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Population and Human Resource Trends and Challenges

Asian Development Bank Key Indicators of Developing Asian and Pacific Countries 2002

Population and Human Resource Trends and Challenges

by Andrew Mason

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Acknowledgements

Key Indicators of Developing Asian and Pacific Countries (KI) 2002 was prepared by the Development Indicators and Policy Research Division (ERDI) of the Economics and Research Department (ERD) of the Asian Development Bank, under the overall guidance of V.N. Gnanathurai.

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Introduction

The developing member countries (DMCs) of the Asian Development Bank (ADB) are in the midst of a fundamental transition in their populations and human resources that bear on many key dimensions of their social and economic development. Many changes are a testament to the development success in the Asia-Pacific region. Infant and child mortality rates have declined considerably and many millions can look forward to longer and healthier lives. Effective reproductive health programs have provided many millions of couples with the capacity to control their childbearing—not just the number, but also the timing, of their births. School enrollment and levels of literacy continue to rise, raising the productivity of workers and enhancing the effectiveness of civil society. The gender gap in education has been greatly reduced in many DMCs and women have made strides in other areas as well.

Success in the region, however, is far from even. Many millions of people live in abject poverty, suffer unacceptably high levels of mortality, and face a future of little hope. In too many countries, women are deprived of the rights and opportunities available to men. The HIV/AIDS epidemic remains a huge threat to DMCs. One of the region's major challenges is to improve the lives of the many millions who are searching for basic human dignity.

The changes in population are creating both challenges and opportunities for accelerated social and economic development. Many DMCs will experience significant increases in their population over the coming decades. Urban population growth will be even more rapid. Job creation and food production will remain high on the agenda for many DMCs. The stress on the environment will inevitably increase. Rising levels of pollution, deteriorating water supplies, increased urban congestion, loss of biodiversity, global warming, and a host of other problems must be addressed.

Population growth rates are beginning to decline throughout the region. As this happens, important changes in age structure offer the prospect of a "demographic dividend." Rapid labor force growth, increased rates of saving and investment, higher investment in human capital, and greater opportunities for women are possible, but only if political and economic institutions and policies support these goals.

The demographic issue of the future is aging. Already, many countries are experiencing rapid growth in the number of elderly and this growth will only accelerate during the coming years. DMCs are aging faster than they are developing. The time left to establish effective and sustainable programs suited to an aging society is growing short.

This theme chapter elaborates on these and other population and human resource issues, drawing heavily on the latest available data provided by the statistical tables of *Key Indicators*. The situation in DMCs is described in relative detail, but this chapter also compares the experience of DMCs with other countries around the world. To do so, the most recently available data produced by the United Nations (UN), World Health Organization (WHO), World Bank, East-West Center (EWC), and other organizations are drawn on.

The chapter is organized around important population and human resource trends and issues identified in recent research and policy forums, e.g., the Millennium Development Forum and the WHO Commission on Macroeconomics and Health. The chapter offers a broad overview of demographic and human resource trends in the Asia and Pacific Region and considers some possible policy implications these developments have for developing countries in the region. However, it is beyond its scope to provide detailed policy analysis or to offer precise policy

prescriptions. The principal purpose of the report is to provide the latest available information about progress on a broad set of fronts related to population, human resources, and development objectives.

The first section provides an important context by discussing population, fertility and mortality. The second section focuses on population growth. Urbanization and associated environmental issues are then discussed. The fourth section discusses labor force, gender and child labor while the fifth examines human resource trends highlighting gender differences. The sixth section provides information about macroeconomics and health, followed by recent information about the HIV/AIDS epidemic in DMCs. The following three sections turn to changes in age structure, prospects for a demographic dividend, and the implications of population aging. The conclusions summarize the main challenges facing DMCs.

Box 1. The Millennium Development Goals

The Millennium Development Goals (MDGs) summarize the development goals agreed on at international conferences and world summits during the 1990s. At the end of the decade, world leaders distilled the key goals and targets in the Millennium Declaration (September 2000). Based on the declaration, the United Nations Development Programme (UNDP) worked with other United Nations departments, funds and programmes, the World Bank, the International Monetary Fund and the Organisation for Economic Co-operation and Development on a concise set of goals, numerical targets, and quantifiable indicators to assess progress. The new set is known as the MDGs, which includes 8 goals, 18 targets and 48 indicators:

- Eradicate extreme poverty and hunger
- Achieve universal primary education
- Promote gender equality and empower women
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, malaria, and other diseases
- Ensure environmental sustainability
- Develop a global partnership for development

The UN General Assembly has approved these as part of the Secretary-General's Millennium Roadmap. ADB has also adopted the MDGs and is now reorienting its processes to be able to design and implement projects that will help countries in achieving these goals.

Human resources occupy a prominent position in the MDGs. The delineated targets include a complete course of primary schooling for all children, girls and boys, by 2015; a reduction in the under-5 mortality rate by two thirds between 1990 and 2015; a reduction by three quarters, between 1990 and 2015, in the maternal mortality ratio; and measurable success in the battles against HIV/AIDS and tuberculosis. Throughout this chapter the progress, and lack thereof, in education and health are emphasized. The record is decidedly mixed—some DMCs have made extraordinary progress while others are struggling to provide a social, economic, physical, and political environment that promotes human development.

The promotion of gender equality and the empowerment of women is a multifaceted goal. Achieving it requires women to have equal access to health care, educational institutions, employment opportunities, and positions of leadership. An essential element is high quality reproductive health services, which increase the prospects for safe motherhood and afford women more effective control over reproduction. Again, some DMCs have made significant progress in all areas, while in other DMCs, women face discrimination in many aspects of their lives and are denied basic control over their childbearing.

With the MDGs, the physical environment is identified as an important factor to all efforts to improve the quality of life in the developing world. The relationship between population growth and the environment is complex and varies from place to place, but continuing population growth may undermine environmental objectives during the coming years. Asia's population is expected to increase by 1.5 billion over the next 50 years. Urban population growth will be especially rapid. Ten of the world's 21 megacities, i.e., cities with a population exceeding 10 million, that are projected for 2015 are situated in DMCs.

An important issue addressed in this chapter is how changes in age structure and other features of the demographic transition are affecting economic growth, potentially the most effective tool for eradicating poverty and hunger. Some studies, including ADB's *Emerging Asia* (ADB 1997a), have raised the possibility of a demographic dividend. Changes in age structure, longer life expectancy, and other demographic changes create an opportunity for accelerated rates of economic growth. Exploiting these favorable demographic patterns is all the more important because DMCs will soon begin to face a period of rapid aging. If DMCs fail to capitalize on their demographic opportunities, prospects for achieving the MDGs may be dim indeed.

Asia's Demographic Transition

Although population growth rates have peaked in DMCs, many of them will experience substantial increases in their population over the coming decades. In no DMC except Kazakhstan has population growth stopped, but populations throughout the region are growing more slowly. In some DMCs and the region as a whole, the number of children, i.e., the population under age 15, is actually in modest decline. In these countries, population growth is concentrated in the working ages (15–64) and seniors (65 and older).

The shift to a slower growth regime, and the rapid population growth that preceded it, is the product of two competing forces. The first is the decline in death rates, particularly among infants and children. During the 19th century, the infant mortality rate (IMR)—the annual number of deaths of children under the age of 1 per 1,000 live births—may have been close to 200 in many developing countries. Fewer than half of all those born were surviving to reach adulthood. Even though women were averaging six or more births during their reproductive span, most were lost to early mortality and population growth was exceedingly modest. Asia's population grew by a scant 0.1% per year between 1820 and 1870 and by 0.5% per year between 1870 and 1900 (Maddison 2001). As death rates declined, Asia's population growth accelerated to close to 1% per year between 1900 and 1950 and to almost 2% per year during the second half of the 20th century (Maddison 2001, UN 2001).

The second factor that influenced population growth was the decline in birth rates. Had women immediately responded to the increased survival of their children by reducing their childbearing, rapid population growth would have been avoided. But the response was delayed. Fertility decline among DMCs did not begin until the 1960s in some of them and much later in many others.

The current situation with regard to these two key demographic variables—fertility and mortality—remains quite varied among DMCs. The IMR ranges from a high of 165 in Afghanistan to a low of 3.2 in Hong Kong, China. The total fertility rate (TFR)[1] varies from a low of 1.0 births per woman in Hong Kong, China to a high of 6.9 in Afghanistan.

Figure 1 shows how DMCs compare with each other and with other countries in the world. To facilitate assessment of the current situation of DMCs, the figure is divided into cells. Countries with a TFR of 2.1 births per woman or less are classified as having low fertility.[2] With a TFR this low, population growth will eventually cease. Countries with a TFR of greater than 2.1 but less than 4 are classified as having a moderate TFR. In these countries, the TFR has declined substantially from peak levels, but population growth will continue in the absence of further declines. Countries with a TFR of 4 or greater are classified as having a high fertility rate. In similar fashion, countries with IMRs of under 20, between 20 and 49, and between 50 and 99 are classified as having low, moderate, or high IMRs, respectively, whereas countries with IMRs of 100 or more are classified as having very high IMRs.[3] Table I identifies the DMCs in each of the cells in Figure 1.

The high-income countries of the world are concentrated in the southwest cell of Figure 1, with IMRs of below 20 infant deaths per 1,000 births and TFRs of below 2.1 births per woman. Sri Lanka and the four most economically advanced DMCs—Hong Kong, China; Republic of Korea (hereafter Korea); Singapore; and Taipei,China—fall into the low fertility and low infant mortality group, whereas four additional DMCs—Azerbaijan, People's Republic of China (PRC), Kazakhstan, and Thailand—have achieved low fertility but not yet low infant mortality.

At the other extreme demographically is Afghanistan, with an IMR well above 100 and a total fertility rate exceeding 6 births per woman. Of the remaining 30 DMCs, 16 have achieved moderate TFRs whereas 14 countries still have TFRs of above 4 births per woman. Eleven of these 30 DMCs have IMRs of

[1] The TFR is the average number of births per woman if women bear children at the current age-specific birth rates.

[2] A TFR of 2.1 is known as replacement fertility. At that level, childbearing couples are producing enough births to replace themselves (after allowing for 0.1 deaths before children reach childbearing age). At this TFR, a population will eventually stop growing.

[3] Low is set at 20 deaths per 1,000 births, a level achieved by 85 of the world's countries and all of the 42 countries with a gross national product per capita of $5,000 in 1999 (World Bank 2001). Twenty-one countries have an IMR of 100 or greater. Roughly half of the remaining 65 countries for which data are available report an IMR of between 20 and 49 and half an IMR of between 50 and 99.

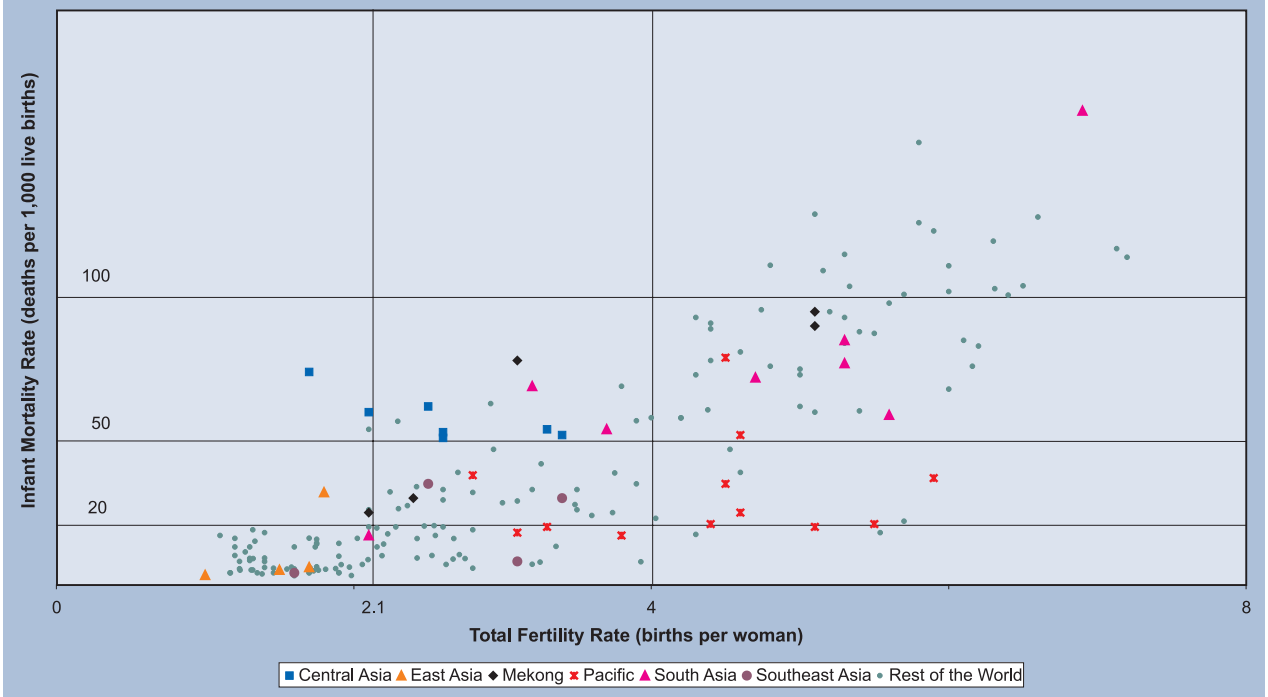
between 20 and 49, but 16 DMCs still have IMRs of between 50 and 99. Thus, despite the progress, women are bearing many children and high numbers of those children are dying before they reach their first birthday.

There are important regional differences in fertility and infant mortality. The DMCs of East Asia and of Southeast Asia are the most demographically advanced, followed by the Mekong countries (see Figure 3 for the subregional groupings of DMCs). The countries of South Asia tend to have the highest fertility rates and IMRs. The Pacific DMCs are distinctive in that IMRs are relatively low compared with other countries in Asia or around the world with similar fertility rates. Rates vary widely within each of the subregional groupings as illustrated by the enormous differences between Afghanistan and Sri Lanka, for example.

To an extent, lower birth and death rates are a byproduct of development. Higher wages and incomes contribute to infant mortality decline by raising nutritional standards and to lower birth rates by raising the market value of women's time and, hence, the opportunity costs of childbearing. Other features of social and economic development, particularly the educational attainment of women, may play an even more important role. But it has also become increasingly clear in recent years that birth and death rates can decline rapidly in countries that have not yet achieved significant levels of economic development. Indonesia and, more recently, Bangladesh are both examples of countries that have achieved relatively low TFRs at relatively low levels of development. In the Indian state of Tamil Nadu, the TFR dropped to 2 births per woman in 1999 even though only 52% of ever-married women of reproductive age were literate (EWC 2002). Likewise, some relatively poor countries have succeeded in reducing IMRs to low levels. Sri Lanka reports an IMR of below 20 infant deaths per 1,000 births despite a per capita income of well below $1,000.

These and other examples point to the effectiveness of policies aimed at reducing birth and death rates. An accelerated demographic transition is possible where effective public policies and programs are implemented. Why have some programs been so successful? First, although many governments have seen curbing rapid population growth as an important objective, programs have stressed family planning and health objectives. Second, religious and other politically

Figure 1. Fertility and Mortality



Sources: Table 4 of ADB, *Key Indicators 2002* and World Bank, *World Development Indicators 2002*.

Table I. Classification of Developing Member Countries by their Total Fertility Rate and Infant Mortality Rate
(most recent year for which data are available)

Infant Mortality Rate	Total Fertility Rate: Less than or Equal to 2.1	Total Fertility Rate: Greater than 2.1 to 3.9	Total Fertility Rate: 4 or More
100 or More			Afghanistan
50-99	Azerbaijan Kazakhstan	Bangladesh India Kyrgyz Republic Mongolia Myanmar Tajikistan Turkmenistan Uzbekistan	Bhutan Cambodia Kiribati Lao PDR Maldives Nepal Pakistan Papua New Guinea
20-49	China, People's Rep. of Thailand	Cook Islands Indonesia Philippines Tuvalu Viet Nam	Marshall Islands Micronesia, Fed. States of Nauru Samoa Solomon Islands Vanuatu
Less than 20	Hong Kong, China Korea, Rep. of Singapore Sri Lanka Taipei,China	Fiji Islands Malaysia Tonga	

Source: Table 4 of ADB, *Key Indicators 2002*.

powerful groups have been supportive, or at least not obstructive, of public policies. Third, governments have maintained significant and sustained efforts. Finally, governments have willingly and successfully worked with nongovernment entities (Tsui 2001).

Population Growth

Every DMC but Kazakhstan is currently experiencing population growth, even those that have achieved low rates of fertility. The medium-growth scenario produced by the UN (UN 2001) anticipates that the total population of DMCs will increase from 3.27 billion in 2000 to 4.24 billion in 2025 and to 4.77 billion in 2050. Most of the population increase will occur in South Asia: about 570 million in India, 200 million in Pakistan, 130 million in Bangladesh, and 50 million in Afghanistan. The population of the PRC is expected to increase by 200 million, Indonesia by about 100 million, and the Philippines by about 50 million between 2000 and 2050.

