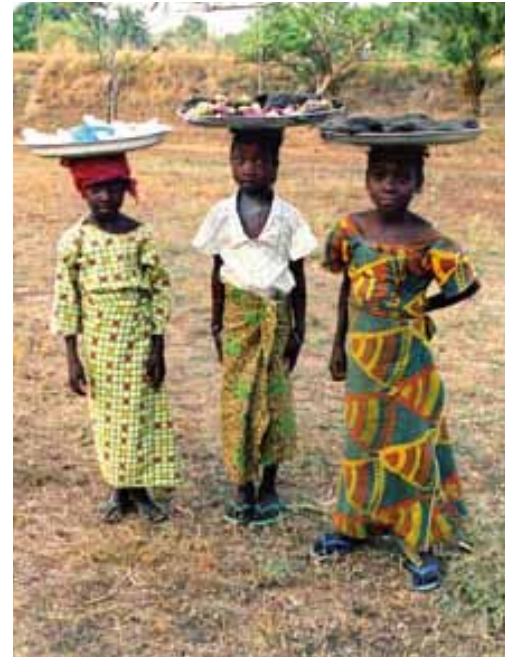


# 2



## Understanding the Education Transition and Its Context

**The global transition in education participation and attainment is but one of many interacting global human development transitions proceeding simultaneously. It is impossible to explore in depth either the past or the future of education without considering many of these other transitions and education's interactions with them.**

The demographic transition is key among the other transitions. In the short period between 1960 and 2005, advances in health raised global life expectancy at birth from 50 years to 68 years. During this period, life expectancy increased most dramatically—from 45 to 66 years—in countries classified by the World Bank as developing economies. Even in sub-Saharan Africa, life expectancy rose from 41 years in 1960 to over 50 in 1990; since then, it has hovered between 48 and 50 years as a result of the AIDS epidemic. On the fertility side of the transition—where change tends to follow increases in life expectancy—the total fertility rate of the world declined

from 4.6 to 2.6 lifetime births per woman over the same period, and that of countries classified as developing economies dropped from 5.1 to 2.7. In sub-Saharan Africa, the total fertility rate declined from 6.7 to 5.3, with the decline really beginning only in 1985 and now proceeding steadily.

We could similarly trace large-scale change in many other dimensions of transition—in urbanization, in an ongoing reduction of the rates of poverty around the world (although not in the absolute numbers of poor or hungry), in increased levels of income per capita in essentially all regions except Africa, in the portion of the world's population living in relatively democratic societies, and more. Figure 2.1 provides a simple schematic of connections among demographic, educational, economic, and sociopolitical systems, giving education—since it is our focus here—the central position.

Our understanding of the purposes of education, roughly framed by its contribution to

the elements shown in Figure 2.1, has changed over time, a topic the next section explores. And our theoretical and empirical understanding of the two-way relationships between education and other elements of the broader human development system has become stronger. We will return to our knowledge about those relationships later, before presenting some of the conceptual foundations of education systems themselves to provide a basis for discussion of the history and future of the education transition in the following chapters.

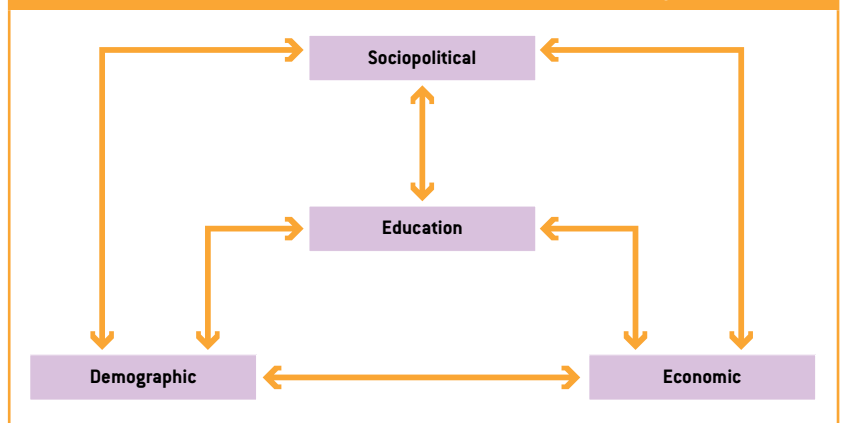
### Education as an Expression of Social Purpose

Education has been a powerful instrument to serve social purposes since the times of ancient civilizations. Often, those purposes have included the perpetuation of a privileged status quo. However, as the Millennium Task Force on Education and Gender Equality pointed out, education can also be a key stimulus for social change: “Educating the poor is particularly important for triggering broader social change. Education has a special quality: the human capital acquired through formal education cannot be appropriated. In that respect it is different from land or financial assets. Education is an asset that enables its owner to earn more and to communicate and obtain information more successfully” (Birdsall, Levine, and Ibrahim 2005: 25).

Formal education was the province of elite groups and elite members of societies until relatively recent times. The widespread dispersion of primary education began in the Western industrialized countries only in the latter half of the nineteenth century. Compulsory primary education was first mandated in the United States (specifically, in Massachusetts) in 1852;<sup>1</sup> other countries that formally mandated compulsory primary education before the end of the nineteenth century were Great Britain, Canada, Australia, Italy, New Zealand, France, and Japan (Clemens 2004: 51).

Industrial workforce needs were, in large part, responsible for the expansion of basic education in industrialized countries in the latter half of the nineteenth century. Public funding for education came with the expectation of economic growth and economic

**Figure 2.1 Education within a broader human development system**



returns at the national level. Only after World War II did the 1948 United Nations Universal Declaration of Human Rights articulate access to some basic level of education as a right of all people, globally. Still more years passed before sub-Saharan Africa and much of Asia emerged from colonial status and could begin to move beyond education systems whose primary purpose had been the preparation of a relatively small number of individuals for positions in the colonial bureaucracies.

The coexistence of these different purposes or rationales for education—for the perpetuation of an established order, as a force for social change, to augment the role of human beings in producing wealth, and to secure the rights of the individual—complicates discourse, research, and policy to this day. Some advocates of education’s expansion focus on the various instrumental roles that education might play; others focus on the intrinsic value of education as a human right.<sup>2</sup> Either position can be—and sometimes is—adopted or expressed as if the various instrumental and intrinsic outcomes are dichotomous rather than, as is surely the case, interwoven in complex interacting patterns. As the Millennium Task Force on Education and Gender Equality noted, “Both the inputs to and the outputs from education are far more complex than much of the usual international discourse suggests” (Birdsall, Levine, and Ibrahim 2005: 23).

