Asian Population Studies Series No. 161

Population and Development
Selected Issues

Population and Poverty
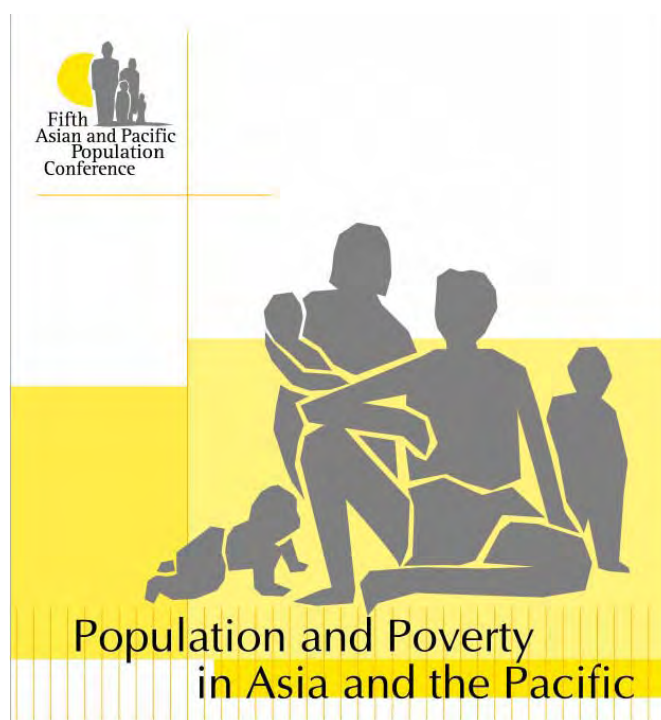in Asia and the Pacific

United Nations

Economic and Social Commission for Asia and the Pacific

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PREFACE

The Economic and Social Commission for Asia and the Pacific and the United Nations Population Fund organized the Fifth Asian and Pacific Population Conference at Bangkok from 11 to 17 December 2002. The main theme of the Conference was "Population and poverty in Asia and the Pacific". The Conference discussed the interlinkages between population, development and poverty and emerging issues challenging the ESCAP region.

With a view to providing information on various issues relating to population, both persistent and emerging, to representatives attending the Conference, background papers were prepared by various experts in the field. This report contains background papers on selected issues of population and development. It is hoped that the papers in this volume will be useful to planners, policy makers and researchers.

SUMMARY

The Asian and Pacific region is characterized by extreme diversity in terms of population and development. Various demographic, economic, sociocultural and political situations have influenced population policies and programmes and poverty reduction initiatives. This study focuses on links between population and poverty, examines fertility levels and trends and discusses the issue of ageing and related policy responses.

Chapter I discusses the size and growth of population in countries of the region and examines links between population and different dimensions of poverty. While the main focus is on income/consumption poverty, implications for labour force and employment, education and health are also assessed with a concluding section that provides population-related policy recommendations.

This chapter notes that more than 3.8 billion people or approximately 61.8 per cent of the world population lived in the ESCAP region in 2002. Although fertility rates have been declining rapidly, gains in life expectancy and the increase in the number of women entering the reproductive age group have been keeping population growth rates relatively high. The linkage between population and poverty therefore is compounded in many countries of the region, where a fixed amount of land and other natural resources combined with high population growth rate remain a challenge for some Governments to provide minimal standards of living to large and rapidly growing populations. Even though birth rates have been declining, the population growth momentum is such that absolute additions to population numbers in many developing countries each year are greater than in the previous year. By 2025, around 1 billion people will be added to the population of the region. Such demographic dynamics lead to what has been called the "population-poverty trap". For example, in South Asia, where despite the reduction in the proportion of poor population from 44 per cent in 1990 to 40 per cent in 1998, rapid population expansion increased the absolute numbers of underprivileged from 495 million to 522 million over the same period.

In chapter II, Gubhaju and Moriki-Durand review levels, trends and patterns of fertility in the Asian and Pacific region. Their findings report that the region comprises countries or areas where fertility has plummeted to well below the replacement level. However, high fertility still prevails in some populations. Within intermediate-fertility countries, fertility is close to the replacement level in some countries, while some others show signs of fertility transition.

The authors stress that the future course of fertility in high- and intermediate-fertility countries will, however, depend largely on several factors, including a high level of political commitment to providing good-quality reproductive health information and services and making investments in social sector development. In high-fertility countries especially, greater emphasis needs to be placed on strengthening family planning programmes so that services are accessible and affordable to couples desiring to use contraception. The data reveal that there is a high level of unmet need for contraception, with at least one third of women in the reproductive age group reporting wanting to postpone or stop childbearing yet not using contraceptives for various reasons. At the same time, investments should be made to improve human development, which has been proven to reduce the demand for children and increase the demand for contraception. Improving women's autonomy and reducing gender inequality seem to bring about positive changes in attitudes, contributing to an increase in contraceptive use and a reduction in fertility.

While the success of family planning programmes, in most cases, depends upon changes in the demand for children, a prominent contributing factor in the changing demand for children is rapid social development, particularly the spread of primary education. A United Nations study concludes that the driving force for fertility decline is socio-economic development, in particular a decline in mortality and increased female education and labour force participation rates.

A pressing issue for low-fertility countries is the ageing of the population. As a consequence of the rapid fertility decline coupled with increased longevity, an increasing number of low-fertility countries will be faced with higher proportions of population in the older age groups (aged 65 and over). Thus, it is especially important for low-fertility countries as well as for those approaching that level to take serious measures to prepare well in advance for an ageing society.

In chapter III, Ogawa reports that improving the living conditions of older persons and providing income security, social welfare and medical services to them are some of the major challenges awaiting many countries in the region. The tempo of growth in the number of the elderly population in Asia is expected to persist for the next 25 years. Within the ESCAP region, South-East Asia is projected to record the largest gain in the percentage increase in the population aged 65 and over. In Fiji and the Islamic Republic of Iran the proportion of older persons is projected to increase by more than four times between 2000 and 2050. The proportion of the elderly is also expected to grow by more than three times during the corresponding period in countries such as Malaysia, the Philippines, Singapore, Thailand and Viet Nam.

The demographic profile of the elderly in Asia at present indicates that the majority of older persons are women, many of them widows. Most Asian elderly are living with their children and in rural areas and a small proportion of them are engaged in economic activities. However, that profile is rapidly changing. With many countries in Asia and the Pacific experiencing extensive urbanization, globalization and migration, the situation poses problems for older peoples' care. As a result, large groups of older persons remain poor and unable to provide for their basic necessities such as food and shelter. In response, recommendations include the need for Governments to provide for or facilitate the establishment of social safety nets for the poor and vulnerable, especially the elderly.

In summary, these chapters review linkages for adopting population-related policies to minimize the adverse impacts of demographic changes on economic and social development, including poverty reduction. Countries with high and intermediate fertility levels, countries with low fertility rates and countries with increasingly larger shares of older persons in the population are illustrated. Various country indicators such as population size and growth; levels and trends of fertility; levels and rates of economic development; and levels and rates of employment, education and health are highlighted. Further, discussions pertaining to the impact of internal and international migration; sociocultural, religious and ethnic dynamics of populations, approaches to development planning and programme implementation; and women's autonomy, to mention only a few, are reviewed to assess the linkages and variations in population trends and levels.

CONTENTS

CHAPTER I

POPULATION AND POVERTY
IN ASIA AND THE PACIFIC[*]

By Poverty and Development Division, ESCAP

A large population can be an asset when it is transformed into productive human capital and combined with sufficient physical and financial capital. Otherwise, it could negatively affect the adequacy of living standards, including social services, infrastructural facilities and other public goods. The ESCAP region is vast and includes countries and areas with diverse demographic situations. Two of the world's most populous countries, China and India, are in this region. Moreover, many countries are passing through different stages of demographic transition. A number of them have been able to reduce fertility and mortality rates to very low levels, while these rates still remain very high in many others. As a result, there is a significant variation in the growth rates as well as the age structure of populations. Population ageing is a universal process that will be faced by all countries sooner or later. As a consequence, many countries will start witnessing a reduction in the shares of their working age population, which will have serious economic as well as social consequences.

Demographic dynamics have many implications for various dimensions of poverty. These implications vary for countries at different stages of the demographic transition. The per capita gross domestic product (GDP) is still considered a good measure of income poverty of a country. Thus, in comparing two countries with the same level of total GDP, the country with the larger

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[*] This was presented as a background paper at the Fifth Asian and Pacific Population Conference in December 2002, It draws from chapters prepared previously by the secretariat contained in the *Economic and Social Survey of Asia and the Pacific 2001* and the *Economic and Social Survey of Asia and the Pacific 2002*.

population is relatively poorer because of its lower *per capita* GDP. Rapid population growth in countries with population pressure is one of the major causes of the high incidence of poverty. The demand for and the quality of social services such as education and health are clearly linked to demographic factors, including both the population growth rate and age structure of the population. On the other hand, very low fertility rates have implications for possible future labour shortages in some countries, while higher population growth puts pressure on the economy to generate employment for an expanding labour force.

The main objectives of this paper are to analyse the linkages between demographic dynamics and various dimensions of poverty and suggest population-related policy options to minimize the adverse impact of demographic dynamics on socio-economic development including poverty reduction. This paper has been organized in the following way. First, the size and growth of the population in countries of the region are briefly analysed. Second, linkages of population with different dimensions of poverty are examined. While the main focus is on income/consumption poverty, implications for labour force and employment, education and health are also assessed. Third, the concluding section provides population-related policy suggestions.

SIZE AND GROWTH OF THE POPULATION

In 2002, more than 3.8 billion people or more than three fifths (61.8 per cent) of the world population lived in the ESCAP region (table 1). By 2025, around 1 billion people will be added to the population of the region.[1] Population growth rates have been declining and are expected to continue doing so in the future. The population growth rate for the region as a whole will be halved to 0.7 per cent per annum between the periods 1990-2000 and 2020-2025. While fertility rates have been declining rapidly, gains in life expectancy and the increase in the number of women entering the reproductive age group have been keeping population growth rates relatively high.

In terms of geographic distribution, South and South-West Asia have the highest shares (40.4 per cent) of the regional population followed by East and North-East Asia (35.8 per cent), South-East Asia (14.0 per cent), North and Central Asia (5.7 per cent), the developed economies including Australia, Japan

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[1] This result is based on the United Nations medium variant projections.

Table 1. Estimates of total population, 2002-2025, and rate of growth of population, 1980-2025 in selected countries/areas in the ESCAP region

Country/area	Population (thousands)		Average annual growth rate (percentage)				
	2002	2025	1980-1990	1990-2000	2000-2010	2010-2020	2020-2025
Developing economies	**3 689 309**	**4 584 513**	**1.8**	**1.4**	**1.1**	**0.9**	**0.8**
South and South-West Asia	**1 550 916**	**2 110 410**	**2.2**	**1.9**	**1.6**	**1.3**	**1.1**
Afghanistan	23 443	45 193	-0.9	4.8	3.7	2.5	2.4
Bangladesh	143 495	210 823	2.6	2.2	2.0	1.6	1.3
Bhutan	2 202	3 843	2.6	2.1	2.6	2.5	2.2
India	1 051 644	1 351 801	2.1	1.8	1.4	1.0	0.9
Islamic Republic of Iran	69 047	99 343	4.1	1.9	1.4	1.5	1.2
Maldives	310	580	3.2	3.0	3.1	2.8	2.4
Nepal	24 179	38 706	2.2	2.4	2.3	2.1	1.8
Pakistan	149 163	250 981	3.1	2.6	2.5	2.3	2.0
Sri Lanka	18 989	22 529	1.5	1.1	0.9	0.6	0.4
Turkey	68 444	86 611	2.3	1.7	1.2	1.0	0.9
South-East Asia	**538 466**	**685 665**	**2.1**	**1.7**	**1.3**	**1.1**	**0.9**
Brunei Darussalam	354	473	2.9	2.5	1.7	1.4	1.2
Cambodia	13 204	22 310	3.8	3.1	2.4	2.1	1.7
Indonesia	217 660	272 911	2.0	1.5	1.1	1.0	0.8
Lao People's Democratic Republic	5 536	8 721	2.6	2.5	2.3	2.0	1.6
Malaysia	24 109	31 326	2.6	2.2	1.6	1.3	1.1
Myanmar	50 633	60 243	1.9	1.7	1.0	0.9	0.8
Philippines	78 744	107 073	2.4	2.2	1.7	1.2	1.1
Singapore	4 157	4 998	2.3	2.9	1.4	0.6	0.5
Thailand	63 430	72 122	1.8	1.4	1.0	0.8	0.6
Viet Nam	80 639	105 488	2.2	1.7	1.3	1.2	1.0
East and North-East Asia	**1 373 138**	**1 561 493**	**1.5**	**1.0**	**0.7**	**0.6**	**0.3**
China	1 292 656	1 470 787	1.5	1.0	0.7	0.6	0.3
Democratic People's Republic of Korea	22 620	25 872	1.5	1.1	0.6	0.6	0.6
Hong Kong, China	6 854	8 762	1.2	1.9	1.1	0.9	0.7
Macao, China	484	529	4.0	1.8	0.8	0.7	0.5
Mongolia	2 462	3 478	2.9	1.3	1.3	1.4	1.1
Republic of Korea	48 062	52 065	1.2	0.9	0.6	0.4	0.3
Pacific island economies	**7 910**	**12 406**	**2.3**	**2.3**	**2.1**	**1.9**	**1.7**
American Samoa	61	104	3.9	3.8	3.0	2.5	2.0
Cook Islands	20	23	0.0	1.1	0.5	0.5	0.9
Fiji	840	1 187	1.3	1.2	1.0	0.5	0.2
French Polynesia	241	318	2.6	1.8	1.5	1.1	1.0
Guam	162	242	2.3	1.5	2.1	1.7	1.4
Kiribati	92	161	1.7	1.4	1.3	1.2	1.1
Marshall Islands	54	74	3.6	1.5	1.3	1.1	1.2

Table 1. (Continued)

Country/area	Population (thousands)		Average annual growth rate (percentage)				
	2002	**2025**	**1980-1990**	**1990-2000**	**2000-2010**	**2010-2020**	**2020-2025**
Micronesia (Federated States of)	124	205	2.6	2.7	2.3	1.9	1.6
Nauru	12	21	2.5	2.9	2.3	1.8	2.1
New Caledonia	224	316	1.8	2.3	1.8	1.4	1.2
Niue	2	2	-4.0	0.0	0.0	0.0	0.0
Northern Mariana Islands	73	96	10.0	5.2	3.8	2.9	2.2
Palau	20	30	2.3	2.4	1.9	2.0	1.4
Papua New Guinea	5 028	8 023	2.5	2.5	2.2	2.0	1.8
Samoa	160	200	0.3	-0.1	0.6	1.2	1.0
Solomon Islands	479	943	3.4	3.4	3.3	3.0	2.6
Tonga	101	105	0.4	0.3	0.4	0.4	0.6
Tuvalu	10	14	2.5	1.1	1.8	0.8	1.5
Vanuatu	207	342	2.4	2.8	2.5	2.2	1.8
North and Central Asia	**218 879**	**214 539**	**1.0**	**0.2**	**-0.1**	**0.0**	**-0.1**
Armenia	3 791	3 736	1.4	0.7	0.1	0.0	-0.3
Azerbaijan	8 137	9 076	1.5	1.1	0.6	0.5	0.3
Georgia	5 207	4 377	0.7	-0.4	-0.6	-0.8	-0.9
Kazakstan	15 902	16 090	1.2	-0.3	-0.2	0.2	0.0
Kyrgyzstan	5 036	6 460	1.9	1.1	1.1	1.1	0.9
Russian Federation	143 963	125 687	0.7	-0.2	-0.6	-0.5	-0.6
Tajikistan	6 320	8 066	3.0	1.4	0.8	1.4	1.2
Turkmenistan	4 924	6 844	2.5	2.6	1.8	1.3	1.2
Uzbekistan	25 599	34 203	2.5	1.9	1.4	1.3	1.0
Developed economies	**150 840**	**148 896**	**0.7**	**0.4**	**0.2**	**0.0**	**-0.2**
Australia	19 621	23 523	1.5	1.3	0.9	0.8	0.7
Japan	127 329	120 913	0.6	0.3	0.1	-0.2	-0.3
New Zealand	3 890	4 460	0.8	1.2	0.7	0.4	0.4
ESCAP	**3 840 149**	**4 733 409**	**1.8**	**1.4**	**1.1**	**0.9**	**0.7**
World	**6 211 082**	**7 936 741**	**1.7**	**1.4**	**1.2**	**1.1**	**0.9**
As percentage of the world total	**61.8**	**59.6**	**-**	**-**	**-**	**-**	**-**

Sources: World Population Prospects: The 2000 Revision , Volume I: Comprehensive Tables, (United Nations publication, Sales No. E.01.XIII.8) and *2002 ESCAP Population Data Sheet.*

**Figure I. Population share of various ESCAP subregions,
2000 and 2025**
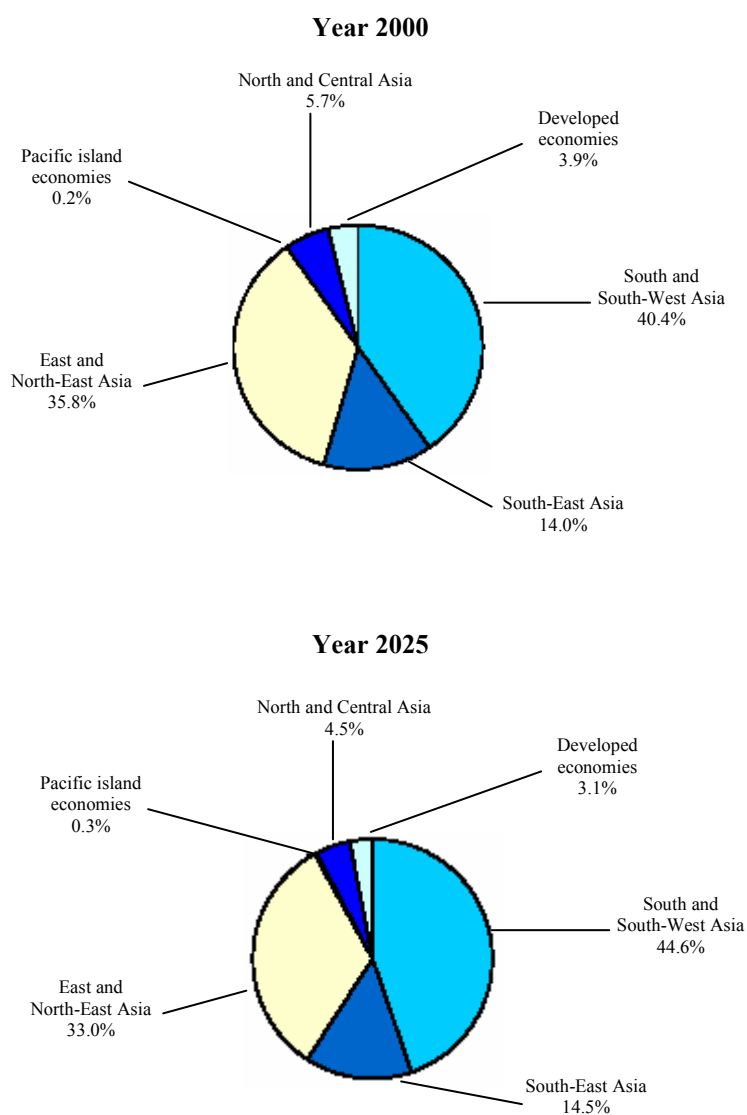
Year 2000

Year 2025

Sources: World Population Prospects: The 2000 Revision, Volume I: Comprehensive Tables, (United Nations publication, Sales No. E.01.XIII.8) and *2002 ESCAP Population Data Sheet.*

and New Zealand (3.9 per cent), and the Pacific island economies (0.2 per cent) (figure I).

By 2025, South and South-West Asia will increase their share by about 4 percentage points at the expense of all the subregions, except South-East Asia and the Pacific island economies. Total fertility rates continue to remain high in several countries in South and South-West Asia; this situation coupled with the rising proportion of women who are of childbearing age is expected to contribute to a rapid increase in the population of those subregions. Relatively high fertility rates in some countries such as Cambodia, the Lao People's Democratic Republic, Malaysia and the Philippines will keep the share of South-East Asia from falling. It should be noted that Singapore and Thailand in this subregion have already achieved below-replacement fertility rates. The Pacific island economies, with a very small share of 0.2 per cent of the regional population, will be able to raise it to 0.3 per cent. A fall in the shares of some other subregions reflects lower fertility rates in several of their countries/areas. For example, China; the Democratic People's Republic of Korea; Hong Kong, China; and the Republic of Korea in East and North-East Asia had below-replacement fertility rates in 2000; the same was true for Armenia, Azerbaijan, Georgia and the Russian Federation in North and Central Asia. The three developed economies (Australia, Japan and New Zealand) also had below-replacement fertility rates.

While population growth rates are on the decline, their levels exhibit large variations across countries/areas. As shown in table 1, out of 57 countries/areas, 22 had annual growth rates of more than 2 per cent during the period 1990-2000, whereas nine had growth rates below 1 per cent. By the period 2020-2025, only six countries/areas will have growth rates higher than 2 per cent. A much larger group of countries/areas (25) will have a growth rate below 1 per cent, including the two most populous countries: China and India. By contrast, Armenia, Georgia, Japan and the Russian Federation will have negative growth rates.

LINKAGES BETWEEN POPULATION DYNAMICS AND VARIOUS DIMENSIONS OF POVERTY

Income poverty

Absolute poverty is one of the major challenges facing many developing countries in the ESCAP region. The overarching millennium development goal of

the United Nations Millennium Declaration is the eradication of extreme poverty. The main target of the goal is to halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day. Based on that poverty line of $1 per day per capita (at 1993 purchasing power parity), around 800 million people were living in poverty in the Asian and Pacific region in 1998, accounting for around 67 per cent of the world's poor. In 1990, 74 per cent had been under the poverty line.

A considerable variation in progress towards achieving the millennium development goal by countries and subregions can be observed. The incidence of poverty in East Asia, South-East Asia and the Pacific was declining rapidly during the 1990s: from 28 per cent in 1990 to 15 per cent in 1998 (table 2). The goal of halving poverty between 1990 and 2015 has been nearly achieved in these subregions as a whole. The challenge is to sustain that success. The reduction in poverty in South Asia has been slow and below the target (from 44 per cent to 40 per cent over the same period) and achievement of the target remains doubtful. Eastern Europe and Central Asia had very low poverty rates in the pre-transition period.[2] After the transition, these rates increased rapidly, especially in many countries in Central Asia. Therefore, it would be very difficult for these countries to achieve the goal of halving the poverty levels of 1990. For Asia and the Pacific as a whole (including East Asia, South-East Asia and the Pacific plus South Asia), the incidence of poverty fell from 34.3 per cent of the population in 1990 to 25.6 per cent in 1998. Based on the current estimate of poverty, that is, 34.3 per cent of the total population of these subregions in 1990, the target of halving poverty by 2015 would mean that around 17 per cent of the population should be under the poverty line. The nearly 9 percentage point reduction in the rate of poverty between 1990 and 1998 appears satisfactory in view of the fact that around 9 percentage points of further reduction between 1998 and 2015 remains if the target is to be reached. Therefore, on the basis of past trends, the achievement of the target for the ESCAP region as a whole by 2015 appears possible, although some subregions and individual countries may not succeed in achieving the target.

At the country level, poverty data based on the $1 per day income poverty-line are available for a limited number of countries (table 3). Among these, China, Indonesia, Malaysia, Thailand and Viet Nam had more or less already achieved the target by 2000. Cambodia, the Lao People's Democratic Republic and the Philippines are making good progress towards achieving the target in 2015. The rate of reduction in poverty in India between 1990 and 1997, was very

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[2] Separate data for the Central Asian subregion are not available.

Table 2. Incidence of extreme poverty by subregion, 1990-1998

Subregion	Percentage of population living on less than $1 a day			
	1990	**1993**	**1996**	**1998**
East Asia, South-East Asia and the Pacific	27.6	25.2	14.9	15.3
South Asia	44.0	42.4	42.3	40.0
Eastern Europe and Central Asia	1.6	4.0	5.1	5.1
Asia and the Pacific	34.3	-	-	25.6

Source: UNESCAP based on *World Development Report 2000/2001 – Attacking Poverty,* World Bank, (New York, Oxford University Press, 2000), p. 23. Aggregate data for Asia and the Pacific, covering East Asia, South-East Asia and the Pacific plus South Asia, have been derived by secretariat staff.

Table 3. Percentage of population below the $1 poverty line in selected countries, 1990-2000

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Bangladesh	..	..	35.9	..	..	..	29.1	..	..	..	..
Cambodia	48.3	..	..	..	..	..	36.7	..	38.7	36.7	34.0
China	31.3	..	..	29.4	..	..	17.2	..	17.1	17.4	16.5
India	46.6	..	51.1	..	45.1	47.1	46.2	44.2	..	..	..
Indonesia	20.6	..	..	14.8	..	..	7.8	..	..	12.0	8.0
Kazakhstan	..	..	..	1.1	..	..	1.5	..	..	..	..
Lao People's Democratic Republic	53.0	..	48.8	..	..	..	41.3	38.4	37.4	33.6	31.5
Malaysia	0.5	..	0.0	..	..	0.0	0.0	0.0	0.0	0.0	0.0
Mongolia	..	..	..	..	..	13.9	..	..	..	..	..
Nepal	..	..	..	..	..	37.7	..	..	..	..	..
Pakistan	47.8	..	..	33.9	..	..	31.0	..	..	..	..
Papua New Guinea	23.7	..	..	..	..	..	11.7	15.1	17.2	16.2	17.5
Philippines	19.1	19.8	..	..	18.4	..	14.8	12.1	14.6	13.7	12.7
Sri Lanka	3.8	..	..	..	..	6.6	..	..	..	..	..
Thailand	12.5	..	6.0	..	..	..	2.2	..	3.9	4.3	3.5
Viet Nam	50.8	..	..	39.8	..	..	23.1	..	15.0	12.6	9.1

Source: East Asia Update: Regional Overview, March and October 2001, World Bank; and World Bank web page "Global poverty monitoring", at *<http://www.worldbank.org/research/povmonitor/ index.htm>,* 30 October 2001.

small. In Papua New Guinea, the rate of poverty declined between 1990 and 1996, after which it started to increase. Very few data points are available for Bangladesh, Kazakhstan, Mongolia, Nepal, Pakistan and Sri Lanka, making it difficult to draw any concrete conclusions. In sum, out of the 16 countries in table 3, about half may not achieve the target for poverty reduction.

Country-specific poverty lines are not comparable across countries owing to differences in their levels and the methodologies employed to estimate them. However, when using consistent time series poverty estimates based on country-specific poverty lines, poverty trends within countries can be gauged. Since the poverty reduction goal is to halve the percentage of poor people between 1990 and 2015, poverty estimates based on national poverty lines may be used to monitor the target, especially for those countries lacking data on the $1 poverty line. Country-level data from 1990 onward based on country-specific poverty lines are reported in table 4.[3] Data are available for 20 countries only and in most cases they are patchy owing to the paucity of observations for individual countries. Some conclusions drawn with regard to the $1 poverty line are applicable here also. It is clear that China and Malaysia have already achieved the target of halving poverty within the previous decade. Viet Nam is making satisfactory progress. Indonesia, the Philippines and Thailand have witnessed rising trends in poverty in the wake of the 1997/98 financial crisis. South Asia as a whole has not experienced satisfactory progress, with poverty on the rise in Nepal, Pakistan and Sri Lanka. However, in the case of India, a poverty estimate for 1999 showed a somewhat rapid decline compared with that of 1994. Poverty increased rapidly in Armenia, Azerbaijan, Georgia, Kyrgyzstan and Tajikistan.

Poverty is a complex phenomenon and its incidence is determined by many factors, including the level of per capita income, distribution of assets and income, quality of governance, policies and institutions related to education, health and other aspects of human development. However, high population pressure leading to low per capita income is considered one of the major causes of poverty in many developing countries. With a fixed amount of land and other natural resources, it becomes difficult to provide even a minimal standard of living to a large and rapidly growing population. Even though birth rates have been declining in the region, the population growth momentum is such that net absolute additions to population numbers in many developing countries each year is higher than in the previous year. Such demographic dynamics lead to what has been called the

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[3] Many countries have more than one poverty line. For the sake of consistency, the poverty line in each country with long time-series poverty estimates is preferred.

**Table 4. Percentage of population below the national poverty line
in selected countries, 1990-2000**

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Armenia	18.00[a]	..	..	..	..	..	..	..	..	55.0	..
Azerbaijan	33.0[a]	..	..	..	..	62.0	..	..	..	..	..
Bangladesh	47.8[b]	..	42.7	..	..	..	36.0	..	..	..	34.0
Cambodia	..	..	..	..	39.0	..	..	36.1	..	..	..
China	9.4	..	..	..	..	7.1	6.7	5.4	4.6	3.7	..
Georgia	16.0[a]	..	..	..	..	..	..	..	..	60.0	..
India	38.9[a]	..	..	..	36.0	..	..	..	..	26.1	..
Indonesia	15.1	..	..	13.7	..	..	11.3	..	..	18.2	..
Kazakhstan	..	..	..	..	..	..	34.6	43.0	43.4	34.5	31.8
Kyrgyzstan	37.0[a]	..	..	40.0	..	..	..	51.0	..	55.0	..
Malaysia	17.1[b]	..	..	13.4	..	9.6	..	6.8	..	8.1	..
Mongolia	..	..	17.0	24.0	..	36.3	..	..	35.6	..	..
Nepal	41.4[c]	..	..	..	..	..	42.0	..	..	..	..
Pakistan	..	22.1	..	22.4	29.3	..	..	31.0	..	32.6	33.5
Philippines	..	45.3	..	..	40.6	..	..	36.8	..	..	39.4
Republic of Korea	8.4[a]	..	..	8.2	..	..	7.0	..	..	..	..
Sri Lanka	..	33.0	..	..	..	..	39.2	..	..	..	..
Tajikistan	59.0[a]	..	..	..	..	..	..	..	..	83.0	..
Thailand	27.2	..	23.2	..	16.3	..	11.4	..	13.0	15.9	..
Viet Nam	..	..	..	58.2	..	..	..	..	37.4	..	32.0

Sources: Growth with Equity: Policy Lessons from Experiences of Selected Asian Countries, (United Nations publication, Sales No. E.00.II.F.14); Asian Development Bank, country papers prepared for the Inception Workshop on Building a Poverty Database, held at Manila in July-August 2001; *World Development Report 2000/2001: Attacking Poverty,* World Bank, (New York, Oxford University Press, 2001); International Monetary Fund and World Bank, *Poverty Reduction, Growth and Debt Sustainability in Low-income CIS Countries* (Washington DC, 2002); and national sources.

