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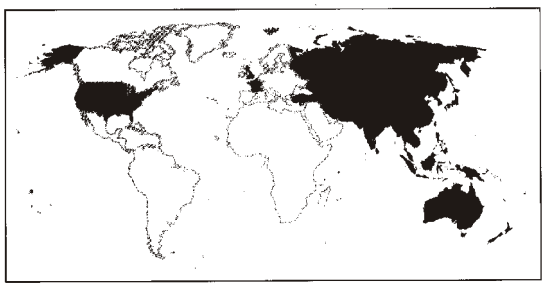

The shaded areas of the map indicate ESCAP members and associate members.

COVER PHOTOGRAPH

An elderly hilltribe woman in Chiang Mai, North of Thailand, engaged in an intricate hand embroidery work (Photograph courtesy of UNFPA/CST Bangkok, Ms. Viennarat Chuangwiwat).

Older persons are at the core of this special issue of the *Asia-Pacific Population Journal*, which is dedicated to the topic of "Growing Old in Asia: Implications and Challenges" and was prepared in collaboration with the Asian MetaCentre for Population and Sustainable Development, Singapore.

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Editorial

This special issue of the *Asia-Pacific Population Journal* on "Growing old in Asia: Implications and Challenges" contains a selection of papers presented initially at the International Conference on Population and Development in Asia: Critical Issues for a Sustainable Future held from 20 to 22 March 2006 at Phuket, Thailand.

The Conference was organized by the Asian MetaCentre for Population and Sustainable Development Analysis and was financially sponsored by Wellcome Trust, United Kingdom.

We are especially indebted to Ms. Evi Nurvidya Arifin for coordinating the preparation of this particular issue and introducing the topic, in the first article published in this issue.

The topic of "Growing Old in Asia: Implications and Challenges" is very timely considering the region's notable decline in fertility and mortality over the past 50 years, which has resulted in the irreversible process of population ageing, a new challenge facing Asian countries.

The total fertility rate for Asia dropped from approximately 6 children per woman in the period 1950-1955 to 2.7 children per woman in 1995-2000. Meanwhile, the older population, defined as those aged 60 years and over, increased and is projected to increase at unprecedented rates in the coming decades. During 2000-2050, Asia's population of older persons is expected to grow nearly fourfold (3.8 times), reaching 1.2 billion in 2050 and comprising more than 22 per cent of the total population.

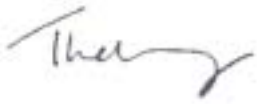
This rapid population ageing in Asia has numerous implications. The provision of medical, public health, social services and other facilities required to address the increasing needs of older persons are likely to exert a severe strain on economies. The rising number of elderly, concurrently with the smaller family size and the declining number of younger population will also mean that there will be a shortage of caregivers for the elderly population, straining the social fabric of our Asian societies.

As it is crucial for Asian countries to recognize the significance of population ageing and start formulating policies for the elderly, this issue of the *Asia-Pacific Population Journal* is aimed at contributing to this timely discussion with forward-looking articles, examining this issue from a variety of angles.

A set of documents included in this issue, touching upon various dimensions of population ageing, will also be useful inputs for the regional review of implementation of the Madrid International Plan of Action on Ageing (MIPAA) that ESCAP will conduct in 2007.

Also, do not miss our popular Viewpoint column, which this time, focuses on the ongoing demographic transition and the many windows of opportunities, opening and closing across the region within the span of a few decades – a topic closely related with population ageing and its implications. Our occasional book review column, featuring an important publication released recently by the United Nations Population Fund (UNFPA) on Population Ageing in East and South-East Asia is another welcome addition to this special issue.

Wishing you pleasant reading,



Thelma Kay

Director

Emerging Social Issues Division

Abstracts

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Growing Old in Asia: Declining Labour Supply, Living Arrangements and Active Ageing 17

This paper serves as an introductory paper to the four papers published in this special issue of the *Asia-Pacific Population Journal* (APPJ) on "Growing Old in Asia: Declining Labour Supply, Living Arrangements and Active Ageing". Population ageing is expected to result in an ageing workforce and in a significant slow-down in the growth of the working-age population. Together with lower participation rate of the elderly population in the labour market, ageing of the workforce will reduce the aggregate labour force participation rate in Asia, as it is the case currently in China. The declining labour supply is the first theme highlighted in this special issue. As family has traditionally been the pillar of support for older persons in Asia, the second theme in this special issue is the welfare of older persons themselves, particularly with respect to the role played by their families as regards their living arrangements. The third and last theme focused upon in this paper is active ageing as a means to improve the welfare of the booming elderly population.

Population Ageing and Labour Supply Prospects in China from 2005 to 2050 31

Increasing life expectancy and rapid fertility decline in China since the 1970s have accelerated the pace of population ageing, fueling the prospects of an ageing workforce and a significant slow-down in the growth of the working-age population. The present paper examines the trend of labour supply in China over the next 45 years under alternative fertility scenarios, taking into account the demographic composition effect and potential trends of the age-and sex-specific

labour force participation rates. The main finding of this paper is that the labour supply contraction will accelerate from 2020 onwards in response to population ageing and the probable attrition of the labour force participation rate of the young population. Relaxing the current one-child policy may moderate the adverse labour market consequences by increasing the base of the working-age population and decelerate the pace of population ageing.

With successive decline in fertility-mortality parameters and added life span, India and Pakistan are gradually becoming young and old simultaneously. These changes however underlie many complex issues. Young people, for example, look for good quality employment, while older persons seek a secure later life. Using host of macro and micro details, this paper argues that the current economic regime in these two countries does not fully conform to those realities. With declining employment elasticity, job markets in both the countries are likely to shrink – leaving most of the labour market entrants to wait longer for better jobs or contend with low wages in informal employment that would help them survive. Undoubtedly, a situation like this may not allow many care providers to find sufficient transferable resources for their older dependents. This exposes older persons to greater vulnerability. The paper therefore suggests creating mechanisms to ensure old-age security with finances drawn from a mix of public and private sources including taxes on a range of products that are hazardous to health.

With rapid population ageing in many developing countries, the issues of living arrangement and socio-economic well-being of older persons are becoming increasingly important. The process of ageing in Indonesia, particularly among the Javanese, the largest ethnic group in Indonesia, is just beginning to accelerate. Traditionally, Javanese children have the obligation to take care of their parents in their old age. However, the processes of urbanization, industrialization and migration are having an impact on the Javanese society. This paper addresses the living arrangement of elderly and their socio-economic well-being in the province

of East Java, – which has the second oldest population in Indonesia and is one of the home-provinces of the Javanese – since these factors are of vital importance in countries which do not have a well developed social security system. The paper also takes into account regional disparities within the province. Three different districts (regencies of Pacitan and Malang and the city of Surabaya, capital of the province) were selected to present a spectrum of populations; from those which have become "Old before getting rich" to those that have become "Rich before getting old". Using the 2002 Indonesian National Socio-economic Survey data set, this study provides representative figures at the district level on the pattern of living arrangement and welfare of older persons aged 60 years and above.

The major findings are: the majority of elderly still co-reside with at least one child; urban elderly (living in Malang and Surabaya) are more likely to live with children, while rural elderly (living in Pacitan) by contrast, are more likely to live alone. Independent living arrangements are more likely among older persons actively participating in the labour market.

Attributes of Active Ageing among Older Persons in Thailand: Evidence from the 2002 Survey **113**

This study attempts to identify and estimate active ageing attribution among older persons in Thailand using the concept of "Active Ageing" suggested by the World Health Organization. Data for this study came from the 2002 National Survey of the Elderly in Thailand, conducted by the National Statistical Office and covering 22,825 persons aged 60 years and over. Sample weights were applied to make the samples nationally representative. Data were analysed using descriptive statistics with cross-tabulation to explore three main dimensions of active ageing: health, community participation and security, besides the active ageing index.

Among important findings highlighted by this paper were: one fourth of the Thai elderly had poor health and more than half had a low level of community participation, whereas most had a moderate to high level of security. When these three dimensions were compiled, the Thai elderly had an active ageing attribution at a moderate level. Active ageing groups were found mostly among males, "younger" and married elderly, with a rather high prestige occupation and high levels of education, suffering from no chronic illnesses. These findings suggest that, in order to promote active ageing, one should especially focus on elderly women, oldest old, older persons suffering from chronic illnesses, as well as uneducated or unemployed elderly.

Population Ageing and Demographic Dividends: The Time to Act is Now

The prospects of ageing may seem relatively remote in many developing countries, but delay could prove to be very costly.

By Andrew Mason*

Every country in the Asian and Pacific region is in the midst of a demographic transition that is producing large changes in age structure with important implications for economic growth and standards of living. In the early stages of the transition, high fertility and declining infant and child mortality produce a bulge in the population at young ages. The middle of the transition is marked by an increase in the share of the population concentrated at the working ages as large cohorts of children reach adulthood and as the relative number of

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children are depressed by fertility decline. At the end of the transition, the share of the older population increases. In part, this is a consequence of continued reductions in mortality rates, but of greater consequence are the low fertility rates that characterize the final stages of the demographic transition.

The details of the demographic transition vary from one country to the next. In many Asian and Pacific countries, the population in the working ages is growing quite rapidly. India, as we will see in more detail below, is a case in point. Many other countries, mostly in East and South-East Asia, are further along in their demographic transitions and, thus, are experiencing or will soon begin to experience rapid growth in their older populations. Japan is now the oldest population in the world, but others are catching up to Japan in large part because their fertility rates have dropped rapidly and to very low levels. Singapore's total fertility rate (TFR) has reached 1.2 births per woman and the Republic of Korea has the lowest fertility rate in the world – slightly less than 1.1 births per woman. China's TFR is somewhat higher than these extreme cases – 1.6 births per woman (Population Reference Bureau, 2006). Even so it will soon begin to experience rapid ageing. Just how rapid is unknown and will depend in part on how quickly China moves to relax the one-child policy.

The economic significance of these changes in age structure and the implications for development policy are the topics to which we now turn.

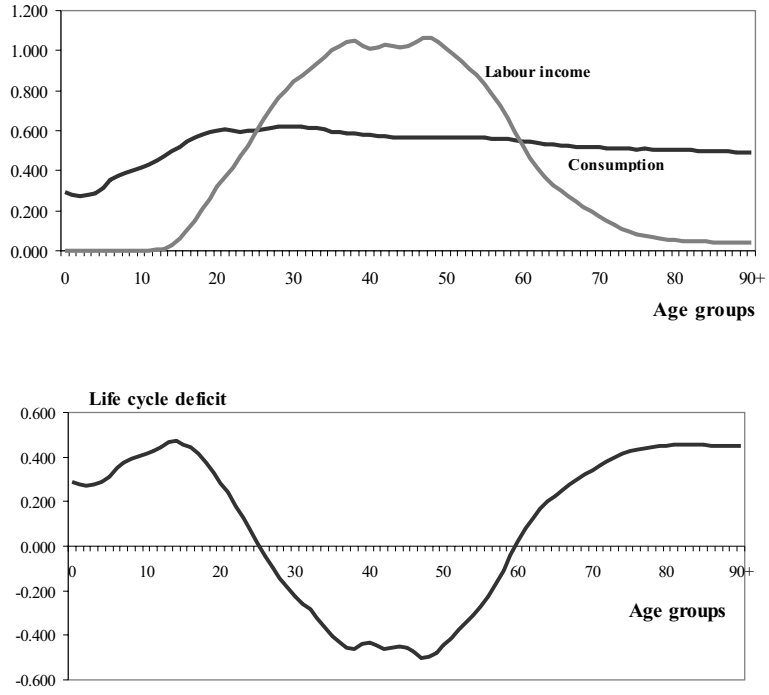
The economic life cycle

The economic life cycle is fundamental to understanding how age structure influences the economy. Life begins with an extended period of childhood or economic dependency. Children consume, but they produce little or nothing at all. At some point children become economically independent and begin to produce as much or more than they consume. In contemporary societies, the older ages are marked by another period of dependency as workers withdraw from the labour force.

An estimate of the economic life cycle for developing Asian economies is shown in figure 1.[1] Labour income is a per capita estimate of the return to work effort at each age. It includes the value of production in both the formal and informal sectors and the value of all fringe benefits before taxes. Consumption is a per capita estimate of all consumption by age, including both private and public consumption. To facilitate comparison the consumption and labour income values plotted in the figure are divided by the average income of prime age adults taken to be those in the 30-49 age range. Thus, a peak value of the consumption profile of 0.6 implies that people at the peak age are consuming about 60 per cent of what a prime age adult is producing in that year. The labour income profile incorporates a

variety of behavioural, cultural, institutional and economic factors that influence labour force participation, the relationship between earnings and age, etc. Labour income rises sharply during the 20s and 30s, reaches a peak in the 40s, and then declines rapidly in the 50s and 60s. Consumption is lowest for young children but rises steeply in large part owing to spending on education. The consumption profile peaks near age 30 when the average person is consuming about 60 per cent of the average labour income of adults aged 30-49. Thereafter, the consumption profile declines very gradually with age. Those at age 85 are consuming about 50 per cent of the average labour income of adults aged 30-49. All-in-all, the consumption profile is remarkably flat and very different from the labour income profile.

Figure 1. The economic life cycle, Asian developing country composite



Note: All values expressed relative to simple average of labour income earned between ages 30 and 49. Average of profiles for Indonesia 1996, Thailand 1996, and Taiwan Province of China 1977. See www.ntaccounts.org for sources and methodological details.

The lower panel of the figure, the life cycle deficit, shows the difference between consumption and labour income and provides an empirically-based, continuous measure of economic dependency. Several features of the estimate should be noted. First, the dependent age groups are surprisingly broad. Those aged 25 and younger and 60 and older are consuming more than they are earning through their labour. Based on estimates recently constructed for other countries, these values are not atypical either in low- or high-income countries. Child dependency does not end until the mid-20s and old-age dependency begins in the mid- to late-50s or early 60s. Second, not all dependents are equally burdensome. Adults in their early 20s or early 60s do not produce more than they consume, but they also do not consume substantially more than they produce. Likewise, young children impose a smaller dependency burden than do teenagers who are consuming substantially more in the form of food, clothing and education.

The economic support ratio and the first demographic dividend

A decline in the share of the population concentrated in the life cycle deficit ages has a direct and immediate effect on per capita income . This effect, called the first demographic dividend, can be formalized using simple algebra. First, the age structure of the population is summarized by the economic support ratio defined as the effective number of producers (L) divided by the effective number of consumers (N). The effective number of producers is calculated using the population weighted by the age-specific labour income values shown in figure 1. The effective number of consumers is calculated in similar fashion using age-specific consumption weights. Thus, the economic support ratio (*L/N*) is:

$$\frac{L}{N} = \frac{\sum_x w_y(x)P(x)}{\sum_x w_c(x)P(x)}, \qquad (1)$$

where are age-specific labour income weights, are age-specific consumption weights, and *P(x)* is the population in age group *x.*

Income per effective consumer, a measure of per capita income adjusted for age-variation in consumption, is the product of the support ratio and income per worker:

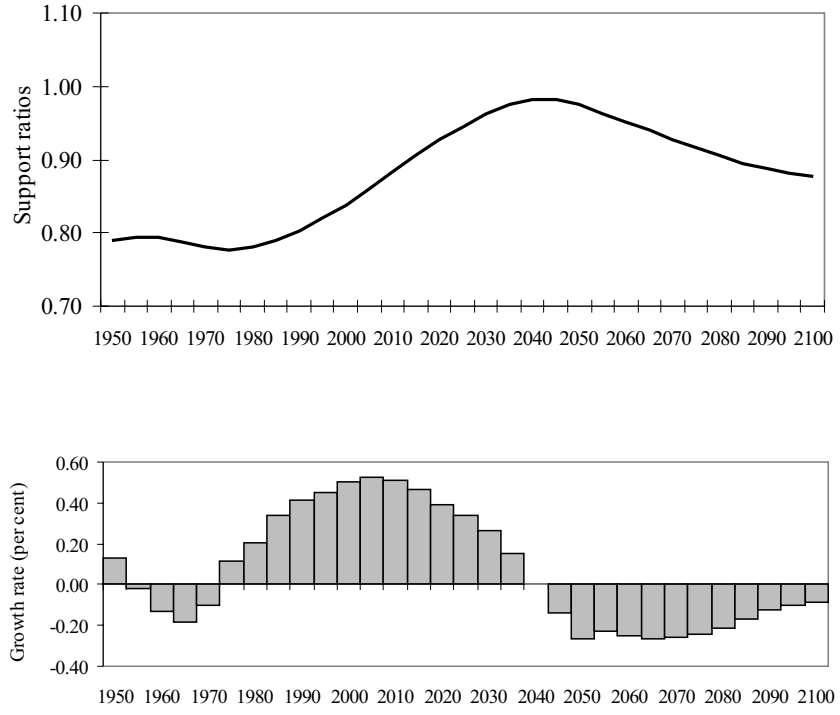
$$\frac{Y}{N} = \frac{L}{N}\frac{Y}{L}. \qquad (2)$$

In growth terms, the growth rate of income per effective consumer depends on an age structure effect and a productivity effect that measures the income (or output) produced by the "average" prime age (30-49) adult:

$$g\left[Y/N\right] = g\left[L/N\right] + g\left[Y/L\right]. \quad (3)$$

Given productivity (output per effective producer), a 50 per cent increase in the support ratio leads to a 50 per cent increase in income per effective consumer. The first dividend, then, is realized when the rate of growth of the support ratio is positive.

Figure 2. The economic support ratios and its growth rate India, 1950-2100



Source: See text.

The economic support ratio and its growth rate are tracked for India in figure 2 over a 150 year period, 1950-2100, that encompasses the major changes in age structure over its demographic transition.[2] In the early part of the transition, the economic support ratio declined because improvements in infant and child mortality led to an increase in the number of child dependents. This served to depress income per equivalent consumer. The dividend period began in 1975 and is projected to last for 65 years. During that time, the first dividend pushes income per effective consumer higher by 26 per cent. Between 1985 and 2030, the first dividend contributes at least 0.3 per cent per year to economic growth. Clearly, the first dividend by itself explains only a modest part of the rapid economic growth enjoyed by India in recent decades. In many other less successful countries, however, the first dividend would account for a larger share of economic growth.

The dividend period does not continue forever. Indeed, the first dividend turns negative as increases in the older population become more important and depress the economic support ratio. This is projected to begin in India around 2045 and continue into the distant future. If the population projections prove to be correct, India's support ratio will decline by about 12 per cent between 2045 and 2100. At that point, India's support ratio will be 13 per cent higher than the low-point realized in 1975, but by 2150 (not shown) the projected support ratio is at a record low.

The window of opportunity and the second demographic dividend

The effect of age structure on the economy would be captured entirely by the first dividend if all of the gains in per capita income were used to increase current consumption. Those alive during the dividend period would be able to achieve higher standards of living, but the gains would be lost to future generations. The possibility of a second dividend arises because some of the gains in per capita income can be diverted to raising productivity and thereby raising standards of living for future generations. This outcome can be realized in a variety of ways. One important possibility is by increasing investment in human capital, increasing investment in physical capital should also be emphasized.