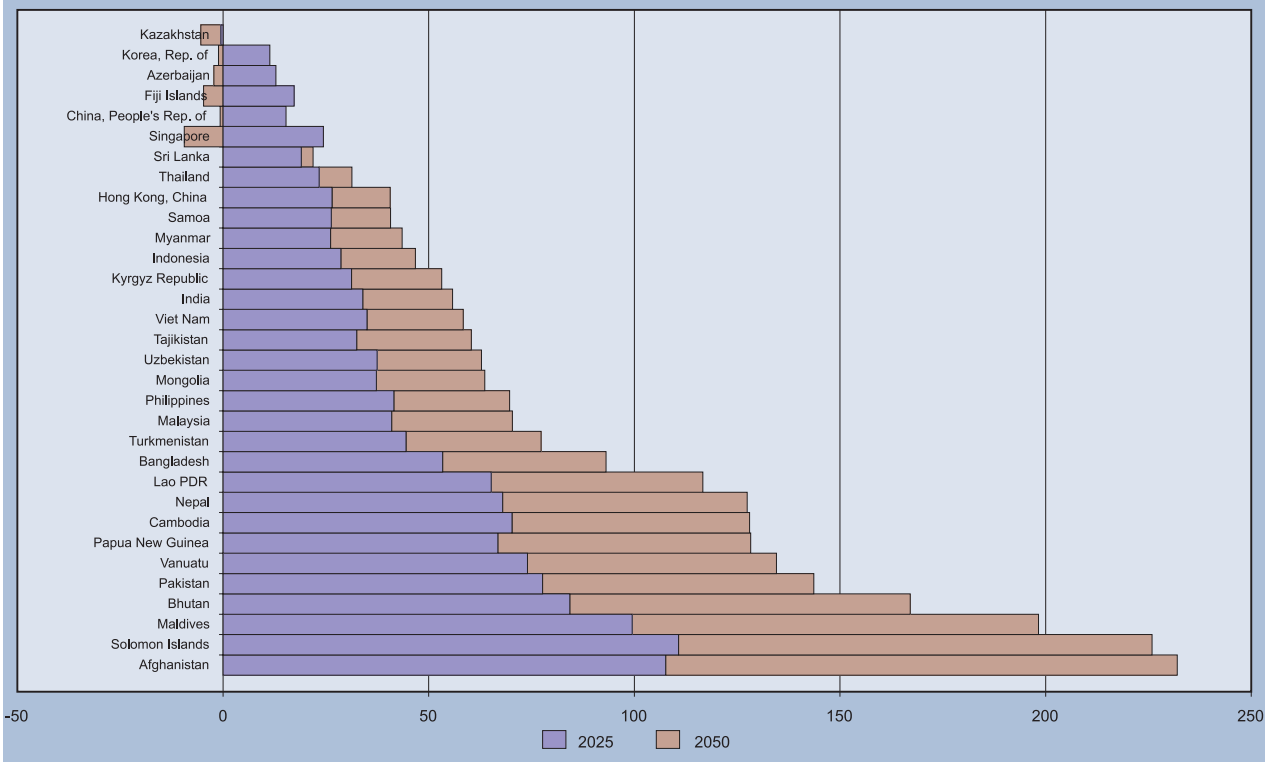
About two thirds of the growth is anticipated to occur between 2000 and 2025. Kazakhstan is expected to have a smaller population in 2025 than in 2000. Between 2025 and 2050, population decline is also projected for Azerbaijan, PRC, Fiji Islands, Korea, and Singapore.

Although the PRC is contributing a substantial part of the region's population growth by virtue of its large population, in percentage terms its population growth rate is among the lowest of the DMCs. The most rapidly growing in percentage terms are Afghanistan, Maldives, and Solomon Islands. Their populations are projected to double by 2025. Seven other DMCs are projected to double their populations by 2050: Bhutan, Cambodia, Lao People's Democratic Republic (Lao PDR), Nepal, Pakistan, Papua New Guinea, and Vanuatu (Figure 2).

The most slowly growing populations are found primarily in East and Central Asia, although every subregion of Asia has a least one country among the 10 most slowly growing countries. The most rapidly growing countries tend to be found in South Asia and the Pacific. The latter tend toward such rapid growth because their fertility rates are relatively high and their IMRs are relatively low. Consequently, the populations in the reproductive ages are growing rapidly in many Pacific DMCs.

How accurate are these projections? Although

Figure 2. Population Increase by 2025 and 2050 (%)



Source: United Nations, *World Population Prospects: The 2000 Revision.*

population projections are much more reliable than long-range economic forecasts, future population growth rates may differ substantially from those projected by the UN or other agencies. Population growth rates will be slower if the rates of childbearing drop more rapidly in the countries with high fertility or drop to lower levels of fertility in those countries where fertility rates are already low. If the age of marriage rises or the interval between births increases faster than expected, population growth will also be slower. If mortality rates decline more slowly or if rates of net out-migration increase, again, population growth will be slower. Any of these changes are possible. However, substantial population growth for the region is a virtual certainty.

Urbanization and the Environment

In the coming years, events within DMCs will have an enormous impact both on environmental features of DMCs and on the global commons. The importance of the Asia-Pacific region is partly a reflection of its absolute size. Most of the world's population growth is occurring in DMCs, and most of the world's economic growth is occurring in DMCs. Asia will also be home to most of the world's urban growth, with many ultra-large cities. The region is very densely populated, intensively cultivated, and a large proportion of the workforce depends on agriculture for its livelihood. The region is also home to rich and diverse ecosystems that are a critical part of the globe's environmental resources. Some countries in the region are also very vulnerable to the effects of global warming, such as rising sea levels and changing weather patterns.

Rapid Urbanization

DMCs are relatively under-urbanized given their level of economic development. On average, 34.3% of DMC populations lived in urban areas in 2001. This compares with an average of 76.8% for Latin American countries, 49.3% for North African countries, and 34.0% for Sub-

Table II. Urban-Rural Indicators for Developing Regions of the World, 2001

Region	Urban Population (% of total)	Annual Growth Rate 1990-2001 (%) Urban	Rural
Latin America	76.8	2.27	-0.03
North Africa	49.3	2.85	1.19
Sub-Saharan Africa*	34.0	4.77	1.75
Developing Member Countries	34.3	2.87	1.12

* Data for 2000.
Note: Values are weighted country averages.
Sources: Table 8 of ADB, *Key Indicators 2002*; United Nations, *World Urbanization Prospects: The 2001 Revision*; and World Bank, *World Development Indicators 2002*.

Saharan African countries (Table II). On the one hand, these numbers suggest that the environmental problems associated with rapid urbanization may be somewhat less pressing in DMCs than in, for example, Latin America. On the other hand, the potential for urban growth is very substantial in DMCs, where the urban population is growing rapidly. The country average is 2.9% per annum. However, these growth rates are not so rapid that levels of urbanization will begin to approach those found in Latin America in the foreseeable future.

Although the Asia-Pacific region is less urbanized than other parts of the developing world, DMCs must still deal with the environmental and other problems that are unique to large urban agglomerations. Of the 16 megacities of the world, eight are located in the region. During the next 15 years, five additional cities are expected to join the megacity ranks. Two—Metro Manila and Tianjin—are in DMCs. If UN projections hold true, India's three megacities in 2015—Bombay, Calcutta, and Delhi—will have a combined population in excess of 60 million. Dhaka is projected at more than 22 million, Karachi at more than 16 million, and Jakarta at over 17 million in 2015 (Table III). In these and many other DMC cities, urban environmental problems will pose a major challenge over the coming decades.

DMCs are continuing to experience significant rural population growth. As elsewhere in the world, rural populations are growing more slowly than urban populations because the dominant migration stream is from rural to urban areas. In DMCs, rural population growth is about 1% per annum. In Latin America, rural populations on average are no longer growing. Even in Sub-Saharan Africa, where overall population growth

Table III. Population and Annual Growth Rates of 21 Urban Agglomerations Projected to be Megacities in 2015

Country	City	Population (000s) 2000	2015	Annual Growth Rate (%) 2000-2015
DMCs				
India	Bombay	16,086	22,577	2.3
	Calcutta	13,058	16,747	1.7
	Delhi	12,441	20,884	3.5
Bangladesh	Dhaka	12,519	22,766	4.1
Pakistan	Karachi	10,032	16,197	3.2
Indonesia	Jakarta	11,018	17,268	3.0
Philippines	Metro Manila	9,950	12,579	1.6
China	Shanghai	12,887	13,598	0.4
	Beijing	10,839	11,671	0.5
	Tianjin	9,156	10,319	0.8
Non-DMCs				
Japan	Tokyo	26,444	27,190	0.2
	Osaka	11,013	11,013	0.0
Nigeria	Lagos	8,665	15,966	4.2
Brazil	Sao Paulo	17,962	21,229	1.1
	Rio de Janeiro	10,652	11,543	0.5
Mexico	Mexico City	18,066	20,434	0.8
United States	New York	16,732	17,944	0.5
	Los Angeles	13,213	14,494	0.6
Argentina	Buenos Aires	12,024	13,185	0.6
Egypt	Cairo	9,462	11,531	1.3
Turkey	Istanbul	8,953	11,362	1.6

Source: United Nations, *World Urbanization Prospects: The 2001 Revision*.

remains relatively high, the rural population growth average exceeds the DMC average by only 0.6 percentage points. Because of their large rural populations and continued growth, DMCs accounted for three quarters of the increase in the world's rural population between 1990 and 1999 (World Bank 2001).

Rural population growth continues in DMCs even though they are densely populated. Densities are highest in Bangladesh, Maldives, Papua New Guinea, Sri Lanka, and Viet Nam, where the rural population per square kilometer of arable land exceeds 1,000. Six DMCs with rural densities higher than those in Sub-Saharan Africa experienced an increase in their population density of 1% per annum or more during the last 5-year period for which reliable data are available (Table IV).

The main consideration is that population growth among DMCs will create challenges for maintaining and improving the environment both in rural and urban areas.

Table IV. Rural Population Density, 1999 and Annual Rate of Increase, 1994-1999

Developing Member Country	Density (persons per sq km)	Annual Rate of Increase (%)
Maldives*	19,447	2.0
Papua New Guinea*	6,379	-2.1
Sri Lanka	1,660	0.5
Bangladesh	1,209	0.3
Viet Nam	1,031	-0.3
Solomon Islands*	807	1.1
Indonesia	694	-1.0
China, People's Republic of	691	0.3
Nepal	686	-0.2
Tajikistan	611	4.8
Philippines	566	-0.2
Malaysia	541	0.8
Korea, Rep. of	520	-1.0
Bhutan*	506	-0.9
Vanuatu*	499	2.3
Lao PDR	454	0.3
India	444	1.5
Pakistan	403	1.3
Tonga*	366	-0.4
Myanmar	359	1.6
Uzbekistan	342	2.3
Thailand	323	3.3
Cambodia	268	2.1
Afghanistan	257	4.0
Samoa*	240	0.4
Kyrgyz Republic	236	1.6
Fiji Islands*	206	-2.6
Azerbaijan	200	-0.9
Turkmenistan	173	2.5
Mongolia	75	2.1
Kazakhstan	22	2.0
Memorandum Items		
Sub-Saharan Africa	377	
Latin America	252	
OECD	168	

* Latest available data is 1998.
Note: Rural density is population divided by arable land area.
Source: World Bank, *World Development Indicators 2002.*

The Environmental Challenges

DMCs face four major environmental challenges: conserving agricultural land in the face of continued intensification of agricultural systems; preserving habitats and avoiding the loss of biodiversity; providing cleaner air and water; and reducing contributions to global warming with its disruptive and potentially costly effects on climate.

Conservation of Agricultural Land. Many DMCs can point to agriculture sector growth as a major success story of the second half of the Twentieth Century. Improvements in yields and agricultural productivity has enabled many countries in the region to feed their growing populations, provide employment for a growing agricultural labor force, and in some instances provide significant export earnings. A few DMCs were able to increase agricultural production and employment by increasing the amount of land under cultivation. But for most the opportunities for expanding cultivated area were very limited. Only Azerbaijan, Bhutan, Fiji Islands, Nepal, Papua New Guinea, and Turkmenistan have increased their arable land by as much as 10% since 1990. Others have actually experienced declines in area cultivated, e.g., Kazakhstan, Korea, and Tajikistan, experienced declines of 10% or more since 1990. Significant increases in agricultural yields have been far more important in enabling DMCs to expand agricultural output to meet the increased demand for food coincident with population growth. Korea increased the rice yield per hectare harvested from under 3 tons in the early 1950s to 6 tons in the mid-1990s. Between the late 1960s and late 1990s, PRC raised average rice

yields from 3.1 tons per hectare to 6.2 tons per hectare (FAO 2000). Corresponding figures in Indonesia and Vietnam were 1.9 to 4.4 tons per hectare and 1.8 to 3.7 tons per hectare, respectively. Vietnam is a particularly impressive case, as yield increases enabled the country to move from being an importer of rice to becoming with world's third largest rice exporting country. Large increases have also been achieved by Bangladesh, India, and Philippines.

These yield increases were achieved through use of new technologies (e.g., chemical fertilizers and improved seed varieties) and more intensive production systems (i.e., moving from one rice crop to as many as three or four per year on a plot), but yields generally reached a plateau in the late 1980s. The challenge faced by DMCs in coming decades is to match continuing population growth and increasing demand for food with additional increases in agricultural productivity or distribution and storage systems that can guarantee imported supplies of food are available if needed. The gaps between attainable and actual yields suggest this is technologically feasible. Agricultural output per hectare in many DMCs is well below the high levels sustained in Japan; Korea; and Taipei,China. In addition, developments in biotechnology hold promise of enabling faster development of improved seed varieties in the future. To reach those levels, however, will require both technological and institutional innovation. Success requires more efficient utilization of a dwindling supply of water, better soil management practices, more efficient application of fertilizers and herbicides/ pesticides, and the development of new varieties of rice and other grains (Hayami 2001). For DMCs without comparative advantage in agricultural production, exports of non-agricultural goods will be important for financing food imports, as will be proper storage and distribution systems. As output required increases and forces increasingly intensive cultivation, there is a danger of depleting the region's scarce water and land resources. Both institutional and technological innovations will be necessary to manage these resources.

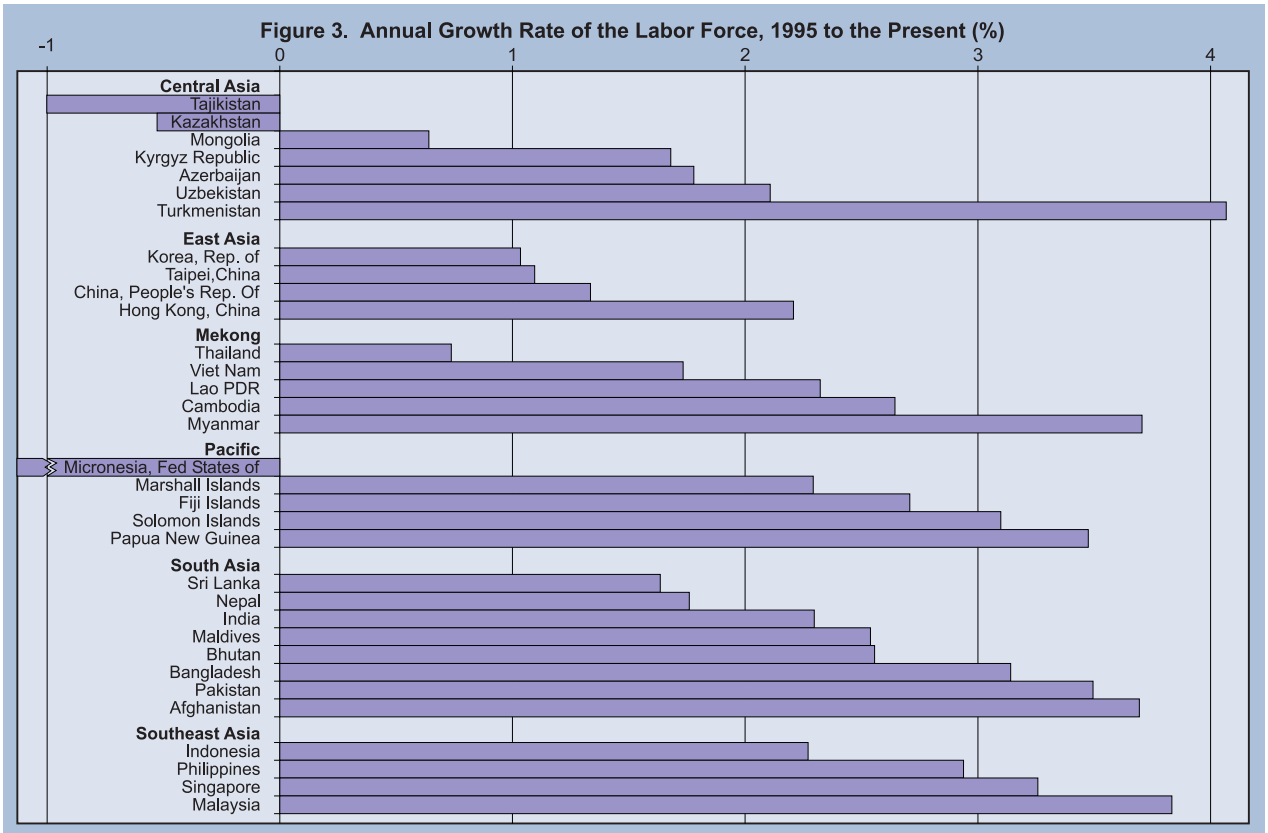
Destruction of Habitat and Loss of Biodiversity. Although the amount of land under active cultivation has stopped increasing or is increasing much more slowly than in the past, intrusion into native habitats continues throughout the region as new land is brought under cultivation, native forests are harvested, and new communities are established. The destruction of the natural habitat is the greatest threat to biodiversity and DMCs play a critical role in the world in this regard. Six Asia-Pacific countries—PRC, India, Indonesia, Malaysia, Papua New Guinea, and Philippines—are among the 17 countries of the world that house two thirds of the globe's biological resources (EWC 2002).

