Fertility Decline in Asia: Opportunities and Challenges

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1. INTRODUCTION*

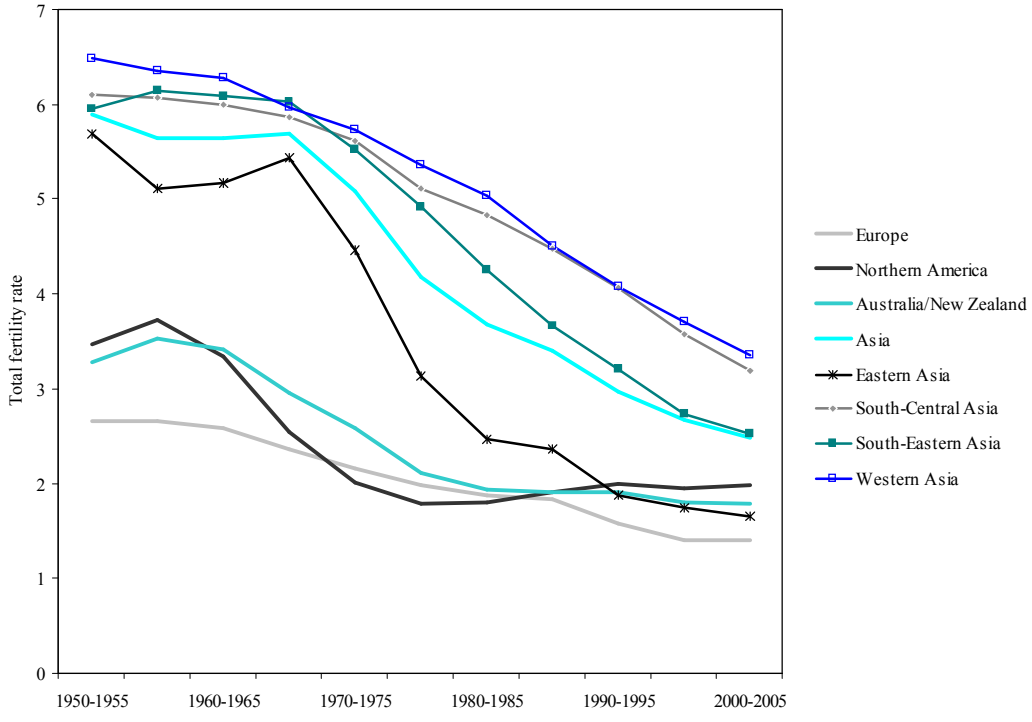
During the past half century, the world has witnessed a remarkable decline in total fertility rates from a high level of 5 children per woman in the period 1950-1955 to 2.8 in the period 1995-2000. While the fertility transition was already well under way in Europe, Northern America and Australia/ New Zealand during the period 1950-1955, TFR was very high in the Asian region, at around 6 children per woman. Fertility continued to decline in Europe from 2.7 in the period 1950-1955 to replacement level (2.1 children per woman) during the 1970s. The total fertility rate has fallen far below the replacement level in Europe (figure 1).

In Northern America, TFR declined from 3.5 in the period 1950-1955 to the replacement level in the early 1970s. TFR had reached a low level of 1.8 in the period 1980-1985, after which it increased slightly but remained stable at below the replacement level. In Australia/New Zealand, replacement level fertility was reached in the late 1970s; although there has been some decline, TFR has levelled off at 1.8.

By contrast, Asia presents a very diverse trend in fertility over the past 50 years. Asia, in general, had very high fertility in the early 1950s, with the fertility transition first occurring in Eastern Asia in the late 1950s. A sharp drop in fertility occurred between the period 1965-1970 and 1975-1980, with a record decline in the number of children by more than one child every five years. Eventually, Eastern Asia represented the below replacement fertility group during the early 1990s.

According to the 2005 ESCAP Population Data Sheet, the total fertility rate in the region has dropped to 2.3 births per woman. 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 in East and North-East Asia, and North and Central Asia (1.7 births per woman). In sharp contrast, South and South-West Asia exhibit a total fertility rate of 3.0 births per woman, while in South-East Asia the total fertility rate is

Figure 1. Fertility trends by major of the world, 1950-2005



Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

2.4 births per woman (ESCAP, 2005).

In view of the fact that countries in the Asian region are at different levels of fertility, it is pertinent to examine the levels and trends in fertility in the region. This paper covers three subregions of Asia, namely East and North-East Asia, South-East Asia and South and South-West Asia. For the purpose of this paper, countries are classified into three categories according to their level of fertility estimated during the period 2000-2005--high, intermediate and low fertility. Intermediate fertility level is further classified as transitional and near-replacement fertility while low fertility level is classified as low and critically low fertility (see table 1 for the classification of countries by the level of TFR).

Using classifications described above, the paper first presents the levels and trends in fertility over the past 30 years. Second, the paper discusses differentials in fertility. Third, the paper highlights factors contributing to fertility decline, and assesses the reasons for hindering fertility decline in high and transitional fertility countries. The paper then discusses the implications of low fertility. Finally, the paper concludes with a discussion of future prospects for fertility decline, and reviews policies implemented by countries in response to low and critically low fertility.

2. LEVELS AND TRENDS IN FERTILIY

Table 1 presents the classification of countries by the level fertility during the past 30 years, while in table 2 countries are classified by percentage decline in fertility between the periods 1970-1975 and 1990-1995, and 1990-1995 and 2000-2005. A large number of countries in Asia (20 out of 28) belonged to the category of high fertility during the period 1970-1975. Japan was the only country which had achieved below replacement fertility, while Hong Kong, China and Singapore had reached near-replacement fertility during that period. China; Republic of Korea; Sri Lanka; Democratic People's Republic of Korea and Macao, China had begun their fertility transition during the early seventies (table 2). Fertility transition also began in several other countries during the early seventies, with Thailand; China; Singapore; Republic of Korea; Hong Kong, China; and Macao, China joining the low fertility countries by the period 1990-1995. Data suggest that Islamic Republic of Iran, Democratic People's Republic of Korea and Sri Lanka have also achieved the replacement level fertility during the recent period. In total, 10 out of 28 countries belong to the low fertility category, with the fertility level of Singapore; Japan; Republic of Korea; Hong Kong, China and Macao, China falling at critically low level of below 1.5 children per woman. It is also to be noted that all countries in the region have begun fertility transition except Timor-Leste and Afghanistan, countries that are devastated by war and with questionable data quality.

Table 2 also shows the classification of countries by total fertility rates during the periods, 1970-1975, 1990-1995 and 2000-2005. Among the low and critically low fertility countries, fertility remained fairly high until the period 1970-1975 in several countries including China, the Republic of Korea, Sri Lanka and Thailand. Japan was the first country in this region which had completed the fertility transition from high to low by the early 1960s (Jones and Leete, 2002). Fertility transition had begun in most of the low and critically low fertility countries prior to the seventies, followed by a precipitous decline thereafter. The most spectacular decline in fertility occurred in such countries as China; Hong Kong, China; Macao, China; the Republic of Korea; Sri Lanka and Thailand during the periods 1970-1975 and 1990-1995. 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 1.4 in the period 2000-2005.