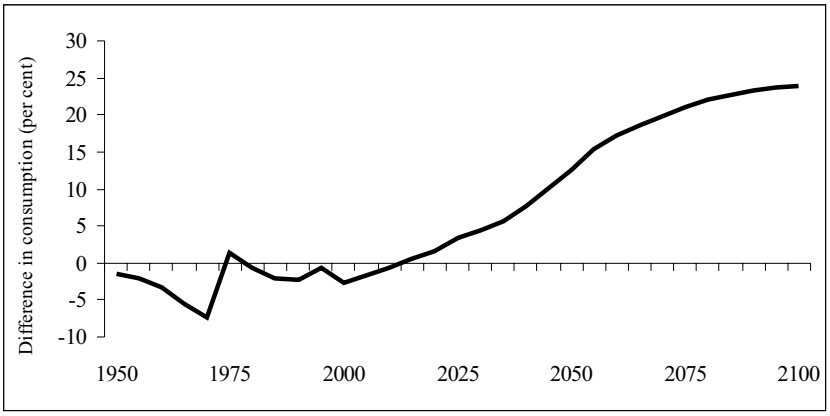
The same demographic changes that lead to a decline in the support ratio have a potentially strong and favourable effect on asset demand. For three reasons the aggregate demand for resources to support retirement rises. The first is simply growth in the size of the older population which, on average, holds much higher per capita assets than do younger members of the population. Second, the decline in the relative size of the dependent child population means that consumption at all ages can rise – including at older ages. This increases the demand for wealth necessary to support old-age consumption. Finally, steady improvements in life

expectancy mean that the duration of retirement is rising and with it the demand for retirement resources.

The rise in the demand for wealth to support old-age consumption may or may not lead to an increase in assets and capital. The reason is that demand for wealth can be satisfied by expanding transfer programmes rather than by increasing saving and investment. Expanded transfer programmes can meet the increased consumption needs of the elderly but they do so by claiming a larger share of the output produced by younger (and future) generations of workers. Relying on transfer programmes, however, will not produce greater investment nor the more rapid economic growth it enables.

If countries rely on capital accumulation to finance old-age consumption, how much more is consumption per effective consumer likely to be? The answer to this question for India is shown in figure 3, which compares two scenarios. In the asset-based scenario the author assumes that the percentage of old-age support provided through assets increased from 40 per cent in 1950 to 65 per cent in 1975. In the transfer-based scenario the percentage of old-age support provided through assets was assumed to have declined from 40 per cent to only 15 per cent. The remaining support comes from some combination of public and familial transfers.[3] The values charted in figure 3 are the percentage gains (or losses) in consumption from the asset-based retirement system.

Figure 3. Increase in consumption, asset-based retirement system versus transfer-based retirement system



Source: See text.

During the transition in the old-age support system (1950-1975) consumption must be reduced (and saving increased) under the asset-based scenario. The greatest sacrifice comes in 1975 when consumption is 7 per cent lower under the asset-based scenario than the transfer-based scenario. People alive in 1975 must sacrifice current consumption. Those who are still alive in 1980, 1985, and later years will realize some benefits in the form of higher consumption. The greatest beneficiaries, however, are future generations. People alive in 2100 will enjoy consumption that is higher by nearly 25 per cent.

Implications for policy

The analysis has clear implications for the broad outlines of policy. Above all, a high priority should be accorded to creating an environment conducive to the accumulation of assets. An important part of reaching this goal is to improve the availability and quality of financial services in the developing world. An equally important part of the answer is creating investment opportunities that provide an adequate and reliable rate of return. Although economies are becoming increasingly globalized and barriers to international capital flows are declining, a strong home bias for investors remains the norm. Hence, the economic status of older persons in societies with asset-based retirement systems will depend critically on the ability of these elderly to realize adequate rates of return on their assets.

Delay must be avoided. The prospects of ageing may seem relatively remote in many developing countries, but delay could prove to be very costly. Many of those who will retire between 2040 and 2050, for example, are already entering the workforce. An asset-based retirement system is most easily achieved if they begin to save early in their careers. If workers are not in a position to accumulate assets during their working years, they will face an old-age of poverty and/or dependence. Moreover, as the number of elderly increases in the future, their political power will rise. If they are not in a position to support themselves in retirement, the pressure to implement large scale public pension programmes will increase. Once such programmes are in place, they will undermine efforts to build an asset-based system of retirement.

Acknowledgements

The author wishes to thank Diana Wongkaren and Turro Wongkaren for their assistance with the calculations. The research was supported by a grant from the National Institutes of Health, NIA, R01-AG025488.

Endnotes

1. The profile is a composite based on estimates for three Asian economies: Indonesia in 1998; Thailand in 1998; and Taiwan Province of China in 1977. Details of the estimation methods and sources are available at www.ntaccounts.org.

2. The population data for 1950-2050 are from the World Population Prospects and the projection data for 2050-2100 are from United Nations, 2004.

3. For a detailed description of the simulation model, see Mason and Lee, 2007 (forthcoming).

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Growing Old in Asia: Declining Labour Supply, Living Arrangements and Active Ageing

In the future, Asia will see a surge of smaller families and therefore smaller networks of resources regardless of the living arrangements in place.

*By Evi Nurvidya Arifin**

Several decades ago, the discussion on population and development focused on the large size and high growth rate of the population, resulting from rapidly declining mortality rates and continuing high fertility which leads to population explosion. Controlling of infectious diseases through the diffusion of public health

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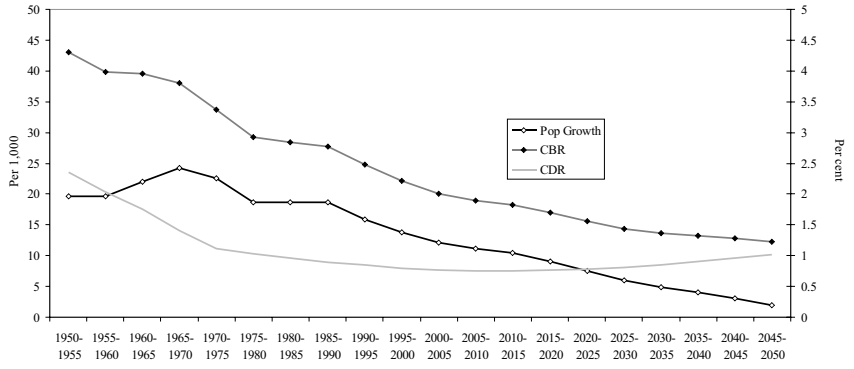
programmes and the availability of modern antibiotics invented in Western countries were some of the key factors in declining mortality rates in developing countries including those in Asia (Hirschman, 2005).

Maintaining this high growth rate of population over a certain period of time would have adversely affected economic growth as a fast increase in the number of population – dominated by a bulk of young population – puts pressure on the allocation of resources. Therefore, attempts were made to slow population growth. Population policies and programmes in many Asian countries focused primarily on reducing the fertility rate and population growth through government-supported family planning programmes and other related programmes such as increasing girls' enrolment in education and women's participation in the labour force.

Prior to the 1970s, Asia's population growth rate reached its peak at 2.42 per cent annually in 1965-1970. Subsequently, the population growth rates in several Asian countries declined rapidly in the period 1970-1980, though remaining high. During the last decade of the twentieth century, as shown in figure 1, the growth rate of the population declined to 1.21 per cent (United Nations, 2005). Hirschman (2005) mentions that fertility decline in the 1960s in several Asian countries was quite unexpected. It spread to many developing countries in Latin America and Africa in the last two decades of the twentieth century. With the expected continuous decline in fertility, the rate of population growth in Asia is projected to decline to almost zero by 2050 (see figure 1).

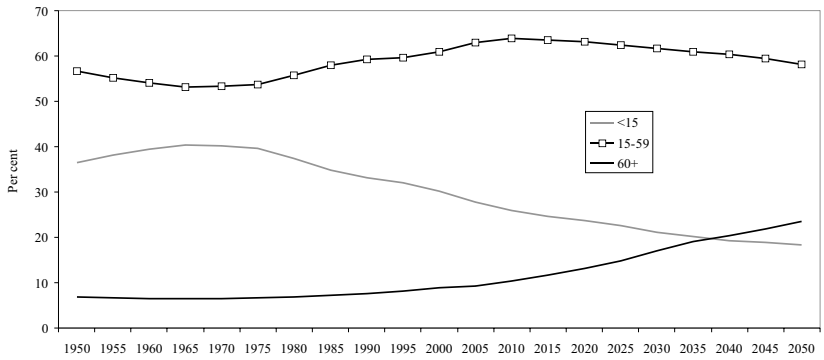
Figure 1. Asia's population growth rate, crude birth rate (CBR) and crude death rate (CDR): 1950-2050



Source: Medium variant (United Nations, 2005), http://esa.un.org/unpp.

The rapid decline in fertility and the increase in life expectancy have transformed the population structure from a triangular population pyramid to a more cylinder one. When the age composition in Asia had a triangular pyramid shape between 1950 and 1975, the share of young population ranged between 35 and 40 per cent of the population and it reached its peak in the last half of 1960s at around 40 per cent of the population. Since then it has been decreasing and it will approximately reach below 20 per cent of the population by 2050. In contrast, as seen in figure 2, the share of the older persons (those aged above 60), has been accelerating since the 1990s. The proportion of older persons will exceed that of the young population by 2040.

Figure 2. Asia's age-specific population structure: 1950-2050



Source: Medium variant (United Nations, 2005), http://esa.un.org/unpp.

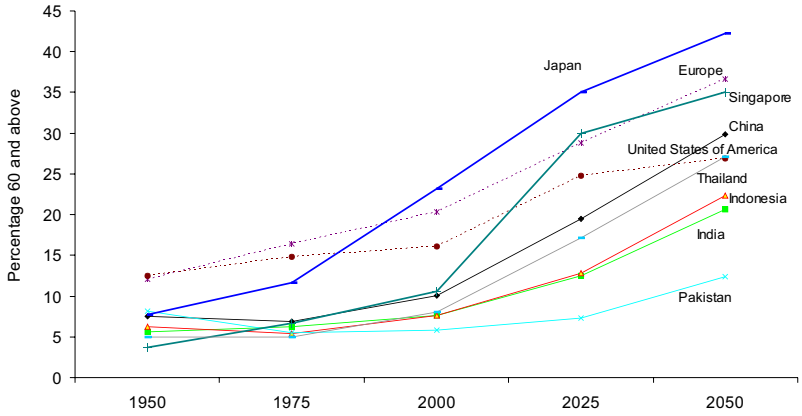
Based on the report of the United Nations on population ageing (2001), the number of the population aged 60 years and over has tripled over the past 50 years. Throughout the world, there were only 205 million older persons in 1950 with three countries each housing more than 10 million of them, namely China (42 million), India (20 million), and the United States of America (20 million). In other words, the two largest Asian countries accommodated about one third of the world's entire elderly population. Some 50 years later, the number of older persons increased threefold to about 606 million with more countries lining up as having more than 10 million older persons.

Asia is likely to be home to the largest portion of the world's elderly population by the first half of the twenty-first century. By 2050, the total number of older persons is projected to reach nearly 2 billion and by that time Asia will

accommodate about 1.2 billion older persons, that is about 62.5 per cent of the world's entire elderly population. Because of their large population size, China will count around 437 million older persons; India, 324 million; Indonesia, 70 million; and Pakistan, nearly 48 million. In 2005, the first wave of the post-independent-era Indonesian older persons joined the world's greying society. In the United States, the first baby-boom generation[1] entered this same greying group in 2006. In addition, the speed of ageing will be faster in Asia than in the more developed countries. As seen in figure 3, Japan and Singapore are examples of rapid population ageing. In 2000, the proportion of elderly persons in Japan had surpassed the proportion of elderly persons in Europe. By 2025, the proportion of elderly in Singapore is expected to be higher than the proportion of elderly in the United States and Europe.

Meanwhile, China's greying population is expected to exceed 25 per cent by 2050, surpassing the proportion of persons in the same age group in the United States. Interestingly, Thailand's ageing population will grow alongside that of China and reach the same level as the proportion in the United States by 2050. By that time, in India and Indonesia older persons will represent about one fourth of their population. Among South Asian countries, Pakistan will emerge as an ageing country in the twenty-first century.

Figure 3. Projected trend in ageing in several major Asian countries compared with Europe and the United States in 1950-2050



Source: United Nations (2001).

Note : Percentage of population aged 60 years old and over.

In short, the population age structure in many Asian countries is going through a major transition, though countries are at very different stages in this transition. Some are in the middle of the demographic transition; some others have completed it and are now facing the challenge of ageing. The population and especially the labour supply of the countries which have completed their demographic transition will begin to decline and the dependency burden will increase. This will exert a significant strain on each country's economy.

For example, the study by Xiujian Peng and Dietrich Fausten on China published in this special issue of the *Asia-Pacific Population Journal* (see pages 31-62) shows that stagnant growth of the working age population combined with the declining aggregate labour force participation rate will exert a downward pressure on labour supply. The reduction of available labour has potentially important adverse implications for economic growth. The current liberalization of the strict population control policy may help to decelerate the rate of population ageing, slow down the decrease in the labour force and mitigate the adverse prognoses for macroeconomic growth. However, any such liberalization counteracts the original object of China's family planning policy of controlling population growth. The potential conflict between achieving a desirable demographic structure and a desirable population size poses a dilemma for policy makers in China.

A different case of the labour supply is shown by Alam and Karim in the third paper published in this same special issue (pages 63-92). The authors examine the implications in having both rising numbers of young and old population simultaneously in India and Pakistan – countries exhibiting relatively high levels of fertility as well as rising longevity and low productive employment opportunity.

Labour supply is the first important theme highlighted in this special issue. The second important theme is the well-being of older persons themselves, particularly with respect to their living arrangement, as analysed by Evi Nurvidya Arifin in the fourth paper published here (pages 93-112). Kattika Thanakwang and Kusol Soonthorndhada in the fifth and final paper (pages 113-135) focus yet on another theme; active ageing as a means to improve the welfare of the booming elderly population.

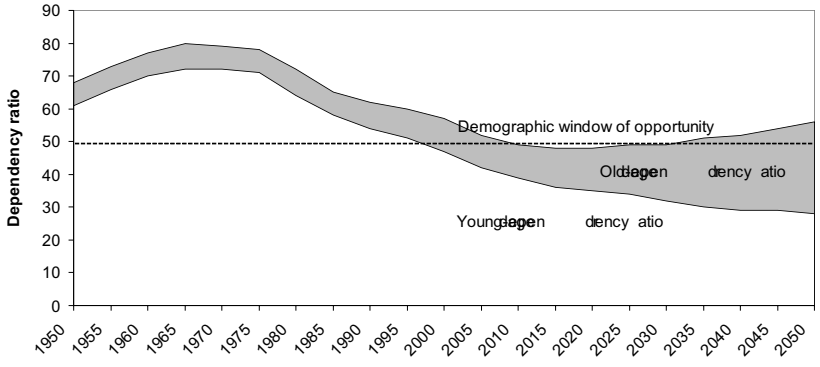
All of the four papers included in this special issue are based on quantitative approaches applied to various surveys and censuses. The strength of quantitative analysis lies in its ability to better represent a region or subregion under study, though it also has limitation. The present papers can also contribute to strengthening the database on population ageing in Asia, particularly in regions where information on this issue is still rather inadequate. For example, Alam and

Karim point out to the lack of access to readily available data on elderly persons in Pakistan. In this special issue, variations within single country are also taken into account, particularly with respect to the analysis of living arrangement in Indonesia by Arifin and the attributes of active ageing among Thai elderly by Kattika and Soonthorndhada.

Labour supply prospects in ageing society

Population ageing is expected to result in an ageing workforce and a significant slowdown in the growth of the working age population, a proxy for supply of labour. It can also have a fundamental impact on the relative proportion of the working age and dependent population within a community. Asia's total dependency ratio in the last 50 years of the twentieth century formed an inverted U-shape like figure (see figure 4), in which the ratio at 70 in 1950 kept increasing to reach its peak of 80 in 1965, before declining to 57 in 2000. Based on the United Nations medium variant population projection, in the next 50 years the ratio will evolve to form a U-shape pattern where the dependency ratio declines steadily and reaches the threshold of the demographic window of opportunity just before 2010. It will decline slightly further and reach its lowest peak at 48 between 2010 and 2015 before increasing again to close the window approximately in 2030. In other words, the span of the demographic window of opportunity in Asia, a once-in-a-lifetime opportunity to enhance the productivity of the economy and to prepare for the management of ageing issues, will probably last for two decades only. The benefits from the demographic window of opportunity are not

Figure 4. Trend in cumulative young and old dependency ratio in Asia: 1950-2050



Source: Medium variant (United Nations, 2005), http://esa.un.org/unpp.

automatically generated. Appropriate policies and enabling conditions are required for these benefits to be realized.

The timing of the transition towards the opening of the demographic window of opportunity differs across countries depending on the speed of decline of the fertility and mortality rates. The four largest countries in Asia can be used as an illustration. The demographic window opened in China since 1990, earlier than Indonesia and India, owing to the impact of their one-child policy. China's demographic window of opportunity will close approximately in 2030. The demographic window of opportunity opened in Indonesia in 2005 and will last until 2035 or 2040, depending on the fertility scenarios that will unfold (Ananta, Arifin and Bakhtiar, 2005). India will see its demographic window of opportunity opening in 2020 and closing by 2050. Meanwhile, Pakistan will experience this once-in-a-lifetime opportunity starting from 2035. Thailand has been experiencing it since 1995 and will probably see it end by 2025 (United Nations, 2005).

Population ageing will slow down the growth of the working age population in Asia, which will expand by 0.7 per cent annually only for the period 2000-2050. This is much slower than the annual growth of 2.3 per cent witnessed in the past five years. This working age population will begin to shrink in 2050. Peng and Fausten reveal that in China the working age population, aged 15-64 years, will reach a peak of 1,001 million around 2015. In Indonesia, this productive group will reach its peak between 2035 and 2045 (Ananta, Arifin and Bakhtiar, 2005). Based on the medium variant of the United Nations World Population Prospects (2005), India will dominate the world's labour supply by 2050 as the size of its working age population will reach a peak of 1,064 by 2050. Pakistan's working age population will override that of Indonesia by 2050 (205 million for Pakistan compared with about 185 million for Indonesia). The working age population may continue to rise in Pakistan beyond 2050. In contrast, by 2050 Thailand will be experiencing a contraction of its working age population which will have reached its peak of nearly 50 million in 2035.