Forest loss, particularly in Southeast Asia, has been widely documented. Logging, often illegal, has had major effects in Indonesia, Malaysia, Philippines, and Thailand (UN 2001).

The Urban Environment. Because Asia's urban populations are growing so rapidly and such large numbers of people are increasingly concentrated in small geographic regions, achieving a livable urban environment will be one of the major challenges faced by DMCs over the coming years. The quality of the urban environment can be degraded in many different ways. Water supplies can be contaminated by industrial or municipal waste and inadequate treatment of municipal sewage. Air pollution can be traced to emissions from vehicles, industrial activity, and domestic heating and cooking. The disposal of solid waste presents its own challenges.

Air quality in many Asian cities fails to meet minimum standards. Suspended particulate levels, sulfur dioxide, and nitrogen oxide are substantially above WHO-recommended levels. Emissions from leaded gas continue to pose a health threat in many cities. Recent tests of children under the age of 3 in Delhi and Mumbai found that nearly half had unsafe levels of lead (EWC 2002).

The quality of the water supply will be a continuing problem in DMCs. Quoting an ADB study (ADB 1997b), the UN recently reported that "In Asia, rivers typically contain 4 times the world average of suspended solids, 3 times the world average for bacteria from human wastes, and more than 10 times the OECD guidelines; the reported median fecal coliform count is 50 times as high as the WHO guidelines" (UN 2001). Only one of every three Asians now has access to safe drinking water (EWC 2002).



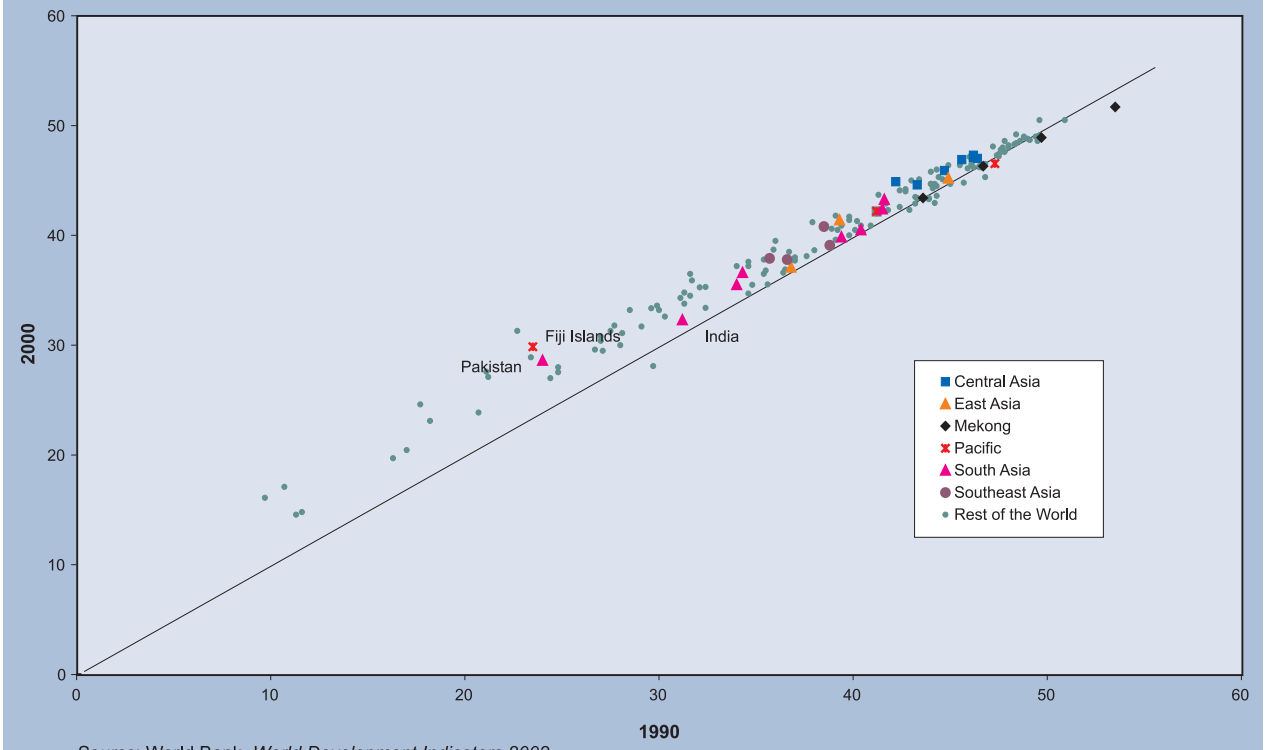
Note: Growth rate for Federated States of Micronesia was - 2.95%.
Sources: Country Tables of ADB, *Key Indicators 2002* and World Bank, *World Development Indicators 2002.*

Global Warming and Climate Change. Global warming and its potential impact on climate change is an issue of considerable importance to DMCs. Most obviously, some Asia-Pacific countries are highly vulnerable to rising sea levels. One half of the rice production of Bangladesh would be destroyed by a 1 meter rise in sea level. Many Pacific DMCs are threatened with the loss of substantial portions of their coastal areas, where large shares of their populations and economies are concentrated. The dislocations to these economies caused by rising sea levels are potentially devastating. Changing weather patterns could increase the destructiveness of typhoons or disrupt monsoon agriculture.

The use of fossil fuels and the emissions of carbon dioxide are major contributors to greenhouse effects and global warming. The highest per capita carbon dioxide emissions are in North America, with Europe a distant second (UN 2001). DMCs' contribution to carbon dioxide emissions is substantially less than the developed countries. In 1997, only 27% of industrial carbon dioxide emissions could be traced to DMCs. But as the region continues to grow, Asia will have a major impact on the growth of greenhouse gases. During the past three decades, energy use has increased by over 300% in Asia compared with 85% for the world as a whole (EWC 2002). Between 1992 and 1997, DMCs accounted for 72% of the rise in industrial carbon dioxide emissions worldwide (World Bank 2001).

Asia has made some strides in bringing its energy consumption under control. For example, energy consumption relative to gross domestic product (GDP) has dropped substantially in the PRC during the past few decades. However, further gains in efficiency and policies to promote such gains are essential to the region.

Figure 4. Female Labor Force, 1990 and 2000
(% of total)



Source: World Bank, *World Development Indicators 2002*.

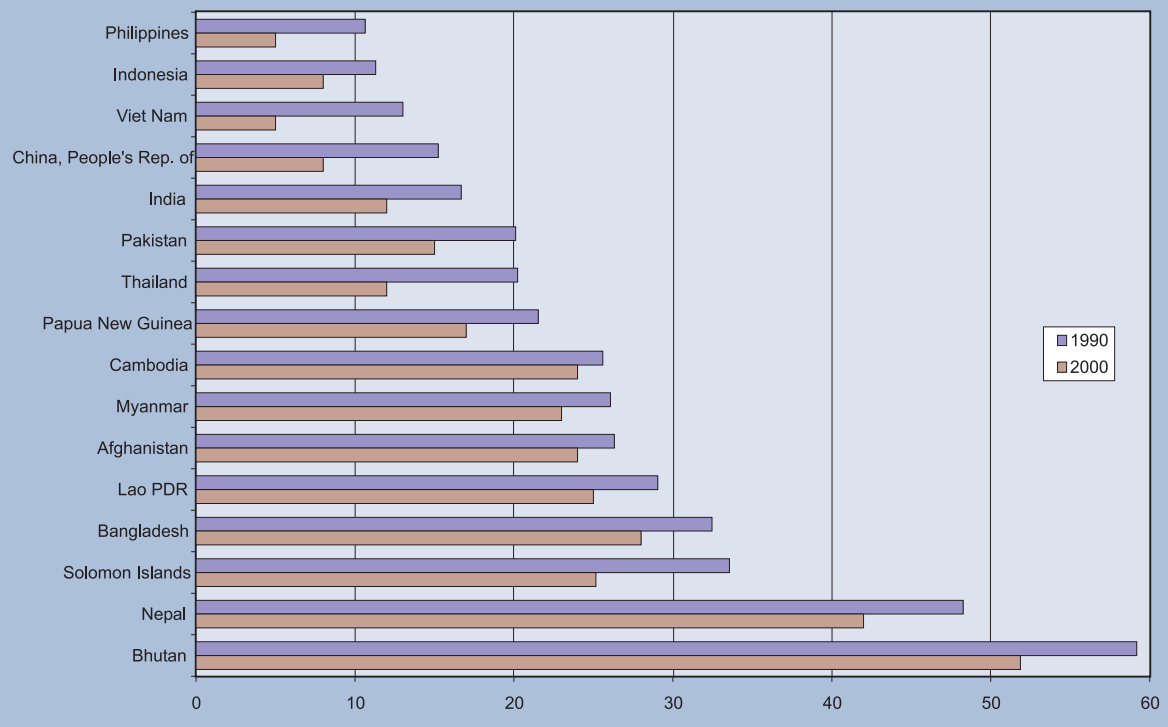
Labor Force, Gender, and Child Labor

In a few East and Central Asian and Mekong DMCs, labor force growth is beginning to moderate, but most DMCs experienced labor force growth of 2-3% annually between 1995 and the most recent year for which data are available (2000 or 2001). Some countries (Afghanistan, Bangladesh, Malaysia, Myanmar, Pakistan, Papua New Guinea, Singapore, Solomon Islands and Turkmenistan) experienced labor force growth exceeding 3% per annum. The countries with the slowest labor force growth were the PRC and Korea, with growth rates of about 1% per annum; Mongolia and Thailand, with growth rates of below 1%; and Kazakhstan, Micronesia, and Tajikistan, which experienced substantial declines in their labor forces (Figure 3).

As discussed in more detail below, the long-run trend in labor force growth is governed to a great extent by the changing demographics of the region. In many countries, the working-age population is growing rapidly and will continue to do so for several decades. Moreover, women are being drawn increasingly into the labor force. Thus, the number of adults available to work is increasing steadily. Of course, demand considerations are also playing a role and economic slowdown has affected labor force and employment growth in some DMCs: Indonesia; Korea; Singapore; and Taipei,China have all experienced higher than typical rates of unemployment in recent years.

In the past, some DMCs experienced accelerated rates of labor force growth because of a substantial increase in the number of women in the workforce. During the 1990s, however, women's share of the labor force changed relatively little. In most DMCs, the female proportion of the labor force was greater in 1999 than in 1990, but the changes were small. The greatest increases were in countries where female participation rates were quite low. The female share increased in Pakistan from 24% in 1990 to 29% in 2000, and in the Fiji Islands from 24% to 30% over the same period. There was little change in India, where women constitute less than one third of the labor force

Figure 5. Percentage of Children 10-14 in the Labor Force
(for developing member countries with 1990 data over 10%)



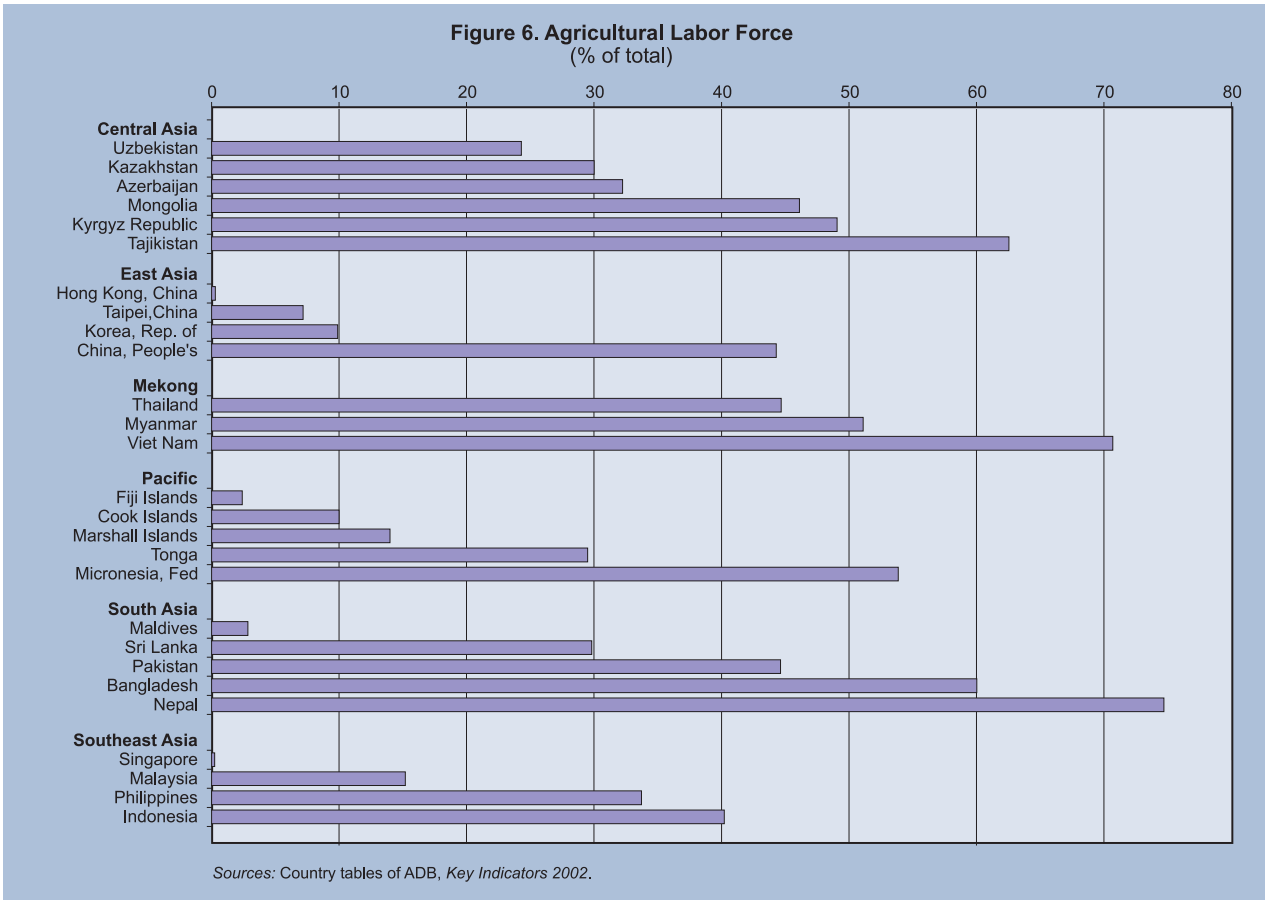
Source: World Bank, *World Development Indicators 2002.*

(Figure 4).

Countries where women form a relatively small portion of the labor force can achieve accelerated labor force growth by increasing female labor force participation. The greatest potential gains are available in the Fiji Islands and several South Asian countries. In the countries of Southeast Asia as well, women account for only about 40% of the labor force. In East and Central Asian and Mekong DMCs, a relatively high percentage of women are members of the labor force, but even in these DMCs they represent a potentially important untapped source of labor.

One factor moderating the growth in the labor force, but only to a small extent to date, is declining participation rates among the young and the old. In some countries, participation rates have dropped among older adults (discussed more extensively below). The impact on the total labor force of this change has been modest because older workers are a relatively small share of the labor force. Participation rates have also declined among the young. The proportion of children aged 10–14 in the labor force dropped during the 1990s in every country where child employment was significant (i.e., greater than 10% in 1990). But the changes were relatively modest and in no instance as great as 10 percentage points. In Bhutan, over 50% of children aged 10–14 are in the labor force and in Nepal more than 40% are working. In several other DMCs—Afghanistan, Bangladesh, Cambodia, Lao PDR, Myanmar, and Solomon Islands—more than 20% of children aged 10–14 are in the labor force (Figure 5).

One of the major labor force challenges that DMCs face is that so many of their workers are still employed in agriculture where labor productivity is relatively low. However, in some Southeast Asian, Pacific, and East Asian DMCs, this is no longer true: in Cook Islands; Fiji Islands; Hong Kong, China; Korea; Malaysia; Maldives; Marshall Islands; Singapore; and Taipei,China, less than 20% of the labor force are in agriculture. But in PRC, Indonesia, Kyrgyz Republic, Mongolia, Pakistan, and Thailand, 40–50% are in the agriculture sector. In Micronesia and Myanmar, more



than half of the labor force are in agriculture and over 60% of the workforces of Bangladesh, Nepal, Tajikistan, and Viet Nam work in agriculture (Figure 6).

In a few DMCs, the agricultural labor force has begun to decline. Employment in the agriculture sector in Korea and Taipei,China dropped by about one third and Thailand's agricultural labor force dropped by about 20% between 1990 and the latest year for which data are available (2000 or 2001). The PRC and Indonesia experienced very modest declines during the last decade. In other countries, however, the agricultural labor force continued to grow. The increase was relatively modest in the Philippines (11%) and Pakistan (16%) during this period, but substantial in Micronesia (36%) and especially so in Mongolia, Kazakhstan, Kyrgyz Republic, and Tajikistan, where agricultural labor forces rose by more than 50%.

