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The shade areas of the map indicate ESCAP members and associate members.

COVER PHOTOGRAPH

A group of elderly women in Mongolia gather around the photographer (*Photo by Paul Ubl, courtesy of ESCAP Library*).

Population ageing in Mongolia, an inescapable outcome of the country's dramatic fertility transition, is the focus of one of the articles published in the present issue of the *Asia-Pacific Population Journal*. Be sure to read it to have the rare chance to learn about the population trends in this remote country.

In addition to the incisive Viewpoint article, other articles published in this issue address a variety of topics in different geographical regions in Asia and the Pacific.



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Are the Goals Set by the Millennium Declaration and the Programme of Action of the International Conference on Population and Development within Reach by 2015?

The risk now is that the benefits of development are increasingly favouring the well-to-do, leading to deepening inequality. As the Millennium Declaration makes very clear, development is for everyone.

The challenge now is to ensure that no one is excluded.

By Mercedes B. Concepcion*

It is now mid-2008, just seven years away from 2015, the target year for the realization of the International Conference on Population and Development (ICPD) Programme of Action and the eight Millennium Development Goals.

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The eight Goals that world leaders pledged to meet in order to solve global challenges, range from halving extreme poverty to facing the problem of maternal mortality and reversing the spread of HIV/AIDS by 2015. Owing to persistent efforts of non-governmental organizations and other development partners, the goal of universal access to reproductive health by 2015, agreed upon during ICPD and reaffirmed at the Fifth Asian and Pacific Population Conference in December 2002, now forms a crucial part of the fifth Goal of improving maternal health.

While the Asian and Pacific region has been moving towards achieving the Goals, progress has been uneven according to the most recent assessment contained in the third Millennium Development Goals report for the region, entitled *A Future Within Reach 2008: Regional Partnerships for the Millennium Development Goals in Asia and the Pacific* (United Nations, 2008). The report disclosed that, between 1990 and 2004, the number of people living in extreme income poverty fell from 1 billion to 641 million in South-East Asia and China. Concerning health, more children are now surviving beyond the age of 5. With regard to education, millions more children are now going to school and a great number of countries have attained nearly 100 per cent primary school enrolment rates. The Asian and Pacific countries have also devised measures to achieve greater equality both in schools and in the workplace.

The following paragraphs will zero in on the eradication of poverty and hunger (Goal 1), the reduction of child mortality (Goal 4) and the improvement of maternal health (Goal 5), citing examples from the Philippines and selected Asian countries.

Goal 1: Eradicate extreme poverty and hunger

In just two years, between 2002 and 2004, the number of people living in extreme poverty in the region fell by 82 million. Between 1990 and 2004, China reduced its incidence of extreme poverty by 23 per cent, from 33 to 10 per cent, thus surpassing the target set for the year 2015. Poverty rates have also diminished sharply in Azerbaijan, Indonesia and Thailand.

However, the 2008 report revealed that, this year, one out of every two people in the world subsisting on less than US \$1 a day resides in the Asian and Pacific region. Other areas of concern include distressing levels of infant and maternal mortality, the increasing spread of HIV/AIDS and the low coverage of water and sanitation.

In addition, women throughout the region continue to encounter discrimination in their homes and communities, and many endure deplorable

working conditions. Another disquieting aspect of the region's progress towards meeting the Millennium Development Goals and the ICPD goals is the divergence that persists within and between countries. Within countries, poor and vulnerable groups, particularly those in rural and remote areas, are falling further behind. Such countries as Bangladesh, the Lao People's Democratic Republic, Nepal and Sri Lanka slipped backward between the early 1990s and the early 2000s. The share of the poorest quintile in national income or consumption, a measure of inequality, remains less than 10 per cent (except in Japan) and appears to have declined in several countries.

Today, with the price of fuel soaring past record levels, with inflation reaching double-digit figures and headlines screaming of rice shortages, can we expect the poor to be released from their bondage? Consider these facts: between January and the first week of July 2008, the world price of Dubai Crude oil jumped 50 per cent; between January and mid-July 2008, petrol prices in the Philippines surged 18 times; in July 2008 in Viet Nam, the oil price increased 30 per cent, while in Malaysia it increased by more than 40 per cent; the general inflation rate in the Philippines registered a 11.4 per cent rise in June, with the inflation rate for food items recorded at 17.4 per cent for the same month; and, in 2006, one in three Filipinos was poor, with some 11 million people estimated to be subsisting on less than US \$1 day. With such a scenario, even middle-class workers have had to tighten their belts and learn to cope with less.

While there is no clear, universally accepted definition of hunger, the Food and Agriculture Organization of the United Nations posits an average daily energy requirement of 2,200 calories for adults undertaking light activity. Based on this standard, about 545 million people in Asia and the Pacific are undernourished (FAO, 2004), comprising almost two thirds of the world's undernourished population. Of this number, South Asia accounts for 300 million persons suffering from hunger, including 233 million in India. Another 160 million live in East Asia, with 119 million located in China. South-East Asia accounts for approximately 65 million undernourished people.

Although the Asian and Pacific region has witnessed an overall decrease in the number and prevalence of undernourished persons, the average rate of reduction has fallen short of what would be required to meet the first Goal of halving the proportion of people who suffer from hunger by 2015. The highest proportions of undernourished populations have been recorded in Tajikistan (61 per cent), the Democratic People's Republic of Korea (35 per cent), Cambodia (33 per cent) and Bangladesh (30 per cent).

The percentage of children under age 5 who are underweight is another vital indicator of hunger. While the region has been making progress as far as this indicator is concerned, it is considerably behind its target for 2015, with two out of every seven children below age 5 being underweight. The region still accounts for about two thirds of the world's underweight children. In some countries, the proportion is almost as high as one half.

Malnourished and underweight girls grow up to be undernourished mothers. Receiving poor health care during pregnancy means such mothers are, in turn, at risk of having underweight children. These forms of malnutrition may not necessarily be the consequence of absolute shortages of food, but may be owing to inadequate feeding, especially when children are weaned.

It is clear, however, that hunger and malnutrition are not primarily due to problems of food production. Nor are they simply the outcome of poverty. In fact, the region has been more successful at producing food and reducing poverty than it has been at diminishing hunger and child malnutrition. Some of the problems lie with the way food is being used. One of the most important steps in the fight against extreme poverty and hunger will be to increase the status of women. Such an improvement not only fulfils women's basic rights but also brings hope to other members of the household, since women who have higher levels of education and who have greater access to productive assets and resources will be in a better position to ensure that their children are well fed. Countries will also need to improve essential social infrastructure to relieve women of the burden of caregiving.

Goal 4: Reduce child mortality

Although child mortality has fallen to a record low throughout the world, it is still a matter of great concern in the Asian and Pacific region, where some 4 million children die every year before reaching the age of 5. The following countries reported very high rates of under-5 mortality per 1,000 live births: Afghanistan (257); Cambodia (143); Myanmar (105) and Turkmenistan (104). Infant mortality followed a similar pattern.

Child mortality is closely associated with gender inequality. Discriminatory practices prevailing in several countries have resulted in baby boys being preferred over baby girls, neglecting the latter's health and nutritional standards. Improving levels of basic health and nutrition of women and increasing pregnant women's access to good health facilities will also lower the number of infant deaths.

And where are the infants? The most violated human right is that of a child to reach his first birthday. The Asian Development Bank declared: "The Philippines,

overall, is doing well on this and is on track to meet the (related) MDG goal by 2015". Meanwhile, a worrisome gap between city and rural areas is emerging.

Goal 5: Improve maternal health

Regarding maternal health, the performance of countries in Asia and the Pacific has been deeply disappointing. Some 250,000 women in the region die each year during childbirth or from pregnancy-related complications. The target is to reduce the maternal mortality ratio by three quarters by the year 2015. In 1990, Asia's overall maternal mortality ratio was 395 deaths per 100,000 live births. A decade later, the ratio had only fallen to 300.

In the Philippines, 10 mothers die each day while giving birth. By contrast, the figure is only 3 in Malaysia. The related Goal for the Philippines is to trim the maternal mortality ratio to 52 for every 100,000 births by 2015, down from 209 in the 1990s. The country has slashed this ratio down to the current figure of 170. Unfortunately, progress is far too slow. Skilled health personnel attend only 6 out of every 10 births in the Philippines, while the number is close to 10 in Thailand. At this rate, the maternal mortality ratio for Filipino mothers will dip only to 140 by 2015.

Although the situation varies from one country to the next, there are a number of common problems, such as gender discrimination in accessing health services, poor quality of services, a lack of emergency obstetric care, and a paucity of skilled health personnel and community-level field workers.

Maternal mortality could fall by 75 per cent if all births were attended by skilled health personnel with access to emergency obstetric care (Rightsbase, 2007). Another difficult issue is that many pregnant women are in poor health and are malnourished, a frequent consequence of their low economic and social status. This situation is especially dire for such vulnerable women as refugees, migrant workers, minorities and women in conflict areas.

Certain countries have created obstacles in the progress towards ensuring universal access to reproductive health, placing ideology above evidence and bias above science. Well meaning but far less effective abstinence efforts are supplanting comprehensive family planning and reproductive health strategies.

Moreover, the lack of accurate statistics has been hampering progress in reducing maternal mortality. Only a few of the poorest countries have effective systems for vital registration. Most data on maternal deaths come from household and other surveys that have their own limitations. Hence, more efficient and effective systems of data collection need to be implemented to correct this situation.

In developed countries, the sex ratio at birth ranges from 103 to 107 males per 100 females. China's sex ratio at birth is 120, while that of India is 108. In some parts of the region, the birth of a boy is viewed as a gift from the gods while that of a girl is often seen as a "curse". Hence, some parents resort to selective abortion or in some cases, infanticide. With the development of amniocentesis and ultrasound imaging technologies, parents have been better able to choose the sex of their child. A study conducted in four countries in the region dubbed the sex-ratio imbalance "*gendercide*" (UNFPA, 2007). Subsequent gender-based violence or neglect that costs the lives of millions of women and girls also distorts the sex ratio at birth.

The ICPD Programme of Action and other international agreements, as well as international organizations such as the United Nations Population Fund, the International Planned Parenthood Federation and the United Nations Children's Fund that provide support for the implementation of such agreements, have been the target of smear campaigns that spew misinformation and continue to use the abortion issue as a wedge to undermine the real target: organized family planning, reproductive health programmes and equality for women.

The Philippines has emerged as one of the countries posing obstacles in the progression towards ensuring universal access to reproductive health care. The current administration has placed ideology above evidence and bias above science. Well meaning but far less effective abstinence efforts supplant comprehensive family planning and reproductive health strategies. It is regrettable that so many of the people talking about the sanctity of life are, by their actions, ignorant and prejudiced, effectively condemning women to die.

A sense of impotence among the needy can pose grave challenges for social stability and economic well-being, compounded by weakness in governance, problems in service delivery and persistent gender discrimination. During the launch of the 2008 report in April, David Lockwood, Acting Head of the United Nations Development Programme Regional Bureau for Asia and the Pacific, emphasized that "raising standards of governance will assist countries in their efforts to achieve 'pro-poor' growth".

The 2008 report highlights the need for international organizations in the region to coordinate in a better fashion their assistance to countries attempting to make the Millennium Development Goals a reality. At the launch of that same report, Noeleen Heyzer, Executive Secretary of ESCAP, said: "It is essential that development partners contribute according to their unique characteristics and strengths, yet uphold the spirit, principle and practice of uniting to 'deliver as one'".

In most countries in Asia and the Pacific, the next generation is likely to be less poor and better educated. However, the risk now is that the benefits of development are increasingly favouring the well-to-do, leading to deepening inequality. As the Millennium Declaration makes very clear, development is for everyone.

The challenge now is to ensure that no one is excluded.

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Gender and Remittance Flows in Viet Nam during Economic Transformation 13

Since the 1990s, Viet Nam has been experiencing a dramatic growth in remittance flows. This article uses the Viet Nam Living Standards Surveys of 1992-1993 and 1997-1998 to study the role of gender in both sending and receiving remittance flows. Knowing about gender differences will help to better explain the impact of remittances and to understand the nature of gender roles during a period of rapid economic transformation. There are important distinctions between men and women, such as a greater sense of responsibility among women for the intergenerational transfers of remittances (particularly between parents and children), while men tend to take more responsibility for intragenerational transfers. In addition, after controlling for other factors and sharing remittances between spouses who live together, evidence suggests that women have a greater likelihood of both sending and receiving remittances.

Spousal Abuse and Infant and Child Mortality in India 33

Data from the National Family Health Survey, 1998-1999, India are used to examine the association between domestic violence and the risk of infant and

child mortality in India. The study explores the association of physical violence against the nutritional status of women and children, the reporting of pregnancy intendedness and the utilization of maternal and child health services. A significant association is found between physical violence against mothers and the risk of death of their children during infancy and childhood. This risk is 9 to 12 per cent higher if the mothers have been exposed to physical violence, even after adjusting for other socio-economic and demographic variables. Battered mothers are not only less likely to utilize maternal and childcare services but also more likely to have poor nutrition. Domestic violence is an important public health concern and should be taken seriously by policymakers and planners.

Fertility Transition and Population Ageing in the Asian and Pacific Region

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This paper provides a general overview of population ageing in the context of fertility transition in Asia and the Pacific. Focusing on low-fertility countries, it highlights the implications of low fertility for the ageing process. Indicators of population ageing, such as changes in age structure, potential support ratio and the feminization of the elderly population, are presented to provide a better understanding of the overall situation.

As the region is home to over 60 per cent of the global population and has been experiencing a rapid decline in fertility, the absolute size of the older population is a cause for major concern. While the overall population growth rate has been declining over time, the number of older persons is increasing at a faster rate. In addition to the increase in the number of older persons, gender disparity in improvements in life expectancy at birth is likely to result in a much higher percentage of females in the older age groups, particularly in the age group 80 years and older.

It is therefore important for countries in the region to recognize the significance of ageing problems and to start formulating policies for the elderly given that it takes several decades for Government old-age pension schemes to mature and to operate at full scale.

Dramatic Fertility Transition in Mongolia and Its Determinants: 81 the Demise of the Pronatalist State

Mongolia followed a centrally planned economy up until 1989. Under socialist rule, the country had a strong pronatalist population policy under which those families having children were provided with generous benefits. The changes made to these policies have had a considerable impact on fertility and family formation in Mongolia.

Dramatic fertility declines occurred in Mongolia between the 1960s and the end of the 1990s – mainly owing to changes in population policies and other social dimensions. Although still not at a low level, the total fertility rate in Mongolia as a whole has declined from about 8 children per woman to about 2.3 within a span of 38 years. Findings suggest that fertility transition is under way, and this transition consists of the following periods: a) pre-transition (1960-1975); b) the onset of transition (around 1975) and c) transition (1976-1998). The latter itself can be split into two phases: the socialist and market periods.

If the decline in fertility persists in Mongolia, it will have a considerable impact on population growth, hence on the country's population structure. It is likely that Mongolia may soon face population ageing and a decline in its dependency ratio, which will have profound effects on many socio-economic issues.

Gender and Remittance Flows in Viet Nam during Economic Transformation

This article attempts to uncover some of the underlying differences in remittance behaviours between men and women in Viet Nam. Some of the interesting results found include a tendency for men to send remittances to other men, while women tend to send more to other women.

By Wade Donald Pfau and Giang Thanh Long*

Remittances are growing in importance in our globalizing world and, consequently, they are receiving greater attention from researchers. At the microeconomic level, researchers tend to use household surveys to examine why people send remittances, how the characteristics of remittance recipients compare to those of non-recipients, how remittances impact poverty and the income

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distribution, if remittances are spent for consumption or investment purposes, and in order to access the role of remittances as an insurance mechanism. However, an issue that has received less attention is the role of gender in remittance decisions, from the perspective of both senders and receivers. In Viet Nam, the *doi moi* economic reforms that began in 1986 have led to large-scale economic transformation in the country, and gender has emerged as an important distinction for understanding how economic growth benefits society and the various subgroups of the population (Long and others, 2000). Viet Nam represents a case of transition from the traditional patriarchal social structure of Confucianism, to a structure of formal equality under socialism, and currently, with further changes taking place, to a market economy. Using the Viet Nam Living Standards Surveys (VLSSs) for 1992-1993 and 1997-1998, which include information about remittance flows at the individual level, attempts are made to shed some light on the role of gender in remittance decisions in Viet Nam during the period of rapid economic transformation.

The authors of this article decided to focus their attention on this particular issue for a number of reasons. First, the survey data allow for a thorough examination of remittance flows at the individual level, whereas in many countries such data can be obtained only at the household level. Second, Viet Nam is undergoing a process of rapid economic change, and the two survey periods provide insight into the impact of economic transformation on migration and remittance flows. To understand those changes, it should be noted that, between the survey years, the poverty rate fell from 57.6 per cent to 37.4 per cent. Additionally, the real gross domestic product of Viet Nam grew by more than 8 per cent for each year between 1992 and 1997 (IMF, 2008). The growth of new industries and of the service sector reduced the importance of agriculture, leading to many changes occurring in the lives of the Vietnamese people. Foreign investment led to rural-urban migration and to the significant growth of both Ho Chi Minh City and Hanoi within just a few years in the mid-1990s (Long and others, 2000). Regarding older persons in Viet Nam, Giang and Pfau (2007) document how traditional living arrangements are breaking down as more elderly persons are living alone or in households with only other elderly persons, as this age group is increasingly losing the support of their children. This trend may also change the context of remittance flows.

Furthermore, the mid-1990s witnessed a change in the trend of migration from Viet Nam, as political motives increasingly gave way to economic motives. Much of the country's international migration has been driven by non-economic factors, at least before the early 1990s. Barbieri and others (1996) found that, of the

more than 1.2 million people who left Viet Nam between 1975 and 1993, 60 per cent were illegal refugees and 40 per cent were part of the Orderly Departure Programme set up by the Government of Viet Nam. Though it is not possible to clearly distinguish political motives from economic ones, many of those refugees were fleeing the Communist regime. Immigration data from the United States of America, the destination country for 62.1 per cent of Vietnamese emigrants between 1975 and 1993, makes this clearer (Barbieri and others, 1996). Niedzwiecki and Duong (2004) compiled data from the United States Immigration and Naturalization Service about Vietnamese immigration to that country between 1971 and 2001, classifying immigrants as either refugees or non-refugees. For refugees, the largest spike was in 1975 following the fall of Saigon, while another spike occurred in the early 1980s as the communist Government strengthened its position against political opponents. While only a small number of non-refugee migrants arrived in the United States in the late 1980s and early 1990s, their numbers soared and more than 40,000 arrived in both 1991 and 1992. As such, between the two survey periods, one can witness how remittances may change as economic migration becomes more important.

In addition, while international remittances have been growing steadily, domestic remittances that took place between the two surveys were found to have grown even more rapidly. Weighted by remittance value, the share of total remittances from international sources fell from 71.7 per cent in 1992-1993 to 57.3 per cent in 1997-1998, whereas the share of remittances flowing from households within the same province grew from 18.9 per cent to 25.8 per cent. By contrast, remittances flowing between different provinces in Viet Nam grew from 9.4 to 17 per cent during the same period. For further information about the surge of internal migration in the mid-1990s, see Long and others (2000).

It is clearly instructive to examine the nature of remittances in Viet Nam. In this paper, remittances are examined especially from the perspective of gender. The authors look at the flow of remittances between genders to answer such questions as whether men are more likely than women to send or receive remittances, and whether men tend to send those to other men or to women. The analysis is then further extended by considering the gender flows for different types of relationships – between senders and receivers – to answer such questions as whether sons or daughters are more likely to send remittances to parents, whether children tend to send those sums to their fathers or to their mothers, and whether parents tend to send those to their sons or to their daughters, and so forth. The next issue considered is that of remittance flows for married couples in order to ascertain which member of the married couple tends to send and receive more

remittances. This leads us to consider an alternative measure of remittance flows, in which one assumes that any remittances sent or received by a married person living with his/her spouse will be divided and shared equally with that person. This reasonable assumption is found to have important implications for the subsequent regression analysis, in which one seeks to determine the role of gender in sending and receiving remittances at the individual level, after controlling for other important characteristics, such as marital status, working status, migrant status, region, urban/rural location, age, position in the income distribution and education.

Briefly, interesting patterns include the tendency of men to send remittances to other men, and the tendency of women to send them to other women. This is the case in absolute terms for domestic remittances, but is somewhat offset for international remittances, as men are more likely to send them to women. Additionally, evidence suggests that women tend to be more responsible for the intergenerational transmission of remittances (particularly between parents and children), while men tend to take responsibility for such transfers within the same generation. Also, for married couples who live together, this analysis found that there is a tendency for the husband to be more responsible for sending and receiving remittances, whereas women are less likely to receive remittances and only slightly more likely to send remittances, if one assumes that spouses living together share the remittance amount. Based on this same assumption, the regression analysis shows that, when controlling for other factors, women actually have a higher probability than men to both send and receive remittances.

Literature review

This section reviews the literature available on the following three issues: reasons remittances are sent; the role of gender in remittance-related decisions; and general studies of remittances in Viet Nam. Theories about migration and remittances can be divided into economic and non-economic motives. Massey and others (1993) reviewed economic motives based on the neoclassical economic theory that identifies the cause of migration as wage differentials, so that the net flow of migrants is expected to be from low-wage areas to high-wage areas. More recently, the new economics of migration have extended the analysis to the household level, with migration being considered as a way to reduce risk by diversifying income sources and providing insurance against local shocks when market failures prevent even the availability of such schemes.