Peng and Fausten's paper illustrate the significant impact of various regimes[2] of fertility decline on population ageing in China, based on different ageing scenarios and the changing labour force participation rates. The authors found out that the proportion of older persons in the total population increases most rapidly under the low fertility scenario. It reaches 28.1 per cent in 2050, compared to 24.8 per cent, 23.6 per cent and 18.4 per cent in the same year for the following scenarios, respectively: constant fertility scenario, medium variant scenario and high fertility regime scenario. In other words, by 2050 the difference between the low and high fertility scenarios on the share of older population in the total

population amounts to a remarkable 35 per cent. This significant difference in the ageing proportion may influence the supply of and demand for labour, good and services. Since the participation rate of older persons is much lower than that of the prime-age labour force, Peng and Fausten demonstrate that ageing of the workforce will reduce the aggregate labour force participation rate in China. With declining participation in economic activities of old persons, it may not be implausible to expect high old-age poverty. Alam and Karim in the third article published in this issue of APPJ point to the low economic participation of older persons and highlight serious poverty-related issues in most major states of India. Furthermore, they argue that India and Pakistan are different from many of the fast greying societies. These two countries will remain both young and old for most of this century. The fast decline in fertility, the slow but definite narrowing in fertility and mortality differentials, as well as the past high fertility have created a bulge of young and middle-age population as well as reproductive-age population. An increase in life expectancy in higher age groups and a fast decline in fertility have resulted in a visible growing number of elderly. On the other hand, the fast-emerging market in India and Pakistan is without a credible social security system for this segment of the population and the deprived. Job opportunities in high-productivity employment are decelerating, and this situation in turn aggravates the risk of these people falling further into poverty. The current economic regimes in the two South Asian countries do not seem to have much to offer to the young and old groups of the population. The combination of rising numbers of young and old population and low productivity, as argued by Alam and Karim, will result in a mismatch between the changing demographics of the two countries and their emerging economic regimes.

Living arrangements

Rapid population ageing in Asia is accompanied by rapid changes in socio-economic and political developments. This will in turn affect living arrangements of older persons while family has traditionally been the pillar of support for this segment of the population in Asia, some studies have shown that modernization and urbanization tend to affect the level and quality of this familial support.

Living arrangements of older persons vary greatly among countries and regions owing to different levels of development (Bongaarts and Zimmer, 2001). Living with a child or grandchild is the most common type of arrangement among elderly in the region, which is similar to that in Latin America, the Caribbean and Africa, whereas in Europe and the United States, elderly persons most commonly reside with their spouses, in couple-only household, or alone. In Africa and Asia,

on average about three quarters of those aged 60 years and over are living with a child or grandchild. In Latin America and the Caribbean, on average the proportion of elderly co-residing with their children was about two thirds. In Europe, by contrast, the average was about one fourth.

Earlier research has found evidence of a trend towards separate residence of older persons in developed countries and in a few developing countries, particularly in Eastern and South-Eastern Asia. Indeed, there is an emerging global trend towards independent forms of living arrangements among older persons – alone or with spouse only – and a corresponding decline in co-residential arrangements. Simultaneously, available evidence shows that in many developing countries, the magnitude of changes has been relatively small so that a striking contrasts between developed and developing countries will persist for many years. For example, Alam and Karim in this special issue of APPJ show that in rural India, the percentage of elderly persons living with their spouse increased from 9.5 per cent in 1986-1987 to 14.2 per cent in 1995-1997. Furthermore, they underscore that in Pakistan, interestingly; the proportion of elderly persons living with spouse only was even higher than in India, standing at 19.2 per cent for female and 30.9 per cent for male.

In general, co-residence with children continues to be the single most important source of living arrangement for the elderly persons which belies the fear that parents are deserted by their children, the latest being thought to be increasingly mobile in terms of social, economic and geographical conditions. In countries such as China, some evidence of declining levels of familial support have surfaced due to the effects of massive rural-urban migration of young adults, and changes in occupational structures (Yi and George, 2000). Alam and Karim note that filial dependence may not remain an option for many elderly in India. With family members participating increasingly in the labour force, other care-giving alternatives are yet to catch up in India. In Taiwan Province of China, the percentage of older persons living independently (alone or with a spouse only) has changed drastically, rising from 9 per cent in 1976 to 38 per cent in 1996 (Kan, Park and Chang, 2001). However, evidence also suggest that Asian families are adapting to changing economies and that elderly's general well-being is not declining. Research on intergenerational transfers in Indonesia; Malaysia; the Philippines; Singapore; Taiwan Province of China and Thailand, has shown high-levels of intergenerational support for elderly parents either via co-residence or the transfer of goods and services. To a certain extent, Frankenberg, Chan, and Ofstedal (2002) found very high-levels of family support, as measured by rates of co-residency in Asia. Approximately 80 per cent of Singaporean elderly lived with

at least one child, while 70 per cent of Indonesians elderly and nearly three quarters of the elderly in Taiwan Province of China lived in such an arrangement. Elderly living alone represented only a small fraction, 6.2, 5.3 and 6.7 per cent, respectively. In Thailand, 4.3 per cent of elderly persons lived alone and 74 per cent resided with at least one child. However, the proportion of those living alone among Thais was increasing. Kattika and Soonthorndhada found that 6.2 per cent of them lived on their own.

Differences in living arrangements of older persons are also observed within a single country. For example, in this special issue of APPJ, Arifin explores differences in living arrangement of the elderly in three different districts of East Java, Indonesia a province with the largest proportion of older persons in the country, taking into account the effect of demographic and socio-economic conditions and the general well-being of elderly. The Regency of Pacitan is the home to the oldest population in the province of East Java, with a percentage of persons aged 65 and above standing at 10.1 per cent in 2000. Pacitan is also the poorest district in the province having the lowest gross regional domestic product and an urbanization rate of only 10 per cent in 2000. Thus, Pacitan has "become old before getting rich". By contrast, the city of Surabaya is fully urbanized and considered as the second biggest city in Indonesia. However, the proportion of elderly is lowest (3.6 per cent) as a result of a big influx of migrants. The per capita gross regional domestic product of Surabaya is the second largest in the province. Contrary to the situation in Pacitan, Surabaya has "become rich before getting old". On the other hand, the Regency of Malang is a district in transition. The ageing proportion, urbanization rate and per capita gross regional domestic product lie between those of Pacitan and Surabaya. Its urbanization rate nears 50 per cent and its per capita gross regional domestic product is about twice that of Pacitan. The percentage of older persons co-residing with children was found to be higher in districts at more advanced stages of economic development (in Malang and Surabaya). In rural areas, elderly parents were less likely to co-reside with their children. To sum up, the urbanization and modernization did not systematically prevent older persons from co-residing with their children, although Indonesia does not provide any financial incentives to encourage co-residence.

Active ageing

Active ageing is the concept promoted by the World Health Organization (WHO) in response to the rapidly growing number of persons aged 60 and over. This notion is well-known in the field of gerontology. Its aim is to preserve the active role of elderly persons in the society (Mandin, 2004). According to WHO ageing should be viewed as a positive experience, therefore living longer has to go

along with continuing opportunity for health, participation and security. WHO defines "active ageing" as "the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age". The word "active" refers not only to the ability of being physically active and participating in the labour market, but also refers to the continuing participation in social, economic, cultural, spiritual and civic affairs. This definition encompasses all individuals across all communities. Retired persons, disabled and ill individuals, for instance, can still contribute to their families or communities. Also the definition allows for people to realize their full potential for physical, social, and mental well-being throughout their life course while adequate protection, security and care should be provided to them in times of need (WHO, 2002).

Based on the above-cited concept of WHO, various key direct and indirect determinants should be considered in a policy framework for this concept to be realized. Health and social service system, health-seeking behaviours, personal factors, physical, social and economic environments (see figure 5) are either direct or intermediate determinants.

Figure 5. The determinants of active ageing

Source: World Health Organization (2002).

By contrast, culture and gender are among the indirect determinants of active ageing. Cultural values and traditions determine many aspects of ageing issues. Different cultures have different social perceptions of the value and benefits of old age. In many African and Asian countries, older persons are characterized as "people with knowledge", although this value is eroding in many cultures. Cultures also affect the living arrangement preference for elderly, whether they co-reside or not with children, as well as their health-seeking behaviours. In many societies, gender differentiates social status and access to certain things such as education, meaningful work, food and health.

In order to better understand this complex issue of the determinants of active ageing, Kattika and Soonthrondhada in this special issue focus on measuring active ageing, based on the concept promoted by the World Health Organization. The authors use elements of health, community participation and security as indicators of a proposed active ageing index. According to their findings, older persons in Thailand rank at a moderate level in terms of active ageing attribution. The active ageing groups mostly males, married elderly, having more prestige occupations and education, and no chronic illnesses. They found that in Thailand only one fifth of older persons had made some kind of preparation for their economic well being and health in old age. Furthermore, one fourth of Thai elderly was found to be in poor health, and more than half of them participated in their communities at a low level whereas most of them had a moderate to high level of security. These findings suggest that, in order to promote active ageing, more support and emphasis should be placed on elderly women, the oldest old, elders suffering from chronic illnesses, as well as uneducated or unemployed elderly.

In the future, Asia will see a surge of smaller families and therefore smaller networks of resources regardless of the living arrangements in place. Because future cohorts of older adults in these societies will have higher levels of education and standards of living, there are some concerns that traditional support for elderly may fade. Therefore, promoting active ageing may be one important means to reduce the dependence of older persons on the younger population.

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Endnotes

1. The baby-boom generations in the United States were the generation of people who were born between 1946 and 1964.

2. Detailed information on these four scenarios of fertility decline can be read in Peng and Fausten's paper in this edition.

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Population Ageing and Labour Supply Prospects in China from 2005 to 2050

As population ageing becomes increasingly prominent, the annual supply of new labour will start to decline sharply in 2025 in response to the low fertility of the 1990s.

By Xiujian Peng and Dietrich Fausten*

Increased life expectancy and rapid fertility decline since the 1970s have combined to create a very rapid rate of population ageing in China. These demographic developments are expected to result in an ageing workforce and a significant slow-down in the growth of the working-age population. According to the United Nations medium variant population projection, the size of the working age population will increase only slightly over the next 10 years before beginning to shrink soon after 2020. Furthermore, since the participation rate of the elderly population is much lower than that of the prime-age labour force, ageing of the workforce will reduce the aggregate labour force participation rate (ALFPR).

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Stagnant growth of the working-age population combined with the declining ALFPR will put downward pressure on labour supply.

It is improbable that the demand for labour will fall to match prospective contractions of labour supply (McDonald and Kippen, 2001). In fact, there are sound reasons for believing that labour demand will rise for years to come (Tsay, 2003). Hence, the reduction of available labour has potentially important adverse implications for economic growth (Peng, 2005). Government officials and scholars are, consequently, eager to identify suitable strategies to cope with population ageing. A common suggestion from scholars is that liberalization of the strict population control policy may help to decelerate the rate of population ageing, slow down the decrease in the labour force and mitigate the adverse prognoses for macroeconomic growth. However, any such liberalization will counteract the original object of China's family planning policy by increasing population growth. The potential conflict between achieving a desirable demographic structure and a desirable population size poses a dilemma for policy makers.

The present paper examines the future trend of labour supply in China over the period 2005 to 2050 under alternative fertility regimes. It investigates the impact of different age structures (demographic composition effects) on future labour supply and the implications of changes in the current level of the labour force participation rate. The authors' analytical approach is similar to that of McDonald and Kippen (2001). However, international migration is not considered in this paper whereas the impact on labour supply of changes in the age structure is included.

The paper is organized as follows: the next section places the present investigation in the context of the ageing-growth nexus by briefly summarizing major findings about the adverse implications of ageing for macroeconomic performance. The third section discusses the evolution of the working-age population over the period 2005 to 2050 under alternative fertility scenarios. The fourth section explores the effects of population ageing on the labour force participation rate and, therefore, on labour supply. Possible changes in the age- and sex-specific labour force participation rates are investigated in the subsequent section while the final section presents conclusions and policy implications.

Ageing and economic growth in China: Evidence from CGE modelling

The impact of population ageing on economic growth is a matter of deep concern to scholars and policy makers alike. A prominent link in the ageing-growth nexus is the behaviour of labour supply. This link was examined in

an earlier study with the help of a computable general equilibrium model (PRCGEM) to simulate the macroeconomic consequences of population ageing in China during the twenty-first century (Peng, 2005). The quantitative result of that investigation highlights the increasingly adverse growth consequences of a labour supply reduction regime.

More specifically, given the baseline scenario of a constant fertility (at 1.62 children per woman) and an average labour force participation (at the 2000 level of 82.35 per cent) rates, contraction of the labour supply reduces the growth rate of the per capita real GDP by 2.0, 2.6 and 3.0 percentage points annually during the 2020s, 2030s and 2040s, respectively, compared with the growth rate of the first decade of the century. If China's total fertility rate (TFR) were to increase to 1.8 or to the replacement level of 2.1 at the beginning of the century, then labour supply would expand. Provided the rate of productivity improvement is maintained, this expansion would help mitigate the adverse effects of population ageing on macroeconomic growth.[1] If, by contrast, the TFR continues to decline to very low levels (such as 1.35), then economic growth will fall even further. Initially, the reduction in the size of the total population serves to raise the growth of the per capita real income slightly above the baseline scenario (during the first twenty years). However, from the 2030s onwards, even the per capita real income is expected to drop below the baseline level because a low TFR accelerates the rate of decrease of labour supply which, in turn, would slow down the process of capital formation.

Constancy of the ALFPR (at the 2000 level of 82.35 per cent) during the simulation period is a very restrictive assumption. It is highly implausible that China's ALFPR will remain at such a high level throughout the twenty-first century. In the first instance, ageing of the workforce will cause the ALFPR to fall because the participation rate of the elderly population is much lower than that of the prime-age labour force. Second, expansion of educational opportunities will remove large, and possibly increasingly large, numbers of young people from the labour force and substantially reduce their labour force participation rate. Third, the development of a pension system in China, especially in the rural areas, will weaken work incentives for the older age groups and, hence, may reduce the participation rate of the elderly population. Fourth, as affluence increases private spending will be devoted increasingly to luxury goods, including the consumption of leisure. The disposition to enjoy a more casual lifestyle invariably reduces the ALFPR by restricting the total number of hours available for work.[2]

The exceedingly likely reduction in the labour force participation rate, combined with negative growth of the working age population that is driven by low fertility, will put significant downward pressure on labour supply in China. Given

the adverse implications for the macroeconomy of reductions in labour supply, it is important to understand the demographic forces that shape its temporal evolution. These involve prominently the ALFPR and its interaction with the ageing profile of the population. This paper will focus on trend changes in China's labour supply over the period 2005 to 2050 under the assumption of alternative fertility regimes. The authors will explore the effects of demographic shifts on the ALFPR as well as on compositional changes of the labour force that are captured by the age- and sex-labour force participation rates.

Alternative population scenarios and evolution of the working-age population

The rapid population ageing and potential labour supply contraction beyond 2020 are primarily the result of the dramatic decline in fertility rates during the 1970s and 1980s and the low level of fertility in the 1990s. Family planning policy has played an important role in the rapid demographic shift (Hernandez, 1984; Kaufman, Zhang and Zhang, 1989; Wang, Keng and Smyth, 2002).[3] Since its introduction at the beginning of the 1970s there have been about 300 million fewer births than would have occurred if the pre-existing birth rate had been maintained (Wu, 1997).

The significant success of the family planning policy in reducing population growth suggests that the institutional and cultural environment in China is conducive to the pursuit of active population policies. In particular, the Government of China may be able to adjust the fertility rate by relaxing the current one-child per couple restriction. The main issue for scholars and policy makers revolves around whether or not to adjust the current population policy, and how to adjust it.

Choice of population policy

So far there are mainly two views of the future direction of population policy in China: negative population growth strategy and zero population growth strategy, as explain below:

Negative population growth strategy: It has been argued that the large size of China's population has hampered the country's economic growth and development (Zhai, 2000 and 2001; Wu, Wang and Miao, 2004 and Li, X. P. 2002). Therefore, controlling population growth should remain the main objective of any population policy. Secondly, the further increase in the population size that would result from an easing of the current one-child policy will put additional pressure on the labour market and on the ecological environment, and restrain rapid economic growth. These considerations suggest that the fertility rate should

be maintained below the replacement level in the long run. Government should implement a negative population growth strategy in the medium to long run.

Advocates of a negative population growth strategy debate about how far fertility should be reduced. There are two prominent views:

- **Retention of the one-child policy.** The notable success in reducing the fertility rate has been accompanied by significant dispersion in fertility rates between rural and urban areas, and East and West China. This imbalance implies that any relaxation of the one-child policy would cause a new baby boom that would be driven by high fertility rates in many poor and backward areas.
- **Partial relaxation of the one-child policy.** The second view maintains that the total fertility rate should be stabilized in the long run at the average level of the late 1990s, around 1.8. In order to achieve this target, the Government should partially adjust the restrictive one-child policy regime at the beginning of the twenty-first century.

Zero population growth strategy: Other scholars are concerned about the consequences of low fertility and its potentially serious adverse effects on the economy. They vigorously advocate for China to maintain a stable population size in the long run and suggest that policy should aim at raising the TFR to the replacement level of 2.1 or 2.0, and maintaining it at this level. This would require adopting a universal two-child per couple policy at the beginning of the twenty-first century (Li, J.X. 2002)

Fertility scenarios and the proportion of elderly population

Given the population policy choices that are under prominent discussion in China, four fertility scenarios were chosen to capture roughly the major demographic effects of alternative population policy strategies - on the fertility rate, working-age population and age structure. The projection horizon extends to the middle of the twenty first century.

- **Baseline scenario – constant fertility:** The constant fertility variant prepared by the Population Division of the United Nations was chosen as the baseline scenario. In this scenario, the TFR remains at 1.7 until 2050.
- **Scenario 2 – low fertility variant**: In this scenario, TFR decreases from 1.7 (2000 to 2005) to 1.49 (2005 to 2010), 1.41 (2010 to 2015) and further to 1.35 (2015 to 2020) where it remains until 2050. This fertility scenario is approximately consistent with the one-child policy regime.

- **Scenario 3 – medium fertility variant**: In this scenario, TFR increases from 1.7 (2000 to 2005) to 1.74 (2005 to 2010), 1.81 (2010 to 2015), and further to 1.84 (2015 to 2020) where it remains until 2050. This scenario may capture the compromise solution of a partial adjustment to the current one-child policy.
- **Scenario 4 – high fertility variant:** TFR in this scenario increases from 1.70 (2000-2005) to 1.90 (2005-2010), 1.95 (2010-2015), 2.00 (2015-2020), 2.05 (2020-2025), and further to 2.08 (2025 to 2030) where it remains until 2050. This high fertility scenario captures salient elements of the two-child policy option.

The population projections corresponding to the first three fertility scenarios were prepared by the United Nations Population Division in 2004. The last population projection was prepared by Qiao and Chen (2003). Tables 1, 2 and 3 present the profiles for the first half of the twenty-first century of total population size, proportion of the elderly population and working-age population under the four above-cited fertility scenarios.

Total population size

The total population size differs significantly between the four scenarios, especially from 2020 onward. Under constant fertility (TFR = 1.7), total population peaks at around 1,420 million in 2025, declining subsequently to reach 1,326 million in 2050. In the low fertility scenario, where the TFR continues to decline to 1.35 after 2015, total population peaks earlier (in 2020) at around 1,368

Table 1. China's population projection: total population size (million)

Year	**Baseline** (Constant fertility)	**Scenario 2** (Low fertility)	**Scenario 3** (Medium fertility)	**Scenario 4** (High fertility)
2000	1,274	1,274	1,274	1,274
2010	1,353	1,342	1,355	1,358
2020	1,409	1,368	1,424	1,436
2025	1,420	1,364	1,441	1,467
2030	1,419	1,347	1,446	1,488
2040	1,389	1,278	1,432	1,501
2045	1,362	1,228	1,417	1,502
2050	1,326	1,171	1,392	1,498

Sources: United Nations (2005) and Qiao and Chen (2003).

million and declines rapidly to 1,171 million in 2050. By contrast, in the high fertility variant (TFR = 2.08), population reaches a peak of 1,502 million only in 2045. The total population falls to 1,498 million in 2050. The difference in population size between the low variant and high variant projections amounts to 327 million in the middle of the century. In scenario 3 (medium variant), population peaks at 1,446 million in 2030. By 2050, the total population would be 1,392 million. The gap of total population at the middle of this century between scenario 3 and scenario 2 is estimated at 221 million.