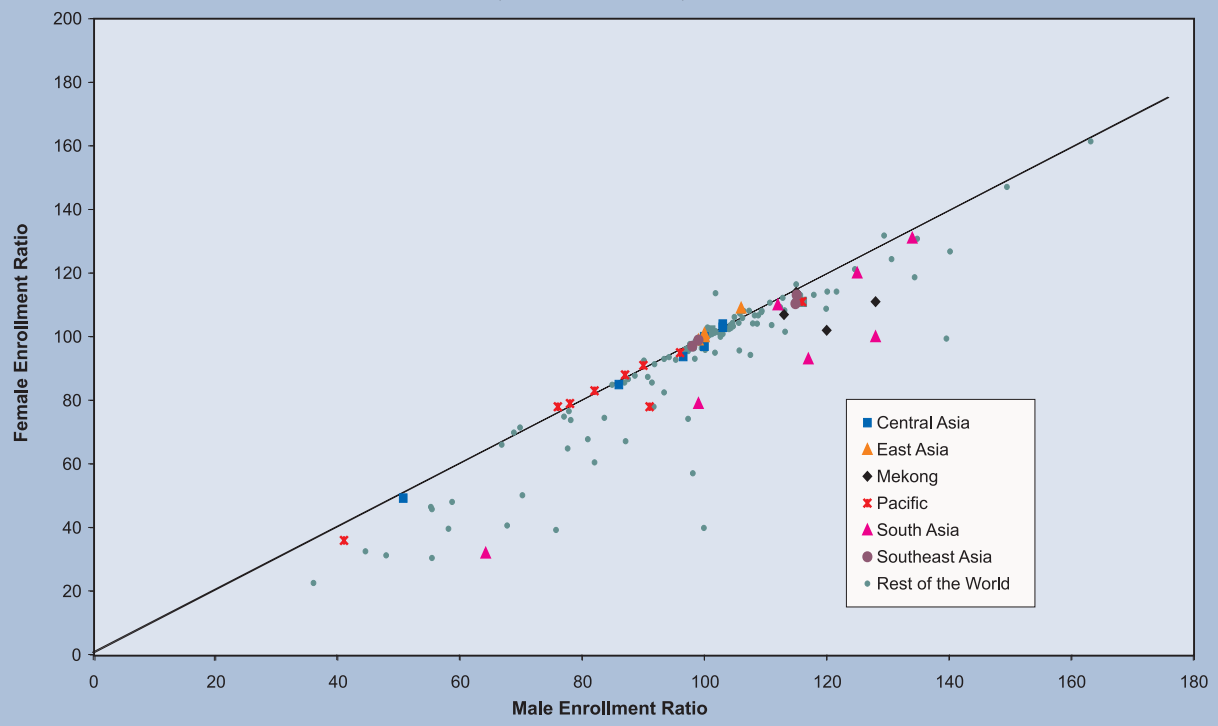
Human Resources and Gender

In most DMCs, children of primary school age are in school. However, Afghanistan and Turkmenistan have very low primary enrollment rates. In Afghanistan, the reported gross primary enrollment ratios[4] are only 64 for males and 32 for females. In Turkmenistan only about half of all girls and boys are enrolled. In many Pacific DMCs as well, enrollment rates lag behind (Figure 7).

The male-female gaps in primary education have declined substantially among DMCs, but large differences in enrollment remain in several of them. The male enrollment ratio exceeds the female enrollment ratio by close to 30 percentage points or more in Afghanistan and Nepal, and by about 20 percentage points in Cambodia, India, Lao PDR, and

[4] The gross enrollment ratio is the total enrollment of a level of education, regardless of age, expressed as a percentage of the age group corresponding to the national regulations for that level of education.

Figure 7. Gross Primary Enrollment Ratios, Latest Year (%)
(females and males)



Sources: Table 2 of ADB, *Key Indicators 2002* and World Bank, *World Development Indicators 2001*.

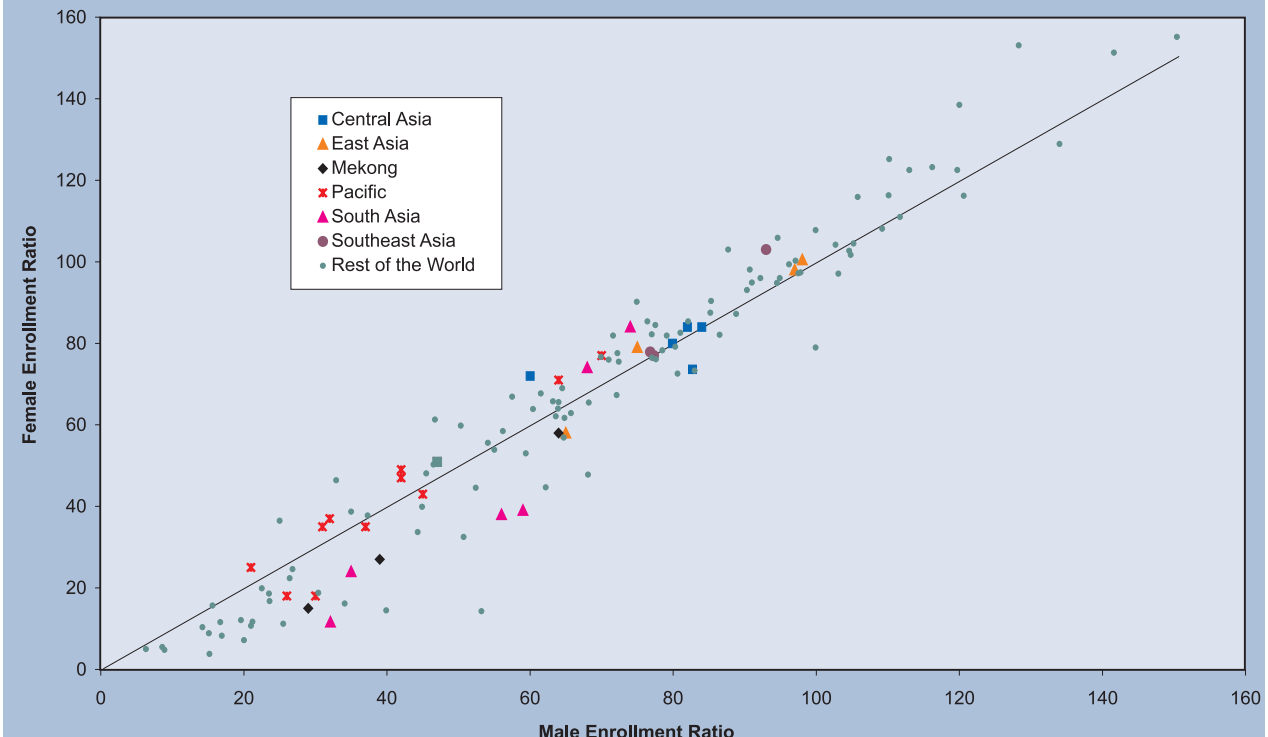
Pakistan.

Although quality issues remain at the primary level of education, attention is increasingly focused on the secondary level. The secondary level has become important for two main reasons. The first is that the secondary school age population grew rapidly during the 1980s and 1990s in many DMCs, straining resources available for the secondary education sector. To the extent that these large cohorts of young people gained the education they needed and, subsequently, appropriate employment, DMCs were able to tap the enormous growth in human resources. The secondary school level is important for another reason. It is at these formative ages that children are maturing and, in some cases, engaging in the high-risk behavior that may lead to early marriage and childbearing, sexually transmitted diseases, and addiction to alcohol, cigarettes, and other drugs that adversely affect health and human development. Successful secondary school programs can play a critical role in this important transition period.

In many DMCs, the great majority of males and females of secondary school age are attending school, but there are also many exceptions, particularly among Mekong, Pacific, and South Asian DMCs. In Afghanistan, Cambodia, Pakistan, Papua New Guinea, Solomon Islands, and Vanuatu, gross secondary school enrollment ratios are below 40 for males and less than 25 for females. In Fiji Islands, Nauru, and Tuvalu, enrollment ratios for males and females are in the 30–40 range. In another group of countries—India, Nepal, and Viet Nam—gross secondary enrollment ratios are 40–60 for males and 30–70 for females (Figure 8).

The largest gender gaps that favor men are found in Afghanistan, India, and Nepal, where gross enrollment ratios for males are higher than those for females by 18-21 points. Smaller, but still significant, gaps are found in many other DMCs including Cambodia, PRC, Lao PDR, Pakistan, Solomon Islands, and Tajikistan. It is not unusual among DMCs, however, for secondary enrollment ratios to be higher for females than for males. Such reverse gender gaps are significant in Malaysia, Maldives, Mongolia, and Samoa.

Figure 8. Gross Secondary Enrollment Ratios, Latest Year (%)
(females and males)



Sources: Table 2 of ADB, *Key Indicators 2002* and World Bank, *World Development Indicators 2001*.

Macroeconomics and Health

The WHO Commission on Macroeconomics and Health recently completed its much-awaited assessment of health conditions in the developing world, the implications of health for development, and the adequacy of current strategies for improving health, particularly among the poor (WHO 2001). The Commission reached 10 findings, paraphrased in Box 1, that emphasize the unacceptable health conditions that exist in many low-income countries and among the poor in middle-income countries, the existence of strategies that can succeed at improving health status, and the considerable payoff from a stronger effort on the part of the developing countries themselves and the international donor community.

Worldwide, the most severe health problems are found in sub-Saharan Africa, but the Commission's findings also have great relevance to the Asia-Pacific region. People living in the poorest DMCs are greatly

Table V. Income and Mortality Measures of Developing Member Countries, 2000

GDP per capita, PPP (current international $)	No. of DMCs	Population (million)	Life Expectancy at Birth (years)	Infant Mortality Rate (per 1,000 live births)	Under-5 Mortality Rate (per 1,000)
<$2000	9	318	62.0	67.8	89.8
$2,000-3,999	11	2,620	67.5	47.9	63.9
$4,000-9,999	7	180	68.9	31.6	40.1
$10,000 +	3	58	77.0	4.1	4.5

Notes: Population is the combined population of all countries in each income group. Mortality measures are simple averages of the values for individual countries.
Sources: Table 4 and Country Tables of ADB, *Key Indicators 2002;* World Bank, *World Development Indicators 2002* and United Nations Children's Fund Internet Website.

Table VI. Growth Rate of Per Capita Income, 1965-1999

	Infant Mortality Rate, 1965		
Income in 1965	<40	40-99	>100
<$500	—	4.4	2.2
>$500	5.4	3.6	1.0

Notes: The cells are averages for countries.
Income is GDP per capita in 1995 US$.
Source: World Bank, *World Development Indicators 2001.*

disadvantaged compared with their high-income neighbors. Life expectancy at birth ranges from 62.0 years for DMCs with a per capita income of under $2,000 to 77.0 years for DMCs with a per capita income in excess of $10,000 (Table V). IMRs range from 67.8 deaths per 1,000 births for the lowest income group to only 4.1 infant deaths per 1,000 births for the highest income group. Under-5 mortality rates are almost 20 times higher in the lowest income DMCs than in the highest income DMCs. Highlighting the differences that exist is not to deny the great progress that has been made, but it is a fact that large health gaps remain in the region.

The high rates of mortality found in low-income countries can be effectively attacked through programs directed at communicable diseases and through improved reproductive health programs. The main causes of avoidable deaths in low-income countries are "HIV/AIDS, malaria, tuberculosis, childhood infectious diseases, maternal and perinatal conditions, micronutrient deficiencies, and tobacco-related illnesses" (WHO 2001, p. 2).

Achieving good health is an important priority in itself, but health is also a critical element in achieving broader development objectives. One of the most important conclusions reached by the Commission on Macroeconomics and Health is that improved health will lead to more rapid economic growth by raising labor productivity and by encouraging greater investment in the education of children. The experience of DMCs is consistent with this view. Table VI illustrates the connection by comparing the rates of growth of real per capita income between 1965 and 1999 in DMCs with different initial per capita incomes and different initial IMRs. Controlling for initial income, countries with low IMRs in 1965 achieved much higher rates of economic growth than countries with high IMRs. The potential returns to health investments appear to be substantial in DMCs.

A health issue of immediate importance is the region's response to the HIV/AIDS pandemic. Although HIV/AIDS has struck with greatest force in sub-Saharan Africa, DMCs cannot afford to ignore this unprecedented health threat.

HIV/AIDS: A DMC Problem or Not?

The HIV/AIDS epidemic has not reached levels among DMCs found in Sub-Saharan Africa. As far as it is known, prevalence levels are currently low in all but a few DMCs. In PRC, India, Indonesia, Nepal, and Viet Nam, prevalence levels are low, but recent evidence points to higher prevalence rates in some of their regions or population subgroups. Three countries—Cambodia, Myanmar, and Thailand—face a serious epidemic. In these countries, HIV/AIDS prevalence levels are very high for population subgroups that engage in high-risk behavior, while prevalence levels for the general population are sufficiently high to adversely affect social and economic development (Table VII).

Whether the region will avoid a devastating epidemic remains an open question. Population subgroups in many DMCs engage in high-risk behavior, e.g., unprotected sex with multiple sex partners and needle sharing among injecting drug users. Knowledge about the cause and prevention of HIV/AIDS is limited. Prevention efforts are modest and often fail to reach the subgroups that are at highest risk of infection.

A feature of the HIV/AIDS epidemic that is common to DMCs is the importance of high-risk behavior subgroups in the dynamics of the epidemic: sex workers and their clients, men who have sex with men, and injecting drug users. Typically it is in these subgroups that the epidemic first gains a foothold and from there spreads to those at lower risk, including notably the men's wives and girlfriends, and subsequently their newborn children.

A survey of urban injecting drug users in Nepal in 1999 and in Jakarta in 2001 found that 40% of them were infected. Surveys in India, Thailand, and Viet Nam have found infection rates ranging from 40% to

as high as 80%. About half of all sex workers were infected in Mumbai in 1993. The rate of infection among sex workers reached 30% in Bangkok in 1992, almost 60% in Phnom Penh, and has recently risen to 20% in Ho Chi Minh City. In recent studies of men having sex with men in Phnom Penh, 14% were found to be living with HIV (EWC 2002).

The speed with which the epidemic spreads among these subgroups and from these subgroups to the population at large depends on the interaction between members of those subgroups with higher-risk behaviors and the general population. For example, a recent study in Cambodia found that 40% of men having sex with men also had sex with women, many of whom

Table VII. Estimated Number of People Living with HIV/AIDS, 1999

Developing Member Country	Adults and Children	Adults (15-49)	Adult Rate (%)	Women (15-49)	Children (0-14)	Orphans (cumulative)	Estimated AIDS Deaths
Central Asia							
Azerbaijan	<500	<500	<0.01	<100	<100	...	<100
Kazakstan	3,500	3,500	0.04	<100	<100	...	<100
Kyrgyz Republic	<100	<100	<0.01	<100	<100	...	<100
Mongolia	<100	<100	0.00	...	...	...	...
Tajikistan	<100	<100	<0.01	<100	<100	...	<100
Turkmenistan	<100	<100	0.01	<100	<100	...	<100
Uzbekistan	<100	<100	<0.01	<100	<100	...	<100
East Asia							
China, People's Rep. of	500,000	500,000	0.07	61,000	4,800	4,500	17,000
Hong Kong, China	2,500	2,500	0.06	630	<100	...	<100
Korea, Rep. of	3,800	3,800	0.01	490	<100	<100	180
Mekong							
Cambodia	220,000	210,000	4.04	71,000	5,400	13,000	14,000
Lao PDR	1,400	1,300	0.05	650	<100	280	130
Myanmar	530,000	510,000	1.99	180,000	14,000	43,000	48,000
Thailand	755,000	740,000	2.15	305,000	13,900	75,000	66,000
Viet Nam	100,000	99,000	0.24	20,000	2,500	3,200	2,500
Pacific							
Fiji Islands	...	300	0.07	...	...	...	...
Maldives	...	<100 *	0.05 *	...	...	...	...
Papua New Guinea	5,400	5,200	0.22	2,600	220	1,100	450
South Asia							
Afghanistan	...	<100 *	<0.01 *	...	...	...	...
Bangladesh	13,000	13,000	0.02	1,900	130	610	1,000
Bhutan	<100	<100	<0.01	...	...	...	...
India	3,700,000	3,500,000	0.70	1,300,000	160,000	...	310,000
Nepal	34,000	33,000	0.29	10,000	930	2,500	2,500
Pakistan	74,000	73,000	0.10	15,000	1,600	7,900	6,500
Sri Lanka	7,500	7,300	0.07	2,200	200	600	490
Southeast Asia							
Indonesia	52,000	52,000	0.05	13,000	680	2,000	3,100
Malaysia	49,000	48,000	0.42	4,800	550	680	1,900
Philippines	28,000	26,000	0.07	11,000	1,300	1,500	1,200
Singapore	4,000	3,900	0.19	790	<100	120	210
Global Total	34,300,000	33,000,000	1.07	15,700,000	1,300,000	13,200,000	2,800,000
Memorandum Item							
Sub-Saharan Africa	24,500,000	23,400,000	8.57	12,900,000	1,000,000	12,100,000	2,200,000

Source: UNAIDS, Internet website.

Box 2. Key Findings on the Linkages of Health and Development, WHO Commission on Macroeconomics and Health

(1) Health is a priority goal in its own right, as well as a central input into economic development and poverty reduction. The importance of investing in health has been greatly underestimated.

(2) A few health conditions are responsible for a high proportion of the health deficit. Effective interventions exist to prevent and treat conditions. Around 8 million deaths per year from these conditions could be averted by the end of the decade in a well-focused program.

(3) The HIV/AIDS pandemic is a distinct and unparalleled catastrophe and requires special consideration.

(4) Investments in reproductive health, including family planning and access to contraceptives, are crucial accompaniments of investment in disease control.

(5) The level of health spending in low-income countries is insufficient to address the health challenges that they face.

(6) Poor countries can increase the domestic resources that they mobilize for the health sector and use those resources more efficiently. However, the levels of funding necessary to cover essential services are far beyond the financial means of many low-income countries, as well as a few middle-income countries with a high prevalence of HIV/AIDS.