As for non-economic motives, remittances may be driven by altruism, in which the sender does so out of a selfless desire to help recipients (Lucas and Stark, 1985). Also, as noted earlier, Viet Nam represents a special case, in which much of

the early international migration was driven by non-economic factors, which could impact remittance decisions as well. Also, Curran and Saguy (2001) explained how culture and social networks may influence the migration and remittance decisions made by different genders, citing that, in Thailand, daughters are more likely to send remittances than sons as a result of differing cultural expectations and family power. As for Viet Nam, Long and others (2000) relate that parents do not show a gender preference in the choice of living with adult unmarried children, but have a clear preference to live with married sons over married daughters, implying that married women tend to be expected to care for their in-laws. Similarly, in studying the remittances from migrants in Thailand, Osaki (2003) found statistically significant evidence that female migrants were more likely than males to send remittances to their origin household. Osaki explains this as possibly resulting from closer relationships and obligations existing between females and their origin households in Thailand compared with those between males and their origin households.

Several studies on remittances in Viet Nam are available to researchers. For instance, Le and Nguyen (1999) used the 1992-1993 VLSS to study domestic and international remittance flows in and to and from Viet Nam. The authors found that, after controlling for other factors, female-headed households are more likely to receive remittances compared with male-headed households. A study that discusses aspects of remittances with regard to their role in supporting the elderly population is that of Knodel and others (2000). An interesting question posed in that article is whether the elderly are disadvantaged by not having a child of a particular sex. Results are conflicting, though with regard to the issue of material support, they found weak evidence that elderly persons without sons in the north of the country are less likely to receive support, and no evidence in the south. Also of relevance, Friedman and others (2003) examined gender differences in the well-being of the elderly in Viet Nam, including in support for the elderly from family members. They found that transfers between generations do not show much variation between genders after controlling for other factors such as marital status and age. Finally, Barbieri (2006) found that elderly women (aged 60 and above) are more likely than elderly men to receive remittances from their children.

Data

In this article, the authors use the 1992-1993 VLSS and 1997-1998 VLSS.¹ These surveys were conducted by the General Statistics Office of Vietnam, along with other international agencies, as a part of the Living Standards Measurement Study of the World Bank. Detailed descriptions of these surveys can be found in numerous research reports, such as those by the World Bank (2000 and 2001).

Unless otherwise noted, the calculations are made using sample weights to make the data representative of the entire Vietnamese population, in both urban and rural areas and across different regions.

The surveys are organized by household, but they also include some characteristics for each individual in the household, such as age; gender; relationship to household head; marital, working and migrant status; salary; health and education. The 1992-1993 VLSS includes 4,800 households with 24,068 individuals, whereas the 1997-1998 VLSS includes 6,002 households with 28,633 individuals. At the household level, those surveys provided extensive data on sources of income, business and agricultural enterprises, detailed household expenditures, the ownership of consumer durables, poverty incidence, poverty alleviation programmes and housing conditions.

Remittances are defined in the surveys as the amount of money and monetary value of in-kind benefits received by a household from people not living in the household (family or friends), which do not require repayment. Reports on the surveys provide information on specific details about each remittance a household receives and sends. For remittances received, the information includes which member received it, the relationship of the remittance sender with the receiver, and the gender of the sender (only in the 1997-1998 VLSS). In addition, information is provided on where the sender lives, including the country if the remittance came from overseas, and whether the location is in an urban or rural area. The value of the remittances sent and received is also provided. Based on details on both remittances received and remittances sent by each household, it can be determined whether the household is a net receiver or sender, and the flow of remittances in both directions can be examined.

Results

Characteristics of remittance flows in Viet Nam

Prior to the analysis of gender and remittances in Viet Nam, general information about remittances for the country is presented. Evidence suggests that, between 1992-1993 and 1997-1998, there was a small but increasingly significant role for remittances in terms of the percentage of households sending and receiving them. About 20.7 per cent of households (weighted by household size) received remittances in 1992-1993, and this number increased to 22.7 per cent in 1997-1998. Most of those households received remittances from domestic sources, while in both surveys, some 5.6 per cent of households received remittances from a sender abroad. Meanwhile, in 1992-1993, 16.5 per cent of

households sent remittances to domestic residents. This number grew to 18.3 per cent by 1997-1998. A mere 0.1 per cent of households sent remittances to family members living abroad.

Table 1. Percentage of households that sent and received remittances

	1992-1993	1997-1998
Households that received:		
No remittances	79.3	77.3
Domestic remittances	16.1	17.8
International remittances	5.6	5.6
Households that sent:		
No remittances	83.4	81.6
Domestic remittances	16.5	18.3
International remittances	0.1	0.1
Households that sent and/or received		
No remittances	66.7	63.7
Only received	16.7	17.9
Only sent	12.5	13.6
Both received and sent	4.1	4.8

Source: Authors' calculations are based on the Viet Nam Living Standards Surveys of 1992-1993 and 1997-1998.

Note: Columns in the top two sections of the table do not add up to 100 per cent because households receiving or sending both domestic and international remittances are counted twice.

Remittance flows between genders

Remittance flows can be examined for only the 1997-1998 survey, since it is the only one that identifies the gender of the person who sent the remittance to each recipient. Overall, females received 54.9 per cent of the total remittance amounts and sent 48.1 per cent of the remittances. Regarding the flow of remittances between genders, at first glance it may seem as though there is no correlation as to who sends to whom. However, a Pearson chi-square test does demonstrate a statistically significant difference at the 0.1 per cent level: even though males send

more remittances to females than females do to males, they are more likely, compared with females, to send remittances to other males. Similarly females are more likely to send remittances to other females.

Table 2. Remittance flows between genders in 1997-1998, remittances weighted by value received, for people aged 20 and over

		Total remittances (in percentage)		
		Sender		
		Male	Female	Total
Recipient	Male	23.5	21.6	45.1
	Female	28.3	26.6	54.9
	Total	51.9	48.1	
		Domestic remittances (in percentage)		
		Sender		
		Male	Female	Total
Recipient	Male	31.4	17.8	49.2
	Female	26.6	24.2	50.8
	Total	58.0	42.0	
		International remittances (in percentage)		
		Sender		
		Male	Female	Total
Recipient	Male	17.7	24.4	42.0
	Female	29.6	28.4	58.0
	Total	47.3	52.7	

Source: Authors' calculations are based on the Viet Nam Living Standards Survey, 1997-1998.

Table 2 also shows the gender relationships for domestic remittances and international remittances separately. For remittances coming from domestic sources, females sent 42 per cent of the total value and received 50.8 per cent of the total value. For international sources, females sent a larger percentage (52.7 per cent) of the remittance value than males. Females received about 58 per cent of the remittances. As for flows between genders, in both cases significant differences exist. For domestic remittances, the trend is clear in absolute terms, as men are more likely to send to other men and women are more likely to send to other

women. However, the opposite emerges for international remittances. In this case, men are relatively more likely to send to women, and women are relatively more likely to send to men. This is an interesting result that the authors will explore further, also by considering the relationships between senders and receivers.

Remittance flows by relationship status and gender

Tables 3 and 4 provide further details about the flow of remittances between genders, categorized by the relationship of the receiver to the sender. This information is given for people aged 20 and older in 1997-1998, and is shown separately for domestic and international remittances. First, table 3 shows the proportion of total remittances received by each relationship category, for eight different categories. For domestic remittances, children/stepchildren receive the largest amount of remittances (45.3 per cent of the value), followed by siblings, nieces and nephews (18.9 per cent), and parents (17.7 per cent). Spouses, other relatives, non-relatives, grandchildren and grandparents each receive less than 10 per cent. Meanwhile, for international remittances, child recipients represent the largest category (36.9 per cent), though siblings, nieces and nephews are a very close second (33.4 per cent). The category of other relatives ranks third (12.2 per cent), whereas the shares flowing to parents or spouses have both fallen to 5.7 per cent.

Table 3. Breakdown of remittances by relationship status of recipient, remittances weighted by value received in 1997-1998 for persons aged 20 and over

	Domestic remittances		International remittances	
	Proportion of total value	Ranking	Proportion of total value	Ranking
Child, stepchild	45.3	1	36.9	1
Sibling, niece, nephew	18.9	2	33.4	2
Parent, mother-in-law, father-in-law	17.7	3	5.7	4
Spouse	9.0	4	5.7	5
Other relative	4.5	5	12.2	3
Non-relative	3.6	6	2.0	7
Grandchild	0.5	7	4.2	6
Grandparent	0.5	8	0.0	8

Source: Authors' calculations are based on the Viet Nam Living Standards Survey, 1997-1998.

Note: Relationship categories are in italics when there were less than 30 instances of that relationship category, making it inappropriate to try to generalize further about the category.

Table 4. Breakdown of remittances by relationship status and gender of sender and receiver in 1997-1998, remittances weighted by value received for people aged 20 and over

Relationship of recipient	Gender of recipient	Domestic remittances (percentage)			International remittances (percentage)		
		Gender of sender			Gender of sender		
		Male	Female	Total	Male	Female	Total
Child, stepchild	Male	29.2	24.2	53.4	16.7	29.6	46.3
	Female	21.8	24.8	46.6	23.6	30.1	53.7
	Total	51.0	49.0		40.3	59.7	
Sibling, niece, nephew	Male	46.7	19.8	66.5	23.6	26.7	50.3
	Female	19.0	14.5	33.5	27.4	22.4	49.7
	Total	65.7	34.4		50.9	49.1	
Parent, mother-in-law, father-in-law	Male	22.4	9.9	32.3	33.7	14.9	48.6
	Female	18.7	49.0	67.7	17.1	34.4	51.5
	Total	41.1	58.9		50.7	49.3	
Spouse	Male	0.0	0.3	0.3			
	Female	99.7	0.0	99.7			
	Total	99.7	0.3				
Other relative	Male	51.6	15.1	66.7	6.8	14.4	21.2
	Female	14.7	18.6	33.3	33.0	45.8	78.8
	Total	66.3	33.7		39.8	60.2	
Non-relative	Male	78.5	3.5	82.0			
	Female	6.3	11.8	18.0			
	Total	84.7	15.3				

Source: Authors' calculations are based on the Viet Nam Living Standards Survey, 1997-1998.

Note: The results for relationship categories with less than 30 instances of remittances have been excluded from the table.

Table 4 shows the gender breakdown by relationship category for domestic and international recipients. First, for domestic remittances remitted to children, 46.6 per cent are received by females, and 49 per cent of these amounts are sent by mothers. Those remittances are usually split almost equally between sons and daughters, although fathers display a stronger tendency to send remittances to their

sons rather than to their daughters. Nonetheless, overall remittance flows to children are split relatively evenly between genders, with a small preference for sons. However, remittances that flow in the opposite direction, from children to parents, show a different pattern. In this case, mothers are more likely to receive remittances (67.7 per cent of the total) compared with fathers, and daughters are also generally more likely to send remittances to parents (58.9 per cent) compared with sons. Rather significantly, of the remittances sent to parents, 49 per cent of the total amount represent funds that flow from daughters to their mothers. In terms of size, this is followed by flows from sons to their fathers (22.4 per cent), and then by flows from sons to their mothers (18.7 per cent), and lastly by flows from daughters to their fathers (9.9 per cent). Thus, while men do tend to send more remittances than women overall, it appears that women share a particular responsibility in providing their parents, and especially their mothers, with remittances.

Meanwhile, for remittances flowing within the same generation, males tend to dominate both sending and receiving.² Males are more likely to send to their siblings or nieces and nephews, and are also more likely to receive from siblings or uncles and aunts. For this category, 46.7 per cent of total remittances flow from males to males, which probably suggests that brothers tend to help each other in this regard. Males also tend to send and receive much more of the remittance flows in the categories of other relatives and non-relatives. Regarding remittance flows between spouses, an exception on the receiving end can be noted, since almost all remittances flow from husbands to their wives. An overall trend in domestic remittance flows is that women tend to be responsible for the intergenerational transmission of remittances, while men tend to be more responsible for those within the same generation (spouses and siblings), as well as with other relatives and non-relatives.

As for international remittances, table 4 shows that women living abroad are more likely to send remittances to their children and to other relatives than men are. Also, daughters, mothers and other female relatives are more likely to receive remittances from abroad than men are. Another interesting point is that sons are much more likely to send to their fathers, while daughters are more likely to send to their mothers, although remittances flowing to parents from abroad are split almost equally overall between the genders.

Flows to and from married couples

For the remainder of the analysis, a scenario in which spouses share remittances is considered. For spouses living together, it may be somewhat arbitrary to try to assess which spouse is responsible for sending or receiving a

particular remittance, and the choice among genders may merely reflect social customs. Table 5 shows that, among married couples who are living together, husbands are more likely to both receive and send remittances (though this tendency diminished between the survey years). In this scenario, “spouses share” means that any remittance sent or received by a married person who lives with their spouse is split and shared equally with the spouse. Among married couples, this tends to increase the percentage of men and women who send or receive remittances, and it particularly boosts the numbers for wives.

Table 5. Gender and remittance flows, remittances weighted by value received for married couples living together, in percentage

	Recipients	Senders
1992-1993		
Husband	69.0	77.8
Wife	31.0	22.2
1997-1998		
Husband	61.5	75.9
Wife	38.5	24.1

Source: Authors’ calculations are based on the Viet Nam Living Standards Surveys of 1992-1993 and 1997-1998.

Characteristics of remittance recipients and senders by gender

In Table 6, socio-economic characteristics affecting the likelihood to send and receive remittances are delineated by gender, including the individual’s marital, working and migrant status, region of residence, urban or rural residence, age, position in income distribution, and education level. Regarding the overall rates by gender, a gradual increase in the percentages of men and women sending and receiving remittances can be observed between the two surveys. In 1992-1993, 9.7 per cent of males and 8.9 per cent of females received remittances. By 1997-1998, these numbers had grown to 10.7 and 10.5 per cent, respectively. At the same time, the percentage of males sending remittances grew from 9.1 per cent to 10.3 per cent. Similarly, that of females grew from 4.5 per cent to 5.6 per cent. As discussed in the previous section, if one considers the possibility that spouses living together share the remittance, then females receive remittances more frequently than males do and much of the gender gap in percentages sending is eliminated.

Table 6. Likelihood of receiving and sending remittances in Viet Nam by category and gender, of persons aged 20 and over, in percentage

	1992-1993				1997-1998			
	Received		Sent		Received		Sent	
	Males	Females	Males	Females	Males	Females	Males	Females
Overall	9.7	8.9	9.1	4.5	10.7	10.5	10.3	5.6
Overall (spouses share)	13.8	15.6	12.0	11.5	14.9	17.7	13.7	13.2
Marital status of receiver/ sender								
Married	11.1	7.7	11.2	4.7	12.6	8.4	13.1	6.5
Widowed	2.6	19.7	5.2	6.0	23.0	27.0	3.0	5.5
Otherwise not married	1.5	5.6	0.9	2.7	2.0	5.2	0.8	2.0
Married (spouses share)	16.2	17.3	14.8	14.7	18.0	19.0	17.6	17.8
Work status of recipient/sender								
Not working	18.1	12.5	4.8	2.9	20.8	17.7	5.1	3.9
Working	8.6	8.2	9.7	4.8	8.6	8.3	11.4	6.0
Migrant status								
Non-migrant	8.8	7.9	7.5	3.4	9.7	8.7	8.6	4.2
Migrant	12.9	11.6	14.3	7.3	13.8	14.9	15.5	9.0
Region								
North	9.0	9.1	9.8	4.7	9.6	9.7	10.1	6.0
Central	11.8	8.4	9.3	4.0	13.4	10.9	13.4	5.3
South	9.4	9.1	8.5	4.6	10.2	10.9	8.5	5.3
Urban/ rural status								
Rural	9.1	7.6	9.3	3.5	10.2	8.7	10.6	4.6
Urban	12.2	13.4	8.9	7.9	12.2	15.6	9.4	8.1
Age of recipient/ sender								
20-29	4.0	5.1	3.5	1.7	1.9	2.8	1.2	1.9
30-39	8.0	7.2	10.3	5.6	8.2	8.4	11.6	7.1
40-49	8.7	10.1	15.8	6.6	8.9	10.1	16.8	8.5
50-59	13.3	10.4	14.7	7.7	12.9	13.0	18.3	8.4
60 -69	17.9	15.7	11.3	5.4	26.9	19.3	13.4	4.8
70-79	35.5	15.9	5.6	1.8	37.5	25.8	7.0	1.9
80 and older	25.5	19.4	1.8	1.0	36.8	19.1	3.5	2.2
Income distribution								
1st quintile	8.0	6.5	3.8	1.1	7.8	6.4	6.1	1.9
2nd quintile	8.7	7.9	7.2	2.7	10.1	7.2	7.4	2.8
3rd quintile	8.6	8.2	9.4	3.4	9.3	9.5	10.1	5.7
4th quintile	11.2	9.5	11.3	5.3	12.7	13.2	13.0	6.5
5th quintile	12.1	12.3	13.7	9.6	14.7	18.0	16.5	12.7

.../

Table 6. (Continued)

	1992-1993				1997-1998			
	Received		Sent		Received		Sent	
	Males	Females	Males	Females	Males	Females	Males	Females
Education								
No education	11.0	9.4	6.4	3.6	8.6	13.6	3.1	2.3
Primary education	9.3	6.5	9.6	5.1	13.7	10.4	6.7	4.4
Secondary education	8.9	9.3	10.0	5.0	9.4	9.1	12.2	7.3
University education	13.1	2.4	18.2	13.3	14.1	14.2	24.1	16.3

Source: Authors' calculations are based on the Viet Nam Living Standards Surveys of 1992-1993 and 1997-1998.

In the marital status category, widowed women enjoy the highest likelihood of receiving remittances. In 1992-1993, 19.7 per cent of widowed women received remittances, and this number rose to 27 per cent in 1997-1998. The percentage of widowed men receiving remittances also rose in 1997-1998, to 23 per cent from a much lower 2.6 per cent in 1992-1993. In addition, it is interesting to note that married men are more likely to receive remittances than are married women. They are also more likely to send remittances. However, this could be misleading to some extent since, as explained earlier, husbands tend to be responsible for remittance activities while sharing the proceeds or burden with their wives. If one assumes that spouses living together share the remittance values, then the gaps between genders are mostly closed, and married women are actually slightly more likely to receive remittances on account of spouses not living in the household.

Regarding the receiving of remittances, non-working people, migrants, persons living in urban areas and persons in higher income brackets are more likely to receive remittances than their counterparts. The trend is less clear, however, in the lower income categories. Additionally, for these categories, men tend to receive remittances more frequently than women, except for women living in urban areas, who receive more frequently than male urban dwellers. The fact that non-working men receive more remittances than non-working women could reflect the idea that males who are not working may be more vulnerable than their non-working female counterparts. Working people, migrants, rural males and urban females, and those higher in the income distribution category tend to send more remittances than their counterparts. Men tend to send more remittances than women. Among migrants, it appears that both female and male migrants are more likely to send and receive remittances than non-migrants. While male migrants are

more likely to send remittances than to receive them, female migrants are more likely to receive them than to send them. It is also worth mentioning that, throughout the three regions of Viet Nam, there do not seem to be any distinct overall trends, apart from the fact that men in the central region appear more likely to receive remittances than those living in the north or south of the country.

With regard to age and education, there is evidence of non-linear patterns. First, the probability of receiving remittances increases gradually with age for both men and women and this appears to be a tendency for all remittances flowing from young to old generations. In 1992-1993, only 4 per cent of men and 5.1 per cent of women aged 20 to 29 received remittances. These numbers increase, so that about 35.5 per cent of men and 15.9 per cent of women aged 70 to 79 received remittances. For ages 80 and above, the percentage of men declines to 25.5, while that of women increases to 19.4. Older men are more likely to receive remittances than are their female counterparts. These trends can also be observed in the VLSS 1997-1998. In this case, 1.9 per cent of men and 2.8 per cent of women aged 20 to 29 received remittances, while the percentages for both genders peaked between the ages of 70 and 79, with 37.5 per cent of men and 25.8 per cent of women receiving remittances. As for sending remittances, the age distribution follows a more pronounced inverted-U shape for both genders, with the percentages for those sending remittances reaching a peak between the ages of 40 and 59. Finally, increasing education is associated with a higher probability of sending remittances for both men and women, though the patterns for receiving remittances are not as clear.

To summarize, evidence indicates that the percentage of males who receive remittances is roughly similar to that of females, being only slightly higher, while the percentage of males sending remittances is noticeably higher than that of females. In addition, a number of trends emerge: widows tend to receive more remittances; married people tend to send more; working people are more likely to send but less likely to receive any; migrants are generally more likely to send and receive remittances; there are more remittance transactions in urban areas, but no clear pattern per region; and there are clear age patterns for sending and receiving remittances. In addition, those who are higher in the income distribution and are more educated are more likely to send remittances, yet patterns are less clear for those receiving remittances.

Determinants of sending or receiving remittances

In the final part of the analysis, the authors seek to determine whether gender plays an important role in the decision to send or receive

remittances, after controlling for other factors. This will allow a determination of whether the trends discussed above still hold after controlling for the effects of any confounding factor. Here, one focuses on the VLSS 1997-1998 data with a logit model, as the trends are similar for the two survey years. Table 7 presents summary statistics for the variables of the logit model, while Table 8 explains determinants of whether or not a person receives or sends a remittance.