Public education policies are likely to differ markedly depending on varying perceptions of the rationales and consequences of education and its expansion. Despite the UN’s assertion of

■ *Education can be a tool to maintain a status quo that may be highly unequal—or it can be used as a powerful force for positive social change.* ■

Public education policies have reflected changing perceptions over time of the role and consequences of education. ■

In the 1960s, analyses emphasized education's contribution to economic growth through the creation of human capital. ■

education as a universal human right in 1948, most analyses of education at that time focused on instrumental rationales and consequences within the nascent fields of development studies and development economics. Dominated by the need for reconstruction in the aftermath of World War II and by the emergence of sub-Saharan Africa and large portions of Asia from colonial status, early development studies typically concentrated exclusively on economic growth and development, and particularly on the role of capital inputs.

The role of labor as a factor in production ("human capital") emerged as a development focus during the 1960s, and education came into the picture insofar as it was seen to enhance the contribution of labor to the production function.<sup>3</sup> Typically, during this period, studies focused on individual and social rates of return to education as manifested solely in individual wage and national income differentials associated with different levels of education. Public and private costs of education were typically compared with the wage and income results to produce cost-benefit analyses, and nonwage impacts of education (even if they might have a future connection to further economic growth) were typically excluded.

As Woodhall pointed out (2004: 87), in countries where women were not represented in large proportions in the wage economy, it was not unusual for such studies to find that education was likely to be less profitable for women than for men. Obviously, such a finding did not necessarily mean the authors were advocating withholding education from women. Nonetheless, the approach could be used to support such a conclusion, particularly in a state with scarce resources and/or a repressive tradition toward girls and women. Even from a rather strict economic development perspective, however, one could take such a finding to task on the grounds of downplaying both potential and measurable nonwage benefits of female education as well as women's potential contributions to economic growth as wage earners.

Not surprisingly, critiques of the human capital approach centered on the extent to which it focused on earnings and "observed output" to the exclusion of other aspects of development. One response to such critiques was an effort to extend cost-benefit analyses to include the value

of education's "nonmarket" economic effects. In a seminal study published in the 1980s, Haveman and Wolfe (1984: 382–386) included what they described as a "catalog of impacts of schooling, nature of impacts, and evidence on magnitude of level and value of impact." Their catalog includes, among others, health, fertility, crime reduction, social cohesion, savings, and charitable giving. Two things are noteworthy. The first is the broad extension of the range of possible impacts from increased education. The second is the continued centrality of economic benefits as the metric for evaluation.<sup>4</sup>

However, a new development framework has broadened and refocused the inquiry. The approach, as elaborated by Amartya Sen, focuses on human capabilities rather than on humans as a form of capital, and it emphasizes the role of development in expanding personal freedoms by enhancing those capabilities and fostering an environment conducive to the functioning of those capabilities. As stated by Sen (1999: 3): "Development can be seen, it is argued here, as a process of expanding the real freedoms that people enjoy. Focusing on human freedoms contrasts with narrower views of development, such as identifying development with the growth of gross national product, or with the rise in personal incomes, or with industrialization, or with technological advance, or with social modernization." He continued: "We must go *beyond* the notion of human capital, after acknowledging its relevance and reach. The broadening that is needed is additional and inclusive, rather than, in any sense, an *alternative* to the 'human capital' perspective" (Sen 1999: 296). Mahbub ul Haq (2003: 21) further clarified both the relationship and the distinction between the human capabilities approach and the human capital approach as follows:

None of the economic issues is ignored, but they all are related to the ultimate objective of development: people. And people are analyzed not merely as the beneficiaries of economic growth but as the real agents of every change in society whether economic, political, social or cultural. To establish the supremacy of people in the process of development—as the classical writers always did—is not to denigrate economic growth but to rediscover its real purpose.

In addition to rejecting the view that economic growth alone, as measured by gross domestic product (GDP) per capita, will provide for other central human needs, the capability approach to development is tied to concepts of social justice and the removal of disparities in opportunity and entitlement (Walker 2006; Maddox 2008: 185). As stated by Nussbaum (2003: 328), “It is very important to insist that development is a normative concept and that we should not assume that the human norms we want will be delivered simply through a policy of fostering economic growth.”

As one might expect, education is a central component of the human capability framework. Nussbaum (2003: 335) described education’s especially significant and central role in developing and enhancing women’s capabilities as follows: “Literacy (and education in general) is very much connected to women’s ability to form social relationships on a basis of equality with others and to achieve the important social good of self-respect. It is important, as well, to mobility (through access to jobs and the political process), [and] to health and life (through the connection to bodily integrity and exit options).” As this statement suggested, in the human capability framework to be illiterate and innumerate is, *inter alia*, to be deprived of an enabling environment for the enjoyment of a long, healthy, and creative life.

In a recent discussion of the capability model of education, Robeyns (2006: 69) described education’s contribution to personal empowerment and personal enjoyment (its intrinsic value) and also its personal and collective instrumental value, including but not limited to economic impacts. Though instrumental impacts may be more easily measured and demonstrated, we believe that the unique power of education is the possibility of its contribution to both domains and that, in fact, the two are not readily separable but together constitute human development.

### **Placing Education in a Human Development Framework**

Hopefully, the preceding exploration of the social purposes of education suggests something of the highly interactive and complex connections between education and other components of human development

systems. Two characteristics of the connections are especially important to our efforts to understand and model the spread of education and its consequences. First, the connections between education and each of the other major components of the system are *bidirectional*. For example, just as education affects demography via its impact on health and fertility rates, demography affects education systems and opportunities via the size and characteristics of school-age and older populations. Second, in addition to the direct bidirectional linkages shown in Figure 2.1, there are multiple secondary or indirect impacts. Consider education and the economy. A *direct* impact of education might be enhanced economic growth as a result of a literate and skilled workforce. An *indirect* impact might be enhanced economic growth as a result of a workforce that is healthier, a condition to which education has also made a contribution.

In the remainder of this chapter we briefly consider three aspects of education’s connections to other components of the human development system. We look first at some of the ways other components affect education and then turn to education’s impacts on other components, a topic that Chapter 8 explores in some depth. And finally, we suggest some of the factors that complicate analyses and forecasts of education in a human development system.

### ***The impact of the broader human development system on education***

We begin our consideration of how each of the other components in Figure 2.1 might separately affect demand for and supply of educational opportunity with demography.

