



The Future of Global Education

Parents around the world want their children to have education. Overwhelmingly, their support and encouragement, as well as that of broader communities, help make that happen. The result over many generations and across almost all the world has been steadily climbing rates of enrollment and completion at all levels of education and gradually rising levels of adult education attainment, an ongoing global transition in formal education from low to high levels.

The global education transition does not unfold in a vacuum. Growth in global incomes and change in the broader sociopolitical environment have been necessary foundations for the transition; and the transition has, in turn, contributed greatly to change in those systems. Similarly, education and demographics have a close, interactive dynamic. In this volume and in the forecasting system that underlies it, we have attempted to map many of the complex, two-way relationships.

Although we have broken some new ground both in the long-term forecasting of global

change in education and in considering that change within the broader context of human development, there is much that we would have liked to do in this volume that we did not. We have been able to give only minimal attention to quality of education, and we are unable to forecast it meaningfully.

Parents not only want their children to have education, they want them to have better education. And we have focused throughout on transitions in enrollment patterns and not on transformations in education delivery systems or curriculum development and reform. Changing technology and the processes of globalization have laid foundations for potentially very significant changes in the ways education occurs and in its content.

This final chapter provides an opportunity to review what we have learned about the transition and its interaction with larger changes in the human condition, as well as to reflect on where further attention to the future of education might productively take us next.

The Unfolding Enrollment and Attainment Transitions

It is difficult to consider the historical and prospective global sweep of education's advance without some sense of awe with respect to the process now under way. Figures 9.1 and 9.2 convey the possible, even quite likely, progression of education attainment for current students and adult populations. Figure 9.1 shows IFs base case estimations of the lifetime educational prospects of twelve-year-olds (roughly those of age to complete their primary education) in 2005, 2030, and 2060. It indicates first the portions likely not to complete even a primary education. In sub-Saharan Africa in 2005, that number still stood near 50 percent. Our base case forecasts,¹ which we have seen to be somewhat conservative relative to change in the most recent years and optimistic relative to the last fifty years, show that the portion in sub-Saharan Africa not completing primary education could drop to under 20 percent by 2030 and to about 5 percent by 2060. Similarly, the noncompletion rate in South and West Asia is near 30 percent and declining rapidly.

Figure 9.1 also shows explicitly the ongoing progress across the globe at the lower secondary level and therefore in basic education. Globally, in 2005, more than 60 percent of all twelve-year-olds could expect to complete both primary and lower secondary education. By 2030, we anticipate that number will grow to 80 percent globally, reaching 47 percent in sub-Saharan Africa and 85 percent in South and West Asia.

Gender gaps at the primary level will have mostly disappeared by 2030, and in fact, we expect reverse gender gaps to have emerged at both levels of secondary education even in South and West Asia by 2030. The fact that we draw attention in this volume to the likely spread of reverse gender gaps should not in any way suggest that we downplay the critical importance of eliminating the current gender gaps that cause female enrollments to fall below those of males. Given the historical dominance of males in societies around the world, the elimination of these gaps and even the development of some reverse gaps can only begin to address larger and persistent social imbalances. Nonetheless, such reverse gaps are already becoming an issue of importance to societies.

By 2060, it is quite likely that nearly 75 percent of all twelve-year-olds globally may expect to complete upper secondary education, and, in fact, 50 percent may ultimately (although perhaps as older adults) attain tertiary degrees. The tertiary number may be somewhat exaggerated because neither our data nor our forecasts distinguish those who complete multiple tertiary degrees from those who complete only one. Because of our weak understanding of saturation levels and processes (and the complex variations in tertiary degree formats), this volume has emphasized that our tertiary forecasts, even though they build on the experience of current high-income countries, are the most tentative of those that we present. Nonetheless, we have much reason to believe that the advance of higher education will be striking.

Figure 9.2 turns our attention to adults age fifteen and older. (Our database does not distinguish between lower and upper secondary attainment among adults, so our forecasts show only total—effectively upper secondary—attainment.) In contrast to the fewer than 15 percent of twelve-year-olds in 2005 who had not completed primary education globally, the number of adults who had not done so in 2005 is a discouraging 45 percent (and, disturbingly, almost 75 percent in sub-Saharan Africa). In fact, more than 50 percent of female adults worldwide in 2005 never were able to complete that first level. Nearly 80 percent of adults (and more than 80 percent of women) never completed secondary education.