(7) Donor finance will be needed to close the financing gap, in conjunction with the best efforts of the recipient countries themselves.

(8) Increased health coverage of the poor would require greater financial investment in specific health sector interventions, as well as a properly structured health delivery system that can reach the poor.

(9) An effective assault on diseases of the poor will also require substantial investments in global public goods, including increased collection and analysis of epidemiological data, surveillance of infectious diseases, and research and development into diseases that are concentrated in poor countries.

(10) Coordinated actions by the pharmaceutical industry, governments of low-income countries, donors, and international agencies are needed to ensure that the world's low-income countries have reliable access to essential medicines.

Source: World Health Organization 2001, pp. 16-17.

were sex workers, within the preceding month (Pisani 2001). Such behavior greatly elevates the risks of rapid spread of the epidemic. Other surveys have found that many injecting drug users also patronize sex workers. And anywhere from 5% to 20% of adult males in most DMCs have recently visited sex workers, and many of them have wives or other girlfriends.

The typical pattern of growth of the epidemic is that it spreads fastest among the subgroups with higher-risk behavior. But often in the early stages the incursion into these subgroups goes undetected because their behavior is illegal or viewed unfavorably by the authorities and they are missed in surveillance systems. After establishing a foothold in one or more higher-risk populations, the epidemic begins to spread between different higher-risk subgroups and into the general population. The disease might spread from injecting drug users to sex workers and from sex workers to clients to wives to newborn children. Explosive growth is characteristic of the epidemic. Low levels that are held for some time are often followed by rapid increases. Thus, the current low prevalence levels among most DMCs may only be a prelude to a much more extensive and devastating epidemic.

The costs of a full-blown epidemic are enormous, but early action that targets those with higher-risk

Box 3. Successful HIV/AIDS Prevention in Thailand and Cambodia

Thailand and Cambodia represent two of the world's few HIV/AIDS prevention success stories. Under very different resource constraints but using similar combinations of focused prevention and broad-based social involvement, both countries have managed to reverse the course of the epidemic.

In Thailand, prevention programs for sex workers and their clients, in combination with heightened public awareness, had a quick and dramatic impact on sexual risk behavior. After the heterosexual outbreak in 1989, condom use in sex work increased from less than 30% in 1990 to more than 90% in 1997. Between 1990 and 1993, the percentage of men using sex services declined by half. As a result, sexually transmitted infection levels fell by more than 90% during the 1990s. HIV prevalence among young men peaked at 4% in 1993 and then declined steadily, falling to below 1% in 2000. In pregnant women, HIV peaked at 2.4% in 1995 and fell to 1.1% in 2001.

In Cambodia, both the epidemic and the response began somewhat later. High HIV prevalence was detected among sex workers in the early 1990s, but political instability and resource constraints limited the response. As the magnitude of the problem became apparent, however, the Government took a leadership role in initiating prevention activities and coordinating external donor assistance. By 1997, condom use in sex work had reached 70-90%. HIV levels among pregnant women peaked in 1997—at 3.2%—and then declined for 3 straight years, reaching 2.3% in 2000.

In both countries, successful HIV prevention efforts shared several common features. Both governments were open about the HIV problem, widely publicizing the results of surveillance surveys, raising public awareness, and making sure that everyone knew how to prevent infection. They implemented programs that involved multiple organizations in a variety of activities targeting both sex workers and their current and potential future clients. They achieved good coverage—an essential factor in mounting an effective response—reaching the majority of sex workers and clients with prevention messages and ensuring wide access to condoms. They were pragmatic, recognizing that they, as governments, had to address the problem of HIV transmission in partnership with people involved in sex work rather than simply imposing ineffective legal sanctions.

But while Thailand and Cambodia have effectively addressed HIV transmission within sex work, their responses have significant gaps. Neither country has mounted any substantial effort to address risk among men having sex with men. There have been limited efforts within this community and a few government programs in Thailand at the local level, but there is no strategic plan or significant financial support in either country for addressing this type of risk. Yet surveys among male Thai sex workers in several cities show a high rate of new HIV infections, and a survey in Phnom Penh, Cambodia, found that 14% of men having sex with men were infected with HIV.

Programs in Thailand for injecting drug users have also been far too limited to produce significant results. The Government initiated programs for drug users in the mid-1980s when HIV prevalence started rising in this population group, but once transmission in sex work became more important, effective programs for drug users were not sustained. As a consequence, studies consistently document high rates of new infections among drug users, and almost one fifth of all new infections are from needle sharing.

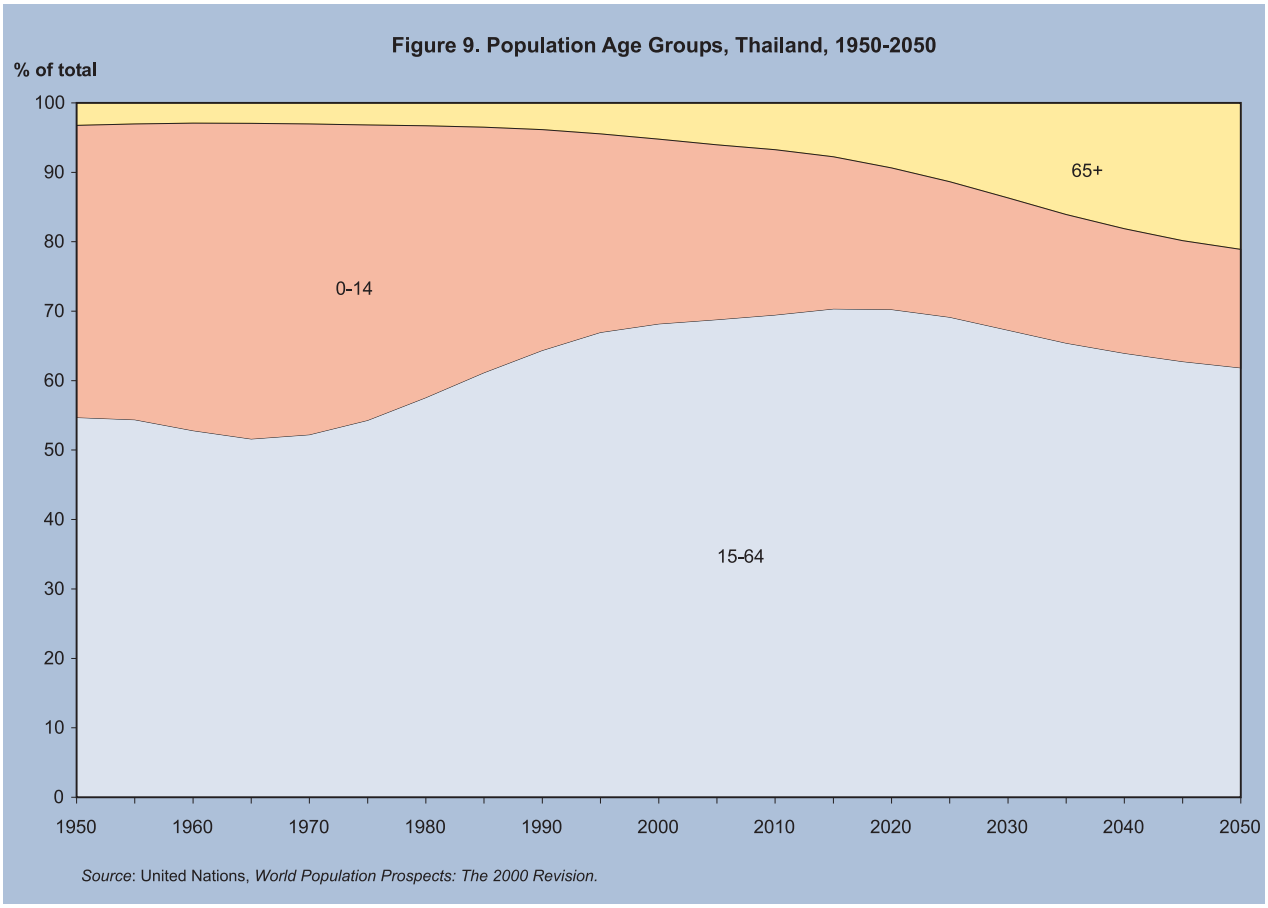
Finally, the Thai program has been slow to adapt to changing transmission patterns. The effectiveness of HIV prevention in sex work means that, today, half of all new infections come from spouse-to-spouse transmission. Yet the national program has placed little emphasis on this aspect of the epidemic.

Source: East-West Center 2002.

behaviors offers real possibilities for avoiding a large-scale epidemic. Cambodia and Thailand have been able to lower HIV transmission rates through prevention programs aimed at reducing needle sharing, promoting condom use, and improving treatment of sexually transmitted infections (Box 3). According to the Thai Working Group on HIV/AIDS, behavioral change has resulted in nearly 5 million fewer infections in Thailand than would likely have occurred without such change.

Changes in Age Structure: Demographic Bonus or Aging Crisis?

During their current demographic transitions, DMCs are experiencing pervasive and systematic changes in their age structures with potentially important implications for social and economic development. The patterns vary from country to country, but there are common features, as illustrated by historical data and projections for Thailand (Figure 9). The decline in infant and child mortality usually leads to a rise in



the number of children in the typical family and the number of children aged 0-14 in the population. It is not uncommon for the population under 15 to reach or exceed half of the total population. In Thailand, the percentage of the population under 15 peaked at 46% in 1965. The onset of fertility decline reversed the trend toward a younger population. In countries with a rapid fertility decline, such as Thailand, this reversal can be very quick. By 2000, Thailand's under-15 population had dropped to only 27% of the population.

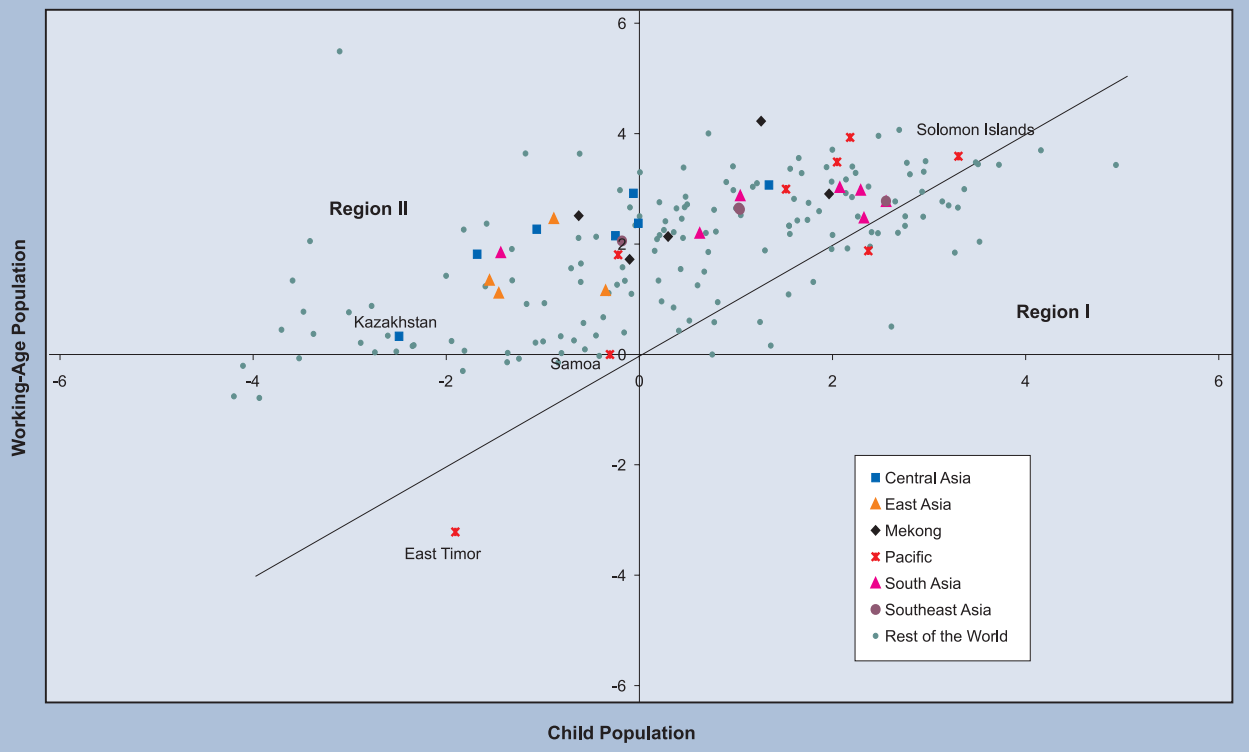
As large cohorts of children reach adulthood, the number of young adults and then the number of middle-aged adults begin to grow rapidly. In Thailand, the proportion of the 15-64 age group increased from 52% of the population in 1965 to 68% of the population in 2000; the proportion in the dependent age groups dropped from 48% to 32%.

Population aging is the final phase of the transformation in age structure. Large birth cohorts begin to reach old age, having survived their childhood and reduced adult mortality risks. Thailand's 65 and older population was relatively small, at 2.9-3.5% of the total between 1950 and 1985. By 2000, a clear shift was detectable as this group increased to 5% of the total population. By 2050, Thailand's older population is projected to reach 21% of the total. Additional aging can be expected after 2050. Japan's 65 and older population is projected to reach 35% by 2050, for example. As aging occurs, the percentage of dependents in the population increases and the percentage in the working ages declines. In Thailand, the 15-64-year-old population is projected to peak at 70% in 2015 and decline to 62% in 2050. The dependent population will rise as the proportion of elderly people increases. In 2040, the elderly are projected to outnumber children in Thailand.[5]

All DMCs have completed the first phase of the transformation of their age structures. The 15–64-

[5] The assumption that the age at which children reach adulthood is unchanging overstates the relative decline in child dependency. With economic development, the period of child dependency increases as children remain in school and enter the labor force at a later age.

Figure 10. Working-Age and Child Populations Annual Growth Rates, 1995-2000 (%)



Source: United Nations, *World Population Prospects: The 2000 Revision.*

year-old population is growing more rapidly than the under-15 population in every country except East Timor, which has experienced a greater decline in its working-age than child population, and Micronesia. As can be seen in Figure 10, in the period 1995–2000, there were countries, mostly in Africa, where the child population was growing more rapidly than the working-age population (region I), but, with the two exceptions noted above, none was in Asia. In two DMCs, the child population and the working-age population were growing rapidly and at nearly identical rates. Solomon Islands is an example. In Samoa, neither the child nor the working-age population was growing at all and, hence, their relative shares in the population were not changing.

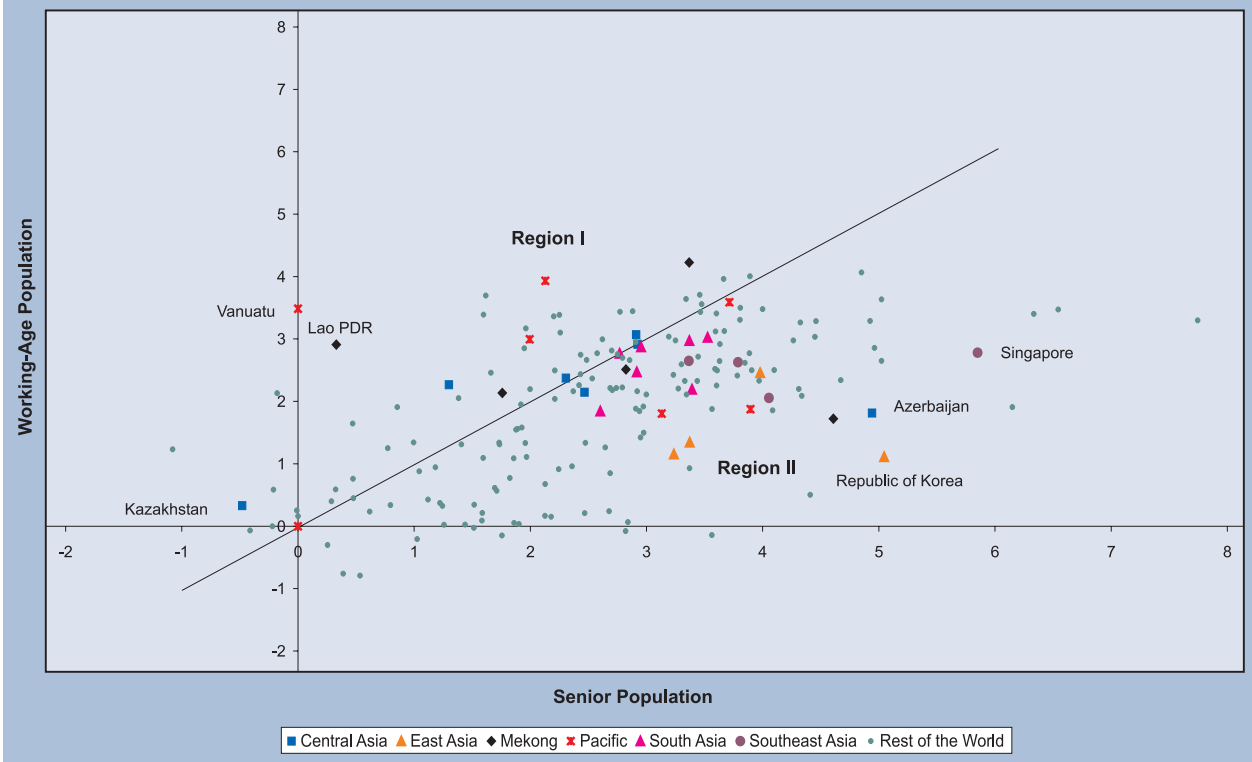
In the remaining DMCs, the working-age populations were growing relative to the child populations (region II). The largest gap was in Azerbaijan, where the working-age population was growing by 1.8% per year while the child population was declining by 1.7% per year, leading to a gap of 3.5% per year. Hong Kong, China; Mongolia; and Sri Lanka had gaps that were nearly as large at 3.3% per year.