Table 7. Summary statistics

	1997-1998	
	Mean	Standard deviation
Received remittances	10.7	0.309
Received remittances (spouses' share)	16.5	0.371
Sent remittances	7.8	0.268
Sent remittances (spouses' share)	13.5	0.341
Gender (male=1)	46.7	0.499
Marital status (married=1)	70.5	0.456
Work status (working=1)	78.7	0.410
Migrant status (migrant=1)	31.0	0.463
Urban/rural (urban=1)	31.2	0.463
Age	42.1	16.3
Region		
Central	26.2	0.439
North	31.6	0.465
South	41.9	0.493
Income distribution		
Bottom quintile	19.9	0.400
2nd income quintile	19.9	0.400
3rd income quintile	19.9	0.400
4th income quintile	19.9	0.400
Top income quintile	20.3	0.402
Education		
No education	10.9	0.312
Primary education	33.3	0.471
Secondary education	50.2	0.500
University education	3.1	0.172

Source: Authors' calculations are based on the Viet Nam Living Standards Survey, 1997-1998.

Note: "Spouses share" represents the modification in which spouses who live together share the remittance with one another, rather than having it just count for one spouse.

Four dependent variables at the individual level are considered: remittances received; remittances received after modifying so that spouses living together share the sum remitted; remittances sent and remittances sent when they are shared by spouses. For people aged 20 and older in the 1997-1998 survey, and after using population weights, the authors found that 10.7 per cent of people received remittances, and that this figure increased to 16.5 per cent when spouses' share was also considered. The percentages for sending remittances are smaller, as 7.8 per cent of people sent remittances, and, after considering spouses' share, 13.5 per cent sent them. As previously discussed, a large amount of remittances come from overseas, and since such people are not part of the sample universe, the percentages receiving remittances tend to be larger than the percentages sending them.

As for the explanatory variables, among people aged 20 and over, 46.7 per cent are male, 70.5 per cent are married, 78.7 per cent are working, 31 per cent are migrants and 31.2 per cent live in urban areas. The average age of this population is about 42 years. Geographically, 26.2 per cent live in the central region of Viet Nam, 31.6 per cent in the north of the country and 41.9 per cent in the south. As regards educational attainment, 10.9 per cent had not received any formal education, 33.3 per cent had received primary-level education, 50.2 per cent had received secondary-level education and 3.1 per cent had received university-level education.

With regard to gender, table 8 shows important differences between baseline cases and results obtained when it is assumed that married couples who live together share their remittances. This is because the majority of remittances for married couples are remitted by the husband. For instance, the authors found that women have a lower probability than men to receive and send remittances, though the difference is not statistically significant in the case of recipients. However, when spouses share their remittances, women become more likely to receive and send remittances at statistically significant levels. When spouses share, women are 3.7 percentage points more likely to receive remittances, and 1.4 percentage points more likely to send remittances than men are.

Although the main emphasis of this paper is on gender, the trends with other explanatory variables are also briefly noted. First, concerning the receiving of remittances, when spouses share remittances, married people, people not working, migrants, people living in urban areas, people in higher income quintiles, and people with higher education are all more likely to receive remittances with a significance at the 5 per cent level. In addition, the age variable shows a non-linear, inverted-U shape, and the central region of Viet Nam receives more remittances than the north or south of the country. Regarding the sending of remittances, it appears that married, working, migrant and rural people tend to send significantly more remittances. Also, age again shows an inverted-U pattern, while persons

residing in the southern region send fewer remittances than those in the north or central regions. Persons in the higher end of the income distribution and those having a higher level of education send more remittances as well.

Table 8. Logit model of remittance determinants in 1997-1998, for people aged 20 and over

	Received	Received (spouses' share)	Sent	Sent (spouses' share)
Probability for male	8.1	10.6	5.9	7.2
Probability for female	7.6	14.4	3.7	8.6
Difference	-0.5	3.7	-2.2	1.4
Explanatory variables				
Gender (male=1)	0.063	-0.318***	0.495***	-0.190***
Marital status (married=1)	-0.139*	0.749***	0.609***	1.548***
Work status (working=1)	-0.393***	-0.359***	0.487***	0.406***
Migrant status (migrant=1)	0.075	0.099*	0.456***	0.472***
Urban/rural (urban=1)	0.075	0.151**	-0.706***	-0.723***
Age	0.079***	0.067***	0.107***	0.100***
Age squared	-0.001***	-0.000***	-0.002***	-0.002***
Region dummies (north is omitted)				
Central	0.189**	0.219***	0.079	0.102
South	0.016	0.008	-0.196*	-0.283***
Income distribution (bottom quintile is omitted)				
2nd income quintile	0.161	0.165*	0.194	0.219*
3rd income quintile	0.212*	0.171*	0.687***	0.716***
4th income quintile	0.521***	0.493***	0.979***	1.053***
Top income quintile	0.708***	0.705***	1.612***	1.750***
Educational status (secondary education is omitted)				
No education	-0.569***	-0.527***	-0.933***	-0.696***
Primary education	-0.294***	-0.230***	-0.542***	-0.403***
University education	-0.132	-0.014	0.315*	0.277*
Constant	-5.374***	-4.962***	-7.885***	-7.436***
N	16 005	16 005	16 005	16 005
pseudo-R ²	0.111	0.122	0.143	0.171

Source: Authors' calculations based on the Viet Nam Living Standards Survey 1997-1998.

Notes: Levels of significance: * < 0.05, ** < 0.01, *** < 0.001; probabilities that males and females receive or send remittances are calculated at the mean values of the other explanatory variables; "spouses' share" represents the modification in which spouses who live together share the remittance with one another.

Concluding remarks

This article attempts to uncover some of the underlying differences in remittance behaviours between men and women in Viet Nam. Some of the interesting results found include a tendency for men to send remittances to other men, while women tend to send more to other women. This is the case in absolute terms for domestic remittances, but is somewhat offset for international remittances, as men are more likely to send to other women. In addition, the authors found evidence suggesting that women tend to be more responsible for the intergenerational transmission of remittances (particularly between parents and children), while men tend to take responsibility for transfers within the same generation. For married couples living together, a tendency could be identified for the husband to be more responsible for sending and receiving remittances. The authors also found that men are less likely to receive remittances and only slightly more likely to send remittances than women are, if it can be assumed that spouses living together share remittances. By using a logit regression analysis, the authors found that, when controlling for other factors, women actually had a higher probability than men to both send and receive remittances, if it can be assumed that spouses share the remittances.

Endnotes

1. Household surveys are also available for 2002 and 2004, namely the Viet Nam Household Living Standards Survey, but the information about remittances is much more limited in these surveys, which indicate only the total amount of remittances received by each household, divided into domestic and international remittances.
2. Most of the categories do not distinguish between generations; however, it is fair to assume that these categories tend to be more representative of flows within the same generation. Nonetheless, it is a generalization.

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Spousal Abuse and Infant and Child Mortality in India

It is clear from both bivariate and multivariate analyses that physical violence against mothers is associated positively with the increased risk of death of their children in both infancy and childhood.

By Abhishek Singh, Bidhubhusan Mahapatra and Subhra Dutta*

Violence against women continues to be a global epidemic that kills, tortures and maims physically, psychologically, sexually and economically. It is one of the most pervasive forms of human rights violations, denying women and girls' equality, security, dignity, self-worth and right to enjoy fundamental freedoms. Violence against women is present in every country, cutting across boundaries of culture, class, education, income, ethnicity and age. The evidence of the magnitude of the problem of domestic violence in developing countries is growing fast. In recent years, there has been a greater understanding of the problem of domestic

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violence, which is one of the forms of violence against women, its causes and consequences, and an international consensus has developed on the need to handle this sensitive issue in an appropriate fashion.

While physical abuse may leave more “visible” scars than psychological abuse, repeated humiliation and insults, forced isolation, limited social mobility, constant threats of violence and injury, and the denial of economic resources are more insidious forms of violence. The intangible nature of psychological abuse makes it harder to define and report, leaving the woman in a situation where she is often made to feel mentally destabilized and powerless. Domestic violence against women leads to far-reaching physical (Abbot and others, 1995; Grisso and others, 1996; Asling-Monemi and others, 2003) and psychological (Koss, 1990; Walker, 1996) consequences, some with fatal outcomes.

The impact of violence against women is not limited to women; it has far-reaching consequences for children as well. Studies in the developed world reveal that physical violence against pregnant women increases their risk of giving birth prematurely, the risk of foetal deaths and the risk of low birthweight offspring. A prospective study of battered low-income women during pregnancy, which was conducted in Baltimore and Houston in the United States of America, suggests that one in every six women had been beaten during pregnancy. Women who had experienced violence were significantly more likely than other women to have delayed antenatal care (McFarlane and others, 1992). Other studies have revealed that women who were subject to violence during pregnancy were twice more likely than other women to have a miscarriage, and four times more likely to have a baby with a low birthweight, a well-known predictor of infant mortality (Stark and others, 1981; Bullock and McFarlane, 1989). In Costa Rica, a study of battered women found that about half of them had been beaten during pregnancy, and 8 per cent of those reported a miscarriage as a result (Ugalde, 1988). A qualitative study conducted in the slums of Mumbai, India, concluded that a relatively large proportion of women who had experienced foetal loss associated the miscarriage or the stillbirth with a violent assault their husbands had inflicted upon them (Ramasubban and Singh, 1997). Evidence from a multivariate study suggested an association between wife battery and child mortality among women in rural south India (Rao and Bloch, 1993). In one of her studies conducted in rural settings of Tamil Nadu and Uttar Pradesh, Jejeebhoy (1998) found that the prevalence of under-5 mortality among the children of battered women could be high because battered women have less power, poor autonomy in decision-making and mobility, and little or no access to resources. Another study from north India found that women who had experienced domestic violence were

more prone to lose their babies during perinatal and neonatal periods (Ahmed, Koenig and Stephenson, 2006).

Most of the studies on the relationship between child health and physical violence against mothers have been conducted in developed countries. Few studies on this topic have been conducted in developing countries such as India. Most of these studies are small-scale and have established an association between wife beating and child mortality at the state level or at an even lower level. None of these studies have tried to establish an association between the two for the country as a whole. Wife beating coupled with high levels of poverty, women's having less access to money and other resources, and women's powerlessness in decision-making in the household can have more severe consequences in developing countries compared with those in developed countries. Therefore, the present study tries to examine the relationship between wife beating and infant and child mortality in India. India is a developing country and the problem of wife beating has been prevalent in this society for a long time. The study further explores the association between wife beating and the nutritional status of women and children, wife beating and the reporting of pregnancy intendedness, and wife beating and the utilization of maternal and child health services in India.

Data and methods

The data for the present study have been gleaned from the National Family Health Survey, 1998-1999, India (NFHS-2). In NFHS-2, women were asked questions regarding their experience of physical violence in their households from the age of 15. Respondents had also been asked about the frequency of the physical violence they had been experiencing during the 12 months preceding the survey. In this study, women who were considered as beaten were those who had been beaten either by their husband or by their in-laws since the age of 15. For the purpose of the analysis, two data sets were created, based on two different age groups, one being that of women aged between 15 and 30 years and the other being that of those aged 15 to 49 years. The rationale behind selecting women aged 15 to 30 years was to attain a greater number of recent reports of experience of child loss and wife beating. Information on the survival status of children was obtained through the survey from a women's detailed birth history, over a 10-year period.

The independent variables considered in the analysis are the place of residence, the educational level of the respondent, the standard of living index (SLI) of the household, the body mass index (BMI) of the respondent, women's autonomy, religion, caste, the age of the respondent at the birth of a child, preceding birth interval, the mass media exposure of the respondent and the work

status of the respondent. These are some of the variables that are usually found to have a significant effect on infant and child mortality. The explanatory variables were categorized in such a way that all the categories had sufficient cell frequencies for carrying out the analyses required.

The mass media category refers to radio, television and newspapers. The information in this category helped in the assessment of the mass media exposure of the respondents. Partial exposure referred to exposure to either one or two media sources, while full exposure referred to exposure to all three types of mass media. NFHS-2 had asked questions on different aspects of day-to-day activities to assess the decision-making power of women in the family. The autonomy index is a composite index computed from the information on the decision-making power of respondents with regards to cooking, seeking health-care services, purchasing jewellery, staying with family, going to the market and visiting friends or relatives. If a respondent made a decision either by herself or jointly with her husband, a score of 1 was assigned; otherwise, a score of 0 was assigned. If a respondent was able to make a decision by herself in every component, she received a maximum score of 6. Equal weight had been assigned to each component. In the study, women who scored less than 4 were considered to have low autonomy; otherwise they were considered to have high autonomy. SLI was used as a proxy measure for the household's economic condition. The index was formed by taking into account information related to the type of house, the number of rooms, whether or not the kitchen was a separate room, toilet facilities, the source of drinking water, the source of lighting, the type of fuel used for cooking, and other resources and material goods available in the household. Greater weightage was given to responses reflecting a higher standard of living than other responses. The weights assigned to different items are given in appendix 1. The scores ranged from 0 to 14 for a low SLI, 15 to 24 for medium SLI, and 25 to 67 for a high SLI (IIPS and ORC Macro, 2000).

It is possible that some of the characteristics changed during the 10-year period since the survey was conducted. A look at the variables considered in the study suggests that only the SLI of the household, the place of residence of the respondent and the exposure to mass media of the respondent may have changed during this period. However, in India, in view of the place of urbanization and economic development, it can be safely assumed that those characteristics may not have changed drastically. In addition, these variables were used only as controls to adjust the estimated effects of wife battery on infant and child mortality.

A problem in mortality analysis arises when, at the time of the survey, some of the participants may not have completed the period of exposure for the event of

interest to occur. This problem is commonly known as censoring. To avoid the problem of censoring, births were excluded that had taken place during 1994-1998 in the case of child mortality and those that had occurred during the period 1997-1998 in the case of infant mortality. Approximately 87,664 births took place during 1988-1997 for women in the age group 15-49. Women in the age group 15-30 experienced 53,634 births during 1988-1997. For women in the age group 15-49, approximately 6,479 births resulted in infant deaths. For women in the age group 15-30, the number of infant deaths was 4,299. For the age group 15-49, it was found that approximately 4,561 child deaths had occurred out of the 43,348 births that took place during 1988-1993. For women in the age group 15-30, out of 21,404 births, 2,570 resulted in child deaths. Binary logistic regression models were employed to assess the influence of different independent variables on infant and child mortality. In the binary model, the dependent variable was treated as a binary outcome. In this case, the death of the child represents the outcome variable. Hence, 0 was assigned if the child was alive in the specified time period, and 1 was assigned otherwise.

Results

Table 1 shows the percentage of women who experienced infant and child mortality in the age groups 15-49 and 15-30 years. The percentages of infant deaths in both the age groups are higher for women who had experienced physical violence by husbands or in-laws. Similarly, the extent of child mortality is lower among non-battered women compared with that of their battered counterparts in both age groups. In addition, the association between the experience of physical violence and the experience of infant and child mortality is statistically significant in the chi-square test.

Apart from the experience of wife beating, other socio-economic variables also play an important role in explaining infant and child mortality. A higher percentage of women from rural areas experience infant and child mortality compared with those from urban areas. The experience of infant and child mortality is also found to vary by caste and religion. Hindu women and women of scheduled castes/tribes are more likely to experience infant and child mortality compared with their counterparts in the remaining categories. As expected, the percentage of women experiencing infant and child mortality declines with an increase in their educational level. The differential by educational attainment is much wider in the case of child mortality, the major concentration of child mortality occurring among non-literate women. Exposure to mass media is another important variable that has significant influence on demographic events. Women who had no exposure to mass media experienced higher infant and child mortality compared with those who had partial or full exposure.

Table 1. Mortality of children during infancy and childhood by selected socio-economic and demographic characteristics of mothers, and physical violence against mothers, aged 15-49 and 15-30 years in India, 1998-1999 (percentage)

Background characteristics	15-49 years		15-30 years	
	Infant deaths	Child deaths	Infant deaths	Child deaths
Beaten by husband or in-laws**				
No	7.2	10.0	7.5	10.8
Yes	8.8	12.2	9.0	13.1
Place of residence**				
Rural	8.3	11.7	8.6	12.4
Urban	4.9	6.5	5.1	7.2
Educational level**				
Illiterate	8.9	12.5	9.3	13.4
Literate, < middle school completed	6.1	8.1	6.4	8.7
Middle school completed	4.7	5.5	5.0	5.8
High-school and above completed	3.3	3.6	3.3	4.0
Standard of living index**				
Low	9.2	13.4	9.6	14.1
Medium	7.2	9.8	7.4	10.5
High	4.5	5.6	4.8	6.3
Body mass index**				
< 18.5 kg/m ²	8.2	11.4	8.4	11.9
>= 18.5 kg/m ²	7.0	9.9	7.4	11.0
Autonomy index**				
Low	8.1	11.3	8.3	12.1
High	6.6	9.3	7.0	10.1
Religion**				
Hindu	8.0	11.2	8.3	12.0
Muslim	6.1	8.3	6.1	9.0
Other	5.3	6.9	5.7	8.4
Caste**				
Scheduled caste or tribe	8.5	12.4	8.9	13.0
Other backward class	7.9	10.8	8.3	11.9
Other	6.5	8.9	6.6	9.7

.../

Table 1. (Continued)

Background characteristics	15-49 years		15-30 years	
	Infant deaths	Child deaths	Infant deaths	Child deaths
Age at birth of child**				
< =20 years	9.4	12.5	9.4	12.5
> 20 years	6.8	9.8	6.6	10.0
Preceding birth interval**				
First birth order	7.9	10.1	8.1	10.6
Second/third birth order and < 24 months	10.4	14.4	11.0	16.3
Second/third birth order and >= 24 months	4.5	7.0	4.7	7.7
Fourth and beyond birth order and < 24 months	12.6	17.0	13.3	11.1
Fourth and beyond birth order and >= 24 months	6.5	10.5	6.5	11.4
Parity**				
<= 2	11.2	16.4	11.4	17.5
> 2	5.7	8.7	5.3	8.6
Mass media exposure**				
No exposure	8.9	12.9	9.5	14.0
Partial	6.6	8.7	6.8	9.5
Full	3.7	4.3	3.7	4.7
Work status**				
Not working	7.1	9.8	7.5	10.7
Working	8.1	11.6	8.5	12.3

Note: The associations have been found significant in the chi-square test;

** p < 0.01, * p < 0.05

The autonomy of women is also one of the most important predictors of infant and child mortality. In the present study, women having lower autonomy were indeed found to experience higher infant and child mortality compared with those enjoying greater autonomy. Women with greater autonomy are expected to have greater decision-making power over their day-to-day activities, more freedom of mobility and possibly greater access to resources. These may contribute to the globally lower incidence of infant and child mortality among this group of women. The experience of infant and child mortality was also found to vary according to the working status of women. A higher proportion of working women

compared with that of non-working women experienced infant and child mortality. This can be explained by the fact that, in India, women generally work to earn their livelihood in unorganized sectors. Women working under such conditions may not be able to take proper care of their offspring and may entrust less experienced and unskilled siblings with this responsibility. This may not be the case with women who are not working. The argument is strengthened by the fact that women with a medium or high standard of living experienced lower infant and child mortality compared with those with a lower standard of living.

Demographic factors again play a crucial role in determining infant and child mortality. The experience of infant and child mortality varies with the age of respondents at child birth, the number of living children, preceding birth interval and birth order. Women with a low age at childbirth, fewer than two living children, a preceding birth interval of less than 24 months, and a birth order of 2 and above all report a higher experience of infant and child mortality compared with their counterparts in different situations.

Another variable that contributes immensely to the phenomenon of infant and child mortality is the nutritional status of women. In large-scale surveys, the nutrition of women is generally measured in terms of BMI. A BMI of less than 18.5 reflects chronic energy deficiency among women and can have serious consequences for both the mother and the child. A higher percentage of women with a BMI of less than 18.5 reported experiencing infant and child mortality compared with their counterparts with a BMI greater than or equal to 18.5.

Many of the explanatory variables included in the analysis, such as the education of women, are linked to both wife beating and infant and child mortality. Uneducated women are more likely to experience beating due to their low autonomy. They are also more likely to experience child loss. In the present study, the explanatory variables that may affect wife beating as well as infant and child mortality are education, the place of residence, caste, the autonomy of the respondent and the standard of living of the household. To demonstrate the plight of physically abused women in terms of the disproportionate loss of children, it is important to separate women in these strata into battered and non-battered groups and to show a statistically significant preponderance of child loss among the battered group. This was performed for the sake of this study. A t-test was used to determine whether the difference in the experience of child loss among the two groups was statistically significant or not. Similar tests were performed for the other explanatory variables as well. The experience of child loss among these different groups of women is presented in table 2. However, the values of t-statistics for every case are not included.

It is clear from table 2 that, among non-literate mothers aged 15 to 49, the children of battered mothers are more likely to die during infancy and childhood compared with the children of non-battered mothers. Significant differences in the risk of infant and child mortality were also found among literate battered mothers and literate non-battered mothers. Significant differences in the risk of infant mortality were observed between battered and non-battered mothers aged 15-49 for all the explanatory variables. Similarly, for women in the age group 15-30, the authors have found significant differences between battered and non-battered groups for all explanatory variables, except for mothers who belong to households with a medium standard of living, those residing in urban areas and those from scheduled castes/tribes. In the case of child mortality no significant difference between battered and non-battered groups of mothers aged 15-49 were found, if the mothers were from households with a low standard of living. Otherwise, for all categories of other explanatory variables significant differences in the risk of mortality during infancy and childhood were found between the battered and non-battered groups of mothers. For mothers in the age group 15-30 who had reported child loss, the difference between battered and non-battered groups was not significant if the mothers were from households with either a low or high standard of living, were residing in urban areas or belonged to other backward classes. The standardized results presented above clearly show battered mothers with a higher proportion of child loss than non-battered mothers.