Notes: Poverty estimates are based on country-specific poverty lines, expressed in national currencies. Many countries have more than one such poverty line, and efforts have been made to include consistent time-series data on the incidence of poverty.

[a] 1988.
[b] 1989.
[c] 1985.

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"population-poverty trap". This is evident in South Asia where, despite the reduction in the proportion of the poor population from 44 per cent in 1990 to 40 per cent in 1998, rapid population expansion increased the absolute numbers of the poor from 495 million to 522 million over the same period (World Bank, 2001).

Another linkage between high population growth and poverty is manifested in large family size among the poor, signifying the relatively higher population growth rate of this group. For example, the poorest 10 per cent of households in Pakistan had on average 7.7 members in 1984, compared with the national average of 6.1. Similar findings emerged from 1983 income distribution data for India. In Thailand, poor households in rural area have relatively larger families than do the non-poor. In the Philippines, 56 per cent of six-member households are poor; by comparison 24 per cent of households with three or fewer members are poor. Therefore, large family size as a result of a higher population growth rate is considered one of the principal factors keeping such families poor. However, it can be argued that the high population growth rate is not only a cause but a result of poverty. The poor tend to have more children because they typically experience higher child mortality, cheaper child-rearing costs and a greater need for income from child labour (de Haan and Lipton, 1998).[4] In both rural and urban areas, the children of the poor start to help their parents to earn a livelihood at an early age and they are the only security the poor have for their old age. Although the earnings of the very young are usually meager, the need for their labour prevents them from attending school. The lack of education of poor children, in turn, helps to transfer poverty from one generation to the next.

The relationship between high population growth and the high incidence of poverty also holds when one uses a broader view of poverty. A relevant quantitative indicator is the human development index (HDI), which incorporates measures of life expectancy, educational attainment and real GDP per capita.[5] The HDI from the *Human Development Report 2002* and population growth rates for a selected number of developing countries in the region are shown in table 5. A higher population growth rate is in general associated with a lower HDI level.

[4] Also, a recent empirical study on Pakistan establishes that children work on account of the compulsions of poverty; for details, see Sonia Bhalotra, *Is Child Work Necessary?,* London School of Economics, STICERD, The Suntory Centre, DEPS No. 26, August 2000.

[5] Being a composite index, HDI is a simple average of life expectancy, education and GDP indices. The education index itself is a composite index and is constructed as the weighted average of the adult literacy index (two thirds weight) and the combined gross primary, secondary and tertiary enrolment ratio index (one third weight).

**Table 5. Population growth rate, human development index and
its component indices in selected countries/areas in the ESCAP region**

Country/area	Annual population growth rate 2002	Human Development Index 2000	Components of human development index		
			Life expectancy index	Education index	GDP index
High human development					
Hong Kong, China	0.9	0.888	0.91	0.83	0.92
Singapore	1.7	0.885	0.88	0.87	0.91
Republic of Korea	0.8	0.882	0.83	0.95	0.86
Brunei Darussalam	2.3	0.856	0.85	0.86	0.86
Medium human development					
Malaysia	1.8	0.782	0.79	0.80	0.75
Russian Federation	-0.6	0.781	0.68	0.92	0.74
Thailand	0.8	0.762	0.75	0.84	0.69
Fiji	1.7	0.758	0.73	0.90	0.64
Armenia	0.1	0.754	0.80	0.92	0.54
Philippines	1.9	0.754	0.74	0.91	0.61
Kazakhstan	-0.4	0.750	0.66	0.91	0.68
Georgia	-0.5	0.748	0.80	0.89	0.55
Maldives	3.0	0.743	0.69	0.90	0.63
Turkey	1.4	0.742	0.75	0.77	0.71
Turkmenistan	1.9	0.741	0.69	0.92	0.61
Azerbaijan	0.6	0.741	0.78	0.88	0.56
Sri Lanka	0.9	0.741	0.79	0.84	0.59
Uzbekistan	1.4	0.727	0.73	0.91	0.53
China	0.9	0.726	0.76	0.80	0.61
Islamic Republic of Iran	1.4	0.721	0.73	0.75	0.68
Samoa	0.3	0.715	0.74	0.75	0.65
Kyrgyzstan	1.2	0.712	0.71	0.87	0.55
Viet Nam	1.3	0.688	0.72	0.84	0.50
Indonesia	1.2	0.684	0.69	0.79	0.57
Tajikistan	0.7	0.667	0.71	0.88	0.41
Mongolia	1.4	0.655	0.63	0.85	0.48
Solomon Islands	3.3	0.622	0.72	0.68	0.47
India	1.5	0.577	0.64	0.57	0.53
Myanmar	1.2	0.552	0.52	0.75	0.39
Cambodia	2.5	0.543	0.52	0.66	0.45
Vanuatu	2.5	0.542	0.72	0.35	0.56
Papua New Guinea	2.3	0.535	0.53	0.55	0.52
Low human development					
Pakistan	2.6	0.499	0.58	0.42	0.49
Bhutan	2.6	0.494	0.62	0.42	0.44
Nepal	2.3	0.490	0.56	0.48	0.43
Lao People's Democratic Republic	2.3	0.485	0.47	0.52	0.46
Bangladesh	2.1	0.478	0.57	0.40	0.46

Sources: 2002 ESCAP Population Data Sheet; UNDP, *Human Development Report 2002,* (New York, Oxford University Press, 2002).

The relationship between the HDI and population growth can be ascertained through the computation of the rank correlation coefficient. A strong negative relationship is clearly reflected in the negative value of 0.46 of the rank correlation coefficient between the two variables.[6]

Labour force and employment

Employment and poverty are closely associated: the lack of the former is the most important reason for the perpetuation of the latter. Demographic changes have a direct impact on labour force supply and thus employment. The supply of labour is determined by the size and age structure of the population as well as the age- and sex-specific labour force participation rates. Labour force participation rates, in turn, are determined by economic, social and cultural factors.

The total labour force grew rapidly during the period 1980-1990 in most countries of the region (table 6). Out of the 28 countries listed in table 6, the labour force grew at more than 2 per cent per annum in 20 of them. Indonesia, the Islamic Republic of Iran and Malaysia registered annual growth rates of 3 per cent or more. Labour force growth rates during the 1980s were higher than corresponding population growth rates in many countries. This reflects higher fertility rates in previous decades as well as rising labour force participation rates, particularly of females. High economic growth rates in some of these countries generated new employment opportunities in the manufacturing and tertiary sectors in urban areas. To take advantage of this growing demand, labour supply also increased. Labour force growth rates slowed markedly in the majority of the countries during the period 1990-1999 as compared with the 1980s.

The short-term future outlook varies somewhat across countries. Labour force growth rates are expected to slow further in 19 countries during the period 1999-2010 as compared with those in the period 1990-1999. China, Georgia, Kazakhstan and the Russian Federation will have growth rates of less than 1 per cent per annum, whereas the Republic of Korea, Singapore and Thailand will have slightly higher than 1 per cent growth. Some of these countries, particularly China, the Republic of Korea, Singapore and Thailand, may face labour shortages. A number of countries including those in South Asia will experience an annual

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[6] For computation of the rank correlation coefficient, a country with the highest value of the human development index is ranked 1 and the country with next highest value is ranked 2 and so on. The ranking of the countries on the basis of population growth proceeds with rank of 1 for the country with the highest population growth and the rank increases for countries with a lower population growth rate.

Table 6. Labour force and unemployment in selected countries in the ESCAP region

Country	Labour force					Percentage of females in the total labour force		Unemployment rate (percentage)		
	Average annual growth rate (percentage)			Total (millions)	Total in 2010/					
	1980-1990	1990-1999	1999-2010	1999	total in 1999	1980	1999	1990	1998	2000
Armenia	1.6	1.3	1.3	2	1.0	47.9	48.5	..	9.3	..
Azerbaijan	1.0	1.7	1.9	4	1.0	47.5	44.4	..	1.1	1.2
Bangladesh	2.2	3.0	2.3	66	1.3	42.3	42.3	1.9	2.5 [e]	..
Cambodia	2.6	2.8	2.2	6	1.3	55.4	51.8	..	..	..
China	2.2	1.3	0.8	750	1.1	43.2	45.2	2.5	3.1	3.1
Georgia	0.5	0.0	0.3	3	1.0	49.3	46.7	..	14.5	10.8
India	1.7	2.3	1.9	439	1.2	33.7	32.2	..	..	..
Indonesia	3.0	2.6	2.0	99	1.3	35.2	40.6	..	5.5	..
Islamic Republic of Iran	3.0	2.4	3.4	20	1.5	20.4	26.5	..	..	..
Kazakhstan	0.9	-0.2	0.5	8	1.1	47.6	46.9	0.6 [c]	3.9 [g]	..
Kyrgyzstan	1.4	1.4	2.0	2	1.1	47.5	47.2	..	..	..
Malaysia	3.1	3.0	2.8	9	1.5	33.7	37.7	5.1	3.2	3.1
Mongolia	2.9	2.8	2.3	1	1.4	45.7	46.9	..	5.7	..
Myanmar	1.8	1.6	1.6	24	2.0	43.7	43.4	..	..	..
Nepal	2.2	2.4	2.5	11	1.2	38.8	40.5	..	1.1 [g]	..
Pakistan	2.9	2.8	3.2	50	1.0	22.7	28.1	3.1	5.9	5.9
Papua New Guinea	2.2	2.3	2.1	2	1.4	41.7	42.1	..	..	..
Philippines	2.8	2.8	2.5	32	1.5	35.0	37.7	8.1	9.6	10.1
Republic of Korea	2.3	2.1	1.1	24	1.3	38.7	41.2	2.4	6.8	3.4 [j]
Russian Federation	0.1	0.1	-0.1	78	1.0	49.4	49.0	0.1 [a]	13.3	10.2 [h]

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Table 6. (Continued)

Country	Labour force							Unemployment rate (percentage)		
	Average annual growth rate (percentage)			Total (millions)	Total in 2010/ total in 1999	Percentage of females in the total labour force		1990	1998	2000
	1980-1990	1990-1999	1999-2010	1999		1980	1999			
Singapore	2.7	1.7	1.3	2	1.0	34.6	39.1	1.7	3.2	4.4
Sri Lanka	2.2	2.0	1.7	8	1.3	26.9	36.4	14.4	10.6	7.4
Tajikistan	2.1	2.7	2.9	2	1.5	46.9	44.6	0.4 [b]	2.7 [f]	..
Thailand	2.7	1.7	1.0	37	1.1	47.4	46.3	2.2	3.4	3.5 [i]
Turkey	2.6	2.8	1.8	31	1.2	35.5	37.3	7.5	7.3 [g]	..
Turkmenistan	2.5	3.5	2.2	2	1.5	47.0	45.8	..	..	..
Uzbekistan	2.3	2.8	2.4	10	1.3	48.0	46.8	0.2 [b]	0.4 [d]	..
Viet Nam	2.7	1.8	1.7	40	1.2	48.1	49.0	..	..	..

Sources: *World Development Indicators 2001 CD-ROM*, World Bank; *World Development Report 2000/2001*; ILO, *World Employment Report 2001* (Geneva, International Labour Office, 2001); ILO, *World Labour Report 2000* (Geneva, International Labour Office, 2000); LABORSTA Database by the ILO Bureau of Statistics, available at <*http://laborsta.ilo.org*> (6 June 2002).

[a] 1991
[b] 1992
[c] 1993
[d] 1995
[e] 1996
[f] 1997
[g] 1999
[h] February 2001
[i] May 2001
[j] March 2002

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labour force growth rate of 2 per cent or more. Many of these countries currently have a relatively high incidence of poverty. Generating sufficient employment for the rapidly growing labour force will be a major challenge.

In almost all the countries, the rate of female labour force participation tends to be lower than that for men.[7] However, there was a rapid increase in the share of the female labour force in the total labour force during the 1970s; by 1980, it reached over 40 per cent in many countries of the region (table 6). The rapid decline in fertility rates gave more time for women to participate in economic activities. At the same time, women's rising education levels, the expansion of employment in services (occupations typically dominated by women) and changing norms relating to women's economic role contributed positively to the increased participation of women. The share of females in the labour force further increased during the period 1980-1999 in a number of countries, particularly those with a lower base. For example, Indonesia, the Islamic Republic of Iran, Pakistan and Sri Lanka registered increases of 5 percentage points or more.

In general, countries with high labour force growth have relatively high unemployment rates. Moreover, those with a large rural population and a high share of agriculture in employment tend to have higher underemployment rates. Persistently high unemployment and underemployment rates are important causes of a high incidence of poverty.

Countries with high labour force growth rates will face formidable challenges in generating much-needed employment opportunities. A number of elements in the current development scene may have the effect of aggravating unemployment problems. The downsizing of Governments tends to reduce the supply of jobs in the public sector and put extra pressure on the private sector to generate the required employment opportunities. The emerging global trade pattern, in which capital and/or technology-intensive goods and services constitute the fastest rising segment of exports, tends to reduce employment per unit of exports. With high import tariffs in many developing countries becoming a thing of the past, tariff-jumping foreign direct investment (FDI) to produce for the domestic market is no longer required. As import tariffs are reduced in compliance with obligations under the World Trade Organization, foreign investors can supply the markets of developing countries through trade rather than FDI. However, the overall effect on

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[7] Strict comparisons across countries may not be possible owing to differences in the perception of various tasks accomplished by women. In one country, a task such as raising livestock may classify a woman as part of the labour force; in another country, it may not. Moreover, where women's labour force participation rates are low, there are often cultural and religious reasons for this phenomenon.

employment will depend on how these factors impinge on the rate of economic growth itself.

Agriculture is still the major source of employment in many developing countries. The reduction in the share of the agricultural labour force in total has been much less than the corresponding reduction in the share of agricultural value added in GDP. As a result of heavy pressure on the rural agricultural sector and the lack of other non-farm employment opportunities, there has been a rapid migration of the labour force from rural to urban areas as people search for a livelihood. In urban areas, these new migrants, who are often uneducated and unskilled, usually end up in low-paying informal sector work owing to the limited job opportunities in the formal sector, thus exacerbating urban poverty (United Nations, 1996). For example, the share of the informal sector in urban employment was over 44 per cent in India, Myanmar, Pakistan and Thailand during the period 1993-1996 (ILO, 2000).

Countries with high labour force growth rates will have to accelerate economic activities to generate much needed employment opportunities. For clearing the backlog, this is more pressing for countries with high unemployment rates. However, countries are facing various challenges in expanding employment. The reduction of employment opportunities in the wake of economic reform and restructuring is an example. The downsizing of Governments is reducing the supply of jobs and putting extra pressure on the private sector to generate the required employment opportunities. Moreover, emerging trade patterns are such that the cheap labour advantage of developing countries is being eroded by the increasing use of labour-saving technologies.

With few exceptions, in countries with high labour force growth rates, their labour force has lower educational levels. For effectively dealing with the problem of poverty, the challenge for these countries is not only to ensure the generation of adequate employment opportunities for the growing labour force, but also to devote a greater share of resources to enhance the educational attainment, skills and productivity of its labour force.

Education

Poverty is a multidimensional concept. Its many dimensions cannot be measured only through the yardstick of income and consumption. Some social indicators, including those related to education and health, must also be employed

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Table 7. School-age population as a percentage of the total population in selected economies of the ESCAP region

Country/area	2000 Age group			2010 Age group			2025 Age group		
	6-11	12-17	18-23	6-11	12-17	18-23	6-11	12-17	18-23
Armenia	10.7	12.1	10.6	5.5	8.0	11.3	5.6	5.8	5.4
Azerbaijan	13.0	12.5	10.7	7.2	10.3	12.3	7.2	6.8	6.4
Bangladesh	15.3	14.0	11.8	13.7	12.7	12.0	11.4	11.5	11.2
Bhutan	16.6	14.2	11.2	15.2	13.4	12.0	14.2	13.0	11.3
Brunei Darussalam	13.1	11.6	10.1	10.3	11.1	11.1	8.7	8.0	8.2
Cambodia	16.8	16.2	9.3	15.4	14.1	12.6	14.0	13.3	11.9
China	10.2	10.4	9.1	8.0	8.6	10.0	7.5	7.6	7.2
Democratic People's Republic of Korea	10.9	10.0	8.7	9.3	10.1	9.9	8.7	8.1	8.1
Fiji	12.9	12.8	12.0	12.2	11.6	10.5	9.2	10.0	10.2
Georgia	8.6	9.8	9.2	6.3	7.3	9.3	5.9	5.9	6.1
Hong Kong, China	6.6	7.6	8.8	5.6	5.9	6.8	5.5	5.5	5.7
India	13.3	12.5	11.0	11.7	11.6	11.2	9.1	9.6	9.9
Indonesia	12.3	12.3	11.9	10.5	10.8	10.8	9.2	8.9	8.9
Islamic Republic of Iran	15.9	16.4	12.2	11.1	12.0	14.0	10.2	9.6	9.2
Kazakhstan	11.2	12.1	10.8	8.7	9.1	11.2	8.4	8.7	8.2
Kyrgyzstan	14.0	13.5	11.2	10.5	11.7	12.5	9.7	9.1	8.5
Lao People's Democratic Republic	16.5	14.0	11.2	15.0	13.6	12.3	13.2	12.7	11.6
Malaysia	13.8	12.1	11.1	11.8	12.3	10.8	9.2	9.4	9.7
Maldives	16.5	15.1	11.7	15.8	13.2	12.0	14.5	13.4	11.6
Mongolia	14.5	14.6	12.4	10.7	11.4	13.2	9.7	9.3	8.8
Myanmar	13.3	12.4	11.9	11.4	11.9	11.4	9.1	8.8	9.5
Nepal	15.7	13.3	11.1	15.2	13.6	11.6	13.3	12.6	11.6
Pakistan	16.0	13.7	11.1	15.3	13.4	11.7	13.7	12.9	11.6
Papua New Guinea	15.8	13.5	11.8	14.6	13.7	11.4	13.1	12.2	11.2
Philippines	15.0	13.6	11.9	13.1	12.9	12.0	9.7	10.3	10.8
Republic of Korea	8.5	9.0	10.0	7.3	7.9	7.8	6.3	6.5	6.8
Russian Federation	7.6	10.0	9.2	5.3	6.1	9.4	5.5	5.8	5.8
Samoa	17.0	15.7	13.2	14.9	14.9	13.7	14.0	13.5	11.5
Singapore	9.3	7.7	7.3	6.8	8.8	8.3	5.5	5.1	5.7
Solomon Islands	16.8	13.9	11.6	16.6	14.1	11.1	15.0	13.4	11.7
Sri Lanka	10.7	11.6	11.4	9.2	9.2	9.8	8.1	8.5	8.5
Tajikistan	16.1	14.9	11.3	11.7	13.1	13.9	10.4	9.6	9.0
Thailand	10.4	10.8	11.3	9.8	9.6	9.4	7.8	7.9	8.5
Turkey	12.0	11.1	12.3	10.7	11.5	9.6	9.0	8.6	8.8
Turkmenistan	15.2	13.7	11.3	12.5	12.7	12.5	9.5	9.9	10.2
Uzbekistan	15.2	14.3	11.5	10.6	12.2	13.2	10.0	9.5	8.6
Vanuatu	16.2	14.7	10.7	14.7	13.9	12.3	12.9	12.3	11.4
Viet Nam	14.2	13.5	11.9	10.2	11.2	12.4	9.7	9.1	8.5

Source: World Population Prospects: The 2000 Revision, Volume. I: Comprehensive Tables, (United Nations publication, Sales No. E.01.XIII.8).

to supplement income and consumption-based measures of poverty in order to capture other dimensions of poverty.

Education itself is one of the dimensions of non-income poverty. Also, it has direct bearing on income generation and hence income poverty through labour productivity. All the countries in the region have invested heavily in education in the past few decades. However, the impact of such investment depends to a large extent on demographic factors, which have an impact on the demand for education. With an increase in fertility, the population of children of school-going age also increases with some time lag. To educate these children, more schools, teachers, books and other equipment are required. Moreover, if existing enrolment rates need to be improved, then the resource allocation must be further increased. Apart from problems related to a quantitative expansion in enrolment, a rapidly increasing school-age population also makes it difficult to improve the quality of education.

The educational achievements of countries are in general negatively associated with their population growth rates. The education index, a component of HDI, shows a negative relationship with population growth (table 5). This negative relationship, as reflected in the negative value of the rank correlation coefficient (-0.54), turns out to be much stronger than that between overall HDI and population growth (the rank correlation coefficient between these two is –0.46).

With the rapid increase in the population that occurred in the past, the population of school-going children also went up sharply. For example, in 2000 the share of children of primary school age (6-11 years) in the total population was 16 per cent or more in Bhutan, Cambodia, the Lao People's Democratic Republic, Maldives, Pakistan, Solomon Islands, Tajikistan and Vanuatu (table 7). With such rapid growth in the size of the population of children, all countries in the region must give special attention to education. They registered impressive achievements in enhancing school enrolment ratios, although with varied success (table 8). Countries in East Asia and South-East Asia have long had an impressive record of primary education; by 1980 if not earlier, primary education was universal in most countries in these subregions. In South Asia, gross primary enrolment ratios have also been rising. Bangladesh, India, Nepal and Sri Lanka have been able to raise enrolment ratios to 100 per cent or more[8]; Bhutan and Pakistan are not far behind. Other subregions have also made impressive

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[8] Enrolment ratios of more than 100 suggest that there are substantial numbers of overaged students and repeaters occupying school places.

Table 8. Gross enrolment ratios by education levels in selected economies of the ESCAP region, 1980 and 1998

Country/area/territory	Enrolment ratio (1980)			Enrolment ratio (1998)[a]			Combined primary, secondary and tertiary enrolment ratio (1999)	
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Male	Female
South and South-West Asia								
Bangladesh	61	18	3	122	47	5	41	33
Bhutan	15	..	..	73	..	..	..	..
India	83	30	5	100	49	7	62	49
Islamic Republic of Iran	87	42	..	98	77	18	76	69
Maldives	146	4	..	128	69	..	77	77
Nepal	86	22	3	114	48	5	67	52
Pakistan	40	14	..	86	37	3	51	28
Sri Lanka	103	55	3	111	75	5	68	71
Turkey	96	35	5	107	70	21	68	55
South-East Asia								
Brunei Darussalam	109	61	1	106	77	7	76	77
Cambodia	139	..	0	119	24	1	71	54
Indonesia	107	29	4	113	56	11	68	61
Lao People's Democratic Republic	114	21	0	112	33	3	65	52
Malaysia	93	48	4	101	98	12	64	67
Myanmar	91	22	5	121	36	5	55	55
Philippines	112	64	24	117	78	29	80	84
Singapore	108	60	8	94	74	39	76	75
Thailand	99	29	15	94	88	30	60	61
Viet Nam	109	42	2	114	61	11	69	64
East and North-East Asia								
China	113	46	2	123	70	6	73	73
Hong Kong, China	107	64	10	94	73	22	61	66
Mongolia	107	92	22	94	56	25	51	64
Republic of Korea	110	78	15	94	102	68	95	85

Table 8. (Continued)

Country/area/territory	Enrolment ratio (1980)			Enrolment ratio (1998)[a]			Combined primary, secondary and tertiary enrolment ratio (1999)	
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	Male	Female
Pacific island economies								
Fiji	119	55	3	128	64	12	84	83
Papua New Guinea	59	12	2	85	22	22	42	35
Samoa	..	..	..	100	62	25	63	67
Solomon Islands	76	16	..	97	17	68	..	..
North and Central Asia								
Armenia	..	..	..	87	90	12	82	77
Azerbaijan	115	95	24	106	84	22	70	72
Georgia	93	109	30	95	79	42	69	71
Kazakhstan	85	93	34	98	87	33	73	81
Kyrgyzstan	116	110	16	104	86	30	65	70
Russian Federation	102	96	46	107	87	43	75	82
Tajikistan	..	..	24	95	78	20	72	63
Turkmenistan	..	..	23	..	..	22	81	81
Uzbekistan	81	106	29	78	94	32	79	74

Source: UNESCO, web site <*http://www.uis.unesco.org/en/stats/stats0.htm*>, 19 July 2002; *Human Development Report 2002*, UNDP, (New York, Oxford University Press, 2002); *World Development Indicators 2001 and 2002* (Washington DC, World Bank, 2001 and 2002).

[a] 1998 or most recent year for which data are available (in most cases data are for 1998 or 1997).

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Table 9. School-age population average annual growth rate in selected economies of the ESCAP region, 2000-2025

Country/area	2000-2010 Age group			2010-2025 Age group		
	6-11	12-17	18-23	6-11	12-17	18-23
Armenia	-6.3	-4.0	0.7	0.0	-2.2	-4.9
Azerbaijan	-5.2	-1.4	2.0	0.4	-2.3	-3.9
Bangladesh	0.9	1.1	2.2	0.3	0.8	1.1
Bhutan	1.8	2.1	3.4	1.9	2.1	1.9
Brunei Darussalam	-0.7	1.2	2.7	0.2	-0.8	-0.6
Cambodia	1.5	1.0	5.6	1.3	1.6	1.6
China	-1.8	-1.2	1.7	0.1	-0.4	-1.7
Democratic People's Republic of Korea	-1.0	0.7	1.8	0.2	-0.9	-0.7
Fiji	0.4	0.0	-0.4	-1.4	-0.6	0.2
Georgia	-3.7	-3.4	-0.6	-1.2	-2.3	-3.6
Hong Kong, China	-0.5	-1.3	-1.4	0.7	0.3	-0.4
India	0.2	0.7	1.6	-0.7	-0.3	0.2
Indonesia	-0.4	-0.2	0.2	0.0	-0.3	-0.4
Islamic Republic of Iran	-2.1	-1.7	2.8	0.8	-0.1	-1.4
Kazakhstan	-2.7	-3.1	0.1	-0.1	-0.2	-1.9
Kyrgyzstan	-1.8	-0.3	2.3	0.6	-0.6	-1.5
Lao People's Democratic Republic	1.3	2.0	3.2	1.0	1.4	1.5
Malaysia	0.1	1.8	1.4	-0.4	-0.6	0.5
Maldives	2.6	1.7	3.3	2.0	2.7	2.4
Mongolia	-1.8	-1.3	1.9	0.6	0.0	-1.4
Myanmar	-0.5	0.7	0.6	-0.6	-1.2	-0.4
Nepal	1.9	2.5	2.7	1.1	1.5	2.0
Pakistan	2.0	2.3	3.0	1.5	1.9	2.1
Papua New Guinea	1.4	2.4	1.8	1.3	1.2	1.9
Philippines	0.4	1.2	1.8	-0.8	-0.3	0.5
Republic of Korea	-1.0	-0.7	-1.8	-0.6	-0.9	-0.6
Russian Federation	-4.1	-5.5	-0.4	-0.4	-0.8	-3.7
Samoa	-0.8	0.0	0.9	0.8	0.5	0.0
Singapore	-1.8	2.7	2.6	-0.9	-3.1	-1.9
Solomon Islands	3.2	3.4	2.9	2.1	2.5	3.2
Sri Lanka	-0.6	-1.4	-0.7	-0.3	0.0	-0.3
Tajikistan	-2.3	-0.5	3.0	0.5	-0.8	-1.6
Thailand	0.4	-0.2	-0.9	-0.8	-0.6	0.1
Turkey	0.1	1.5	-1.3	-0.2	-1.0	0.3
Turkmenistan	-0.2	1.0	2.8	-0.5	-0.4	-0.1
Uzbekistan	-2.2	-0.3	2.8	0.8	-0.4	-1.6
Vanuatu	1.5	1.9	4.0	1.2	1.2	1.5
Viet Nam	-2.1	-0.6	1.7	0.9	-0.3	-1.3

Source: World Population Prospects: The 2000 Revision, Volume I: Comprehensive Tables, (United Nations publication, Sales No. E.01.XIII.8).

achievements regarding primary school enrolment. In sum, there is a convergence of primary enrolment ratios among all the countries towards the target of 100 per cent.

Gross enrolment ratios at the secondary and higher levels of education have also increased over time. However, success varies considerably and these ratios need to be improved further in many countries. For example, the gross secondary enrolment ratio was below 50 per cent in 1998 in many countries in South Asia, while it was 102 per cent in the Republic of Korea. Countries in North and Central Asia were also relatively better placed. The ratio was below 80 per cent in Brunei Darussalam, China, Indonesia, the Philippines and Singapore.[9] In some of the least developed countries, the ratios were below 40 per cent.

Despite improvement over time, disparities still remain between the enrolment ratios of males and females. These disparities are quite visible in the case of several South Asian countries (table 8). For example, the combined enrolment ratio at all levels in Pakistan was 51 per cent for males but nearly half that ratio for females.

What are the implications of demographic changes for future educational planning? Countries where fertility rates have already slowed considerably will face less pressure on their educational system as the demand for primary education drops. Thus, they would be able to devote greater resources to expanding enrolment in the higher levels of education and improve the quality of education. Between 2000 and 2010, the share of the population at primary school age (6-11 years) in the total population will fall in most of these countries (table 9). In fact, the absolute numbers of this group will decline in 2010 as compared with those in 2000 in a large number of countries, as reflected in the negative growth rates shown in table 9. Countries and areas where the average annual rate of reduction will be more than 1 per cent include Armenia; Azerbaijan; China; Georgia; Hong Kong, China; the Islamic Republic of Iran; Kazakhstan; Kyrgyzstan; Mongolia; the Russian Federation; Singapore; Tajikistan; Uzbekistan and Viet Nam. Countries with a positive growth rate of 1 per cent or more will be Bhutan, Cambodia, the Lao People's Democratic Republic, Maldives, Nepal, Pakistan, Papua New Guinea and Solomon Islands.

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[9] From a cross-country regression model based on 121 countries around the world, the predicted values on the basis of income levels for some of these countries turn out to be much higher than their actual values. It means even these countries need to improve on their gross enrolment ratios. For more details, see, A. Deolalikar and others, "Competitiveness and human resources development in Asia", *Asian Development Review*, 1997, vol. 15, No. 2.

For the secondary school-age population (12-17 years), there will also be both negative and positive growth rates. Beyond 2010, it appears that the primary and secondary school-age population will become relatively more stable. For example, between 2010 and 2025, negative or positive growth rates exceeding 1 per cent will occur in only a few countries of the region (table 9).