At the level of aggregate demand, other things being equal, larger school-age populations place a greater demand on education systems. However, two factors significantly interact with the absolute size of the school-age population in shaping demand pressures. First, a school-age or youth population that is large as a percentage of the overall population—and especially one that is growing relative to the economically active population—will translate into greater effective or felt demand. Second, not surprisingly, various demographic characteristics of families correlate with school participation rates. Poverty and various forms of social exclusion create

More recently, education has been viewed as central to the development of broadly defined human capabilities. ■

Education has bidirectional linkages with demographic, economic, and sociopolitical systems that affect both the demand for and the supply of education. ■

formidable barriers to participation even when schools with capacity are available. Children living in poverty, children in linguistic and ethnic minority groups, children who live in rural areas, and children with disabilities (and particularly, in a number of countries, girls in these circumstances) are less likely to attend school, especially in the early stages of a country's education transition. At the same time, parental education is strongly related to children's school participation; children whose parents have attended primary school are more likely to attend themselves, including children in poor families and children (including girls) in socially excluded groups.

Demographic and economic factors clearly interact in determining both education supply and education demand, as indicated by the previously mentioned lower enrollment rates of children from poor families and by a quite consistent global relationship between enrollment rates and per capita GDP. It is not just that poor families may not be able to afford the direct costs of education (school fees, uniforms, and sometimes tuition). In addition—and perhaps depressing demand in low-income economies even more—families may not be able to afford the opportunity costs associated with sending their children to school, such as giving up the paid or unpaid work their children perform. In yet another connection with the economy, because of the extreme hardship involved for many families in sending their children to school, parents need to be able to anticipate their children will realize future benefits from education, especially access to jobs (and hopefully better jobs), as a result of that hardship.<sup>5</sup>

On the supply side, the strength of a country's economy obviously shapes its ability to expand adequately resourced school capacity in an environment with a growing school-age population (either absolutely or relatively) or in an environment in which an increasing proportion of families want to send their children to school. Societies are especially challenged if both dynamics are occurring at the same time, as has happened in most sub-Saharan African countries in recent decades. The strength of a country's economy also affects its capacity to stimulate employment opportunities for a more educated populace.

Sociopolitical forces interact with demographic and economic environments to create and implement education systems. Governments ultimately make decisions about the priority afforded education in the face of varying perceptions of public responsibility, competing public needs and demands, varying levels of access to resources, and greater or lesser levels of government effectiveness.

Among the sociopolitical decisions that significantly shape educational systems and enrollment levels are:

- The relative proportion of public sector resources going to education, to health, to the military, to the direct creation of jobs, and to other compelling public needs
- The level of public spending per student at the primary, secondary, and tertiary levels
- Costs, if any, that are viewed as the responsibility of families
- The special attention, if any, that is directed at subpopulations or groups of school-age children who are particularly at risk of not attending or completing school
- The relative balance between quantity and quality, particularly if there are both internal desires and external pressures to rapidly increase participation levels
- The balance of emphasis across primary, lower secondary, upper secondary, and tertiary levels<sup>6</sup>
- Participation in programs that provide international assistance

The manner in which governments and communities respond to these issues interacts with families' perceptions of educational opportunities and hence the decisions they make regarding their children's education. A special concern is the extent to which all children have equal access to a quality education (see Box 2.1).

### ***Education's impact on other aspects of human development***

Education clearly also has impacts on other human systems, and a great many studies have sought to understand the benefits of education, its possible neutral or even adverse consequences, and the circumstances under which varying impacts arise.

### Box 2.1 Social exclusion: A perspective from the field

*Social exclusion is no longer a question of “denied physical access to schooling” but is a more complex reality. In an increasing search for elusive quality, for instance, many communities may opt for low fee-paying private schools. This often results in a massive shift of school-going populations away from dysfunctional state schools to private schools, while those left in state schools of poor quality are children from the socially marginalized and economically deprived communities. While the accomplishment of physical access is easily demonstrated in quantitative*

*terms through the provision of suboptimal options of low quality schools in “hard-to-reach” habitations, it is the quality of education that determines access to learning and is reflected in completion and success rates of schooling. For the disadvantaged, schooling can become yet another form of oppression and social exclusion.*

Poonam Batra, Professor of Education  
Maulana Azad Centre for Elementary and Social Education  
University of Delhi

Hannum and Buchmann (2006: 496) recently completed an extensive literature review of such studies, analyzing the research findings of over 100 empirical studies in sociology, demography, economics, political science, and anthropology relative to the following assertions:<sup>7</sup>

- Human capital stock is central to national economic development, as better-educated citizens are more productive. (*Economic System*)
- Within societies, the expansion of educational opportunities enables individuals to improve their economic circumstances. (*Economic System*)
- Educational expansion narrows social inequalities within countries by promoting a meritocratic basis for status attainment in which the talented can achieve appropriate positions in the economy, regardless of social background. (*Sociopolitical System*)
- Countries with better-educated citizens have healthier, slower-growing populations, as educated individuals make better health choices, live longer, and have healthier and fewer children. (*Demographic System*)
- Countries with more educated populations are more democratic, as their citizens are able to make more informed political decisions. (*Sociopolitical System*)

From their review, Hannum and Buchmann concluded that empirical evidence most strongly supports the assertions of positive health impacts and reduced fertility from expanded participation in primary and secondary education, as well as enhanced (although not ensured) economic circumstances of individuals. They pointed to a more ambiguous outcome with respect to national

economic development, stating that “many empirical studies find a positive relationship, but other studies cast doubt on it” (Hannum and Buchmann 2006: 521)—a point we will return to in some detail in Chapter 8. In the meantime, we quote at greater length their finding with respect to education’s impact on narrowing social inequalities: “Numerous empirical studies in sociology have indicated that while educational expansion tends to offer absolute benefits to disadvantaged groups, it is less likely to erode social inequalities rapidly, except perhaps for inequalities associated with gender. Inequalities associated with economic origins or ethnicity often prove resistant to educational expansion, as educational access may expand faster for advantaged than disadvantaged groups” (Hannum and Buchmann 2006: 521).

They also find an ambiguous relationship between education (particularly at the primary and secondary levels) and democratization: “Though expansions of primary and secondary education are likely to improve the informed citizenship of individuals ... democratization, perhaps more so than other outcomes, may hinge directly on the hard-to-measure content of education. This possibility is suggested in studies that find larger effects of tertiary education than lower levels of education” (Hannum and Buchmann 2006: 521).

In Chapter 8, we will draw on a range of specific studies to explore each of these five posited relationships, in order to explain how components of education’s impact are included in the IFs modeling system. In addition, our analysis in Chapter 8 of sociopolitical systems extends beyond democratization to include government effectiveness, corruption, and state failure.