Multivariate analysis

A bivariate analysis shows a significant association between physical violence against mothers and the increased risk of infant and child mortality for both groups of mothers. To examine whether the difference in the risk of infant and child mortality vary significantly among battered and non-battered mothers, a multivariate logistic regression analysis was carried out. The socio-economic and demographic characteristics used in the bivariate analysis were used as controls in the multivariate analysis. The results of the logistic regression analysis are presented in table 3. A positive association is found between physical violence against mothers and the risk of the death of their children in infancy and childhood. The risk of death in infancy is 12 per cent higher if the mother is exposed to physical violence and is aged between 15 and 49, even after adjusting for other socio-economic and demographic variables. Similarly, the risk of death during childhood is 10 per cent higher if the mother is exposed to physical violence and is aged 15 to 49. A similar association is found between physical violence against mothers aged 15 to 30 and the increased risk of death of their children during infancy and childhood.

Results adjusted for important socio-economic and demographic variables clearly show that a mother's area of residence (when rural), educational level

(non-literate), autonomy (low), religion (Hindu), exposure to mass media (no exposure) and standard of living (low) are associated with higher infant and child mortality. Among the demographic variables, mother's age at first birth (below 20 years), preceding birth interval (less than 24 months) and parity are significantly associated with a higher risk of infant and child mortality. Nutritional status of the mother does not appear to be significant in explaining the risk of infant and child mortality in the multivariate analysis. After adjusting for all other socio-economic and demographic characteristics, the children of working mothers are found to have a lower risk of infant and child mortality compared with children of non-working mothers. The relationships are of a similar nature among mothers of both age groups.

Table 2. Percentage of battered and non-battered mothers aged 15-49 and 15-30 years having experienced infant and child mortality, by selected socio-economic characteristics in India, 1998-1999

Socio-economic characteristics	15-49 years				15-30 years			
	Infant deaths		Child deaths		Infant deaths		Child deaths	
	Battered	Non-battered	Battered	Non-battered	Battered	Non-battered	Battered	Non-battered
Education of women								
Illiterate	9.7	8.5	13.4	12.2	10.0	9.1	14.4	13.1
Literate	5.5	4.9	7.6	6.1	6.0	5.1	8.7	6.7
Standard of living index								
Low	10.0	8.9	13.9	13.3	10.3	9.3	14.8	13.9
Medium	7.8	7.0	11.0	9.5	7.9	7.2	11.9	10.1
High	6.1	4.3	7.7	5.3	6.6	4.6	8.1	6.1
Autonomy of women								
Low	9.3	7.7	13.0	10.8	9.5	8.0	13.9	11.5
High	7.7	6.3	10.5	8.9	8.1	6.7	11.7	9.7
Place of residence								
Rural	9.3	7.7	13.0	10.8	9.5	8.0	13.9	11.5
Urban	7.7	6.3	10.5	8.9	8.1	6.7	11.7	9.7
Caste								
Scheduled caste or tribe	9.2	8.3	13.5	12.0	9.4	8.7	14.8	12.3
Other class	8.8	7.9	11.8	10.5	9.3	8.0	12.6	11.6
Other	8.3	6.0	11.1	8.4	8.2	6.3	11.8	9.2

It is clear from both bivariate and multivariate analyses that physical violence against mothers is associated positively with the increased risk of death of their children in both infancy and childhood. The study provides sufficient evidence to support the hypothesis that children born to mothers who experience physical violence before, during or after pregnancy stand a higher chance of death during infancy and childhood than those born to mothers who do not experience such violence. It can be concluded, therefore, that, apart from other important socio-economic determinants of mortality during infancy and childhood, physical violence against mothers is an important determinant.

Table 3. Odds of experiencing infant and child mortality by mothers aged 15-49 and 15-30 years by selected socio-economic and demographic factors in India, 1998-1999

Background characteristics	15-49 years		15-30 years	
	Infant deaths	Child deaths	Infant deaths	Child deaths
Beaten by husband or in-laws				
No®				
Yes	1.12 (1.06-1.19)**	1.10 (1.02-1.18)**	1.09 (1.01-1.17)*	1.11 (1.01-1.22)*
Place of residence				
Rural®				
Urban	0.79 (0.73-0.85)**	0.79 (0.72-0.87)**	0.79 (0.71-0.87)**	0.76 (0.67-0.87)**
Educational level				
Illiterate®				
Literate, < middle school completed	0.73 (0.68-0.79)**	0.73 (0.66-0.81)**	0.74 (0.67-0.81)**	0.71 (0.62-0.80)**
Middle school completed	0.55 (0.48-0.63)**	0.48 (0.40-0.58)**	0.54 (0.46-0.63)**	0.43 (0.34-0.55)**
High school and above completed	0.42 (0.36-0.49)**	0.35 (0.29-0.44)**	0.39 (0.32-0.46)**	0.36 (0.27-0.48)**
Standard of living index				
Low®				
Medium	0.92 (0.87-0.98)**	0.84 (0.79-0.91)**	0.93 (0.87-1.00)*	0.87 (0.79-0.96)**
High	0.79 (0.71-0.88)**	0.70 (0.62-0.81)**	0.83 (0.72-0.94)**	0.72 (0.60-0.87)**
Body mass index				
< 18.5® kg/m2				
>= 18.5 kg/m2	0.96 (0.91-1.01)	1.02 (0.95-1.09)	0.97 (0.91-1.04)	1.06 (0.97-1.15)
Autonomy index				
Low®				
High	0.88 (0.84-0.93)**	0.88 (0.82-0.94)**	0.89 (0.83-0.96)**	0.87 (0.80-0.96)**

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Table 3. (Continued)

Background characteristics	15-49 years		15-30 years	
	Infant deaths	Child deaths	Infant deaths	Child deaths
Religion				
Hindu®				
Muslim	0.79 (0.73-0.86)**	0.77 (0.69-0.87)**	0.80 (0.72-0.89)**	0.82 (0.71-0.94)**
Other	0.84 (0.73-0.97)**	0.76 (0.63-0.91)	0.84 (0.71-1.01)*	0.81 (0.63-1.03)
Caste				
Scheduled caste or tribe®				
Other backward class	1.00 (0.93-1.06)	0.96 (0.88-1.03)	1.02 (0.94-1.10)	0.99 (0.89-1.10)
Other	0.94 (0.88-1.01)	0.94 (0.86-1.02)	0.89 (0.82-0.98)*	0.89 (0.80-1.00)
Age at birth				
< = 20 years®				
> 20 years	0.81 (0.76-0.87)**	0.79 (0.73-0.86)	0.80 (0.75-0.87)**	0.84 (0.77-0.93)**
Preceding birth interval				
First birth order®				
Second/third birth order and < 24 months	2.15 (1.99-2.34)**	2.21 (2.00-2.45)**	2.11 (1.93-2.30)**	2.21 (1.98-2.47)**
Second/third birth order and >= 24 months	0.89 (0.82-0.97)**	0.99 (0.90-1.10)	0.83 (0.75-0.91)**	0.93 (0.83-1.06)
Fourth and beyond birth order and < 24 months	4.01 (3.61-4.45)**	3.50 (3.09-3.96)**	3.65 (3.19-4.19)**	3.04 (2.52-3.68)**
Fourth and beyond birth order and >= 24 months	1.93 (1.74-2.15)**	1.83 (1.62-2.07)**	1.72 (1.47-2.01)**	1.77 (1.40-2.25)**
Parity				
<= 2 ®				
>2	0.26 (0.25-0.28)**	0.27 (0.25-0.29)**	0.29 (0.27-0.31)**	0.30 (0.27-0.32)**
Mass media exposure				
No exposure®				
Partial	0.90 (0.84-0.95)**	0.79 (0.74-0.86)**	0.87 (0.81-0.94)**	0.78 (0.71-0.86)**
Full	0.74 (0.63-0.86)**	0.61 (0.50-0.76)**	0.69 (0.57-0.83)**	0.55 (0.41-0.74)**
Work status				
Not working®				
Working	0.92 (0.87-0.97)**	0.92 (0.86-0.98)*	0.90 (0.84-0.96)**	0.87 (0.80-0.95)**

* p < 0.05,

** p < 0.01

Note: Values in parentheses indicate confidence interval at 95 per cent level of confidence; R indicates reference category.

Dissimilarities between battered and non-battered women

In order to provide an explanation for the disparity of infant and child mortality between battered and non-battered women, the characteristics of women in those two groups were compared and the results are presented in this section. The selected variables considered for comparison are the absence of an antenatal check-up; unsafe delivery; non-institutional delivery; incomplete immunization; the size of the baby at birth (smaller than average); women's BMI (<8.5 kg/m²); the percentage of women below -2 standard deviation (SD) for height/age and weight/height; the percentage of children below -2SD for height/age, weight/height and weight/age; the birthweight of the baby; and the pregnancy intendedness of the respondent. Table 4 shows the differentials in the above-mentioned indicators between the two groups of women.

Table 4. Maternal and child health-related service utilization, nutritional status of women and children and reports of pregnancy intendedness by battered and non-battered groups of women in India, 1998-1999

Characteristics	Battered	Non-battered
No antenatal check-up	41.0	32.3
Unsafe delivery	67.2	55.1
Non-institutional delivery	76.1	64.0
Incomplete immunization	77.6	72.2
Size of the baby at birth (less than average)	27.5	23.8
Body mass index of women (less than 18.5 kg/m ²)	44.6	38.2
Percentage of women below -2SD for height/age	98.2	97.3
Percentage of women below -2SD for weight/height	94.5	90.9
Percentage of children below -2SD for height/age	78.1	75.8
Percentage of children below -2SD for weight/height	72.8	68.5
Percentage of children below -2SD for weight/age	82.6	79.0
Birthweight		
<2500 g	4.0	6.1
>=2500 g	13.2	21.5
Not weighed	82.8	72.4
Pregnancy intendedness		
Intended	74.4	81.1
Intended later	12.0	10.6
Not intended	13.6	8.3

Note: All associations were found statistically significant in the chi-square test.

It is evident that non-battered women perform better compared with their battered counterparts in terms of the various selected indicators. Battered women are less likely to utilize antenatal care, to have an institutional delivery and to fully immunize their children against vaccine-preventable diseases, and are more likely to have unsafe deliveries compared with non-battered women. Moreover, they are also more likely to have babies of less than average size at birth and are less likely to have their babies weighed at the time of birth compared with non-battered women. Battered women are more likely to report mistimed and unintended pregnancies compared with non-battered women. It is clear that battered women are less likely to utilize preventive and curative care for themselves as well as for their children, a trend that may, to some extent, explain the higher incidence of infant and child mortality among this group of women.

When comparing the nutritional status of battered women with that of non-battered women, one finds that battered women tend to have poorer nutritional status. Battered women are also more likely to have a BMI of less than 18.5 kg/m² and are likely to be below -2SD for height/age and weight/height. The above-mentioned indicators reflect measures of energy deficiency in battered women, and are all found to be better for non-battered women. Not only is the nutritional status of battered women poorer, the nutritional status of their children is also poorer than that of the children of non-battered women.

Discussion

Using NFHS-2 data, this article has investigated the relationship between domestic violence, wife beating in particular, and infant and child mortality. The results of the logistic regression show that the survival chances of children whose mothers are being beaten by either their husbands or their in-laws are significantly lower compared with those of children of non-battered women, even after controlling for the well-known determinants of child survival. The authors have also made a comparison between battered and non-battered groups of women experiencing infant and child mortality, by stratifying these two groups according to the selected explanatory variables that appear to influence wife beating and child survival. In order to explore the possible reasons for the high infant and child mortality among battered women, characteristics that appear to have influenced child mortality were compared with the characteristics of women having not experienced wife beating. The results revealed that battered women and their children are always in a disadvantageous position in terms of nutrition and other characteristics vital to child survival. Women who are battered are less likely to utilize available services, such as antenatal care, institutional delivery and the immunization of children. This group of women is more likely to report mistimed and unintended births – events that are found

to have serious consequences for both mother and child (Marston and Cleland, 2003; Joyce, Kaestner and Korenman, 2000).

The authors found clear evidence of an association between wife beating and child survival in India. However, the association may be biased to some extent because of the quality and type of data used for the analysis. The NFHS-2 data used were based on questions posed to women retrospectively about their experience of being beaten. Women were asked whether they had been beaten from the age of 15. They were subsequently asked about the perpetrator of the violence. Women were considered as battered if they had been beaten either by their husbands or by their in-laws. The singulate mean age at marriage in India is about 20 years (IIPS and ORC Macro, 2000). Women in the age groups 20-49 and 20-30 years were thus selected. The age group 15-30 was selected to capture recent episodes of both wife beating and other forms of domestic violence. One may argue that women might have experienced violence at the beginning of the age group and experienced infant and child mortality at the end of the age group. In India, most childbearing occurs in the age group 20-29 years. This is the age group in which one can expect the highest proportion of births and deaths to occur. Even after restricting the age group up to 30 years, the peak age group for childbearing, the authors find that the association is significant.

The present study has three potential limitations. First, there could be an issue of temporality in the data, that is, whether physical violence against mothers preceded the event of interest or vice versa. This could be an issue particularly among mothers aged 15-49. The results for mothers aged 15-30 may tackle some of the issues related to temporality. As discussed earlier, for this group of mothers, recent episodes of physical violence were expected. There is clearly a positive association between physical violence against mothers aged 15-30 and the increased risk of mortality of their offspring during infancy and childhood. This association among mothers aged 15-30 increases the validity of such an association even among those aged 15-49.

The second limitation is due to the lack of information on both the frequency and the timing of beating. No information could be collected on when or how frequently the woman was beaten. However, the information on the frequency and timing of physical violence could have been of great use in explaining the severity of physical violence and the association between physical violence against mothers and the survival of their offspring.

The third and most fundamental concern is the possible underreporting of physical violence by mothers. Given the culturally sensitive nature of this behaviour, women may be reluctant to report the occurrence of physical violence. Underreporting can also be a result of the presence of a third person at the time of

the interview, which is likely to happen during data collection. The presence of the mother-in-law or of elders at the time of the interview may affect the women's reporting of physical violence. However, several features of the study, such as proper training for interviewers and efforts undertaken to ensure privacy and protect the confidentiality of responses, are likely to have increased the validity of the reporting of physical violence.

In general, the underreporting of violence is much commoner than overreporting, mothers who have experienced the trauma of the death of a child may be more likely to report violence if they believe it was precisely related to the child's death. In NFHS-2, data were collected on a wide spectrum of issues ranging from fertility, family planning, the utilization of maternal and child health-related services, the quality of care, along with domestic violence and mortality during infancy and childhood. The data on mortality were collected in the birth history section, at the beginning of the interview schedule, while the questions on domestic violence were raised towards the end. Therefore, it is less likely that the mothers who had experienced the trauma of the death of a child associate the two events and systematically overreport the incidence of such an event. Furthermore, it seems unlikely that selective overreporting by such mothers would account for the strength of the associations that were found.

Past studies conducted to explain the association between physical violence against mothers and the increased risk of infant and child mortality were criticized particularly for not having collected information on issues such as pregnancy intendedness and child abuse. Other factors that could be prominent in explaining such an association are the prevalence of a low birthweight among babies; the prevalence of malnutrition among children; the autonomy of women; and the utilization of prenatal, natal and postnatal services. Without such data, it is difficult to test the hypothesis that offspring born to mothers who experience violence before, during and after pregnancy will be more likely to die than those born to mothers who do not endure any violence. The present study clearly reveals that children of battered mothers are more likely to be of a low birthweight or to remain underweight. The present findings are consistent with those of other studies. A low birthweight may be a direct consequence or an indirect consequence of physical violence. Furthermore, a low birthweight is a well-known risk factor for increased infant mortality.

Violence may reduce the autonomy of women in terms of access to material resources, affecting women's ability to obtain adequate nutrition, rest, exercise and medical care. Therefore, low autonomy coupled with cultural taboos in India may contribute to children's health more seriously than in other countries. Violence may also interfere with the caring capacity of mothers. A study by Rao and Bloch (1993)

found that the children of battered women were more likely to be malnourished and to receive less food than those of women who were not beaten. This study clearly shows that not only are the children of battered women malnourished, but the battered women themselves are, and tend to have chronic energy deficiencies. Elevated maternal stress levels and poor nutrition are both associated with a low birthweight or preterm delivery and are well-known risk factors for perinatal and infant mortality. Also, the findings of this study are consistent with those of other studies, in that women experiencing violence are more likely to receive late antenatal care or no antenatal care at all and to report unintended births. By presenting data on the above issues, this study sheds some light on the association between physical violence against mothers and the increased risk of infant and child mortality. In this regard, the present study overcomes the limitations of many of the previous studies carried out on this particular subject.

The relationship between wife beating and child survival is well-established in developed countries. There is little research, however, to provide evidence in support of this relationship in a developing-country setting. The present analysis has reinforced the fact that wife beating has serious consequences for child survival in the latter setting, in particular in India. Wife beating also has serious consequences for the overall well-being of women. Therefore, domestic violence is an important public health concern and should be taken seriously by policymakers and policy planners. Reproductive and child health programmes must aim at addressing domestic violence against women in order to improve the overall well-being of both women and children. Involving men in reproductive and child health programmes and counselling them on matters related to maternal well-being and child health could be one strategy to address the issue of wife battery. Involving men in maternal care and childcare may, to some extent, help to avert the serious consequences of domestic violence for both mothers and children.

Appendix

Scores assigned to different items utilized to construct the standard of living index of households, National Family Health Survey, 1998-1999, India

Items	Score
Type of house	
Pucca	4
Semi-pucca	2
Kachha	0
Toilet facility	
Private/with flush	4
Public or shared flush toilet/Private pit toilet	2
Shared or public pit toilet	1
None	0
Source of lighting	
Electricity	2
Kerosene, gas or oil	1
Other source of lighting	0
Main fuel for cooking	
Electricity, liquid petroleum gas, biogas	2
Coal, charcoal, kerosene	1
Other fuel	0
Source of drinking water	
Pipe, hand pump or well in residence/yard/plot	2
Public tap, hand pump or well	1
Other water source	0
Separate room for cooking	
Yes	1
No	0
Ownership of house	
Yes	2
No	0

.../

Appendix (Continued)

Items	Score
Ownership of agricultural land	
5 acres or more	4
2.0-4.9 acres	3
Less than 2 acres or acreage not known	2
No agricultural land	0
Ownership of irrigated land	
Yes	2
No	0
Ownership of livestock	
Yes	2
No	0
Ownership of durable goods	
Car or tractor	4
Moped/scooter/motorcycle, telephone, refrigerator, colour television	3
Bicycle, electric fan, radio/transistor, sewing machine, black and white television, water pump, bullock cart, thresher	2
Mattress, pressure cooker, chair, cot/bed, table, clock/watch	1

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Fertility Transition and Population Ageing in the Asian and Pacific Region

Considering the experience of low fertility countries, the Governments of transitional and near-replacement fertility countries and areas 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 replacement level.

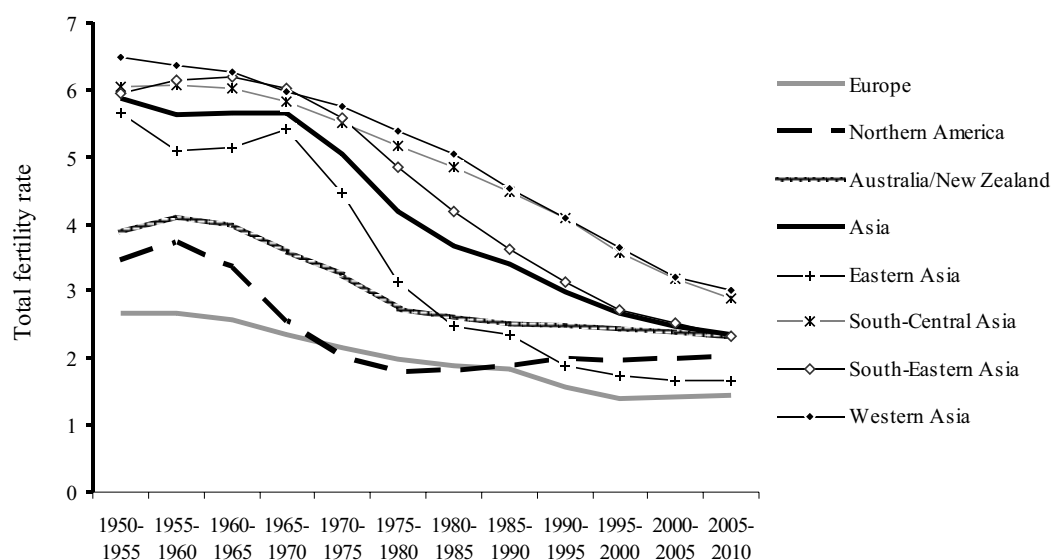
By Bhakta Gubhaju *

During the past half century, the world has witnessed a remarkable decline in total fertility rates (TFRs) from a high level of 5 children per woman in the period 1950-1955 to 2.8 children per woman in the period 2000-2005. While the fertility transition was already well under way in Europe, North America, and Australia and

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New Zealand during the period 1950-1955, TFR was very high in the Asian region, at about 6 children per woman. Fertility continued to decline in Europe, from a TFR of 2.7 in the period 1950-1955 to replacement level (2.1 children per woman) during the 1970s. TFR is now far below replacement level in Europe (figure 1).

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



Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

* This graph is based on the subregional groupings of the United Nations Secretariat rather than on those of ESCAP.

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

The Asian and Pacific region has also experienced remarkable success in reducing fertility during the past 50 years. According to the 2007 ESCAP Population Data Sheet, TFR in the region has dropped to 2.3 births per woman from about 6 in 1950. This regional average, however, masks a considerable difference in the levels observed among subregions. TFR has plummeted to below replacement level in East, North-East, North and Central Asia (1.7 births per woman). By sharp contrast, South and South-West Asia exhibit a TFR of 2.9 births per woman. The South-East Asian and the Pacific subregions have a TFR of 2.3 births per woman (ESCAP, 2007).