One can expect changes in the priorities of countries with regard to the level and type of education as the countries attain different stages of economic development. For countries with low incomes, the first priority could be to establish universal primary education, followed by improvements in secondary and higher level education. At the upper secondary level, relatively more emphasis could be placed on vocational training, because many of these countries are facing problems of unemployment and underemployment. In the past, some of these countries achieved only limited success in this respect. For example, by 1994 technical and vocational schools accounted for less than 10 per cent of all upper secondary enrolments in Bangladesh and Pakistan. Economies with higher proportions included China (60 per cent); Hong Kong, China (58 per cent); Thailand (48 per cent); the Republic of Korea (41 per cent); and Singapore (38 per cent) (Lewin, 1997). It should be pointed out that these countries and areas possess a very good track record in reducing poverty. Challenges for many of the faster growing countries in East and South-East Asia are different as they attempt to make the transition to the next stage of development, with the focus being on improving the access to and the quality of higher and tertiary education, including more emphasis on scientific and technical education.

Health

The importance of health as a contributor to non-income poverty as well as its direct impact on labour productivity cannot be over-exaggerated. Demographic dynamics affect the demand for health services in at least two ways. As the size of the population grows, the demand for health services rises. Also, in many countries the quality of the existing supply of health and related services is not very satisfactory. Therefore, many countries with a high population growth rate face the dual challenge of improving health services for the existing population as well as meeting the demand of the growing population. Population growth rates are in general negatively associated with health standards. The life expectancy index, a component of HDI, tends to be lower in countries with high population growth rates (table 5). The value of the rank correlation coefficient (-0.41) reveals a strong negative relationship between the two.

Changes in age composition of the population as a result of changes in fertility and mortality rates have implications for health services also. In countries where fertility rates are still high, a large proportion of the population will consist of infants and young children with particular health needs. At the same time, there is a larger demand for reproductive health services for women. In countries that have already achieved a reduction in fertility, the share of the older population will be on the rise as a result of improvements in life expectancy. In such countries, health services have to take into account the needs of this older age group. With fertility rates declining and life expectancy rising, the share of the older age group in the total population is expected to eventually become relatively large in all the countries. Therefore, while planning budgets for future health services, Governments should take into account this demographic transition. Usually, health care costs per elderly person are much higher than for a younger person.

The health standards of countries have improved considerably over time but wide disparities among countries still exist. For example, a child born in India today can expect to live 63 years, that is, 14 years longer than a child born in 1970 (table 10). Life expectancy in the Republic of Korea improved from 60 years to 75 years over the same period. Currently, life expectancy varies from 80 years in Hong Kong, China to 43 years in Afghanistan. The significant increase in life expectancy over time has been achieved particularly as a result of the sharp drop in infant mortality rates. The infant mortality rate of 157 per 1,000 live births in Maldives in 1970 was one of the highest in the region, but it dropped to 59 per 1,000 in 2000; in Nepal, the rate fell from 165 to 72 per 1,000 over the same period. Infant mortality virtually disappeared (the rate being 5 or less per thousand) in the Republic of Korea and Singapore.

What are the factors that explain the variations in achievement in terms of health? Three theories, namely, well-being or nutrition-based theory, public health or technology-based theory and cultural-behavioural theory, may help in answering this question.[10] The nutrition-based theory explains improved health outcomes principally in terms of the secular improvement in food consumption made possible by overall increases in material prosperity and agricultural productivity. The public health or technology-based theory highlights the importance of access to safe water, sanitation and, more recently, mass vaccination and other public health measures for improving the length and quality of life. The cultural-behavioural theory comes into play because there are factors in addition

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[10] For more details on these theories, see S. R. Osmani and A. Bhargava, "Health and nutrition in emerging Asia", *Asian Development Review*, 1998, vol. 16, No. 1.

Table 10. Estimates of life expectancy, infant mortality rates and maternal mortality ratios in selected economies of the ESCAP region

Country/area	Life expectancy at birth (years)		Infant mortality rate (per 1,000 live births)		Maternal mortality ratio (per 100,000 live births)
	1970	2000	1970	2000	1990-96
South and South-West Asia					
Afghanistan	38	43	198	165	..
Bangladesh	44	59	145	54	600
Bhutan	42	62	156	77	500
India	49	63	127	69	440
Islamic Republic of Iran	53	69	122	36	130
Maldives	50	67	157	59	390
Nepal	42	59	165	72	830
Pakistan	48	60	117	85	200
Sri Lanka	64	72	65	17	60
Turkey	56	70	150	38	55
South-East Asia					
Brunei Darussalam	67	76	58	6	22
Cambodia	43	56	..	95	590
Indonesia	48	66	104	35	390
Lao People's Democratic Republic	40	53	145	90	660
Malaysia	61	72	46	8	39
Myanmar	48	56	122	78	170
Philippines	57	69	60	30	208
Singapore	69	78	22	4	9
Thailand	59	70	74	25	44
Viet Nam	49	68	112	30	95
East and North-East Asia					
China	61	71	85	32	60
Democratic People's Republic of Korea	61	64	52	23	35
Hong Kong, China	..	80	..	3	..
Mongolia	53	63	..	62	65
Republic of Korea	60	75	43	5	20
Pacific island economies					
Fiji	60	69	50	18	20
Papua New Guinea	43	57	90	79	390
Samoa	55	69	106	21	..
Solomon Islands	54	68	71	21	60
Vanuatu	53	68	107	35	..

Table 10. (Continued)

Country/area	Life expectancy at birth (years)		Infant mortality rate (per 1,000 live births)		Maternal mortality ratio (per 100,000 live births)
	1970	**2000**	**1970**	**2000**	**1990-96**
North and Central Asia					
Armenia	72	73	24	25	29
Azerbaijan	68	72	41	74	37
Georgia	68	73	36	24	22
Kazakhstan	64	65	50	60	80
Kyrgyzstan	62	68	111	53	80
Russian Federation	70	66	29	18	74
Tajikistan	63	68	78	54	120
Turkmenistan	60	66	82	52	65
Uzbekistan	63	69	66	51	60

Source: Human Development Report 2002, UNDP, (New York, Oxford University Press, 2002); UNICEF, *Official Summary: The State of the World's Children 2002* (United Nations publication, Sales No. E.02.xx.1); UNICEF web site, <http://www.childinfo.org/cmr/revis/db1.htm>, 12 July 2002; *World Development Indicators 2002,* (Washington DC, World Bank) *Maternal Mortality in 1995: Estimates Developed by WHO, UNICEF, UNFPA* (WHO/RHRO1.9), (WHO, 2001).

to material prosperity and the availability of health technology that are important. Thus, according to the cultural-behavioural theory, there are cultural influences that predispose people to respond differently to the availability of food and health technology. For example, some relatively poor countries have achieved impressive health standards that are comparable to those of rich countries. Moreover, with the same level of access to health technology, the performance of countries has varied. Based on the above theories, a set of variables has been identified to explain inter-country differences in survival chances (measured alternatively by life expectancy and the infant mortality rate). Econometric analysis shows that the survival chances of a population depend on the (a) quantity of food that is available, especially at the lower end of the income distribution; (b) the access to non-food inputs such as health-care facilities, sanitation and safe water; (c) the spread and depth of education, particularly for women; and (d) female labour force participation.

Access to health-improving factors such as safe drinking water and adequate sanitation has improved in almost all countries (table 11). By 2000, out of 28 countries listed in the table, more than 80 per cent of the population in 18 countries had access to an improved water source. In three countries only, less

Table 11. Trends in health-related services in selected countries of the ESCAP region

Country	Population with access to improved water source (%)		Population with access to improved sanitation facilities (%)		Population with access to health services (%)	Physicians (per 100,000 people)
	1990	2000	1990	2000	1990-1995	1990-1999[a]
Bangladesh	91	97	37	53	45	20
Cambodia	..	30	..	18	83	30
China	71	83	29	38	88	162
Fiji	..	47	..	43	..	48
Georgia	..	76	..	99	..	436
India	78	88	21	31	85	48
Indonesia	69	76	54	66	93	16
Islamic Republic of Iran	86	95	81	81	88	85
Kazakhstan	..	91	..	99	..	353
Kyrgyzstan	..	77	..	100	..	301
Lao People's Democratic Republic	..	90	..	46	67	24
Malaysia	..	95	..	98	..	66
Maldives	..	100	..	56	..	40
Mongolia	..	60	..	30	95	243
Myanmar	64	68	45	46	60	30
Nepal	66	81	21	27	..	4
Pakistan	84	88	34	61	55	57
Papua New Guinea	42	42	82	82	96	7
Philippines	87	87	74	83	71	123
Republic of Korea	..	92	..	63	100	136
Samoa	..	99	..	99	..	34
Singapore	100	100	100	100	100	163
Sri Lanka	66	83	82	83	93	36
Thailand	71	80	86	96	90	24
Turkey	80	83	87	91	..	121
Turkmenistan	..	58	..	100	..	300
Uzbekistan	..	85	..	100	..	309
Viet Nam	48	56	73	73	90	48

Source: Human Development Report 1998, UNDP, (New York, Oxford University Press, 1998); *Human Development Report 2002,* UNDP, (New York, Oxford University Press, 2002); *World Development Indicators 2002,* (Washington DC, World Bank, 2002).

[a] Data from the source refer to the most recent year available during the period specified.

than 50 per cent of the population had access to improved water sources. The latest available comparable data on population with access to some health services is for the period 1990-1995. Again, in a large number of countries, more than 80 per cent of the population had access to some health services. In the Republic of Korea and Singapore, access was universal. It is important to note that access to health services does not necessarily mean utilization of such services, which are essential for improving the health status of the population. Poor people usually do not have sufficient income to pay for health services. In public hospitals where medical services are subsidized or are free of cost, facilities are often woefully inadequate and there are usually long queues. In rural areas, people have to travel long distances to benefit from health services because public health facilities are situated mostly in urban areas. Thus, high opportunity costs deter effective utilization of health services by the poor.

POPULATION AND RELATED POLICY OPTIONS

There is clearly a need for adopting population-related policies to minimize the adverse impacts of demographic changes on economic and social development, including poverty reduction. Three groups of countries can be identified for policy purposes: countries with high fertility rates, and countries with low fertility rates and countries with increasingly larger shares of older people in the population.

Countries suffering from population pressure and having relatively high fertility rates need to increase their efforts to stabilize their populations. Both the development process and reproductive health programmes have played major roles in reducing fertility (ADB, 1997). With increases in income, more widespread education and improved availability of health services, people tend to desire fewer children and their demand for contraceptives increases. The wide availability of and access to contraceptives help them in keeping families small. However, a high level of socio-economic development is not a necessary condition for the success of a family planning programme. For example, in Bangladesh a well-designed family planning programme has helped in reducing the fertility level. However, as there are a large number of poor people who cannot afford modern contraception, Governments will have to be actively involved for some time in designing and implementing reproductive health programmes that make such contraception available. The programmes need to ensure the availability of a large range of contraceptive techniques for the poor coupled with well-formulated communication and information programmes.

The International Conference on Population and Development in 1994 adopted a broad and more holistic approach to population issues, encompassing reproductive health and gender equality, equity and the empowerment of women (ESCAP and UNFPA, 1998). Reproductive health services provide men and women with the knowledge they need to choose the number and timing of their children and protect their health as well as the health of their family members. This includes methods for planning their families, preventing and treating sexually transmitted diseases, including HIV/AIDS. However, family planning remains central to reproductive health and it is viewed as a fundamental human right to which couples and individuals should be given access. Information about family planning techniques should also be provided to them, so that they can make informed choices that are consistent with their overall reproductive health needs. To the extent that large family size, the incidence of malnutrition and diseases including HIV/AIDS contribute to the perpetuation of poverty, a pro-active stance in the area of population and development will go a long way in tackling the problem of poverty.

A lasting solution to the diverse problems caused by rapid population growth depends upon investment in human resources. Female education should get priority because it is negatively related to fertility. The extent of schooling received by females can affect their fertility by raising the age at marriage, reducing the demand for children (because educated women face greater opportunity costs in having children) and facilitating the spread of knowledge about contraceptive methods. Evidence from a cross-section of countries shows that, on average, women with secondary education have three children whereas those who do not tend to have around seven.[11] Better-educated mothers also rear children who are healthier and better educated. In addition, female education is found to be particularly important for lowering infant mortality. For example, within India, female literacy is much lower in the state of Uttar Pradesh than in Kerala. At the same time, despite the fact that overall poverty head-count ratios are similar in these two states, child mortality rates in the former are six times higher than those in the latter. For achieving an improved educational standard, investments in schools, teachers and materials are essential along with policies to encourage enrolment, such as scholarship programmes. In Bangladesh, a scholarship programme has succeeded in almost doubling female secondary

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[11] For details, see *World Development Report 1992* (New York, Oxford University Press, 1992), p. 8. Moreover, a recent study on India using district level data finds a negative and highly significant effect of female literacy on the fertility rate (see J. Dreze and M. Murthi, *Fertility, Education and Development: Further Evidence from India*, London School of Economics, STICERD, The Suntory Centre, DEDPS No. 20, January 2000).

enrolment, as well as promoting higher labour force participation, increasing the age at marriage for women and lowering fertility rates. Considering the enormous direct and indirect benefits of education, basic education for the entire population would need to be provided free or at minimal cost. On the other hand, strong emphasis on primary and secondary education should not lead to the neglect of tertiary education. However, tertiary education should mainly be fee based, with the provision of scholarships and loans for the poor.

While high population growth is a source of problems in many countries, the low growth of population causes worries in others. Countries with low fertility rates will have to evaluate the implications of this phenomenon for the availability of labour. As discussed previously, in some countries labour force growth is expected to slow considerably and such countries may face labour shortages in the near future. It is important for these countries to invest more in human resources development to raise productivity in order to remain competitive in the international market. Allowing migration from labour surplus countries is an option. Relocation of labour-intensive industries to labour-surplus countries is another option which has been used by some countries. Raising the retirement age appears very appealing in view of the fact that life expectancy is on the increase and older people remain productive beyond currently specified retirement ages in most countries. Raising the retirement age will also increase the share of the working-age population relative to the retired population, thus reducing pressures on pension and social security systems. There is still the potential to enhance female labour-force participation in countries that are expected to face labour shortages. In 2000, the female labour force participation rate was estimated to be 62 per cent in Japan, 58 per cent in the Republic of Korea and 55 per cent in Singapore. In some European countries and the United States, the rates were significantly lower than 70 per cent and in Australia and New Zealand around 67 per cent (ILO, 2000).

Population aging is an inevitable outcome of the demographic transition and should be addressed with special emphasis. The share of the old-age population has been rising in most countries and this is expected to accelerate in countries with low fertility rates. With the gradual erosion of extended family support systems, the working-age population will need to save more for their retirement. At the same time, Governments will have to provide for or facilitate the establishment of social security and pension systems. In this connection, designing and implementing social safety-nets for the poor and vulnerable, especially for the elderly, merits attention (ESCAP, 2000). In most countries, government employees

enjoy retirement benefits, but private sector employees and the self-employed do not. Malaysia and Singapore have mandatory central provident funds for employees in both the public and private sectors. The self-employed can also participate in these funds. There is a need to vigorously explore viable options to ensure that adequate social security coverage can be expanded to a much larger share of the population in all countries, because this will positively contribute to a reduction in poverty.

The need for health services and hospitalization is usually greater for the elderly than for other age groups. At the same time, health services for the elderly are relatively more expensive. Therefore, better health-care facilities for older people should be planned and access to these services facilitated.[12] A rising share of the elderly population relative to the working-age population reduces the potential support population for the elderly. However, with the increasing productivity of successive generations, some decline in the potential support ratio should not cause too much worry. A related issue of greater concern is that there will be a shortage of caregivers for the elderly population. Also, greater investment will have to be directed towards housing, entertainment goods and other industries catering to the needs of the elderly.

All population-related policies and programmes require financial resources. These can be generated more easily in a growing economy. Therefore, it is essential that policies promoting broad-based economic growth should be pursued vigorously.[13]

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[12] A recent study on Thailand reports very long queues at public hospitals and doctors being unable to devote sufficient time to each patient for detailed examination. A rapidly increasing share of the elderly in the population will put further pressure on medical facilities in public hospitals. The study recommends allocation of more financial resources by the Government to deal with this problem. For further details, see P. Kamnuansilpa and others, "An assessment of the Thai Government's health services for the aged", *Asia-Pacific Population Journal*, vol. 15, No. 1, March 2000.

[13] For details on such policies, see ESCAP, *Growth with Equity: Policy Lessons from the Experiences of Selected Asian Countries* (ST/ESCAP/2007), 1999.

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CHAPTER II

FERTILITY LEVELS AND TRENDS
IN THE ASIAN AND PACIFIC REGION

By Bhakta Gubhaju and Yoshie Moriki-Durand[*]

Remarkable success has been achieved during the last half of the twentieth century in the reduction of fertility in the Asian and Pacific region. According to the *2002 ESCAP Population Data Sheet*, the total fertility rate in the region has dropped to 2.4 births per woman from around 6 in 1950. This regional average, however, masks a considerable difference in the total fertility rate (TFR) observed among subregions. The TFR has plummeted to below the replacement level (2.1 births per woman) in East and North-East Asia (1.6 births per woman) and North and Central Asia (1.5 births per woman). In sharp contrast, South and South-West Asia exhibit a TFR of 3.3 births per woman. The South-East Asian and the Pacific subregions have fertility rates of 2.5 and 2.4 births per woman respectively (ESCAP, 2002).

Within subregions, TFRs vary to a large extent by country. Fertility has dropped to below the replacement level in all the populations of East and North-East Asia, except for Mongolia where the TFR is 2.3 births per woman. Below replacement fertility has been reached in Singapore and Thailand in South-East Asia, while Sri Lanka is the only country in South and South-West Asia exhibiting below replacement fertility.

The lowest fertility in the region has been recorded in Hong Kong, China, with a TFR of 1.0. Countries and areas such as Armenia; Azerbaijan; Georgia; Japan; Macao, China; the Republic of Korea; the Russian Federation; and Singapore

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have reached a TFR of 1.6 or lower, while Australia, China and Thailand are marginally higher at 1.8 and New Zealand at 2.0. By contrast, fertility continues to remain high, with TFR exceeding 5 births per woman in Afghanistan, Bhutan and Maldives in South and South-West Asia and Solomon Islands in the Pacific. A large number of countries, however, have fertility rates that are at the intermediate level, ranging from 2.1 to 5.0 births per woman.

In view of the fact that countries and areas in the Asian and Pacific region are at different levels of fertility, it is pertinent to review the trends and patterns of fertility, examine factors affecting fertility and discuss future prospects. For the purpose of this paper, countries and areas are classified into three categories according to their level of fertility estimated in the period 1995-2000: high, intermediate and low. The high fertility category includes countries and areas in which the TFR is 5.0 or higher. The intermediate fertility category consists of countries or areas in which the TFR ranges from 2.1 to 5.0, while the low fertility category comprises countries and areas in which the TFR is 2.1 or lower.

Using those classifications, the paper first presents the levels and trends in fertility over the previous 50 years. Second, the paper examines the shifts in age patterns of fertility in countries at different levels of fertility. Third, the paper discusses fertility transition theories. It then highlights factors contributing to fertility decline in low fertility and intermediate fertility countries, and assesses the factors hindering fertility decline in high fertility countries. Fourth, the paper concludes with a discussion of future prospects for fertility decline in high fertility and intermediate fertility countries, and underlines the need for policies and programmes to be implemented by low fertility countries.

FERTILITY LEVELS AND TRENDS

Table 1 presents the trends in TFRs during the previous 50 years, while in table 2 countries and areas are classified by the percentage decline in fertility between the periods 1970-1975 and 1995-2000. Among the high fertility countries, Cambodia is the only country that experienced some fertility decline, from 6.3 in the period 1950-1955 to 5.5 in the period 1970-1975. During the previous 25 years, fertility in Cambodia remained relatively constant. However, the recent demographic and health survey of Cambodia suggests that there has been a resumption of fertility decline to 4.0 children per woman (National Institute of Statistics, Directorate General for Health and ORC Macro, 2001). In the

**Table 1. Trends in total fertility rates (TFRs) in the ESCAP region,
1950-1955, 1970-1975 and 1995-2000**

Country, territory or area	High fertility (TFR = 5.0 or higher)			Percentage change	
	1950-1955	1970-1975	1995-2000	1950-1955 to 1970-1975	1970-1975 to 1995-2000
Cambodia	6.3	5.5	5.3	-12.7	-3.6
Lao People's Democratic Republic	6.2	6.2	5.3	0.0	-14.5
Bhutan	5.9	5.9	5.5	0.0	-6.8
Pakistan	6.3	6.3	5.5	0.0	-12.7
Solomon Islands	6.4	7.2	5.6	12.5	-22.2
Maldives	7.0	7.0	5.8	0.0	-17.1
Afghanistan	7.7	7.4	6.9	-3.9	-6.8

Country, territory or area	Intermediate fertility (TFR = 2.11-4.99)			Percentage change	
	1950-1955	1970-1975	1995-2000	1950-1955 to 1970-1975	1970-1975 to 1995-2000
Viet Nam	5.7	6.7	2.5	17.5	-62.7
French Polynesia	6.0	5.2	2.6	-13.3	-50.0
Indonesia	5.5	5.2	2.6	-5.5	-50.0
New Caledonia	5.0	5.2	2.6	4.0	-50.0
Mongolia	6.0	7.3	2.7	21.7	-63.0
Turkey	6.9	5.2	2.7	-24.6	-48.1
Brunei Darussalam	7.0	5.4	2.8	-22.9	-48.1
Kyrgyzstan	4.5	4.7	2.9	4.4	-38.3
Uzbekistan	6.0	6.3	2.9	5.0	-54.0
Fiji	6.6	4.2	3.2	-36.4	-23.8
Islamic Republic of Iran	7.0	6.4	3.2	-8.6	-50.0
India	6.0	5.4	3.3	-10.0	-38.9
Malaysia	6.8	5.2	3.3	-23.5	-36.5
Myanmar	6.0	5.8	3.3	-3.3	-43.1
Philippines	7.3	6.0	3.6	-17.8	-40.0
Turkmenistan	6.0	6.2	3.6	3.3	-41.9
Tajikistan	6.0	6.8	3.7	13.3	-45.6
Bangladesh	6.7	6.4	3.8	-4.5	-40.6
Guam	5.5	4.1	4.0	-25.5	-2.4
Samoa	7.3	5.7	4.5	-21.9	-21.1
Papua New Guinea	6.2	6.1	4.6	-1.6	-24.6
Vanuatu	7.6	6.1	4.6	-19.7	-24.6
Nepal	5.8	5.8	4.8	0.0	-17.2

Table 1. (Continued)

Country, territory or area	Low fertility (TFR = 2.10 or lower)			Percentage change	
	1950-1955	1970-1975	1995-2000	1950-1955 to 1970-1975	1970-1975 to 1995-2000
Hong Kong, China	4.4	2.9	1.2	-34.1	-58.6
Macao, China	5.0	3.2	1.2	-36.0	-62.5
Russian Federation	2.8	2.0	1.2	-28.6	-40.0
Armenia	4.5	3.0	1.4	-33.3	-53.3
Japan	2.7	2.1	1.4	-22.2	-33.3
Republic of Korea	5.4	4.3	1.5	-20.4	-65.1
Georgia	3.0	2.6	1.6	-13.3	-38.5
Singapore	6.4	2.6	1.6	-59.4	-38.5
Australia	3.2	2.5	1.8	-21.9	-28.0
China	6.2	4.9	1.8	-21.0	-63.3
Azerbaijan	5.5	4.3	1.9	-21.8	-55.8
New Zealand	3.7	2.8	2.0	-24.3	-28.6
Democratic People's Republic of Korea	5.4	4.3	2.1	-20.4	-51.2
Kazakhstan	4.4	3.5	2.1	-20.5	-40.0
Sri Lanka	5.9	4.1	2.1	-30.5	-48.8
Thailand	6.4	5.0	2.1	-21.9	-58.0

Source: *World Population Prospects: The 2000 Revision, Volume I: Comprehensive Tables,* (United Nations publication, Sales No. E.01.XIII.8).

remaining high fertility countries, the fertility transition did not begin until the period 1970-1975. During the period between 1970-1975 and 1995-2000, the total fertility rates declined by 22 per cent in Solomon Islands and by 17 per cent in Maldives, registering a reduction of more than 1 child per woman. In the Lao People's Democratic Republic and Pakistan, fertility dropped by 14 per cent in the former and 13 per cent in the latter (less than 1 child per woman) during the same period. A nominal decline in fertility occurred in Bhutan during the previous 25 years, from 5.9 in the period 1970-1975 to 5.5 in the period 1995-2000. With the limited information available, the United Nations estimated that the TFR in Afghanistan has continued to remain high at around 7 children per woman.

A large number of countries in the Asian and Pacific region belong to the

category of intermediate fertility. Almost all the countries in this category had high fertility in the period 1950-1955. Incipient declines in fertility occurred in almost half the countries (11 out of 23 intermediate fertility countries) between the period 1950-1955 and 1970-1975. The most notable declines were exhibited by countries and territories such as Brunei Darussalam, Fiji, Guam, Malaysia, Philippines, Samoa, Turkey and Vanuatu. These economies had registered a decline in TFR of more than 1 child per woman between the period 1950-1955 and 1970-1975. During the previous 25 years, all the countries experienced a fertility transition. Most importantly, the speed of decline was much faster during this period compared with the earlier period. This is consistent with the observation that fertility remains high until the transition begins and the decline in fertility speeds up once the transition gets under way (Bongaarts, 2002).

It can be seen from tables 1 and 2 that Mongolia and Viet Nam are the two leading countries that experienced a spectacular decline in fertility by 63 per cent, bringing TFRs down by more than 4 children per woman in 25 years (see also figure I). Other countries and territories where fertility has been reduced by at least half are French Polynesia, Indonesia, the Islamic Republic of Iran, New Caledonia and Uzbekistan. While fertility decline was initiated prior to the 1970s in Brunei Darussalam, Malaysia, the Philippines and Turkey, the speed of the decline was fairly rapid during the previous 25 years. Rapid fertility decline also occurred during this period in Bangladesh, India, Kyrgystan, Myanmar, Tajikistan and Turkmenistan. On the other hand, fertility decline has been relatively slow in Fiji, Guam, Nepal, Papua New Guinea, Samoa and Vanuatu during this period. Except in Fiji, the estimated TFR in these countries during the period 1995-2000 was 4 or higher.

Figure I. Trends in the total fertility rates by countries, territories and areas classified according to the level of fertility, 1970-1975 and 1995-2000
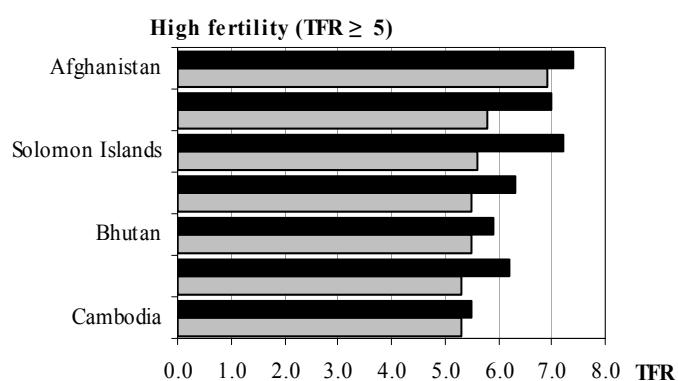
Figure I. (Continued)

Intermediate fertility (2.1 < TFR < 5)

Low fertility (TFR ≤ 2.1)
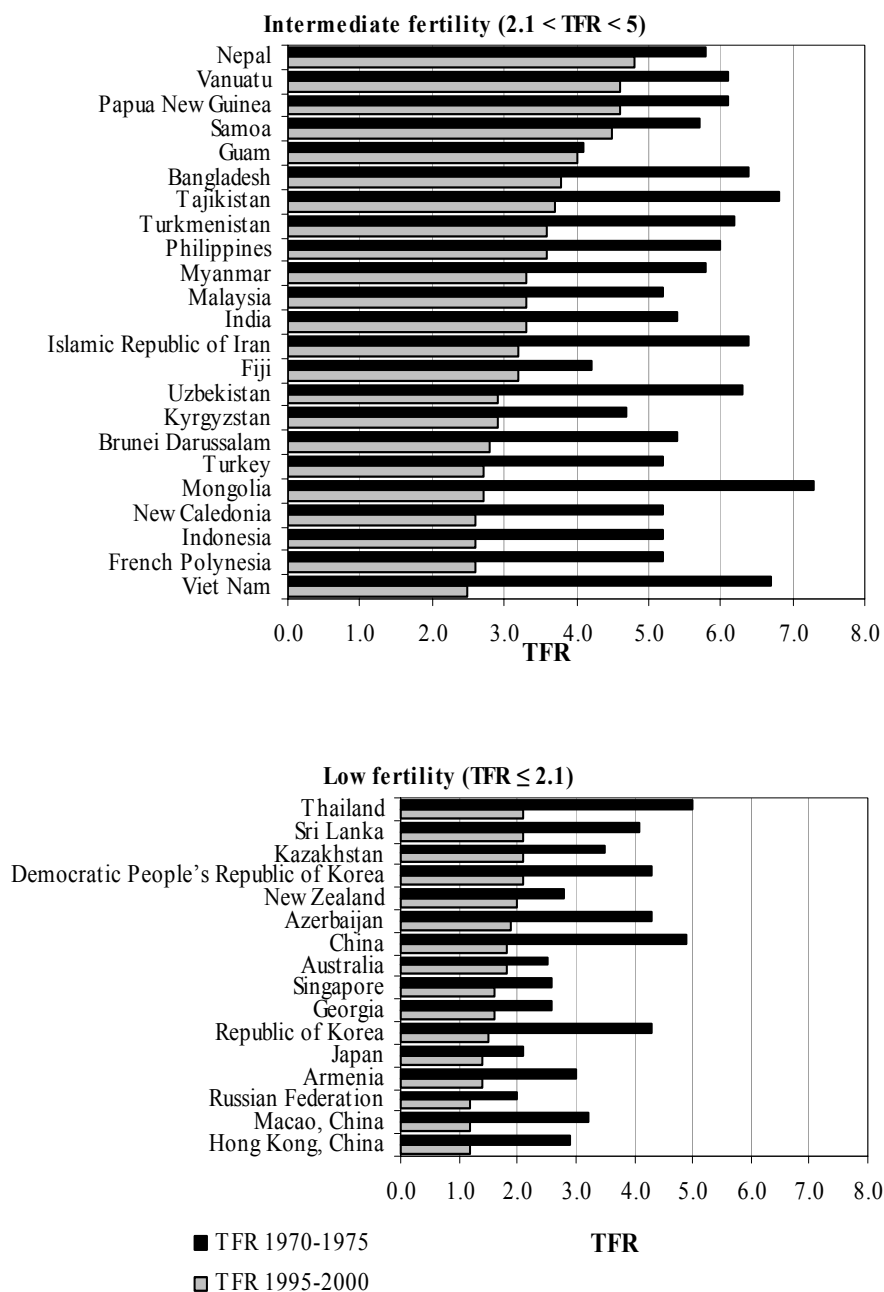

■ TFR 1970-1975

☐ TFR 1995-2000

Table 2. Classification of countries, territories or areas according to percentage decline in total fertility rate: 1970-1975 to 1995-2000

Percentage decline		
Less than 25%	**25% to 49%**	**50% or more**

High fertility (TFR = 5 or more)

Afghanistan		
Bhutan		
Cambodia		
Lao People's Democratic Republic		
Maldives		
Pakistan		
Solomon Islands		

Intermediate fertility (TFR = 2.11-4.99)

Fiji	Bangladesh	French Polynesia
Guam	Brunei Darussalam	Indonesia
Nepal	India	Islamic Republic of Iran
Papua New Guinea	Kyrgyzstan	Mongolia
Samoa	Malaysia	New Caledonia
Vanuatu	Myanmar	Uzbekistan
	Philippines	Viet Nam
	Tajikistan	
	Turkey	
	Turkmenistan	

Low fertility (TFR = 2.10 or lower)

	Australia	Armenia
	Georgia	Azerbaijan
	Japan	China
	Kazakhstan	Democratic People's Republic of Korea
	New Zealand	Hong Kong, China
	Russian Federation	Macao, China
	Singapore	Republic of Korea
	Sri Lanka	Thailand

Source: World Population Prospects: The 2000 Revision, Volume I: Comprehensive Tables, (United Nations publication, Sales No. E.01.XIII.8).