Proportion of elderly population and population ageing

The extent and speed of population ageing depend *inter alia* on the fertility level (table 2). None of the four population scenarios allows for changes in the absolute size of the elderly population. The reason is that the time horizon for the present projections is limited to 50 years while the elderly population is defined as the group of persons aged 65 and above. Hence, none of the alternative fertility assumptions can feed into the determination of the size of the elderly population within the time frame of these projections. From the perspective of economic growth, however, important considerations relate also to the proportionate size of the elderly population, not only to its absolute size.

Table 2. Trends of the proportion of older persons in China

(Population aged 65 years and over in percentage)

Year	**Baseline** (Constant fertility)	**Scenario 2** (Low fertility)	**Scenario 3** (Medium fertility)	**Scenario 4** (High fertility)
2000	6.8	6.8	6.8	6.8
2010	8.3	8.4	8.3	8.2
2020	12.0	12.4	11.9	10.7
2030	16.6	17.5	16.3	14.1
2040	23.0	25.0	22.3	18.2
2050	24.8	28.1	23.6	18.4

*Source*s: United Nations (2005) and Qiao and Chen (2003).

The proportion of older persons in the total population increases most rapidly under the low fertility scenario (scenario 2). It reaches 12.4, 17.5 and 28.1 per cent, respectively, in years 2020, 2030 and 2050. In the baseline scenario (constant fertility) and in scenario 3 (medium variant), the proportions of older persons rise to 24.8 and 23.6 per cent by 2050, while in the high fertility regime the proportion of the elderly reaches only 18.4 per cent. By 2050, the difference between the low and high fertility scenarios (2 and 4) of the share of the elderly in the total

population would amount to a remarkable 35 per cent. The differences in the proportion of elderly under the four fertility regimes illustrate the significant impact that fertility choice can exert on future population structure.

Working-age population

The four scenarios provide for the same growth rate of the working-age population during the first two decades because the change in the fertility level can affect the size of the population of working age only after some 15 to 20 years (table 3) and this population is expected to reach a peak of 1,001 million around 2015. According to the low fertility scenario, the working-age population decreases at the fastest rate, falling to 720 million by 2050. Accordingly, continued decline in China's fertility rate to very low levels would lead to a rapidly shrinking labour force, reducing the working-age population by some 17 per cent over 30 years (2020-2050). However, if the Government of China can manage to increase the TFR to the replacement level, for example by implementing a universal two-child policy (scenario 4), then the working population would decline slightly to 940 million in 2050. This would represent a working-age population that would be 69 million larger than in 2000. It implies that by maintaining the replacement level fertility, China can prevent its working age population from declining during the first half of this century.

Table 3. Trends of working-age population in China
(Population aged 15 to 64 years in million)

Year	Baseline (Constant fertility)	Scenario 2 (Low fertility)	Scenario 3 (Medium fertility)	Scenario 4 (High fertility)
2000	871	871	871	871
2010	978	978	978	978
2015	1,001	1,001	1,001	1,001
2020	992	992	992	992
2030	959	934	966	987
2040	870	814	891	947
2050	810	720	845	940

Sources: United Nations (2005) and Qiao and Chen (2003).

The difference in the total size of the working-age population between the four fertility scenarios becomes significant by the middle of the century. For example, in scenario 2 it would be 23 per cent less than under scenario 4 (high

fertility), and 15 per cent less than under scenario 3 (medium fertility). The large differentials in the size of the working-age population demonstrate the potentially substantial impact of population policy on China's future labour supply.

Demographic composition effect and labour supply

Labour supply is determined jointly by the size and the LFPR of the various age and sex categories of the working-age population (McDonald and Kippen, 2001). Since changing age structures affect the age-specific LFPRs, they change the aggregate LFPR (ALFPR) which is a weighted average of the component rates (Dugan and Robidoux, 1999).

$$PR_t = \sum_{i=1}^{j} s_{i,t} PR_{i,t} \quad (1)$$

$$s_{i,t} = WP_{i,t} / WP_t \quad (2)$$

where PR_t is the ALFPR in year t, $PR_{i,t}$ is the participation rate of cohort i in year t, and $s_{i,t}$ is the share of working population cohort i in WP_t, the total working-age population aged 15 to 64 in year t. The authors identify ten 5-year sex-specific cohorts (i =1, 2,…10). Equation (1) shows that changes in the ALFPR reflect either changes in cohort (age-specific) participation rates or changes in the composition of the working-age population – the demographic composition effect. Many social, economic and cultural factors influence the cohort participation rates. In this section we will ignore such changes, leaving the discussion for the next section, and only calculating the demographic composition effect.

Data from China's fifth population census in 2000 show that the ALFPR was 82.35 per cent. Detailed cohort and sex-specific participation rates in 2000 are presented in table 4. The trend of the ALFPR over the half century is estimated by assuming that the cohort's participation rates remain at their 2000 levels ($PR_{i,00}$).

$$\overline{PR_t} = \sum_{i=1}^{j} s_{i,t} PR_{i,00} \quad (3)$$

where $\overline{PR_t}$ is the aggregate participation rate that would have been observed at time t if all cohort participation rates had remained at their 2000 levels. Changes in $\overline{PR_t}$, therefore, reflect changes in the composition of the labour force. Table 4 presents estimates of ALFPR for the baseline scenario (constant fertility). The evolution of the demographic age structure reduces the ALFPR from 82.35 per cent in 2000 to approximately 78.79 per cent in 2050 if the TFR remains at 1.7. The demographic composition effect is 3.6 percentage points. As a result, the labour

force in the baseline scenario will contract to 638 million (table 6). That represents an 11 per cent decline from its level in 2000.

Table 4. Detailed demographic composition effect on aggregate labour force participation rate in China from 2000 to 2050

Age group	2000			2010		2020	
	PR[a] (Per cent)	Source population weights (Per cent)	Contribution to aggregate participation rate (Per cent)	Source population weights (Per cent)	Contribution to aggregate participation rate (Per cent)	Source population weights (Per cent	Contribution to aggregate participation rate (Per cent)
	(1)	(2)	(2)*(1)/100	(3)	(3)*(1)/100	(4)	(4)*(1)/100
Men							
15-19	49.10	5.94	2.92	5.49	2.70	4.44	2.18
20-24	90.23	5.07	4.58	6.25	5.64	4.98	4.50
25-29	97.90	6.52	6.39	5.26	5.15	5.32	5.21
30-34	98.07	7.32	7.18	5.07	4.97	6.02	5.90
35-39	97.89	6.45	6.32	6.21	6.08	5.05	4.94
40-44	97.44	4.96	4.83	6.44	6.28	4.86	4.73
45-49	96.41	5.24	5.05	5.32	5.13	5.93	5.72
50-54	90.90	3.92	3.57	4.27	3.88	6.10	5.55
55-59	80.30	2.89	2.32	4.20	3.38	4.94	3.96
60-64	60.35	2.61	1.57	2.94	1.78	3.79	2.29
Total	87.80	50.93	44.72	51.46	44.98	51.44	44.99
Women							
15-19	51.74	5.56	2.88	4.93	2.55	3.99	2.07
20-24	85.39	5.07	4.33	5.67	4.84	4.49	3.84
25-29	86.66	6.46	5.60	4.89	4.24	4.81	4.17
30-34	87.97	7.18	6.32	4.79	4.22	5.51	4.85
35-39	88.38	6.28	5.55	5.95	5.26	4.75	4.20
40-44	86.25	4.69	4.04	6.25	5.39	4.65	4.01
45-49	79.97	5.03	4.03	5.12	4.10	5.77	4.61
50-54	67.15	3.69	2.48	4.00	2.69	6.01	4.04
55-59	54.57	2.70	1.47	4.08	2.23	4.87	2.66
60-64	38.94	2.41	0.94	2.85	1.11	3.71	1.45
Total	76.68	49.07	37.63	48.54	36.61	48.56	35.87
ALFPR[b]	**82.35**	**100.00**	**82.35**	**100.00**	**81.59**	**100.00**	**80.86**

[a] PR is participation rate.

[b] ALFPR is aggregate labour force participation rate.

Table 4. *(Continued)*

Age group	2030		2040		2050	
	Source population weights (Per cent) (5)	Contribution to aggregate participation rate (Per cent) (5)*(1)/100	Source population weights (Per cent) (6)	Contribution to aggregate participation rate (Per cent) (6)*(1)/100	Source population weights (Per cent) (7)	Contribution to aggregate participation rate (Per cent) (7)*(1)/100
Men						
15-19	4.59	2.25	4.47	2.20	4.26	2.09
20-24	4.49	4.05	4.83	4.36	4.41	3.98
25-29	4.53	4.43	4.99	4.88	4.74	4.64
30-34	5.04	4.95	4.86	4.77	5.11	5.01
35-39	5.36	5.24	4.88	4.78	5.27	5.16
40-44	6.04	5.89	5.42	5.28	5.12	4.99
45-49	5.05	4.87	5.74	5.54	5.13	4.94
50-54	4.83	4.39	6.44	5.85	5.66	5.15
55-59	5.79	4.65	5.30	4.25	5.91	4.74
60-64	5.75	3.47	4.89	2.95	6.43	3.88
Total	**51.47**	**44.20**	**51.82**	**44.86**	**52.04**	**44.58**
Women						
15-19	4.14	2.14	4.05	2.09	3.86	2.00
20-24	4.05	3.46	4.37	3.73	4.00	3.41
25-29	4.09	3.54	4.52	3.92	4.31	3.73
30-34	4.58	4.03	4.41	3.88	4.64	4.09
35-39	4.89	4.32	4.44	3.92	4.80	4.24
40-44	5.60	4.83	4.97	4.29	4.67	4.03
45-49	4.82	3.85	5.30	4.24	4.70	3.76
50-54	4.70	3.16	6.05	4.06	5.24	3.52
55-59	5.76	3.15	5.15	2.81	5.54	3.02
60-64	5.89	2.29	4.93	1.92	6.22	2.42
Total	**48.53**	**34.78**	**48.18**	**34.86**	**47.96**	**34.21**
ALFPR	**100**	**78.97**	**100**	**79.71**	**100**	**78.79**

Source: Data in column one are calculated based on China's fifth population census in 2000 and data for the source population weights for different years is based on United Nations population projection (constant fertility variant) (2004).

Using the same methodology, the authors estimated the demographic composition effects under the other three fertility scenarios and calculated the corresponding ALFPR. The results are displayed in table 5.

Table 5. Demographic composition effects (percentage points) **and trends of aggregate labour force participation rates** (per cent)

Year	**Baseline** (Constant fertility)		**Scenario 2** (Low fertility)		**Scenario 3** (Medium fertility)		**Scenario 4** (High fertility)	
	Demographic composition effects	**ALFPR**	**Demographic composition effects**	**ALFPR**	**Demographic composition effects**	**ALFPR**	**Demographic composition effects**	**ALFPR**
2000	..	82.35	..	82.35	..	82.35	..	82.35
2010	-0.76	81.59	-0.76	81.59	-0.76	81.59	-0.76	81.59
2020	-1.49	80.86	-1.49	80.86	-1.49	80.86	-1.49	80.86
2030	-3.38	78.97	-3.03	79.32	-3.52	78.83	-3.15	79.20
2040	-2.64	79.71	-2.66	79.69	-2.63	79.72	-2.59	79.76
2050	-3.56	78.79	-4.19	78.16	-3.39	78.96	-3.16	79.19

Again, the alternative fertility scenarios cannot display any differences in the demographic composition effect during the initial 20 years. The differences that do emerge during the 2030s and 2040s are not significant in view of slight differences in the age structure. However, the difference becomes significant with the increasing divergence in the age structure. In 2050, the demographic composition effect is 1.03 percentage points larger under scenario 2 (low fertility) than under scenario 4 (high fertility). The most rapid population ageing under scenario 2 reduces the ALFPR to 78.16 per cent. As a result, the total labour force declines to 563 million, 21.5 per cent below its 2000 level (table 6). However, under scenario four characterized by the high replacement fertility rate and relatively slower population ageing, the demographic composition effect is smaller (3.16 percentage points), generating a relatively higher ALFPR (79.19 per cent). As a result, the total size of the labour force will be 754 million in 2050, 5 per cent larger than in 2000.

Changes in the demographic composition of the working population under alternative fertility scenarios feed into the total size of labour force. By 2050, the labour force will be 25 per cent lower in the low fertility scenario 2 than in the fourth scenario. Without the demographic composition effects, that difference would be 23 per cent.

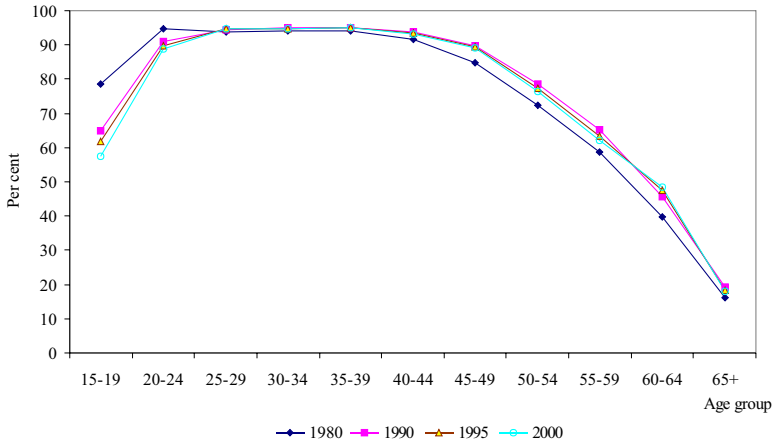
Table 6. Trends of labour force with demographic composition effects
(millions)

Year	Baseline (Constant)	Scenario 2 (Low variant)	Scenario 3 (Medium variant)	Scenario 4 (High variant)
2000	717	717	717	717
2005	763	763	763	763
2010	798	798	798	798
2020	803	803	803	803
2030	757	741	762	793
2040	693	648	710	765
2050	638	563	667	754

Age- and sex-specific participation rates and labour supply

The investigation of the impact of the age structure on labour supply was based on the assumption that age and sex-specific participation rates remain at their 2000 levels. This section examines potential changes in the age- and sex-specific participation rates over that period.

Figure 1. Labour force participation rates in China from 1980-2000

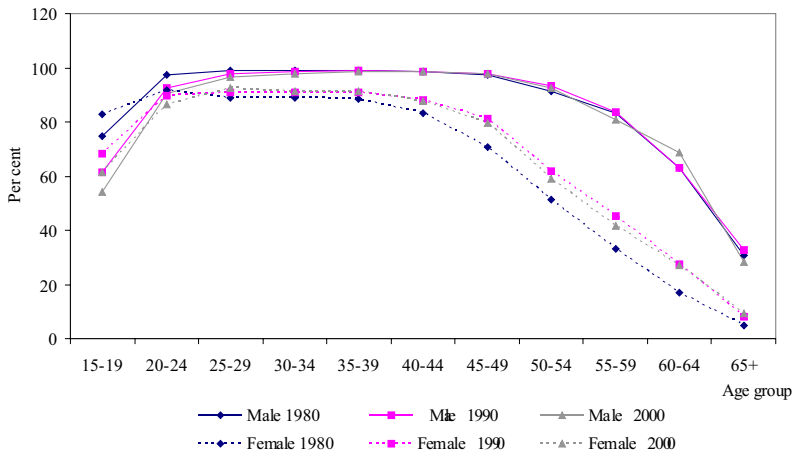


During the 1980s, China experienced an increase in the ALFPR, from 82 per cent in 1982 to 85 per cent in 1990, that was spread across most working age groups. The only exceptions were the relatively young age groups 15 to 19 and 20 to 24, for

whom participation rates dropped (figure 1). Even though the ALFPR declined slightly during the 1990s, it remained at historically high levels. In 1995, it dropped slightly to 84.97 per cent, declining further to 82.35 per cent in 2000. All age groups contributed to this reduction in the ALFPR, but particularly the relatively young age groups whose participation rates displayed a sustained and fast drop.

Comparison of LFPRs by sex indicates that the evolution of the LFPR for women is the main driver for the changes in the ALFPR over the period 1980 to 2000 (figure 2). The LFPR for males remains roughly stable (except for the young age group) while for females, the LFPR increases in all age groups during the 1980s, except for the age groups 15-19 and 20-24, and then declines slightly during the 1990s.

Figure 2. Age-specific LFPR for males and females: China, 1980 - 2000



The historical evolution of age- and sex-specific LFPRs displayed in figure 2 also shows that

- Women's LFPRs are lower than men's in all cohorts (except for cohort 15-19);
- The divergence increases significantly beyond age 45. Women's workforce participation declines substantially at age 45, while men maintain a high participation rate until they reach age 60. The difference in compulsory retirement age between men and women (55 and 50 years, respectively) is one reason;

- Women enjoy lower education opportunities than men because the 15-19 cohort is the only age group for which women show a higher LFPR than men.

Many social, economic and cultural factors affect the age- and sex-specific participation rates. This section explores the nature of changes in those rates during the first half of this century in China.

Labour force participation of the young population

Table 7 compares the participation rates in 2000 of the age groups 15-19 and 20-24 in China with selected countries and areas.

Table 7. Labour force participation rates at ages 15-19 and 20-24 by sex in 2000 (per cent)

Country /area	Ages 15-19		Ages 20-24	
	Males	Females	Males	Females
China	**54.1**	**61.4**	**90.7**	**86.6**
Thailand	38.0	30.9	77.2	66.4
Malaysia	32.3	22.0	85.4	61.5
Philippines	41.7	24.9	78.2	52.
Republic of Korea	11.5	12.4	52.4	60.9
Singapore	18.0	20.1	75.9	78.7
Taiwan Province of China*	20.4	18.5	64.8	61.6
Hong Kong, China	18.1	15.9	75.9	74.7
Japan	18.0	16.0	74.0	74.0
New Zealand	53.7	53.1	79.2	67.1
Australia	54.2	58.4	85	77.5
Canada	51.8	51.8	79.9	73.9
United States	50.2	51.2	81.6	73.1
Sweden	32.0	37.8	70	61.6
Germany	36	29.0	78.0	71.0
Italy	21.9	14.9	63.6	50.2
Greece	15.9	13.4	71.0	68.1

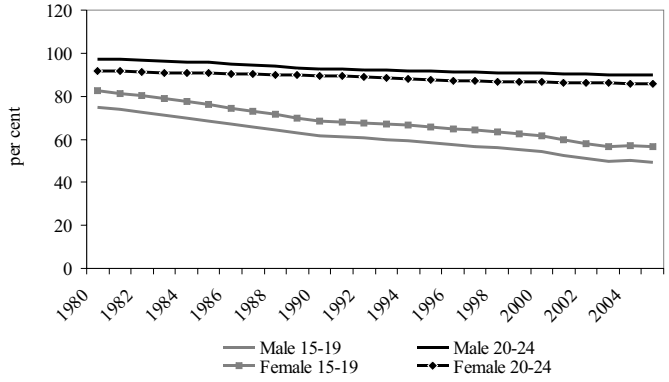
Sources: For Taiwan Province of China, Tsay Ching-Lung (2003); for other economics, ILO (2006).