Within subregions, TFRs vary to a large extent by country. Fertility has dropped to below replacement level (2.1 births per woman) in all the populations of East and North-East Asia. Below replacement fertility has been reached in Myanmar, Singapore, Thailand and Viet Nam in South-East Asia, while Sri Lanka is the only country in South and South-West Asia exhibiting below replacement fertility. In North and Central Asia, Armenia, Azerbaijan, Georgia and the Russian Federation have achieved below replacement fertility, while in the Pacific, below replacement fertility has been reached in Australia, New Caledonia, New Zealand and the Northern Mariana Islands.

The lowest fertility in the region has been recorded in Hong Kong, China (1.0) and Macao, China (0.9). Countries and areas such as Armenia, Georgia, Japan, the Northern Mariana Islands, the Russian Federation and Singapore have reached a TFR of 1.5 or lower. By contrast, fertility continues to remain high, with TFR exceeding 5 births per woman in Afghanistan, the Marshall Islands and Timor-Leste. A large number of countries and areas, however, have fertility rates that are at the intermediate level, ranging between 2.1 and 5.0 births per woman.

In view of the fact that countries in the region are at different levels of fertility, it is pertinent to examine the levels and trends in fertility in the region. For the purpose of this paper, countries and areas are classified into three categories according to their level of fertility estimated during the period 2000-2005: high, intermediate or low. The intermediate fertility level is further classified into either transitional or near-replacement fertility, while the low fertility level is classified as either low or lowest-low fertility (see table 1 for the classification of countries and areas by TFR level).

The ESCAP region is diverse not only in its economic and social development, but also in its levels of fertility. Country experiences reveal that various factors have contributed to the decline in fertility. In some countries, socio-economic development has played a major role in reducing fertility rates, while in others strong family planning programmes – in the absence of development – have been successful in fostering a decline in fertility. However, it has been documented that sustainable fertility declines occurred mostly in countries with a higher human development index. By contrast, fertility declines had slowed down or even stalled in countries where the fertility transition began at a lower human development index (Gubhaju and Moriki-Durand, 2003a).

Against this backdrop, the paper first presents the levels and trends in fertility over the past 30 years. It then discusses the implications of low fertility, such as the inevitable phenomenon of population ageing, the decline in the working age population and the feminization of older persons. Finally, this paper highlights new

issues and challenges faced by low-fertility countries and proposes policy recommendations for future key actions.

Levels and trends in fertility

Table 1 shows the classification of countries and areas by TFR during the periods 1970-1975, 1990-1995 and 2000-2005. A large number of countries and areas (37) in the ESCAP region fell under the high fertility category during the period 1970-1975. Japan and the Russian Federation were the two countries that had achieved below replacement fertility, while Australia, Georgia, New Zealand, Singapore and Hong Kong, China had reached near-replacement fertility during that period. As a result of the fertility transition taking place since the 1970s, several countries had reached the near-replacement and low fertility levels, with 12 countries and areas achieving below replacement fertility during the period 1990-1995. Notably, Japan, the Russian Federation and Hong Kong, China had even reached the lowest-low level. By contrast, during this period, 10 countries and areas had high fertility. Currently, a total of 18 countries and areas in the region have reached below replacement fertility, with Armenia, Georgia, the Northern Mariana Islands, the Republic of Korea, Singapore and Macao, China joining the lowest-low fertility category. By contrast, only Afghanistan, the Marshall Islands and Timor-Leste continued to have high fertility during the recent period 2000-2005.

Table 1. Fertility trends in Asia and the Pacific, 1970-1975 to 2000-2005

Fertility level	1970-1975	1990-1995	2000-2005
High TFR \geq 5	Afghanistan	Afghanistan	Afghanistan
	American Samoa	Bhutan	Marshall Islands
	Bangladesh	Cambodia	Timor-Leste
	Bhutan	Lao People's Democratic Republic	
	Brunei Darussalam	Maldives	
	Cambodia	Marshall Islands	
	Cook Islands	Nepal	
	French Polynesia	Pakistan	
	India	Solomon Islands	
	Indonesia	Timor-Leste	
	Iran (Islamic Republic of)		
	Kiribati		
	Lao People's Democratic Republic		
	Malaysia		
	Maldives		
	Marshall Islands		
	Micronesia (Federated States of)		

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Table 1. (Continued)

Fertility level	1970-1975	1990-1995	2000-2005
	Mongolia		
	Myanmar		
	Nepal		
	New Caledonia		
	Northern Mariana Islands		
	Pakistan		
	Palau		
	Papua New Guinea		
	Philippines		
	Samoa		
	Solomon Islands		
	Tajikistan		
	Thailand		
	Timor-Leste		
	Tonga		
	Turkey		
	Turkmenistan		
	Uzbekistan		
	Vanuatu		
	Viet Nam		
Transitional TFR 3.0 to 4.9	Armenia	American Samoa	American Samoa
	Azerbaijan	Bangladesh	Bangladesh
	China	Brunei Darussalam	Cambodia
	Democratic People's Republic of Korea	Cook Islands	Fiji
	Fiji	Fiji	India
	Guam	French Polynesia	Kiribati
	Kazakhstan	Guam	Lao People's Democratic Republic
	Kyrgyzstan	India	Micronesia (Federated States of)
	Macao, China	Iran (Islamic Republic of)	Nepal
	Nauru	Kiribati	Pakistan
	Niue	Kyrgyzstan	Papua New Guinea
	Republic of Korea	Malaysia	Philippines
	Sri Lanka	Micronesia (Federated States of)	Samoa
	Thailand	Mongolia	Solomon Islands
	Tuvalu	Myanmar	Tajikistan
		Papua New Guinea	Tonga
		Philippines	Tuvalu
		Samoa	Vanuatu
		Tajikistan	
		Tonga	
		Turkmenistan	
		Tuvalu	
		Uzbekistan	
		Vanuatu	
		Viet Nam	

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Table 1. (Continued)

Fertility level	1970-1975	1990-1995	2000-2005
Near-replacement TFR 2.2 to 2.9	Australia	Armenia	Bhutan
	Georgia	Azerbaijan	Brunei Darussalam
	Hong Kong, China	Democratic People's	Cook Islands
	New Zealand	Republic of Korea	French Polynesia
	Singapore	Indonesia	Guam
		Kazakhstan	Indonesia
		Nauru	Kyrgyzstan
		New Caledonia	Malaysia
		Niue	Maldives
		Palau	Myanmar
		Sri Lanka	Nauru
		Turkey	New Caledonia
			Niue
		Palau	
		Turkey	
		Turkmenistan	
		Uzbekistan	
		Viet Nam	
Low TFR 1.6 to 2.1	Japan	Australia	Australia
	Russian Federation	China	Azerbaijan
		Georgia	China
		Macao, China	Iran (Islamic Republic of)
		New Zealand	Kazakhstan
		Northern Mariana Islands	Mongolia
		Republic of Korea	New Zealand
		Singapore	Sri Lanka
		Thailand	Thailand
Lowest-low TFR <=1.5		Hong Kong, China	Armenia
		Japan	Georgia
		Russian Federation	Hong Kong, China
			Japan
			Macao, China
			Northern Mariana Islands
			Republic of Korea
			Russian Federation
			Singapore

Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

Table 2 presents the trends in TFRs during the past 30 years. It is interesting to note that a large number of countries experienced marked declines in fertility from a high level (5 or more) to the transitional level (3.0 to 4.9) or near-replacement level (2.2 to 2.9) during the periods 1970-1975 and 1990-1995. Prominent among these are Bangladesh, Brunei Darussalam, the Cook Islands,

French Polynesia, Indonesia, Malaysia, New Caledonia, Myanmar, Palau, Turkey, Turkmenistan, Uzbekistan and Viet Nam, all of which registered more than a one third decline in TFR.

Table 2. Decline in total fertility rate in Asia and the Pacific, 1970-1975 to 2000-2005

Fertility level	Country	TFR			Decline (percentage)	
		1970- 1975	1990- 1995	2000- 2005	1970-1975 to 1990-1995	1990-1995 to 2000-2005
High TFR ≥ 5	Afghanistan	7.7	8.0	7.5	3.9	-6.5
	Timor-Leste	6.2	5.7	7.0	-7.6	22.3
	Marshall Islands	8.2	6.7	5.3	-18.3	-20.5
Transitional TFR 3.0 to 4.9	Samoa	5.7	4.7	4.4	-17.5	-6.0
	Solomon Islands	7.2	5.5	4.4	-23.5	-21.3
	Papua New Guinea	6.1	4.7	4.3	-22.7	-8.2
	Micronesia (Federated States of)	6.9	4.8	4.2	-30.5	-11.8
	Vanuatu	6.1	4.8	4.2	-20.9	-14.0
	Pakistan	6.6	5.8	4.0	-12.1	-31.1
	Tajikistan	6.8	4.9	3.8	-28.6	-22.0
	American Samoa	5.4	4.3	3.7	-21.0	-12.3
	Tonga	5.5	4.5	3.7	-17.7	-17.6
	Nepal	5.8	5.0	3.7	-13.7	-26.3
	Tuvalu	3.2	3.4	3.7	4.7	9.0
	Cambodia	5.5	5.5	3.6	0.3	-34.5
	Lao People's Democratic Republic	6.4	5.9	3.6	-8.7	-38.8
	Kiribati	5.0	4.6	3.6	-8.9	-21.9
	Philippines	6.0	4.1	3.5	-31.0	-14.5
	Bangladesh	6.2	4.1	3.2	-33.1	-21.7
India	5.3	3.9	3.1	-26.6	-19.4	
Fiji	4.2	3.4	3.0	-20.2	-11.2	
Near-replacement TFR 2.2 to 2.9	Bhutan	6.7	5.4	2.9	-19.2	-46.0
	Malaysia	5.2	3.5	2.9	-32.6	-17.2
	Maldives	7.0	5.6	2.8	-20.7	-49.5
	Turkmenistan	6.2	4.0	2.8	-34.9	-31.6
	Guam	4.1	3.1	2.7	-24.8	-11.6
	Uzbekistan	6.3	3.9	2.7	-38.4	-29.4
	Cook Islands	5.5	3.5	2.7	-36.4	-22.9
Brunei Darussalam	5.4	3.1	2.5	-42.8	-19.0	

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Table 2. (Continued)

Fertility level	Country	TFR			Decline (percentage)	
		1970- 1975	1990- 1995	2000- 2005	1970-1975 to 1990-1995	1990-1995 to 2000-2005
	Kyrgyzstan	4.7	3.6	2.5	-23.6	-30.8
	French Polynesia	5.2	3.1	2.4	-40.8	-21.7
	Indonesia	5.3	2.9	2.4	-45.3	-18.1
	Niue	3.7	2.4	2.3	-35.1	-2.6
	Viet Nam	6.7	3.3	2.3	-50.7	-29.6
	Myanmar	5.9	3.1	2.2	-47.5	-27.4
	Turkey	5.3	2.9	2.2	-45.2	-23.2
	New Caledonia	5.2	2.9	2.2	-43.9	-23.0
	Nauru	3.5	2.2	2.2	-37.1	0.0
	Palau	5.5	2.8	2.2	-48.9	-22.8
Low TFR 1.6 to 2.1	Iran (Islamic Republic of)	6.4	4.3	2.1	-32.4	-50.9
	Mongolia	7.3	3.4	2.1	-54.0	-38.6
	Sri Lanka	4.1	2.5	2.0	-39.9	-18.5
	Kazakhstan	3.5	2.6	2.0	-26.3	-21.3
	New Zealand	2.8	2.1	2.0	-27.5	-4.7
	Democratic People's Republic of Korea	3.7	2.4	1.9	-36.8	-18.4
	Thailand	5.0	2.0	1.8	-59.7	-8.6
	Australia	2.5	1.9	1.8	-26.6	-5.6
	China	4.9	1.9	1.7	-60.5	-11.5
	Azerbaijan	4.3	2.9	1.7	-32.4	-42.4
Lowest-low TFR <=1.5	Georgia	2.6	2.0	1.5	-25.0	-24.2
	Singapore	2.6	1.8	1.4	-32.8	-23.2
	Armenia	3.0	2.4	1.3	-21.6	-43.5
	Russian Federation	2.0	1.5	1.3	-23.9	-16.0
	Japan	2.1	1.5	1.3	-28.0	-13.4
	Republic of Korea	4.3	1.7	1.2	-60.4	-26.8
	Northern Mariana Islands	5.4	2.0	1.1	-63.7	-43.7
	Hong Kong, China	2.9	1.3	0.9	-55.4	-27.0
	Macao, China	3.2	1.6	0.8	-51.6	-45.7

Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.02).

Among the low and lowest-low fertility countries and areas, fertility remained fairly high until the period 1970-1975 in several countries, including China, the Islamic Republic of Iran, Mongolia, the Republic of Korea, Sri Lanka and Thailand. It is notable that Japan was the first country in the Asian and Pacific

region that had completed the fertility transition from high to low, which it had done by the early 1960s (Jones and Leete, 2002). The fertility transition had begun in most of the low and lowest-low fertility countries prior to the 1970s, followed by a precipitous decline thereafter. Among the low fertility countries, China, Mongolia and Thailand registered a spectacular decline in fertility between 1970-1975 and 1990-1995, with a reduction of 3 children per woman in China and Thailand and a reduction of almost 4 children per woman in Mongolia. Sri Lanka and the Democratic People's Republic of Korea also experienced a sizable decline in fertility during this period.

Among lowest-low fertility countries and areas, the Republic of Korea registered a marked decline in TFR from 4.3 in 1970-1975 to 1.7 in 1990-1995, while in the Northern Mariana Islands, TFR was reduced from a high of 5.4 to below replacement level during this period. In Hong Kong, China and Macao, China, fertility was reduced by more than half during this period. It is noteworthy that Singapore exhibited a dramatic fall in TFR to 2.6 in the period 1970-1975, down from the high level of 6.4 in the period 1950-1955. Singapore continued to experience a further decline in fertility, reaching 1.8 in 1990-1995 and 1.4 in 2000-2005.

Between 1990-1995 and 2000-2005, several countries and areas exhibited rapid fertility declines. A decline in fertility of more than one quarter was recorded in transitional fertility and near-replacement fertility countries such as Bhutan, Cambodia, the Lao People's Democratic Republic, Kyrgyzstan, Maldives, Myanmar, Nepal, Pakistan, Turkmenistan, Uzbekistan and Viet Nam.

Among low-fertility countries, the Islamic Republic of Iran experienced a dramatic fall in TFR from 4.3 to 2.1 during this period. Azerbaijan reduced its TFR by over 40 per cent, while Mongolia's fertility further declined by 39 per cent during the same period. It is also to be noted that, among lowest-low fertility countries and areas, fertility dropped from 2.4 to 1.3 in Armenia and from 2.0 to 1.1 in the Northern Mariana Islands during that period. It is most striking that fertility in Macao, China was reduced by more than two fifths, registering a TFR of 0.8 – the lowest in the world. In the Republic of Korea and Hong Kong, China, TFR was further reduced by more than one quarter, from 1.7 to 1.2 in the former and 1.3 to 0.9 in the latter.

Low fertility and population ageing

As with fertility rates, there has been a remarkable improvement in mortality rates globally. Worldwide, a child born today can be expected to live on average 65 years, which is an increase of 20 years from 50 years ago (United Nations Population Division, 2006). There is, however, a considerable difference in life expectancy at birth among major areas and regions of the world. While a newborn

baby is expected to live more than 75 years in much of Europe, North America and Australia and New Zealand, this indicator is just a little higher than 65 years in Asia. The current life expectancy at birth in Asia as a whole is the same as it was in Europe 50 years ago.

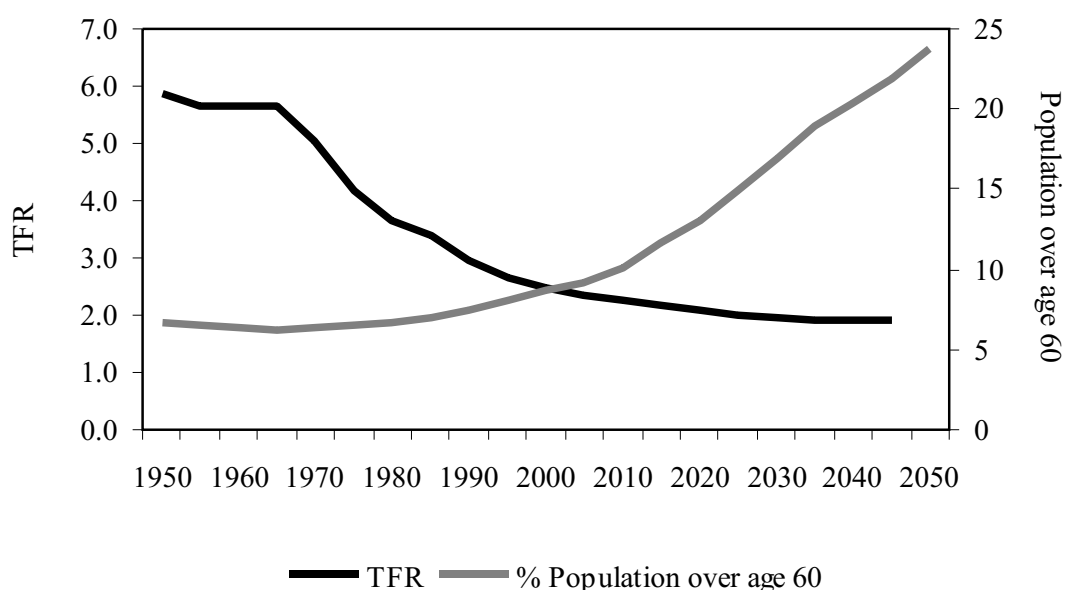
With the increase in life expectancy at birth, a wide gender disparity, which favours females over males, has emerged in many low-mortality countries. In general, females tend to outlive males by 5 to 7 years in Europe, North America and Australia and New Zealand. By contrast, in Asia, the gender disparity in life expectancy at birth is not as wide as in developed countries. However, in South-Central Asia, owing to the high female mortality associated with the low status of women, the life expectancy at birth of females was slightly lower than that of males until the period 1980-1985. With the improvement in mortality rates, especially among women, this trend has been reversed. As a result, the life expectancy at birth in South-Central Asia is currently 62 years for females and 61 years for males.

Declining fertility, increasing longevity and the widening disparity in life expectancy at birth between females and males have brought remarkable shifts in the age and sex structures of the population. Europe, North America and Australia and New Zealand initially experienced population ageing. While the transition from the young-age population to the ageing population occurred over a much longer period in the West, the speed of ageing was much faster in the low fertility countries of Asia. For instance, it took 115 years for France and 85 years for Sweden to raise the percentage of the population aged 65 years and older from 7 per cent to 14 per cent. By stark contrast, Japan took only a quarter of a century to complete the fertility transition. Similarly, other low fertility countries in Asia, such as China, the Republic of Korea, Singapore and Thailand, are projected to follow the trend set by Japan. This rapid ageing of the population is driven largely by sharp declines in fertility in recent decades. This has emerged as a new issue challenging many low fertility countries in this region. The implications are profound as they affect labour force shortages and increase the elderly dependency ratios and the feminization of the elderly population. There are other contentious issues related to health-care costs, social support and financial security that are likely to be faced by an ageing society (National Research Council and others, 2001).

As a result of low fertility, fewer children are born and progressively large numbers of adults move into the older age groups. Changes in the age structure of the population and population ageing are inevitable consequences of low fertility. Figure 2 shows that declining fertility has had a significant impact on the rising percentage of the population over age 60. It is also evident that the impact of the

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 rates not only increases life expectancy at birth but also increases the number of additional years persons aged 60-80 years are expected to live (United Nations Population Division, 2007). These improvements in old-age mortality rates have contributed to the ageing of the elderly themselves.

Figure 2. Total fertility rate and percentage of population over age 60, ESCAP region, 1970-2050



Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

In the long run, however, population ageing is not the only radical outcome of persistent low fertility. Increases in longevity and the widening gap between female and male life expectancies at birth will also result in the faster growth of the elderly population, an increase in the old-age dependency ratio and the 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. An old-age structure provides the momentum for a decline in population, just as the young-age population provides the momentum for accelerated population growth (McDonald, 2000).

Table 3 clearly shows a very strong relationship between a country or area's TFR and the percentage of the population aged 60 years and older. By 2007,

countries and areas that had reached below replacement fertility had a markedly higher percentage of older persons. A long-term decline in fertility would give rise to a higher percentage of older persons. The speed of ageing is also determined by the continuation of a decline in fertility. For example, in 2007, Japan had the largest percentage of older persons (27.9 per cent), which is expected to rise further to 35.8 per cent by 2025 and 44 per cent by 2050. Similarly, a long-term decline in fertility in Australia, Georgia, New Zealand and the Russian Federation has resulted in a high percentage of older persons (between 17 and 18 per cent in 2007). These countries will exhibit a further increase in older persons, exceeding 30 per cent by 2050.

