basic economic modeling lead to a richer interpretation of the Bronfenbrenner bioecological model by allowing for induced changes in behaviors of a number of entities. Some of these induced changes are proximal and some more distal from the point of view of human resource investments in children and youth. They include a multiplicity of adjustments with implications not only for immediate responses to the shocks but also for the dynamics of longer-run responses to actual or anticipated shocks (and with implications for targeting of policies).

Combined, the three principles—nested points of entry, substitutability, and targeting—provide a coherent framework for designing and implementing effective interventions to protect and promote young people’s development during economic crises. Thus, this multilayered approach expands the set of possible policy interventions, for example, by presenting a more nuanced depiction of the experiences and relationships that shape children and youth and how those experiences are conditioned by the mental health of their parents. But more work remains for further integration in program design and implementation, as well as in empirical measurement and testing of combined approaches to achieve both faster recovery and enhanced well-being in times of crisis.

Notes

1. Of course, the consequences of all crises may be related to past economic policy. The impact of natural disasters, for example, depends strongly on the quality of previous investments, especially prior infrastructure development. This is in part why the 2010 earthquake in Haiti was much more devastating than the 2010 earthquake in Chile, even though the latter was one of the strongest earthquakes ever measured, 500–700 times more forceful than the devastating earthquake in Haiti, (<http://en.wikipedia.org/wiki/Richter_magnitude_scale>, accessed 12/27/2011.)

2. The investor may vary depending on the particular situation and the life-cycle stage of the individual in whom the investment is made. In some cases, for
example, the individual may be the investor, but in other cases it may be his or her family. In still other cases there may be implicit or explicit bargaining among family members—between spouses or between children and their parents—regarding investments in human capital. If there is such bargaining, the fall-back or “threat point” of the individuals involved may be critical because their bargaining power may depend on what their options are if they opt out of the family. Space precludes developing the implications of these bargaining possibilities in this chapter, but see Behrman (1997), Hoddinott, and Alderman (1997), and Lundberg and Pollak (1996) and the references therein for more extensive discussion. To avoid awkward terminology, we refer to the investor as the family of the individual, but we try to be clear when it makes a difference who the investor is.


4. The net discounted present value of benefits is the sum of all the benefits that derive from an item or service, today and into the future; that is, this year’s benefits, plus next year’s benefits, plus the subsequent year’s benefits, and so on. Future benefits are usually discounted to account for inflation, the opportunity cost of the resources used, and the observation that people generally prefer things that are closer in time over things that are farther in the future. The same principles hold for costs.

5. This analytical model is developed more formally and graphically in appendix A. The “present discounted value” of future outcomes adjusts for the fact that money received (or spent) today is more valuable than the same amount of money received (or spent) in the future because money received now can be reinvested and receive a return before money received at some point in the future. “Marginal” means additional. At the time of the investment decision, the relevant marginal benefits and costs are not known but are expected in the future.

6. This is not the same as engineering or scientific efficiency. An engine that is very efficient in the engineering sense, for example, may be very inefficient economically because it uses inputs that have better uses elsewhere.

7. If all other markets in the economy are not operating efficiently, policies that narrow the differences between private and social marginal incentives in the human capital investment market or in some segment of that market do not necessarily increase efficiency and productivity. And clearly in the real world there are many market failures so that some distortions may counterbalance others. But, in the absence of specific information to the contrary (such as on the existence of two counterbalancing distortions), a safe operating presumption is that lessening any one distortion between social and private incentives is likely to increase efficiency.
8. The relevant information includes not only information about the functioning of human capital investment markets and possible market failures but also serious evaluations of government policies that are related to human development and possible policy failures. Policies are the result of behaviors and are subject to estimation problems such as those mentioned earlier.

9. Most available studies on the positive relations between productivity (or wage) gains and human development—education interactions, however, may overstate the causal effect because of the failure to control for the selectivity of human development in the presence of important unobserved (by analysts) attributes such as ability and motivation.

10. A role is a set of behaviors and expectations pertinent to an individual in a particular setting and at a particular point during the life course, associated with a particular position in society, for example, the role of mother, baby, teacher, friend, and so forth (Bronfenbrenner 1979).

11. For more detail on the mesosystem, see Bronfenbrenner (1979); depicting the system in more detail would exceed the scope of this section.

12. Quisumbing (1994) and DeGraff and Bilsborrow (2003) show that Filipino parents tend to prefer educating girls over boys as they perceive greater returns to investing in girls’ secondary education. This preference, they explain, seems to stem from the fact that migrating daughters provide greater financial support to their parents than their sons later on. More generally, while there once was a pattern of schooling boys on average more than girls, in recent years that pattern has been reversed among children enrolled in school in most countries, although there still persist smaller enrollment rates for girls than boys in a number of countries (Grant and Behrman 2010).

13. See, for example, the Family Stress Model by Conger, Conger, and Martin (2010).

14. We are not looking at intertemporal substitution or inability thereof, as in Almond and Currie (2011).


17. See http://www.friendsofthechildren.org/.

References