One reason that age structure is changing so rapidly in many DMCs is that their under-15 populations are in decline. The most rapid decline is in Kazakhstan where the under-15 population dropped by 2.5% per year between 1995 and 2000. In other countries, the rate of decline is small, but it could easily become more rapid in the coming years if fertility rates decline to low levels.

There are strong subregional tendencies apparent, particularly with respect to the rate of growth of child populations. In many of the DMCs of East and Central Asia, the number of children is in decline. The Mekong countries are experiencing relatively slow growth in their number of children. The fastest growth is found in South Asian and Pacific DMCs. The situation in Southeast Asia is relatively diverse.

In most DMCs, the senior population is a relatively small percentage of the total, but in many of them the

Figure 11. Working-Age and Senior Populations, Annual Growth Rates, 1995-2000 (%)



Source: United Nations, *World Population Prospects: The 2000 Revision.*

population aged 65 and over is growing rapidly, and more rapidly than the working-age population (Figure 11, region II). Growth rates of 3–4% per annum were not unusual between 1995 and 2000. The senior populations of Azerbaijan and Korea grew at nearly 5% per annum and Singapore's older population increased by 5.8% per annum between 1995 and 2000.

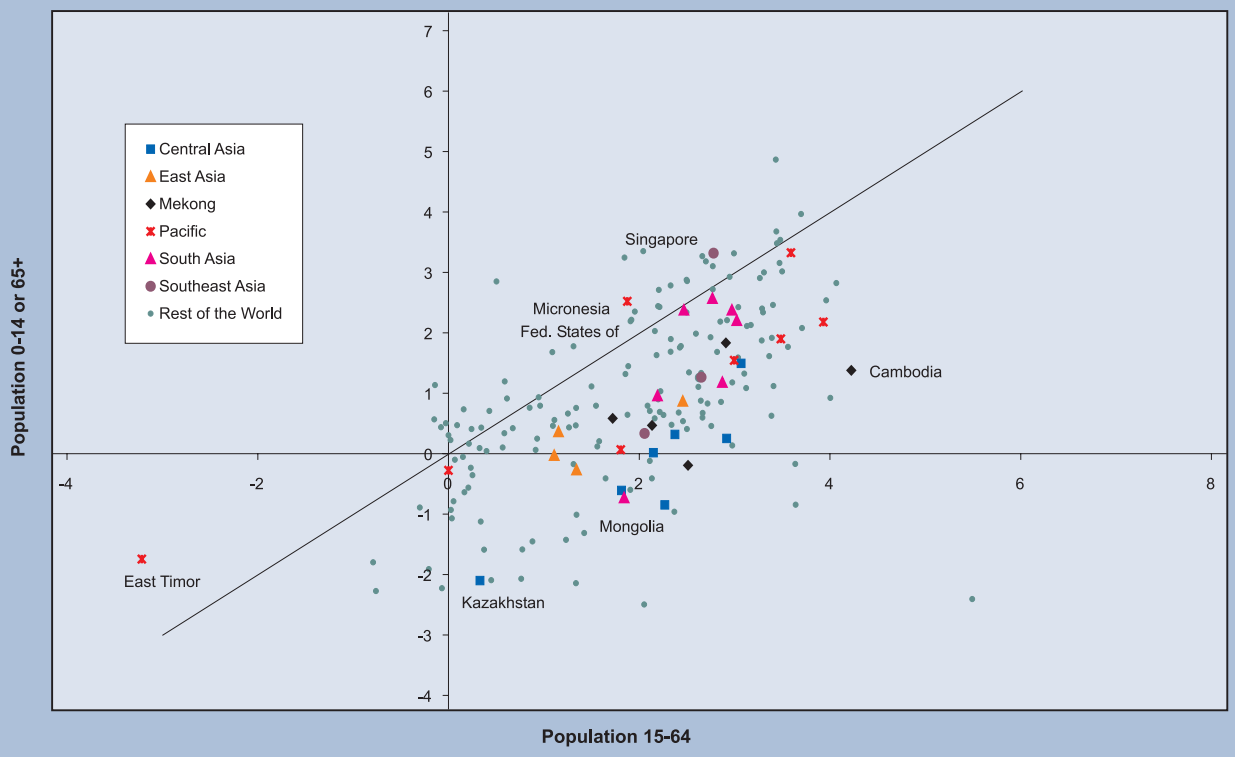
In other DMCs, however, the senior populations are not growing as rapidly as the working-age populations (Figure 11, region I). Kazakhstan's senior population declined at an annual rate of 0.5%. The populations aged 65 and over grew in the Lao PDR and Vanuatu but at substantially slower rates than the working-age populations.

The subregion is not a particularly strong "predictor" for the relative growth of the older population among DMCs. In the DMCs of Southeast Asia, the populations aged 65 and over are consistently growing more rapidly than the working-age populations. The DMCs of South Asia fall into a relatively tight grouping, with the populations aged 65 and over growing at around 3% per year, somewhat more rapidly than the working-age populations. The East and Central Asian, Mekong, and Pacific DMCs are very diverse.

Which dominates the trend in the dependent population—the rise in the senior population or the decline in the child population? Although the senior population is growing rapidly, it is relatively small and, hence, has a smaller impact on the overall trend in dependency. Consequently, in only two DMCs (Micronesia and Singapore) did the working-age population grow more slowly than the dependent population (Figure 12). East Timor's dependency ratio rose because its working-age population declined even more rapidly than its dependent population. On average among DMCs, the working-age population grew at 2.2% per annum compared with 1.7% per annum for the dependent population.[6]

[6] Values are the simple averages of country values with each country weighted equally.

Figure 12. Dependent and Working-Age Populations, Annual Growth Rates, 1995-2000 (%)



Source: United Nations, *World Population Prospects: The 2000 Revision.*

In many DMCs, the gap in the growth rates of the dependent and working-age populations were around 2% per year. The largest gaps are found in East, Central Asian and in Mekong DMCs. Significant gaps are also found in South Asian, Pacific, and Southeast Asian DMCs.

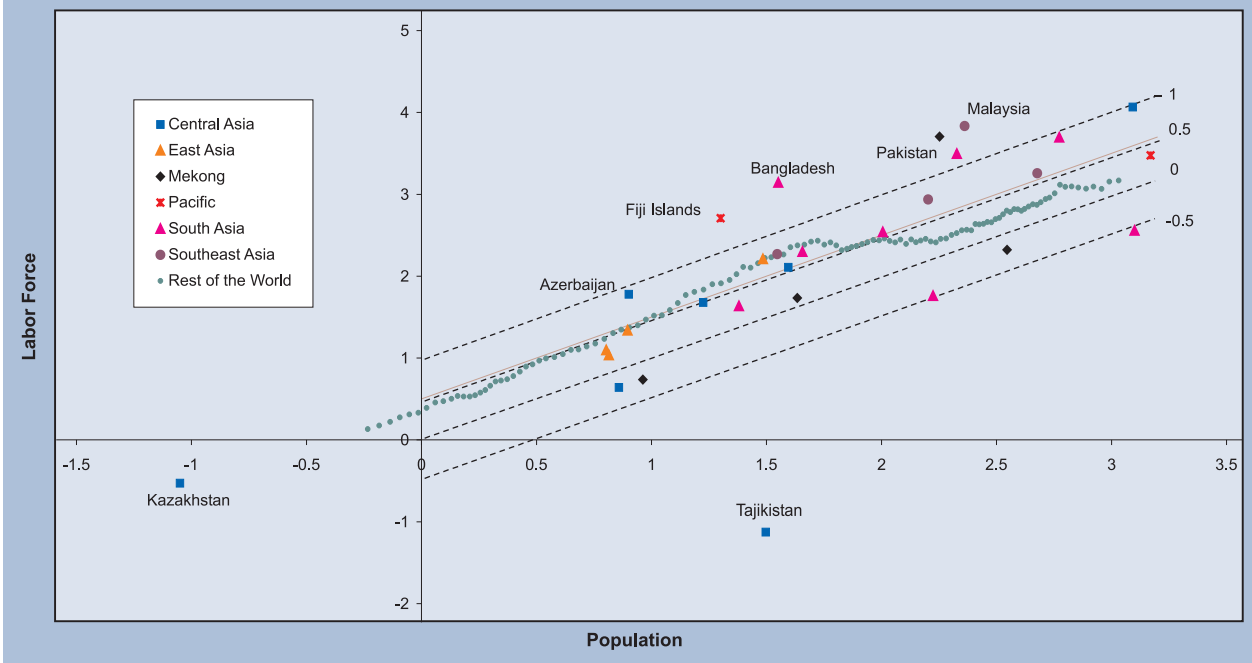
A Demographic Dividend?

Several recent studies have examined the implications of changing age structures for economic growth, raising the possibility of a "demographic dividend." The demographic dividend refers to a feature of age structure described above—the tendency for the working-age population to grow more rapidly than the overall population once fertility has begun to decline. Let us recall that Thailand's working age population has been growing more rapidly than its total population since 1965. The percentage of the population in the working ages is expected to rise to 70% in 2015 from a low of 52% in 1965. Although the working-age population will decline in relative terms thereafter, by 2050 it will remain well above the 1965 level at 62% of the population. It is this increased concentration of the population at the productive ages and other related demographic changes that have been termed the demographic dividend.

Changes in reproductive behavior among women also have important implications for the size of the potential workforce. The demographic transition has lasting effects on the economic role of women. In societies with high rates of infant and child mortality, much of the productive potential of women is engaged in bearing and rearing children who do not reach adulthood. As mortality conditions improve, however, and women reduce their levels of childbearing, their human resources can be increasingly devoted to labor force activities.[7]

[7] The causal connections are complex here. In part, increased labor force participation is a response to lower rates of childbearing. In part, increased economic opportunities for women induce them to increase their labor force participation and reduce their childbearing. Whatever the exact causal mechanisms, however, fertility decline and increased female labor force participation go hand in hand.

Figure 13. Annual Labor Force and Population Growth Rates, 1995 to the Present (%)



Note: Dashed lines show gap between population and labor force growth.
Sources: Table 8 and Country Tables of ADB, *Key Indicators 2002*, and World Bank, *World Development Indicators 2002*.

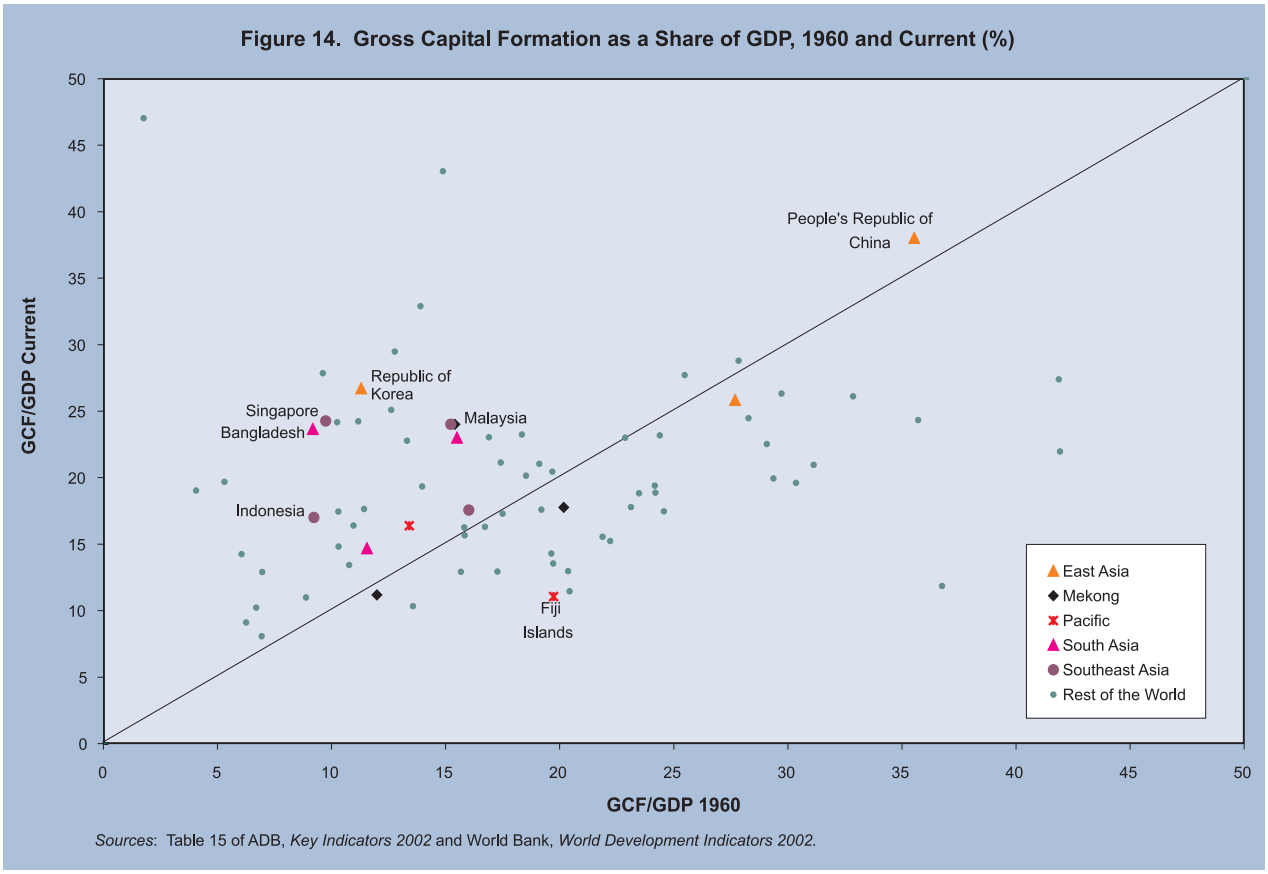
In both DMCs and the rest of the world, the labor force grew more rapidly than the population in the most recent year for which data are available. The "average" pattern for the rest of the world[8] shows a consistent gap between the labor force and population growth rates (Figure 13). The gap peaks for population growth rates that are in the 1-2% per year range, approximately, with labor force growth higher by about 0.5% per year.

The DMC values vary substantially, but are similar to the pattern found in the rest of the world. The largest gaps are found in countries that are in transition from high to low population growth rates but have not yet achieved near-zero population growth. Labor force growth in Bangladesh, Fiji Islands, Malaysia, and Pakistan exceeded population growth by more than 1% per annum since 1995. In DMCs with population growth rates near 1% per annum—Thailand and several East Asian DMCs—labor force and population growth rates are almost similar. This illustrates the transitory nature of the demographic dividend.

Of course, current labor force growth reflects short-term economic influences as well as the influences of demography. But over the longer term, the strong influence of demographic change can be clearly seen: Indonesia; Korea; Singapore; Taipei,China; and Thailand, for example, all experienced labor force growth that was substantially greater than population growth between 1960 and 1990 because of their favorable demographics (Mason 2001).

The demographic dividend is not just an employment phenomenon, but may spill over into other parts of the economy. The relative decline in the number of young dependents can encourage higher rates of saving and greater investment in human capital. More rapid growth in per capita income and employment as well as higher rates of saving can lead to higher rates of investment. The impact of the dividend is clearly evident in the increased rates of investment in some DMCs where demographic change has been particularly rapid. Bangladesh; Indonesia; Korea; Singapore; and Taipei,China all have much

[8] The rest of the world pattern is computed using non-parametric techniques. The data for non-DMCs are ordered by their population growth rates. The mean population growth rate and the mean labor force growth rate are calculated for successive 21-country groups. The resulting means are plotted.



higher current rates of investment (i.e., gross capital formation [GCF]) than they did in 1960. The PRC is the only country in the world with an investment rate in excess of 30% of GDP in 1960 and in the most recent year for which data are available (Figure 14). The rise in investment rates has led to rapid capital deepening and has been a key to the rapid growth in output per worker experienced in the most economically successful DMCs.

Changes in age structure do not automatically yield more rapid economic growth. Rather, demographic change is presenting a window of opportunity—one that some DMCs are more successful in seizing than others. The relatively rapid growth of DMC labor forces is a blessing or a burden depending on their ability to increase employment opportunities and maintain growth in labor productivity. The decline in youth dependency frees up additional resources that can be devoted to improved child health and education. But neither parents nor governments will necessarily choose to spend those additional resources in a way that enhances the growth of human capital. Although women may enter the labor force in increased numbers as their childbearing responsibilities decline, their contribution to economic growth may be minimized by discriminatory practices in education and employment. Although changing demographics may favor higher rates of saving and investment, the influence of high rates of inflation, political instability, and inadequate financial institutions may be far greater than that of demographic vairables.