Table 3. Percentage of population 60 years and older to total population, 2007, 2025, 2050 by fertility level

Fertility level	Country	TFR	Percentage of population 60 years and older		
		2000-2005	2007	2025	2050
	ESCAP region		10.3	15.4	24.3
Lowest-low TFR≤1.5	Macao, China	0.8	11.5	29.2	42.8
	Hong Kong, China	0.9	16.4	30.2	39.4
	Republic of Korea	1.2	14.6	27.4	42.2
	Japan	1.3	27.9	35.8	44.0
	Russian Federation	1.3	17.4	23.8	32.4
	Armenia	1.3	14.6	22.6	33.9
	Singapore	1.4	13.8	31.6	39.8
	Georgia	1.5	18.3	25.4	34.9
Low TFR 1.6 to 2.1	Azerbaijan	1.7	9.2	16.7	27.6
	China	1.7	11.6	20.0	31.1
	Australia	1.8	18.7	25.8	30.2
	Thailand	1.8	12.0	21.5	29.8
	Democratic People's Republic of Korea	1.9	13.7	16.6	24.6
	New Zealand	2.0	17.3	24.9	30.2
	Kazakhstan	2.0	10.4	15.3	24.1
	Sri Lanka	2.0	10.6	19.7	29.0
	Mongolia	2.1	5.9	10.8	25.1
	Iran (Islamic Republic of)	2.1	6.6	10.9	25.6
Near-replacement TFR 2.2 to 2.9	Turkey	2.2	8.5	13.8	24.5
	New Caledonia	2.2	10.6	16.9	26.0
	Myanmar	2.2	8.2	13.9	25.6
	Viet Nam	2.3	7.7	13.4	26.1
	Indonesia	2.4	8.6	13.7	24.8
	French Polynesia	2.4	8.5	15.0	24.7

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Table 3. (Continued)

Fertility level	Country	TFR	Percentage of population 60 years and older		
		2000-2005	2007	2025	2050
	Kyrgyzstan	2.5	7.3	11.6	21.5
	Brunei Darussalam	2.5	5.1	11.2	20.1
	Uzbekistan	2.7	6.2	10.6	20.9
	Guam	2.7	10.1	16.6	22.3
	Turkmenistan	2.8	6.2	10.8	21.2
	Maldives	2.8	5.6	8.5	20.0
	Malaysia	2.9	7.1	13.2	22.2
	Bhutan	2.9	7.1	10.1	23.3
Transitional TFR 3.0 to 4.9	Fiji	3.0	7.4	12.7	19.6
	India	3.1	7.7	11.5	20.2
	Bangladesh	3.2	5.9	9.2	17.0
	Philippines	3.5	6.2	9.8	18.2
	Lao People's Democratic Republic	3.6	5.1	7.6	16.3
	Cambodia	3.6	5.4	7.9	15.2
	Nepal	3.7	5.9	7.8	14.0
	Tonga	3.7	9.1	9.1	15.6
	Tajikistan	3.8	5.1	8.1	16.1
	Pakistan	4.0	6.0	8.6	16.5
	Vanuatu	4.2	5.2	7.7	15.9
	Micronesia (Federated States of)	4.2	5.6	9.2	15.3
	Papua New Guinea	4.3	4.0	6.3	11.2
	Solomon Islands	4.4	4.8	6.3	13.0
	Samoa	4.4	6.6	10.3	17.4
High TFR =>5	Timor-Leste	7.0	4.6	5.3	7.6
	Afghanistan	7.5	3.7	3.8	5.6

Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

It is also worth noting that Hong Kong, China; Macao, China; Singapore and the Republic of Korea, which have witnessed rapid declines in fertility (currently at the lowest-low level), will experience a vast increase in the number of older persons. Between now and 2050, there will be significant increases in the percentage of older persons in Hong Kong, China (from 16.4 per cent to 39.4 per cent), Macao, China (from 11.5 per cent to 42.8 per cent), the Republic of Korea (from 14.6 per cent to 42.2 per cent) and Singapore (from 13.8 per cent to 39.8 per cent). Other low fertility countries will also see a dramatic increase in older

persons. In the cases of the Islamic Republic of Iran and Mongolia, although the percentage of older persons is currently below 7 per cent, the speed of ageing would be much faster. The percentage of the older population is expected to rise to about 11 per cent by 2025 and to over 25 per cent by 2050.

It is also evident from this table that, by 2025, all countries and areas in the region, except Afghanistan, Papua New Guinea, Solomon Islands and Timor-Leste, will have an ageing population (defined as having 7 per cent of the total population aged 60 years and older). By 2050, Afghanistan is expected to be the only country with less than 7 per cent of the population aged 60 years and older. For all countries and areas with lowest-low fertility, more than one third of their population will be 60 years and older. Japan will be the most aged country in the region (with the older population being 44 per cent of the total population), followed by Macao, China (42.8 per cent) and the Republic of Korea (42.2 per cent).

Changes in age structure

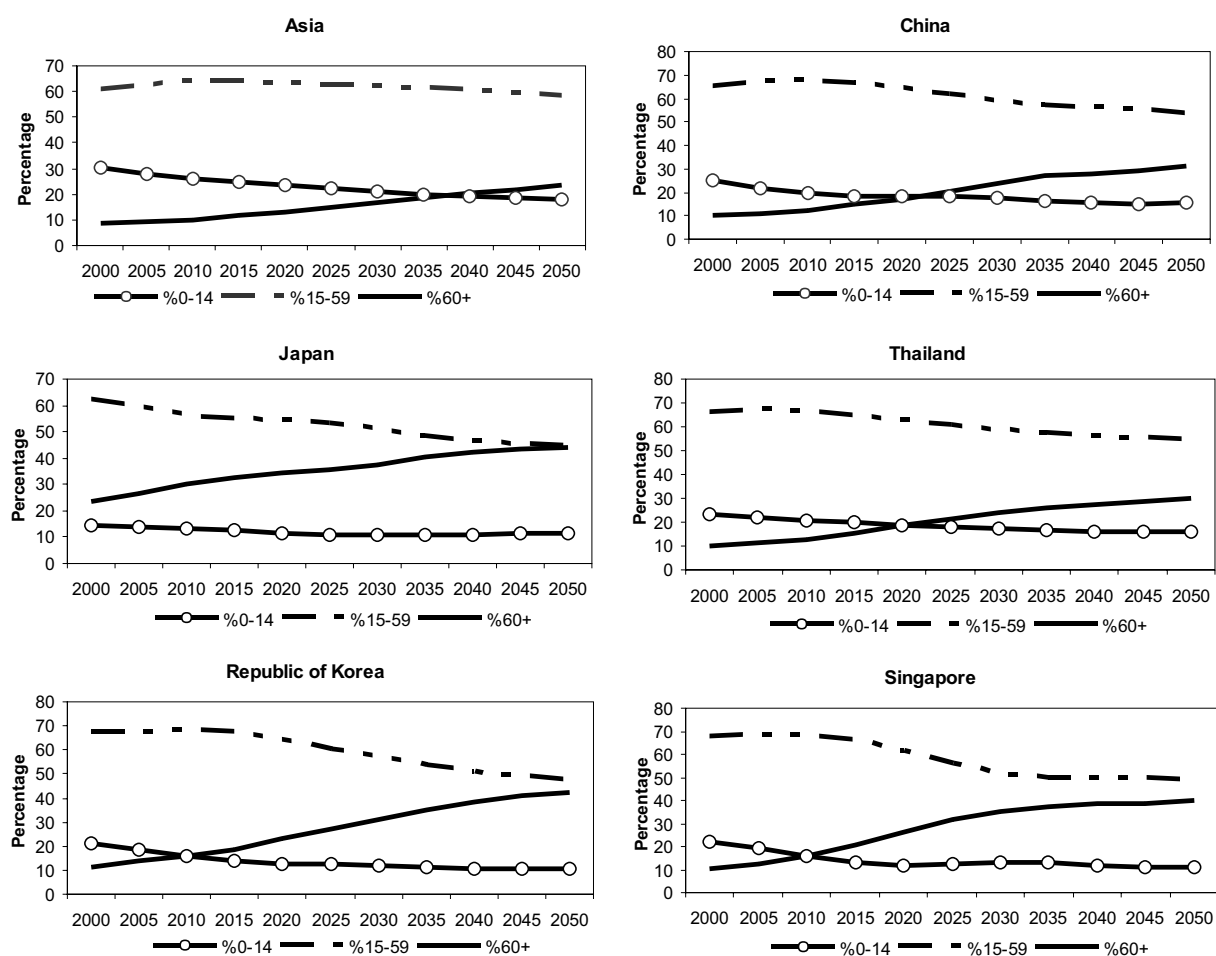
One of the implications brought about by low fertility is a substantial change in the age structure of a country's population. On one hand, the proportion of the population under age 15 will experience a continuous fall, while on the other hand, the proportion of the population aged 60 years and older will increase during the period 2000-2050. Globally, 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.

Asian and Pacific countries will also experience a tremendous shift in the proportion of the young-age population and the old-age population between 2000 and 2050. During this period, the proportion of the population 60 years and older is expected to increase by two and a 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 3). 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 is expected to 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 years. Globally, the proportion of the population representing this age group will remain

more or less constant at around 60 per cent during the period 2000-2025, and will experience a slight decline to 58 per cent by 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. Working age populations such as those in the Republic of Korea and Singapore will also be a lower proportion of the total population in the next 50 years.

Figure 3. Percentage distribution of population by broad age groups, 2000-2050

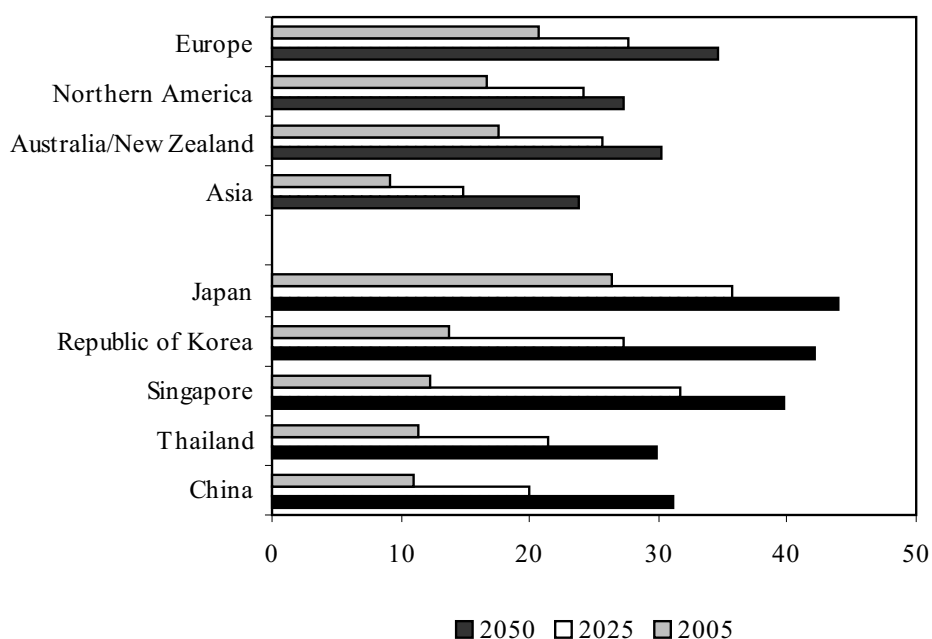


Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

As previously noted, in 2007, Japan's old-age population represented 27.9 per cent of the total population, while the young-age population represented 15 per cent of the total. The old-age population will drastically increase in the next few decades; it is projected that, by 2050, Japan's old-age population will be 44 per

cent of the total population, almost three and a 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 (figure 4).

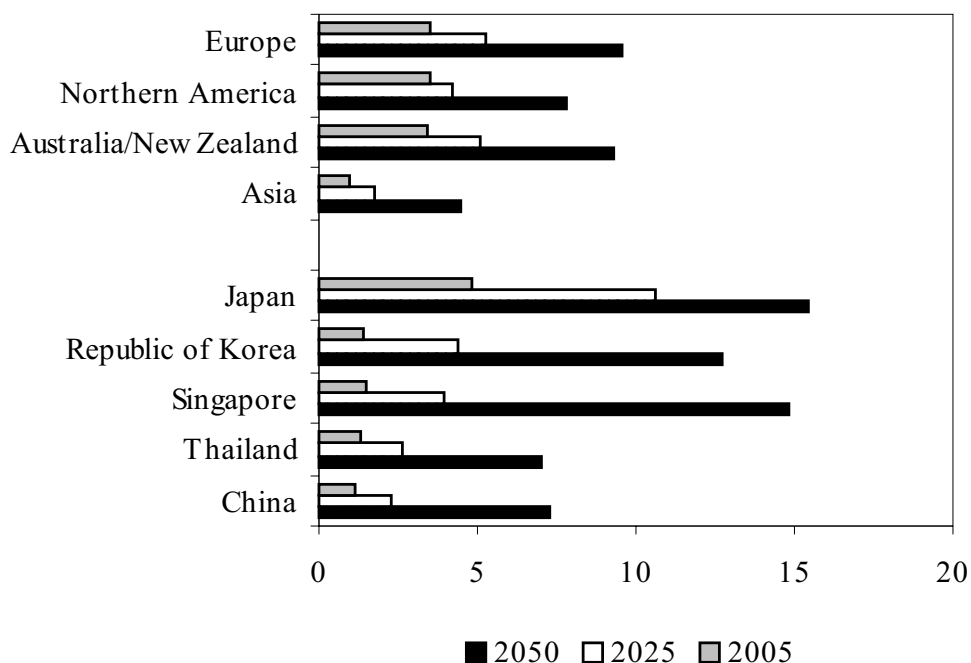
Figure 4. Percentage of population aged 60 years and older



Source: World Population Prospects: the 2006 Revision, Volume I: Comprehensive Tables (United Nations publication, Sales No. 07.XIII.2).

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 North 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 more than double in North America during the same period. The only country in Asia with a sizeable population of the oldest-old is Japan: in 2007, 5.4 per cent of Japan's population comprised people aged 80 years and older. Worldwide, Japan is projected to witness the largest proportion of the oldest-old (15.3 per cent) of the total population by 2050. Other countries such as the Republic of Korea and Singapore are also expected to experience 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 5).

Figure 5. Percentage of population aged 80 years and older



Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

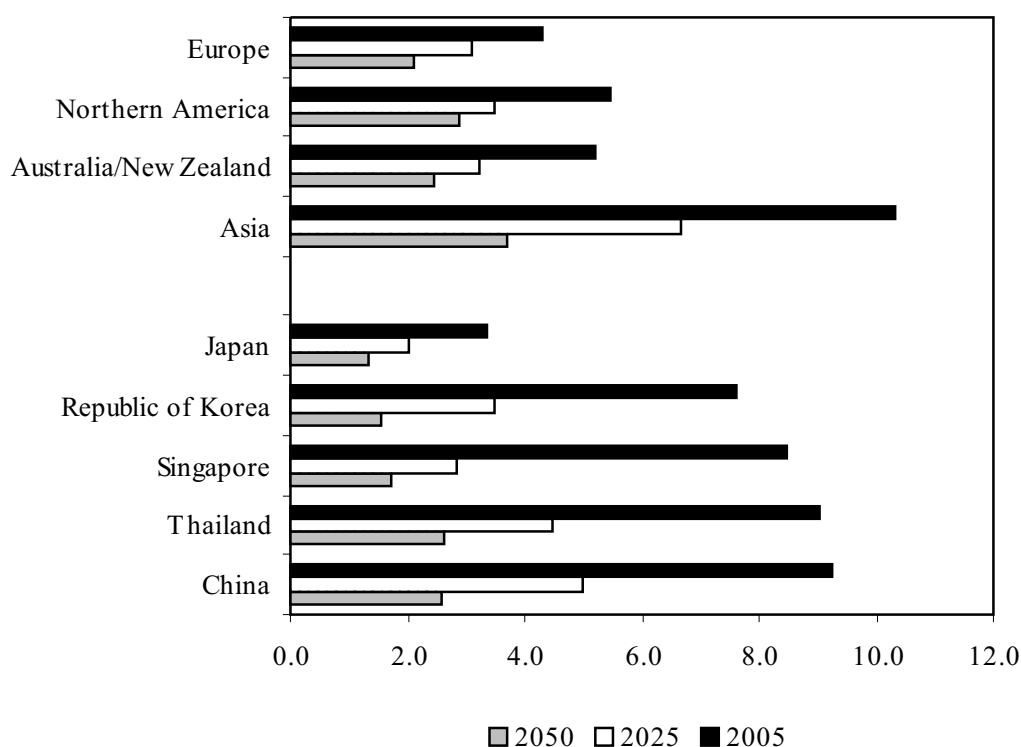
Potential support ratio

The potential support ratio, presented in figure 6, is a simplified measure showing the relationship between the number of the working-age population (15-64 years) and the number of older persons (65 years and older). 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, which is already low at less than 5, will further decline to less than 2 by 2050. Relatively low potential support ratios are found in North America (5.4) and Australia and New Zealand (5.5). Over the next half century, this ratio will drop substantially to 2.8 in North America and 2.7 in Australia and New Zealand.

Although the potential support ratio in Asia as a whole is relatively high at 11, important variations can be seen at the country level. In the next 50 years, several low fertility countries and areas in Asia will experience a sharp decline in the potential support ratio, eventually falling to 2 or lower. Such countries and areas will include Hong Kong, China; Japan; Macao, China; the Republic of Korea; and Singapore. Importantly, the potential support ratio of Japan, currently at 3.2, 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 is expected are Italy and Spain (United Nations Population Division, 2007).

Figure 6. Potential support ratio (15-64 years/65 years and older)



Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

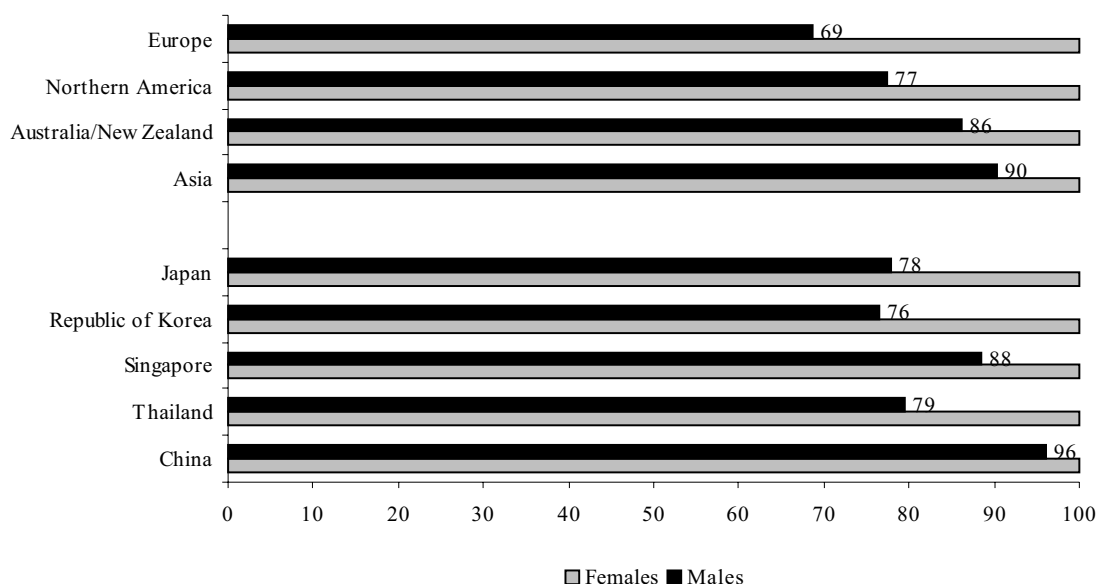
Feminization of the elderly population

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 a higher life expectancy at birth than males. As a result, women tend to outnumber men in the older age groups. It is apparent from figures 7 and 8 that sex ratios at older ages are much lower in Europe compared with those in North America, Australia and 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 lowest-low fertility countries in Asia. The feminization of the elderly population (more female elderly than male elderly) is particularly pronounced in

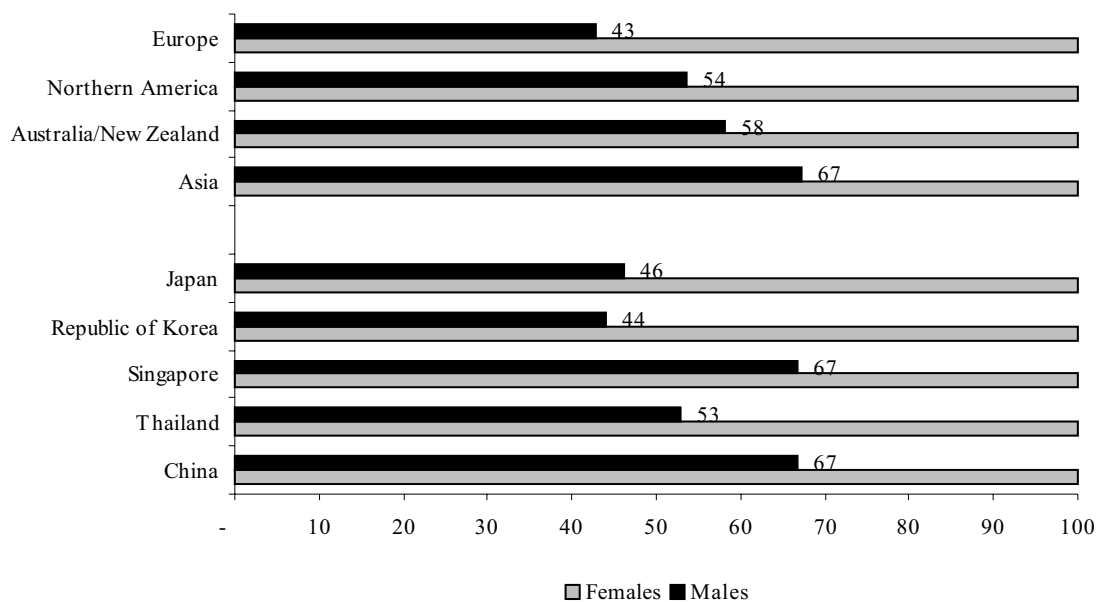
Japan, the Republic of Korea and Thailand, where sex ratios at ages 60 years and older and 80 years and older are significantly lower. The greater numbers of women in the older age groups is typically viewed as problematic, because it reflects high levels of widowhood and the various difficulties associated with it (Mujahid, 2006a). 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 that of men (Neville, 2000). The 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 and 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 income from pensions or occupational skills to support themselves in old age. Moreover, the majority of the institutionalized elderly are the oldest-old women who are often widowed and who usually suffer from weak health (United Nations Population Division, 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 and others, 2001).