It is interesting to note that a large number of countries experienced marked declines in fertility from a high level (5 or more) to transitional or near-replacement levels (2.2 to 4.9) during the periods 1970-1975 and 1990-1995. Prominent among these are Bangladesh, Brunei Darussalam, Indonesia, Islamic Republic of Iran, Mongolia, Myanmar, Turkey and Viet Nam. Of particular importance is Thailand, which exhibited a remarkable decline in fertility from a high level to the replacement level. However, in countries such as Afghanistan, Bhutan, Cambodia, Lao People's Democratic Republic, Maldives, Nepal and Pakistan, fertility remained at a high level during these periods.

Over the last 10 year, between 1990-1995 and 2000-2005, several countries exhibited rapid fertility declines. Islamic Republic of Iran exhibited a most spectacular decline in TFR by more than half, from 4.3 in 1990-1995 to 2.1 in 2000-2005. The TFR of Macao, China, which was already low at 1.6 in 1990-1995, further declined by almost half, reaching to a critically low level of 0.8 in 2000-2005. More that one quarter decline in fertility was recorded in transitional and near-replacement fertility countries such as Maldives, Pakistan, Nepal, Myanmar, Mongolia and Viet Nam. It is also to be noted that in the Republic of Korea, the TFR

Table 1. Fertility trends in Asia: 1970-1975 to 2000-2005

Fertility level	1970-1975	1990-1995	2000-2005
High (TFR ? 5.0)	Afghanistan Mongolia Maldives Viet Nam Pakistan Iran (Islamic Republic of) Bangladesh Lao PDR Timor-Leste Philippines Bhutan Nepal Myanmar Cambodia India Brunei Darussalam Turkey Indonesia Malaysia Thailand	Afghanistan Maldives Lao PDR Pakistan Bhutan Cambodia Nepal	Timor-Leste Afghanistan
Transitional (TFR 3.0 to 4.9)	China Republic of Korea Sri Lanka DPR Korea Macao, China	Timor-Leste Iran (Islamic Republic of) Philippines Bangladesh India Myanmar Malaysia Mongolia Viet Nam Brunei Darussalam	Lao PDR Bhutan Maldives Pakistan Cambodia Nepal Bangladesh Philippines India
Near-replacement (TFR 2.2 to 2.9)	Hong Kong, China Singapore	Indonesia Turkey Sri Lanka DPR Korea	Malaysia Brunei Darussalam Turkey Myanmar Mongolia Indonesia Viet Nam
Low (TFR 1.6 to 2.1)	Japan	Thailand China Singapore Republic of Korea Macao, China	Iran (Islamic Republic of) DPR Korea Sri Lanka Thailand China
Critically low (TFR =<1.5)		Japan Hong Kong, China	Singapore Japan Republic of Korea Hong Kong, China Macao, China

Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

Table 2. Percentage decline in total fertility rate in Asia: 1970-1975 to 2000-2005

Fertility level	Country	TFR			% Decline	
		1970-75	1990-95	2000-05	1970-75 to 1990-95	1990-95 to 2000-05
High	Timor-Leste	6.2	4.8	7.8	-22.8	64.1
(TFR =>5.0)	Afghanistan	7.7	8.0	7.5	3.9	-6.5
Transitional	Lao PDR	6.2	5.8	4.8	-5.7	-16.8
(TFR 3.0 TO 4.9)	Bhutan	5.9	5.6	4.4	-5.7	-21.0
	Maldives	7.0	6.0	4.3	-13.7	-28.3
	Pakistan	6.6	5.7	4.3	-13.6	-25.1
	Cambodia	5.5	5.4	4.1	-3.3	-22.6
	Nepal	5.8	5.0	3.7	-13.7	-25.8
	Bangladesh	6.2	4.1	3.3	-33.1	-21.2
	Philippines	6.0	4.1	3.2	-31.0	-22.2
	India	5.4	3.8	3.1	-29.8	-19.4
Near-replacement	Malaysia	5.2	3.6	2.9	-29.7	-19.0
(TFR 2.2 to 2.9)	Brunei Darussalam	5.4	3.1	2.5	-42.8	-19.0
	Myanmar	5.8	3.8	2.5	-33.9	-35.3
	Turkey	5.3	2.9	2.5	-45.3	-15.3
	Mongolia	7.3	3.4	2.5	-54.0	-27.4
	Indonesia	5.2	2.9	2.4	-44.2	-18.4
	Viet Nam	6.7	3.3	2.3	-50.7	-29.6
Low	Iran (Islamic Republic of)	6.4	4.3	2.1	-32.4	-50.9
(TFR 1.6 to 2.1)	DPR Korea	3.9	2.3	2.0	-40.3	-13.4
	Sri Lanka	4.1	2.4	2.0	-41.1	-17.9
	Thailand	5.0	2.1	1.9	-57.8	-8.2
	China	4.9	1.9	1.7	-60.5	-11.5
Critically low	Singapore	2.6	1.8	1.4	-32.8	-23.3
(TFR <=1.5)	Japan	2.1	1.5	1.3	-28.0	-10.7
	Republic of Korea	4.3	1.7	1.2	-60.4	-27.7
	Hong Kong, China	2.9	1.2	0.9	-57.8	-23.0
	Macao, China	3.2	1.6	0.8	-51.6	-45.8

Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

was further reduced by more than a quarter, from 1.7 to 1.2 during the last 10 years (table 3).

3. DIFFERENTIALS IN FERTILITY

The previous section has shown the diversity of the region with respect to the levels and trends in fertility. While several countries in the region continue to be in the transitional and near-replacement levels fertility, many have reached low and critically low levels. Just as there are substantial differentials within the region with respect to levels of fertility, differentials are also evident within these countries. Country averages of total fertility rates mask variations in fertility observed in various sectors of the population. Thus, in some countries, while fertility may be high at a national level, it has declined among certain groups within the country. Most notable differential is observed between urban and rural areas and by women's educational attainment.

Table 4 shows the total fertility rate of selected countries in the transitional and near-replacement levels by type of place of residence and highest educational level of women. As can be seen from the table, while fertility of some countries at the national level may be at a transitional level, fertility in urban areas in these countries has approached near-replacement levels, with the exception of Pakistan and the Philippines. Urban fertility in Viet Nam has in fact reached a critically low level of 1.5 births per woman.