■ A great many studies have sought to understand education’s impacts, and our understanding of causality and relationships continues to evolve. ■

● *Considering the education transition requires that we understand how the spread of education is analyzed and measured.* ●

### ***Difficulties in analyzing educational change and human development***

Much complicates our ability to understand education as a component of social change. Perhaps first and foremost, difficulties in conceptualization and measurement arise from the inherent complexity of human and social phenomena. Second, even when we have a conceptual framework in place and a protocol for measurement exists, the data we need are often not available. And third, methodological issues and differences in research approaches, though potentially a path to clarification, frequently instead add further elements of uncertainty. Box 2.2 briefly describes some of the complicating factors that contribute to inconclusive or contradictory research results. As a result, we have a far from perfect understanding of the processes through which phenomena interact and change, and our understandings of causality are continually subject to refinement and modification. However, despite the many complicating factors, there is ample evidence of a virtuous cycle between education and broader human development.

In seeking to understand and diminish the frequency of research problems, Hannum

and Buchmann (2006: 522–524) made four suggestions to researchers to enhance future studies and the interpretation of research results with respect to education’s impacts: (1) use a long-term perspective to account for time lags; (2) pay attention to different consequences associated with the expansion of different levels of education; (3) consider connections between specific education characteristics (e.g., quality, content, and organizational structure) and differing outcomes; and (4) recognize the impact on education’s outcomes of differences in the contexts and environments within which educated people live and work.

### **Participation in and Attainment of Education: A Conceptual Framework**

An exploration of the unfolding global educational transition requires its own conceptual foundations, even before and somewhat independently of considerations of the relationship between education and other elements of the human development system. In particular, the distinction between the education participation rates of students and the education attainment levels of adults is foundational.

Assessing levels of attainment or progress toward educational goals begins (and too

#### **Box 2.2 Examples of complicating factors in assessing education’s impacts**

*Bivariate causality:* Problems arise in the interpretation of the direction and magnitude of causality between related variables. For example, even though a strong association between levels of education and economic growth can be demonstrated, the balance of directionality is not clear. Does education lead to economic growth, or does economic growth lead to expanded education? Are both at play? Is the causality stronger in one direction than the other?

*Spurious or false correlations:* It is even possible that there is not—or not fully—a causal relationship between education and economic growth but rather an association driven by a third variable or a constellation of other variables. For example, technological advance might partially drive both education demand and economic growth.

*Interaction effects:* Third variables may affect or condition the relationship between two others under direct examination by largely determining one of them or by intervening between two of them. For example, Hanushek (2004) found education quality—as measured by standardized international assessments—has a greater association with economic growth than does education quantity. Similarly, the strength of an association between education and many other social

phenomena is conditioned by the different contexts within which persons with given levels of education seek to apply the knowledge, skills, and capabilities acquired from their schooling. Jamison, Jamison, and Hanushek (2006: 14), for instance, found a stronger relationship between education and economic growth in an open economy than in a closed economy.

*Temporal dynamics:* Another problem involves lags, sometimes very long ones, in relationships between variables. For example, an increase in primary entry or intake rates of children at age six, assuming these children continue on to the secondary level, will take ten years or more before it impacts in measurable ways the life choices and circumstances of these children as they become young adults.

*Generalization across levels of analysis:* Still another difficulty arises from generalizing relationships from a marginal analysis to a systemwide outcome. For instance, there may be a strong relationship between lower secondary education and increased individual income when secondary enrollment rates are low. However, as the proportion of a population with lower secondary education moves toward 100 percent, the supply/demand dynamics change, and the previously observed relationship may no longer pertain.

often tends to end) with measurement of the participation rates or *flows* of individuals into, through, and out of components of education systems. The path or flow is one of entry into school, followed by progression from grade to grade or from level to level, culminating hopefully with completion of primary schooling or more advanced levels.<sup>8</sup>

To explore the implications of education for other components of human development, the assessment of student flows must be followed by the movement of school-age populations into the demographic cohorts of the adult population—cohorts who carry with them, as they age, their experiences of partial or full completion of education programs. In this way, the foundation is in place to explore relationships between varying educational patterns among adults and other social and human development characteristics.

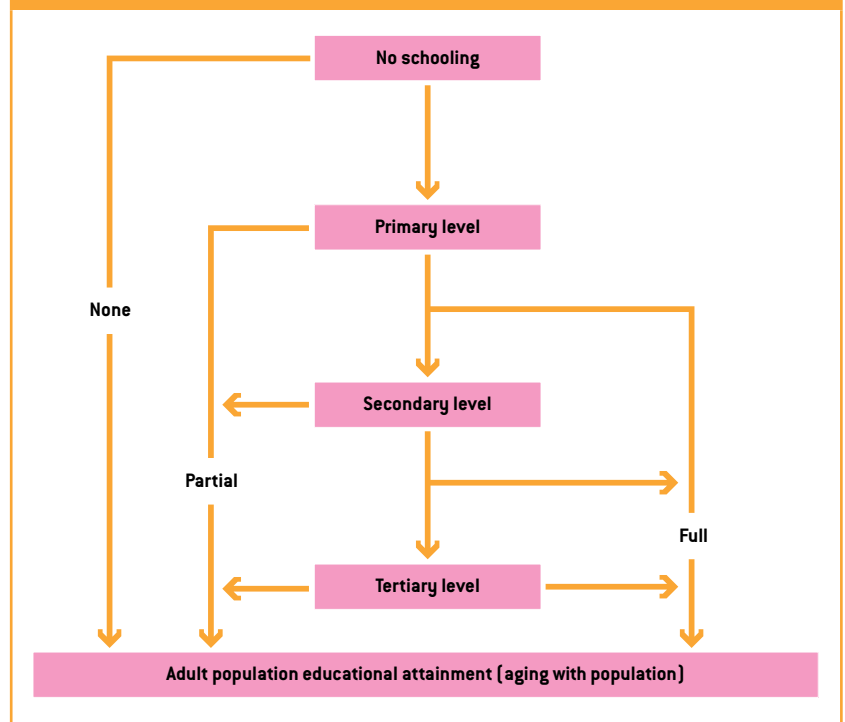
In summary, the level of education attainment among an adult population is the time-lagged result of the participation (*flows*) of members of that population in an education system or systems. In the terminology of systems dynamics, the accumulated experiences of the adult population (or across a population of any age) constitute a *stock* of educational attainment, an important indicator of human capabilities. Figure 2.2 presents a simplified high-level view of education system flows and stocks.