Table 3. Classification of countries, territories and areas in the ESCAP region by total fertility rate, 1970-1975 and 1995-2000

Total fertility rate in 1970-1975	Total fertility rate in 1995-2000		
	High fertility (5.0 or higher)	**Intermediate fertility** (2.11 – 4.99)	**Low fertility** (2.10 or lower)
High fertility (5.00 or higher)	Afghanistan Bhutan Cambodia Lao People's Democratic Republic Maldives Pakistan Solomon Islands	Bangladesh Brunei Darussalam French Polynesia India Indonesia Islamic Republic of Iran Malaysia Mongolia Myanmar Nepal New Caledonia Papua New Guinea Philippines Samoa Tajikistan Turkey Turkmenistan Uzbekistan Vanuatu Viet Nam	Thailand
Intermediate fertility (2.11 - 4.99)		Fiji Guam Kyrgyzstan	Armenia Australia Azerbaijan China Democratic People's Republic of Korea Georgia Hong Kong, China Kazakhstan Macao, China New Zealand Republic of Korea Singapore Sri Lanka
Low fertility (2.10 or lower)			Japan Russian Federation

Source: World Population Prospects: The 2000 Revision, Volume I: Comprehensive Tables, (United Nations publication, Sales No. E.01.XIII.8).

Among the low fertility countries, fertility remained fairly high until the period 1950-1955 in several countries including China, the Republic of Korea, Singapore, Sri Lanka and Thailand. On the other hand, the fertility transition was well under way in Australia, Georgia, Japan, New Zealand and the Russian Federation where TFR was less than 4 in the period 1950-1955. Japan was the first country in this region to have completed the transition from high to low fertility by the early 1960s (Jones and Leete, 2002). The fertility transition had begun in the remaining low fertility countries since the beginning of the second half of the twentieth century, followed by a precipitous decline thereafter. During that period, the most spectacular decline in fertility occurred in countries and areas such as Azerbaijan; China; Hong Kong, China; Macao, China; the Republic of Korea; and Thailand. It is noteworthy that Singapore exhibited a dramatic fall in TFR to 2.6 in the period 1970-1975, down from a high level of 6.4 in the period 1950-1955. Singapore continued to experience a further decline in fertility, reaching 1.6 in the period 1995-2000.

Table 3 shows the classification of countries and areas by TFR in the two periods, 1970-1975 and 1995-2000. It is interesting to note that a large number of countries and areas experienced marked declines in fertility from a high level (5 or more) to an intermediate level (2.11 to 4.99) during the previous 25 years. Prominent among these are Bangladesh, Indonesia, the Islamic Republic of Iran, Mongolia and Viet Nam, all of which countries experienced rapid declines in fertility. However, in countries such as Afghanistan, Bhutan, Cambodia, the Lao People's Democratic Republic, Maldives, Pakistan and Solomon Islands, fertility remained at a high level during the previous 25 years. By contrast, a sustained decline in fertility was observed in a number of countries where TFRs dropped from the intermediate level in the period 1970-1975 to the low category in the period 1995-2000. Of particular importance is Thailand, which exhibited a remarkable decline in fertility from a high level to below the replacement level. Japan and the Russian Federation are the only two countries in which fertility has continued to remain below the replacement level during the previous 25 years.

Age patterns of fertility

Table 4 presents the age pattern of fertility for the most recent data available in each country or area classified by fertility level and table 5 shows the contribution of each age group of women to the total fertility rate. As expected, fertility reaches its peak in the age groups 20-24 or 25-29 and begins to decline with the advancement of age of women. Peak fertility, occurring in the age group 20-24 or 25-29, is determined largely by the average age at marriage and the proportion of

Table 4. Age-specific fertility rates (per 1,000 women) by country or area

Country, territory or area	Year	Total fertility rate	Age group						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
High fertility									
Maldives	1990	7.5	147	348	356	311	224	100	19
Solomon Islands	1984-1986	6.1	101	280	295	252	177	84	25
Bhutan	1984	5.9	57	229	268	223	201	141	53
Lao People's Democratic Republic	2000	4.9	96	261	210	180	109	71	49
Pakistan	2000/01	4.8	65	211	258	206	128	61	26
Cambodia	2000	4.0	51	191	203	165	118	55	15
Intermediate fertility									
Papua New Guinea	1990/91	5.1	86	252	270	173	124	70	39
Samoa	1991	4.9	26	165	251	221	182	103	39
Vanuatu	1988/89	4.9	78	234	248	195	138	61	22
Tajikistan	1992	4.1	42	261	227	163	93	34	7
Nepal	2001	4.1	110	248	205	136	81	35	7
Philippines	1998	3.7	46	177	210	156	111	40	7
Guam	1990-1994	3.6	103	220	194	127	58	16	1
Kyrgyzstan	1997	3.4	75	246	179	113	47	13	0
Uzbekistan	1996	3.3	61	266	176	114	39	9	3
Bangladesh	1999-2000	3.3	144	188	165	99	44	18	3
Malaysia	1997	3.3	16	121	214	172	96	32	3
Fiji	1996	3.3	54	195	185	124	61	25	8
India	1998	3.2	54	220	183	104	54	25	9
Mongolia	1998	3.1	54	216	169	105	50	18	0
Turkmenistan	2000	2.9	30	184	195	105	48	14	1
New Caledonia	1994	2.8	34	140	182	130	61	17	1
Indonesia	1995-1997	2.8	62	143	149	108	66	24	6
Myanmar	1997	2.7	25	102	144	138	92	35	7
Turkey	1998	2.6	60	163	150	93	42	13	1
Brunei Darussalam	2000	2.4	33	91	132	113	76	27	17
Viet Nam	1997	2.3	32	164	132	81	41	15	2
Islamic Republic of Iran	2000	2.2	35	110	131	90	48	16	4

Table 4. (Continued)

Country, territory or area	Year	Total fertility rate	Age group						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Low fertility									
Kazakhstan	1999	2.1	40	167	106	64	24	9	0
Thailand	1995/96	2.0	54	126	107	68	36	11	3
Sri Lanka	2000	2.0	14	72	123	105	58	18	2
New Zealand	1998	1.9	30	76	112	108	49	9	0
Azerbaijan	1998	1.9	38	147	106	53	26	7	1
China	1994	1.9	5	161	144	47	10	4	1
Georgia	1992	1.8	53	159	79	45	18	4	0
Australia	1998	1.8	19	60	111	107	46	8	0
Armenia	2000	1.7	50	149	88	35	16	3	0
Singapore	1999	1.5	8	37	105	99	39	7	0
Macao, China	1995	1.4	8	56	98	75	28	6	0
Japan	1999	1.3	5	39	100	92	30	4	0
Republic of Korea	2001	1.3	2	32	131	78	17	3	0
Russian Federation	1998	1.2	34	99	68	33	12	2	0
Hong Kong, China	2001	0.9	4	29	58	61	28	5	0

Source: Database maintained by UNESCAP secretariat, Bangkok.

women marrying by age 20. The earlier the age at marriage and the higher the proportion of women marrying by age 20, the higher will be the fertility of women in the age group 20-24. Age-specific fertility rates are also typically high among women aged 15-19 in Bangladesh, Maldives and Nepal – countries that are characterized by a low age at marriage of females. The share of adolescent fertility in overall fertility is over one fifth in Bangladesh. It is also worth mentioning that the first three Categories of age groups of women, aged 15-29, in Bangladesh contributed 75 per cent to the total fertility rate.

In high fertility countries, childbearing not only begins early but also spreads over a longer duration during the reproductive span, with the largest contribution to overall fertility being women in the age groups 20-24, 25-29 and 30-34. These three age groups combined contribute more than two thirds to the total fertility rate. A similar pattern is observed among intermediate fertility countries, in which TFRs range between 3.5 and 5 children per woman. However, childbearing begins

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Table 5. Percentage contribution of each age group to fertility rate by country or area

Country, territory or area	Year	Index	Age group						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
High fertility									
Maldives	1990	100	9.7	23.0	23.5	20.6	14.8	6.6	1.3
Solomon Islands	1984-1986	100	8.3	22.9	24.2	20.7	14.5	6.9	2.0
Bhutan	1984	100	4.8	19.4	22.8	18.9	17.1	12.0	4.5
Lao People's Democratic Republic	2000	100	9.8	26.6	21.4	18.4	11.1	7.2	5.0
Pakistan	2000/01	100	6.8	22.0	26.9	21.5	13.3	6.4	2.7
Cambodia	2000	100	6.4	23.9	25.4	20.7	14.8	6.9	1.9
Intermediate fertility									
Papua New Guinea	1990/91	100	8.4	24.7	26.5	17.0	12.2	6.9	3.8
Samoa	1991	100	2.6	16.6	25.3	22.3	18.3	10.4	3.9
Vanuatu	1988/89	100	8.0	23.9	25.3	19.9	14.1	6.2	2.2
Tajikistan	1992	100	5.1	31.4	27.3	19.6	11.2	4.1	0.8
Nepal	2001	100	13.3	30.0	24.8	16.5	9.8	4.2	0.8
Philippines	1998	100	6.1	23.6	28.0	20.8	14.8	5.3	0.9
Guam	1990-1994	100	14.3	30.4	26.8	17.6	8.0	2.2	0.1
Kyrgyzstan	1997	100	11.1	36.4	26.5	16.7	6.9	1.9	0.0
Uzbekistan	1996	100	9.1	39.6	26.2	17.0	5.8	1.3	0.4
Bangladesh	1999-2000	100	21.7	28.3	24.8	14.9	6.6	2.7	0.5
Malaysia	1997	100	2.4	18.4	32.6	26.2	14.6	4.9	0.5
Fiji	1996	100	8.2	29.8	28.3	18.9	9.3	3.8	1.3
India	1998	100	8.3	33.7	28.1	15.9	8.3	3.8	1.4
Mongolia	1998	100	8.8	35.1	27.5	17.1	8.1	2.9	0.0
Turkmenistan	2000	100	5.2	31.7	33.6	18.1	8.3	2.4	0.2
New Caledonia	1994	100	6.0	24.7	32.1	22.9	10.7	3.0	0.2
Indonesia	1995-1997	100	11.1	25.5	26.6	19.3	11.8	4.3	1.1
Myanmar	1997	100	4.5	18.7	26.4	25.3	16.9	6.5	1.3
Turkey	1998	100	11.4	31.1	28.6	17.7	8.0	2.5	0.2
Brunei Darussalam	2000	100	6.7	18.4	26.9	22.9	15.5	5.5	3.5
Viet Nam	1997	100	6.8	34.9	28.1	17.3	8.7	3.2	0.4
Islamic Republic of Iran	2000	100	8.0	25.2	30.0	20.6	11.0	3.7	0.9

Table 5. (Continued)

Country, territory or area	Year	Index	Age group						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Low fertility									
Kazakhstan	1999	100	9.7	40.5	25.7	15.5	5.8	2.2	0.0
Thailand	1995/96	100	13.2	30.9	26.2	16.8	8.8	2.8	0.7
Sri Lanka	2000	100	3.6	18.3	31.2	26.7	14.7	4.6	0.5
New Zealand	1998	100	7.7	19.6	29.0	28.2	12.6	2.2	0.1
Azerbaijan	1998	100	10.0	38.7	27.9	14.0	6.8	1.8	0.3
China	1994	100	1.3	43.1	38.5	12.6	2.7	1.1	0.3
Georgia	1992	100	14.7	44.2	21.9	12.5	5.0	1.1	0.1
Australia	1998	100	5.2	17.0	31.5	30.4	13.0	2.3	0.1
Armenia	2000	100	14.6	43.5	25.7	10.2	4.7	0.9	0.0
Singapore	1999	100	2.8	12.3	35.4	33.5	13.3	2.2	0.0
Macao, China	1995	100	2.9	20.5	35.9	27.5	10.3	2.2	0.1
Japan	1999	100	1.8	14.4	36.9	34.0	11.1	1.3	0.0
Republic of Korea	2001	100	0.8	12.0	49.6	29.6	6.5	0.9	0.1
Russian Federation	1998	100	13.6	39.7	27.3	13.2	4.8	0.8	0.0
Hong Kong, China	2001	100	2.2	15.6	31.3	32.7	15.2	2.4	0.1

Source: Database maintained by UNESCAP secretariat, Bangkok.

to compress to a narrow reproductive span across the countries with declining fertility.

Age patterns of fertility in low fertility countries are in sharp contrast with those in intermediate or high fertility countries. Not only does childbearing start late in low fertility countries but also the fertility rate of women past age 35 begins to dip very rapidly, registering a very low age-specific fertility rate of women aged 40 and older. The appearance of fertility compressing to a short reproductive span is a general trend that low fertility countries have experienced, with over 60 per cent of childbearing being completed by women belonging to two age groups, 20-29 or 25-34. This is much more prominent in the Republic of Korea where women aged 25-29 contributed about half to the total fertility rate, and over 75 per cent of the total fertility rate was achieved by women aged 25-34. In other low fertility countries, such as Armenia, China, Georgia, Kazakhstan and the Russian Federation, women aged 20-24 contributed at least two fifths to the total fertility rate. The extreme case is China where women aged 20-29 contributed over 80 per cent to the total fertility rate.

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Table 6 and figure II show the changes in the age pattern of fertility in countries for which empirical data are available for at least two points in time. In high fertility countries, the shape of the fertility curve remained relatively unchanged over time, with peak fertility occurring among women aged 20-24 in the Lao People's Democratic Republic and among women aged 25-29 in Cambodia and Pakistan. Among these countries, Cambodia and the Lao People's Democratic Republic exhibited a relatively rapid decline in fertility, whereas in Pakistan, the decline has been slow. In these countries, the decline in fertility occurred to a large extent among women in the older age groups in comparison to the fertility decline experienced by women in the younger age groups. This is more pronounced in Pakistan, where fertility has begun to decline typically among women older than 35 years of age. These are obviously the women who already have four or more children, who contribute very little to the overall fertility transition.

Discussion of the changes in the age pattern of fertility pertaining to intermediate fertility countries is rather difficult, as countries representing this category display different shapes of fertility pattern. Nonetheless, reclassification of countries by subregion presents some interesting patterns. For example, in South and South-West Asia, Bangladesh, India and Nepal present more or less a similar pattern in that the fertility decline occurred mostly among women in the older age groups while adolescent fertility (the age-specific fertility rate of females aged 15-19) increased in the case of Bangladesh and Nepal.

Conforming to the pattern observed in Bangladesh and India, in Nepal peak fertility has shifted from women aged 25-29 in 1976 to women aged 20-24 in 2001. The lack of a precipitous decline in fertility among younger women in these countries is related primarily to the prevalence of early age at marriage of females, resulting in a higher proportion of women married by ages 15-19 and 20-24. For example, in Bangladesh, India and Nepal more than four fifths of women in the age group 20-24 are already married (table 7). Furthermore, a high female illiteracy rate, leading to a lower contraceptive prevalence rate, is another factor inhibiting fertility decline among adolescent women (ESCAP, 2001).

By contrast, in Turkey and the Islamic Republic of Iran, a sustained decline in fertility has occurred among women in all age groups, maintaining the same age pattern of fertility over time. In the case of the Islamic Republic of Iran especially, a dramatic fall in fertility has occurred in a short period of time: the TFR plummeted from 6.2 in 1986 to 2.2 in 2002. During this period, fertility declined

Table 6. Age-specific fertility rates (per 1,000 women) and percentage change by country or area

Country, territory or area	Year	Total fertility rate	Age group							Percentage change						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49	15-19	20-24	25-29	30-34	35-39	40-44	45-49
High fertility																
Cambodia	1995/96	5.2	23	221	246	236	182	103	26	122	-13.6	-16.3	-30.1	-35.2	-46.6	-42.3
	2000	4.0	51	191	203	165	118	55	15							
Lao People's Democratic Republic	1990-1994	6.4	115	297	288	246	190	108	31	-16.5	-12.1	-27.1	-26.8	-42.6	-34.3	58.1
	2000	4.8	96	261	210	180	109	71	49							
Pakistan	1984	5.9	61	223	263	234	209	127	71	6.6	-5.4	-1.9	-12.0	-38.8	-52.0	-63.4
	2000/01	4.8	65	211	258	206	128	61	26							
Intermediate fertility																
Bangladesh	1975	6.3	109	289	291	250	185	107	35	32.1	-34.9	-43.3	-60.4	-76.2	-83.2	-91.4
	1999-2000	3.3	144	188	165	99	44	18	3							
Brunei Darussalam	1992	3.1	41	142	175	136	84	28	5	-19.5	-36.2	-24.5	-17.1	-9.4	-3.2	240.0
	2000	2.4	33	91	132	113	76	27	17							
Fiji	1976	4.0	70	239	219	145	81	36	10	-23.3	-18.2	-15.3	-14.7	-25.0	-30.0	-13.7
	1996	3.3	54	195	185	124	61	25	8							
India	1976	4.7	83	250	239	180	116	53	16	-34.9	-11.8	-23.4	-42.1	-53.5	-53.1	-42.7
	1998	3.2	54	220	183	104	54	25	9							
Indonesia	1965-1970	5.9	158	290	277	224	146	75	12	-60.8	-50.7	-46.2	-51.8	-54.8	-68.0	-50.0
	1995-1997	2.8	62	143	149	108	66	24	6							
Islamic Republic of Iran	1986	6.2	132	266	283	252	185	101	28	-73.5	-58.6	-53.6	-64.3	-74.1	-84.2	-85.9
	2000	2.2	35	110	131	90	48	16	4							
Kyrgyzstan	1992	3.6	55	274	196	123	56	16	5	36.4	-10.2	-8.7	-8.1	-16.1	-18.8	-100.0
	1997	3.4	75	246	179	113	47	13	0							
Malaysia	1967	5.1	68	248	282	241	154	6	17	-76.5	-51.2	-24.1	-28.6	-37.7	433.3	-82.4
	1997	3.3	16	121	214	172	96	32	3							
Mongolia	1979-1984	6.3	45	274	356	255	185	118	35	20.0	-21.2	-52.5	-58.8	-73.0	-84.7	-100.0
	1998	3.1	54	216	169	105	50	18	0							

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Table 6. (Continued)

Country, territory or area	Year	Total fertility rate	Age group							Percentage change						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Myanmar	1983	4.7	43	186	227	210	171	88	21	-42.1	-44.9	-36.6	-34.3	-46.1	-59.8	-65.4
	1997	2.7	25	102	144	138	92	35	7							
Nepal	1976	5.9	69	257	290	241	210	84	30	59.4	-3.5	-29.3	-43.6	-61.4	-58.3	-76.7
	2001	4.1	110	248	205	136	81	35	7							
Philippines	1973	6.0	56	228	302	268	212	100	28	-17.9	-22.4	-30.5	-41.8	-47.6	-60.0	-75.0
	1998	3.7	46	177	210	156	111	40	7							
Turkey	1975	5.1	85	276	262	196	133	51	16	-29.1	-40.9	-42.8	-52.5	-68.4	-74.4	-93.8
	1998	2.6	60	163	150	93	42	13	1							
Turkmenistan	1991	4.1	26	227	273	177	85	28	4	15.4	-18.9	-28.6	-40.7	-43.5	-50.0	-75.0
	2000	2.9	30	184	195	105	48	14	1							
Uzbekistan	1990	4.1	44	297	239	149	65	21	3	38.6	-10.4	-26.4	-23.5	-40.0	-57.1	0.0
	1996	3.3	61	266	176	114	39	9	3							
Viet Nam	1987	4.0	20	235	243	151	85	51	11	60.0	-30.2	-45.7	-46.4	-51.8	-70.6	-81.8
	1997	2.3	32	164	132	81	41	15	2							
Low fertility																
Armenia	1975	2.8	40	217	160	81	44	15	2	26.3	-31.2	-45.1	-56.6	-63.5	-79.9	-100.0
	2000	1.7	50	149	88	35	16	3	0							
Australia	1975	2.2	41	138	156	76	27	6	0	-54.8	-56.6	-28.6	40.5	68.6	29.0	-25.0
	1998	1.8	19	60	111	107	46	8	0							
Azerbaijan	1975	3.9	20	215	239	155	105	43	6	88.1	-31.8	-55.6	-65.9	-75.2	-83.6	-83.3
	1998	1.9	38	147	106	53	26	7	1							
China	1975	3.6	20	188	235	139	86	41	6	-75.0	-14.4	-38.7	-66.2	-88.4	-90.2	-83.3
	1994	1.9	5	161	144	47	10	4	1							
Georgia	1975	2.5	36	179	156	83	36	11	2	46.0	-11.4	-49.5	-45.5	-49.9	-63.6	-88.9
	1992	1.8	53	159	79	45	18	4	0							

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Table 6. (Continued)

Country, territory or area	Year	Total fertility rate	Age group							Percentage change						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Hong Kong, China	1975	2.8	18	122	207	123	60	19	3	-77.0	-76.2	-71.8	-50.5	-52.4	-75.8	-92.6
	2001	0.9	4	29	58	61	28	5	0							
Japan	1975	1.9	4	106	189	69	15	2	0	19.5	-63.4	-47.1	33.0	102.7	66.7	0.0
	1999	1.3	5	39	100	92	30	4	0							
Kazakhstan	1989	2.9	45	215	159	96	45	14	1	-11.1	-22.3	-33.3	-33.3	-46.7	-35.7	-100.0
	1999	2.1	40	167	106	64	24	9	0							
Macao, China	1981	1.9	10	80	141	90	39	12	1	-21.6	-29.8	-30.4	-16.9	-28.6	-50.4	-75.0
	1995	1.4	8	56	98	75	28	6	0							
New Zealand	1975	2.3	54	157	155	68	25	7	1	-44.5	-51.8	-27.8	58.7	97.2	23.2	-33.3
	1998	1.9	30	76	112	108	49	9	0							
Republic of Korea	1975	3.2	13	171	250	137	53	18	5	-83.3	-81.5	-47.7	-42.9	-67.5	-86.2	-95.7
	2001	1.3	2	32	131	78	17	3	0							
Russian Federation	1974/75	2.0	34	159	111	59	29	7	1	0.3	-37.7	-38.5	-43.7	-58.5	-72.6	-100.0
	1998	1.2	34	99	68	33	12	2	0							
Singapore	1975	2.1	17	104	157	96	36	10	1	-51.7	-65.0	-33.2	3.8	10.1	-34.0	-100.0
	1999	1.5	8	37	105	99	39	7	0							
Sri Lanka	1975	3.4	31	146	161	158	126	43	6	-54.8	-50.7	-23.6	-33.5	-54.0	-58.1	-66.7
	2000	2.0	14	72	123	105	58	18	2							
Thailand	1964/65	6.3	66	259	303	273	222	112	24	-19.0	-51.4	-64.8	-75.0	-83.9	-89.8	-88.4
	1995/96	2.0	54	126	107	68	36	11	3							

Source: Database maintained by UNESCAP secretariat, Bangkok.

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Figure II. Trends in age-specific fertility rates (ASFR) by countries and areas classified according to the level of fertility

High fertility

ASFR   **Cambodia**

300
250
200
150
100
50
0

15-19 20-24 25-29 30-34 35-39 40-44 45-49
Age group

——●—— 1995/96   - - - - 2000

Lao People's Democratic
ASFR   **Republic**

350
300
250
200
150
100
50
0

15-19 20-24 25-29 30-34 35-39 40-44 45-49
Age group

——●—— 1990-1994   - - - - 2000

ASFR   **Pakistan**

300
250
200
150
100
50
0

15-19 20-24 25-29 30-34 35-39 40-44 45-49
Age group

——●—— 1984   - - - - 2000/01

52
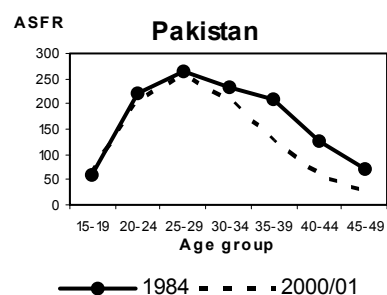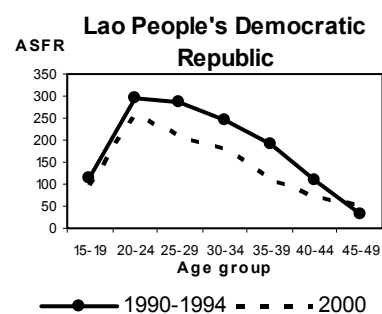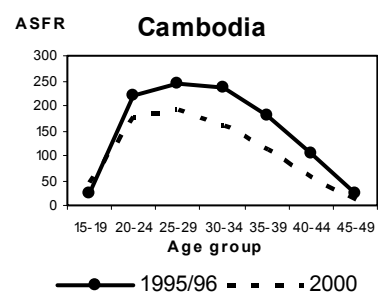
Figure II. (Continued)

Intermediate fertility

South and South-West Asia
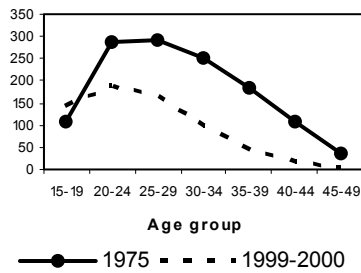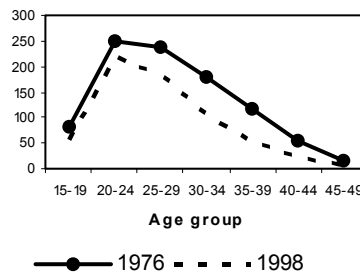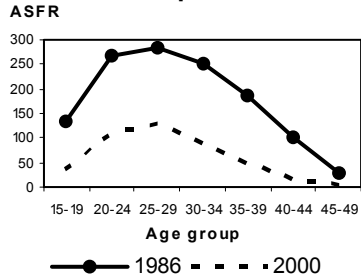
Bangladesh

ASFR vs Age group

15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49

—●— 1975   - - - 1999-2000

India

ASFR vs Age group

15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49

—●— 1976   - - - 1998

Islamic Republic of Iran

ASFR vs Age group

15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49

—●— 1986   - - - 2000

Nepal

ASFR vs Age group

15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49

—●— 1976   - - - 2001

Turkey

ASFR vs Age group

15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49

—●— 1975   - - - 1998

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Figure II. (Continued)

Intermediate fertility (Continued)

South-East Asia

Brunei Darussalam

1992 ——— 2000 - - - -

Indonesia

1965-1970 ——— 1995-1997 - - - -

Malaysia

1967 ——— 1997 - - - -

Myanmar

1983 ——— 1997 - - - -

Philippines

1973 ——— 1998 - - - -

Viet Nam

1987 ——— 1997 - - - -

Figure II. (Continued)

Intermediate fertility (Continued)