In all countries, as expected, urban fertility is lower than rural fertility, although the differences vary by country. The largest difference is seen in Nepal where urban fertility is at replacement level (2.1) while rural fertility continues to be at a transitional level of 4.4 births per woman. In Pakistan and the Philippines the difference is also large with urban women having 1.7 and 1.3 fewer births than their rural counterparts, respectively. In Cambodia, Bangladesh, India, Turkey and Viet Nam the difference is about 1 birth between urban and rural women. Indonesia, on the other hand, exhibits a very small difference with 2.4 births per

Table 3. Percentage decline in total fertility rate in Asia, 1990-1995 to 2000-2005

Fertility level	Percentage decline		
	Less than 25%	25 to 49%	50% or more
High (TFR =>5.0)	Afghanistan (6.5) Timor-Leste (increase of 64.1)		
Transitional (TFR 3.0 TO 4.9)	Cambodia (22.6) Phillipines (22.2) Bangladesh (21.2) Bhutan (21.0) India (19.4) Lao PDR (16.8)	Maldives (28.3) Nepal (25.8) Pakistan (25.1)	
Near-replacement (TFR 2.2 to 2.9)	Brunei Darussalam (19.0) Malaysia (19.0) Indonesia (18.4) Turkey (15.3)	Myanmar (35.3) Viet Nam (29.6) Mongolia (27.4)	
Low (TFR 1.6 to 2.1)	Sri Lanka (17.9) DPR Korea (13.4) China (11.5) Thailand (8.2)		Islamic Republic of Iran (50.9)
Critically low (TFR <=1.5)	Singapore (23.3) Hong Kong, China (23.0) Japan (10.7)	Macao, China (45.8) Republic of Korea (27.7)	

Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

Table 4. Differentials in fertility by place of residence and level of education of women, selected countries

Fertility level	Country	Year of survey	TFR				
			Residence		Education		
			Urban	Rural	No education	Primary	Secondary or higher
Transitional (TFR 3.0 to 4.9)	Pakistan*	2000/2001	3.7	5.4	5.1	4.2	3.5
	Cambodia	2000	2.8	4.0	4.3	3.8	2.7
	Nepal	2001	2.1	4.4	4.8	3.2	2.2
	Bangladesh	1999/2000	2.5	3.5	4.1	3.3	2.4
	Philippines	2003	3.0	4.3	5.3	5.0	3.1
	India	1998/1999	2.3	3.1	n/a	n/a	n/a
Near-replacement (TFR 2.2 to 2.9)	Turkey	1998	2.4	3.1	4.0	2.7	1.8
	Indonesia	2002/2003	2.4	2.7	2.5	2.7	2.5
	Viet Nam	2002	1.5	2.0	2.6	2.0	1.7

Source: ORC Macro, 2005, Measure DHS STATcompiler. Http://www.measuredhs.com, July 14 2005

* National Institute of Population Studies, 2001, Pakistan Reproductive Health and Family Planning Survey, 2000/2001, Preliminary Report.

woman in urban areas and 2.7 births per woman in rural areas.

Women's education has been noted to have an inverse relationship with fertility, showing a higher level of fertility among women with no education. It is interesting to note that with the exception of Pakistan and the Philippines, fertility level among women with secondary or higher education has reached near-replacement and low levels. Substantial differences are observed within countries with respect to fertility of women by their educational attainment. The largest difference is observed in Nepal where women with no education have 2.6 more births than women with secondary or higher education. Fertility levels of women with secondary or higher education in Nepal is at near-replacement of 2.2 births per woman while women with no education have 4.8 births per woman. In the Philippines and Turkey, women with no education give birth to 2.2 more children than women with secondary or higher education. The Philippines presents an interesting case in that fertility level of women with no education and primary education is at high level of over five births per woman. Fertility of women with secondary or higher education in Turkey and Viet Nam is already at low levels at 1.8 and 1.7 births per woman, respectively. In both Bangladesh and Cambodia, fertility among women with no education is just above 4.0 births per woman while fertility among women with secondary or higher education is just under 3.0 at near-replacement levels. Indonesia is an exception among these countries with virtually no difference in fertility by education levels. The TFR is about 2.5 for all three education levels.

4. FACTORS AFFECTING FERTILITY DECLINE

The preceding section reviewed the levels, trends and differentials in fertility in Asia. The above review reveals the diversity of the region with respect to the level of fertility. The region comprises countries where fertility has plummeted to well below the replacement level. On the other hand, two countries still have high fertility. Within intermediate fertility countries, fertility is close to the replacement level in some countries, while others, labelled as transitional fertility countries, 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 intermediate and low 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 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 economic advantages by 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 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 (i.e., 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 the 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 decline in mortality, 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 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 the 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 (1994:619) 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) emphasize 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 near-replacement, low and critically low fertility countries by using a combination of classical theories of changing demand for children and the impact of information diffusion, with a particular focus on governmental population policies. On the other hand, the slowdown of fertility decline in transitional fertility countries will be examined in light of the low level of education, especially for women, and a limited level of women's autonomy.

4.1 Low Fertility

The above 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 contraceptives. 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 and achievable by easily available effective contraceptive methods. In fact, the low fertility countries, in general, and Japan, 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 for 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 5-7 that these low fertility countries, in general, have lower proportions ever married among women aged 20-24, a universal female literacy rate, higher percentage of the population living in urban areas, lower infant mortality rates and higher life

Table 5. Percentage of married women aged 15-19 and 20-24

Fertility level	Country	Year of census or survey	Percentage ever married among women aged	
			15-19	20-24
High (TFR =>5.0)	Afghanistan	1979	53.7	90.7
Transitional (TFR 3.0 to 4.9)	Bangladesh*	1999/2000	46.6	77.8
	Nepal*	2001	39.8	82.1
	Maldives	1990	36.5	85.2
	India*	1998/1999	33.8	75.8
	Pakistan*	1990/1991	24.3	59.6
	Lao People's Democratic Republic	1995	19.7	67.4
	Cambodia*	2000	12.1	50.9
	Philippines*	2003	3.9	36.9
Near-replacement (TFR 2.2 to 2.9)	Turkey*	1998	15.2	59.3
	Indonesia*	2002/2003	14.0	57.0
	Brunei Darussalam	1991	8.0	38.2
	Malaysia	1991	7.6	39.9
	Myanmar	1997	6.6	34.8
	Viet Nam*	2002	4.1	46.4
	Mongolia#	1998	3.9	44.5
Low (TFR 1.6 to 2.1)	Iran (Islamic Republic of)	1991	25.9	68.6
	Thailand	1990	15.2	52.0
	Sri Lanka*	1987	6.5	40.6
	China	1990	4.7	58.6
Critically low (TFR =<1.5)	Macao, China	1991	2.3	22.3
	Hong Kong, China	1996	1.7	14.7
	Singapore	1990	1.2	21.2
	Republic of Korea	1995	0.8	16.7
	Japan	1990	0.7	14.0

Source - World Marriage Patterns 2000, United Nations Population Division, New York.

* : ORC Macro 2005. Accessed on 30/06/2005: http://www.measuredhs.com/statcompiler/table_builder.cfm?userid =147064&usertabid=161706.

: Mongolia Reproductive Health Survey 1998, National Statistical Office of Mongolia.

expectancies at birth. All these indicators, along with advanced economic development, have created a favourable environment for contraceptive use: 56 per cent in Japan, 62 per cent in Singapore, 81 per cent in the Republic of Korea, 84 per cent in China, and 86 per cent in Hong Kong, China (table 7). Figure 2 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, somewhat lower contraceptive use reported in Japan is due to the legalization of induced abortion, which has been credited as one of the reasons for fostering fertility decline (Atoh, 2001).