Figure 7. Feminization of the elderly population 60 years and older



Source: *World Population Prospects: the 2006 Revision, Volume 1: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

Figure 8. Feminization of the elderly population 80 and older



Source: *World Population Prospects: the 2006 Revision, Volume I: Comprehensive Tables* (United Nations publication, Sales No. 07.XIII.2).

Implications of population ageing

It has been shown that declining fertility and mortality rates resulting in population ageing has emerged as a new issue challenging some countries in the Asian and Pacific region. Mortality reduction will continue to be an overriding policy goal, and it will have the effect of further accelerating the ageing process. The implications of such population ageing and the associated growth in the size of elderly populations are of particular concern. The elderly population is often perceived as posing serious burdens on economic and social support and health-care systems. The rising number of elderly on the one hand, and the declining number of the younger population on the other will also mean that there will be a shortage of caregivers for the elderly population. As women will outnumber men in the older age groups, the social and financial security as well as the health conditions of elderly women will be one of the largest problems faced by ageing societies. Women in many Asian countries are disadvantaged as they have a lower education and less work experience than men and they have less income and access to assets and diminished authority within the family. Hence, women are more likely to be dependent upon family members and public programmes, especially at advanced ages and under conditions of illness and disability

(Mujahid, 2006a). These needs put extra pressure on family members for caregiving (Knodel, Ofstedal and Hermalin, 2002).

The rising number of older persons has important policy implications for the provision of health and social services (Mujahid, 2006b). The family continues to provide older persons with support and, in many societies of the Asian and Pacific region, the tradition of older persons co-residing with their family members is generally the norm (Knodel and others, 1999). However, as traditional means of family support are being steadily eroded in most societies, Governments urgently need to establish a social protection system, particularly to foster old-age security.

In many countries and areas of the region, the health-care infrastructure is already weak and most of the resources are utilized to address the needs of mother and child health services and to provide reproductive health services, including family planning. Therefore, the provision of medical, public health and social services and other facilities required to address the needs of older persons are likely to put a severe strain on the economy (Knodel, Ofstedal and Hermalin, 2002). With an increasing number of younger women entering the labour force, often away from home, the availability of caregivers for older persons is also decreasing. With rapid urbanization, globalization and migration being experienced by many countries and areas in the region, the situation is further worsening, leading many older persons to be left behind in rural areas without caregivers (Nizamuddin, 2003). These movements of the younger generation, who are better educated than their rural counterparts, have led to the ageing population structure in rural areas being referred to as “ageing in place” (Hermalin and Myers, 2002).

The majority of countries and areas in the region do not have a social security system for older persons, and even Governments that already have such a social security system are facing problems in caring for frail older persons. These older persons may have financial resources to support themselves, but they need day-to-day physical care. Although the policy trends of the Governments seem to be towards home-based community care, day-to-day care requires a lot of time and labour from the supporting family members. The caregivers are usually women who are caught between the responsibilities of raising children, caring for ageing parents and engaging in economic activities (United Nations Population Division, 2001). Thus, more intensive and practical Government assistance is necessary to successfully support frail older persons with a declining number of children. In the case of an ageing society, such as that of Japan, it has been suggested that the expansion of institutional care as an alternative to home care may alleviate the heavy burden on middle-aged women taking care of elderly persons. However,

besides the higher health-care costs of providing such care in institutions, this is likely to deteriorate the psychological and emotional well-being of the infirm elderly. In view of the negative consequences, the Government of Japan started to implement its insurance scheme for long-term care in 2000. However, the effect of this new system on the well-being of the elderly and their families remains to be seen (Ogawa, 2003a).

The desire and the need for continued employment have been expressed in low fertility countries. For example, the Governments of Japan, the Republic of Korea and Singapore have been trying to raise the retirement age to compensate for increasing national expenditures on the elderly (Cheung, 1994; Cho, 2002; United Nations Population Division, 2002). There is growing evidence that older persons are willing to accept continued employment, mostly to maintain good health and retain an income (Katsumata, 2002). Thus, it is important for Governments to build more flexible work environments in which older persons can be meaningfully employed.

As previously mentioned, low fertility and mortality produces an age structure that has a high proportion of older persons. Moreover, if fertility continues to decline to below replacement level and remains low, not only the working-age population but also the general population itself will eventually start to decline. In contrast to the economic and social advantages of falling fertility rates, a constantly low rate creates the problem of an ageing society, including labour shortages and the high cost of social welfare. For example, as a result of continued low fertility in Japan, that society is facing serious problems associated with ageing, and this demographic trend is depressing Japan's economic perspective. In order to recover from the demographic depression, it is necessary to increase the input of the working-age population by either increasing in-migration or female labour-force participation (Seetharam, 2002).

Hence, a pressing issue for lowest-low fertility countries and areas is the ageing of the population. 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 the ageing of the population. For example, some ageing countries, such as Japan, the Republic of Korea and Singapore, are facing the problem of increasing national expenditures for old-age social security, a shrinking labour force and mounting burdens of providing the growing number of frail elderly with care. The shrinking labour force and the increase in the ageing population have also contributed to lowering potential support ratios (United Nations Population Division, 2007). 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 grows smaller (Gubhaju and Moriki-Durand, 2003b; United Nations Population Fund, 2006a, 2006b).

Considering the experience of low fertility countries, the Governments of transitional and near-replacement fertility countries and areas 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 replacement level. In this regard, researchers are urging Governments to start preparing policy measures to deal with the problems associated with an ageing population 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 schemes to mature and operate at full scale (Ogawa, 2003b). It would be more difficult for families to care for their older members because families would be smaller, people would live longer and the migration of young adults would mean that families would fragment. The present trends pose a major challenge in addressing the needs of families. Therefore, Governments are urged to consider the present trends in designing social policies, to put the family at the centre of any future social policy development and to study good national practices when designing a new approach to family policies.

While formulating policies, it is important also to understand the changing needs of older persons. As a result of the socio-economic development that has taken place over the past several decades, the younger generation is more educated, urban and professional than the older generation. Although these attributes are beneficial to society, they may be the source of problems, for those differences across age groups are not only a potential source of intergenerational tension and conflict, but they may also mean that the future elderly will have sharply different characteristics than the current elderly. Therefore, policymakers need to take into consideration the changing socio-economic characteristics of the elderly in designing policies and approaches that will be suitable in the future (Hermalin and Myers, 2002).

The momentum of population ageing in the world is likely to be the most significant demographic process of the twenty-first century, with implications for a wide range of human behaviour. In this regard, researchers have increasingly recognized the need for multidisciplinary approaches to the ageing process. Continuous changes in the population age structure will require new social sensitivities and innovative policy responses (Kinsella and Phillips, 2005).

Finally, it is also important to recognize the benefits of a changing population age structure. A decline in fertility and an increase in life expectancy at birth, which result in slower population growth, temporarily increase the relative size of the workforce, opening an historic, one-time-only “demographic window” that provides an opportunity for human and financial investment to spur economic growth. This potential economic growth occurs within one generation and has already been effectively taken advantage of in several East Asian countries between the 1960s and the 1990s (Bloom, Canning and Sevilla, 2003). In this regard, several countries and areas in South-East Asia and developing countries and areas in other regions are projected to have a large segment of their population of prime working age, with the likelihood of high economic output and savings. This “demographic dividend” has the potential for stimulating economic growth if appropriate economic and social policies are in place (Kinsella and Phillips, 2005; Knodel, Ofstedal and Hermalin, 2002).

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Dramatic Fertility Transition in Mongolia and Its Determinants: the Demise of the Pronatalist State

It is projected that fertility will continuously decline in Mongolia albeit at a slower rate, and TFR is expected to fall from 2.4 to 1.8 children per woman during the period 2000-2025. This decline will have a considerable impact on population growth, hence on the structure of the population.

By Altankhuyag Gereltuya*

The move from a centrally controlled economy to a market-driven economy has had strong political implications for family planning and fertility in Mongolia. Under socialist rule, Mongolia had a strong pronatalist population policy under which those families having children were provided with generous benefits. The changes made to these policies have had a considerable impact on fertility and family formation in Mongolia. In the mid-1970s, the country started to experience a dramatic decrease in

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the level of fertility, which intensified when the country moved towards a market economy. The country experienced a drop in its total fertility rate (TFR) from 7.2 children per woman (of reproductive age) in 1975 to about 3 children in 1995, and it has remained constant at about 2.3 children since that time. Relatively few studies have been carried out on fertility changes in Mongolia with explanations about their causes, primarily owing to a lack of data sources.

The aim of this paper is to examine fertility changes in Mongolia with respect to the changes in population policies and changes in the proximate determinants of fertility that have occurred since the mid-1970s.

Data availability and quality

Until 1990, the majority of statistical data in Mongolia were confidential and were reported only to high Government officials. Data dissemination was very limited and distributed on an ad hoc basis and only if specifically requested by interested users.

The first twentieth century Mongolian population census was conducted in 1918, with further censuses conducted in 1935, 1944, 1956, 1963, 1969, 1979, 1989 and 2000. The range of information collected in the first four censuses was very narrow. Information collected included the age, sex, marital status and occupation of respondents. The last four censuses have been more complete with the inclusion of housing information. In general, census information is accurate and problems of under-enumeration are comparatively small, particularly in the 1969, 1979, 1989 and 2000 censuses. The reporting of age, sex and fertility-related information and other demographic, economic and social characteristics in those censuses is considered relatively reliable. This reliability is based on the assessment of the accuracy of age and sex reporting, in comparison with information obtained from other sources. The National Statistical Office of Mongolia (NSOM) evaluated the 1969, 1979 and 1989 censuses using the “consistent correction of census and vital registration data” developed by Luther and Retherford. According to an assessment by NSOM, under-enumeration was 1.5 per cent in the 1969 census, 3.5 per cent in the 1979 census, and reached 6.5 per cent in the 1989 census. The under-enumeration of the 2000 population and housing censuses was evaluated using a post-enumeration survey and was estimated to be at 0.8 per cent.

From the 1950s onwards, NSOM was charged with the registration and compilation of vital events. In the mid-1980s, the responsibility for collecting civil registration data (births, deaths, marriages, divorces, occupational status, change of address, education, residential status and so forth) was transferred to the Central Population Register Bureau, a newly created agency. The degree of completeness of

the registration of vital events in Mongolia slowly improved. The continuous evaluation of the quality of data obtained from the 1969, 1979 and 1989 censuses allowed for an improvement in the registration of births and deaths for each intercensal year. The under-registration of births was approximately 5 per cent and that of adult deaths was about 6 per cent. Indirect estimates were also calculated and similar results obtained. There are, however, two exceptions: early age mortality and the registration of population movements.

According to Mongolian law, parents must register the birth of a newborn baby within one month of the birth. However, as in other developing countries, parents may consider it futile to register both the birth and the death of a child who died at a very young age. Therefore, it is likely that many infant deaths that occurred within one month of birth may have never been registered. Even if a child dies after a month and the birth has been registered, parents may fail to register his death. This is the case in rural areas where ties with the Government are weaker and where burial permits are not necessary most of the time. The use of indirect techniques to consistently assess the quality of data suggests an under-registration of nearly 30 per cent of infant deaths from 1970 to 1989. The under-registration of infant deaths did not greatly improve, even after 1990. However, NSOM conducted a number of surveys that helped to better estimate real infant death rates in the 1990s. Recent demographic and reproductive health surveys suggest that the real infant mortality rate may be as much as 50 per cent higher than the official figures, owing to the underreporting of deaths. One hypothesis suggests that there may be some misclassifications of infant deaths in Mongolia as a result of existing regulations aimed at measuring the work performance of medical units. During the socialist regime, the health of newborn babies was strictly controlled by the Government. Each newborn was assigned to a district doctor and her/his job performance was evaluated by the number of infant deaths occurring in her/his district. Therefore, it could be the case that the infant deaths that occurred during the first year of birth were actually reported as deaths occurring during the second year, if the child's birth had been registered. In other words, there might have been a transfer from infants to children's deaths. Thus, the number of births in Mongolia could be biased as a result of underreported early neonatal and neonatal infant deaths.

For this paper, data on the use of modern contraceptives were obtained from various sources. The proportion of women using any modern method of contraception in 1990 and 1992 was based on the estimates prepared by the Ministry of Health and Social Welfare. These estimates include only contraceptives distributed by Government-run programmes, while data on private access were not available. The commercial distribution of contraceptives appears to have been limited to that

time when the private distribution of medical and health products in general was still negligible. Data on contraceptive use in 1995 and 1998 were based on sample surveys conducted by the Mongolian National University and NSOM with assistance from the United Nations Population Fund (UNFPA). These surveys used internationally accepted methods of survey design; therefore, their results are reliable and among the best data on the current use of contraceptives available to date.

In 1970, the Ministry of Health and Social Welfare issued an order on the collection of data on abortion and approved an initial reporting statistical form. This form has changed over time, reflecting changes in the abortion law. The most recent version of this form was approved in 1997 by the Ministry of Health and Social Welfare. For this paper, data on abortion were obtained from the administrative records maintained by the Ministry of Health and Social Welfare. However, caution is needed in interpreting trends observed in the rates of abortion. It has been reported in a number of studies that abortion may have been practised before its legalization in 1989 in the form of spontaneous abortions, or miscarriages. In 1985, the number of spontaneous abortions per 1,000 births was 168.6, and by 1989 it had increased to 179.7. However, in 1990 this ratio fell to 95.3. This sharp decline in “spontaneous abortions” just after the legalization of abortion suggests that many abortions had actually been induced.

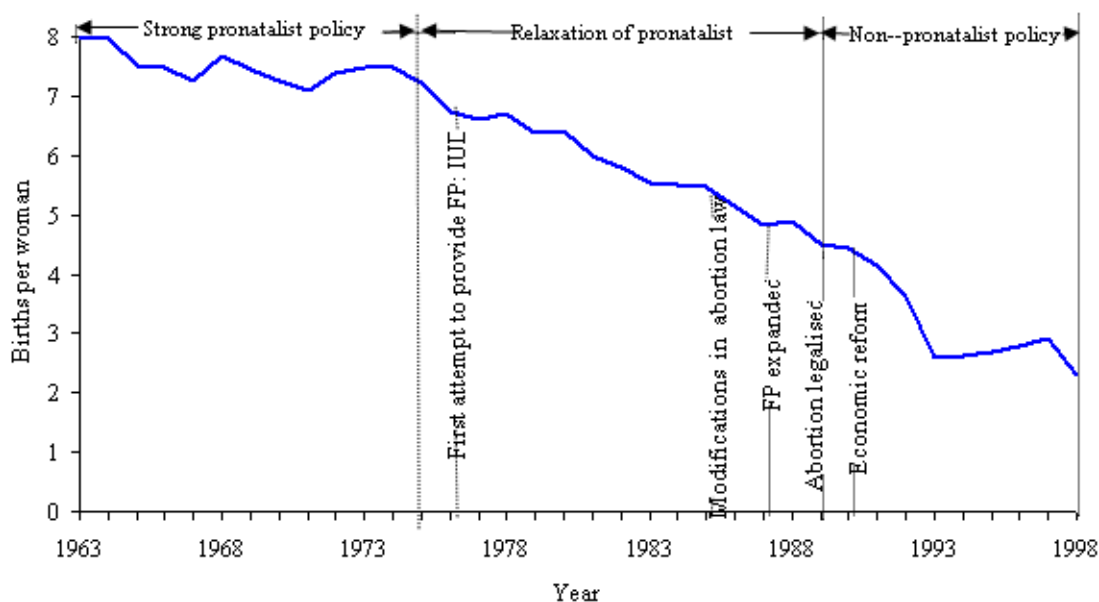
Fertility transition and its onset

Figure 1 shows changes in population policies and in TFR in the period from 1963 to 1998. In the 1960s, TFR was 8 children per woman. In 1975, this number fell to 7.2, in 1989 to 4.5, and subsequently, in 1998 to 2.3. Between 1963 and 1975, the number of children per woman fluctuated between 7 and 8. However, from 1975 onwards, the decline in fertility became relatively steady until it reached 2.6 children per woman in 1993. However, a slight rise occurred again in 1993-1997 before fertility levels declined further during the last three years of the past century.

Figure 2 clearly indicates that, in the first half of the 1970s, fertility was concentrated in four age groups: 20-24, 25-29, 30-34 and 35-39 years. Two decades later, fertility was concentrated in two age groups only: 20-24 and 25-29 years. Although measures of fertility are subject to tempo and quantum influences, both figures roughly indicate that the fertility transition was underway in Mongolia in 1975-1998. The Princeton’s approach is chosen for Mongolia to identify the onset of the fertility transition. The reason for this is that, between 1960 and 1975, the TFR of Mongolia fluctuated between 7 and 8 children per woman and that there was no clear picture of a continuous decline in fertility. TFR peaked in 1963 and

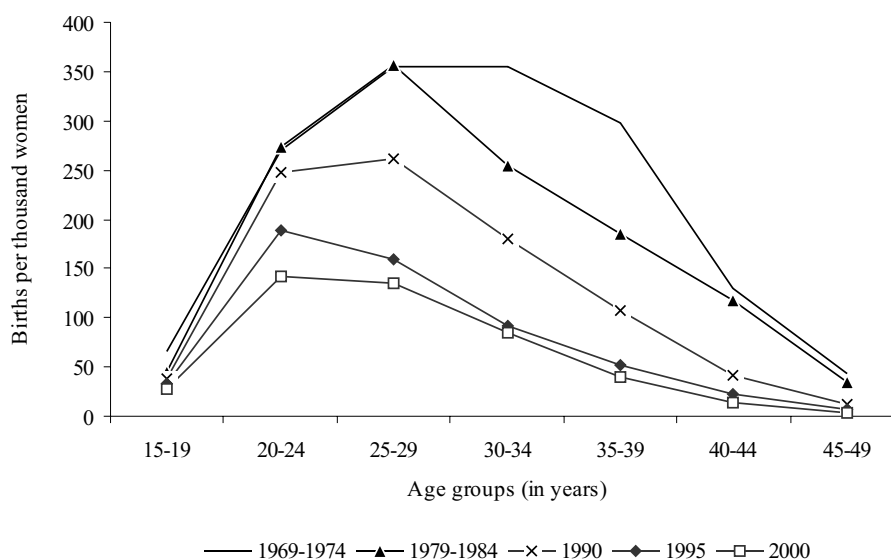
stood at 8 children per woman. The onset of the decline in fertility can be dated back to 1975 when TFR reached 7.2 children per woman.

Figure 1. Population policies and total fertility rates, Mongolia



Source: Mongolia, National Statistical Office, *Population of Mongolia, 1994 and Statistical Yearbook, 2000* (Ulaanbataar).

Figure 2. Age specific fertility rates, 1969 - 2000, Mongolia



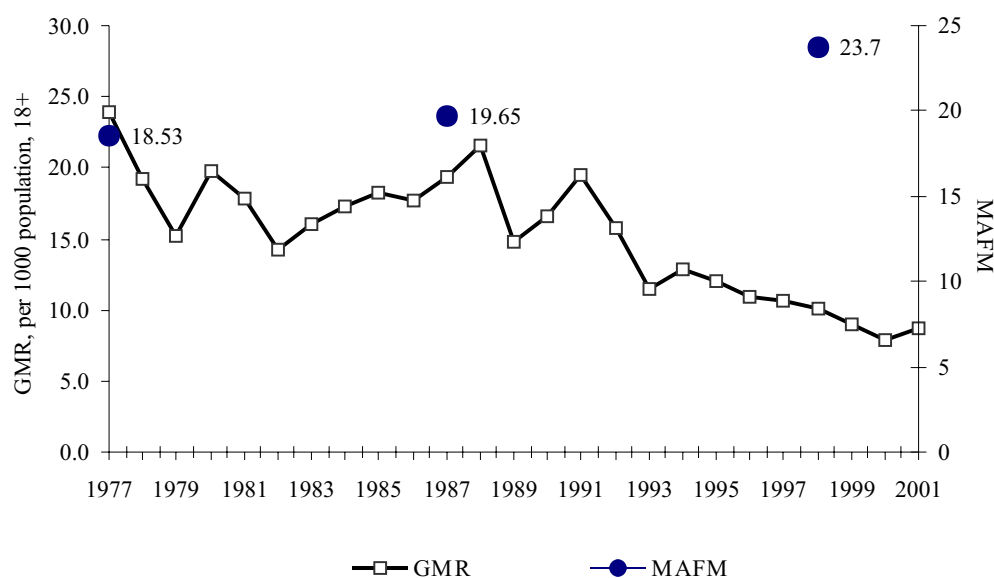
Source: Calculations are by the author using data from Mongolia, National Statistical Office, *Population of Mongolia, 1994 and Statistical Yearbook, 2000* (Ulaanbataar)

Trends in proximate determinants of fertility

Marriage

Arranged marriage was prohibited in 1925, shortly after the communist revolution, and it is no longer a common feature of Mongolian life. The new family law enacted in 1999 reiterates this prohibition. In Mongolia, marriage is valid only if both parties are at least 18 years old, and there is no recognition of a de facto or cohabitation relationship under the family law. Pursuant to the Constitution of Mongolia, marriage must be monogamous. According to the last three population censuses, the proportion of married women aged 15 and above decreased from 63 per cent in 1979 to 61 per cent in 1989 and to 57 per cent in 2000. The proportion of women of reproductive age increased to 27 per cent in 2000, from 23 per cent in 1989 and 21 per cent in 1979. Figure 3 shows the marriage rate per 1,000 people aged 18 and above for the last two decades and the mean age at first marriage for females for the census years. The marriage rate per 1,000 people aged 18 and above decreased by only 2 per cent between 1979 and 1989, whereas it decreased by more than 40 per cent from 1989 to 2000. The Government's *Report on Population and Development* estimated that 15.3 per cent of the total fertility decline at the beginning of the 1990s was caused by a fall in the number of married people.