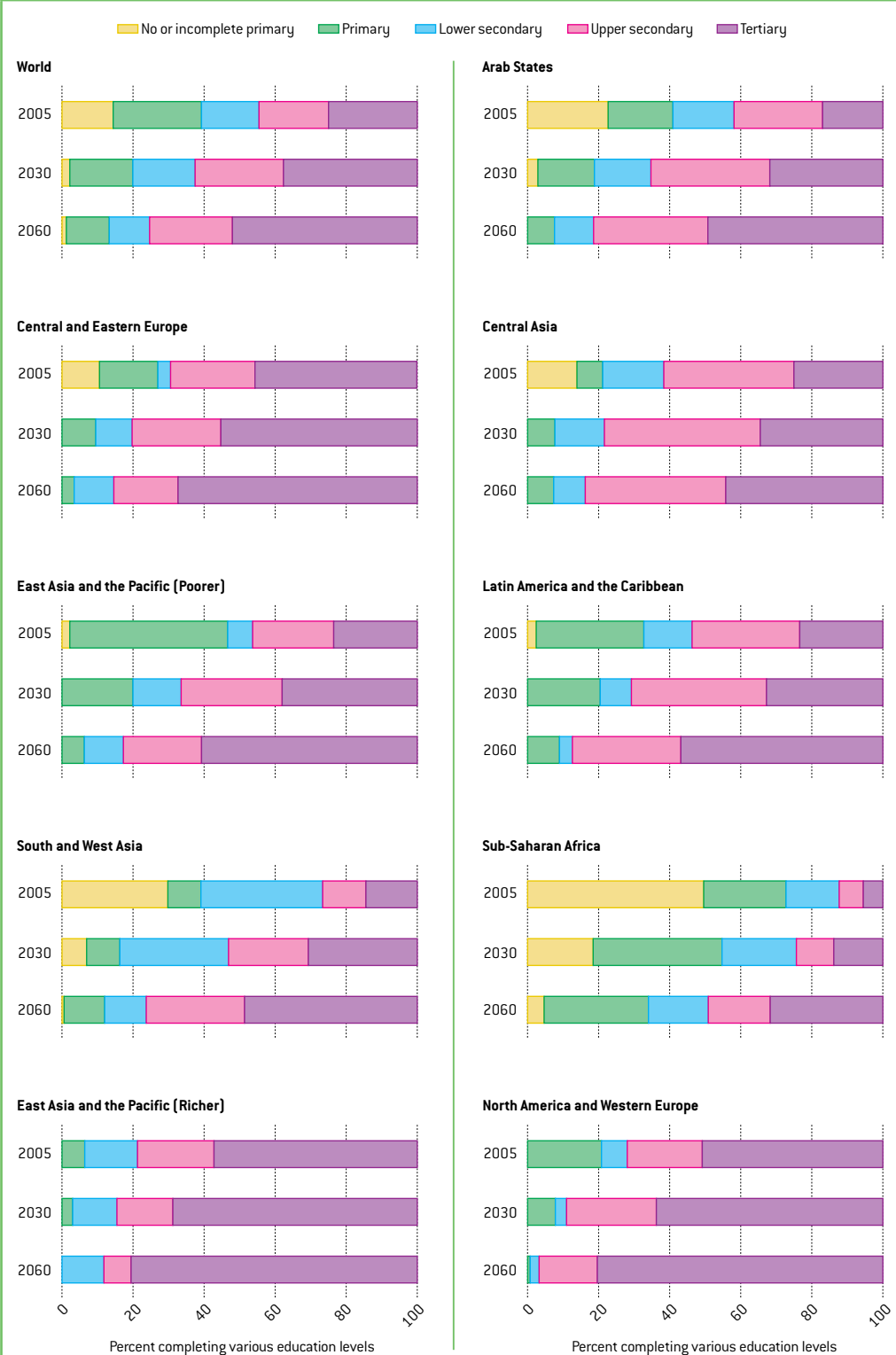
The steady progression of more highly educated young adults into the adult population mix will mean, however, that globally by 2030, the number of individuals without a primary education will likely drop to under 35 percent of the total; the number will fall to 20 percent by 2060. In that year, more than 45 percent of adults globally are likely to have a complete secondary education or more (about 40 percent in South and West Asia and somewhat over 20 percent in sub-Saharan Africa).

We have been able to say much less about quality of education in this volume than we would have liked. We do know, however, that cross-country instruments and systems for assessment of education quality, on the global stage only since 1995, are spreading rapidly.