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, the TFR has dropped from around 5 children per woman in the late 1960s to the replacement level in the late 1990s. The main reasons cited for a sharp decline in fertility in Sri Lanka are the rise in age at first marriage, increase in the proportions of women remaining single, widespread use of contraception and an increasing percentage of temporal migration by young married women (Langford, 2001). More importantly, the

Table 6. Life expectancy at birth, infant mortality rate, percentage urban and female adult literacy rate

Fertility level	Country	Life expectancy at birth (Years)* (2000-2005)		Infant mortality rate (per 1,000)*	Percentage urban*	Female adult literacy rate (aged 15 and over)#
		Males	Females	2000-2005	2005	2000-2004
High	Timor-Leste	55	58	87	8	…
(TFR =>5.0)	Afghanistan	47	47	145	24	…
Transitional	Maldives	68	67	38	30	96.4
(TFR 3.0 to 4.9)	Philippines	65	71	26	63	92.7
	Cambodia	58	64	73	20	64.1
	Lao People's Democratic Republic	54	57	84	22	60.9
	Bangladesh	63	65	54	25	31.4
	Pakistan	64	64	75	35	35.2
	Nepal	62	63	68	16	34.9
	Bhutan	63	65	52	9	…
	India	62	66	64	29	47.8
Near-replacement	Mongolia	63	67	55	57	97.5
(TFR: 2.2 to 2.9)	Brunei Darussalam	75	79	6	78	90.2
	Viet Nam	69	73	18^	27	86.9
	Malaysia	71	76	10	65	85.4
	Indonesia	66	70	38	48	83.4
	Myanmar	58	64	71	67	86.2
	Turkey	67	72	39	31	81.1
Low	Thailand	67	75	17	31	90.5
(TFR: 1.6 to 2.1)	Sri Lanka	72	77	16	21	88.6
	China	70	74	33	41	86.5
	Iran (Islamic Republic of)	69	73	31	68	70.4
	Democratic People's Republic of Ko	61	67	43	62	…
Critically low	Singapore	77	81	3	100	88.6
(TFR: =<1.5)	Macao, China	78	82	7	99	87.8
	Hong Kong, China	79	85	4	100	…
	Japan	78	85	3	79	…
	Republic of Korea	73	80	4	81	…

*: 2005 ESCAP Population Data Sheet, ESID/UNESCAP, Bangkok

#: UNESCO Institute for Statistics (UIS). Youth (15-24) and Adult (15+) literacy rates by Country and by Gender for 2000-2004. May 2005.

^: Refers to 1998-2002

advanced level of human development, reflected in the high female literacy rate (90 per cent), low infant mortality rate (16 per 1,000 per live births) and fairly high life expectancies at birth (72 years for males and 77 years for females), has inevitably influenced the fertility level (see table 6). These social conditions that facilitated the acceptance of the small family norm helped to complete the fertility transitions earlier than economic indicators would suggest. The lessons from Sri Lanka clearly demonstrate that investments in social sector programmes with strong political commitment can be highly effective in reducing fertility in low-income countries (Sathar and Phillips, 2001).

Thailand provides yet another example which is often quoted as one of the most successful countries in reducing fertility in a short span of time. Thailand's TFR was close to 5 children per woman until 1975, after which it drastically dropped to 3.8 in the 1980s and 2.3 in the early 1990s. Fertility continued to decline through the 1990s, eventually dropping to below the replacement level (Chamratrithirong, undated; Gubhaju and Moriki-Durand, 2003). The current TFR is estimated at 1.7 children per woman (ESCAP, 2005). 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 was compressed into a narrow span. However, the

Table 7. Contraceptive prevalence rate among women of reproductive age and percentage of women with unmet need for family planning

Fertility level	Country	Year	Contraceptive prevalence rate (%)		Percentage of women with unmet need for family planning
			Any method	Modern method	
High (TFR =>5.0)	Afghanistan	2000	4.8	3.6	..
Transitional (TFR: 3.0 to 4.9)	Bangladesh	1999/2000	53.8	43.4	15.3
	India[a]	1998/1999	48.2	42.8	15.8
	Philippines	1998	46.5	28.2	19.8
	Maldives	1999	42.0	32.0	42.0
	Nepal	2001	39.3	35.4	27.8
	Lao People's Democratic Republic	2000	32.2	28.9	39.5
	Pakistan	2000	27.6	20.2	32.0[b]
	Cambodia	2000	23.8	18.5	32.6
	Bhutan	1994	18.8	18.8	..
Near-replacement (TFR: 2.2 to 2.9)	Viet Nam	2002	78.5	56.7	4.8
	Mongolia	2000	67.4	54.3	9.9[c]
	Turkey	1998	63.9	37.7	10.1
	Indonesia	1997	57.4	54.7	9.2
	Malaysia	1994	54.5	29.8	..
	Myanmar	1997	32.7	28.4	..
Low (TFR: 1.6 to 2.1)	China	1997	83.8	83.3	..
	Iran (Islamic Republic of)	1997	72.9	56.0	..
	Thailand	1996/1997	72.2	69.8	..
	Sri Lanka	1993	66.1	43.6	..
	Democratic People's Republic of Korea	1990/1992	61.8	53.0	..
Critically low (TFR =<1.5)	Hong Kong, China	1992	86.2	79.7	..
	Republic of Korea	1997	80.5	66.9	..
	Singapore	1997	62.0	53.0	..
	Japan	2000	55.9	51.0	..

Source: World Contraceptive Use 2003, United Nations Population Division, New York

[a] : Excluding the state of Tripura

[b] : Data pertains to 1997

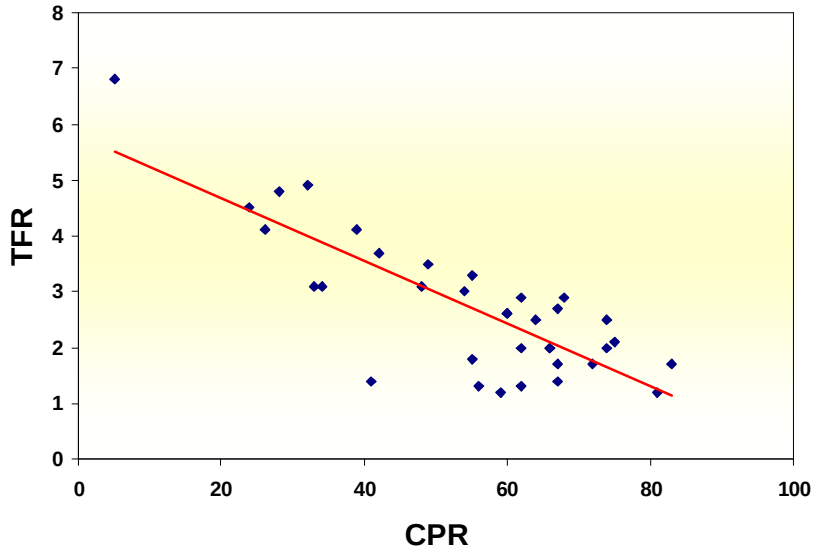
[c] : Data pertains to 1998

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 contraceptive increased from about 34 per cent in 1975 to 72 per cent in 1996 (Ruffolo and Chayovan, 2000).