North and Central Asia

Kyrgyzstan

ASFR

Age group

━●━ 1992   ▪ ▪ ▪ 1997

Turkmenistan

ASFR

Age group

━●━ 1991   ▪ ▪ ▪ 2000

Uzbekistan

ASFR

Age group

━●━ 1990   ▪ ▪ ▪ 1996

East and North-East Asia

Mongolia

ASFR

Age group

━●━ 1979-1984   ▪ ▪ ▪ 1998

Pacific

Fiji

ASFR

Age group

━●━ 1976   ▪ ▪ ▪ 1996

55
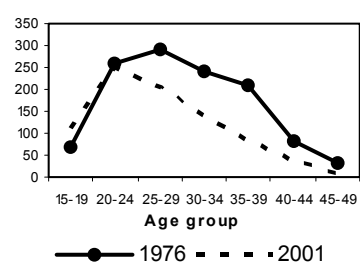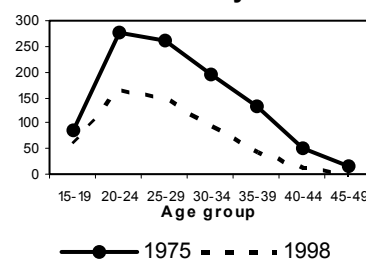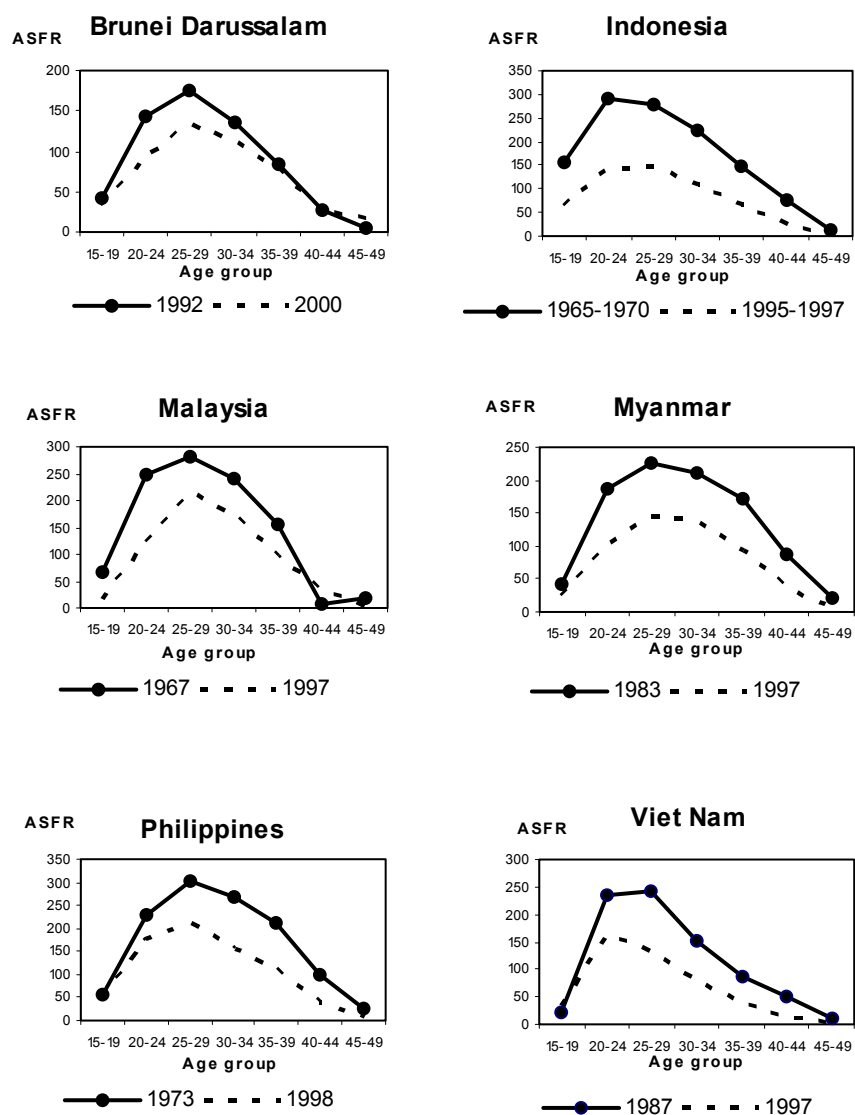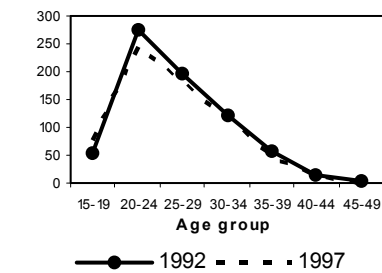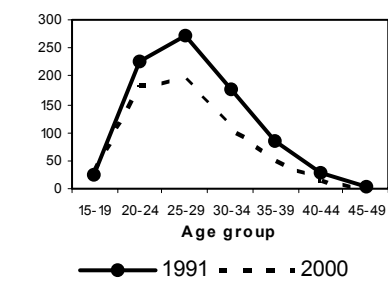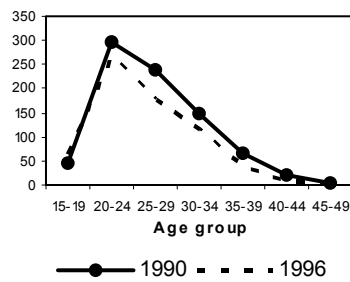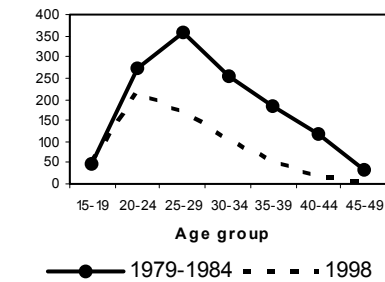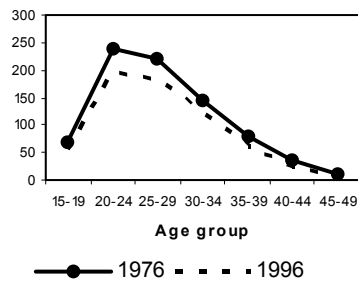
Figure II. (Continued)

Low fertility

East and North-East Asia

China

ASFR

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

1975 ─●─ ▪ ▪ ▪ 1994

Hong Kong, China

ASFR

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

1975 ─●─ ▪ ▪ ▪ 2001

Japan

ASFR

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

1975 ─●─ ▪ ▪ ▪ 1999

Macao, China

ASFR

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

1981 ─●─ ▪ ▪ ▪ 1995

Republic of Korea

ASFR

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

1975 ─●─ ▪ ▪ ▪ 2001

Figure II. (Continued)

Low fertility (Continued)

North and Central Asia

Armenia

ASFR

Azerbaijan

ASFR

Kazakhstan

ASFR

Russian Federation

ASFR

Georgia

ASFR

Figure II. (Continued)

Low fertility (Continued)

South-East Asia

Singapore

ASFR

200	
150	
100	
50	
0	

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

●——— 1975   - - - - 1999

Thailand

ASFR

350
300
250
200
150
100
50
0

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

●——— 1964/65   - - - - 1995/96

South-Asia

Sri Lanka

ASFR

200
150
100
50
0

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

●——— 1975   - - - - 2000

Pacific

Australia

ASFR

200
150
100
50
0

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

●——— 1975   - - - - 1998

New Zealand

ASFR

200
150
100
50
0

15-19 20-24 25-29 30-34 35-39 40-44 45-49

Age group

●——— 1975   - - - - 1998

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Table 7.   Percentage ever married among women aged 15-19 and 20-24

Country, territory or area	Year of census or survey	Percentage ever married among women aged	
		15-19	20-24
High fertility			
Bhutan	1990	25.5	64.8
Cambodia	2000	12.9	55.5
Lao People's Democratic Republic	2000	26.8	73.0
Maldives	1995	20.1	70.1
Pakistan	2000/01	15.2	52.3
Solomon Islands	1986	18.3	62.9
Intermediate fertility			
Bangladesh	1999-2000	55.4	81.5
Brunei Darussalam	1991	7.8	37.4
Fiji	1996	10.0	52.4
French Polynesia	1996	1.4	15.0
Guam	1990	5.6	42.7
India	1991	35.3	81.8
Indonesia	1997	17.1	61.4
Islamic Republic of Iran	1996	17.5	59.5
Kyrgyzstan	1999	7.3	50.4
Malaysia	1991	7.4	39.1
Mongolia	2000	2.8	24.1
Myanmar	1997	6.6	34.8
Nepal	2001	40.2	82.9
New Caledonia	1989	1.7	19.7
Papua New Guinea	1996	18.2	70.0
Philippines	1998	4.8	34.5
Tajikistan	1989	11.4	73.8
Turkey	1990	15.1	61.2
Turkmenistan	1989	6.2	51.5
Uzbekistan	1996	12.7	73.4
Vanuatu	1989	11.4	55.3
Viet Nam	1997	7.7	52.0
Low fertility			
Armenia	1989	16.3	64.2
Australia	1999	0.6	13.4
Azerbaijan	1999	12.5	47.4
China	1999	1.3	45.6
Georgia	1989	16.8	56.1
Hong Kong, China	2001	0.7	10.8
Japan	2000	0.9	11.3
Kazakhstan	1999	7.1	47.4
Macao, China	1991	2.3	22.0
New Zealand	1996	0.6	11.9
Republic of Korea	1995	0.8	16.7
Russian Federation	1989	10.5	62.2
Singapore	2000	1.0	15.7
Sri Lanka	2000	8.6	37.1
Thailand	1990	13.9	48.7

Source: World Marriage Patterns, 2000, United Nations, (Wall Chart).

by over 50 per cent among women in all age groups and by more than 70 per cent among women aged 15-19 and those aged 35 years and older.

The age pattern of fertility depicted by many South-East Asian countries – Brunei Darussalam, Indonesia, Malaysia, Myanmar, Philippines and Viet Nam – remained relatively similar at two points in time, while the magnitude of fertility has rapidly declined. In Indonesia, Malaysia and Myanmar, fertility decline was experienced by almost all age groups of women with, however, a higher percentage of the decline occurring among women in the older and the younger age groups. A sharp reduction in adolescent fertility was observed in Indonesia and Malaysia. On the other hand, in the case of the Philippines and Viet Nam, fertility decline was more pronounced among women in the older age groups. In the case of Brunei Darussalam, fertility decline occurred among women in the age group 20-39.

A typical age pattern of fertility can be observed among countries in North and Central Asia, namely Kyrgyzstan and Uzbekistan, where fertility reached its peak among women aged 20-24, and then began to decline sharply with the advancement in the age of women. In Turkmenistan, fertility reached its highest level in the age group 25-29, with a steep decline occurring later in the reproductive ages. Fertility patterns have, however, remained consistent in these countries during the two periods for which data were available. These age patterns of fertility are consistent with the higher percentage of women aged 15-19 and 20-24 reported to have ever married (see table 7).

The remaining two countries, namely Fiji and Mongolia, at the intermediate fertility level largely conformed to the pattern evidenced by North and Central Asia. In Fiji, fertility decline occurred across all the age groups of women, with fertility patterns remaining almost unchanged over time. However, the spectacular decline in TFR observed in Mongolia, from 6.3 in the early 1980s to 3.1 in the late 1990s, was triggered by the decline occurring among women aged from 25 to 49. As a result, there has been a shift in the age pattern of fertility, with peak fertility drifting from women aged 25-29 to those aged 20-24.

In low fertility countries, the age pattern of fertility presents a distinct feature by subregion. In North and Central Asia, Armenia, Azerbaijan, Georgia, Kazakhstan and the Russian Federation reveal a typical age pattern in which fertility reached the highest level among women aged 20-24 and then fell sharply

with the advancement in women's age. With the exception of younger and older age groups, there has been a consistent decline in fertility affecting women in other age groups. As a result, a consistent age pattern of fertility has prevailed between the two periods. This consistent pattern of fertility can be explained by the higher percentage among women ever married aged 15-19 and 20-24. For example, in Armenia and the Russian Federation more than three fifths of women aged 20-24 have been reported as ever married (see table 7). Despite the fact that the proportion married is high, the increased use of contraceptives, along with induced abortion as a method of family planning, has played a major role in the reduction of fertility in the North and Central Asian countries (UNFPA, 1999).

It is apparent that in Hong Kong, China; Japan; Macao, China; and the Republic of Korea in East and North-East Asia, women aged 25-29 continued to have the highest fertility levels. It is only in China that there has been a drift in the age pattern of fertility, with women aged 20-24 having the highest fertility level in 1994. With the exception of Japan, fertility has dropped in all age groups between the two periods. Although Japan, which already had low fertility in 1975, experienced a continuous decline in TFR, women in some age groups actually observed a rise in fertility. For example, between 1975 and 1999 fertility increased slightly among women aged 30-39, while there was a sharp decrease in fertility among women aged 20-29.

While Hong Kong, China; and the Republic of Korea witnessed a precipitous decline in fertility among women aged 20-39, the fertility decline in China was concentrated mostly among women aged 25-44. The shift in the age pattern of fertility, from 25-29 to 20-24, observed in China is obviously related to the stringent one-child policy that led couples to stop childbearing after having one, or in special circumstances, two children. As a consequence, childbearing tends to be squeezed into an earlier time during the reproductive ages.

Singapore continued to experience a sharp reduction in fertility among women in the prime reproductive age group, 20-29, while maintaining a low level of fertility among older women. In the case of Sri Lanka and Thailand, there has been a substantial drop in fertility affecting women in general and women aged 20-44 in particular. On the other hand, Australia and New Zealand reveal a pattern that is atypical in that fertility continued to fall among younger women aged 15-29, while it rose among older women aged 30-39, demonstrating a tendency towards postponement of marriage and delayed childbearing.

FACTORS AFFECTING FERTILITY DECLINE

Theoretical perspectives

The preceding section reviewed the levels, trends and patterns of fertility in the Asian and Pacific region. The previous review reveals the diversity of the region with respect to the level of fertility. The region comprises countries or areas where fertility has plummeted to well below the replacement level. On the other hand, high fertility still prevails in some populations. Within intermediate fertility countries, fertility is close to the replacement level in some countries, while some others have shown signs of fertility transition. In the process of achieving low fertility, some countries have followed the conventional theory of fertility transition as experienced by industrialized countries, while others have deviated from the past theory, adding new dimensions to the fertility transition.

This section first presents a brief overview of the fertility transition theory. It then examines the factors affecting fertility decline in the region, focusing separately on low and intermediate fertility countries. This is because the factors operating to regulate fertility tend to differ by the level of fertility. Country experiences drawn from each level of fertility will be presented to highlight the conditions under which fertility decline took place.

The classical theories of fertility transition postulate that one of the preconditions of fertility decline is the changing economic value of children and associated decrease in the demand for children. The wealth flow theory of Caldwell (1976) claims that, with the introduction of Western ideas, the direction of wealth flow between generations changes from an upward (children to parents) direction to a downward (parents to children) one. In traditional societies, children have great economic value for their parents because children work in the field, help with housework and take care of parents in their old age. Since the net flow of wealth is from children to parents, parents perceive that there are economic advantages to having many children. However, westernization and the concomitant growth of mass education increase the costs of education and other expenditures for children, which makes having children more costly. As a result of reduced economic gains from having many children, parents begin to have fewer children.

Based on a similar idea of the changing value of children, Easterlin and Crimmins (1985) presented a more specific model combining cost-benefit analysis

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with socio-demographic elements. According to the model, fertility decline is the result of a cost-benefit analysis of the demand for children, the supply of children and the cost of fertility regulation. Demand is described as the number of surviving children that parents would want if the cost of fertility regulation were free. The demand is subject to household income, prices of other goods and the preference of parents, that is, the degree to which parents want children relative to other goods. The supply depends on the proximate determinants of fertility, such as the age at marriage, frequency of intercourse and probability of foetal loss. The cost of fertility regulation is the aggregated costs (both emotional and economic) of using contraception. If the supply of children is greater than the demand, there will be unwanted children, and people will start to regulate their fertility. Thus, the model suggests that the increasing gap between supply and demand is the key to fertility reduction.

The traditional demand theories hypothesize that the demand for children will decline with changes in socio-economic conditions. Examining the relationship between socio-economic development and the changing level of fertility, studies have concluded that the improvement in human development, measured by indicators such as literacy and life expectancy, plays a major role in reducing fertility. Economic development (a structural transformation of modes of production), on the other hand, is not a necessary condition for fertility decline (Bongaarts, 2002; Bongaarts and Watkins, 1996; Cleland and Wilson, 1987). While the success of family planning programmes, in most cases, depends upon changes in the demand for children, a prominent contributing factor in the changing demand for children is rapid social development, particularly the spread of primary education (Jones and Leete, 2002). A United Nations study also concludes that the driving force for fertility decline is socio-economic development, in particular a decline in mortality, and increased female education and labour force participation rates (United Nations, 2002a).

In addition to the demand factor, some studies have pointed out that the diffusion of new ideas and behaviours is another prime factor for fertility decline. According to the diffusion model, new ideas and information are spread through social interactions, which is the process of changing (or not changing) people's attitudes towards a new idea. Social norms and traditions also act to encourage or discourage a new idea. Once innovative ideas and behaviours are adopted by a group of people, they tend to diffuse to others. Social interactions, which provide opportunities for diffusion, are communicated at the personal network, national and international levels (Bongaarts and Watkins, 1996). Thus, the process of fertility decline is propelled by the transmission of information and ideas of

regulating fertility and using modern contraceptives. In examining the impacts of diffusion on fertility decline, the role of Government is particularly important because it is a major institution that can effectively diffuse information at the national level. It has been argued by Bongaarts (1994, p. 619) that national family planning programmes can have powerful impacts on fertility levels by "reducing noneconomic costs of contraceptive use, such as lack of knowledge, fear of side effects, and social and familial disapproval". Reviewing the development of family planning programmes during the latter part of the twentieth century, Caldwell and others (2002) emphasized that national family planning programmes have played a significant role in reducing fertility in the developing world by not only providing new contraceptive methods for free or at a reasonable price, but also, even more importantly, by popularizing the small family norm and legitimizing the use of contraceptives.

The crucial role of population policy in fostering fertility decline in Asia was further reinforced by Leete and Alam (1999). They also affirmed that the positive changes in the demand for children were, to some extent, responsible for the success of family planning programmes. While increases in the age at marriage have played a significant role in fertility decline, reductions in infant and child mortality, rising income levels and improved access to information and services have led to a latent demand for contraceptive use in most countries of Asia (Seetharam, 2002).

In the following section, attempts will be made to explain factors affecting fertility decline in low and intermediate fertility countries by using a combination of classical theories of the changing demand for children and the impact of information diffusion, with a particular focus on governmental population policies. On the other hand, the lack of fertility decline in high fertility countries will be examined in light of the low level of education, especially for women, and the limited level of women's autonomy.

Low fertility

The previous review indicates that factors affecting fertility decline have two dimensions, underlying socio-economic conditions that lead to a smaller number of children and a diffusion mechanism that spreads the benefits of fertility control and the use of the modern methods of contraception. In other words, as Coale (1973) has put it, fertility regulation needs to be a conscious choice of couples, based on the balance between the advantages and disadvantages of having a

smaller number of children, advantageous to the couples concerned and achievable by easily available effective contraceptive methods. In fact, the region's low fertility countries in general and Australia, Japan, New Zealand, the Republic of Korea and Singapore in particular appear to have met these conditions. Socio-economic conditions and the social environment of these countries have provided strong motivation for couples to desire having a small family, and fertility control has become socially and culturally acceptable. Methods of controlling fertility were then introduced to meet the "unmet need" for family planning.

It can be seen from tables 7-9 that these low fertility countries, in general, have lower proportions ever married among women aged 20-24, a universal female literacy rate, a higher percentage of the population living in urban areas, lower infant mortality rates and higher life expectancies at birth. All these indicators, along with advanced economic development, have created a favourable environment for contraceptive use, the rates of which range between 55 per cent in Azerbaijan to 56 per cent in Japan and 86 per cent in Hong Kong, China (table 9). Figure III reveals that a higher level of contraceptive prevalence is associated with lower fertility. In the majority of low fertility countries, contraceptive prevalence exceeds 60 per cent. However, the somewhat lower contraceptive use reported in Japan is due to the legalization of induced abortion, which has been identified as one of the reasons fostering the fertility decline (Atoh, 2001). Similarly, the much lower prevalence of modern methods of contraception reported in North and Central Asian countries, such as Armenia, Azerbaijan and Georgia, is attributed to the fact that in these countries induced abortion has been used as a method of family planning, and this factor has played a major role in their fertility decline (UNFPA, 1999; Kandiah, 2002).

While socio-economic development has influenced fertility decline in some low fertility countries, there have been notable exceptions. The case of Sri Lanka illustrates the crucial role of human development in the evolution of fertility decline. Despite the fact that Sri Lanka is still a low-income country, TFR dropped from around 5 children per woman in the late 1960s to the replacement level in the late 1990s. The main reasons cited for the sharp decline in fertility in Sri Lanka are the rise in age at first marriage, the increase in the proportions of women remaining single, the widespread use of contraception and an increasing percentage of temporal migration by young married women (Langford, 2001). More importantly, the advanced level of human development, reflected in the high female literacy rate (89 per cent), low infant mortality rate (17 per 1,000 per live births) and fairly high expectation of life at birth (71 years for males and 76 years

Table 8. Life expectancy at birth, infant mortality rate, percentage urban and female adult literacy rate, 2000

Country, territory or area	Life expectancy at birth		Infant mortality rate	Percentage urban	Female adult literacy
	Males	Females	(per 1,000)		rate
High fertility					
Afghanistan	46	47	147	22	21
Bhutan	61	63	58	7	34
Cambodia	53	61	79	16	58[b]
Lao People's Democratic Republic	53	56	88	24	51
Maldives	67	65	45	26	96
Pakistan	64	66	70	37	28
Solomon Islands	70	74	21	20	..
Intermediate fertility					
Bangladesh	59	60	73	25	30
Brunei Darussalam	74	79	9	72	88
Fiji	65	69	18	49	91
French Polynesia	69	74	10	53	..
Guam	73	78	10	39	..
India	63	64	68	28	42
Indonesia	64	68	44	41	82
Islamic Republic of Iran	69	71	32	62	70
Kyrgyzstan	64	73	38	33	95[c]
Malaysia	71	75	11	57	84
Mongolia	65	68	65	64	99
Myanmar	60	63	71	28	81
Nepal	58	58	77	12	24
New Caledonia	69	77	10	77	..
Papua New Guinea	58	60	58	17	68
Philippines	67	71	33	59	95
Samoa	65	72	21	22	..
Tajikistan	65	71	54	28	99
Turkey	67	72	42	75	77
Turkmenistan	63	70	52	45	97[c]
Uzbekistan	65	71	42	37	100[c]
Vanuatu	66	70	35	21	..
Viet Nam	66	71	35	24	91

Table 8. (Continued)

Country, territory or area	Life expectancy at birth		Infant mortality rate	Percentage urban	Female adult literacy
	Males	**Females**	**(per 1,000)**		**rate**
Low fertility					
Armenia	68	74	25	70	99[a]
Australia	76	81	6	85	..
Azerbaijan	66	75	34	57	96[c]
China	69	73	39	32	77
Democratic People's Republic of Korea	70	76	20	60	..
Georgia	69	77	19	61	..
Hong Kong, China	76	82	6	100	90
Japan	77	84	4	79	..
Kazakhstan	64	73	33	56	99[a]
Macao, China	75	80	10	99	90
New Zealand	74	80	7	86	..
Republic of Korea	69	77	10	82	96
Russian Federation	61	73	18	78	99
Singapore	75	80	5	100	89
Sri Lanka	71	76	17	24	89
Thailand	71	76	22	31	94

Source: 2000 ESCAP Population Data Sheet, (Bangkok, United Nations Economic and Social Commission for Asia and the Pacific).

[a] Refers to 1995.
[b] Refers to 1996.
[c] Refers to 1997.

for females), has inevitably influenced the fertility level (see table 8). These social conditions, which facilitated the acceptance of the small family norm, helped to complete the fertility transition earlier than economic indicators would suggest. The lessons from Sri Lanka clearly demonstrate that investments in social sector programmes along with strong political commitment can be highly effective in reducing fertility in low-income countries (Sathar and Phillips, 2001).

Thailand provides yet another example; the country is often pointed to as one of the most successful in reducing the fertility level in a short span of time. Thailand's TFR was close to 5 children per woman until 1975, after which it

Table 9. Contraceptive prevalence rate among women of reproductive age and percentage of women with unmet need for family planning

Country, territory or area	Year	Contraceptive prevalence rate (per cent)		Percentage of women with unmet need for family planning
		Any method	Modern method	
High fertility				
Afghanistan	1973	1.6	1.6	
Bhutan	2000	30.7	30.7	
Cambodia	2000	23.8	18.5	32.6
Lao People's Democratic Republic	2000	32.2	28.9	39.5
Pakistan	2000-2001	27.6	20.2	33.0
Intermediate fertility				
Bangladesh	1999/00	53.8	43.4	15.3
India	1998/99	48.2	42.8	15.8
Indonesia	1997	57.4	54.7	9.2
Islamic Republic of Iran	2000	73.8	55.9	
Kyrgyzstan	1997	59.5	48.9	11.6
Malaysia (Peninsular)	1994	54.5	29.8	
Mongolia	1998	59.9	45.7	
Myanmar	1997	32.7	28.4	
Nepal	2001	39.3	35.4	27.8
Papua New Guinea	1996	25.9	19.6	
Philippines	1998	46.0	28.2	19.8
Tajikistan	2000	33.9	27.3	
Turkey	1998	63.9	37.7	10.1
Turkmenistan	2000	61.8	53.1	
Uzbekistan	1996	55.6	51.3	13.7
Viet Nam	1997	75.3	55.8	6.9
Low fertility				
Armenia	2000	59.0	22.3	
Australia	1995	66.7	64.6	
Azerbaijan	2000	55.1	15.8	
China	1997	83.8	83.3	
Democratic People's Republic of Korea	1990-1992	61.8	53.0	
Georgia	1999/00	40.5	19.8	23.8
Hong Kong, China	1992	86.2	79.7	
Japan	2000	55.9	55.1	
Kazakhstan	1999	66.1	52.7	8.7
New Zealand	1995	74.1	71.5	
Republic of Korea	1997	80.5	66.9	
Russian Federation	1994	66.8	48.6	
Singapore	1997	62.0	53.0	
Sri Lanka	2000	70.8	49.5	
Thailand	1996/97	72.2	69.8	

Source: Family Planning Worldwide, 2002 Data Sheet, (Washington DC, Population Reference Bureau); *World Contraceptive Use 2001,* United Nations, (Wall Chart).

**Figure III. Relationship between total fertility rate
and contraceptive prevalence rate**
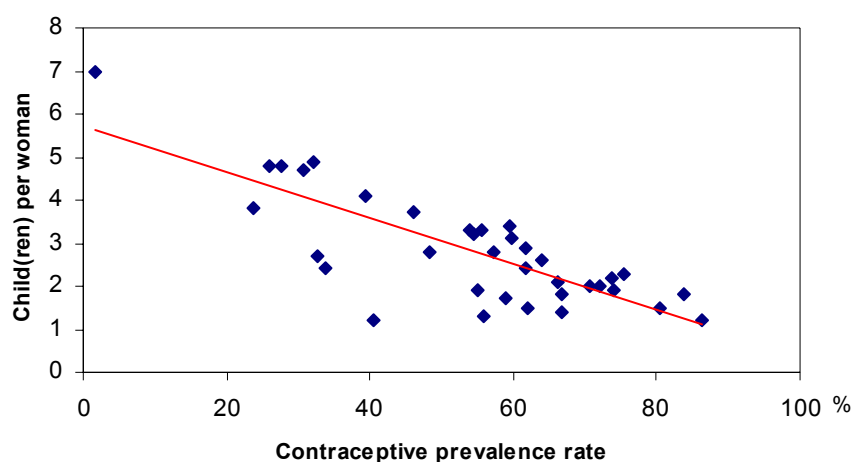
dropped drastically to 3.8 in the 1980s and 2.3 in the early 1990s. Fertility continued to decline throughout the 1990s, eventually dropping to below the replacement level (Chamratrithirong, undated; Gubhaju and Moriki-Durand, 2002). The current TFR is estimated at 1.8 children per woman (ESCAP, 2002). Several factors contributed to the decline in fertility in Thailand: age at marriage for both men and women has gone up, the level of celibacy has increased and childbearing has been compressed into a narrow span. However, the dominant factor in the rapid fertility decline has been attributed to the success of the national family planning programme implemented in the early 1970s. As a result, the use of contraceptives increased from about 34 per cent in 1975 to 72 per cent in 1996 (Ruffolo and Chayovan, 2000).

Thailand's national family planning programme is well known for its innovative character, providing contraceptive services at the community level by employing nurses and auxiliary midwives as contraceptive providers (Rosenfield and others, 1982). However, some studies have argued that Thai women across different age groups and social segments had a latent desire to control fertility even before the beginning of the national family planning programme in 1970. Increasing economic pressures, the active participation of women in trading and farming, and the relative autonomy of women were some of the driving forces behind Thai women's actions to control their fertility (Knodel and others, 1987;

Mougne, 1988). Thus, the case of Thailand strongly suggests that fertility transitions can progress rapidly when modern contraceptive methods are effectively provided in favourable social conditions where people are ready and willing to limit their fertility.

China provides an extreme case in the evolution of the fertility transition, in particular the speed with which the decline occurred. It exemplifies the crucial role that government policy can play in reducing fertility under low socio-economic conditions. As a result of the Government's comprehensive and strong family planning programme in the 1970s, China experienced an unprecedented drop in TFR from 5.8 in 1970 to 2.8 in 1979 (Zhai, 2002). The principles of late marriage, longer birth spacing and fertility limitation were strictly enforced throughout the country along with the vigorous implementation of the one-child policy (Jiang and Zhang, 2000). China experienced a sustained decline in fertility, with the TFR reaching below the replacement level in the early 1990s. The TFR currently remains at 1.8. The successful family planning programme helped to free married women from high order births and heavy family burdens, providing them more opportunities to participate in socio-economic activities. The Government's commitment to reduce the population growth rate not only contributed to fertility decline but also improved socio-economic conditions and people's ideas about family and gender relations, making them more compatible with the low fertility regime (Attane, 2002).

Intermediate fertility

Following the mechanism of fertility decline experienced in low fertility countries, many intermediate fertility countries have experienced a dramatic fertility decline in the past several decades, and the declining trend seems to be continuing towards the achievement of low fertility. These countries include, among others, Indonesia, the Islamic Republic of Iran and Viet Nam. However, some countries in the intermediate fertility group, such as Bangladesh and the Philippines, have registered a stagnant fertility rate during the recent period. On the other hand, incipient declines in fertility have begun in countries such as Papua New Guinea, Samoa and Vanuatu in the Pacific and Nepal in South Asia. Recent surveys have indicated that the TFR in these countries is above 4 children per woman. Factors inhibiting a noticeable fertility decline in these countries are related to the lack of socio-economic development, resulting in higher infant mortality, lower expectation of life at birth and low use of contraceptives.

Several factors have contributed to the decline in fertility in intermediate

fertility countries. Fertility decline in most of these countries is obviously associated with a rise in the contraceptive prevalence rate through the implementation of family planning programmes. However, lessons learned from some countries underline the importance of the effect of family planning programmes under favourable socio-economic conditions. Viet Nam presents an example of a sustained decline in TFR from 5.9 in the early 1970s to 4.0 in the late 1980s and 2.3 in 1999. This is consistent with the rise in contraceptive prevalence from 53 per cent in 1988 to 65 per cent in 1994 and 75 per cent in 1997. Although contraceptive use is the main driving force in the reduction of fertility in Viet Nam, the transformation towards a market-oriented economy following the unification of the country has improved the socio-economic conditions of the people at large, thereby strongly affecting family structure, lifestyle and reproductive behaviour (Hung, 2002).

On the other hand, Mongolia elucidates a unique situation in which the weakening of pronatalist policies followed by economic crisis, rather than prosperity, triggered the fertility decline. The TFR in Mongolia was consistently high at around 8 children per woman between 1960 and 1968. During that time, pronatalist policies were in practice; the distribution and the use of modern contraceptives were prohibited, while women with many children were rewarded with various benefits. Since 1976, however, the pronatalist policies have gradually been relaxed, with a significant expansion of family planning services in 1988 and legalized abortion in 1989. Accordingly, the TFR declined to less than 5 children per woman by 1990. A further rapid decline was recorded with the collapse of the socialist system and the accompanying economic crisis of the 1990s. Along with falling income levels and increased unemployment rates, the TFR dropped to less than 3 children per woman. More importantly, reduced social benefits for childbearing have adversely affected people's motivation for having many children as health care and schooling were no longer free, adding extra burdens for parents (Aassve and Altankhuyag, 2002). The Mongolian case thus suggests that changes in the level of social services along with economic hardship can depress people's desire to have many children.

The recent spectacular decline in fertility achieved by the Islamic Republic of Iran demonstrates the importance of basic social and health infrastructures in facilitating the use of contraceptives. The TFR in the Islamic Republic of Iran fell rapidly from 5.6 in 1985 to 2.2 in 2000. The decline in fertility has been credited to the rise in contraceptive use, which increased sharply from 37 per cent in 1976 to 74 per cent in 2000. While improvements in female education have made a significant contribution to the increase in contraceptive use, the change in the

pattern of marriage has also affected fertility decline (Roudi-Fahimi, 2002). The fertility decline in the Islamic Republic of Iran is unique in that it occurred in all segments of the population, including in rural areas. While in urban areas, the TFR fell from 4.5 to 1.8 between 1976 and 2000, in rural areas it dropped from 8.1 to 2.4 during the same period. This is attributed to the fact that the government policies to increase public education and to establish a health network system have resulted in the promotion of successful family planning within the framework of the rural health care network called "health houses" (see Box I).