■ *The number of those in sub-Saharan Africa not completing a primary education will likely fall below 20 percent by 2030.* ■

■ *Female gender gaps at the primary level will have mostly disappeared by 2030, even as male gaps potentially become a growing issue at higher levels.* ■

Figure 9.1 Base case forecast of highest level of education ever completed by those age 12 in 2005, 2030, and 2060

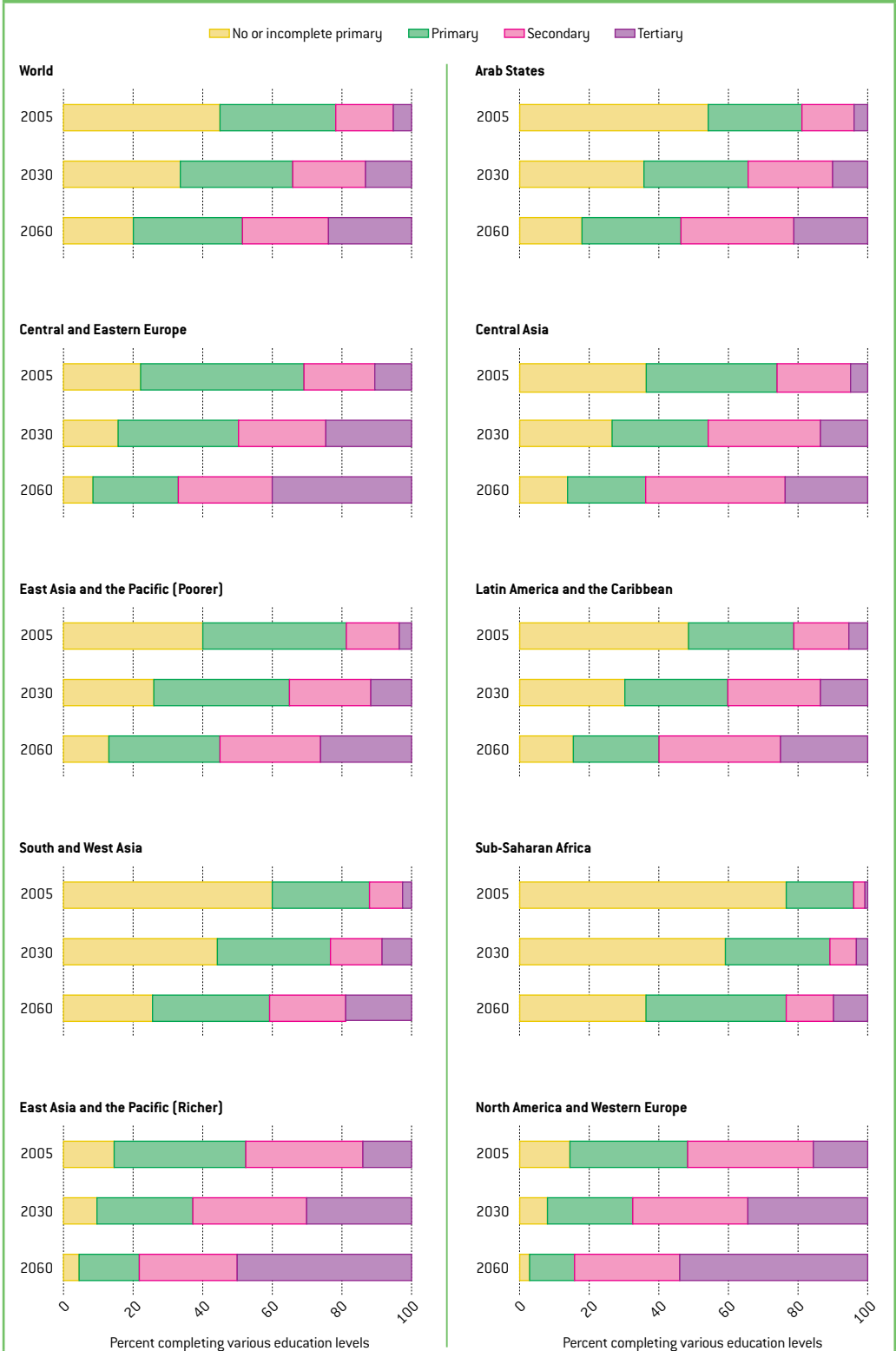


By 2060, it is quite likely that nearly 75 percent of all twelve-year-olds globally may expect to complete upper secondary education.