The national family planning programme in Thailand is well-known for its innovative character, providing contraceptive services to the community level by employing nurses and auxiliary midwives as contraceptive providers (Rosenfield and others, 1982). However, some studies have argued that the Thai women across different ages and social segments had latent desires to control fertility even before the beginning of the national family planning programme. 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 methods of modern contraception 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 a crucial role that government policy can play in reducing fertility under the conditions of 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

Figure 2. Relationship between total fertility rate and contraceptive prevalence rate in the ESCAP region



Source: Population Reference Bureau, 2005 Women of Our World.

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, reaching below the replacement level in the early 1990s. The TFR has currently remained at 1.7. 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 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).

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 2.1 in 2000-2005. 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 marriage pattern has also affected fertility decline (Roudi-Fahimi, 2002). Fertility decline in the Islamic Republic of Iran is so unique that it occurred in all segments of the populations, including rural areas. While in urban areas, fertility 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"

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-1980, the perceived costs of rearing children have increased owing to higher aspirations and investments by families in their children's education (Abbasi-Shavazi, 2002). Hence, the key elements to the success of a phenomenal decline in fertility are: a culturally sensitive family planning programme, investments in health infrastructure and human development, and a high level of political commitment (Roudi-Fahimi, 2002).

4.2 Intermediate Fertility (transitional and near-replacement level)

Many intermediate fertility (transitional and near-replacement) countries have experienced a rapid fertility decline in the past three decades, and the declining trend seems to be continuing towards the achievement of low fertility. These countries

include, among others, Indonesia and Viet Nam. Some countries in the transitional fertility group, such as Bangladesh, India and the Philippines, which experienced a faster decline during the period 1970-1975 to 1990-1995, however, saw a slow down in fertility decline during the recent period. On the other hand, incipient declines in fertility have begun in countries such as Cambodia, Nepal, Maldives and Pakistan. Recent surveys have indicated that the TFR in these countries is around 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 life expectancies at birth, and low use of contraceptives.

Several factors have contributed to the decline in fertility in transitional and near-replacement fertility countries. Fertility decline in most of these countries is obviously associated with the 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, life style and reproductive behaviour (Hung, 2002).

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 family planning programmes in Indonesia is the result of the political change that occurred in the 1960s. The new political regime has changed the political climate from one that was traditionally Islamic to a less conservative one. The secularization of the government helped the formulation of an effective family planning programme that is compatible with Islamic values (Hull, 2002).

Furthermore, a study has indicated that increased involvement of women in school and the formal workforce further depressed Indonesian fertility (Hull, 2003). A growing number of women are choosing a life focused on a higher education and a career rather than the traditional life based on marriage and childbearing. The social reality of Indonesia is making it difficult for these young women to have both family and 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 which influenced the course of fertility transition; however, the transition was 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 with 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 a further fall 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 with its pronatalist messages. The fertility of people of Chinese and Indian decent, 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 3.2 in 1998. Such a steady decline in fertility at the national level is obviously related to the implementation of the government family planning programme established in 1951 as well as

perceptible changes in socio-economic development of the country over the past 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, Uttar 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 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 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 per 1,000 live births) and higher female age at marriage (20 years). On the other hand, 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 fertility difference between northern and southern India, where underlying family structures as well as the status of women considerably differ. 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 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 found in some northern states (Sathar and Phillips, 2001; Dyson, 2002).

Most of the transitional fertility countries have experienced a sustained decline in fertility. However, the fertility rates in some of these 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 high to transitional level was largely due to the successful family planning campaign, which was supported by a strong political commitment to reduce fertility. Culture-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 Dutta, 2001).

The stabilization of 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 Dutta, 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 led to an increase in the TFR in Matlab by 12 per cent (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) 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 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 (HDI of 0.32 and 0.33 respectively in Nepal and Bangladesh). By contrast, the onset of the fertility transition in more advanced countries, such as Singapore and the Republic of Korea, occurred when their HDI levels were much higher, 0.65 in the former and 0.58 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 fertility decline.

A further explanation to the lack of fertility decline in Bangladesh is related to a drop in the use of effective contraceptive methods, possibly due to low quality of care, and an increase in inefficient methods of family planning with a high discontinuations rate (Jones and Leete, 2002). Furthermore, Islam and others (2003) found that the quality characteristics of field workers, including regularity in work, innovative technique 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 transitional 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 the TFR in the Philippines had started to decline since the mid-1960s, the pace of the decline has been quite modest during the past 25 years. 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 life expectancies at birth (see table 6). 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 its 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).

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 during the 1990s. The lack of 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 reduction in fertility, if any, 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, 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 a 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.

5. CHALLENGES AND FUTURE PROSPECTS

The preceding sections examined the levels, trends and differentials in fertility and reviewed the factors affecting the fertility decline in Asia. 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 transitional and near-replacement fertility countries. It will also highlight challenges and emerging issues for countries at low and critically low fertility levels.

5.1 Prospects for Fertility Decline in Intermediate (transitional and near-replacement) Fertility Countries and Future Challenges

Considering the past trends and the current level

Table 8. Period when fertility is assumed to reach replacement level: Medium variant projections

Period	Transitional fertility	Near-replacement fertility
2005-2010		Myanmar Viet Nam
2010-2015		Mongolia Brunei Darussalam Indonesia
2015-2020		Turkey
2020-2025	India Philippines	Malaysia
2035-2040	Bangladesh Maldives	
2040-2045	Lao, PDR Nepal	
2045-2050	Cambodia Bhutan Pakistan	

Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

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, 2004). Table 8 shows the period during which countries in the region are likely to reach the replacement level of fertility. According to the medium variant projections, all countries in this region, except Afghanistan and Timor-Leste will have achieved the replacement level fertility by the year 2050.

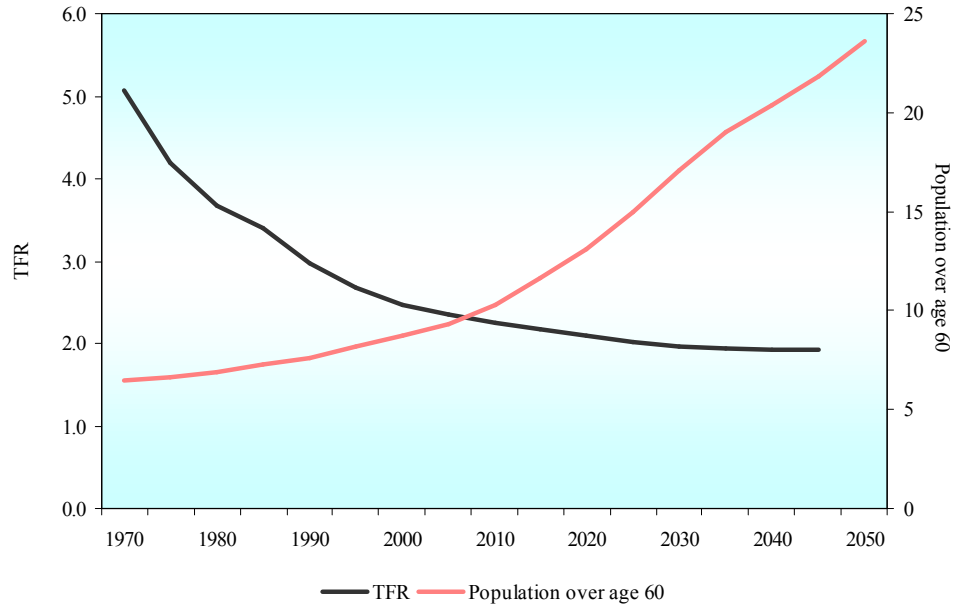
Among the transitional fertility countries, Cambodia, Bhutan and Pakistan are expected to reach the replacement level fertility in the period 2045-2050, while Lao People's Democratic Republic and Nepal will reach this level in the period 2040-2045. Bangladesh and Maldives will reach the replacement level fertility in 2035-2040. The United Nations projects that India and the Philippines will achieve the replacement level fertility in the period 2020-2025.