The implementation of the national family planning programme in 1989 was effectively enhanced through the health network. Religious leaders legitimized the family planning programme by giving full support, which enabled the Government to provide family planning services to the people without any religious barriers. Moreover, by the mid-1980s, the perceived costs of rearing children had increased owing to higher aspirations and investments by families in their children's education (Abbasi-Shavazi, 2002). Hence, the key elements in the success of a phenomenal decline in fertility are the following: a culturally sensitive family planning programme, investments in health infrastructure and human development, and a high level of political commitment (Roudi-Fahimi, 2002).

Box I. The Rural Health Care Network in the Islamic Republic of Iran

There are now more than 16,000 health houses in the Islamic Republic of Iran, covering around 95 per cent of the rural population; mobile clinics bring health services to people living in remote areas. Each health house serves around 1,500 people, usually consisting of the people of one central village (where the health house is located) and those of satellite villages that are within an hour's walk from the central village. Each health house generally has two health providers (in principle, one man and one woman), known as *behvarz,* who receive two years of training. The female *behvarz* is in charge of maternal and child health care, and the male is responsible for issues related to environmental health, such as water safety and agricultural production…. The age and sex profiles of each village are put in charts…. The data also show the number of married women of reproductive age and their contraceptive prevalence rate by methods. *Behvarzes* are proactive: They are comfortable knocking on people's doors to talk about families' health care needs, including family planning, and to give them appointments to visit the health house (Roudi-Fahimi, 2002, p. 4).

The successful implementation of the Indonesian national family planning programme is yet another example that contributed significantly to the reduction in fertility. Indonesia exhibited a remarkable decline in the total fertility rate from close to 6 children per woman in the 1960s to less than 3 in the 1990s. This is associated with the percentage of married women currently using contraceptives, which increased from less than 20 per cent in the mid-1970s to over 50 per cent by the end of the 1990s. The success of the family planning programme in Indonesia is the result of the political change that occurred in the 1960s. The new political regime changed the political climate from one that was traditionally Islamic to a less conservative one. The secularization of the Government helped in the formulation of an effective family planning programme that is compatible with Islamic values (Hull, 2002a).

Furthermore, a study has indicated that increased involvement of women in school and the formal workforce further depressed Indonesian fertility (Hull, 2002b). A growing number of women are choosing a life focused on obtaining a higher education and pursuing a career rather than a traditional life based on marriage and childbearing. The social reality of Indonesia is making it difficult for these young women to have a family and to work; as a result, many women are deciding to pursue a non-familial life. If this trend continues, Indonesian fertility will soon decline to below the replacement level, and possibly continue to stay at a low level.

Malaysia exhibits the role of government policy in a fertility transition that is not uniform across ethnic groups. In Malaysia as a whole, TFR dropped substantially from 5.4 in 1967 to 3.5 in 1987 and the decline slowed somewhat to 3.3 in 1997 (Peng, 2002). The establishment of the national family planning programme in the mid-1960s along with the impressive gains in socio-economic indicators led to a sustained decline in fertility among Malays and an accelerated decline among people of Chinese and Indian ethnicity. However, the slow pace of the overall fertility decline in Malaysia during the period between 1987 and 1997 is the result of a differential response by ethnic groups to the inequalities in the level of socio-economic development and government policy changes. Concerned about further reductions in fertility, the Government apparently de-emphasized the family planning programme and established a pronatalist policy in the early 1980s. The immediate effect of this policy was revealed in a slowing of further declines in the TFR of Malays, from 4.5 in the years 1977 and 1987 to 3.8 in 1997, as the Malays responded quickly to the new government policy and its pronatalist messages. The fertility of Malaysians of Chinese and Indian descent, however, continued to fall, reaching 2.5 and 2.6 respectively in 1997 (Jones and Leete, 2002; Peng, 2002).

The case of India demonstrates the value of social stratification, family structure and women's autonomy in the uneven fertility transition across states divided between the northern and southern parts of the country. In India as a whole, fertility declined from 6.0 children per woman in the early 1960s to 4.5 in the early 1980s. The process of decline continued at a gradual pace, reaching a TFR of 3.2 in 1998. Such a steady decline in fertility at the national level is obviously related to the implementation of the Government's family planning programme established in 1951 as well as perceptible changes in socio-economic development of the country over the previous 30 years (Ram and Ram, 2002). The aggregate fertility level of the country is, however, masked by the substantial variations in fertility by state. For example, in the southern states of Kerala and Tamil Nadu there has been a spectacular drop in TFR from around 5 in the early 1960s to below the replacement level in 1998. By contrast, women in the northern states of Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh reported some declines in TFR from over 6 children per woman to over 4.0 during the same period (Kumar, 2002). It has been suggested that the fertility transition in most states began with the family planning programme. In Kerala, however, it was initiated in the absence of any officially committed family planning programme. A distinct difference between the north and south of India is that the fertility transition began in the south at a higher level of social development, such as a higher female literacy rate (over 45 per cent), lower infant mortality (89 death per 1,000 live births) and higher female age at marriage (20 years). By contrast, in most of the northern states the fertility transition began when female literacy was below 20 per cent, infant mortality was above 100 per 1,000 live births and female age at marriage was below 18 years (Ram and Ram, 2002).

Some studies have strongly argued the importance of women's autonomy in the manifestation of a clear difference in fertility between northern and southern India, where underlying family structures as well as the status of women differ considerably. In the northern region of India, great emphasis is placed on males and the patrilineal family system. Dowry is usually required for women to marry, a strong son preference and neglect of girls are persistent and the decision-making power of women is very low. In the south, on the other hand, marriage usually takes place within a circle of relatives, dowry is not as important and son preference is not as strong. The earlier onset of social change in Kerala and Tamil Nadu has also been further attributed to the fact that these states are examples of more equitable societies, with hierarchies that are less strictly defined and more amenable to change, and the effect of greater women's autonomy, compared with the highly stratified and feudalistic class system found in some northern states (Sathar and Phillips, 2001; Dyson, 2002).

Most of the intermediate fertility countries have experienced a sustained decline in fertility. However, the fertility rates in some of the intermediate fertility countries have stalled at above 3 children per woman. A prime example is the case of Bangladesh. Although the TFR in Bangladesh was impressively reduced from 6.3 in 1975 to 3.3 in the early 1990s, the decline has virtually stalled during the last decade. The speed with which fertility declined from a high to an intermediate level was due largely to the successful family planning campaign, which was supported by a strong political commitment to reduce fertility. Culturally-sensitive family planning programmes, manifested in household visits by field workers, the involvement of religious leaders in the programmes' promotion (McEachran and Diamond, 2001) and external funding to support the family planning programme (Caldwell and others, 2002) have facilitated the progress of the campaign. As a result, the contraceptive prevalence rate increased from less than 10 per cent in the mid-1970s to about 40 per cent at the beginning of the 1990s. The contraceptive prevalence rate increased from 45 per cent in 1993/1994 to 54 per cent in 1999/2000 (Bairagi and Datta, 2001).

The stabilization of the TFR at slightly above 3 children per woman indicates that a subsequent rise in contraceptive prevalence failed to show an impact on fertility decline. A study conducted in Matlab, Bangladesh suggests that, conditioned by strong son preference in the area, fertility in Matlab has actually reached the level of couples' desired number of children. The impact of the increase in contraceptive use has been offset largely by the decrease in the incidence of abortion, with the net balance resulting in the stalling of the total fertility rate at the desired number of children (Bairagi and Datta, 2001). It has been shown that the presence of son preference in Bangladesh has actually increased the desired number of children, the result of which has been a 12 per cent increase in TFR in Matlab (Bairagi, 2001).

It has been shown that a low level of social development might be a factor in keeping the desired number of children at a relatively high level. According to Bongaarts and Watkins (1996), the threshold level of social development, measured by the Human Development Index (HDI) required for the onset of fertility decline has lowered over time because of the diffusion of information transmitted from leading countries in the region, which had initiated the fertility decline. For example, the region's poorer countries, such as Bangladesh and Nepal, began their fertility transition at a much lower level of social development (HDIs of 0.32 and 0.33 in Nepal and Bangladesh respectively). By contrast, the onset of the fertility transition in more advanced countries, such as the Republic of Korea and Singapore, occurred when their HDI levels were much higher, 0.58 in

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the former and 0.65 in the latter. Thus, as Bangladesh had begun its fertility transition earlier than anticipated in view of its level of social development, the social conditions were not sufficient to sustain the fertility decline.

A further explanation concerning the apparent stalling of the fertility decline in Bangladesh is related to a drop in the efficiency of contraceptive methods, possibly with a decline in the quality of care, and an increase in inefficient methods with a high discontinuation rate (Jones and Leete, 2002). Furthermore, Islam and others (2003) found that the quality characteristics of field workers, including regularity in work, innovative techniques in communication, technical competence, enthusiasm for work and conformity to social norms, have had significant positive impacts on the current use of contraceptives. They conclude that the presence of or visit by a field worker by itself is not enough to increase contraceptive prevalence/continuation rates and to decrease failure rates. What is needed is good quality field workers. The Bangladesh experience, therefore, suggests that a further decline in fertility would require renewed programmes and intensified training for field workers with a strong emphasis on the quality of care.

Another example of an intermediate fertility country with a staggered fertility rate is the Philippines, where a religious institution appears to have hindered further progress in the country's fertility transition. Although TFR in the Philippines had started to decline since the mid-1960s, the pace of the decline has been quite modest during the ensuing years, and the TFR has stalled at around 4 children per woman over the last 10 years (Cabigon, 2002). This is surprising in light of favourable social indicators such as higher female literacy rate, relatively low infant mortality rate and higher expectation of life at birth (see table 8). One of the major reasons for the less-than-expected performance is resistance from the Roman Catholic Church in any effort to promote most forms of modern contraception and the Church's ideological commitment to natural family planning methods such as the rhythm method. A weak political commitment to establishing a comprehensive family planning programme is further worsening the situation (Cabigon, 2002).

High fertility

While the overall fertility rate in Asia and the Pacific has declined at a remarkable pace, some countries in the region continue to have high fertility. In the seven countries with high fertility, a lack of reliable information on demographic issues precludes the study of fertility trends in Afghanistan, Bhutan,

Maldives and Solomon Islands. The limited information available shows that fertility in these countries has remained above 6 children per woman and there has been no sign of the onset of a fertility transition. However, the fertility transition has recently begun in Cambodia, the Lao People's Democratic Republic and Pakistan. In Cambodia, the TFR has declined from 5.2 in 1995/96 to 4.0 in 2000, while fertility has dropped from 6.4 in the period 1990-1994 to 4.8 in 2000 in the Lao People's Democratic Republic (see table 6). Although in both of these countries the fertility transition began somewhat late, the decline appears to be relatively fast.

On the other hand, the TFR in Pakistan remained around 6 children per woman throughout the 1960s, 1970s and 1980s, while it declined marginally to a little over 5 children per woman during the 1990s. The absence of a fertility decline is supported by the prevalence of contraception, which nominally increased from 5.5 per cent in 1968 to 12 per cent in 1990/91 and to 24 per cent in 1996/97 (Hakim and Miller, 2001). Recent estimates suggest that the TFR in 2000 dropped to about 4.8, with the contraceptive prevalence rate increasing to about 30 per cent. The rising age at marriage may have accounted for some, if any, reduction in fertility before the 1990s, while resumption of political interest in population policies and the family planning programme, which started in the mid-1990s, is the reason for the observed decline during the 1990s. Unmet need for family planning, however, continues to be high at about 38 per cent (Sathar, 2001).

Comparisons with neighbouring countries in South Asia illuminate factors hindering a smoother fertility transition in Pakistan. For example, in contrast to the successful national family planning programme in Bangladesh, Pakistan's family planning programme suffered from a lack of political commitment, user-oriented contraceptive delivery systems, and involvement of external agencies and international donors (Robinson, 2001). More critically, low education and the associated subordinate position of women have been suggested as major reasons for inhibiting the onset of the fertility transition in Pakistan. A comparison of women's autonomy in Uttar Pradesh and Tamil Nadu in northern and southern India, respectively, and Punjab in Pakistan shows that a higher level of autonomy is associated with a lower desired number of children and a higher level of contraceptive use. Moreover, women with more autonomy have fewer unmet needs for family planning (Sathar and others, 2001), because women with higher autonomy and social status can exercise more power over their reproductive rights, thus enhancing their decisive role in adopting family planning methods and fertility outcomes.

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CHALLENGES AND FUTURE PROSPECTS

The preceding sections examined the levels, trends and patterns of fertility and reviewed the factors affecting the decline in fertility in the Asian and Pacific region. The complexity of the fertility transition does not allow an easy generalization. However, it is apparent that the prime determinant of the fertility decline lies in social development, particularly the level of women's education and autonomy, as well as commitments by Governments to provide effective family planning programmes. This section will present future prospects for fertility decline in intermediate and high fertility countries. It will also highlight challenges and emerging issues for countries belonging to each level of fertility.

Considering the past trends and the current level of fertility, along with some social and economic indicators, the United Nations has projected global total fertility rates up to the year 2050 (United Nations, 2001b). Table 10 shows the period during which countries in the region are likely to reach the replacement level of fertility. The periods reflected in this table were the most plausible for each country at the time when the projections were prepared. Nonetheless, some countries are likely to achieve replacement-level fertility much earlier than predicted by the United Nations because of the observed current fertility levels that were lower than those used by the United Nations to prepare its projections. According to the medium variant projections, all countries in this region, except Afghanistan, will have achieved the replacement level of fertility by the year 2050.

Among the high fertility countries, Bhutan, Maldives and Solomon Islands are expected to reach the replacement level of fertility in the period 2045-2050, while Pakistan is expected to reach this level in the period 2035-2040. The United Nations projects that Cambodia and the Lao People's Democratic Republic will achieve the replacement level of fertility in the period 2030-2035. However, in light of the newly available data from the 2000 Demographic and Health Survey of Cambodia, which estimated a TFR of 4.0, it is highly likely that Cambodia would reach the replacement level of fertility in the period 2020-2025.

More than one third of the 23 intermediate fertility countries are expected to complete their fertility transition by the period 2015-2020. Of these, Indonesia, Kyrgyzstan, Mongolia, Turkey, Uzbekistan and Viet Nam will soon complete their fertility transition. Although the Islamic Republic of Iran is projected to complete the fertility transition in the period 2010-2015, recent data indicate that

Table 10. Period when fertility is assumed to reach replacement level: medium variant projections

Period	High fertility countries	Intermediate fertility countries/territories
2005-2010		Indonesia
		Kyrgyzstan
		Mongolia
		Turkey
		Uzbekistan
		Viet Nam
2010-2015		Brunei Darussalam
		Islamic Republic of Iran
		Myanmar
2015-2020		French Polynesia
		India
		Malaysia
		New Caledonia
		Philippines
		Turkmenistan
2020-2025		Fiji
		Tajikistan
2025-2030		Bangladesh
		Guam
2030-2035	Cambodia	
	Lao People's Democratic Republic	
2035-2040	Pakistan	Nepal
		Samoa
		Vanuatu
2040-2045	Bhutan	Papua New Guinea
	Maldives	
	Solomon Islands	

Source: *World Population Prospects: The 2000 Revision, Volume I: Comprehensive Tables,* (United Nations publication, Sales No. E.01.XIII.8).

the country has nearly reached the replacement level. Bangladesh is yet another country for which the United Nations underestimated the time to the completion of the fertility transition. This is probably due somewhat to an overestimation of the TFR at 3.8 during the period 1995-2000. Considering the TFR of 3.3 provided by the 1999-2000 Demographic and Health Survey of Bangladesh as being plausible, it might be reasonable to predict that replacement level fertility in Bangladesh would be reached in the period 2015-2020, about 10 years earlier than predicted by the current United Nations projections.

The future course of fertility in high and intermediate fertility countries will, however, depend largely on several factors, including a high level of political commitment to providing good quality reproductive health information and services and making investments in social sector development. In high fertility countries especially, greater emphasis needs to be placed on strengthening family planning programmes so that services are accessible and affordable to couples desiring to use contraception. The data reveal that there is a high level of unmet need for contraception, with at least one third of women in the reproductive age group reporting that they wanted to postpone or stop childbearing but were not using contraceptives for various reasons (see table 9). At the same time, investments should be made to improve human development, which has been proven to reduce the demand for children and increase the demand for contraception. Improving women's autonomy and reducing gender inequality, especially in the case of Pakistan, have also been suggested as modalities for bringing about positive changes in attitudes towards increasing contraceptive use and reducing fertility (Sathar, 2001; Hakim and others, 2003).

Although there are groups in many societies that have considerably higher fertility levels than is the societal norm, in general, the gap is highest among the intermediate fertility countries. For example, in the case of India one observes considerable variations in fertility among the different states: northern states generally show a higher level of fertility compared with the southern states. Such variability in fertility, therefore, suggests that there are large pockets of the population where people are less motivated to have a smaller family and/or have poorer access to good quality family planning services and modern contraceptives. Thus, as a primary strategy to reduce the gap, special attention should be paid to making improvements in social and economic conditions along with increasing the accessibility and affordability of good quality reproductive health services for all. Moreover, a study suggests that, in order to better serve less-advantaged women, it is important to determine the categories of women who still need government-subsidized family planning services and women who can afford to

purchase contraceptives from commercial sources (Foreit, 2002). The same study also suggests that, if more women with financial means use commercial outlets, the private sector will participate more in family planning, and governmental support could be more effectively extended to women in real need.

Other important issues in the intermediate fertility countries relate to modification and adjustment of national family planning programmes in the course of the fertility transition. First, the emphasis of programmes needs to be changed from a target-oriented approach to a holistic reproductive health approach, with the aim of providing good quality primary health care, including family planning. The case of the Islamic Republic of Iran clearly suggests the effectiveness of establishing a good quality health care system rather than concentrating on narrowly focused family planning services. Second, it is apparent from the experience of Bangladesh that national family planning programmes that rely heavily on external resources are not sustainable over a long period of time. In other words, it is necessary to transform programmes to more self-supportive systems (Caldwell and others, 2002). Third, learning from the experience of low fertility countries, the Governments of intermediate fertility countries need to foresee the consequences of declining fertility rates. For example, the Government of Malaysia took steps to decelerate its fertility decline far ahead of approaching low fertility levels. Therefore, it is crucial for all countries with declining fertility levels to prepare measures for population ageing as soon as possible.

As for low fertility countries, the challenge is to maintain a balance between population growth and economic development. Although low fertility countries are the region's forerunners in having reached the replacement level of fertility earlier than their European counterparts, a continued depression in fertility in some of these countries has made them cautious about any further fertility decline. In fact, national family planning programmes in the Republic of Korea and Singapore were phased out after their fertility levels fell well below the replacement level (Caldwell and others, 2002). The experiences of European countries also confirm that the prospect for reversing fertility to the replacement level is highly unlikely (United Nations, 2000a). Similarly, in the low fertility countries of Asia, such as Japan, the Republic of Korea and Singapore, although concerted efforts were made to reverse the fertility decline, these measures proved to be unsuccessful.

Therefore, a pressing issue for the low fertility countries is the ageing of the population. As a consequence of the rapid fertility decline coupled with increased longevity, an increasing number of low fertility countries will be faced with higher

proportions of the population in the older age groups (aged 65 and older). The rapidity of the process leading to low fertility has not allowed enough time for these countries to prepare adequately for the problems associated with the ageing of the population. For example, some ageing countries such as Japan, the Republic Korea and Singapore are facing the problem of increasing national expenditures for old-age social security and mounting burdens of providing care for the growing number of frail elderly and a shrinking labour force. The shrinking labour force and the increase in the ageing population have also contributed to lowering potential support ratios (United Nations, 2002b). For example, countries such as China and Thailand, where fertility declined very rapidly and which have no established social security system, will face the problem of supporting increasing proportions of elderly persons when the proportion of the younger generation is growing smaller (Gubhaju and Moriki-Durand, 2002). Thus, it is especially important for low fertility countries as well as those nearly at that level to take serious measures to prepare well in advance for an ageing society.

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CHAPTER III

AGEING TRENDS AND POLICY RESPONSES
IN THE ESCAP REGION

By Naohiro Ogawa[*]

The United Nations designated 1999 as "The Year of Older Persons" in order to increase awareness among its Member States that the world population is ageing, and ageing at an unprecedented rate. Such awareness was further enhanced at the Second World Assembly on Ageing, held at Madrid in April 2002. In the case of Asia, the number of those aged 65 and older is projected to grow substantially over the next 50 years (United Nations, 2001a). For instance, in East Asia the number of elderly persons in this age group is expected to increase by 3.4 times over the next half century. The corresponding figures for other Asian subregions range from 4.9 times for South-Central Asia to 5.4 times for West Asia. In addition to the size of the elderly population, the proportion of elderly is anticipated to rise at an alarming rate in Asia over the next several of decades.

Until the early 1980s, many Governments of developing Asian countries perceived that population ageing was an issue only among developed countries. However, as a consequence of their rapid fertility declines over the past few decades, these Asian Governments have become increasingly aware of various population ageing problems which require more focused attention in the process of formulating their long-term development plans. Primarily because the fertility transition in these developing countries has been substantially shorter than in the developed countries, the speed of population ageing in the former has been and will be much faster than that observed in the latter (Leete, 1987; United Nations, 2002).

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It is axiomatic among demographers that declining fertility, not increased life expectancy, is the principal determinant of population ageing. It should be emphasized, however, that the effect of mortality on population ageing becomes increasingly strong as the process of demographic transition and economic development proceeds (United Nations, 1987). Currently, the effect of mortality on population ageing seems relatively limited in most Asian countries, as compared with the effect of fertility. However, if the recent trends in mortality improvement continue in these countries, mortality at advanced ages will fall substantially in the relatively near future, thus contributing to population ageing as a major force. It is generally considered that the role of mortality improvements in inducing the ageing process becomes increasingly important over time, especially when the expectation of life at birth exceeds 70 years (Myers, 1988). In view of the fact that some Asian developing countries have already achieved an expectation of life at birth higher than 70 years, one can easily conceive that in these countries the mortality effect will overtake the fertility effect in the not so distant future. This implies that development planners in these countries should pay greater attention to mortality change in the years to come.

Fertility declines and mortality improvements affect not only the proportion of the elderly in the total population at the macro level but also the elderly's way of life at the micro level. As a result of lowered fertility, each elderly person has fewer children on whom he or she can rely for old-age security. Owing to the extension of life expectancy, people may need to increase their savings and modify their retirement plans.

Apart from these two demographic factors, the urbanization process is likely to affect the welfare of elderly persons. Urbanization, which is both an antecedent and a consequence of economic development, tends to lead to an increase in nuclear families and to a decrease in traditional joint families. It also brings about numerous lifestyle changes not only among the young but also among the elderly. In parallel with such changes in family structure and lifestyles, development induces migration from rural to urban areas, which in turn, separates families and creates geographical obstacles to reciprocal family aid.

In Asia, the urbanization process has been slower than in other parts of the world. It is expected, however, that the pace of urbanization in many Asian countries will accelerate in the next few decades (Pernia, 1987; United Nations, 2001b). For this reason, the well-being of the elderly in Asia is likely to be seriously jeopardized with the passage of time unless a series of effective government policies are brought into being.

It is also important to note that both population ageing and economic development are closely interconnected and mutually interdependent. For example, the provision of health care and old-age pensions for the elderly population requires a vast amount of financial and human resources, thus competing with alternative government investments.

In the present paper, we shall examine various interrelationships among population change, the well-being of the elderly and economic development. The first half of this paper will deal with trends and prospects of population ageing and the demographic profile of the elderly in the ESCAP region. The second half will discuss some of the policies that have been formulated in recent years by certain Governments, and that are available to ESCAP countries as future programme options to enable them to cope with population ageing.

POPULATION AGEING IN THE ESCAP REGION

Trends and prospects

In 2000, a total of 418 million persons were aged 65 and older in the entire world (United Nations, 2001a). Approximately 60 per cent of these elderly persons were residing in developing regions, and this proportion increased by 7.7 percentage points in the second half of the twentieth century, as presented in table 1.

The population aged 65 and older in Asia was estimated to be 216 million in 2000, which corresponded to 5.9 per cent of the total Asian population. This proportion in Asia was considerably lower than in Europe (14.7 per cent), the population of which was older than any other population among the six geographical regions listed in table 1. Owing to the large population size in Asia, however, the elderly residing in Asian countries constitute 51.6 per cent of the aged population of the world as a whole. According to the 2000 United Nations population projections, this percentage is expected to rise to 57.9 per cent in 2025 and to 62.1 per cent in 2050, as shown in table 1. Moreover, the expected huge increase in the number of those aged 65 and older in Asia as a single segment of the population is historically unprecedented (Myers, 1988).

Table 2 compares the percentage increase in the population aged 65 and older in various regions of the world for successive 25-year periods from 1950 to 2050.

Table 1. Percentage distribution of those aged 65 and older by region, 1950-2050

(Percentage)

Region	Year				
	1950	**1975**	**2000**	**2025**	**2050**
World	100.0	100.0	100.0	100.0	100.0
More developed region	49.0	48.7	40.7	31.5	21.7
Less developed region	51.0	51.3	59.3	68.5	78.3
Africa	5.5	5.4	6.2	6.8	9.4
Europe	34.4	33.5	25.6	17.8	12.1
Asia	43.9	43.6	51.6	57.9	62.1
East Asia	22.9	22.4	27.4	29.6	27.0
South-East Asia	5.2	4.9	5.8	7.0	8.8
South-Central Asia	14.2	14.4	16.2	18.7	22.9
West Asia	1.7	1.8	2.1	2.6	3.3
North America	10.8	10.8	9.3	8.7	6.4
Latin America and the Caribbean	4.7	6.0	6.7	8.1	9.4
Oceania	0.7	0.7	0.7	0.7	0.6

Source: *World Population Prospects: The 2000 Revision, Volume I: Comprehensive Tables,* (United Nations publication, Sales No. E.01.XIII.8).

The data reported in this table indicate that the tempo of growth in the number of the elderly population has been accelerating in recent years all over the world except for the more developed regions including Europe. These accelerating trends in the recent past have been particularly pronounced in Asia, and are expected to persist for the next 25 years. In addition, within Asia, South-East Asia is projected to record the largest gain in the percentage increase in the population aged 65 and older.

Table 3 shows changes in the proportion of the population aged 60 and older among 30 selected ESCAP countries over the period 1950-2050. (In this table,

**Table 2. Percentage increase in the population aged 65 and older
by region, 1950-2050**

(Percentage)

Region	Year			
	1950-1975	**1975-2000**	**2000-2025**	**2025-2050**
World	177	181	197	177
More developed region	176	151	152	122
Less developed region	177	209	228	202
Africa	176	205	217	245
Europe	172	138	137	120
Asia	175	214	221	190
East Asia	172	222	213	161
South-East Asia	169	213	238	223
South-Central Asia	180	203	228	217
West Asia	194	210	236	228
North America	177	155	185	131
Latin America and the Caribbean	225	202	237	205
Oceania	170	191	192	147

Source: *World Population Prospects: The 2000 Revision*, *Volume I: Comprehensive Tables*, (United Nations publication, Sales No. E.01.XIII.8).

ages 60 and older are used as the criterion for determining the elderly population, primarily because in many Asian countries the age of retirement from the labour force is 60 years.) A few points of interest emerge from this table. First, in 2000, Japan's population was by far the most aged in the ESCAP region; 23.2 per cent of its population were aged 60 and older. Japan is followed by Georgia (18.7 per cent), the Russian Federation (18.5 per cent), Australia (16.3 per cent), and New Zealand (15.6 per cent). Besides these five countries, another five countries exceeded a level of 10 per cent, ranging from 10.1 per cent for China to 11.2 per cent for Kazakhstan. It should be noted that in 1950 the proportion aged 60 and

Table 3. Change in the proportion of those aged 60 and older
in the ESCAP region, 1950-2050

Country	Year				
	1950	**1975**	**2000**	**2025**	**2050**
Afghanistan	4.5	4.7	4.7	5.2	7.7
Australia	12.5	12.8	16.3	24.8	28.2
Azerbaijan	11.1	7.9	10.5	18.4	32.1
Bangladesh	6.2	5.5	4.9	8.4	16.0
China	7.5	6.9	10.1	19.5	29.9
Fiji	4.5	4.5	5.7	13.0	23.3
Georgia	14.9	12.4	18.7	25.6	35.8
India	5.6	6.2	7.6	12.5	20.6
Indonesia	6.2	5.4	7.6	12.8	22.3
Islamic Republic of Iran	8.3	5.4	5.2	10.5	21.7
Japan	7.7	11.7	23.2	35.1	42.3
Kazakhstan	10.2	8.5	11.2	16.8	25.4
Kyrgyzstan	12.5	8.5	9.0	12.9	22.3
Malaysia	7.3	5.6	6.6	13.4	20.8
Nepal	6.2	5.7	5.9	7.1	12.4
New Zealand	13.1	12.7	15.6	25.4	29.3
Pakistan	8.2	5.5	5.8	7.3	12.4
Papua New Guinea	6.0	3.7	4.1	6.5	12.1
Philippines	5.5	4.9	5.5	10.4	19.5
Republic of Korea	5.4	5.8	11.0	24.1	33.2
Russian Federation	9.2	13.6	18.5	26.0	37.2
Singapore	3.7	6.7	10.6	30.0	35.0
Solomon Islands	3.2	4.9	4.2	5.5	10.8
Sri Lanka	7.3	6.3	9.3	18.0	27.6
Thailand	5.0	5.0	8.1	17.1	27.1
Turkey	5.9	6.9	8.4	14.2	23.0
Turkmenistan	9.5	6.8	6.5	10.7	19.9
Uzbekistan	9.1	7.8	7.1	11.7	22.3
Vanuatu	4.3	4.4	5.0	7.5	13.9
Viet Nam	7.0	7.5	7.5	12.6	23.5

Source: World Population Ageing 1950-2050, (United Nations publication, Sales No. E.02.XIII.3).

older was higher than 10 per cent in only six countries. The number is expected to rise to 23 countries in 2025 and to 29 out of 30 countries in 2050. These expected changes over time point to the rapid process of population ageing among many ESCAP member countries, particularly over the next 50-year period.