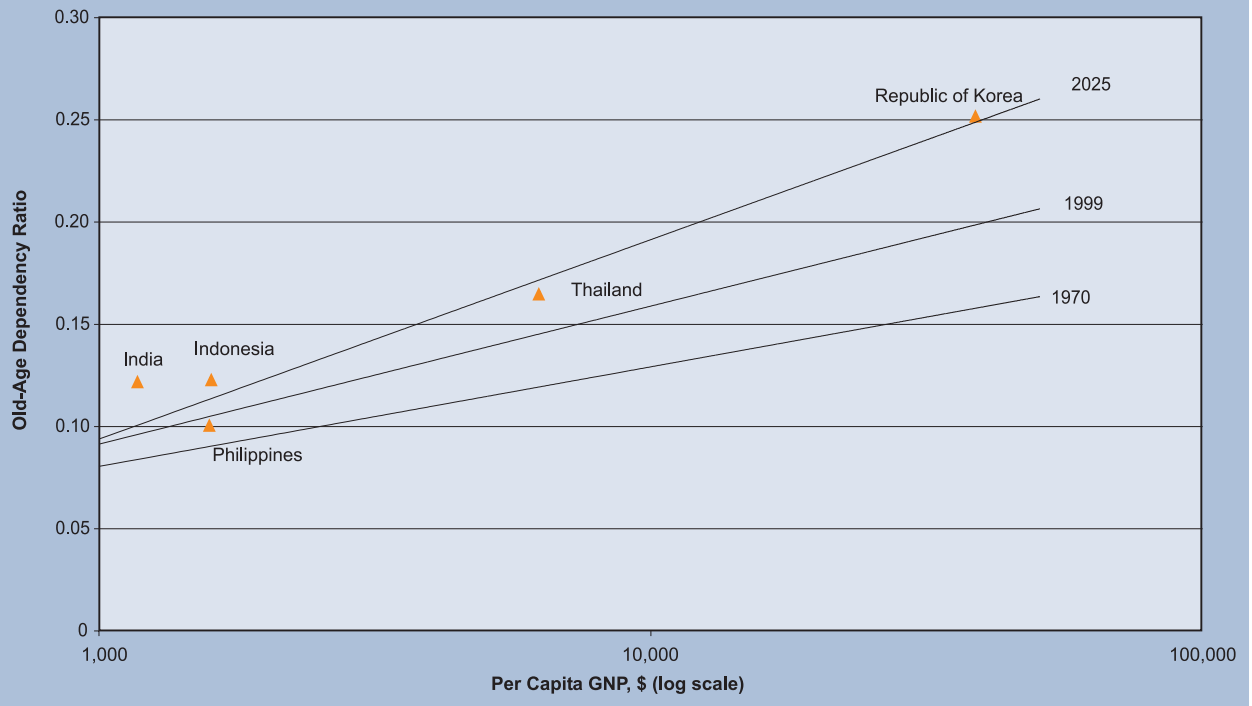
The experience in DMCs furthest along the road of demographic transition was relatively positive in this regard until other forces overwhelmed the effects of demographic change in recent years. During the 1970s, 1980s, and early 1990s, Korea; Singapore; Taipei,China; and Thailand were able to exploit the demographic dividend to achieve rapid growth in employment, health and education, and investment. Studies estimate that favorable demographic trends accounted for between one quarter and one third of the growth of per capita income during this period (Bloom and Williamson 1998, Mason 2001). The more recent DMC experience shows that favorable

Table VIII. Aging Measures, Medium Scenario, 2000, 2025, and 2050

Developing Member	Percentage of Total Population 65 and Above			Population 65 and Above as a Percentage of Population 20-64		
Country	2000	2025	2050	2000	2025	2050
Central Asia						
Azerbaijan	6.8	12.0	23.7	12.5	18.4	42.1
Kazakhstan	6.9	11.3	18.2	12.1	18.6	31.4
Kyrgyz Republic	6.0	8.5	15.8	12.2	14.1	27.3
Mongolia	3.8	6.4	16.3	7.6	10.3	28.2
Tajikistan	4.6	6.5	14.3	10.2	10.8	24.2
Turkmenistan	4.3	6.8	13.9	8.9	11.2	23.5
Uzbekistan	4.7	7.5	15.7	9.7	12.3	27.0
East Asia						
China, People's Rep. of	6.9	13.2	22.7	11.4	21.3	40.9
Hong Kong, China	10.6	20.0	29.2	16.0	32.4	55.9
Korea, Rep. of	7.1	16.9	27.4	11.1	27.4	54.2
Taipei,China	10.0	23.1	30.1	15.5	39.9	57.6
Mekong						
Cambodia	2.8	4.2	7.4	6.9	8.3	12.2
Lao PDR	3.5	4.5	8.8	8.1	8.6	14.5
Myanmar	4.6	8.1	15.8	8.8	13.2	27.3
Thailand	5.2	11.4	21.1	8.9	18.2	37.8
Viet Nam	5.3	8.1	17.1	10.5	13.3	30.1
Pacific						
Fiji Islands	3.4	8.5	17.4	6.5	14.3	29.7
Maldives	3.5	4.0	8.1	8.5	8.1	13.6
Papua New Guinea	2.4	3.9	8.3	5.3	7.3	13.7
Samoa	4.6	4.7	9.7	10.9	9.4	16.2
Solomon Islands	2.6	3.5	7.4	6.3	7.3	12.6
Vanuatu	3.2	4.8	9.3	7.4	9.1	15.3
South Asia						
Afghanistan	2.8	3.2	4.9	6.6	6.9	9.0
Bangladesh	3.1	5.2	10.9	6.6	9.1	18.2
Bhutan	4.2	4.8	8.2	10.0	9.7	13.8
India	5.0	8.3	14.8	9.6	13.8	25.1
Nepal	3.7	4.6	8.3	8.3	8.8	13.7
Pakistan	3.7	4.8	8.3	8.4	9.5	13.6
Sri Lanka	6.3	12.3	21.3	10.9	20.4	38.5
Southeast Asia						
Indonesia	4.8	8.4	16.4	8.9	13.7	28.7
Malaysia	4.1	9.0	15.4	8.0	15.2	26.6
Philippines	3.5	6.8	13.9	7.3	11.5	23.6
Singapore	7.2	21.5	28.6	11.2	35.8	54.7
World	6.9	10.4	15.6	12.8	18.1	27.7
Africa	3.3	4.1	6.9	7.5	8.5	12.3
Asia	5.9	10.0	16.7	10.8	16.8	29.1
Europe	14.7	21.5	29.2	24.2	35.8	56.0
Central America	4.5	8.4	16.6	9.0	14.3	29.2
South America	5.6	10.0	17.0	10.4	16.8	30.1
Northern America	12.3	18.7	21.4	20.8	32.7	39.4
Oceania	9.9	14.4	18.0	17.4	25.5	32.2

Sources: United Nations, *World Population Prospects: The 2000 Revision* and Taipei,China, Council for Economic Planning and Development, Official Communication, 2002.

Figure 15. Development and Aging, 1970, 1999, and 2025



Notes: The lines for 1970 and 1999 are based on World Bank data for 104 countries. The line for 2025 is based on data for 15 Asian Countries. All income values are US dollars deflated to 1995 prices. Points for individual countries are projections to 2025.
Source: East-West Center, 2002, *The Future of Population in Asia*.

demographic trends cannot by themselves guarantee more rapid economic growth.

Although demographic conditions will be highly favorable to economic growth in most DMCs for the coming few decades, this unique window of opportunity will not remain open indefinitely. The reason? Population aging.

Population Aging: A Looming Crisis?

Population aging is Asia's—and the world's—new demographic phenomenon. Currently about 6% of Asia's population is aged 65 and over, compared with 7% of the world's population. Japan, United States, and countries in Europe have the largest older populations in percentage terms with 17%, 12%, and 15% of their populations 65 and older, respectively. In only nine DMCs (Azerbaijan; PRC; Hong Kong, China; Kazakhstan; Korea; Kyrgyz Republic; Singapore; Sri Lanka; and Taipei,China) does the 65 and older population constitute 6% or more of the total. In other DMCs, the percentage of those aged 65 and over ranges from 2.4% of the total in Papua New Guinea to 5.3% in Viet Nam (Table VIII).

Despite their relatively small numbers, the elderly and the programs to meet their special needs are the subject of increased attention. Why is this so? In part, aging is such an important issue because seniors are the fastest growing demographic group in Asia. In fact, DMCs are rapidly catching up with the countries in the West when it comes to population aging. In Singapore, for example, the percentage of those aged 65 and over will triple between 2000 and 2025. By 2050, the percentage of the population aged 65 and over will be as great in Thailand as in the United States. Azerbaijan; PRC; Hong Kong, China; Korea; Singapore; Sri Lanka; and Taipei,China are projected to have even greater senior populations in percentage terms.

A second reason why aging is an issue of immediate importance is that the development of institutions and programs that will meet the needs of the elderly in a sustainable way requires time. Pension programs are a case in point. Many countries have

established public programs that depend on transfers to seniors from those in the working ages. On the surface, these programs can provide generous benefits at a relatively low cost when there are few seniors relative to the number of workers. But as populations age, the programs become unsustainable. The obligations to future retirees lead to large implicit debts that undermine reform efforts. The only answer is to design sustainable programs at the outset or to undertake reform before population aging begins.

Whether or not DMCs are up to this task is an open question because, in general, they are developing more slowly than they are aging. The simple statistical relationship between old-age dependency and income is shown in Figure 15. In both 1970 and 1999, higher-income countries typically had older populations, but the relationship shifted substantially during the 29-year period. The typical country with an old-age dependency ratio of 0.15 in 1970 had a per capita gross national product (GNP) of $26,000, while the typical country with an old-age dependency ratio of 0.15 in 1999 had a per capita GNP of only $7,400.

The relationship between income and aging is likely to shift further over the coming years. The line for 2025 shown in Figure 15 is based on data for 15 Asian countries for which adequate information is available. For these countries, per capita income was projected to 2025 assuming the continuation of per capita income growth rates achieved during the 1990s. Old-age dependency ratios are based on the medium scenario of the most recent UN projections (UN 2001). Under these conditions, a typical country with an old-age dependency ratio of 0.15 in 2025 will have a per capita GNP of only $3,800—a drop of 85% compared with 1970 (Figure 15).

Is this scenario unduly pessimistic? DMCs may be able to achieve more rapid rates of economic growth during the coming decades, especially those that are in a position to cash in their demographic dividend. However, for the countries most advanced in the aging process, demographic conditions are turning less favorable and rates of economic growth may slow. Moreover, the medium scenario demographic projections used here are widely believed to underestimate the speed of aging in developing countries. The next set of projections, to be released by the UN in 2003, is expected to incorporate lower fertility rates and more rapid increases in old-age dependency rates.

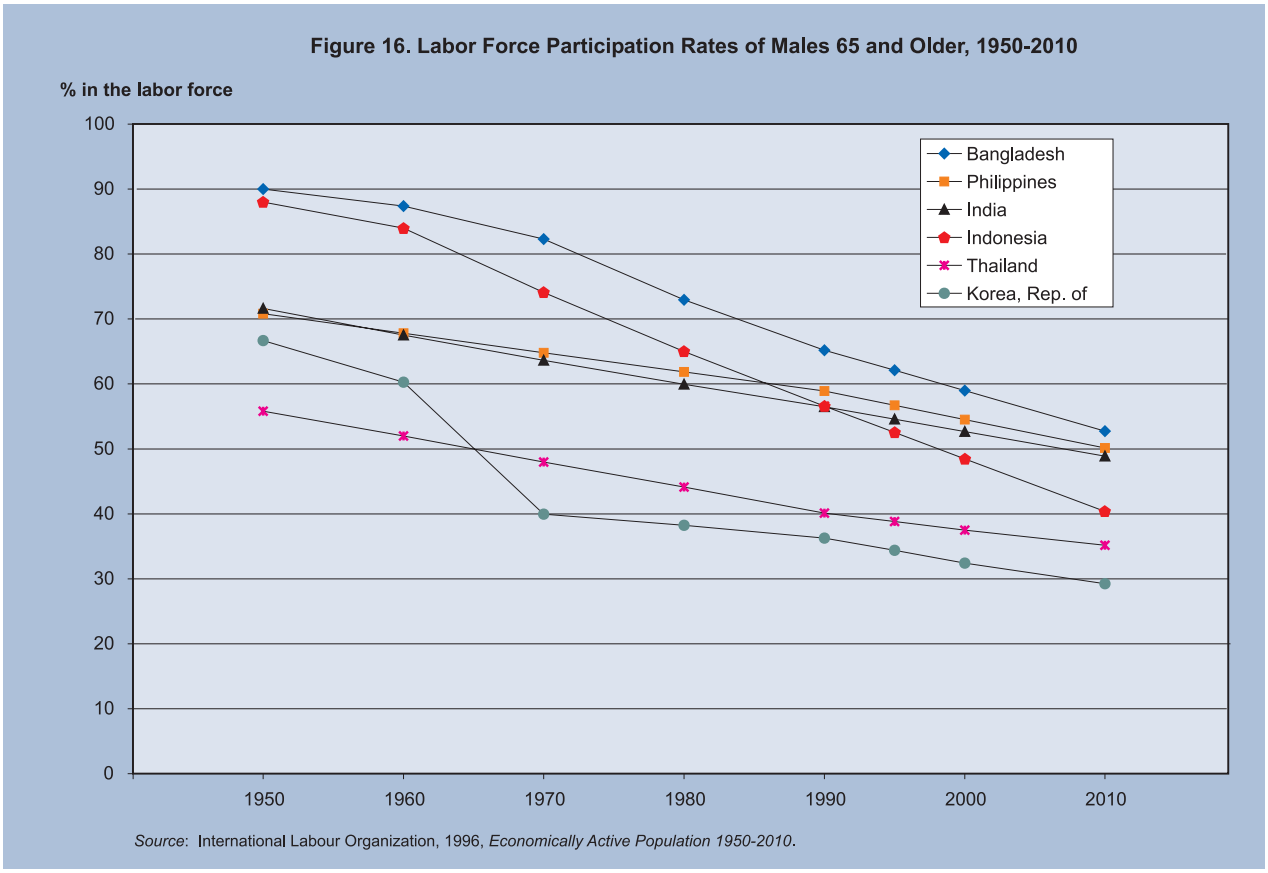
The problem is not just one of affording a large, dependent, elderly population. Perhaps even more important is that DMCs may not have the necessary political and economic institutions in place that are essential in aging societies, including efficient and secure pension systems, well-run financial institutions, regulatory and accounting practices that meet international standards, and health care systems that can provide quality care to the elderly. No challenge is greater than assuring the economic and social security of the region's future elderly.

In Asia, maintaining this economic and social security for the elderly has been primarily the responsibility of individuals and their families. To a greater extent than in the West, the elderly continue to work, to rely on assets accumulated during their working years, and to depend on their children and their extended families. Public pensions and government welfare programs are relatively modest.

By and large, the private approach has, to date, been very successful. That it can serve DMCs and their older citizens as well in the future is doubtful. Important changes are undermining Asia's traditional approach to old-age support. First, Asia's successful reliance on the family is likely to erode. Countries will be increasingly caught in a "demographic squeeze." The elderly will find themselves providing care and support to their still-surviving parents, yet they will have fewer children upon whom they can rely. In addition to the demographic pressure, young people are increasingly leaving home to seek opportunities elsewhere. Many women are entering the workforce, reducing the time available to provide support to their parents. New ideas about marriage, family, and individualism are emerging in Asia, as in many other parts of the world.

In Asia's most advanced economies, the multigenerational extended family is clearly on the decline. In Korea, only 8% of women surveyed in 1997 said that they wanted to live with their children in old age, while 70% did not want to. In Taipei,China, the proportion of 60-year-olds living with their adult children has declined substantially and the elderly are much slower than they used to be in moving in with their children as they age (Mason and Lee 2002).

Several governments have adopted pro-family



policies in an effort to fight the decline in the family support system. In Singapore, for example, children are legally required to support their needy parents. If these efforts prove successful, the elderly will no doubt benefit from the personal care and attention that families can provide much more effectively than institutions. The family, however, is poorly equipped either to help parents who are severely disabled or with many of the financial risks associated with aging.

As populations age, the labor force decisions made by older workers will become increasingly important to workers and their families, to employers, and to governments. For some older workers, continued employment will be crucial to maintaining an adequate standard of living. Many will be supporting not only themselves, but their aging parents. Employers' need for older workers will grow as labor shortages emerge. Governments will depend on a tax base that will be eroding all the faster if retirement ages begin to decline.

Throughout Asia, as in much of the world, however, older workers are withdrawing from the labor force at a younger age as illustrated by the experience of six DMCs charted in Figure 16. In 1950, participation rates for men aged 65 and over ranged from a low of 55% in Thailand to a high of 90% in Bangladesh. By 2000, projected values ranged from a low of 32% in the Republic of Korea to a high of 59% in Bangladesh.[9] For these six countries, participation rates among older men dropped by an average of 25 percentage points. The picture is more complex for women. Older women in most Asian countries are not members of the labor force, but younger cohorts of women have a great deal more labor market experience and in the future their labor force behavior will likely be much more similar to the behavior of men than it is today.

The trend toward earlier retirement is a persistent feature of economic development. Many workers are retiring at an earlier age because they can afford to do so. But increasingly, workers are employed in the formal sector, working for governments and firms that impose mandatory retirement or maintain inflexible

[9] The ILO *Yearbook of Labour Statistics 2000* (ILO 2000) reports labor force participation rates for 1999 that differ to some extent from the projected values presented in Figure 16.

Box 4. Issues on Aging in Some Developed Asian Economies

In four Asian countries – Singapore; Hong Kong, China; Taipei,China; and Japan – the population 65 and older is projected to reach 20 percent each by 2025 and to near or exceed 30 percent by 2050. For these countries, developing programs for an aging society is especially important. The difficulty of devising sustainable programs is compounded, however, by the uncertainties about the demographics and economics of aging. Thus, countries require strategies that are responsive to the inevitability of aging but sufficiently flexible to respond to future developments.