Figure 3. General marriage rate (GMR) and mean age at first marriage (MAFM) for females



Source: Mongolia, National Statistical Office, *Population of Mongolia, 1994* and *Statistical Yearbook, 2000* (Ulaanbataar).

Increases in the age at first marriage for females are expected to reduce the level of fertility, and a minor increase (of about 6 per cent, that is, from 18.5 to 19.7 years) in the mean age at first marriage can be observed between 1979 and 1989. However, the mean age at first marriage increased by 20 per cent (from 19.7 to 23.7 years) from 1989 to 2000.

The 1998 Mongolian Reproductive Health Survey indicated that women who were 45 to 49 years of age in 1998 had been married at an earlier age than their younger counterparts. For instance, in 1998, 48 per cent of women aged 45-49 years had had their first marriage before the age of 20, compared with only 30 per cent of those aged 30-34 years, and 36 per cent of those aged 25-29 years. All these figures indicate that significant changes have been taking place in marriage patterns and in the age at first marriage during the last decade, when the country was moving towards a market economy.

In Mongolia, births take place mainly within the bounds of marriage. However, the proportion of women aged 15-17 years who already have a child increased from 2.3 per cent in 1996 to 8.5 per cent in 1998. When children are born to women below age 18, this can be considered childbearing outside marriage, because the legal age at marriage is 18 as regulated by the family law of Mongolia. Within two years, from 1996 to 1998, the percentage distribution of women aged 15-49 years by marital status had changed remarkably. For instance, the proportion of women cohabitating outside of marriage had risen from 3.7 per cent in 1996 to 5.7 per cent in 1998. Similarly, the share of separated women increases to 1.1 per cent in 1998 from 0.7 per cent in 1996, while the percentage of divorced women increased almost twofold during the same period.

Contraceptive use

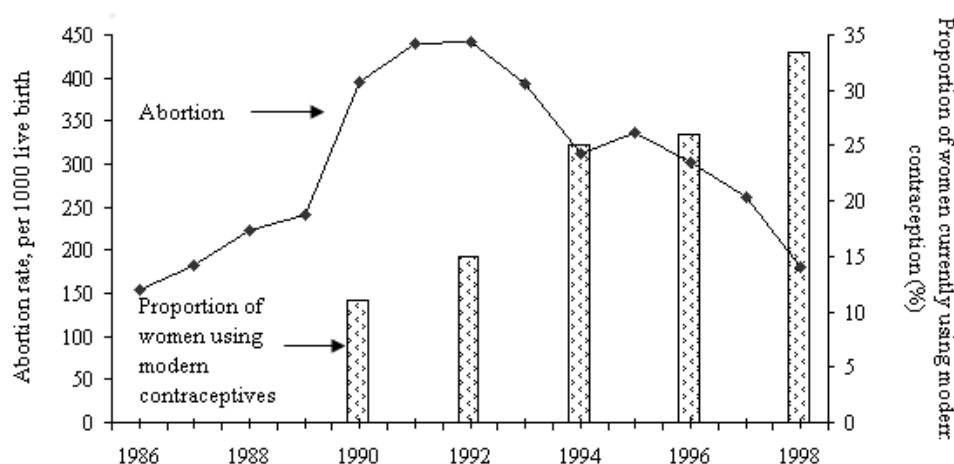
Figure 4 illustrates recent trends in the abortion rate and the proportion of women using any modern method of contraception. Even after the 1989 policy shift, the proportion of women using modern contraceptives was very low. According to estimates from the Ministry of Health and Social Welfare, about 11 per cent¹ of the female population of reproductive age used a modern method of contraception in 1990. This number increased to 15 per cent¹ in 1992 and to 25 per cent in 1994, before reaching 33.4 per cent in 1998. By contrast, the proportion of traditional method users declined from 35.7 per cent in 1994 to 10 per cent in 1998. Neupert stated that the calendar method appears to have been the main method of contraception used in Mongolia during the 1970s and 1980s. However, he argued that it played a limited role in the fall of fertility. Pandey's later analysis suggested that it was the use of the intrauterine device – also an

important method of contraception at the time – that most contributed to the decline in fertility in Mongolia. The *Report on Population and Development*, by the Government of Mongolia, estimated that the contribution of contraceptive use accounted for up to 21.6 per cent of the total fertility decline in 1990-1993.

Abortion

With the law on the liberalization of abortion enacted in 1985 and then amended in 1989, the number of induced abortions increased significantly. For instance, the number of abortions per 1,000 live births was 155 in 1986, then reached a peak of 442 in 1992 before decreasing to 312 in 1994. The number decreased sharply in the following years along with the increase in the use of modern contraceptives (figure 4).

Figure 4. Abortion rate and proportion of women currently using modern methods of contraception



Sources: Unwanted pregnancies and abortions in Mongolia, 2001, NCHD; Contraceptive use: 1990 – Estimation of MOH; 1992 – Project report, MON/97/PO7; 1994 – Survey report, MNU, 1994; 1996 – Survey report, 1996; 1998 – RHS report, NSO, 1999.

The pronatalist policy pursued for almost three decades forced women to rely on abortion to postpone or avoid childbearing. Several researchers concluded that one of the possible reasons for the drop in fertility was the legalization of abortion, which occurred in 1989.

In the *Report on Population and Development*, it was noted that 39.3 per cent of the total fertility decline was attributed to a surge in the incidence of abortion from 1991-1993. This clearly indicates that there was a significant unmet need for contraceptives which probably led to the dramatic increase in the number of

abortions observed at the beginning of the 1990s, after abortion became legal in 1989. Furthermore, the report indicated that, owing to a lack of availability and knowledge of contraceptives, abortion became the main method of fertility regulation for Mongolian women. The main reasons for abortions were very short birth intervals and the poor health of women. The Mongolian Reproductive Health Survey (1998) found that age, the number of living children and marital status were the determining factors of abortion. The Population Policy Programme of Mongolia stated that abortion should not be promoted as a method of family planning. However, in practice, abortion has been the most important intermediate variable in the country's fertility decline after 1989.

Breastfeeding

Data on breastfeeding trends are not available. However, continued breastfeeding is common in Mongolia: 81 per cent² of all children are breastfed until they are 1 year of age and 61 per cent² until 2 years of age. Considering the experience of other developing countries, it is likely that this practice has increased in Mongolia during the last three decades; therefore, breastfeeding (and in this case, the lactational amenorrhea method of birth control) probably did not have a major effect on the fertility decline.

Population policies

There were three different phases of the population policy of the Government of Mongolia during the period from 1960 to 1998 (see figure 1): a) a strong pronatalist policy from 1963 to 1975; b) a relaxation of the pronatalist policy from the 1975 to 1989 and c) a non-pronatalist policy from 1989 to 1998. The following paragraphs briefly describe the context of each phase and the likely effect of each on the overall fertility trend.

Strong pronatalist population policy (1963-1975)

In the 1960s and 1970s, the Government of Mongolia had an interest in encouraging high levels of fertility or at least in maintaining earlier levels in order to bring to fruition a series of huge economic goals in the agricultural and industrial sectors. During this period, two major economic events overlapped: the collectivization of agricultural activities and industrialization. The First Five-Year Plan (1948-1952) had concluded that the available labour force was insufficient to realize two major desired economic events in the 1960s: the collectivization of agricultural activities in rural areas and the construction of industrial infrastructures in urban areas. This Five-Year Plan was the first policy document to describe an interest in an increase in the size of the population, yet

without suggesting any specific intervention. In the Third Five-Year Plan (1961-1965), pronatalist interventions were included for the first time. International immigration was never considered as an alternative or a complement to the rise in fertility. Moreover, Mongolia did not have an excess of labour in rural areas during that time because the process of large-scale collectivization coincided with that of industrialization in urban areas. The desire for a sufficient supply of labour through a population increase can be considered as an economic factor that led to pronatalist policies in Mongolia.

The pronatalist population policy had several components. Women with more than four children were awarded medals of honour, additional substantial child allowances and subsidized holiday leave. Moreover, they were given earlier retirement (at age 50) compared with other women. Generous maternity leave also applied, and mothers were guaranteed that they could return to their original jobs after having a child. In addition, special taxes were imposed on unmarried and childless couples. The availability and use of modern contraceptives was severely limited during this period. From the beginning of the 1960s up to the mid-1970s, fertility rose with the implementation of pronatalist population policies. There were dramatic improvements in the level of women's education and their participation in the labour force. Free and compulsory education at all levels for both boys and girls was introduced throughout the socialist era, and a high rate of female participation and equality with males was achieved, higher than in most other Asian countries. By 1969, 75 per cent of women had received some form of education.

The labour law³ that was amended in 1970 enabled women to undertake work outside their home (Ardiin Ih Khural, 1970). Mongolian women had legal equality, but once in the labour force they suffered the familiar double burden of housework and childcare. In addition, Mongolia developed an extensive and well-staffed health-care system that had made modern health technologies widely accessible. In spite of economic and health developments, however, mortality levels were high. For instance, the infant mortality rate was 75 per 1,000 live births in 1965 and remained at this level roughly until 1975.

As the economy developed, the population increased, the society grew more greatly differentiated and people came to have less in common. The population was increasingly divided along occupational, educational and regional lines. Social interactions also came to differ, from group to group. In sum, socio-economic development, including women's education and labour force participation, might have been one of the main causes of the onset of the fertility decline.

Relaxation of pronatalist population policy (1975-1989)

The main reasons for the shift from a strong pronatalist population policy to a relaxation of the pronatalist policy were the high rates of infant and maternal mortality and their reluctance to decline. In 1976, the first attempt was made to provide family planning, albeit under only very special conditions. The intrauterine device became legal in cases when pregnancy was not recommended, either because of the woman's health or age, or because the woman had experienced more than five pregnancies. From 1976 onwards, access to contraceptives was progressively liberalized and between 1985 and 1988, more policy changes occurred. Strict restrictions on abortion lasted until 1985, when a decree of the Ikh Khural Presidium allowed abortions to be performed upon a woman's request. The limited family planning services were also expanded at the end of the 1980s. The availability of the intrauterine device and abortion services was extended to all women older than 35 years or with more than five children, single women with more than three children, women pregnant less than one year after the previous birth, women with three or more children and whose husband was either disabled or imprisoned, and women who were themselves in prison or in an orphanage.

Changes in the age-specific fertility rates (see figure 2) could be attributed to a relaxation of the pronatalist population policy. Between the periods 1969-1974 and 1979-1984, there were sharp declines⁴ in fertility among women older than age 30, while from the period 1979-1984 to 1990, fertility fell substantially in almost all age groups.

By 1989, about 95 per cent of women had received some form of education. Literacy levels rose and the gap between male and female literacy rates narrowed from 16 per cent in 1963 to less than 3 per cent by 1989. The major change regarding the position of Mongolian women was their nearly universal participation at all levels of the educational system. In 1985, women made up to 63 per cent of students in higher educational establishments and up to 58 per cent of those in specialized secondary schools. The number of women employed in various economic sectors increased by 87.3 per cent from 1969 to 1989, compared with an increase of 68.4 per cent for male employees during the same period.

Yet, male attitudes and public services did not catch up with the reality of an increasing percentage of women being employed outside their home. There was little cultural pressure on men to help with household chores, and child-rearing continued to be the sole responsibility of women. Working mothers' difficulties were often compounded by cramped housing conditions, a lack of time- and energy-saving appliances, and the absence of modern shopping facilities and convenience services. These factors made child-rearing a major burden. Women's

household duties took up almost as much time as their job. Therefore, it is highly possible that women immediately reacted to the relaxation of pronatalist policies that took place in 1976 and 1989. Following the Russian model, Mongolia initially devoted most resources to collectivization and the development of industry (mainly mining and textiles), with relatively little being invested in the consumer sector. As a result, the technology used by consumer industries was hardly developed, leading to a low level of mechanization of housework, commerce and services compared with that in Western countries. This was not a feature unique to Mongolia; it also existed in other socialist countries, as documented by earlier research. From the mid-1970s to 1989, female education and female labour force participation, plus the lack of development of consumer industries, might have been factors that were influential in women limiting their childbearing.

Non-pronatalist population policy (1989-1998)

In 1990, Mongolia embarked on a path of economic reform embracing all spheres of political, economic and social life. This transformation has been dramatic. The country has faced new social problems, such as unemployment, poverty, declines in literacy and diminished access to education and health services, that were mostly absent during the socialist rule. It is difficult to believe that those changes have not affected Mongolian women's childbearing behaviour. Among the major reasons for the rapid decline in fertility in the 1990s, previous work identified the negative impact of the economic transition on families and family formation, and the changes in the population policy. The measures recommended by the new population policy were outlined in the health law, which was amended at the end of 1989. The amended health law, stating that a woman had the right to decide about motherhood herself, fully legalized abortion and the use of contraceptives. The new population policy removed all restrictions on the use, distribution and import of contraceptives. With the exception of a continuing prohibition on vasectomies, the last restrictions were lifted in 1989 and oral contraceptives became available. By the end of 1989, abortion was fully legalized to supplement the family planning policy with regard to women's physiological and mental health. This policy allowed every woman to have an induced abortion if she did not want to carry on with the pregnancy.

The fall in fertility was substantial during the non-pronatalist policy period, especially during 1989-1993 when the country also experienced an economic collapse. Between 1990 and 1995, fertility declined dramatically in all age groups, whereas in the period 1995-2000 there was a steep drop in the fertility of all age groups with the exception of a noticeable decrease in the age group 20-24 (see figure 2).

The transition to a market economy shaped the nature of women's employment opportunities. The unemployment rates of women were higher than those of men, and the difference has remained within the range of 6 to 10 per cent. The employment status of women has affected their income and hence their desire to bear children. Women are important contributors to family income, partly because two salaries have become essential to maintain a certain basic standard of living. Though the traditional perception of males as the main breadwinners remains unchanged, in reality women have been earning substantial incomes in Mongolia in recent years. Besides paid work, women have been engaging in unpaid work, such as household maintenance, rearing children, caring for husbands and older persons. In this way, women carry a double burden, which has a bearing on social reproduction and sustainable human development. Thus, many factors may account for the falling birth rate since the beginning of the fertility transition, including economic hardship and vulnerability, and the pressure to pursue supplementary income sources. This has further decreased men's contribution in the home, while also increasing women's unpaid household and care work. Other influential factors are the higher costs of rearing children; social and attitudinal factors, such as women's education and employment opportunities; the decline of childcare services; and young women's attitudes towards marriage.

Summary and discussion

Dramatic fertility declines occurred in Mongolia between the 1960s and the end of the 1990s, mainly owing to changes in population policies and other social dimensions. Although still not at a low level, TFR in Mongolia as a whole has declined from about 8 children per woman to about 2.3 within a span of 38 years. Findings suggest that a fertility transition is under way in Mongolia and consists of the following periods: a) pre-transition from 1960 to 1975; b) the onset of transition in around 1975; and c) transition from 1976 to 1998. The latter itself can be split into two phases: the socialist period and the market period.

At the beginning of the twentieth century, fertility was low in Mongolia owing to widespread venereal disease, the adherence of men to religious life, and high infant mortality. Since the 1950s, the total population of Mongolia has increased as a result of rising fertility and decreasing mortality. The major part of the increase in fertility is due to the post-war baby boom. In addition, the increased participation of women in the labour force, combined with the non-availability of contraceptives, contributed to shortening the duration of breastfeeding, which itself may have resulted in increased levels of fertility. Moreover, the introduction of modern medical services in the country reduced the prevalence of venereal diseases, which could be a factor behind the fertility rise of the 1950s.

During the 1960s, the two major economic events of collectivization and industrialization overlapped. The labour supply was then insufficient to implement huge economic goals in both rural and urban areas. An adequate labour supply, to be achieved ultimately through population increase, was considered an important economic factor and led to the formulation of the pronatalist population policies. International migration was never considered as a serious alternative or a complement to high fertility. From the beginning of the 1960s, Mongolia implemented a strong pronatalist policy based on the restriction of import, distribution and use of modern contraceptives, as well as on strict regulations of abortions and sterilizations. The pronatalist policy had several components encouraging women to bear many children. The availability and use of modern contraceptives were severely limited during that period. Marriage was universal and women were married at earlier ages. Abortion was strictly prohibited by law. The population policy played an important role in increasing the fertility level of Mongolian women during this period. Moreover, people at the time were more homogenous in terms of social class, and the exchange of information or ideas took place mostly within small communities.

As the economy developed in the 1970s and 1980s, the population increased, the society grew more differentiated and people came to have less in common. There were dramatic improvements in the level of women's education and in their participation in the labour force. The population became increasingly divided along occupational, educational and regional lines. Consequently, social interactions differed among people. Socio-economic development, including women's education and labour force participation, might have been the main cause of the onset of the fertility decline.

Meanwhile, high levels of infant and maternal mortality imposed pressure on the Government to revisit its population policy. In 1976, the first attempt was made to provide family planning and, in 1988, the existing family planning services were expanded and modifications were introduced in the abortion law. Thus, the fertility decline from 1976 to 1989 was driven mainly by the relaxation of the pronatalist policy, which initially gave Mongolian women limited access to contraception and abortion services. Female education and female labour force participation, plus the lack of development of consumer industries, might have been influential factors that resulted in women limiting their childbearing from the mid-1970s up to 1989.

The shift from a centrally planned economy to a market-driven economy in 1989-1998 made the childbearing behaviour of Mongolian women similar to that of women in other former socialist countries. Almost all Governmental incentives to bear children were removed. By the end of 1989, abortion was fully legalized

and all restrictions on the use, distribution and import of contraceptives were removed. Delayed marriage, the increased use of contraception and abortion and, consequently, women's intention to have fewer children became important features of fertility changes in 1989-1998. In that period, fertility declined abruptly.

Mongolia has a reverse gender gap in education which means higher enrolment rates in education for girls than for boys. This gap increased over the first half of the transition period and narrowed thereafter. The reverse gender gap for children of herder families is higher than the national average. Parents tend to assume that boys can do any type of job and sustain their lives, while girls may not be able to do so. They also assume that education is the only avenue for girls' economic security and opportunity, whereas for boys, the livestock sector and business is viewed as offering the most opportunities. At the tertiary level of education, female enrolment rates fell in the first half of the transition period and increased again more recently. Educational opportunities for girls have become dependent on parents' ability and willingness to pay the related fees, and only higher income families can afford these fees.

The reasons behind the abrupt decline in fertility in 1989-1998 were inadequate parental incomes, the disappearance of many social services and people's developing awareness of individualism and self-fulfilment.

In sum, one can conclude that the most relevant determinants of the fertility decline in Mongolia were the use of modern contraceptives and abortion services and changes in marriage patterns. Changes in the population policy ruled the availability of modern contraceptives and abortion services, which in turn affected the changes in fertility level in 1960-1998. Further in-depth quantitative investigation is required to examine underlying factors of fertility changes in Mongolia from the onset of the fertility decline.

It is projected that fertility will continuously decline in Mongolia albeit at a slower rate, and TFR is expected to fall from 2.4 to 1.8 children per woman during the period 2000-2025. This decline will have a considerable impact on population growth, hence on the structure of the population. It is likely that Mongolia, like most East Asian countries, will face the ageing phenomenon and its various implications. On policy grounds, the decline in fertility can easily exert profound effects on many socio-economic issues in Mongolia, such as education, health care, housing, immigration, retirement protection, business opportunities and saving behaviours. Those effects will become more prominent in Mongolia when the country's fertility rates approach the replacement level, which is roughly equal to 2.1 children per women.

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Endnotes

1 This estimate includes only contraceptives distributed by Government programmes; data on private access are not included.

2 These data come from a household survey of breastfeeding practices conducted in May 1992 by the Mongolian Nutrition Research Centre with the cooperation of the Mongolian National Centre for Children and the United Nations Children's Fund.

3 Because of the high percentage of women of childbearing age in the labour force, the labour law contained provisions to protect pregnant women and women with children younger than 1 year of age. Refusal to employ women, the reduction of their earnings, dismissal because of pregnancy or the existence of children were all illegal. Pregnant women and mothers with infants were eligible for a shortened workday and for a transfer to a position involving lighter work. They were not eligible for night work, overtime or business trips. Women received 45 days' pregnancy leave and 56 days' birth leave. Mothers also could combine maternity leave with annual leave. In addition, they could receive an additional six months of unpaid leave and retain their jobs. Nursing mothers were granted paid breaks of up to two hours per day to nurse infants younger than 6 months and one hour to nurse infants from 6 to 12 months. Workplaces with large numbers of female employees were required to provide facilities for nurseries, for kindergartens, for nursing mothers and infant, and for personal hygiene.

4 The number of births per 1,000 women aged 30-34 in 1979-1984 fell by 22 per cent compared to that in 1969-1974. Similarly, there was a decrease of 38 per cent for women aged 35-39, and of 9 per cent for women aged 40-44 for the same time interval.

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