Second, it is interesting to observe that in 1950 Japan's ageing level was only 7.7 per cent, which was lower than that of several developing countries in Asia such as Pakistan. Owing to the difference in the subsequent fertility paths in these countries, the percentage of the elderly population for the former was four times higher than that for the latter in 2000. In the case of Pakistan, the relative share of the elderly population declined considerably from 8.2 to 5.8 per cent during the period under consideration. In addition to Pakistan, a number of countries in the ESCAP region underwent a rejuvenation of their population during the second half of the twentieth century, particularly between 1950 and 1975. The rejuvenation process was attributable primarily to persistent high fertility in these countries over the period 1950-1975. These countries include Azerbaijan, Bangladesh, China, Georgia, Indonesia, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Malaysia, Nepal, Papua New Guinea, the Philippines, Sri Lanka, Turkmenistan and Uzbekistan.

Third, it is worth noting that the speed of population ageing is likely to accelerate over the next 50 years in some of the ESCAP countries listed in table 3. For instance, in both Fiji and the Islamic Republic of Iran the proportion of the elderly is projected to increase by more than four times between 2000 and 2050. In 13 other countries, the proportion of the elderly is expected to grow by more than three times during the corresponding period. These additional countries include several ASEAN (Association of South-East Asian Nations) countries such as Malaysia, the Philippines, Singapore, Thailand and Viet Nam.

The validity of these observations can be further substantiated by data presented in table 4, in which the time required to double the proportion of elderly persons aged 60 and older from 10 to 20 per cent has been computed for various ESCAP countries. As mentioned previously, Japan is currently the most aged population in the ESCAP region, and it took Japan 28 years, from 1967 to 1995, to increase its proportion of elderly persons from 10 to 20 per cent. However, a brief inspection of computed results for other ESCAP countries reveals that there will be a total of 12 countries that will complete this transition in a considerably shorter period of time than 28 years. In the case of Singapore, the comparable demographic shift will be achieved in only 17 years. As discussed elsewhere

**Table 4. Time required to increase the proportion of elderly persons aged 60
and older from 10 to 20 per cent in selected ESCAP member countries**

Country	Year in which the aged population reaches		Time required to increase from 10 to 20%
	10%	**20%**	**(years)**
Singapore	1998	2015	17
Thailand	2010	2031	21
Georgia	1991	2013	22
Republic of Korea	1998	2020	22
Viet Nam	2019	2042	23
Fiji	2018	2043	25
Uzbekistan	2021	2046	25
Islamic Republic of Iran	2023	2048	25
Sri Lanka	2004	2030	26
China	1999	2026	27
Turkey	2012	2039	27
Indonesia	2016	2043	27
Japan	1967	1995	28
Kyrgyzstan	2017	2046	29
Azerbaijan	1998	2028	30
Malaysia	2016	2047	31
India	2017	2049	32
Kazakhstan	1997	2038	41
Russian Federation	1964	2014	50

Source: World Population Prospects: The 2000 Revision, Volume I: Comprehensive Tables,
(United Nations publication, Sales No. E.01.XIII.8).

(Ogawa and Retherford, 1997), the tempo of the ageing of the Japanese population
is substantially more rapid than that of Western industrialized populations,
implying that Singapore's ageing process may be the fastest in the history of the
world. Singapore's rapid ageing will be followed by that of Thailand (21 years),
Georgia (22 years), the Republic of Korea (22 years), Viet Nam (23 years), Fiji (25
years), Uzbekistan (25 years), the Islamic Republic of Iran (25 years), Sri Lanka
(26 years) and China (27 years).

To measure the level of population ageing, demographers often use the index
of ageing, which is defined as follows: (those aged 60 and older ÷ those aged 0-14)
x 100. In most ESCAP countries, the value of this index is currently below 100,

thus indicating that the number of children exceeds that of elderly persons. In Asia, Japan is the only exception; it has exceeded the value of 100 since 1991. In the early part of this century, however, many ESCAP countries are projected to exceed the 100-level. For instance, Georgia is expected to reach this level in 2003, Singapore in 2011, Armenia in 2012 and the Republic of Korea in 2016. United Nations population projections show that more than 30 ESCAP countries will attain this level by 2050. Moreover, Japan's index of ageing is forecast to be 338 in the same year, followed by Singapore at 252. These projected results point to a high likelihood that the variance in the level of ageing will increase over time among ESCAP countries.

In addition to the index of ageing, the median age of the population is frequently employed to represent the level of ageing. In 1950, the median age of the population in Asia as a whole was 22.0 years old, but it increased to 26.2 years old in 2000, and is expected to rise to 38.3 years old by 2050. The median age for the East Asian subregion, which is the most aged subregion in Asia, is projected to almost double from 23.5 to 44.3 years old over the period 1950-2050. This makes a sharp contrast to the case of the West Asian subregion, which has the youngest population in Asia, that is, from 20.4 to 31.4 years old over the corresponding period.

Demographic sources of population ageing

One of the major demographic sources contributing to the rapid process of population ageing in Asia is an unprecedented fertility decline in the second half of the twentieth century. Since the mid-1960s, the magnitude and tempo of the fertility transition in many parts of Asia, especially East and South-East Asia, have been phenomenal (Ogawa and others, 1993; Mason, 2002). These Asian countries have experienced a substantially quicker transition than that of the developed countries. As a result, South-Central and West Asian countries have been left far behind East and South-East Asia in the process of fertility transition. Table 5 presents changes in the total fertility rate in selected ESCAP member countries over the period 1950-2050. During the period 1950-1955, none of the ESCAP member countries enumerated in table 5 had a total fertility rate (TFR) below the replacement level of fertility (2.1 children per woman). During the period 2000-2005, however, approximately one third of the countries listed in table 5 are expected to have TFRs below the replacement level. Virtually all the countries except for Afghanistan are projected to attain the replacement level of fertility by the middle of this century.

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Table 5. Total fertility rates in the ESCAP region, 1950-2050

Country	Year				
	1950-1955	1975-1980	2000-2005	2025-2030	2045-2050
Afghanistan	7.7	7.4	6.8	4.7	2.8
Australia	3.2	2.1	1.8	1.9	2.0
Azerbaijan	5.5	3.6	1.5	1.7	1.9
Bangladesh	6.7	5.7	3.6	2.1	2.1
China	6.2	3.3	1.8	1.9	1.9
Fiji	6.6	4.0	3.0	2.1	2.1
Georgia	3.0	2.4	1.4	1.6	1.9
India	6.0	4.8	3.0	2.1	2.1
Indonesia	5.5	4.7	2.3	2.1	2.1
Islamic Republic of Iran	7.0	6.0	2.8	2.1	2.1
Japan	2.7	1.8	1.3	1.6	1.8
Kazakhstan	4.4	3.1	2.0	1.9	1.9
Kyrgyzstan	4.5	4.1	2.3	2.1	2.1
Malaysia	6.8	4.2	2.9	2.1	2.1
Nepal	5.8	5.7	4.5	2.5	2.1
New Zealand	3.7	2.2	2.0	1.9	2.1
Pakistan	6.3	6.3	5.1	2.8	2.1
Papua New Guinea	6.2	5.9	4.3	2.9	2.1
Philippines	7.3	5.5	3.2	2.1	2.1
Republic of Korea	5.4	2.9	1.5	2.0	2.1
Russian Federation	2.8	1.9	1.1	1.4	1.8
Singapore	6.4	1.9	1.5	1.8	1.9
Solomon Islands	6.4	7.0	5.3	3.4	2.1
Sri Lanka	5.9	3.8	2.1	1.9	1.9
Thailand	6.4	4.0	2.0	1.9	1.9
Turkey	6.9	4.7	2.3	2.1	2.1
Turkmenistan	6.0	5.3	3.2	2.1	2.1
Uzbekistan	6.0	5.6	2.3	2.1	2.1
Vanuatu	7.6	5.8	4.3	2.6	2.1
Viet Nam	5.7	5.9	2.3	2.1	2.1

Source: World Population Ageing 1950-2050, (United Nations publication, Sales No. E.02.XIII.3).

Figure I depicts the pattern of intertemporal changes in TFR for five Asian countries over selected periods. By inspecting this graphical exposition, one can easily observe that all five countries underwent highly comparable fertility declines, although the time period for each differs considerably. This result seems to suggest that, as a forerunner of the fertility transition, Japan's population ageing experience may be useful to the other Asian countries or areas as a base for formulating appropriate policies for coping with various ageing problems, particularly because all five countries share considerably similar cultural settings.

In addition to fertility declines, mortality improvements are another demographic factor contributing to population ageing. Unlike the case of their Western predecessors, in many developing countries, including those in Asia, significant mortality decline took place without accompanying substantial socio-economic development. This was due mainly to the importation of advanced medical knowledge and technology from the West, and to the subsequent spread of ideas on public health and hygiene through government programmes. In Asia as a whole, the expectation of life at birth for both sexes improved dramatically, from 41.3 years during the period 1950-1955 to 67.4 years during the period 2000-2005.

Fertility reduction induces a relative decrease in the number of young persons, thus accounting for "ageing from the base". Mortality, on the other hand, depending upon its pattern of improvement, affects different segments of the population differently. Improvements in infant mortality contribute to population rejuvenation, while people in older age groups contribute to population ageing. To disentangle the effects of fertility and mortality upon the ageing of the Japanese population, the population projection technique has been applied to the Japanese case, and the following three population projections have been computed: (a) the projection of the base population for the next five years by applying both fertility and mortality rates constant at the level of the initial year; (b) the projection of the same base population for the next five years by applying the declining rate of mortality, holding fertility constant at the level of the initial year; and (c) the projection of the base population for the next five years by applying the declining rate of fertility, holding mortality constant at the level of the initial year. For each of these three projections, the index of ageing was computed for an interval of five years. The same computation process has been repeated for the four subsequent five-year periods, beginning from 2005. Based upon the computed results, the relative impact of fertility and mortality on the index of ageing for each five-year period has been measured, and the results are reported in table 6. As can be seen from inspecting these calculated results, in the case of Japan, the impact of fertility

**Figure I. Changes in the total fertility rate in five countries
over selected periods of time**
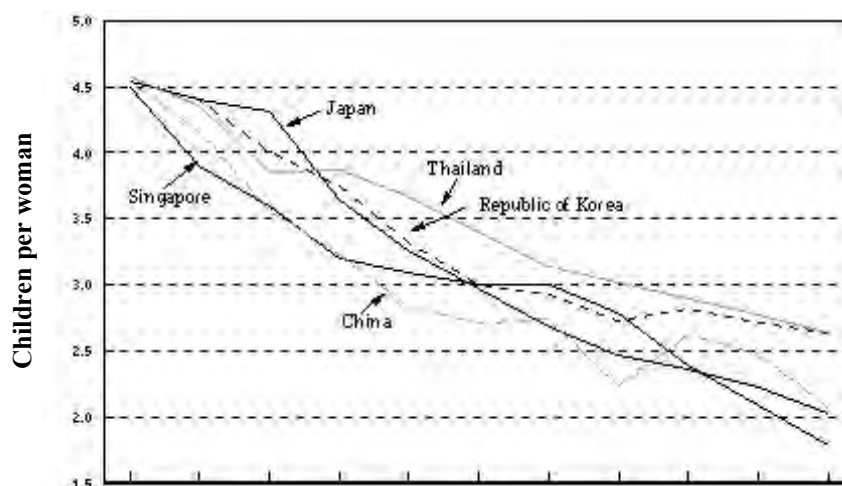
Japan	1947	1957
China	1973	1983
Singapore	1966	1976
Thailand	1973	1983
Republic of Korea	1971	1981

Source: United Nations, *Demographic Yearbook,* various years.

decline on population ageing is expected to exceed that of mortality decline over the period 2000-2005. However, from the period 2005-2010 onward, mortality improvement is more dominant than fertility reduction. These calculated results are in agreement with the view that the process of population ageing is primarily induced by declining fertility in the beginning, but the importance of declining mortality increases with the passage of time. In due course, the shift of importance from fertility to mortality in the population that is ageing may be expected in many ESCAP countries.

Demographic profile of elderly persons in Asia

Shown in table 7 are expectations of life at birth and at later ages for selected ESCAP countries. The expectation of life at birth in Japan is 77.8 years for males and 85.0 years for females, currently the highest anywhere in the world. It is worth remarking, however, that Japan's life expectancy for males at age 80 is not

Table 6. Decomposition of changes in projected index of aging, 2000-2025

	Period				
Starting year	2000	2005	2010	2015	2020
Ending year	2005	2010	2015	2020	2025
	Index of ageing				
Projection (a)	143.5	175.4	223.0	267.8	305.3
Projection (b)	142.4	173.6	221.0	265.7	303.1
Projection (c)	144.1	174.4	221.2	265.6	302.9
Components (%)					
Fertility component	25.0	29.1	45.0	42.5	35.2
Mortality component	24.4	30.2	46.8	44.7	37.6
Age structure component	23.2	28.4	44.9	42.6	35.4
Total change	26.2	30.9	46.9	44.6	37.5
Residual	-46.5	-56.7	-89.7	-85.3	-70.7
Relative impact between mortality component and fertility component [a]					
	102.4	96.5	96.1	95.2	93.7

[a] Relative impact { (fertility component) ÷ (mortality component) } x 100.

the highest of all the countries in the table; Singaporean males show an even higher life expectancy at this age. This cross-over phenomenon can be observed between various pairs of the countries listed in this table. For instance, although Chinese males show higher life expectancy at birth than their counterparts in Pakistan, the remaining years of life at higher ages (both 65 and 80 years) for the former are considerably shorter than those for the latter. More importantly, in terms of the number of years, the differences between the countries at higher ages are not so pronounced as at birth. Although the difference in life expectancy at birth for males between Bangladesh and Japan amounts to approximately 17 years, it shrinks to only 5.3 years for males at age 65. One of the primary reasons for this pattern is that, for individuals who survive to age 65 in both developing and developed countries, the average remaining years of life are rather similar owing to the principle of survival of the fittest.

Another crucial point emerging from table 7 is related to the difference in life expectancy at higher ages between males and females. In all the countries, the number of remaining years to be lived at advanced ages is greater for females than

Table 7. Expectation of life at birth and at later ages for males and females in selected ESCAP countries, 2000-2005

(Years)

Country	Males				Females			
	0	60	65	80	0	60	65	80
Afghanistan	43.0	13.3	10.4	4.0	43.5	14.0	10.8	4.1
Australia	76.4	20.4	16.6	7.5	82.0	24.6	20.3	9.4
Azerbaijan	68.7	17.7	14.6	7.2	75.5	21.9	18.2	9.4
Bangladesh	60.6	15.2	12.1	5.2	60.8	16.4	13.1	5.5
China	69.1	16.3	12.9	5.4	73.5	20.1	16.1	7.2
Fiji	68.1	15.0	11.9	5.4	71.5	17.6	14.2	6.2
Georgia	69.5	17.6	14.4	6.8	77.6	21.7	17.8	8.2
India	63.6	16.1	13.0	6.0	64.9	17.9	14.4	6.5
Indonesia	65.3	16.0	12.7	5.4	69.3	17.9	14.2	5.9
Islamic Republic of Iran	68.8	16.6	13.2	5.4	70.8	18.1	14.2	5.5
Japan	77.8	21.4	17.4	7.8	85.0	27.0	22.6	10.8
Kazakhstan	59.6	14.0	11.5	5.6	70.7	19.0	15.5	7.1
Kyrgyzstan	64.8	16.3	13.2	6.3	72.3	20.1	16.3	7.2
Malaysia	70.6	16.9	13.5	6.4	75.5	19.4	15.5	6.9
Nepal	60.1	15.2	12.1	5.2	59.6	16.3	12.9	5.5
New Zealand	75.3	19.7	15.9	7.1	80.7	23.8	19.6	9.1
Pakistan	61.2	16.1	13.0	6.5	60.9	16.7	13.3	6.1
Papua New Guinea	56.8	12.5	10.0	5.0	58.7	15.0	12.2	5.8
Philippines	68.0	16.5	13.1	5.5	72.0	18.5	14.7	6.1
Republic of Korea	71.8	17.3	13.8	6.0	79.1	22.3	18.1	7.8
Russian Federation	60.0	13.5	11.1	5.8	72.5	18.7	15.0	6.8
Singapore	75.9	19.6	16.1	8.1	80.3	23.2	19.3	9.9
Solomon Islands	67.9	15.3	11.9	4.9	70.7	17.2	13.5	5.7
Sri Lanka	69.9	17.0	13.5	5.7	75.9	20.0	16.0	6.7
Thailand	67.9	16.9	13.5	5.7	73.8	19.5	15.6	6.4
Turkey	68.0	17.3	13.8	6.2	73.2	19.8	15.8	6.8
Turkmenistan	63.9	16.0	13.1	6.4	70.4	19.5	15.9	7.4
Uzbekistan	66.8	17.4	14.2	7.0	72.5	20.6	16.9	8.2
Vanuatu	67.5	15.4	12.4	5.9	70.5	18.5	15.1	7.0
Viet Nam	66.9	18.1	14.5	6.2	71.6	19.6	15.7	6.7

for males, although the male-female differential varies widely cross-nationally. In the case of Bangladesh, for example, life expectancy at age 65 for females is only 1 year higher than that for males, but the corresponding figure for the Republic of Korea is 4.3 years. In addition, mortality risks between males and females vary substantially at different ages; in high-fertility countries, for instance, middle-aged women show higher mortality as a result of various complications arising from pregnancies and deliveries. As a result of such inter-country mortality differentials by sex, the sex ratio of the elderly differs markedly from country to country. The predominance of women can be observed in virtually all the countries included in table 8, particularly at higher ages. There are two intriguing exceptions: in both Pakistan and Papua New Guinea the number of males exceeds that of females at virtually all higher ages except for 70-74 years and 75-79 years. In contrast, after the age of 85 there are only 24 men for every 100 women in Kazakhstan and 23 men for every 100 women in the Russian Federation. In these countries, the sex ratio among the elderly is substantially skewed as a result of past war influences (Vassin, 1996).

The relative surplus of women at older ages – or the feminization of the aged population – in Asian countries is also reflected in data on marital status. As presented in table 9, in the early 1980s, the proportion of women aged 65 and older who were married falls in the range of 20 to 50 per cent. On the other hand, the proportion of men at ages 65 and older who were married was markedly higher, ranging from 70 to 90 per cent. In view of the wide prevalence of the universal marriage pattern in Asia, these results appear to suggest that the modal marital status for older women in these Asian countries is widowhood (Martin, 1988). It should also be noted that although marital status among the elderly is influenced by divorce and remarriage at older ages to a certain extent it is more strongly affected by differential mortality between males and females (Myers, 1988). It should be further noted that, as a result of the improved joint survival to older ages of both husbands and wives, the incidence of being widowed for both males and females has declined or remained the same for a number of Asian countries in recent years.

With regard to living arrangements for the elderly in Asia, coresidence of the elderly with adult offspring is considered to be a central feature of the familial support system in much of the developing world (United Nations, 2000), but especially in Asia. Moreover, the sex of a coresiding child has implications for the nature and level of support provided to older parents (Ofstedal and others, 1999). Social structures and related gender preferences differ systematically among countries.

Table 8. Gender ratios at higher ages in selected ESCAP countries, 2000

(Males per 100 females)

Country	Age					
	60-64	65-69	70-74	75-79	80-84	85+
Afghanistan	101	98	96	94	91	87
Australia	101	95	89	76	63	44
Azerbaijan	82	81	74	52	36	30
Bangladesh	99	102	102	101	98	98
China	106	100	90	76	61	40
Fiji	93	92	86	79	71	75
Georgia	81	77	69	49	36	35
India	95	93	91	87	83	80
Indonesia	89	86	84	80	72	63
Islamic Republic of Iran	99	95	91	87	84	82
Japan	94	90	82	64	53	40
Kazakhstan	77	70	54	36	30	24
Kyrgyzstan	83	77	65	43	33	35
Malaysia	98	91	84	81	76	77
Nepal	101	98	95	91	85	76
New Zealand	97	96	90	74	58	42
Pakistan	102	101	93	100	107	126
Papua New Guinea	105	102	98	100	106	121
Philippines	92	90	78	68	63	58
Republic of Korea	91	76	62	56	46	32
Russian Federation	71	63	51	32	27	23
Singapore	97	91	87	83	69	54
Solomon Islands	106	113	106	125	100	100
Sri Lanka	111	104	92	122	88	97
Thailand	90	84	81	75	67	59
Turkey	89	97	82	78	67	65
Turkmenistan	88	82	70	48	39	39
Uzbekistan	90	84	76	50	38	43
Vanuatu	113	108	125	100	133	100
Viet Nam	93	90	87	83	78	68

Source: World Population Ageing 1950-2050, (United Nations publication, Sales No. E.02.XIII.3).

**Table 9. Marital status of males and females at ages 65 and older
in selected Asian countries**

(Percentage)

Country	Year	Males			Females		
		Single	Married	Widowed/ separated	Single	Married	Widowed/ separated
Australia	1991	7.0	73.4	19.6	6.2	43.0	50.7
Bangladesh	1981	0.2	89.1	10.7	0.1	27.6	72.3
China	1990	2.2	66.6	31.2	0.3	37.1	62.6
India	1981	2.0	74.3	23.7	0.4	28.9	70.7
Indonesia	1990	3.8	80.1	16.1	2.0	28.3	69.7
Japan	1995	1.4	84.0	14.1	3.0	43.1	53.3
Malaysia	1991	1.9	80.6	17.5	1.4	36.2	62.4
New Zealand	1991	6.1	72.1	21.8	6.5	39.6	53.9
Pakistan[a]	1981	2.6	85.5	11.9	2.6	49.6	47.8
Philippines	1990	3.1	77.8	19.0	8.8	42.1	49.1
Republic of Korea	1995	0.2	83.7	16.2	0.2	26.5	73.4
Russian Federation	1994	1.6	79.8	18.6	7.7	28.4	63.9
Singapore	1990	5.0	73.9	21.0	3.8	33.5	62.7
Sri Lanka	1981	6.7	78.3	15.0	4.9	44.6	50.5
Thailand	1990	3.9	73.9	22.2	2.2	39.4	58.4
Turkey	1990	1.9	81.3	16.8	1.4	42.9	55.7

Source: Kevin Kinsella and Victoria A. Velkoff, *An Aging World: 2001,* United States Census Bureau, Series P95/01-1, (Washington DC, United States Government Printing Office, 2001).

[a] At ages 60 and older for Pakistan.

For example, the following two dominant patterns are observed in Asia. One of them is the patrilineal system, where males dominate ownership of resources, while a woman, when she marries, takes the identification of her husband's family. In these types of societies (for example, in China, Japan and most of India), adults tend to live with a married son and most likely receive care, when needed, from a daughter-in-law (Bongaarts and Zimmer, 2001). The other Asian system, found in countries such as Thailand and Cambodia, is bilateral. In these cases, women and men are considered to be equal members of their natal families, and there is little, if any, preference with respect to the sex of the coresident child.

Over the previous two decades or so, various ageing-related sample surveys have been conducted in the ESCAP region. Using micro-level data gathered in 10 ESCAP countries including Bangladesh, India, Indonesia, Kazakhstan and Nepal

**Figure II. Living arrangements of elderly persons aged 60 and older
in selected countries in 1996**
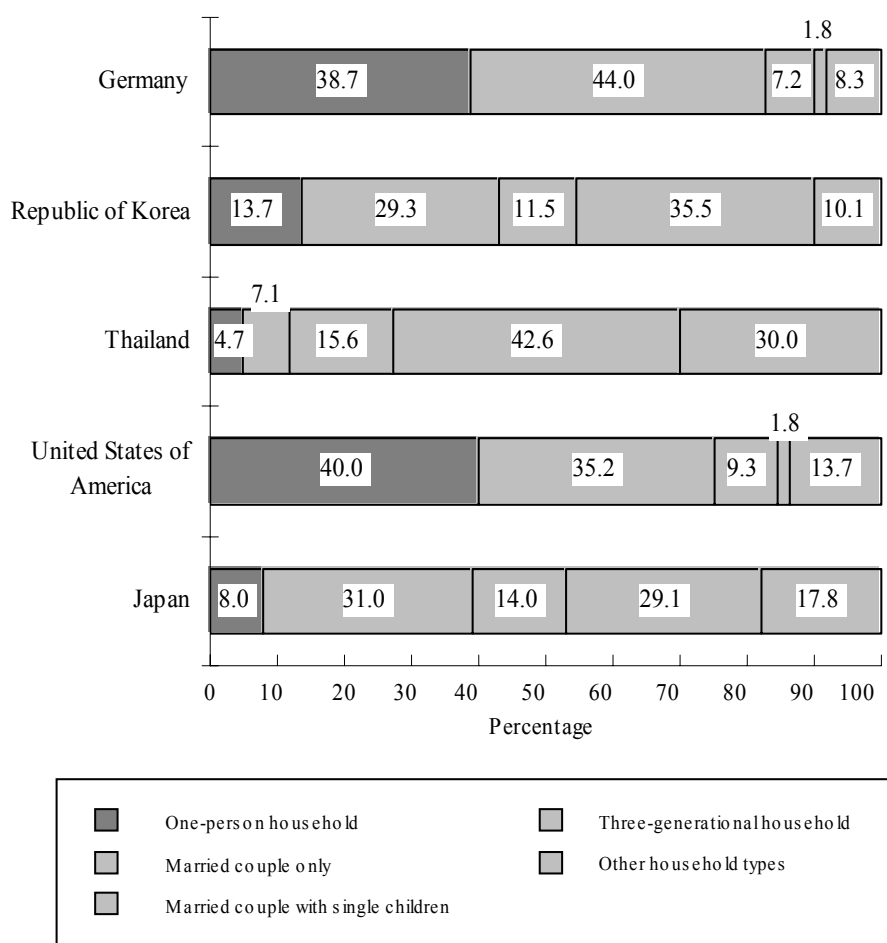
between 1990 and 1998 as part of the Demographic and Health Household Surveys, Bongaarts and Zimmer (2001) have found that 66 per cent of males and 68 per cent of females are coresiding with an adult child in developing Asia. Among these 10 ESCAP countries, the highest proportion of older men living with an adult child (80 per cent) is observed in Pakistan.

According to an international comparative survey on the elderly undertaken in 1996 (Management and Coordination Agency, 1997), the proportion of the elderly at ages 60 and older living in three-generational households was 42.6 per cent in Thailand, 35.5 per cent in the Republic of Korea and 29.1 per cent in Japan, as displayed in figure II. In contrast, in the case of Germany and the United States of America, it was 1.8 per cent each. In addition, the proportion of the elderly coresiding with their children has been on a downward trend over the previous two decades in the three Asian countries under consideration. In Japan, the proportion of the elderly aged 60 and older coresiding with an adult child declined from 36.9 per cent in 1981 to 22.0 per cent in 2001. In the case of the Republic of Korea, it decreased from 38.1 per cent in 1991 to 26.3 per cent in 2001. In Thailand, it fell from 48.5 per cent in 1986 to 42.6 per cent in 1996.

The aforementioned study conducted by Bongaarts and Zimmer asserts that the association between older adults' schooling and living arrangement patterns tends to substantiate the hypothesis that older adults living in developing countries with high scores for socio-economic indicators are less likely to be living in extended families. This view seems to be in agreement with Goode's (1963) convergence theory, suggesting that there exists a movement towards family nuclearization and a weakening of the extended family system as socio-economic development proceeds. Moreover, because the three ESCAP countries under consideration have already been on a steady socio-economic developmental path for a considerable period of time, the recent declining trends in the proportion of elderly persons coresiding with their adult children seem to endorse the validity of Goode's convergence theory.

The level of urbanization has been gradually rising in Asia over the past several decades. The proportion of those living in urban areas increased from 17.4 per cent in 1950 to 36.7 per cent in 2000 (United Nations, 2001b). Asia's current level of urbanization is less than half that for Latin America. Because of the lagging pace of urbanization in Asia, the predominant portion of the elderly in Asia inhabit rural areas. Thus, their labour force participation rates are extremely high (as shown in table 10) by international standards, although they have been on a downward trend as the developmental processes have advanced in recent years. Among the 29 countries listed in table 10, male labour force participation in Nepal is the highest: in 2000, 65.0 per cent of Nepalese men aged 65 and older were in the labour force. The male labour force participation rates for the other countries range roughly from 10 to 60 per cent. However, the labour force participation rates for the female elderly were substantially lower than those for the male elderly. As is the case with males, the female labour force participation rates among the

Table 10. Socio-economic profile of elderly persons (65 years and older) in the ESCAP region, 2000

Country	Labour force participation rate (%)		Illiteracy rate (%)	
	Males	**Females**	**Males**	**Females**
Afghanistan	55.2	20.5	85.6	99.1
Australia	7.5	2.1	n.a.	n.a.
Azerbaijan	18.2	6.3	n.a.	n.a.
Bangladesh	59.0	32.9	66.7	91.4
China	27.5	7.6	39.1	82.3
Fiji	44.6	10.2	23.4	42.6
Georgia	23.6	11.1	n.a.	n.a.
India	52.7	13.5	57.5	86.1
Indonesia	48.5	24.1	35.3	68.8
Islamic Republic of Iran	53.7	11.9	n.a.	n.a.
Japan	33.4	14.4	0.0[a]	0.0[a]
Kazakhstan	7.9	3.1	n.a.	n.a.
Kyrgyzstan	8.8	3.1	n.a.	n.a.
Malaysia	38.6	17.0	34.2	70.3
Nepal	65.0	36.5	78.3	97.8
New Zealand	8.8	3.3	n.a.	n.a.
Pakistan	48.1	12.4	73.6	94.3
Papua New Guinea	46.0	33.0	n.a.	n.a.
Philippines	54.5	26.2	16.1	20.5
Republic of Korea	32.4	16.0	5.7	20.8
Russian Federation	12.1	5.4	0.8	1.7
Singapore	16.3	4.3	16.1	56.0
Solomon Islands	64.1	51.0	n.a.	n.a.
Sri Lanka	27.2	5.1	12.1	33.5
Thailand	37.5	17.3	11.0	23.9
Turkey	42.9	23.7	30.9	69.9
Turkmenistan	13.5	4.6	n.a.	n.a.
Uzbekistan	9.1	3.4	n.a.	n.a.
Viet Nam	43.7	26.1	9.5	31.6

Source: World Population Ageing 1950-2050, (United Nations publication, Sales No. E.02.XIII.3).

[a] Author's estimate.

elderly vary more widely from country to country, ranging from 2 per cent for Australia to 36.5 per cent for Nepal.

Data on the illiteracy rate among the elderly in the ESCAP region presented in table 10 seem to provide a useful base for confirming that the availability of schooling has been improving in many countries in the ESCAP region. Evidently, as mentioned above, the improved level of schooling has contributed to reducing to a certain extent the proportion of elderly persons coresiding with their adult children. Although the relevant table omitted the date, the level of illiteracy has rapidly declined particularly in the Republic of Korea, Singapore and Thailand.