### Student flow patterns

In reality, patterns of participation (flows) are considerably more complex than Figure 2.2 suggests. Using the primary level as an example, complexity arises around several interacting dynamics, including patterns of intake, progression, and completion (see Figure 2.3). We consider each in turn.

With respect to intake, children may enter the system at various ages, such as the designated entry age (most typically six for primary school) or above or below the designated entry age. The *net intake rate* refers to the number of students who enroll at the designated or expected entry age as a percentage of all children of that age (both those in school and those out of school), whereas the *gross intake rate* refers to entry of students of any age as a percentage of the population of the age expected to enroll.

Figure 2.2 Education flows and stocks



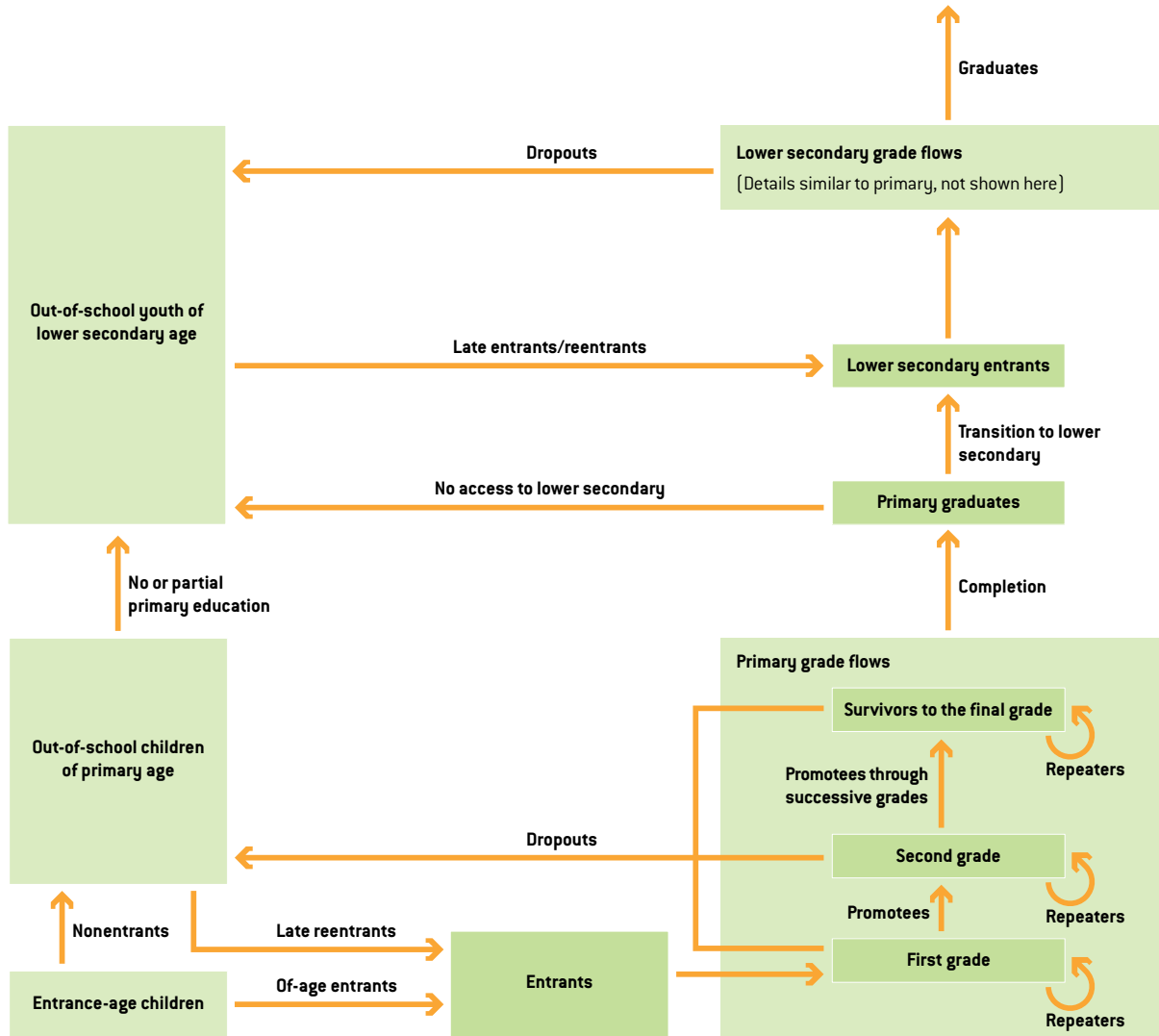
Students may progress without interruption from one grade to the next. They may also repeat grades, and although primary *repetition rates* around the world and across grades average 6–7 percent annually, they vary widely. And finally, students may drop out either during the year or at the end of the year. Some of those who drop out will subsequently reenter; others will not.

Enrollment rates express the combined result of intake, progression, repetition, drop-out, and reentry patterns. *Gross enrollment rates* refer to all enrolled students as a percent of the population in the stipulated or expected age range for that level. *Net enrollment rates*, by contrast, refer only to the number of enrolled students within the stipulated or expected age range as a percentage of the total population (again, both those in and those out of school) in that age range. Whereas net enrollment rates, by definition, cannot exceed 100 percent, gross enrollment rates can and often do, sometimes by substantial margins. Three factors contribute to this possibility: (1) the entry of students who are younger than the stipulated entry age, (2) students who are enrolled beyond the expected age range either because they were older than the stipulated entry age when they started or because they

Education “flows” refer to participation rates of students, and education “stocks” refer to education attainment levels of adults in a population.



**Figure 2.3 Patterns of student flows (primary level as example)**



Source: Adapted from Ifan (2008).

have repeated one or more grades, and (3) reentry of students who drop out for a period and subsequently return.

Progression is measured by survival rates and completion rates. The *survival rate* is the percentage of an entering cohort persisting to the beginning of the final year of a given level of education,<sup>9</sup> whereas the *completion rate* is the ratio between the number of students completing an education level and the number of children or youth in the population at large who are the expected age to do so. At the primary level, for example, the completion rate is calculated as the number of children

completing the final grade as a percentage of the population of the age a child would be who began first grade at the system-defined entry age and progressed without repetition or interruption through the final grade.<sup>10</sup>

Of those who complete the primary level, some will transition immediately to the lower secondary level, some will enroll in the lower secondary level after one or a number of years out of school, and some will never enter the lower secondary level—and so on through the upper secondary and tertiary levels. *Transition rates* to the new levels are calculated by dividing the number of new entrants to each

new level by the number of students who were in the final grade of the prior level the previous year.