Note: Multiple degrees by some may inflate tertiary percentages; data on completion and graduation rates, used for 2005 values, are not of consistently high quality.

Source: IFs Version 6.12.

Figure 9.2 Base case forecast of education attainment levels of all adults age 15 and older



Note: Multiple degrees by some may inflate tertiary percentages; IFs does not forecast adult percentages with lower secondary education separately from total secondary.

Source: IFs Version 6.12.

And we know that both higher levels of income and rising levels of education completion tend to go hand in hand with improvements in quality. We thus have much reason to hope that quality enhancements will also progress steadily.

This volume has repeatedly emphasized that unless one-size-fits-all global education goals are set unreasonably low, many countries will inevitably fail to meet them. In truth, such goals essentially set up some countries to be ultimately identified as failures. We add our voices to those who argue that universal basic education should be clearly recognized as a global goal and pursued, but we disagree with the identification of specific target years for all countries. As the next section discusses, targets that focus on realistic rates of progression toward goals, taking into account the broader process of human development, can serve us better.

Education and Broader Human Development

Pestilence, famine, and war could disrupt the steady path of education's advance that the base case of IFs sketches, not just locally but even globally. Humanity has not fully confined to their barracks any of the horsemen of the apocalypse, and extreme consequences of environmental change or simple greed and mismanagement by human leaders and followers (although, as Mark Twain said, we repeat ourselves) could well unleash them.

Short of more catastrophic futures, we have seen that slower economic growth significantly affects societies' ability to advance education participation and attainment. At lower income levels, demand drops and supply is constrained. Across our forecast horizon, 1 percent differences in average economic growth rates have a considerable impact on patterns of transition, especially at the tertiary level.

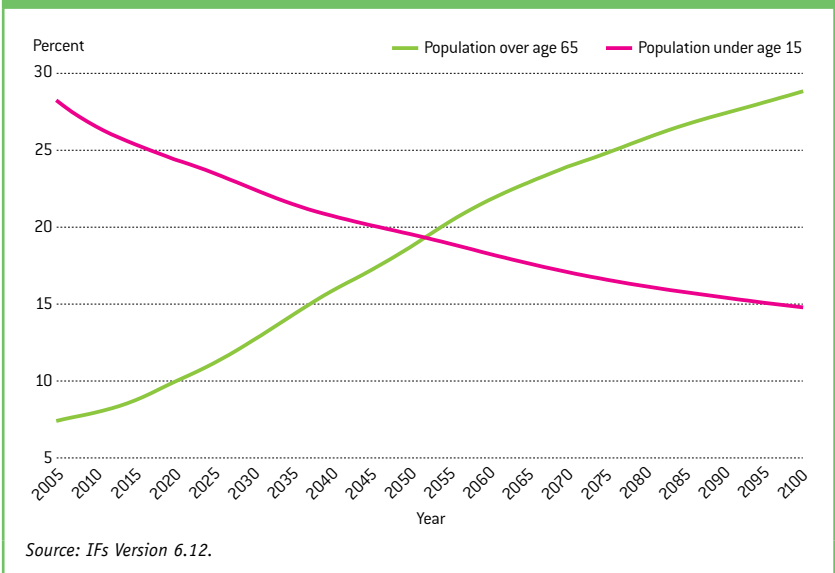
Nonetheless, barring an unfortunate and always very possible disruption of the paths of human advance in coming decades—and even in the face of some fairly significant reduction in global economic growth—many good things should continue to go together. This volume has consistently emphasized the extensive and complex relationships of educational, demographic, economic, and broader sociopolitical change (see, again, Figure 2.1), and we need not review them in detail here.

Although a great many of the relationships are strong, we have especially emphasized the subset between demographics and education. We have done so not just because sizes of population determine the numbers of potential students, because educational attainment levels shape fertility rates and thus population growth, and because the correlations among these forces are strong, but also because a massive global demographic transition has been reshaping the relationships and promises to continue doing so.