Of those countries belonging to the near-replacement level fertility, Myanmar and Viet Nam are expected to complete their fertility transition by the period 2005-2010, while Brunei Darussalam, Indonesia and Mongolia will do so in the period 2010-2015. Turkey is projected to complete the fertility transition in the period 2015-2020 and Malaysia in 2020-2025.

The future course of fertility in transitional and near-replacement fertility countries will, however, depend largely on several factors, including a high level of political commitments to providing good quality reproductive health information and services and making investments in social sector development. While contraceptive use has risen significantly during the past decade, data reveal that there is still a high level of unmet need for contraception (see table 7). In developing countries, 17 per cent of married women desire to use contraception to prevent pregnancy, but are not using any method. Unmet need is high among the poorest women in the poorest countries (Ross and Winfrey, 2002). In these countries, greater emphasis needs to be placed on strengthening family planning programmes so that services are accessible and affordable to couples desiring to use contraception. 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 high fertility levels than is the societal norm, in general, the gap is highest among the transitional fertility countries. For

Figure 3. Total fertility rate and percentage of population over age 60, ESCAP region, 1970-2050



Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

example, in the case of India one observes considerable variations in fertility among the different states, in general, northern states show a higher level of fertility as compared with the southern states. The situation in Nepal is also indicative of a society with a considerable large fertility gap between groups. Both the urban sector and highly educated women in Nepal exhibit replacement level fertility, although overall TFR in Nepal is 4.1 births per woman. Such variability in fertility, therefore, suggests that there are large pockets of population who 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 improvements of social and economic conditions along with an increase in 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. 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 (Foreit, 2002).

Other important issues in the transitional 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 heavily rely on external resources are not sustainable over a long period of time. In another words, it is necessary to transform programmes to more self-supportive systems (Caldwell and others, 2002).

5.2 Consequences of Low Fertility

As a result of low fertility, fewer children are born and progressively large numbers of adults move into the older age groups. Changes in age structure of the population and population ageing are inevitable consequences of low fertility. It can be seen from figure 3 that declining fertility has had a significant impact on the rising percentage of population over age 60. It is also evident that the impact of fertility decline on population ageing is much more revealing in the later stage as the high fertility cohort begins to reach the older age groups. In addition, improvement in mortality not only increases life expectancy at birth but also increases the number of additional years expected to be lived by older persons aged 60 and 80 years (United

Nations, 2002b).

In the long run, however, population ageing is not the only radical outcome of persistent low fertility. Increases in longevity at older ages and the widening gap between female and male life expectancies at birth will also result in a higher rate of growth of the elderly population, an increase in the old-age dependency ratio and feminization of the elderly population. By contrast, an ageing population would eventually lead to a decline in the overall growth of the population in general and the working-age population in particular. Because an old-age structure provides the momentum for a decline in population, just as the young-age population provides the momentum for an accelerated growth of population (McDonald 2000).

In Asia in general, the overall population growth rate has dropped to 1.3 per cent per annum currently. However, persons aged 60 years and older are growing at a rate almost twice as high as that of the total population. Persons aged 80 years and older are increasing even much faster. United Nations projections reveal that, although the population growth rate in Asia would significantly decline over time, the growth rate of older persons (aged 60 years and older, and 80 years and older) would be expected to increase consistently.

5.2.1 Changes in age structure and population ageing

One of the implications brought about by the low-fertility regime is a substantial change in the age structure of the population. On one hand, the proportion of the population under age 15 will experience a continuous fall, while on the other, the proportion of the population aged 60 years and older will increase during the period 2000 to 2050. In the world as a whole, the proportion of the population under age 15 (young-age population) and that of the population aged 60 years and older (old-age population) will be converging during the next 50 years. The timing of the crossover, however, varies depending on the timing and speed of the demographic transition: the earlier and faster the transition, the earlier the crossover.

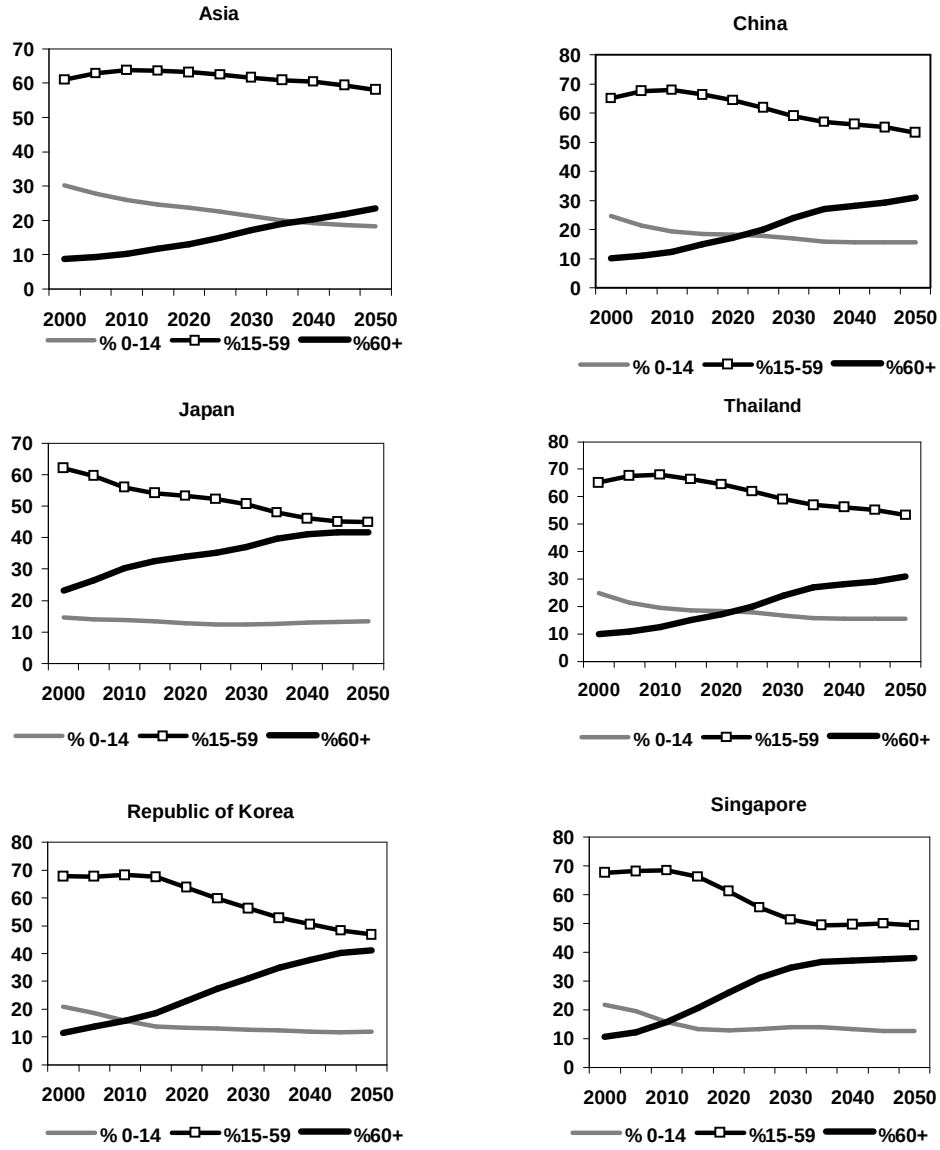
The Asian countries will also experience a tremendous shift in the proportion of the young-age (under 15 years of age) and the old-age populations between 2000 and 2050. During this period, the proportion of population 60 years and older is expected to increase by two and half times, from 9 to 23 per cent, while the proportion of the young-age population is likely to decline by one third, from 30 per cent to 19 per cent. In Asia as a whole, the old-age population will outnumber the young-age population by the year 2040 (figure 4). However, as a consequence of an earlier and faster fertility transition, the old-age population in Japan has already surpassed the young-age population. In Singapore and the Republic of Korea, such a crossover will occur in 2010 and 2015 respectively.