* 2001 data for Taiwan Province of China.

15-19 age group

The LFPR for this age group (54.1 and 61.4 for males and females, respectively) is very high in China compared with other selected Asian and Western countries and regions. For example, in the Republic of Korea the comparable rates were only 11.5 per cent and 12.4 per cent, respectively. The high participation rate in China reflects the very low rates of participation in education at those ages.[4] As educational opportunities expand, particularly for women, the LFPR of this group would be expected to decline. Indeed, historical data shows that the LFPR of this age group has already declined in China (figure 3). In 2005, these figures were 49.3 and 56.4, respectively. Within 25 years, LFPR of this group has fallen by 34 per cent for males and by 32 per cent for females.

Figure 3. Labour force participation rates of population aged 15 to 19 and 20 to 24: China, 1980-2005



Source: ILO (2006).

The experience of selected Asian countries and areas shown in table 8 confirms the authors' conjecture that labour force participation by this young age group has declined dramatically over the past 35 years throughout the Asian region. In Hong Kong, China it has declined by 68 per cent for males and by 74 per cent for females. Singapore has experienced a similarly dramatic decline. The fall is even more impressive in the Republic of Korea, amounting to 80 per cent for males and 74 per cent for females. In Thailand, the dramatic decline in LFPR occurred after 1990. Within 15 years (from 1990 to 2005), the LFPR for males fell by 51 per cent and by 71 per cent for females.

This historical evidence about the demographic composition of the labour force informs all the labour supply projections that were conducted for the present study. It is assumed that the LFPR of the 15-19 year age group follows its historical trend up to 2005 and declines thereafter at 1.6 per cent annually. This assumption generates LFPRs by 2050 of 23.9 and 29.1 per cent for males and females, respectively, for this age cohort (table A1 provides detailed information). At that time China's assumed LFPRs are comparable to the levels that had been attained at the beginning of the 1990s in Hong Kong, China and Singapore, and in Japan already in the late 1970s. Given the very low participation rates observed for this age group in the East and South-East Asian countries and areas (table 8), this assumption may be an excessively optimistic conjecture.

Table 8. Labour force participation rates at ages 15-19 by sex (per cent)

Year	Hong Kong, China		Singapore		Republic of Korea		Thailand		Japan	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1960	...	...	...	...	...	...	...	...	51.6	49.7
1970	...	...	55.7	43.0	45.9	40.3	77.4	77.2	36.6	35.9
1971	50.4	56.4	...	...	...	...	...	...	...	...
1975	...	...	...	...	46.0	47.5	...	...	...	...
1976	51.4	55.3	44.1	42.2	...	...	...	...	...	...
1980	41.8	40.7	45.8	48.1	27.3	34.4	70.9	71.0	20.3	18.8
1985	35.2	31.5	32.6	33.7	14.5	21.1	69.6	70.7	...	...
1990	29.6	25.8	26.9	28.3	10.8	18.7	67.7	69.4	19.9	17.4
1995	22.6	18.8	20.5	19.1	9.5	14.5	47.5	44.0	18.8	15.8
2000	18.1	15.9	18.0	20.1	11.5	12.4	38.0	30.9	17.4	15.4
2005	15.9	14.9	14.8	15.4	8.8	10.6	33.5	19.8	...	...

Sources: Data for Japan are from the National Institute of Population and Social Security Research, Japan (2006). Other data are from ILO (2006).

20-24 age group

The LFPR for the group 20-24 has also declined in China, but the drop is much smaller than for the age group 15-19. Over the quarter century 1980 to 2005, the rate declined by 7.2 per cent for men and by 11 per cent for women (figure 3). In 2005, the LFPR for men was 89.8 per cent and for women, 85.9 per cent.

Table 9. Labour force participation rates at ages 20-24 by sex (per cent)

Year	Hong Kong, China		Singapore		Republic of Korea		Thailand		Japan	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1980	89.8	80.2	92.5	79.0	76.5	53.5	87.8	80.3	74.7	71.1
1985	88.2	83.4	88.8	78.9	63.3	55.1	90.4	81.2	...	...
1990	85.8	83.2	84.0	80.9	60.2	64.6	91.6	81.7	75.4	75.5
1995	79.2	77.2	76.2	77.2	58.8	66.1	85.7	71.7	75.8	74.2
2000	75.9	74.7	75.9	78.7	52.4	60.9	77.2	66.4	70.2	70.5
2005	70.8	71.8	72.8	77.9	59.1	66.0	77.5	64.4	...	...

Sources: Data for Japan are from the National Institute of Population and Social Security Research, Japan (2006). Other data are from ILO (2006).

Compared with the countries and areas shown in table 7, the LFPR in 2000 of this age group is much higher in China than in the selected Asian and Western countries and regions. The experience of the selected Asian countries and regions in table 9 implies that with the continued economic development in China, the LFPR for this age group will also keep declining. Meanwhile, "as technology advances, and as those with high skills continue to receive high rewards from the labour market, it is likely that young adults will spend more time in acquiring higher levels of formal education" (McDonald and Kippen, page 7, 2001). In all the scenarios of the present paper, the authors assume that the LFPR for this age group maintains its historical trend and continues to decline at 0.3 per cent annually for men and at 0.25 per cent for women until 2050 (changes in participation rates are reported in table A1).

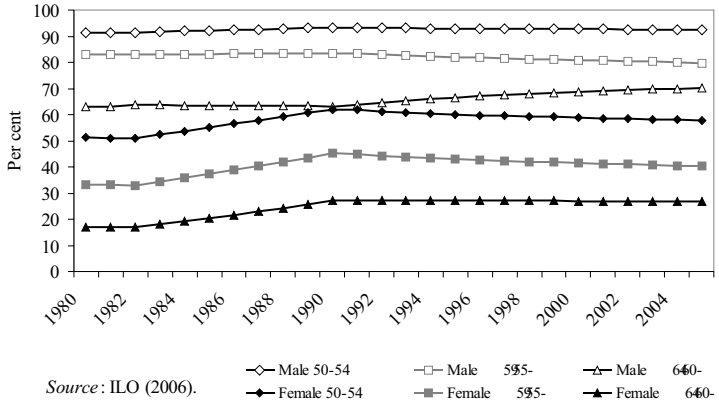
Labour force participation of the older population, 50-64 age group

The distinguishing feature of figure 4 is that the female LFPR for each of the older age cohorts of the population is distinctly and persistently lower than for corresponding males.

Male participation rates

The changes in the participation rate for males aged 50-54 are positive but very modest, increasing from 91.5 in 1980 to 92.7 per cent in 2005. For the age group 55-59, the rate dropped slightly from 83.2 in 1980 to 80.9 per cent in 2005. However, the participation rate for males aged 60-64 has steadily increased from 62.9 in 1980 to 68.7 per cent in 2005 (figure 4).

Figure 4. The LFPR for population aged 50-64 by sex in China, 1980-2005
(per cent)



Source: ILO (2006).

Table 10. Labour force participation rates at ages 50-64 by sex in 2000
(per cent)

Country/area	Ages 50-54		Ages 55-59		Ages 60-64	
	Males	Females	Males	Females	Males	Females
China	92.7	58.9	80.9	41.5	68.7	26.9
Thailand	94.8	74.4	90.5	63.6	80.9	39.2
Malaysia	93.4	40.6	75.1	28.5	61.6	23.2
Philippines	95.6	68.0	89.3	55.7	79.1	50.3
Republic of Korea	89.1	55.2	77.7	51.1	63.4	45.9
Singapore	91.3	46.7	74.4	29.6	49.6	15.3
Taiwan Province of China*	...	...	70.9	...	52.0	...
Japan	95.0	66.2	92.6	57.1	71.6	37.6
Australia	84.8	66.6	73	47.6	46.8	22.3
Canada	86.5	71.0	72.9	53.4	46.1	27.2
United States	86.8	74.1	77.1	61.4	55.0	40.2
Sweden	90.6	86.2	84.6	79.6	56.8	48.5
Germany	90.3	71.9	76.1	55.7	30.2	13.3
Italy	82.6	41.6	53.9	24.3	31.4	8.0
Greece	87.9	42.6	72.1	31.4	45.2	20.5

Sources: ILO (2006) and Tsay Ching-Lung (2003) for the data of Taiwan Province of China.
* 2001 data for Taiwan Province of China.

Compared with developed countries, the Chinese rates are typically high, except for Japan (table 10). But they are lower than in the selected Asian countries and areas, which have similar or higher income levels.

Female participation rate

The participation rates of females aged 50-64 are much lower than those of males in China. In addition to the difference in retirement age for men and women, the low education level of women in this age group constitutes another important reason for that disparity. The temporal evolution of the participation rates during the last 25 years of the three "old population" age groups shows the same tendencies: a slight increase during 1980s followed by modest declines during the 1990s (figure 4).

The participation rates of females aged 50-59 are lower in China than in most of the countries and regions shown in table 10. In Asia, only Singapore and Malaysia and in western countries, only Italy and Greece have lower participation rates than China in 2000. For the age group 60-64, the participation rate shows a large divergence between the countries. The participation rate of women aged 60-64 is much lower in China than in Japan, Republic of Korea, Thailand and the Philippines.

Looking ahead, there is a great deal of uncertainty surrounding the evolution of the participation rate of those age groups for both males and females. This study assumes three hypothetical evolutionary trends over the next 45 years:

- **First, slight decline then stability:** Given the existing retirement ages, sustained economic growth, a rising living standard and gradual improvements of the pension system, the LFPR of the older population (50-59) is likely to decline slightly initially, and then to stabilize at that lower level. For the period 2005-2015, this study adopts the ILO projection. This is a conventional assumption and the authors define it, therefore, as the "conventional case".

- **Second, moderate increase:** The OECD (1998) suggests that, in an ageing society, attention should be focused on increasing the LFPR of men at older ages. This may be brought about by an increase in the retirement age. Furthermore, increasing educational engagement of women will stimulate their economic activities and labour force participation, especially after age 40. The expansion of educational opportunities is likely to affect all cohort participation rates albeit in different ways. Increasing school enrolments, especially at upper secondary and tertiary

level, will reduce the participation rate, especially among the young (15-24) while increasing it later in life, especially after age 40. Evidence from Australia and Canada shows that there exists a positive relationship between education level and labour force participation rate, especially for women (Day and Dowrick, 2004; Dugan and Robidoux, 1999). Accordingly, for this scenario, one assumes that by 2050 the labour force participation rates for these three age groups will increase to the level of Japan in 2000. For men, the annual rates of increase will be 0.06, 0.3 and 0.04 per cent for age groups 50-54, 55-59 and 60-64, respectively. For women, the corresponding figures are 0.28, 0.76 and 0.52 per cent. This scenario is defined as the "optimistic case".

- **Third, substantial increase**: Sweden has the highest female LFPR at ages 50 and above in the developed countries. Following McDonald and Kippen (2001) this scenario assumes that in the next 45 years, female LFPR in China will increase to Sweden's 2000 level. Under this assumption, the annual growth rates of female LFPR for the age groups 50-54, 55-59 and 60-64, will be 0.87, 1.5 and 1.3 per cent, respectively, assuming that the male labour force participation will be the same as in the optimistic case. This scenario is defined as the "very optimistic case".[5]

The LFPR for both sexes of the intermediate age groups, 25 to 49, are assumed to remain at their 2000 level.

Labour supply prospects over the period 2005-2050

Based on the assumed evolution of the age- and sex-specific LFPRs, the projected working-age population and the demographic composition effects, the authors calculate the trends of the labour force for the period 2005-2050 for the four alternative scenarios. The results are shown in tables 11 to 13.

In the conventional case (table 11), the total size of the labour force declines in all alternative fertility scenarios after a slight increase during the first two decades. In the baseline case, the labour force declines to 582 million, which is equivalent to 76 per cent of the 2005 labour force. In the low fertility scenario (TFR declining to 1.35), the total labour force drops to slightly over 500 million, implying that China would lose more than one quarter of her current labour force.

If one considers only the demographic composition effect, and if China maintains her age- and sex-specific participation rates at the 2000 level, then lifting the fertility rate to the replacement level (high fertility scenario) will help increase the labour supply over the next 45 years (table 6). However, in the conventional case,

with the assumed reduction in the LFPR of young people (aged 19 to 24) and slight change in the elderly population (aged 50 to 64), the total size of the labour force will fall after 2020 as in the baseline case and under scenarios 2 and 3. By 2050, the labour force will be 11 per cent smaller than in 2005 in scenario 4 (table 11).

Table 11. Trends of labour force under conventional case (millions)

Year	Baseline (Constant fertility)	Scenario 2 (Low fertility)	Scenario 3 (Medium fertility)	Scenario 4 (High fertility)
2005	763.2	763.2	763.2	763.2
2010	779.3	779.3	779.3	779.3
2020	766.7	766.7	766.7	766.7
2030	701.6	691.0	704.0	725.8
2040	642.2	602.6	656.0	693.3
2050	582.2	512.4	608.6	677.6

The evolutionary pattern of the labour force in the optimistic case is much closer to the conventional case (table 12). The only difference is the slightly larger labour supply after 2020 as a result of the assumed increase in the LFPR for both males and females aged 50-64. For instance, in the low fertility scenario, by 2050 there will be 23.7 million more labourers in the optimistic case compared to the conventional case. In the high fertility scenario, this figure will increase to 24.4 million.

Table 12. Trends of labour force under optimistic case (millions)

Year	Baseline (Constant fertility)	Scenario 2 (Low fertility)	Scenario 3 (Medium fertility)	Scenario 4 (High fertility)
2005	763.2	763.2	763.2	763.2
2010	781.7	781.7	781.7	781.7
2020	775.4	775.4	775.4	775.4
2030	716.5	706.0	718.9	740.0
2040	660.8	627.1	674.5	711.5
2050	606.0	536.1	632.5	702.0

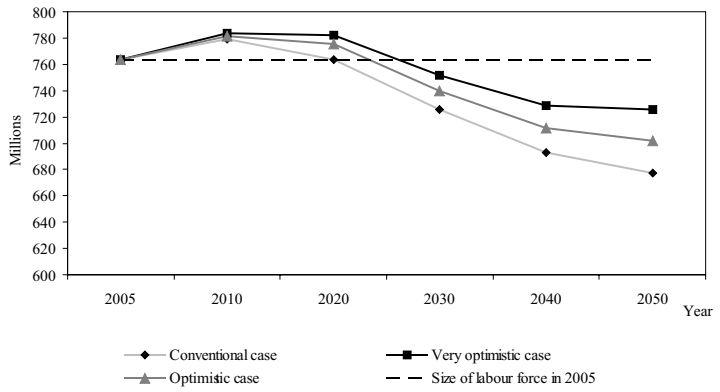
Under the very optimistic case, the substantial increase in the participation rate of elderly females cannot completely offset the declining trend of labour supply in all fertility scenarios after 2020 (table 13). But the extent of the fall has been considerably reduced. For instance, in the high fertility scenario, the total size of the labour force in 2050 will be only 5 per cent smaller than in 2005.

Table 13. Trends of labour force under very optimistic case (millions)

Year	Baseline (Constant fertility)	Scenario 2 (Low fertility)	Scenario 3 (Medium fertility)	Scenario 4 (High fertility)
2005	763.2	763.2	763.2	763.2
2010	783.3	783.3	783.3	783.3
2020	782.0	782.0	782.0	782.0
2030	728.5	718.1	730.8	751.5
2040	677.8	638.2	691.7	728.3
2050	628.6	558.6	655.1	725.5

Comparing these three evolutionary cases, by 2050 the labour supply will be 7 per cent larger in the very optimistic case than in the conventional case under high fertility scenario (figure 5).

Figure 5. Comparison of trend projections of labour supply in three hypothetical cases (high fertility scenario)



This simulation exercise implies that even if China's TFR were to rise to near replacement level, the total size of the labour supply will begin to contract after 2020 (figure 5). This tends to reflect the decline in the LFPR of young people, irrespective of the behaviour of the elderly population's LFPR. The dramatic drop in the participation rate of young people is the main driver of the labour supply contraction in the high fertility scenario. By contrast, the sharp decline of labour supply in the low, constant and medium fertility scenarios is mainly caused by the shrinking working age population which is, in turn, attributable to the low fertility.

Conclusion and policy implications

The present paper examines possible trends over the next 45 years of the labour supply in China. Alternative fertility scenarios have been constructed that take account of demographic composition effects and plausible changes in age- and sex-specific labour force participation. In order to focus on the role of demographic factors, the present analysis ignores international migration flows. The main findings are:

- First, given present levels of fertility the working-age population in China will decline from 2020 onwards (constant fertility scenario-baseline case). If fertility declines to a very low level (low fertility scenario), then there will be a very sharp drop in the working-age population. Conversely, increasing the current fertility level to 1.84 (medium variant) will increase the population in working age only slightly without preventing the declining trend beyond 2020. In order to achieve sustainable growth of the working-age population, the fertility rate would need to increase to the replacement level. In that case, the working-age population in 2050 will slightly exceed its 2000 level.

- Second, the upward shift of the age structure, i.e., population ageing, will put downward pressure on the labour supply in all fertility scenarios. This reflects the fact that population ageing reduces the aggregate labour force participation rate, even if the relevant cohort labour force participation rates remain at their 2000 levels. However, the demographic composition effect will be more severe in low fertility scenarios than with high fertility, enlarging the differences of labour supply in the alternative scenarios.

- Third, the very likely reduction of the labour force participation rate of the young population (aged 15-24), especially of the very young aged 15-19, reduces the labour supply substantially from 2020 onwards in the low, constant and medium fertility scenarios. The higher fertility level in scenario 4 cannot completely offset the declining trend of the labour supply, irrespective of the LFPR behaviour of the elderly population.

China's economy has been and will continue to benefit from the "demographic window"[6] that will be opened during next 25 years by a low share of the total dependency ratio. However, when the demographic window closes around 2025, the demographic profile will be quite different. As population ageing becomes increasingly prominent, the annual supply of new labour will start to decline sharply in 2025 in response to the low fertility of the 1990s. "China will enter a long period of demographic crossover: a consistent reduction in the new

labour supply coupled with a consistent rise of the elderly population" (Wang, 2005). The present investigation demonstrates that the demographic composition effects and the probable decline in the labour force participation rate of the young population will accelerate the declining trend of the labour supply and make the situation even worse. Furthermore, any feasible increase in the labour force participation rate of the old provides at best only a partial offset.

How can China sustain her economic growth in the light of these labour market developments? Without knowledge about potential changes in labour demand, it is difficult to determine whether a shrinking labour supply imposes a binding constraint on economic growth.

In the first instance, there is evidence to support the importance of maintaining the size of the labour supply. Peng (2005) demonstrated for a constant fertility scenario (TFR = 1.62) during the first half of this century, that falling labour supply will reduce the growth rate of per capita real GDP.[7] The Productivity Commission in Australia found complementary evidence suggesting that the combination of falling labour supply and population ageing in Australia would halve the current economic growth rate, reducing it to nearly 1.25 per cent per year, by the mid-2020s (Productivity Commission, 2005). Similarly, Masson and Tryon (1990) from the International Monetary Fund (IMF), Turner and others (1998) at the OECD, and McMorrow and Roeger (1999) from the European Commission have completed major studies with large macroeconomic forecasting models. Their multicountry studies of industrial nations project slowing growth after 2010 as a result of population ageing, and further deceleration of growth after 2025.