Enrollment rates reflect the composite effect of specific intake rates along with specific grade-to-grade survival rates and therefore, not surprisingly, are the most frequently reported education flow variable. However, enrollment rates alone do not tell us about the underlying dynamics of education flows, for the same enrollment rate can result from a high entry rate combined with a low survival rate as from a lower entry rate combined with a higher survival rate. Decomposing enrollment rates into entry, progression, and survival components provides more information about flow patterns—such as whether a country is successful at providing access (high entry rates) but is less successful with respect to progression (low survival rates)—and is therefore of greater help to those seeking to understand and improve education systems.

Our primary source for student flow data is UNESCO. Between 1963 and 1999, data were published in annual UNESCO Statistical Yearbooks, first through the Division of Statistics on Education and then through the Office of Statistics. In 1999, the UNESCO Institute for Statistics (UIS) was established and assumed responsibility for global education data collection and dissemination (see Box 2.3).

### **Levels of education attainment**

The consequence of a pattern of student flows is the state of educational attainment within a population at any given point in time. Two types of measures of attainment are frequently used. The first is the average years of education within the adult population, most often defined as the population twenty-five years of age and older or the population fifteen years of age and older (and often differentiated by sex).<sup>11</sup> The second frequently used measure is the distribution of attainment by levels of education across age categories (and often, again, categorized separately for males and females).

Problems afflict both measures, stemming from the availability and quality of the underlying data and from the estimation methodologies employed to address problems of missing data.<sup>12</sup> However, from a conceptual perspective, greater limitations are associated

with the use of average years of education as an indicator of capabilities because of its highly aggregated nature. As a single population-wide measure, it provides no indication of the distribution of educational attainment around the average; an average educational attainment of five years could mean that all adults have five years of education or that half of them have ten years and half have none—surely two very different profiles of capabilities. Another limitation is the inability to see differential attainment rates by age groups in a single population-wide measure. Even so, comparisons of population-wide measures of average education years at different points do provide indicators of patterns across countries and trends within countries over time. Often, also, the numbers are provided separately for women

■ *Enrollment rates alone do not tell us about the underlying dynamics of education flows.* ■

#### **Box 2.3 Data availability**

UNESCO is charged with global responsibility for collecting, collating, and distributing country-level education data and for monitoring progress toward the MDG education goals of universal primary education and gender equity.

In cooperation with countries and with other international organizations, UNESCO's Institute for Statistics (UIS) is greatly increasing the quality and coverage of global data for all levels of formal education. Certain data series extend back as far as 1960 (and some even to 1950), providing the opportunity for analysis over a significant time period—which is obviously desirable when the goal is to track, understand, and forecast medium- to long-term patterns of significant social change. Nonetheless, data are very spotty for some series, such as primary completion rates, and sometimes missing almost altogether for individual countries, especially for countries in crisis.

Gross enrollment data, both aggregate and for males and females separately, are available for primary, secondary (lower and upper secondary levels combined), and tertiary levels since 1960, whereas primary and secondary net enrollment data are available from 1970 forward. Many more series are available beginning in 1999, including gender-specific primary intake rates by age categories, repetition rates, transition rates to the lower secondary level, and separate gross enrollment data for lower secondary and upper secondary levels. Although separate dropout and reentry data are not available from UIS, their net effect—along with the progression of students whose enrollment is continuous whether with or without grade-level repetition—is captured in primary survival rates provided by UIS.

Data are available online at <http://stats.uis.unesco.org> and are updated twice annually.

■ *One typically used measure of education attainment is the average years of education among a population.* ■

■ The second type of measure is the distribution of attainment by specific levels of education across age cohorts. ■

and men, so that parity—as measured by average years of education—can be analyzed.

The second type of measure—the distribution of educational attainment by specific levels of education and by age categories—attempts to address the aggregation issues associated with the single average years of education measure. In this distributional approach, an overall population is typically divided into five-year age categories (e.g., 25–29, 30–34, and so on) by sex; then, the proportion of each age/sex category attaining all or part of varying levels of education (e.g., no education, primary education, secondary education, and tertiary education) is estimated. This approach allows for a richer exploration of relationships among the varying education/age/sex combinations and other dimensions of human development. The distributions of educational attainment are frequently displayed in education/age/sex population pyramids that visually reinforce the analysis, including making clear the time-

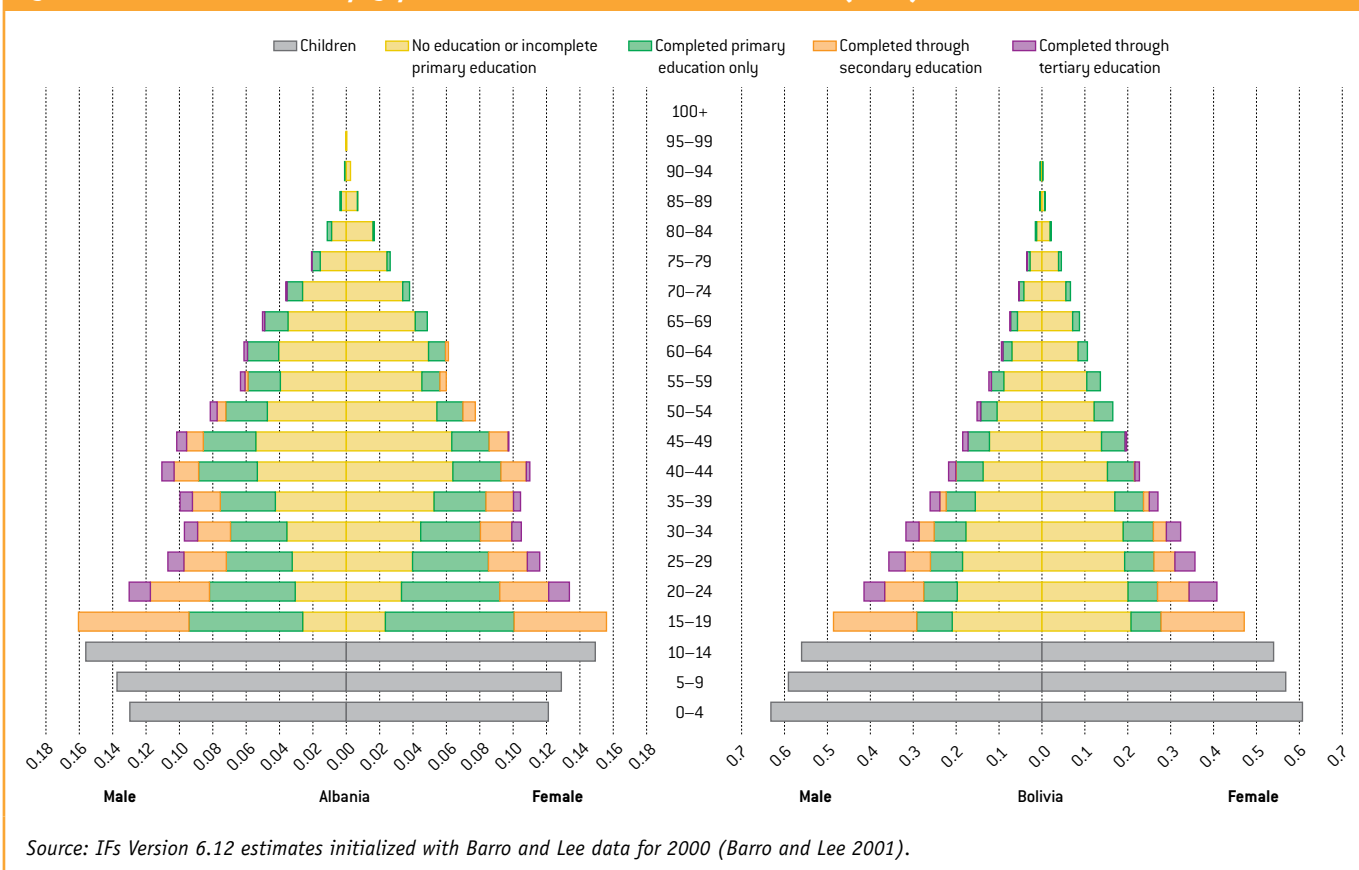
lagged nature of increases in enrollment rates among children and educational attainment levels throughout the adult population.