There is one aspect of aging about which there is little uncertainty. Barring some completely unforeseeable disaster, elderly populations will grow rapidly during the coming decades. All of those who will be 65 or older in 2050 are alive today, nearly all will survive to reach old age, and life expectancy has increased with great regularity in all of these countries. Immigrant streams are primarily composed of young adults and their children, so changes in immigration rates would have a delayed and relatively modest impact on the number of elderly. Thus, the numbers of elderly in the future can be predicted to fall within a reasonably small range.

The health of the growing numbers of seniors is less certain. Modern medicine has improved our ability to treat many of the ailments of old age, but it has also led to the survival of the severely ill and disabled. In the US, the health of the elderly apparently deteriorated during the 1980s but improved during the 1990s. In Japan, rates of disability among the elderly have apparently increased somewhat in recent years. New efforts to measure health status in other Asian countries do not yet provide us with reliable estimates of the trends in their health.

Changes in the health status of the elderly will bear on the overall impact of aging in two important ways. First, the demands on health care systems and the costs of providing health care will depend not just on the number of elderly but on their relative health. Second, the decision to retire is often influenced by health. If the elderly of the future are in better health, the trend towards an earlier age at retirement may be reversed. This would reduce the number of retirees and the costs of supporting them and increase the tax base out of which programs for seniors are financed.

How rapidly the number of workers (taxpayers) and the size of the total tax base will grow during the next 50 years is a great deal more uncertain. Growth in the working-age population will depend on trends in immigration and, with a lag of 20 years, trends in birth rates.

Fertility rates have dropped to very low levels in the rapidly aging economies of Asia. In Japan, the total fertility rate was only 1.36 births per woman in 2000. In Singapore and Taipei,China the TFR was 1.4 in 2001, and 1.7 in 2000, respectively. No country has ever reported a TFR as low as Hong Kong's 2001 TFR of 0.93 births per woman (Ho 2002). Underlying the decline in childbearing in these countries is another disturbing trend – a decline in marriage. In each country the mean age at marriage has increased substantially in recent decades and it seems likely that many young men and women may never marry or marry at so late an age that their ability to bear children will be impaired. In Japan, 69% of men and 54% of women aged 25-29 are still single (Obayashi 2002). Of Singapore's citizens, 66.4% of men and 45.5% of women aged 25-29 are still single, although permanent residents are somewhat more likely to be married (Leow, Bee Geok 2001).

employment practices that do not accommodate the needs of the elderly.

Most Asian governments not only impose a statutory retirement age, but they impose a retirement age that remains below 65 despite substantial gains in life expectancy and improvements in health among older workers (Table IX). In Indonesia, for example, a statutory retirement age of 55 is imposed. In some countries, the mandatory age for retirement is younger for women than for men even though women, as a rule, live longer than men.

There is little reason for governments to encourage early retirement and increasingly good reasons for them not to do so. There is scant evidence that dismissing older workers creates jobs for younger workers, while forcing older workers out of the labor force depresses employment and income growth, and undermines attempts by the elderly to prepare for their post-retirement lives.

In many DMCs, savings rates have increased substantially in recent decades. Savings rates may rise in other Asian countries as child dependency declines, as the proportion of the labor force in the peak earning years increases, as the family support system erodes, and as workers respond to the financial implications of a longer life expectancy and an extended duration of retirement. Particularly among those in higher-income groups, the accumulation of personal wealth is key to maintaining standards of living during retirement. Many lower-income individuals may find

The aging measures presented in Table VIII are based on optimistic assumptions about future trends in fertility. The UN assumes that the total fertility rate in low fertility countries will rise to at least 1.7 births per woman. But official population projections for Hong Kong assume that the TFR will rise to only 1.1 births per woman (Ho 2002) and for Japan to only 1.39 births per woman by 2035 (Obayashi 2002). The large differences in fertility assumptions reflect the difficulty of forecasting fertility rates. There is no strong scientific basis for concluding that fertility rates will remain where they are, decline further, or rise to higher levels.

The declines in marriage and childbearing have not gone unnoticed in official circles. Since 1987, Singapore has actively encouraged marriage and childbearing through a variety of programs. Couples are offered tax incentives and child-care subsidies including tax relief for working mothers on the levy assessed for foreign maids. Women with 2 or fewer children who request sterilization or an abortion must undergo counseling and are encouraged to have more children (Yap 2001). Effective April 1, 2001, cash grants are given for second and third births, with the proviso that the funds are used for child development. Moreover, paid maternity leave for third births is being provided at government expense. There is little evidence, however, that pro-natalist policies have any lasting impact on birth rates.

As birth rates and the size of the cohorts entering the labor force each year have declined, Singapore, Taipei,China, Hong Kong,China, and Japan have all become net labor importers, but the dependence on international sources for labor has varied considerably from country to country. The foreign population is 10% of the total labor force in Hong Kong, but only 4% in Taipei,China and 1% in Japan. In Singapore, by contrast, the foreign population is 29% of the domestic labor force. Singapore has long viewed foreign workers as a source of revenue and a means for achieving economic growth and macroeconomic stability. Professionals are allowed to become permanent residents, hold government positions, and live in public housing. Unskilled workers are allowed to live and work for a period of no more than 4 years and the numbers allowed vary depending on employment conditions (Martin 2001). Given its experience, Singapore is probably in the best position of all the countries in Asia to rely on foreign workers as the availability of domestic workers diminishes.

The ability of Asian economies to deal with the aging of their populations will ultimately depend on productivity growth as much as growth in the number of workers. In this context, the potential impact of aging on aggregate saving looms large. The research on this issue is mixed. Toh's 2001 analysis of Singapore, for example, concludes that aging will lead to much lower saving rates. Deaton and Paxson (2000), however, conclude that aging will have a more modest impact on saving in Taipei,China.

The enormous uncertainty about the extent of the aging problem in Asia argues for flexibility in policies. Singapore's reliance on the Central Provident Fund is one such approach. Because its pension program is fully funded, sufficient resources will be available to meet all obligations. An alternative and innovative idea is currently being discussed in Japan – tying pension payments to individuals to the number of children that they bear. This would both eliminate an externality to childbearing associated with their pay-as-you-go pension program, and improve the fiscal health of the program by linking future obligations to the size of the future workforce. Perhaps, there is little prospect that the proposal will be adopted at this time, but it illustrates the importance of innovative approaches to the aging problem and the uncertainties about aging and its effects on economic growth.

it difficult to achieve financial independence in their old age and the public sector is likely to play a more important role in providing income security to older adults. Of course, the role of the public sector is not limited to redistributing income. The elderly face important risks—in terms of investment, health care, and longevity—from which they cannot adequately protect themselves through private insurance markets.

DMC governments are playing an increasingly important role in the provision of pensions and social insurance for the elderly. In many countries, occupational pension programs provide benefits to public sector and military retirees. Moreover, many DMCs are developing public pension programs with the ultimate goal of providing broad coverage to most of their citizens. Initially these programs are often limited to the formal sector and to employees of firms with some minimum number of employees. In India, for example, only employees of establishments with 20 or more employees in 177 categories of industries are included. Some countries define coverage very broadly, but enrollment may fall well short of the legislative goal. Over time, however, as the employment share of agriculture and the informal sector shrink and as administrative capacities strengthen, public pension program coverage is gradually extended to a larger share of the labor force (Table X). A few countries, such as Malaysia and Singapore, have achieved universal or nearly universal coverage, but this is the exception rather than the norm among DMCs.

Public programs in Asia typically come in two varieties. A number of DMCs rely on central provident funds (CPFs) that are essentially mandatory savings schemes. The programs are financed through payroll taxes levied on employees and employers. The investment funds are managed by the public sector. The sizes of the programs vary enormously. Singapore's program is probably the most extensive in Asia. In 1995, 80% of those who were employed contributed to the CPF. The contribution rates have varied substantially over the life of the program, but in 1995 the contribution rate was 20% for employees and 20% for employers. In 1995, CPF saving amounted to 30% of total private saving in Singapore (Toh 2001).

CPF schemes are also important in Fiji Islands, India, Indonesia, Kiribati, Malaysia, Nepal, Samoa, Solomon Islands, and Sri Lanka. The combined payroll tax in around 1991 varied from a low of 3% in Indonesia to a high (Singapore aside) of 20% in India, Malaysia, Nepal, and Sri Lanka (World Bank 1994, Table 6.2, p. 206). CPF assets also vary widely among DMCs. Assets as a proportion of GDP ranged from 75.6% in Singapore and 40.8% in Malaysia in 1991, to a low of 4.5% in India and 1.4% in Indonesia[10] in 1990 (World Bank 1994, Table 6.3, p. 210).

Another group of DMCs (Afghanistan; Azerbaijan; PRC; Kazakhstan; Korea; Pakistan; Philippines; and Taipei,China) rely in whole or in part on social insurance schemes, i.e., transfer programs that provide benefits to those who are currently elderly, mainly by taxing the earnings of those who are currently working (US SSA 1999). These programs are politically attractive in the short run because generous benefits can be offered at a relatively low per worker cost when there are relatively few retirees. However, as population aging sets in, these programs can be sustained only if the government cuts benefits to retirees or raises taxes on workers. After a point, either option is politically difficult. Of additional concern is that large-scale transfer programs have serious disincentive effects that undermine economic growth. Incentives to work are lessened through increased payroll taxes, and incentives to save are reduced through workers' knowledge that they will receive large transfers after they retire.

Table IX. Statutory Retirement Age

Country	Men	Women
China, People's Rep. of	60	55
Korea, Rep. of	60	60
India	55	55
Pakistan	60	55
Sri Lanka	55	50
Indonesia	55	55
Philippines	60	60
Singapore	55	55
Viet Nam	60	55
Japan	65	65
United Kingdom	65	60
Sweden	65	65
Mexico	65	65
Chile	65	60

Sources: US Social Security Administration, 1999, *Social Security Programs Throughout the World* and United Nations, 1999, *Population Ageing.*

Despite their drawbacks, transfer programs provide an effective means of reducing poverty among the elderly and protecting them against investment risk. Also, many social insurance programs have disability components that provide necessary insurance for those who become disabled during their working years. No doubt many DMCs will choose to expand the coverage of their social insurance programs, but seek to avoid benefits that are overly generous or that are not means tested.

Public programs for the elderly in any form entail their own risks, particularly in countries where political and economic institutions are not strong. Providing wide coverage may entail enormous administrative hurdles. If countries face political instability, changes in political regime can lead to default on the promises made by predecessors. Governments may be tempted to use pension funds to support political agendas or goals other than ensuring the economic security of future elderly people. Thus, developing and operating effective and reliable programs for the elderly represents an enormous challenge for DMCs.

[10] The figure for Indonesia refers to both CPF and public employee funds.

Table X. Coverage of Schemes Providing Cash Benefits to the Old aged, Disabled and/or Survivors

Country (coverage rate in 1992)	Coverage of Schemes (1999)	Special Schemes
Bangladesh (0.0%)	None.	
China, People's Rep. of (21.1%)	Employees in state-run enterprises. Private, collective, and foreign-invested companies depend on local government regulations.	Government, and party, cultural, scientific, and educational institution employees.
Hong Kong, China (n.a.)	Dual universal and social assistance system. Old-age allowance: resident status and at least 5 years of continuous residence; means tested for those 65-69; no means tested for those 70 and older. Comprehensive social security: age 60 and older or disabled; holding resident status and 1 year of continuous residence; means tested.	
India (0.9%)	Establishments with 10 or more employees or a payroll of 1 million rupees or more a month.	Public employees, railway industry workers, and coalminers.
Indonesia (6.9%)	Employees of establishments with 20 or more employees in 177 categories of industries. Employees earning over 5,000 rupees a month excluded.	Public employees, military personnel.
Japan	National pension program: All residents aged 20-59. Voluntary coverage for residents aged 60-64 and citizens residing abroad aged 20-64 (employees' pension insurance: employees of firm in industry and commerce)	Public employees, private school teacher, agriculture, fishery and forest sector.
Korea, Rep. of (25.9%)	Employers and employees in a workplace with 5 or more employees. The self-employed, farmers, and fisherfolk aged 18-59. Voluntary coverage for the others.	Public employees, private school teachers, military personnel.
Malaysia (95.6%)	Mandatory coverage for private sector employees, non-pensionable public sector employees, and foreign workers. Voluntary coverage for domestic workers, self-employed, and pensionable public sector employees.	Public employees.
Philippines (52.6%)	All private employees aged 60 or less. House helpers and self-employed earning at least 1,000 pesos a month.	Government employees, military personnel.
Singapore (100%)	Employed persons earning more than $50 a month. Also some self-employed workers.	Public workers.
Taipei,China (n.a.)	Employees of firms in industry and commerce, mines, and plantations with 5 or more workers; wage-earning public employees; public utility employees; fisherfolk; and some self-employed in service. Voluntary coverage for employees with firms with fewer than 5 workers and self-employed.	Farmers, salaried public employees, staff of private schools.
Thailand (n.a.)	Employees of firms with 10 or more workers. Voluntary coverage for the self-employed.	Civil servants, private school teachers.

Sources: US Social Security Administration, 1999, *Social Security Programs Throughout the World* and International Labour Organization, 1995, *World Labour Report*.

Conclusions

The first challenge faced by many DMCs is unfinished business—the continuation of rapid population growth. Enormous strides have been made to improve the quality and availability of reproductive health services. However, relatively high fertility rates persist in many DMCs and even where fertility rates have declined to lower levels, substantial population growth will occur over the coming decades. The only question is how much population growth the region will experience, not whether it will occur. The effectiveness of reproductive health programs will determine when the DMC population passes the 4 billion mark and whether it will reach 5 billion.

Most population growth will occur in Asia's poorest countries, i.e., those that are least prepared to deal with many of the potential difficulties that increased rural density and urban congestion may bring. Feeding each additional 100 million people will require great strides in agricultural productivity, because bringing significant new land under cultivation is no longer an alternative. Providing each additional 100 million potential workers with jobs will require rapid growth in the number of jobs in the industry and services sectors and an expansion of the region's urban centers.

Continued population growth represents an especially great challenge on efforts to maintain the physical environment in which Asia's billions work and play. Further intrusion into native habitats is continuing with potentially devastating effects for the region's native forests, biodiversity, and genetic resources. The quality of the water supply, air quality, urban congestion, noise pollution, and solid waste disposal will present ever-greater difficulties, particularly in urban areas.

Improving reproductive health services has been a priority in Asia not only because it was key to slowing the rates of population growth, but also because improving reproductive health is a desirable outcome in its own right. The Millennium Development Goals identify both reduced rates of infant and child mortality and maternal mortality as priorities. More generally, better health for all is increasingly seen as an important development objective because of its intrinsic value and because of its contribution to economic development. Populations that are healthier are more productive and achieve higher rates of economic growth over sustained periods.

Emerging health problems threaten to undo much of the progress achieved in Asia during the second half of the 20th century. The HIV/AIDS epidemic has reached serious levels in Mekong countries. In some other DMCs, the epidemic has gained a significant foothold, and acceleration in prevalence levels remains a very real possibility. DMCs that fail to meet this challenge will suffer devastating losses, but early action holds great promise. Experience in the Asia-Pacific region clearly shows that prevention programs aimed at reducing high-risk behavior can prove to be very effective in combating the spread of the disease.

In the past, many DMCs experienced rapid growth in the number of children. Under these conditions, building new schools and training and hiring new teachers were among the most difficult and important tasks faced by the public sector. Some DMCs continue to experience growth in their school-age population, but for most, the next few decades offer an opportunity to improve the quality of their educational systems, to provide additional years of schooling, and above all to ensure that girls have the same opportunities as boys.

In the future, most population growth in the region will be among adults, namely those in the working ages and seniors. At the moment, most population growth is concentrated among the working-age populations. This represents both a great challenge and a great opportunity. The challenge is to foster vibrant and innovative economies that can successfully employ the millions of adults who will be seeking new jobs each year for decades to come. Asia's most successful countries have already met this challenge and, as a result, have achieved accelerated rates of economic growth. In the coming years, it will be the large countries of the region facing this challenge—Bangladesh, PRC, India, Indonesia, and Pakistan. The ability of these and other DMC economies to create productive opportunities for their growing labor forces will largely determine whether future millions live in poverty or not.

The number of seniors is already growing rapidly in Asia. In many DMCs, they are the most rapidly growing demographic group. As time passes, their share of the total population will rise to unprecedented

levels. Aging is now an issue at the top of the agenda in high-income countries as governments there worry about how to finance the high costs of retirement and health care for the elderly; for many DMCs, the aging issue may prove to be even more complex. Aging is occurring much more rapidly in DMCs than in the United States and Western Europe. Many Asian countries will find themselves with large elderly populations at relatively low levels of income. Many countries have not yet achieved the political and economic institutions that are critical to providing for the elderly. Although the family support system is much stronger in Asia than in the West, population aging will place enormous pressure on the traditional means of intergenerational support. Already the extent to which the elderly live with and rely on their children is beginning to decline—and rapidly so in Asia's most advanced DMCs. Creating new structures and institutions to complement or replace traditional approaches is of immediate and vital interest.

The populations of Asia are very diverse and meeting the needs of DMCs requires a very diverse and tailored set of programs and policies. Some DMCs are well positioned to meet the population and human resource challenges that are emerging. But others face enormous obstacles if they are to achieve the development objectives so clearly enunciated in the Millennium Development Goals.

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The U.S. Congress established the East-West Center in 1960 to foster mutual understanding and cooperation among the governments and peoples of the Asia Pacific region, including the United States. Funding for the Center comes from the U.S. government with additional support provided by private agencies, individuals, corporations, and Asian and Pacific governments.