Second, there is no prior experience in an advanced country of falling labour supply over a long period of time. Advanced countries have typically experienced gradual to rapid increases in the labour supply during the last 30 years (McDonald and Kippen, 2001). In the Asian "tiger" economies, such as Hong Kong, China; the Republic of Korea; Singapore and Thailand, the labour force has more than doubled during the period 1970-1995. China's rapid economic growth during the last 25 years was accompanied by a 57 per cent growth in the labour force.

Third, it is improbable that the demand for labour will fall to match the reduction of labour supply. Even though increases in the price of labour could stimulate improvements to productivity, there is no suggestion that labour demand will fall overall to any significant extent. The counter argument is much more probable: rapid technological advance and the increasing availability of investment capital will stimulate the demand for people (McDonald and Kippen, 2001; Judy and D'Amico, 1997). Furthermore, population ageing will itself alter spending patterns and the required occupational structure of the labour force. Consumption

demand will shift increasingly towards services and products that are consumed intensively by older members of the community. These outputs are typically labour intensive. It follows that the scope for technology to replace labour is limited (McDonald and Kippen, 2001).

Fourth, maintenance of a stable labour force is of crucial importance for China. International competition for skilled and even low-skilled workers will intensify during the coming decades with the progress of global population ageing and resulting labour shortages, particularly in developed countries. Significant amounts of capital will continue to flow from the advanced economies to the economies that have an abundant labour supply. China's comparative advantage lies in labour-intensive manufacturing. Contraction of labour supply places upward pressure on wages, progressively eroding China's low labour cost advantage in attracting capital. Since the ageing of China's population commenced at a relatively low per capita income level, the stance of policy needs to be growth-oriented. Maintaining an abundant labour supply to attract foreign capital will help to sustain economic growth and to accommodate the increasingly elderly population.

The importance of maintaining the labour supply for economic growth suggests prompt relaxation of the current one-child policy as a plausible and efficient policy option. A gradual increase in the fertility level would dampen the decline of the labour force by increasing the working-age population and mitigating the adverse demographic composition effect on the LFPR. Though no policy change can prevent the occurrence of the demographic crossover, an early departure from the one-child policy and a gradual increase in fertility could help to lighten the pressure of population ageing 20 to 30 years from now (Wang, 2005).

Expansion of educational opportunities will remove large numbers of young people from the labour force and sharply reduce their labour force participation rate. The output consequences of this effect may be compensated in due course by the improvement of productivity resulting from increases in the stock of human capital. However, in the short to medium term it will reduce the labour supply. Countervailing policy choices include increasing the obligatory retirement age and encouraging older persons to remain in the labour force in order to raise their LFPR. These strategies reflect the common policy approach adopted in OECD countries. They constitute constructive policy options for China in 10 to 15 years when the supply of labour begins to decline.

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Endnotes

1. It should be noted that an increase in economic growth may indeed be associated with a deterioration of the per capita income because of the acceleration of the total population's growth rate induced by higher fertility regimes.

2. The hours worked per worker in the manufacturing sector have declined by almost 10 per cent over seven years, from 181.7 hours per month in 1991 to 162.9 in 1998 (ILO, 2006).

3. The past 30 years have witnessed significant achievements in this area. China has achieved noticeable reductions in the birth rate, death rate and natural growth rate within a comparatively short period of time (Wang, Keng and Smyth, 2002). The crude birth rate of about 14.5 per 1,000 and population growth rate of 7.3 per 1,000 in 2000 are both less than half the comparable figures in the 1970s. The total fertility rate has dropped sharply from 4.01 in 1970 to 1.92 in 1990 and further to 1.8 in 2000, close to the average level of developed countries.

4. The relatively high LFPR at the age group 15–19 in some developed countries, such as New Zealand, Australia, Canada and the United States reflects a combination of formal education with part-time work. (McDonald and Kippen, 2001).

5. Documentation of the hypothesized changes in the participation rates for the alternative scenarios are provided in tables A2, A3 and A4 in the appendix.

6. The dramatic fertility rate decline that started in the early 1970s has created rapid change in the population age structure in China. The child dependency ratio (the ratio of the population aged 0-14 to the working age population 15-64) fell from 0.7 in 1975, to 0.4 in 1995 and will continue to decline to 0.26 in 2025 (medium variant population projection from United Nations, 2004). The old dependency ratio (ratio of elderly population to the working age population) has been rising gradually from 0.08 in 1970 to 0.09 in 1995. From 2010 onwards, its rate of increase will accelerate to reach 0.20 in 2025, and almost 0.4 in 2050. The interplay between these two trends – the decline in child dependency ratio leading the increase in the old dependency ratio by about one generation - has reduced the total dependency ratio to below 0.5. This "golden age structure" characterized by a total dependency ratio less than 0.5 will last approximately 30 years (from 1995 to around 2025). That period is often referred to as the "demographic window", "demographic bonus" or "demographic dividend" because it provides

the potential for an increased pace of economic growth. At the later stage of the "golden age structure", the stagnant growth in the labour supply and rapid increase in the old dependency ratio will dissipate the demographic dividend and close the demographic window.

7. The projected reduction in GDP growth is two percentage points annually during the 2020s, and three percentage points p.a. during the 2040s.

APPENDIX

Table A1. The possible evolution of the LFPR at ages 15-24 from 2005 to 2050 by sex (per cent)

Year	Aged 15-19		Aged 20-24	
	Males	Females	Males	Females
2005	49.3	56.4	89.8	85.9
2010	45.5	52.4	88.4	84.8
2015	42.0	48.7	87.1	83.8
2020	38.7	45.2	85.8	82.7
2025	35.7	42.0	84.5	81.7
2030	33.0	39.0	83.2	80.7
2035	30.4	36.3	82.0	79.7
2040	28.1	33.7	80.7	78.7
2045	25.9	31.3	79.5	77.7
2050	23.9	29.1	78.3	76.7

Table A2. The possible evolution of the LFPR at ages 50-64 from 2005 to 2050 by sex (per cent) **– conventional case**

Year	Aged 50-54		Aged 55-59		Aged 60-64	
	Males	Females	Males	Females	Males	Females
2005	92.5	57.8	79.8	40.3	70.2	26.8
2010	92.2	57.4	79.3	39.7	70.8	26.7
2015	92.0	57.3	79.0	39.5	71.0	26.7
2020	92.0	57.3	79.0	39.4	71.0	26.7
2025	92.0	57.3	79.0	39.4	71.0	26.7
2030	92.0	57.3	79.0	39.4	71.0	26.7
2035	92.0	57.3	79.0	39.4	71.0	26.7
2040	92.0	57.3	79.0	39.4	71.0	26.7
2045	92.0	57.3	79.0	39.4	71.0	26.7
2050	92.0	57.3	79.0	39.4	71.0	26.7

Table A3. The possible evolution of the LFPR at ages 50-64 from 2005 to 2050 by sex (per cent) **– optimistic case**

Year	Aged 50-54		Aged 55-59		Aged 60-64	
	Males	Females	Males	Females	Males	Females
2005	92.5	57.8	79.8	40.3	70.2	26.8
2010	92.8	58.6	81.1	41.8	70.4	27.8
2015	93.0	59.5	82.4	43.5	70.5	28.8
2020	93.3	60.4	83.8	45.1	70.7	29.9
2025	93.6	61.2	85.1	46.9	70.8	31.1
2030	93.9	62.1	86.5	48.7	71.0	32.2
2035	94.1	63.0	87.9	50.5	71.1	33.4
2040	94.4	63.9	89.4	52.5	71.3	34.7
2045	94.7	64.9	90.8	54.5	71.4	36.0
2050	94.9	65.8	92.3	56.6	71.6	37.3

Table A4. The possible evolution of the LFPR at ages 50-64 from 2005 to 2050 by sex (per cent) **– very optimistic case**

Year	Aged 50-54		Aged 55-59		Aged 60-64	
	Males	Females	Males	Females	Males	Females
2005	92.5	57.8	79.8	40.3	70.2	26.8
2010	92.8	60.4	81.1	43.4	70.4	28.6
2015	93.0	63.0	82.4	46.7	70.5	30.5
2020	93.3	65.8	83.8	50.3	70.7	32.5
2025	93.6	68.8	85.1	54.2	70.8	34.7
2030	93.9	71.8	86.5	58.3	71.0	37.0
2035	94.1	75.0	87.9	62.8	71.1	39.5
2040	94.4	78.3	89.4	67.6	71.3	42.1
2045	94.7	81.8	90.8	72.8	71.4	44.9
2050	94.9	85.5	92.3	78.4	71.6	47.9

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Changing Demographics, Emerging Risks of Economic-Demographic Mismatch and Vulnerabilities Faced by Older Persons in South Asia: Situation Review in India and Pakistan

It appears evident that neither India nor Pakistan are well prepared at the policy level to meet the challenges brought about by the changes in their population structures.

By Moneer Alam and Mehtab Karim*

This paper provides an overview of some important demographic changes in two major South Asian countries, India and Pakistan, resulting in a situation marked by sustained fertility decline, life prolongation and a growth of population in both the young (especially 25 years and over) and old (60 years and over) age groups. The study postulates that these changes may prove significant for both the countries – affecting, inter alia, the size and clearance mechanism of their labour

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markets, nature of dependencies, increasing ratios of young to old, etc. The study further postulates that a fair proportion of families in the two countries may find it difficult to endure old-age dependencies owing to increasingly widespread casualization of employment and jobless growth. Enduring old-age dependencies may also be difficult due to limited work opportunities for older persons, functional disabilities, perpetuating poverty, lack of social assistance, compression in real public health expenditure, etc. The study also postulates that the pro-market changes in these countries may not particularly conform to their age structure changes. It may as well create a situation fraught with a significant economic-demographic mismatch (see appendix 1).

The following underlie these arguments:

(a) India and Pakistan will remain both young and old for most of this century. Young, owing to past fertility and its momentum; and old, because of their changing demography and added life span. The size of the graying population in particular, in the two countries is expected to grow very fast. Besides, recent projections reveal that the pace of population ageing in Pakistan is likely to catch-up with India over the next few decades (United Nations, 2005a). The United Nations projections also reveal bulge in their working age populations, needing matching growth in employment opportunities.[1] This seems to be an uphill task for the two South Asian countries (Husain, 1999; Baqai, 2004; Thomas, 2005).

(b) India and Pakistan have fast emerging market regime although no credible social security system for the deprived and older persons. Deceleration in high productivity employment in the subregion aggravates the risks of deprivation. Jointly, (a) and (b) are expected to bring a mismatch between the changing demographics of the two countries and their emerging economic regimes (see diagram in appendix 1; also see appendix 2 for declining employment elasticity in India and Pakistan).[2]

(c) Casualization of labour market may constrain cash transfers from young to old.

(d) With grossly inadequate protective securities for older persons, the idea of down sizing the family loses some of its logical moorings – especially for low-income households.

(e) Left to fend for themselves, with decaying non-market institutions, older persons may face exclusions.

To justify some of those arguments, this paper begins with a brief description of changes in the demographics of the two major South Asian countries. How far are these changes in conformity with their existing economic scenario and what security environment do the persons aged 60 and over in these countries currently enjoy follow in the subsequent sections of this paper. Arguably, an examination of these issues would help in the identification of insecurities being faced by young and old persons alike in the two countries under study. In terms of value addition, this study expects to build a case for: (a) working towards preventing an economic-demographic mismatch, (b) setting up of a strong health and income security net for the aged and (c) ensuring the latest structure's public-private financing mechanism.

However, it is to be noted that for lack of access to readily available data on old persons in Pakistan, much of the empirical contents of this analysis remains confined to India. Yet, some of the authors' arguments have been substantiated by a couple of recent studies on older persons in parts of western Pakistan. The point made in later part of the study is that the ongoing economic liberalization may imperil the existing and preceding few cohorts of older persons in India and Pakistan. Combined with growing old-age dependency and perennial poverty, the study strongly questions the adequacy of familial transfers – in particular to ensure the financial and health security of older persons. The challenge may be even greater with households comprising widows or persons in the "older old" categories (80 years and over).[3] This can easily be gauged by: (a) high prevalence of diseases causing dependence of oldest old persons in performing activities of daily living,[4] (b) large-scale poverty, (c) lack of long-term saving instruments for old with decent terminal return,[5] and (d) inadequate public expenditure on health.[6] In addition, there are issues relating to the health sector reforms with privatization of various services, non-existent social insurance, informalization of the labour market,[7] etc.

Demographics of India and Pakistan: selected indicators

Table 1 clearly suggests that both countries are already at fairly advanced stages of demographic transitions, paving the way for bulging in their working and higher age populations with many important socio-economic and health ramifications. Two significant questions arise here and need serious consideration: (a) can these structural changes in population composition of both countries be overlooked? And (b) do the economic and health regimes of these countries fully conform to changes in their age patterns? The discussion that follows attempts to explore these two questions farther, though not being able to derive any definitive answer.

Table 1. Demographics of India and Pakistan: selected indicators (1950-1960 to 2045-2050)

Decades	India	Pakistan
Total fertility rates (TFR): Number		
1950-1960*	5.95	6.65
2000-2005	3.07	4.27
2010-2015	2.50	3.31
2020-2025	2.11	2.76
2030-2035	1.85	2.43
2045-2050	1.85	2.10
Population growth rates: Percentages		
1950-1960*	2.13	2.34
2000-2005	1.55	2.04
2010-2015	1.26	1.98
2020-2025	0.93	1.60
2030-2035	0.61	1.28
2045-2050	0.32	0.84
Life expectancy at birth (e_0): Years		
1950-1960*	40.65	40.50
2000-2005	63.10	62.90
2010-2015	66.70	66.50
2020-2025	70.00	69.50
2030-2035	72.70	72.20
2045-2050	77.90	75.40

Sources: * United Nations (1999a) and United Nations (2005a) for information from 2000-2005 to 2045-2050.

Another observation emerging from table 1 relates to potentials of these two countries to accelerate the process of their demographic shifts. This is particularly true for India. Table 1 indicates that India is likely to achieve its replacement level of fertility before 2025 (Srinivasan, 1999). India is, therefore, expected to bring down the rate of its population growth drastically over the coming decades. Pakistan is expected to follow India closely, though certain differences between the two will persist (table 1).

What follows from most of these changes are obvious in the coming year the two countries will increasingly experience:

- An upward population momentum, with a rapid growth of population in the higher age groups. This phenomenon would keep both the countries young with large fractions of population in search of services and avenues to build superior human capital leading to good quality employment;

- A situation where, propelled by declining mortality and increasing life expectancy, large segments of the population in both the countries will grow older facing serious health and income security issues.

Of the two situations described above, the former may act to flood the labour market and affect bargaining strength of lower-end job seekers, while the latter would require income and health security for older persons. Unfortunately, both are missing from the two countries.

Macroeconomic and health indicators of India and Pakistan: do they conform to the countries' demographics?

Like many other commonalities and shared problems, both India and Pakistan are busy managing huge populations – majority in reproductive ages with considerably large young age dependencies. Moreover, a large section of those populations suffer from asymmetric income distribution, poor health conditions, limited civic amenities and high growth of entrants in the labour market. In some of these traits, Pakistan outperforms India, and vice versa (table 2; also see ILO, 2004). Similar observations emerge from a few of the more recent studies dealing particularly with the economic climate in these countries and their tryst with pro-market reforms (Srinivasan, 2002).[8]

As argued, the current economic regimes in India and Pakistan would increasingly confront in coming years via two demographically mediated issues: (a) swelling in the labour markets and (b) accelerating growth in elderly populations including the oldest old. As it is, the current economic regimes in both countries do not seem to have much to offer to either of these population groups. Speedier expansion in their labour markets, for example, require corresponding increase in job opportunities – that too at wage rates commensurate with prevalent market prices of life serving essential goods and services (Baqai, 2004; Husain, 1999; Bhattacharya and Shakthivel, 2004). Increase in the number of older persons will require matching support provisions (Alam, 2004a).

Like all other traditional societies, elderly care in India and Pakistan lies with families.[9] But this may be possible only if families have adequate transferable income.

Table 2, however, presents a picture that makes informal family-based old-age support in both countries a difficult proposition (see table 2, panels G and H)

Further, accompanying the fast growing young and old in both countries are several complex issues such as decelerating employment opportunities (see appendix 2), high growth of labour, income inequalities, poor formation of human capital, inadequate access to health services, and so on (see table 2; also see ILO, 2004). Given the cascading effects of these issues, the authors postulate that any bailing out process would require linking the demographically mediated age structure changes in both countries with their growth strategies.

Information, provided in table 2 suggests a mixed position. Pakistan, for example, has an edge over India if judged against the international poverty criterion, sanitation and availability of certain medical personnel.[10] Gini coefficient however brings them fairly close.[11] Economically, India appears to be doing better.[12] Another disturbing factor in the case of Pakistan is the growth of its labour force. By available economic trends and policies, absorption of such a high growth of labour would not be easy for Pakistan (Baqai, 2004; Ghayur, 2001; Joekes and others, 2000).

Table 2. Selected socio-economic and health indicators of India and Pakistan
(Various years)

Indicators	India	Pakistan
Panel A. Population (million)	1,028.61 (2001)	132 (1998)
Panel B. Population momentum	1.4	1.7
Panel C. Average growth rate of labour force (per cent)		
1980-1998	2.0	2.9
1998-2010	2.0	3.3
Panel D. Employment elasticity		
1983 to 1993/1994	0.52	0.56 (1972-1978)*
1993/1994 to 2000	0.16	0.41 (1978-1987)*
Panel E. GNP per capita (US $)	540 (2003)	520 (2003)
Panel F. Annual per capita growth of GDP (per cent)		
1980-1990	5.7	6.3
1990-2003	5.9	3.6
Income inequalities: Gini Coefficient	0.325 (1999-2000)	0.330 (1998-1999)

.../

Table 2. *(Continued)*

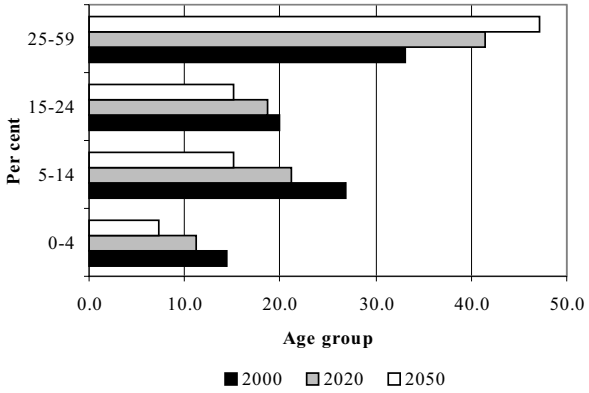
Indicators	India	Pakistan
Panel G. Persons below poverty line (per cent)		
Rural	30.2 (1999-2000)	35.9 (1998-1999)
Urban	24.7 (1999-2000)	24.2 (1998-1999)
Total	28.6 (1999-2000)	32.6 (1990-1996)
Panel H. International poverty line		
Below 1 US $ (per cent)	34.7 (1999-2000)	13.4 (1998-1999)
Below 2 US $ (per cent)	79.9 (1992)	65.6 (1998-1999)
Panel I. Percentage share of income/consumption by different income groups		
Lowest 10 per cent	3.9 (1999-2000)	3.7 (1998-1999)
First 20 per cent	8.9 (1999-2000)	8.8 (1998-1999)
Second 20 per cent	12.3 (1999-2000)	12.5 (1998-1999)
Third 20 per cent	16.0 (1999-2000)	15.9 (1998-1999)
Fourth 20 per cent	21.2 (1999-2000)	20.6 (1998-1999)
Highest 20 per cent	43.3 (1999-2000)	42.3 (1998-1999)
Panel J. Primary investment as percentage of gross domestic fixed investment		
1980	55.5	45.0
1997	70.1	58.2
Panel K. Adult literacy rate (15 per cent and above)	57	43
Panel L. Access to health care (per cent)		
Access to general health services (per cent)	85 (1991-1995)	55 (1991-1995)
Safe water (per cent)	88 (2000)	88 (2000)
Sanitation (per cent)	31 (2000)	61 (2000)
Physician per 100,000 persons (number)	48 (1990-1999)	57 (1990-1999)
Panel M. Human development index (HDI)		
1960	0.206	0.183
2003	0.602	0.527
Panel N. 60 years and over population and old age dependency burden		
Population (in millions)	76.8 (2000)	8.1 (2000)
Dependency burden: (per hundred pop. 15-59)	12.9 (2000)	10.9 (2000)
Dependency burden: 2050 (per hundred pop. 15-59)	23.6 (2050)	19.8 (2050)

Sources: Different data sources were used including the World Bank (2000, 2005); Human Development Centre (1997, 2002); ADB (2001); Planning Commission of India (2002); United Nations (2003).