Education/age/sex pyramids generated by the IFs modeling system for Albania and Bolivia in 2000 illustrate these points (see Figure 2.4). Although the estimated average years of education for adults twenty-five and over are just a bit below 6 years in both countries in 2005, the pyramids show quite different age structures and patterns of educational attainment, and appropriately suggest probable differences in other indicators of human development in the two countries now and in the future.

### Conclusion

Thinking about the long-term dynamics of the global education transition involves many conceptual and analytic dimensions, including the relationship between the education transition and the broader human development context. As a foundation for considering the relationship of education to that broader

**Figure 2.4 Estimated education/age/sex distribution for Albania and Bolivia (2005)**



context, this chapter identified a range of values placed on education, including instrumental and intrinsic elements. We identified our own orientation as that of considering education in a broad human development framework, in which education has both instrumental social purposes and intrinsic value.

Continuing with the exploration of education in a human development context, we considered the close interactions of education with demographic, economic, and sociopolitical systems, and we noted the great complexity involved in understanding those relationships. As has happened for others before us, that complexity will make our exploration of educational futures difficult and inevitably both incomplete and somewhat tentative.

Considering education transition also requires, of course, that we understand how the spread of education is analyzed and measured. We described flow patterns of students and the concepts by which we understand them. We also identified the measurement of education attainment within adult populations as a critical interest. In the next chapter, we will use these concepts to explore the education transition over the past several decades.

## Appendix to Chapter 2: Education System Elements

Some elements of education systems are perhaps surprisingly similar globally; others display more variability. We consider here some elements of education systems to provide a context for historical analyses and forecasts in subsequent chapters.

### Levels of education

The International Standard Classification of Education (ISCED) has existed since the early 1970s. Designed by UNESCO and most recently refined in 1997, ISCED provides guidelines for countries to classify their educational programs by level (and at some levels by field), in order to establish an ongoing global repository of education indicators and statistics (UNESCO 1997: 1). The classifications are:

Level 0—Preprimary education

Level 1—Primary education

Level 2—Lower secondary education

Level 3—Upper secondary education

Level 4—Postsecondary nontertiary education

Level 5—First stage of tertiary education

Level 6—Second stage of tertiary education

A number of refining principles and guidelines further clarify the categories:

- The preprimary level includes both preschool and kindergarten programs.
- The primary level is the first stage of basic education, and the lower secondary level is the second stage of basic education.
- At the lower and upper secondary levels, there is a further division into general programs and vocational or technical programs.
- The postsecondary nontertiary level encompasses “programmes that straddle the boundary between upper-secondary and postsecondary education” (UNESCO 1997: 17).<sup>13</sup>
- The tertiary level is divided into two categories: level 5 refers to programs that do not lead to an “advanced research qualification,” whereas level 6 refers to programs that do lead to such a qualification.
- Following this division, there are two subcategories in level 5: 5A includes theoretically based programs, research programs, and programs that prepare students for practice in high-skill professions; 5B includes practical, technical, and “occupationally specific” programs.

The specification of primary and lower secondary levels as the two stages of basic education and the separation of lower and upper secondary levels are especially important in the context of this volume. The ISCED classification system describes the distinguishing characteristic of primary education as the “beginning of apprenticeship of reading, writing, and mathematics” and the distinguishing characteristic of lower secondary education as the “full implementation of basic skills and foundation for lifelong learning” (UNESCO 1997: 10). In distinction, upper secondary programs move beyond basic education to prepare students for higher-level entry into the labor market or for advanced (tertiary) study. The very different purposes of lower and upper secondary education, widespread agreement on the importance of universal basic education

■ *Enough standardization exists in the arrangement of the common elements of education to enable comparative study of education’s expansion.* ■

● Globally, the most typical pattern is six years at the primary level, three at the lower secondary level, and three at the upper secondary level. ●

● Although the primary net enrollment rate is under 90 percent globally, primary education is compulsory virtually across the world. ●

through the lower secondary level, and differing enrollment and cost patterns at the two secondary levels led to our decision to represent lower and upper secondary levels separately in the IFs education model, further including the separation into general versus vocational or technical programs as possible.<sup>14</sup>

### Duration of education by level

Considerable similarity exists in the duration of the various levels of education across the world. Six years is the most frequent duration for primary education, three years for lower secondary, and three years again for upper secondary. What regional differences there are

**Table 2A.1 Average duration of primary and secondary levels of education (2005)**

	Primary	Lower secondary	Upper secondary	Basic education	Primary through upper secondary
Arab States	6	3	3	9	12
Central and Eastern Europe	4	4	3	8	11
Central Asia	4	5	2	9	11
East Asia and the Pacific (Poorer)	6	3	3	9	12
Latin America and the Caribbean	6	3	3	9	12
South and West Asia	5	3	4	8	12
Sub-Saharan Africa	7	3	3	10	13
East Asia and the Pacific (Richer)	6	3	3	9	12
North America and Western Europe	6	3	3	9	12
World	6	3	3	9	12

Note: Basic education is primary plus lower secondary; regional rates are unweighted country averages.