The impact of a long-term decline in fertility will also give rise to a substantial drop in the proportion of the population in the age group 15-59. In the world as a whole and in Asia, the proportion of the population representing this age group will remain more or less constant at around 60 per cent during the period 2000 to 2025 and will experience a slight decline to 58 per cent in 2050. However, the changes in the age structure of the population are more revealing in countries where fertility declined rapidly. Japan will experience a considerable drop in the proportion of the population in this age group: by the year 2050, only 45 per cent of the population of Japan will be in this age group, down from 62 per cent in 2000. Populations such as the Republic of Korea and Singapore will also exhibit a lower proportion of populations in the working ages in the next 50 years.

It can also been seen from figure 5 that in 2000, Japan's old-age population represented 23 per cent of the total population as compared with the young-age population, which represented 15 per cent of the total. The old-age population will drastically increase in the next few decades; it is projected that in 2050 Japan's old-age population will be 42 per cent of the total population, almost three and half times as high as the proportion of the young-age population. As the changing proportions of the young-age and old-age populations suggest, Japan will continue to be one of the most aged countries in the world. Other low-fertility countries in Asia will also experience a substantial increase in the proportion of older persons.

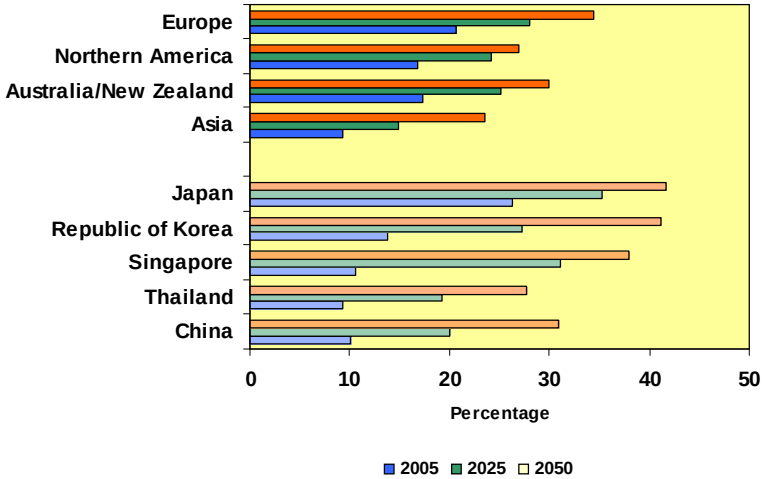
It is worth mentioning that persons aged 80 years and older (the so-called oldest-old) currently represent more than 3 per cent of the total population in Europe and Northern America. The population of the oldest-old will increase by more than three times in the next 50 years in Europe, reaching at least 10 per cent of the total population. Similarly, the population of the oldest-old will be more than double in Northern America during the same period. The only country in Asia with a sizeable population of the oldest-old is Japan: 3.8 per cent of Japan's population in 2000 comprised people aged 80 years and older. Of all the countries in the world, Japan is projected to witness the largest proportion of the oldest-old (15.4 per cent)

Figure 4. Percentage distribution of population by broad age groups, 2000-2050



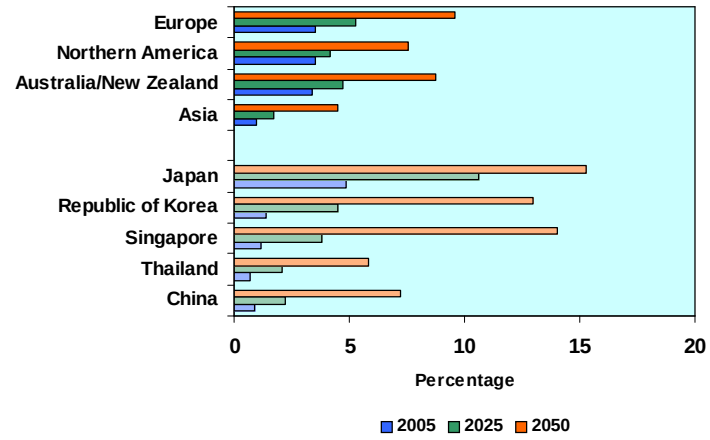
Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

Figure 5. Percentage of population over age 60



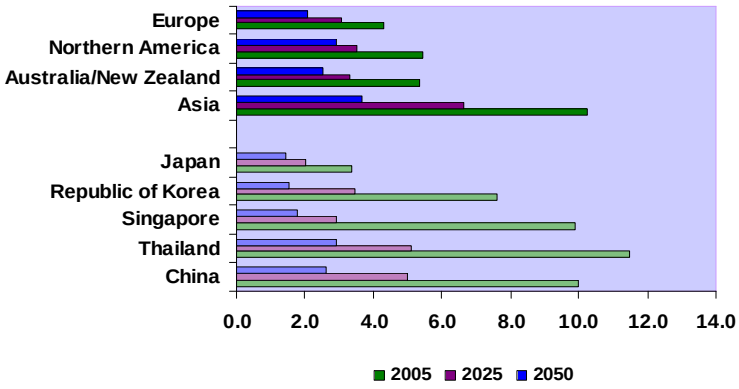
Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

Figure 6. Percentage of population over age 80



Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

Figure 7. Potential support ratio (15-64/65+)



Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

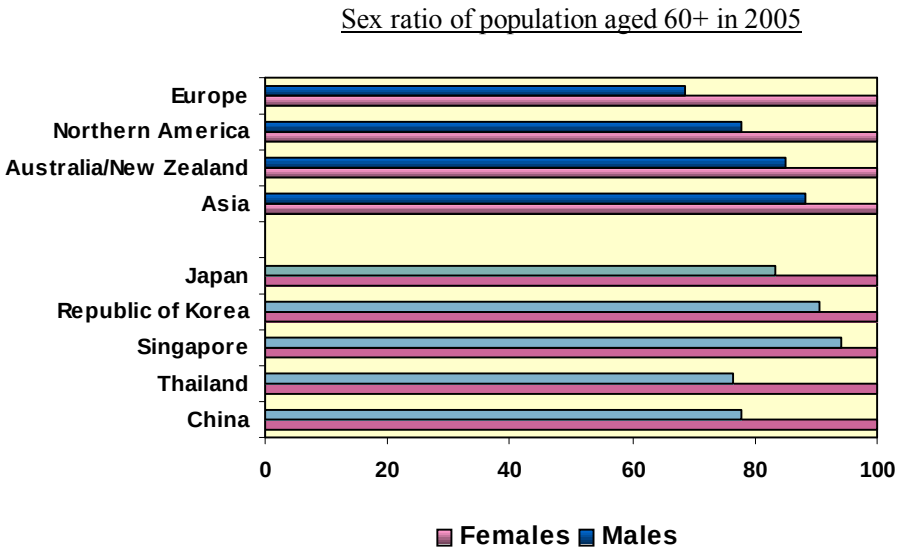
in the total population in 2050. Other countries such as the Republic of Korea and Singapore are also expected to experience a large growth in the population of the oldest-old. It is noteworthy that in the Republic of Korea and Singapore, the number of oldest-old is projected to increase by almost 10 times over the next 50 years (Figure 6).

5.2.2 Potential support ratio

The potential support ratio, presented in figure 7, is a simplified measure showing the relationship between the number of working-age population and older persons. Globally, there are 9 persons in the working age group per older person. However, in the next 50 years there is likely to be a vast depletion in the potential support ratio, shrinking by more than half. Currently, the potential support ratio in Europe-already low at less than 5-will further decline to less than 2 in 2050. Relatively low potential support ratios are found in Northern America (5.4) and Australia/New Zealand (5.5). Over the next half century, this ratio will drop substantially to 2.8 in Northern America and 2.7 in Australia/New Zealand.

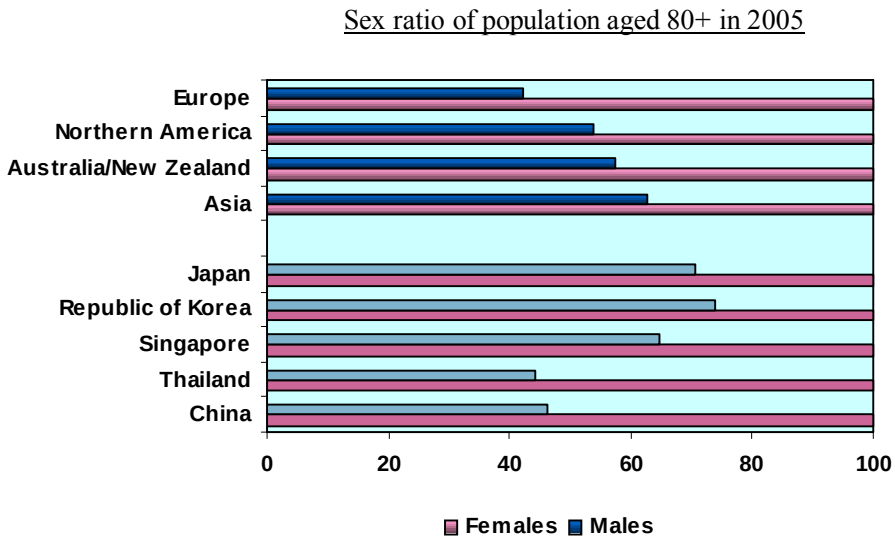
In Asia a whole, although the potential support ratio is relatively high at 11, important variations can be seen at the country level. In the next 50 years several low-fertility countries in Asia will experience a sharp decline in the potential support ratio, eventually falling to 2 or lower. Such countries will include Hong Kong, China; Japan; Macao, China; the Republic of Korea; and Singapore. Importantly, the potential support ratio of Japan, currently at 4, is already lower than that of Europe. More importantly, this ratio in Japan is projected to fall below 1.5 in 2050; the only two other countries in the world in which such a low ratio would be expected are Italy and Spain (United Nations 2002b).

Figure 8. Feminization of the elderly population aged 60+



Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

Figure 9. Feminization of the elderly population aged 80+



Source: World Population Prospects: The 2004 Revision, United Nations Population Division, New York.

5.2.3 Feminization of the elderly population

In addition to the increase in elderly dependency ratios, a large gender disparity in the improvement of life expectancy at birth has been observed in low-mortality countries, with females having higher life expectancy at birth than males. As a result, women tend to outnumber men in the older age groups. It is apparent from figured 8 and 9 that sex ratios at older ages are much lower in Europe compared with those in Northern America, Australia/New Zealand and Asia. This is attributed to the fact that there is a large gender difference in longevity in Europe, with females having a much higher life expectancy at birth than males. Currently, in Europe women outnumber men by 3 to 2 at ages 60 years and older, and by 5 to 2 at ages 80 years and older.

Significant differences in the sex ratios of the elderly population can be seen among critically low-fertility countries in Asia. Feminization of the elderly population (more female elderly than male elderly) is particularly pronounced in China and Thailand,

where sex ratios at ages 60 years and older and 80 years and older are significantly lower. The excess of women in the older ages is typically viewed as problematic, because it reflects high levels of widowhood and the various difficulties associated with it. A higher proportion of older women are likely to be widowed owing to the difference in the age of the spouse at the time of marriage (women tend to be younger than their spouse) and a higher life expectancy at birth for women compared with men (Neville, 2000). Percentages of women widowed increase with age as they tend to remarry less frequently upon divorce or the death of a spouse. Many older widows in industrialized countries tend to live alone. Widowed elderly women tend to live in poverty. Because women are less likely to be employed in the formal sector, they tend to have shorter working years and smaller earnings. Also, they often do not have enough pensions or occupational skills to support themselves in old age. Moreover, a majority of the institutionalized elderly are the oldest-old women who are often widowed and who usually suffer from weak health (United Nations, 2001). These realities combined with a host of gender differences, such as educational attainment, poverty and functional status, pose additional problems for elderly women (National Research Council, 2001).

In conclusion, although critically 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 a 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 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 critically low fertility countries is the ageing of the population. As a consequence of a rapid fertility decline coupled with an increase in longevity, the increasing number of low fertility countries will be faced with higher proportions of the population in the older age groups. The rapidity of the process leading to low fertility has not allowed enough time for these countries to adequately prepare for the problems associated with 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, 2003).

Considering the experience of low fertility countries, the governments of transitional and near-replacement fertility countries need to foresee the consequences of declining fertility rates. A crucial agenda for the governments is, therefore, to plan for an ageing society before fertility drops well below the replacement level. In this regard, researchers are urging Governments to start preparing for policy measures to deal with ageing problems as soon as possible (Mason, Lee and Russo, 2002). In other words, it is particularly important for Asian countries to recognize the significance of ageing problems and start formulating policies for the elderly as it takes several decades for government old-age pension insurance schemes to mature and operate at full scale (Ogawa, 2003).

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