Note: * Husain (1999).

By no means however has it implied that labour issues are less significant in India. Bulging of population in the age group 25 years and over is striking in both countries (see figures 1 and 2). Since the labour force participation of persons in this age group is highest in almost every country, the nature of the problems ahead is self-explanatory (see table 2, panel D for declining employment elasticity).

Figure 1. Changes in size of below 60 age groups (per cent): Pakistan, 2000-2050

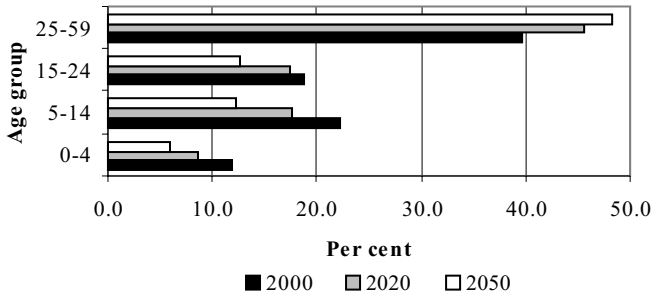


Source: United Nations (2005b).

An exclusive study on labour and employment in South Asian countries by Anant, Sundaram and Tendulkar (1999) highlights many similar issues including those relating to their growing labour markets followed by decelerating job opportunities in the high productivity sectors of these countries. On the flip side, the study notes a gradual decline in dependence on agriculture in most of this region. The study also suggests a general rise in real wages and improvements in sectoral productivity. The study however confronts with many nagging issues arising due to:

- Low levels of social and educational attainments: denying market driven opportunities to large segments of the population;
- Growing size of labour force and decline in labour absorption by higher productivity sectors;
- Higher levels of open unemployment and high informalization of labour market.

Figure 2. Changes in size of below 60 age groups (per cent)**: India, 2000-2050**



Source: United Nations (2005b).

This scenario with underlying issues of food insecurities (United Nations, 2006), malnourishment (Gragnolati and others, 2006), and poor human capital formation (PROBE, 1999; Dreze and Murthi, 2001) may force a big fraction of young job seekers in both countries to seek refuge in low-paid informal economy (Alam and Mishra, 1998; ILO 2004). For many of them enduring old-age dependencies with all its attendant issues may not be easy (Roy, 2003).

The other side of the demographics in India and Pakistan: Ageing, growing share of the oldest old and emerging issues

As stems from table 1, India and Pakistan are moving to a bimodal age composition with bulging in younger and older age groups. What does it look like in terms of age pyramids? How do the two countries differ – especially considering that the latter is still in a high fertility stage? These questions are discussed briefly below.

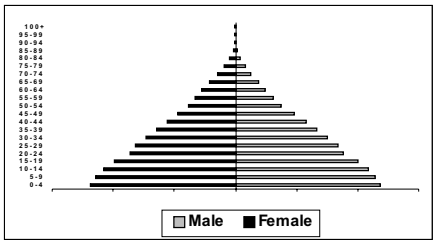
Using United Nations population projections (2002 revisions), age pyramids of both the countries are presented in figures 3 and 4 over three points of time – i.e., 2000, 2020 and 2050.

Broadly, these two sets of population pyramids clearly indicate that the age structure of India and Pakistan may not mutually converge before the later half of this century. In terms of life expectancy, however, Pakistan is likely to surpass India sooner and may, therefore, face the issues linked with bimodal population growth more severely.

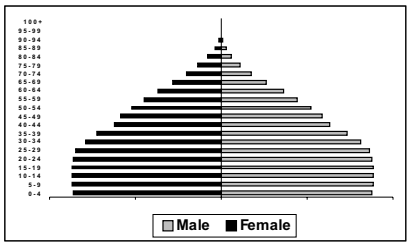
Another observation from these pyramids relates to the accelerating growth of older old – leading to expand the size of health care markets in both the countries.

Figure 3. Age structure of population: India

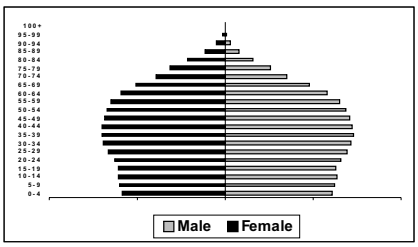
3a: 2000



3b: 2020



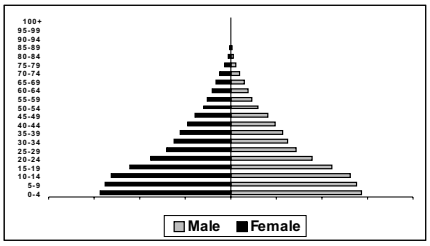
3c: 2050



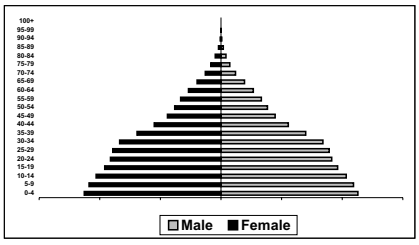
Source: United Nations (2005b). *World Population Prospects, The 2004 Revision.*

Figure 4. Age structure of population: Pakistan

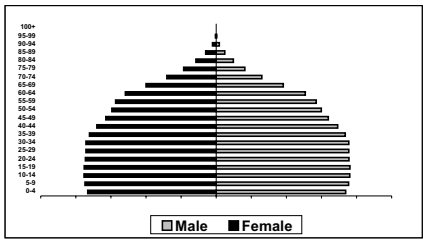
4a: 2000



4b: 2020



4c: 2050



Source: United Nations (2005b). *World Population Prospects, The 2004 Revision.*

Societal ageing in Pakistan: Growing issues and feeble responses

Despite an ongoing debate in Pakistan on its recent demographic achievements and declining fertility (Feeney and Alam, 2003; Soomro, 2000; Sathar and Casterline, 1998; Sathar and Kiani, 1998), the question of ageing or its various ramifications – especially for the economy and the society – remains in oblivion. Different reasons underlie this neglect. Most of them are perhaps rooted into micro perspective of ageing – with family at the centre. Incoming remittances and higher elderly participation in economic activities ease the burden of elderly care. Macroeconomic perspective of ageing is yet to take root (Soomro, 2000; Nasir and Ali, 2000; Clark, Zaman and Ghafoor, 2002).

Notwithstanding this, the United Nations projections on age structure changes in Pakistan reveal a very fast growth of societal ageing in the country – even faster than India after a certain time gap (table 3).[13] Further, the growth of older old is expected to be much higher. Table 3 provides these changes more explicitly. It also suggests highest projected growth in 75 years and over age group, especially women.

Table 3. Age-wise annual average growth of population in Pakistan: 2000-2050

Age group	**2000-2020** (per cent)		**2020 – 2050** (per cent)		**2000 – 2050** (per cent)	
	Male	**Female**	**Male**	**Female**	**Male**	**Female**
60-64	3.20	3.13	3.34	3.35	3.28	3.26
65-74	3.09	2.96	3.42	3.57	3.29	3.33
75 years and over	3.58	4.21	3.90	4.23	3.77	4.22
Total population	2.35	2.37	1.41	1.46	1.79	1.82

Source: Calculated on the basis of United Nations (2003), *World Population Prospects: The 2002 Revision*.

Taking cue from these age structure changes, certain attempts have recently been made in Pakistan to analyse the effects of population ageing for the country and its required institutional mechanism to improve the security environment for the aged (Afzal, 1994 and 1999; Khan, 1999; Clark, Zaman and Ghafoor, 2002). The study by Afzal (1999), for example, scans through these details including a few recent attempts by the Government of Pakistan to draw action plans for the welfare of older persons. The Special Education and Social Welfare Division of Pakistan has also commissioned a couple of multi-centric surveys in Lahore (1988) and Islamabad (1990) to make assessments about the ageing or its issues.

Table 4. Elderly status in Pakistan: selected details

	Female (per cent)	**Male** (per cent)
A. Living arrangement of older persons:		
Alone	11.6	9.1
With spouse	19.2	30.9
Spouse and children	6.3	14.0
With married son	51.6	37.0
Others including daughters/relatives	11.3	9.0
Total (N)	473	465
B. Do adult son/s provide support?		
Yes: provide support	18.2	13.1
No: do not provide support	72.1	73.5
No response	9.7	13.3
Total (N)	473	465
C. Proportion of support provided by son/s:		
Total support	18.2	13.1
Partial support	33.8	34.8
No support	38.3	38.8
No response	9.7	13.3
Total (N)	473	465
D. Work status of older respondents:		
Working for pay	14.1	36.5
Not working	71.2	58.5
No response	14.7	5.0
Total (N)	473	465
E. Reasons for not working/inactive:		
Sickness	22.27	28.67
Eye impairments	7.56	10.19
Functionally dependent	2.52	0.0
Physical weakness	22.69	34.39
Senescence	22.69	22.29
No need	17.65	0.0
No job opportunities/unemployment	1.26	0.0
Others	3.36	4.46
Total (N)	238	157

Source: Clark, Zaman and Ghafoor (2002). Information pooled from different tables.

As regards social security, Pakistan apparently has very few such schemes except for a small fraction of the country's total workforce comprising civil servants, military personnel and employees of public sector undertakings.

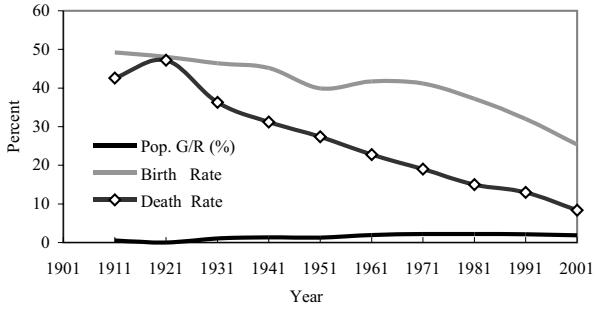
Outside the Government, a few non-profit voluntary organizations (e.g., the Senior Citizens Foundation of Pakistan or the Association of Retired Persons) have also been working as pressure groups to seek benefits in personal taxation after retirement, and subsidized medical care. These organizations have also succeeded in sensitizing the Government to include elderly welfare as part of its development agenda with gender specific public provisioning for the destitute elderly.

Despite those feeble responses, much of the ageing scenario in Pakistan looks rather bleak. This is emerging in particular from a study by Clark, Zaman and Ghafoor (2002), which was largely designed to examine the role of families in elderly care. Based on a survey of 938 elderly men and women from different places in Punjab province, the study reveals significant erosions in traditional values – leaving a big fraction of older persons in the lurch. Table 4 tries to reproduce a few of these details. Even a cursory scanning validates the authors' earlier argument underlining insecure ageing with limited family support.

Population ageing in India: emerging health and non-health issues of aged

India has had a history of struggling with its large population base and slower fertility transition. However, there has been a gradual improvement over the past twenty years or so with a perceptible decline in the overall fertility level (table 1). This whole process was however camouflaged by faster ageing, caused by declining crude birth rate and crude death rate (figure 5) and growing longevity – especially at higher ages. As fertility continues to decrease, India is likely to age at an accelerating pace with fastest growth in the share of oldest old (table 5).

Figure 5. Population growth in India, crude birth and death rates



Source: Alam (2004b).

Table 5. Growth of population in India by age and sex, 2000 - 2050

Broad age groups	Annual average growth rate of population: 2000-2050 (per cent)	
	Males	Females
80 years and over	4.04	4.27
75 years and over	3.61	3.78
60 years and over	2.80	2.84
0-14 years	- 0.41	- 0.38
15-59 years	0.89	0.96
Total population	0.77	0.87

Source: Calculated on the basis of United Nations (2003), *World Population Prospects: The 2002 Revision*.

Declining work participation and old-age poverty

Tables 6 and 7 focus on the continuing decline in work participation of older persons and its implication for poverty. Alike Pakistan, India is a country with low economic participation of elderly. This is particularly true for females, though rural women appear to be more active than their urban counterparts (table 6). Much of this may, however, be a coping strategy for the rural old, especially women.

Table 6. Elderly work participation: all India [14]

Sex	1961	1971	1981	1991
		Urban (per cent)		
Persons	35.2	31.5	27.5	24.3
Male	58.4	55.4	48.3	42.9
Females	11.4	6.4	6.5	6.3
		Rural (per cent)		
Persons	52.0	45.5	43.1	43.1
Males	79.9	77.4	69.1	65.4
Females	24.3	11.3	15.9	19.0

Note: All India Census figures for respective years.

With declining participation in economic activities, it may not be implausible to expect high old-age poverty. While the age-specific data on poverty are not readily available, the authors tried to draw certain inferences on the basis of an exercise reported in table 7. Using the 52nd National Sample Survey data on consumption expenditure of the rural and urban households with co-residing old, the authors noticed serious poverty issues in terms of the per capita monthly

consumption expenditure (PCMCE) in most major states with Orissa and Bihar facing very critical situations. The low consumption level is also accompanied by very high coefficients of variation in most of the states. Interestingly, while the mean consumption level is disturbingly low in rural areas, the levels of consumption disparities are much higher among the urban households.

Table 7. Variations in per capita monthly consumption expenditure of households with at least one elderly co-resident: India and major states: 1995-1996

Major states	Rural		Urban	
	Mean (Rs.)	s/*100	Mean (Rs.)	s/*100
Andhra Pradesh	323.79	56.7	534.42	75.0
Bihar	282.39	40.4	435.97	57.9
Gujarat	411.95	55.3	607.83	54.2
Karnataka	331.43	53.4	511.66	60.0
Kerala	455.73	72.1	529.73	68.3
Madhya Pradesh	314.55	47.6	455.33	55.1
Maharashtra	345.13	52.0	678.99	75.3
Orissa	279.10	45.5	424.69	48.5
Punjab	549.04	51.0	665.10	45.6
Rajasthan	378.43	36.8	513.50	48.8
Tamil Nadu	341.49	47.1	523.57	65.3
Uttar Pradesh	330.39	53.2	506.41	71.8
West Bengal	334.50	46.7	545.72	66.0
All India	357.40	55.8	559.99	66.9

Source: Computed on the basis of household data from NSS, 52nd round (1995-1996).

Familial support for older persons

The NSS in its 42nd (1986-1987) and 52nd (1995-1996) rounds provided several details about the socio-economic status of the aged including their relationship with the care providers. Some of these details are presented in table 8. Two observations bear attention. One, spouse and children are the two major sources of care for older persons. Second, grandchildren and other relatives – particularly the latter – are increasingly pulling out of these responsibilities (table 8). A declining trend may be noted for children and grandchildren as well although not to that extent. Therefore filial dependence may not remain an option for many in India in the long term.

With families increasingly participating in market-dominated formal activities, other caregiving alternatives for the elderly are yet to catch-up in India. A particular example may be the old-age homes. Available literature not only reveals that these are limited in number, but it also raises question about these homes' quality (Rajan, Misra and Sharma, 1999). Using data from HelpAge India (1998) Directory of Old Age Homes, a recent study by Alam (2006) makes certain interesting observations. One of them is that out of a total of 510 homes, over 40 per cent are located in just four southern states – namely, Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. Bigger states with a considerable share of elderly population such as Uttar Pradesh and Bihar remain far behind. In addition, female old-age homes are particularly scarce. Another interesting observation is in regard to their inmate capacity and basis of stay. It was noted that a majority of the homes in the country are of medium size – with a capacity ranging from 25 to 50 inmates – and are free of charge without any or very limited facilities to meet medical contingencies (Alam, 2006).[15]

Table 8. Nature of care providers: all India

(Percentage)

Sex	Spouse		Children		Grandchildren		Others	
	1986-1987	1995-1996	1986-1987	1995-1996	1986-1987	1995-1996	1986-1987	1995-1996
				Rural				
Male	7.0	11.3	75.0	76.6	6.2	5.0	11.8	7.1
Female	11.5	15.9	73.8	71.7	6.4	5.2	8.3	7.2
Persons	9.5	14.2	74.4	73.5	6.3	5.2	9.8	7.1
				Urban				
Male	6.2	10.5	78.0	79.2	6.1	5.4	9.7	4.9
Female	11.3	18.2	72.3	69.5	6.5	5.6	9.9	6.7
Persons	9.0	15.6	74.9	72.8	6.3	5.5	9.8	6.1

Source: National Sample Survey, 52nd Round (1995-96) - Report No. 446.

Poor old-age health: major risk factors

One of the worst problems faced by older persons in India is the high prevalence of multiple diseases in almost every part of the country. Based on self-reported health conditions in the NSS 52nd round, table 9 distributes older persons in rural and urban areas by number of ailments/disabilities. Contrary to

general expectations, table 9 reveals that the rural elderly suffer more heavily with poor health conditions in many major states including Andhra Pradesh, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjan and Rajasthan. To its worst, those with multiple conditions exceed others in most of these states. Given the virtually non-existent public health-care infrastructure in most of rural areas, this is an issue with serious public policy concern.

Table 9. Distribution of elderly by a number of conditions, rural and urban: 1995-1996

State	**Urban** (per cent)			**Rural** (per cent)		
	No disease	**Single disease**	**Multiple diseases**	**No disease**	**Single disease**	**Multiple diseases**
Andhra Pradesh	33.9	29.4	36.7	24.9	30.4	44.7
Assam	19.6	30.5	49.9	23.7	27.0	49.3
Bihar	46.3	25.8	27.9	43.5	24.4	32.1
Gujarat	31.9	34.3	33.8	39.7	26.8	33.5
Karnataka	42.0	25.3	32.7	51.5	24.2	24.3
Kerala	32.2	29.1	38.7	23.9	27.5	48.5
Madhya Pradesh	44.0	23.3	32.7	42.8	23.0	34.2
Maharashtra	33.5	29.8	36.6	30.9	30.6	38.4
Orissa	40.4	24.5	35.1	30.7	29.2	40.1
Punjab	36.8	23.8	39.4	31.6	29.7	38.7
Rajasthan	43.2	26.7	30.1	40.0	25.2	34.7
Tamil Nadu	36.8	27.0	36.2	39.2	24.7	36.1
Uttar Pradesh	34.1	27.5	38.3	34.0	26.5	39.5
West Bengal	16.2	29.1	54.7	22.2	23.9	53.9

Source: Computed on the basis of household data from NSS, 52nd round (1995-1996).