Source: Compiled by IFs team from UIS data.

**Table 2A.2 Percent of countries with compulsory education at various levels (2005)**

	Percentage of countries within region requiring		
	at least primary	at least lower secondary	all of upper secondary
Arab States	100	85	5
Central and Eastern Europe	100	95	11
Central Asia	100	100	22
East Asia and the Pacific (Poorer)	100	69	8
Latin America and the Caribbean	100	83	29
South and West Asia	100	44	0
Sub-Saharan Africa	98	29	0
East Asia and the Pacific (Richer)	100	100	0
North America and Western Europe	100	96	18
World	100	72	12

Note: Regional rates are unweighted country averages.

Source: Compiled by IFs team from UIS data.

by level are minimized when the durations are summed across the three levels. The average total duration for two regions (central and eastern Europe, and central Asia) is eleven years. The longest average duration is in sub-Saharan Africa (thirteen years); the average duration in all other regions is twelve years. No matter how primary and lower secondary are divided, with the exception of two reporting countries, the minimum number of years constituting basic education is eight (see Table 2A.1).

### Compulsory education

The extent to which education is at least nominally compulsory (shown in Table 2A.2) may also be surprising. Of the 202 countries included in recent UIS data, only Gambia reported less than compulsory primary education.<sup>15</sup> Globally, 72 percent of countries (with a range from 29 percent to 100 percent

by region) reported having compulsory education through the lower secondary level. Perhaps unexpectedly, only 12 percent of the countries reported having compulsory upper secondary education, another clear indication of the different ways in which lower and upper secondary education are currently viewed.<sup>16</sup>

Clearly, the formal requirements of compulsory primary and lower secondary education do not guarantee universal coverage. At the primary level, for example, with all but one country having a reported compulsory education requirement, the 2005 global primary net enrollment rate was just under 89 percent. Nonetheless, the existence of formal requirements indicates at least some level of public awareness and potential commitment and provides a path or policy lever for those urging further expansion of formal education.<sup>17</sup>

● Globally, 72 percent of countries have compulsory lower secondary requirements, but only 12 percent do at the upper secondary level. ●

1 Citing Goldin 1999, Clemens (2004: 23) noted it was not until 1918 that all U.S. states had compulsory basic education laws.

2 The term *instrumental* typically refers to economic outcomes associated with increased education and sometimes also to noneconomic but still measurable outcomes such as fertility reduction or improved child health. By contrast, the term *intrinsic* is more often used when the reference is to not easily measured states of well-being and life satisfaction.

3 Becker and T. W. Schultz, in particular, were key in the development of the human capital perspective. In a 1961 paper in the *American Economic Review*, Schultz used the term *human capital* in the title, making the case for the importance of human skills and knowledge as a form of capital (see Schultz 1961).

4 Grossman has continued to explore the relationships between education and a variety of nonmarket outcomes within a human capital framework. In a recent paper, he provided an in-depth analysis of the relationship between education and various dimensions and indicators of health (Grossman 2005: 32–68).

5 Speaking to this point, Clemens (2004: 18) referred to a “takeoff” that occurs in primary enrollment rates when GDP per capita reaches a level that signals likely economic returns from education.

6 One approach to this question appears in a report of the UNESCO Regional Office for Education in Africa (BREDA). In making recommendations with respect to “student flow management,” the report argued for a phased approach across levels, and it suggested that a number of African countries would need to consider reducing transition rates to the lower secondary level during the transition to UPE (UNESCO 2005b: 17, 134). Earlier, we cited a recent RAND study that pointed to the differing ways China and India have addressed the question of balance across levels (see Goldman, Kumar, and Liu 2008).

7 Each of the bulleted items is quoted directly from Hannum and Buchmann 2006. At the end of each bulleted item, we have inserted, in italics, the component of Figure 2.1 to which that item is most closely connected.

8 See the Appendix to this chapter for elaboration of similarities and differences in the educational systems of regions and countries around the world in terms of the levels and length of schooling and the degree to which schooling is compulsory.

9 Survival rates can also be defined as the rate of persistence to a certain grade rather than to the beginning of the final year of a level.

10 Countries have very different conventions as to what constitutes completion, ranging from “simply” progressing through a series of grades to successfully completing an exit examination. In addition, far fewer countries provide primary completion data as compared with those that provide survival data. For these reasons, survival rates (with an adjustment for dropouts in the final year) in conjunction with net enrollment rates are more frequently used as the proxy to track progress toward universal primary education.

11 Bloom (2006: 54) and others recently have directed attention to another important age group—the population of fifteen- to twenty-four-year-olds. As education participation rates increase, the attainment levels of fifteen- to twenty-four-year-olds record that change more quickly, providing a clearer indicator of future human capabilities within the population. Crespo-Cuaresma and Lutz (2007: iii), for example, noted that “differences in the education level of the younger age groups explain the differences in income per capita across countries significantly better than aggregate measures such as the education level of the entire adult population.”

12 Bloom (2006: 53–61) provided a very useful discussion of this topic, including a comparison of the approaches and results of the Barro and Lee dataset (widely used by researchers for many years, including the IFs team) and the more recent Cohen and Soto dataset. To directly access those datasets and information about them, see Barro and Lee (2000, 2001) and also Cohen and Soto (2001, 2007).

13 A further clarification states: “Typical examples are programmes designed to prepare students for studies at level 5 who, although having completed ISCED level 3, did not follow a curriculum which would allow entry to level 5” (UNESCO 1997: 17).

14 The IFs education model includes ISCED level 1, ISCED level 2, and ISCED level 3 separately. ISCED levels 0 (preprimary) and 4 (postsecondary nontertiary) are not represented, and levels 5 and 6 (first and second stages of tertiary education) are combined.

15 Gambia reported 5 years of compulsory education and 6 years as the duration of primary education.

16 A number of countries reported compulsory years beyond a given level but less than the end of the next level, perhaps suggesting that changes have taken place in the structure of educational levels since compulsory years were first established. Whatever the reason, in Table 2A.2, countries are categorized by the complete level of education that is reported by the country as compulsory.

17 Caldwell (1980) explored the relationship between universal or compulsory education legislation and the actual advent of “mass schooling” in the Western industrialized countries in the nineteenth century. He noted (1980: 233) that “universal education legislation in many countries was the end point of a movement over several decades to bring all children into schools,” lending credence to the idea that even though compulsory education does not guarantee universal coverage, it signals and assists in movement in that direction.