Figure 9.3 shows an important element of the worldwide demographic transition across the coming century. The share of population under fifteen years of age is falling steadily. That is true of every UNESCO region, including those with the lowest incomes. The last region to turn from growth to decline of that population segment's share was sub-Saharan Africa in the early 1990s. Although the subsequent decline of share in Africa has only been 2 percent and remains slow compared to that in South and West Asia (which passed its peak of youth population in the late 1960s and has reduced youth share in total population by more than 10 percent), an accelerating decline of youth share has become obvious in much of sub-Saharan Africa. The resultant “demographic dividend” for education (many have explored that concept for the economy as well) is great—the peak youth share of population in the two regions was

■ *The spread of education is receiving a significant “demographic dividend” from a decrease in those fifteen and younger as a proportion of the population.* ■

Figure 9.3 Base case forecast of dependent age categories as percent of total global population



■ However, at the same time, societies face a demographic challenge from an increase in their aging populations. ■

■ Our normative scenario is built on target rates of enrollment growth rather than common temporal targets. ■

■ We conclude that benefits of accelerated advance of education build steadily to high levels relative to the costs. ■

about 45 and 42 percent, respectively, and those very high levels all but prohibited them from rapid transition to universal primary and lower secondary education.

Figure 9.3 also shows, however, the growing demographic challenge of aging populations. Their share is increasing in all UNESCO regions, and on a global basis, the older population share is growing faster than the younger share is declining, creating a mounting combined level of dependency on working-age populations. But sub-Saharan Africa should benefit through about 2080 (that is, through most of the century) from a more rapid decline in the younger population than growth in the aging segment, as should South and West Asia through about 2040. The consequences of these interacting demographic forces will be felt everywhere, which will both allow education's expansion in many regions and simultaneously put downward pressure on total public education spending, especially in the high-income regions.

This volume has also explored many other linkages of education to the larger human development system. In our modeling and analysis, GDP per capita as a proxy for income and economic structure has played a foundational role in forecasting education demand, and attainment of education has in turn helped determine the rate of economic productivity growth. In our forecasts, education attainment also clearly (if not always dramatically) affects broader sociopolitical change such as democratization.

Representation of the interaction of these elements of global change allowed elaboration and exploration of a normative scenario in comparison with the base case. Consistent with our belief that universal global goals are valuable but that common temporal targets are mistaken, we based the normative scenario on target rates in enrollment growth at all levels below tertiary, incorporating also the typically S-shaped growth patterns in those target patterns. We identified peak target growth rates for student intake (or transition to higher levels) and survival to final grades that appear, based on historical experience, to be aggressive yet reasonable. This approach, centered on target growth rates, has its own weaknesses, including nonrecognition of sharply different demographic and economic realities across countries, but it

is a foundation on which analysts can build. Normative scenario analysis with IFs could also evaluate country-specific target growth rates.

We explored the economic costs of the normative scenario, comparing them with some of the economic benefits of it, and we considered some of the much less easily monetized consequences of more rapid educational advance. Our first conclusion is that the benefits, economic and otherwise, are often quite slow to come, lagging (like adult education attainment) by a generation or two behind increases in enrollment rates. Our second conclusion is that those benefits build steadily to very high levels relative to the costs. We come away convinced that continuing efforts to increase education participation—subject, as always, to caveats concerning appropriate pace, reasonable per-student expenditures, and substantial attention to quality—have great merit. It is time, for instance, for the global community to clearly state the goal of universal basic education and suggest target rates of movement toward it, but without specifying a year by which all countries will achieve it. And it is by no means too early to begin considering the global future of upper secondary education.

Because of demographic pressures, which remain intense now but will continue to ameliorate well into and perhaps through the century, the needs of low-income societies for extra education funding and possible outside assistance will be greatest in the normative scenario over the coming two to three decades. We are now in a period, framed by the expansion of education and still high youth populations, when a “bubble” of incremental funding would be extremely helpful. Some payoffs, including a positive feedback process of further fertility reduction, would begin quite soon. Others, such as higher levels of income, would come more slowly but would be significant. Our estimate, for instance, is that for sub-Saharan Africa as a whole, GDP per capita at PPP could be more than \$1,000 higher in 2060 in the normative scenario than the roughly \$6,200 we would expect in the base case. Investment now can pay huge dividends.

More generally, we should not accept the credo of modernization theory—that all good things tend to go together—without raising important caveats and concerns. For example,

adults age twenty-five and older in sub-Saharan Africa now have acquired, on average, only 3 years of formal education, about 7 years fewer than adults in Western Europe and North America. In our base case forecast for 2060, adults in Africa will be nearing 7 years of education, but those in the richest countries may have reached 15, a gap of 8 years; even in our normative scenario, that gap will still exceed 6 years. The overall pattern of advance would be wonderful. The continued prospective disadvantage of sub-Saharan Africa and similarly of South and West Asia, however, raises significant concerns about the global distribution of opportunity and well-being. Another half century of such remarkable inequality is a very sad prospect.