Based upon the foregoing discussions, one can describe the demographic profile of the elderly in Asia as follows: the majority of the elderly are women, many of whom are widows; most of the Asian elderly are living with their children and in rural areas; and a substantial proportion of the elderly are engaged in economic activities. It seems from the fragmentary evidence presented above and elsewhere, however, that in the process of economic development, this general profile of the elderly in Asia has been gradually changing. In some Asian countries, these changes have already aroused the concern of policy makers and development planners, particularly because the tempo of population ageing in these countries is unprecedented.

PUBLIC AND FAMILY SUPPORT SYSTEMS IN ASIA

It is generally considered that, although family-based support systems provide a principal source of old-age security at the early stages of economic development, the responsibility for taking care of aged dependants is gradually shifting to the public support system as the developmental process proceeds (Ogawa, 1992; Ogawa and Retherford, 1997).

Limits to the family support system and value shifts

As has been widely documented (Petri, 1982; Treas and Logue, 1986), the levels and the nature of family support vary substantially with the level of economic development. In most developing countries, such as those in Asia, support for the elderly is provided mainly and significantly by families. In developed countries, however, public transfers play a significant role in supporting the elderly, although families still provide their elderly dependants with many support services.

Table 11. Income sources for the elderly aged 60 and older in Germany, Japan, Republic of Korea, Thailand and United States, 1996

Specific income source	Percentage mentioning specific income source				
	Japan	United States	Thailand	Republic of Korea	Germany
Work	35.0	25.6	35.0	32.4	6.5
Public pensions	84.0	83.0	9.5	4.3	84.4
Private pensions	7.5	33.0	5.1	0.5	23.9
Savings	21.4	23.7	8.9	11.0	20.7
Assets	11.4	34.3	13.6	10.2	11.8
Children	15.4	3.0	75.4	70.8	2.9
Public assistance	0.7	1.9	1.9	5.0	1.1
Other	3.8	7.0	5.5	0.5	4.2
No answer	0.3	1.6	0.0	0.0	0.3

Specific income source	Percentage responding that specific source is main source				
	Japan	United States	Thailand	Republic of Korea	Germany
Work	21.6	15.5	26.9	26.6	4.6
Public pensions	57.1	55.5	7.3	2.9	77.0
Private pensions	1.7	13.3	2.1	0.5	10.1
Savings	2.4	1.5	1.9	4.9	1.6
Assets	2.5	8.5	4.8	4.5	2.0
Children	4.2	0.0	52.9	56.3	0.2
Public assistance	0.3	0.3	0.3	3.7	0.6
Other	2.4	1.6	3.6	0.3	1.7
No answer	7.9	3.7	0.2	0.4	2.2

Source: Management and Coordination Agency (1997). *Brief Summary of the Fourth International Comparative Survey of the Elderly,* Tokyo, Gyosei Printing Co., (in Japanese).

Note: Results are based on self-reports. For income in general (first three columns), respondents often indicated more than one specific source, so that percentages add to more than 100 down the columns. For main income source (last three columns), the percentages for particular income sources add to 100 within rounding error. The distinction between savings and assets is not clearcut, but most Japanese view savings as money in savings accounts.

One of the most salient factors contributing to this difference between developing and developed countries is a pronounced difference in family structure. As has already been discussed in the previous section of this paper, traditional extended families are still prevalent in developing Asia.

In an ASEAN ageing survey conducted in the mid-1980s (Jones, 1988), respondents aged 60 years and older were asked what was their main source of old-age support. The collected data show that the pattern differed by country to a certain extent, and varied by sex to a greater extent. In Indonesia, Malaysia, Singapore and Thailand, families were the principal source of monetary and material support for a large majority of elderly women. Children and grandchildren were also a major source of income for elderly men, but family support was considerably less important than for women. Income from their own economic activity was more important for men than for women.

The picture of the family support system that emerged from the ASEAN ageing survey seems to be still largely valid in Asia, according to the international comparative survey undertaken in 1996 (Management and Coordination Agency, 1997). Data presented in table 11 indicate that in both the Republic of Korea and Thailand more than half of the elderly aged 60 and older relied on their children as their main income source in the mid-1990s. In contrast, the proportion of the elderly whose main income source was public pensions was only 2.9 per cent in the Republic of Korea and 7.3 per cent in Thailand.

Another vital source of income for older persons in ESCAP countries is their own economic activity. Data on the labour force participation rate reported in table 10 clearly endorse the validity of this observation. Furthermore, data on the income sources collected in the 1996 international comparative survey show that approximately one third of the elderly in the Republic of Korea and Thailand worked to make a living.

In an agricultural society such as Thailand, these results are highly conceivable. It is generally considered that the high labour force participation rates for the elderly in agricultural societies represent the relatively strong economic position of older people. One important factor underlying this view is that the economic value of knowledge and experience relative to physical prowess is generally high in agriculture. In these societies, the economic value of the elderly is high, but so is the value of their children. The elderly person's offspring provide productive utility as workers and old-age security utility as a substitute for social

Figure III. Trends in norms and expectations about care for the elderly:
Japan, 1950-2000
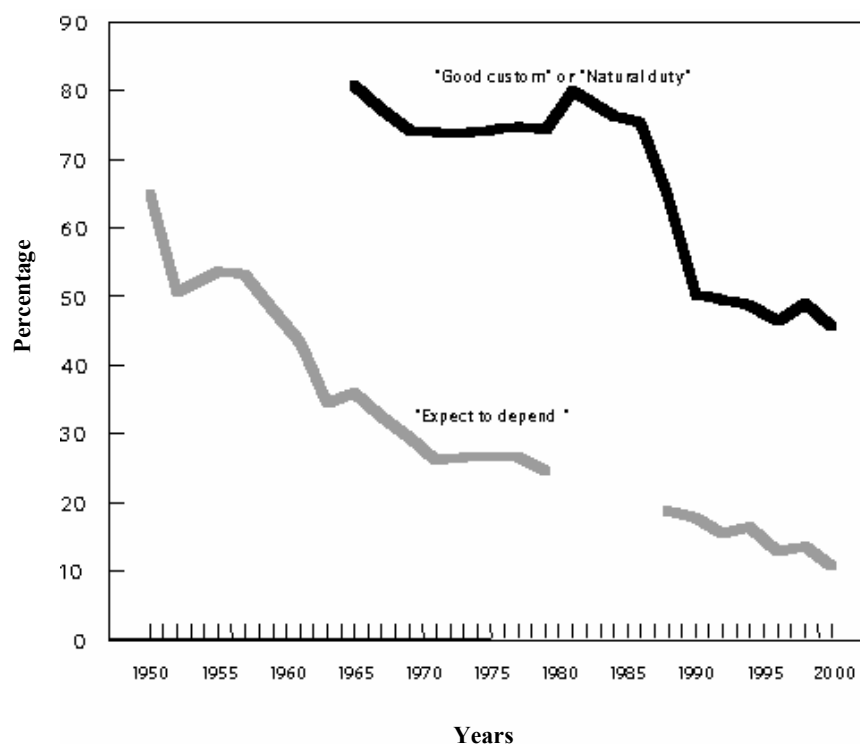
Source: Compiled from various rounds of Mainichi Newspapers' survey.

security (Leibenstein, 1957; Vlassoff and Vlassoff, 1979). Such utility can decline with economic development; this nexus plays a key role in reducing fertility in the process of economic development. Bulatao (1979) showed, using data collected over the period 1975/76 in a project on the value of children, that modernization and urbanization, both of which are accompanied by an expansion of the formal support system, could reduce the economic benefits of having children as well as weaken the reasons relating to old-age security. In less developed countries, such as Indonesia, 60 per cent of wives included in the sample survey thought that the children's role as a source of old-age security is an important reason for having large families, compared with 44 per cent in the Philippines, 43 per cent in Turkey, 41 per cent in Singapore, 27 per cent in Thailand and 23 per cent in the Republic of Korea. In contrast to these developing countries, only 7 per cent in the United States felt that old-age security was a reason for having a large family.

These cross-sectional results are supported by time-series data for Japan, gathered in a series of countrywide surveys concerning fertility and family planning, which have been carried out every other year since 1950 by Mainichi Newspapers (Population Problems Research Council, 2000). Since the first round of the survey, except for a few rounds, the question regarding the dependence on children for old-age security has been asked of married women of reproductive age who have at least one child. The precoded responses are as follows: (a) "expect to depend", (b) "do not expect" and (c) "never thought about it". Figure III shows intertemporal changes over the period 1950-2000 in the percentage of the respondents who chose the category of "expect to depend". The proportion of respondents who expect to depend on their own children declined almost continuously over the period in question. Almost two thirds of Japanese married women in 1950 expressed an expectation to depend on their own children, but only 10.9 per cent in 2000 intended to depend on their own children for old-age security.

Since 1963, the question on the attitude of wives towards taking care of elderly parents has been asked in the successive rounds of the Mainichi Newspapers' surveys. The precoded response categories were as follows: (a) "good custom", (b) "natural duty as children", (c) "unavoidable due to inadequacy of public support resources" and (d) "not a good custom". Figure III presents changes in the percentage of those who chose one of the first two response categories: (a) "good custom" and (b) "natural duty as children". The plotted result indicates that the proportion of respondents who felt that providing care for elderly parents was either a good custom or natural duty had been, by and large, stable over the period 1963-1986. From 1986 to 1988, however, the percentage distribution changed dramatically, and the declining trend is still under way.

The results set out in figure III indicate that, in the process of Japanese postwar economic development and urbanization, children's utility as old-age security for their parents has decreased considerably, and family support provided by married women for elderly parents has also declined. Moreover, a further in-depth statistical analysis of the time-series data has shown that the recent trends in both the attitudes of Japanese married women towards aged parents and their dependence on children for old-age security are likely to continue in the years to come, but this scenario is likely to be seriously affected depending on how social security policies such as old-age pensions and medical care programmes are formulated by the Government (Ogawa and Retherford, 1993a and 1993b; Retherford and others, 1999).

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Table 12. Selected indices related to the intergenerational support system in the ESCAP region, 2000

Country	Index		
	Potential support ratio	Parent support ratio	Familial support ratio
Afghanistan	18.9	0.5	2.32
Australia	5.5	8.2	1.18
Azerbaijan	9.5	5.9	1.48
Bangladesh	18.6	1.5	2.26
China	10.0	2.5	1.60
Fiji	18.4	0.9	2.76
Georgia	5.2	6.5	1.02
India	12.4	1.9	1.79
Indonesia	13.4	1.6	1.91
Islamic Republic of Iran	17.6	1.3	2.28
Japan	4.0	8.1	0.92
Kazakhstan	9.7	4.2	1.71
Kyrgyzstan	9.9	4.6	1.45
Malaysia	14.9	2.2	2.30
Nepal	14.8	1.3	1.96
New Zealand	5.6	8.1	1.22
Pakistan	14.8	1.8	1.95
Papua New Guinea	23.6	1.0	2.93
Philippines	16.7	1.7	2.25
Republic of Korea	10.2	2.3	1.78
Russian Federation	5.6	6.1	1.21
Singapore	9.8	4.4	2.13
Solomon Islands	20.1	1.0	2.28
Sri Lanka	10.8	2.1	1.65
Thailand	13.0	1.7	2.01
Turkey	11.1	2.9	1.61
Turkmenistan	13.6	3.8	1.86
Uzbekistan	12.6	5.2	1.70
Vanuatu	16.9	3.3	2.21
Viet Nam	11.5	4.0	1.53

Source: World Population Ageing 1950-2050, (United Nations publication, Sales No. E.02.XIII.3).

Note: Potential support ratio = (those aged 15-64 ÷ those 65+) x 100
Parent support ratio = (those aged 85+ ÷ those 50-64) x 100
Familial support ratio = (those aged 40-59 ÷ those 65-84)

In addition to the shift of values related to intergenerational relationships, the demographic availability of adult children for the provision of care for aged parents changes as the process of population ageing advances. To measure the demands on families (at ages 50-64) to provide support for their oldest-old members (aged 85 and older), the parent support ratio has been commonly used in the recent past (United Nations, 2001b). This ratio relates the oldest-old to their presumed offspring, who were born when the older persons were in their twenties and thirties. In 2000, the parent support ratio for Asia as a whole was 2.6 persons older than 85 years per 100 persons aged 50-64, but it is projected to rise to 10.0 persons in 2050. In particular, the magnitude of growth in the parent support ratio has been phenomenal in the case of East Asia. It will grow from 3.3 in 2000 to 17.2 in 2050.

Another indicator is the familial support ratio, which represents the demands on women at ages 40-59 to give care to their elderly parents (65-84). In Asia as a whole, that ratio was 1.87 in 2000, but is expected to decline to 1.05 in 2050.

Table 12 shows the value of these two indicators among selected ESCAP countries in 2000. In the same year, the parent support ratio ranged from 0.5 for Afghanistan to 8.1 for Japan and New Zealand. In the case of the familial support ratio, Papua New Guinea's 2.93 is the highest, while Japan's 0.92 is the lowest in the ESCAP region.

Besides the parent support ratio and the familial support ratio, table 12 also shows the potential support ratio, which is defined as the ratio of people aged 15-64 to persons 65 and older. The potential support ratio is a measure for expressing the numerical relationship between those more likely to be economically productive and those more likely to be dependants. In Asia as a whole, the number of working-age people per older person is expected to drop from 10.9 to 3.8. That support ratio is projected to decline by more than 65 per cent over the next 50 years. In 2000, the potential support ratio varied considerably among ESCAP countries, ranging from 4.0 for Japan to 23.6 for Papua New Guinea.

These shifts in the numerical relationship between elderly parents and their adult children in the ESCAP region seem to indicate that the durability of traditional patterns of family care for the elderly by adult children will be increasingly questioned with the passage of time. This implies that, as the ageing process proceeds in ESCAP countries, an increasing number of Governments are likely to replace the family support system with a public support system.

Figure IV. Relationship between economic development and share of GDP allocated to social security benefits in the period 1996/97
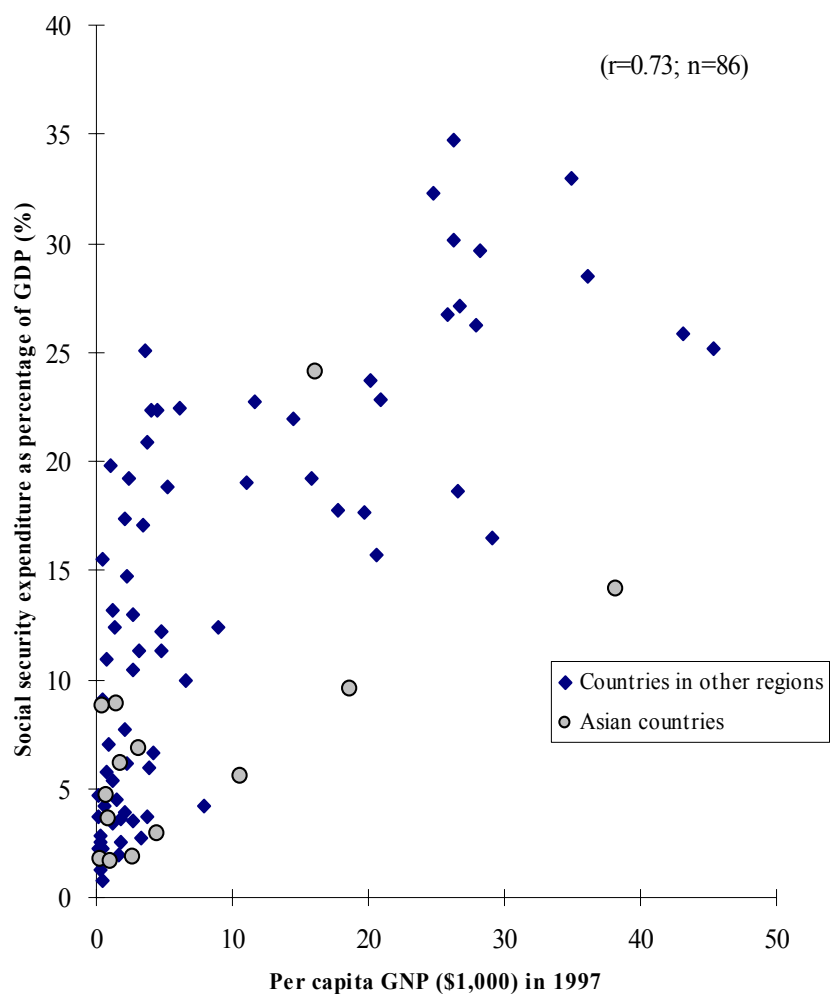
Source: World Labour Report 2000, (Geneva, International Labour Office, 2000).

However, the large inter-country differences in the demographic availability of the intergenerational support system among ESCAP countries suggest that the timing of each country to shift its policy emphasis from the family support system to the public support system should vary considerably from country to country in the years to come. In addition, the extent to which Governments shift their policy emphasis from family support to public support will depend heavily on the pace and magnitude of the deterioration of the potential support ratio in their future developmental processes. Besides these demographic factors, a variety of elements need to be considered in formulating such long-term macroeconomic plans for the societies that are ageing in Asia, as will be discussed in the ensuing section.

Public support system and economic development

Data shown in figure IV, which cover both developed and developing regions (a total of 86 countries) in 1996/97, point to an increase in the importance of the public support system as economic development proceeds (ESCAP countries are indicated by circles). This graphical exposition shows that the share of GDP allocated to the provision of social security benefits rises with per capita GNP measured in United States dollars. There are, however, various data limitations with regard to the provision of social security benefits, as widely discussed elsewhere. Also, although the correlation between the two variables is quite high, figure IV indicates that there are substantial differences among different countries even when their levels of economic development are comparable. This implies that the compositional shift of support resources for the elderly over the course of economic development is subject to a host of non-economic factors that are demographic, sociocultural, ideological and historical. For those reasons, the pattern emerging from the above intercountry data should be interpreted cautiously.

The clustering of observations in figure IV, particularly for developing countries at an initial stage of economic development, is attributable mainly to the fact that social security programmes in these countries are limited in terms of duration, size and coverage. According to data published by the United States Social Security Administration (1999) and covering 26 ESCAP countries, old-age security programmes had been introduced in only six member countries before 1950. This is what one would expect, because most developing countries are short of economic resources and such programmes are difficult to administer.

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**Table 13. Coverage of pension schemes and medial plans
in selected ESCAP countries, 1992**

Country	Percentage of work force covered by	
	Pensions	**Medical plans**
Azerbaijan	100	100
Japan	100	100
Georgia	100	n.a.
Singapore	100	92
Malaysia	96	n.a.
Philippines	53	18
Turkey	34	22
Republic of Korea	26	3
Islamic Republic of Iran	22	20
China	21	21
Indonesia	7	n.a.
India	1	2
Thailand	n.a.	13

Sources: World Labour Report 1995, (Geneva, International Labour Office, 1995); *The Future of Population in Asia,* (Honolulu, East-West Center, 2001).

Social security programmes in the developing world are not only of recent creation, but are also generally meagre in terms of the benefits provided. One reason for their small financial size is that their coverage is often extremely limited. The fact of this limited coverage is substantiated by additional data on public pensions collected from Asian developing countries, as presented in table 13. For instance, only 1 per cent of the working population is currently covered by pensions in India, 7 per cent in Indonesia and 21 per cent in China. In other developing countries in Asia, the corresponding percentages are substantially higher: 53 per cent in the Philippines, 96 per cent in Malaysia and 100 per cent in Azerbaijan and Singapore. A brief comparison of these data reveals that there are vast differences within the developing region of Asia. China, Indonesia and Thailand reveal a situation more common in low-income countries, in which only civil servants, employees of State-owned enterprises, and a limited number of private-sector employees receive pensions. Moreover, even in countries with wider coverage, such as Singapore, the pension is hardly adequate to provide minimal living levels, an observation which is also applicable to most developing countries in other regions (Jones, 1988).

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It is clear that there are conspicuous differences between developing and developed countries in the nature and scope of social security programmes designed for the elderly. Although a number of developing countries have already introduced social security programmes to provide financial and material support to the elderly, the financing schemes for these programmes are often considerably different from those in developed countries. Reserve financing schemes, such as provident fund systems, are widely used as a financing method in developing countries, whereas "pay-as-you-go" schemes are generally in operation in developed countries. Provident fund systems essentially return the sum of a person's contributions with interest; social insurance systems under pay-as-you-go schemes, however, relate benefits to specific adverse contingencies rather than to contributions (Petri, 1982). Although most countries operate mixed systems, the combination of these considerations differs markedly between the developing and developed countries. Experience shows, however, that most countries have shifted from reserve financing to pay-as-you-go schemes as they have proceeded on their development paths (Richardson, 1960).

This shift has many economic implications. Because the pay-as-you-go scheme is based on the taxation concept, it has income redistribution features, that is, income transfers from younger generations to older generations. In contrast, under reserve financing schemes, a vast amount of funds is accumulated so that the money can be used for strengthening the process of capital formation, which is one of the crucial factors in economic development among developing countries. Furthermore, although the equity consideration plays a key role in reserve financing schemes, priority is given to the adequacy consideration under pay-as-you-go schemes. The timing of the shift from reserve financing to pay-as-you-go financing is especially important in that the latter method is directly affected by changes in age structure (which is the nature of intergenerational transfer) (Keyfitz, 1985; Horlacher, 2002). Some of the financial problems of social security programmes in industrialized countries such as Japan are a case in point. Hence, when social security financing schemes are shifted from compulsory income-contributory plans to taxation-based schemes, population ageing should be carefully taken into account by policy makers in ESCAP countries.

Besides old-age pensions, health care services constitute a core of social security programmes in most countries, both developing and developed. It seems that health care is more widely available to the elderly than pensions in the majority of developing countries. This is certainly the case in Asia's developing countries (Martin, 1988). However, the adequacy and accessibility of health care differs from country to country as well as within each country. In China, for

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**Figure V. Projected ratio of the elderly population who suffer from
senile dementia or who are bedridden to non-working women
at various ages, Japan 2000-2025**
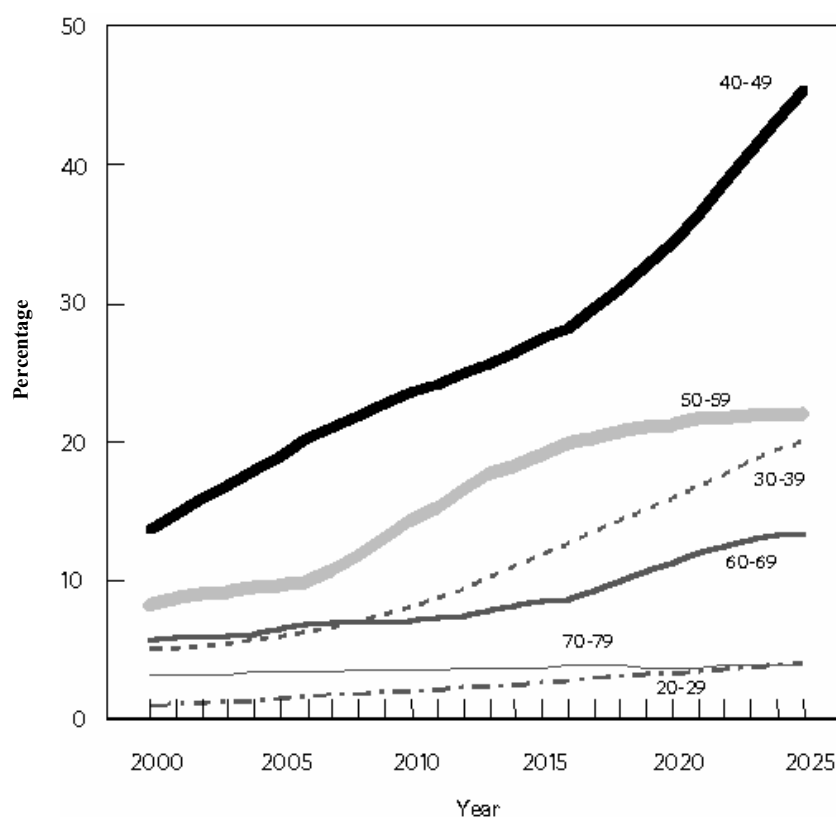
example, urban elderly persons retired from State-owned enterprises receive free medical care services, whereas the medical care costs of municipal governments pay all other urban elderly. In Singapore, a part of each person's account in the Central Provident Fund has been used for the Medisave programme since 1984. In Malaysia, comprehensive health and medical services are available to the general population, but not specifically for the elderly (Ogawa, 1988).

In Thailand, a major change was introduced into its medical care plan in 2001. It is called the "30-Baht Health Care Scheme", under which patients pay only 30 baht (US$ 1 = around 42 baht) per visit to a medical facility, with additional costs being covered by the Government (Kamnuansilpa and Wongthanvasu, 2002).

Because of its low price, this new scheme can be regarded as a virtually universal medical care plan. Prior to the new plan, only limited segments of the population were covered by the medical insurance schemes, one of which was the "health card" plan. The purpose of the health card scheme was to provide health care security to those who were not covered by any health scheme. One health card covered card holders and their families (not exceeding five persons) and the benefits covered free medical care, necessary preventive care and rehabilitation services at a registered provider. The cost of providing such benefits was estimated at 1,000 baht per card, but card holders paid only 500 baht, and the remaining 500 baht was subsidized by the Government (Phananiramai and McCleary, 1998).

Because of the high cost of hospital use and technology in the care of an ever-increasing elderly population, growing attention has recently been directed towards the role of families in supporting the health of their elderly parents in both developing and developed countries. In Japan, families are likely to face an extremely fast growth in the number of elderly parents who need intensive care at home. Elderly parents in need of such care include those suffering from senile dementia and those who are bedridden. Owing to the wide prevalence of extended families and the limited availability of institutional care, the majority of these elderly persons are looked after at home in contemporary Japanese society. More importantly, it is middle-aged women outside the labour force who usually assume this responsibility. In view of this pattern, the ratio of non-working women at various ages, compared with bedridden or senile elderly persons, has been projected over the period 2000-2025, as shown in figure V. As may be observed from this graph, the probability for full-time housewives at ages 40-49 having to take care of such elderly patients rises from approximately 14 per cent in 2000 to 45 per cent in 2025.

In an ageing society such as Japan, however, it is conceivable that, owing to the growing scarcity of the overall labour supply, labour demand for women in this age group would increase gradually. For this reason, the availability of institutional care as an alternative to home care should be urgently expanded to alleviate the heavy burden on middle-aged women taking care of elderly patients. It should be borne in mind, however, that the provision of such care in institutions gives rise not only to higher health care costs but also to the deterioration of the psychological and emotional well-being of the infirm elderly. In view of these negative consequences, the Government of Japan implemented its Long-term Care Insurance Scheme in 2000. However, the effect of this new system on the well-being of the elderly and their families remains to be seen.

It is worth remarking that there are two major differences between old-age pension schemes and health care programmes in terms of financing. First, most of the old-age pensions currently available in developing countries involve a certain degree of intergenerational transfers from the young to the old, while health care services can be regarded as transfers from the healthy to the unhealthy. This implies that change in the social security system is likely to affect different segments of the population differently, depending on whether change is related to a pension component or a health service one. Second, pensions usually require each participant to make contributions for many years before benefits are paid, but in health care each individual is entitled to receive medical care services as soon as he or she is enrolled in the programme. For this reason, where there is less economic development, the cost of health care – rather than pensions – tends to be the major financing problem in the social security system.

By and large, the discussions developed so far appear to indicate a shift in the responsibility for providing economic security to the elderly from the family to the state as societies develop. However, in the pattern of provision of support resources, there are many similarities and equally many dissimilarities not only between countries at different levels of economic development, but also between those at comparable levels of economic development. For more concrete examples, table 14 shows intercountry differences in the socio-economic structure when the proportion of those aged 60 and older reaches 10 per cent. As may be

Table 14. Projected socio-economic conditions when the population aged 60 and older reaches the level of 10 per cent

Country	Year	Labour force partici-pation rate (%)		Illiteracy rate (%)		Level of urbanization (%)
		Male	**Female**	**Male**	**Female**	
Japan	1967	50	19	0	0	69
Singapore	1998	18	5	20	59	100
China	1999	28	8	45	81	32
Thailand	2010	34	14	5	10	26
Turkey	2012	34	13	18	59	84
India	2017	46	11	47	79	38
Fiji	2018	39	14	5	16	61

Sources: World Population Ageing 1950-2050, (United Nations publication, Sales No. E.02.XIII.3); and *World Urbanization Prospects: The 1999 Revision,* (United Nations publication, Sales No. E.01.XIII.11).

easily seen from this table, there are wide differences in terms of the labour force participation rates among the elderly, their illiteracy rates and the level of urbanization among the seven ESCAP countries listed. These results suggest that one should take into consideration not only economic but also non-economic (social and cultural) factors when the ESCAP member countries begin to formulate long-term plans for the welfare of their senior citizens relevant to their own developmental context.

CHANGE IN THE DEFINITION OF AGE OF ELDERLY PERSONS: A POLICY OPTION

Although the level of population ageing is still relatively low in many ESCAP Members, the process of population ageing is expected to be extremely fast because both fertility and mortality transitions in these countries and areas are likely to be much shorter than those experienced by Western developed countries. To cope with their future problems arising from rapid population ageing, the Governments of ESCAP countries should make long-term plans before it is too late. For instance, it normally takes several decades before government old-age pension insurance schemes become mature and operate at full scale.

Obviously, many developing countries in the ESCAP region can learn numerous policy lessons related to population ageing from demographically more advanced countries in Asia such as Japan and Singapore. Just to mention a few examples, Singapore's well-known Central Provident Fund and Japan's recent Long-term Care Insurance Scheme are likely to provide other Asian countries with useful information when they embark on the formulation of their own policies and programmes to cope with population ageing.

When a population ages, its age distribution changes. Many Asian countries are age-graded societies. Thus, the age structural shifts are prone to generate a wide range of disruptions at both societal and familial levels in these countries. To alleviate the seriousness of these adjustment problems, the Governments of ESCAP countries could change age-based institutional factors such as the mandatory retirement age and the pensionable age. From a demographic point of view, the Governments could introduce policies to raise their fertility levels or import foreign workers.

Besides these policy options, the Governments should explore the possibility of redefining the age of elderly persons. Up to this point, the discussion has been

based on the definition that the age of the elderly population is 60 or 65 years. This fixed definition of age of the elderly leads to many serious adjustment problems in the labour market (Clark and Ogawa, 1992a and 1992b) and in the operation of the social security system. To solve these problems, therefore, one can propose that a new concept of the age of elderly persons be introduced. In the case of Japan, if the definition of the aged is gradually shifted from 65 years old in 2000 to 75 years old in 2025, the proportion of the elderly will remain at 17 per cent for the next 25 years. Undoubtedly, this change in the definition of the aged will call for massive social engineering under strong government leadership in cooperation with the private sector.

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