Concerns in the high-income world may seem paltry by comparison, but they are nonetheless real. Reductions in per-student public spending on tertiary education as a portion of GDP per capita have largely ceased. Yet tuition fees, and thus private spending, have been increasing. For example, a recent report on higher education finance (SHEEO 2008: 1) found that in the United States, students and their families paid 36 percent of the costs of attending public higher education institutions in fiscal year 2008, compared to 24 percent in the early 1980s. Another report noted that in the 1999–2000 academic year, the net college costs of attendance at a public four-year college or university in the United States were 18 percent of the income of a family in the middle-income quartile; in 2007–2008, that figure had increased to 25 percent of such a family's income (National Center for Public Policy and Higher Education 2008: 8). Increased costs of attendance at private institutions have been even greater. Although education brings so much that is good, it remains expensive, even for the rich.

New Issues and Horizons

In ways we cannot yet fully grasp, information and communication technology is fundamentally reshaping teaching and learning. The transformation of education is coming.² Information and communication technology has clearly begun to reshape the foundational patterns of relationships between students and teachers and, more generally, between learners and teaching and learning resources and delivery

systems. Can there be a single reader of this volume who has not experienced the power of searching the Web for information? Not just science fiction fans anticipate the day when we will turn to our ambient environment, say "Computer, tell me ...," and thereby initiate a conversation.

In spite of Moore's Law, asserting that ICT power doubles about every two years, the day of such conversations is some distance in the future. And it will be considerably longer still before that conversation partner understands and adapts to our current knowledge level and perhaps even our personality, things that a good teacher always does. Illustrating the gap between prospect and reality that exists even with current technology, a study on ICT in British schools in 2008 reported that only 18 percent of primary schools and 44 percent of secondary schools were connected to high-speed broadband.³ The \$100 personal computer, much less a proposed \$20 version for Indian students, still has very low penetration levels in low-income countries. (The increasingly smart mobile phone is, however, advancing much more rapidly up the penetration curve.)

Still, the transformation is coming. Distance education and ICT-enhanced lifelong learning are powerful transformative forces, and they are only in their infancy. We certainly anticipate that education will look strikingly different by 2060 than it does today. Yet for the foreseeable future, quite probably for most or all of our forecast horizon, a significantly traditional formal education structure will likely remain in place, augmented by the rapidly advancing fruits of ICT rather than replaced by them. The strong need to support the quality and capabilities of teachers and formal education structures will remain and even grow. The availability of technologically enhanced education will certainly give ammunition for governments that seek to reduce spending on education and divert it to older populations or other purposes, rather than taking full advantage of technology's development. Those supporting education will need to press for experimentation and innovation.

Another related and powerful transformative force is the general advance of globalization. Higher education is becoming increasingly internationalized in a variety of ways, many

● *Sadly, despite tremendous absolute gain forecast for sub-Saharan Africa, there is continued prospective relative disadvantage for the region.* ●

● *And globalization itself is transforming education.* ●

of which have positive potential, such as more emphasis on developing intercultural and global competencies; the creation of new international networks and consortia; the cross-border delivery of collaborative academic programs; and the international movement of students, professors, and researchers (Knight 2008). However, as Knight further noted, there is also widespread concern about risks associated with these endeavors, depending on the motives of those participating in them, the manner in which they are implemented, and the standards to which they adhere.

This volume has not attempted to elaborate and forecast the implications of these transformational processes. The fourth volume

in the Patterns of Potential Human Progress series, on building global infrastructure, will return to the development and expansion of knowledge creation and diffusion systems; it will look at their roots in ICT; at research and development; and at elements of education systems, particularly at the tertiary level.

More generally, there are a great many elements of the educational future that we cannot pretend to foresee. What we can be certain of is that the importance of education systems, through whatever transitions and transformations they may pass, will not diminish. Human development depends on them.

1 We have used the processes of data cleaning and filling that Chapter 4 described to make our initial estimates of completion rates and used the full IFs education model in the forecasts.

2 This phrase consciously echoes Kurzweil (2005), who has said that the singularity (a point of exceptionally rapid technological progress tied to the emergence of artificial intelligence) is near and that it will transform society in manifold and fundamental ways.

3 Report on “School’s In: Learning for the Twenty-First Century,” from the UK Department for Children, Schools, and Families’ Beyond the Current Horizons program, available through www.sigmascan.org.