[a] Both diseases and disabilities (see endnote 17).

Responding to this particular situation would obviously require making assessments about the causal risk factors responsible for the poor health of older persons, especially multiple conditions. The authors examined this issue by using a count data model and a set of variables representing socio-economic status of households, obtained from the NSS 52nd round. The specification of the model[16] is briefly described below.

The dependent variable is the number of condition/s reported by individuals.[17] Explanatory variables in the analysis are both continuous and

dichotomous. Age and Square of Age (Age^2) as well as household monthly consumption expenditure (HHMCE) are continuous variables, while others such as sex, literacy, drinking water, and toilet type are dichotomous.[18]

The model was estimated separately for the rural and urban areas (see table 10). Clearly, those estimates suggest a strong positive correlation between age and risk of suffering a greater number of diseases. This relationship does not however hold with Age^2 as its coefficient becomes negative. It indicates that people might be more susceptible to the risk of contracting multiple diseases up to a certain age. Thereafter, these susceptibilities may taper off. How far is this explanation justifiable requires sifting through the biological literature and the concept of health stock in early ages. These results also suggest negative implications of poverty on health outcomes, especially in rural areas. To be precise, better-off older persons living in rural areas with a higher consumption expenditure (HHMCE) are less likely to suffer from numerous diseases. This is shown by a negative but statistically significant relationship between the household's average consumption expenditure (a commonly used indicator of poverty) and the number of diseases. Similar relationship also exists between public health variables (such as drinking water, toilet facilities) and the disease risks. In other words, expenditure on public health and hygiene reduces the risk of ailments. Literacy level may also help to reduce the risks of sickness significantly – especially in urban areas. Compared with males, probabilities of females suffering co-morbid conditions are higher.

Table10. Results of the count data regression model: negative binomial dependent variable: number of diseases

Explanatory variables	60 years and over living in rural		60 years and over living in urban	
	Coefficients	Standard error	Coefficients	Standard error
Constant	-5.900393	0.012076	-5.146724	0.024086
Age	0.143742*	0.00033	0.128663*	0.000666
$(Age)^2$	-0.000738*	2.26E-06	-0.000675*	4.56e-06
Sex dummy	-0.056446*	0.00037	-0.0608274*	0.000716
Literacy dummy	0.027533*	0.00045	-0.107109*	0.000740
Drinking water dummy	-0.111574*	0.00038	-0.0738475*	0.001180
Type of toilet dummy	-0.008248*	0.00226	-0.0220192*	0.000742
HHMCE	-6.21E-07*	1.40E-07	8.15E-06*	1.74E-07

***** Coefficients significant at 1 per cent level.

Barring the HHMCE, all other variables follow a similar explanation both for the rural and urban elderly. The negative HHMCE drawn for older persons living in urban areas implies that persons with higher consumption levels are also susceptible to co-morbid conditions – perhaps owing to life-style problems.

How can one manage these conditions suffered by disadvantaged older persons? Obviously, in view of their poor economic background, declining work opportunities and very high prevalence of diseases, this issue is expected to become serious challenge for India and countries with similar characteristics. Two possible options may be considered to help tackle the situation. One is to upgrade the network of existing primary and community health centres with basic facilities to assist older persons. The other requires evolving a health fund to finance old-age health and long-term care.

Inadequate public health expenditure and declining use of public health facilities

By contrast, several states including Bihar, Rajasthan, Uttar Pradesh and West Bengal, have reduced their per capita health expenditure in real terms during 1990-1991 and 1995-1996 (table 11). Similar cut were also made in the Central

Table 11. Growth in real per capita health expenditure of centre and states: 1990-1991 and 1995-1996

State	1990-1991 (Indian rupees)	1995-1996 (Indian rupees)	Annual average growth (per cent)
1. Andhra Pradesh	34.6	83.8	19.35
2. Bihar	25.4	21.9	(-) 2.92
3. Gujrat	50.9	52.7	0.70
4. Haryana	44.1	49.8	2.46
5. Karnataka	37.1	53.0	7.39
6. Kerala	51.2	63.7	4.47
7. Madhya Pradesh	30.4	31.8	0.90
8. Maharashtra	58.4	61.7	1.11
9. Orissa	33.0	48.2	7.87
10. Punjab	54.9	57.7	1.00
11. Rajasthan	63.0	58.1	(-) 1.61
12. Tamil Nadu	70.2	72.8	0.73
13. Uttar Pradesh	33.1	29.4	(-) 2.34
14. West Bengal	41.6	34.4	(-) 3.73
Centre	9.2	4.7	(-) 12.57

Source: National Sample Survey, 52nd Round (1995-96) - Report No. 446.
Note: 1 USD = 99.35 Indian rupees.

budget. This trend was however contrasted by Andhra Pradesh, Karnataka, Orissa and so on who increased their per capita health expenditure during the same period (table 11). And yet, there appears to be growing dependence on private facilities over-time. This is clearly shown in table 12, which presents a substantial decline in utilization of public health facilities during the period under study. The table specifically suggests a reduction in utilization of government hospitals.

Table 12. Share of public and private sectors in hospitalized treatment

Hospital type	Rural (per cent)		Urban (per cent)	
Government	1986-1987	1995-1996	1986-1987	1995-1996
Hospital	55.4	39.9	59.5	41.8
PHC/CHC	4.3	4.8	0.8	0.9
Public dispensaries	-	0.5	-	0.4
Non Government				
Private hospital	32.0	41.9	29.6	41.0
Nursing home	4.9	8.0	7.0	11.1
Charity institutions	1.7	4.0	1.9	4.2
Others	1.7	0.08	1.2	0.6

Source: NSS 52nd Round (1995-96), Report No. 441, November 1998, p. 28.

Against this background, arises an important question: Will families alone be able, in countries like India and Pakistan, to take responsibilities for their elderly – especially in the current economic environment? Clearly, the answer is no.

Concluding observations

It appears evident that neither India nor Pakistan are well prepared at the policy level to meet the challenges brought about by the changes in their population structures, characterized by a simultaneous increase of younger and older adults. While the former will require a matching improvement in employment opportunities, the latter may make demands for health and social security provisioning. Unfortunately, however, one foresees an increasing mismatch between the two sets of demands.

Admittedly, meeting the growing social and health security requirements of the ageing population in both countries hinges on the countries' respective constrained fiscal situation. Nevertheless, these issues can no longer be ignored

and appropriate instruments will have to be created to address them – especially in order to minimize the risks of any major economic-demographic incongruities. This may, inter alia, require the following:

- With both India and Pakistan emerging as major "demographic bonus states", three policy areas are likely to need further considerations: (a) nutrition and child health, (b) quality education with vocational training and market linkages, and (c) growth of activities with high employment potentials. Investment in rural economy is therefore a must. Also, quality of human life as measured in terms of socio-economic, environmental and welfare conditions will have to be taken into account as important indicators of development.

- Attempts will have also to be made to mainstream the post-retirement financial needs of the older persons. Problems faced by the low-income households in resource transfers to elderly need serious examination;

- On the health front, the large network of primary and community health facilities may need to be revamped in both India and Pakistan in order to offer additional facilities dedicated to providing basic health services for older persons. This however implies a change in public perceptions and attempts to include a few important geriatric conditions as part of the basic health-care package. In India, two major policy documents – i.e., the National Policy on Older Persons (NPOP, 1999) and the National Population Policy (2000) – endorse these initiatives;

- Reduction of expenditure on health services undermines the importance of negates the significance of the health security. The process has to be reversed;

- A complete reliance on families to provide care for older persons may not be realistic because of serious poverty issues and jobless growth in both countries. The Governments of India and Pakistan will have to chip in with appropriate financing mechanism;

- Attempts may nevertheless be made to strengthen the family system, for example, by allowing a rebate in personal taxation to those supporting their ageing parents;

- Creation of assured and stable savings instruments for older persons, contributing to income security. Some tax sheltered retirement accounts may also be designed;

- A social health insurance policy may be evolved with the help of finances generated through diverse financial sources including old-age taxes on health-hazardous industries, pay-role-tax, employers' contributions, public transfers;
- Pakistan may need to draw a clear-cut strategy for its ageing population and create institutions required for old-age income and health security.

Endnotes

1. The prospects of forward falling labour supply in developing countries like India and Pakistan is not considered.

2. This diagram postulates that the current economic regimes in India and Pakistan may not easily reverse their decelerating employment or bring qualitative improvement in labour situations despite being able to achieve faster GDP growth (see appendix 2). As both countries will keep expanding their pools of new job seekers due to upward demographic momentum, there may be problems in clearance of labour market and, to that extent, an economic-demographic mismatch may not be completely ruled. Further, educational achievements in the two countries are low. In India, this is particularly true in rural areas, among females, members of socially deprived groups, and in highly populous states like Bihar, Madhya Pradesh, Orissa, Rajasthan and Uttar Pradesh (Thomas, 2005). Pakistan is also confronted with more or less similar issues (Baqai, 2004). A situation like this may, inter alia, affect informal and family based support transfers to older persons.

3. Certain health financing studies from industrial societies have revealed that the growth of the elderly population has had little to do with the growth in health expenditures. To them, these spurts are to a large extent technology driven. This may or may not be true for Asian societies. Moreover, a faster growth of "*older old",* particularly in countries such as India and Pakistan, is likely to affect the demand for health care, requiring additional expenditure on health infrastructure and delivery. Long-term care is another emerging problem resulting from the high prevalence of functional disabilities among older persons in India (Alam, 2005; Alam and Mukherjee, 2005).

4. See, for example, Alam (2005) and Alam and Mukherjee (2005).

5. See Alam (2004b).

6. For details, see Prabhu and Chatterjee (1993).

7. See, for example, Alam and Mishra (1998).

8. For a more recent discussion on issues of poverty, food insecurity and malnourishment faced by people in India, see United Nations (2006). This publication clearly reveals that " … India still has the largest number of permanently and chronically undernourished people and one of the highest rates of child malnutrition in the world, and that hunger and malnutrition have been increasing since the second half of the 1990s". The report clearly substantiates some of the authors' arguments.

9. Governments in both the countries base their old-age policies on the assumption that the families will continue supporting their older persons. In many cases, however, these traditions are fast eroding. A

recent study on ageing in Pakistan by Clark, Zaman and Ghafoor (2002) supplements this argument. India is also facing similar problems.

10. These indicators may however mean little while discussing questions such as access, equity and efficiency.

11. Data on income distribution in Pakistan, especially the head count ratios of poverty, underlie serious conceptual issues as they often rely on household poverty levels rather than individual poverty levels. Further, the cut-off income level to determine whether persons are below or above poverty levels is questionable (Joekes and others, 2000).

12. For further details, see Husain (1999).

13. The elderly population in Pakistan is projected to grow from 8.1 million in 2000 to 15.6 million in 2020, and to 46.7 million in 2050 (United Nations, 2005).

14. Work participation rates of older persons from the 2001 census are still not available. The NSS (55th round for 1999-2000) however reports this figure as 29.9 per cent at the all-India level.

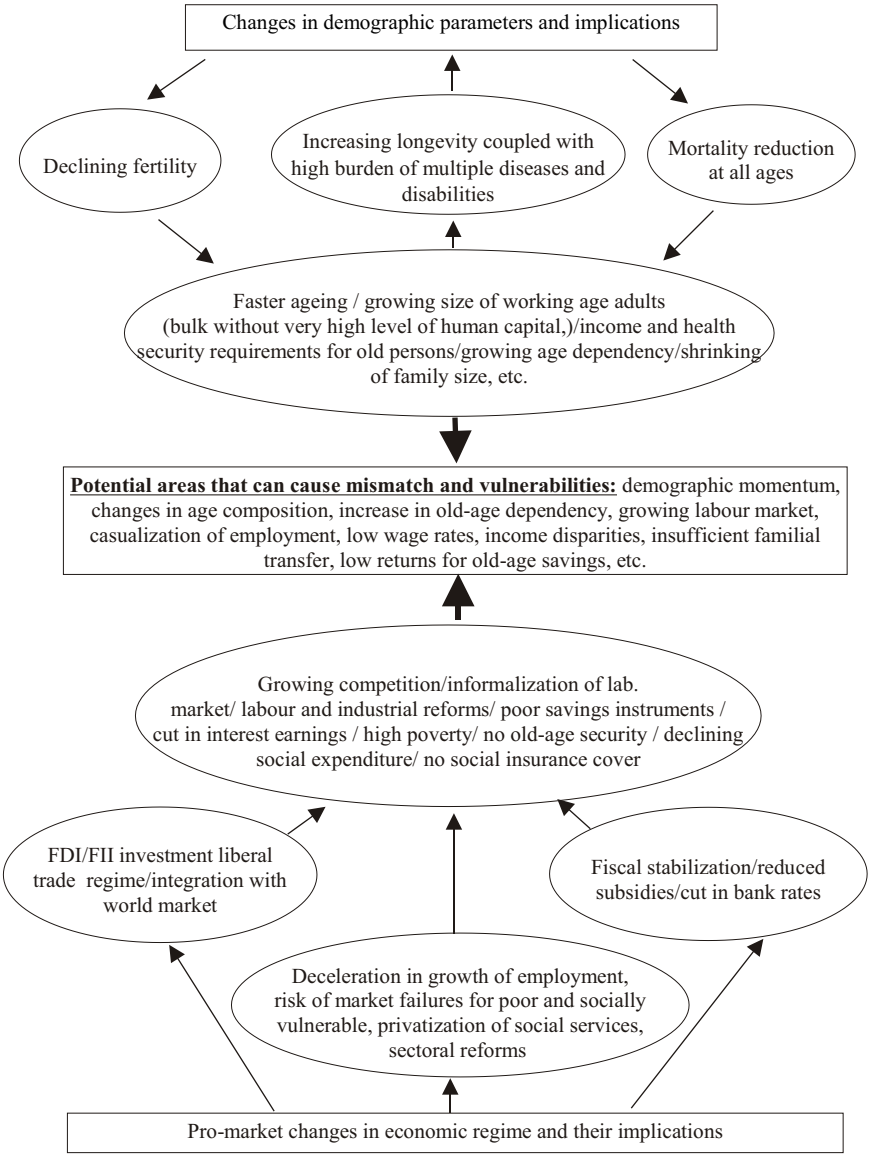
15. For a State-wise break-up of these facilities, see Alam (2006, table 1.10, p. 65).

16. Given the multiple and discrete nature of our dependent variable (i.e., the number of diseases/disabilities), a count data model was employed. Both Poisson and negative binomials were tried, but given the relative ease of the latter, especially while analysing the health outcomes that exhibit strong linkages between previous and successive events, we decided to restrict ourselves to the negative binomials (a Bernoulli process). For further discussion and methodological details, see Grootendorst, 2002; Cameron and Trivedi, 1986.

17. A total of 8 diseases and 5 disabilities were considered, including cough, haemorrhoids, joint problems, blood pressure, urinary problems, diabetes, cancer and heart disease. Disabilities comprise hearing and visual impairments, speech problems, locomotive disorders and amnesia.

18. Sex dummy (male = 1), literacy dummy (literate = 1), drinking water dummy (Tap, tube well and hand pump = 1, open well, canal water = 0), toilet type dummy (flush system = 1, all others = 0).

Appendix 1. Factors in economic-demographic mismatch: a hypothetical diagram



Appendix 2. Decelerating employment, poverty risk and prospects of intergenerational transfer in India and Pakistan

India

Year	Employment in organized sector			Employment in unorganized sector	Total
	Public	Private	Total		
1993-1994	19.3	7.9	27.2 (8.6 per cent)	288.7 (91.4 per cent)	315.9 (100.0 per cent)
1999-2000	19.4	8.7	28.1 (8.3 per cent)	308.6 (91.7 per cent)	336.7 (100.0 per cent)
Growth rate (1993-2000)	0.10 per cent	1.64 per cent	0.56 per cent	1.12 per cent	1.07 per cent
Employment elasticity	0.015	0.133	0.066	0.213	0.165

Source: Planning Commission of India (2002).

Pakistan

Sectors	Elasticity coefficient	
	1951-1961	1978-1987
Agriculture	1.62	0.42
Mining and manufacturing	0.77	0.35
Construction	0.47	0.39
Electricity, gas and water	0.21	0.43
Transport and communication	1.71	0.43
Trade	0.86	0.48
All sectors	0.94	0.41

Source: Husain, Ishrat (1999), p. 242.

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Living Arrangements of Older Persons in East Java, Indonesia

Contrary to the hypothesis, the percentage of older persons co-residing with the children was found to be higher in districts with more advanced stages of economic development. In rural areas, older persons were, by contrast, more likely not to co-reside with their children.

By Evi Nurvidya Arifin*

As in many other Asian countries, norms regarding family life in East Java have changed and will continue to change with the forces of globalization. Family structures used to be the pillars for the support of children and older persons. However, the declining fertility, rising mobility and rising female labour force are changing as are norms regarding the family. Therefore, the question arises as to who and how will the society finance the care of its elderly?

Study of the pattern of living arrangements of older persons is very important in order to examine how dependent these elderly are upon their offspring and how

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strong this support system still is. It would also provide some information regarding the need to introduce institutionalized care for older persons. Yet, the idea of institutionalization of older persons seems to remain a taboo in Indonesia as the family is still seen as playing an important role in providing support for its members. This does not mean that there is no such institution providing support for older persons in the country. However, in this paper, the discussion on living arrangements for older persons is restricted to arrangements within the family and does not include arrangements with other institutions.

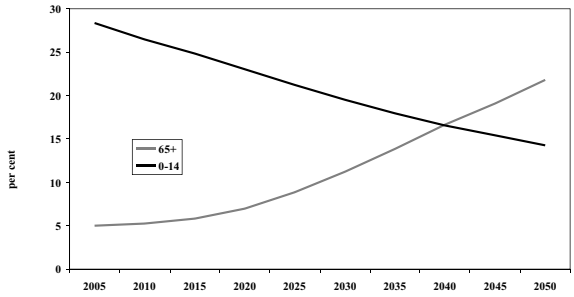
In the last decade, there have been few studies on living arrangements of the Indonesian elderly, such as Frankenberg, Beard and Saputra (1999), Cameron (2000), Beard and Kunharibowo (2001), Keasburry (2001), Frankenberg, Chan and Ofstedal (2002) and Schroder-Butterfill (2003). Some of them are limited in their geographical coverage while some others are small case studies. Beard and Kunhariwibowo examined the connection between living arrangement and support relationship from 20 cases in urban and rural areas of Java and Sumatra, focusing upon two distinct sociocultural groups: the Javanese and the Batak Karo.1 Keasburry's study2 focused on the rural Javanese in Yogyakarta and selected two different villages (297 respondents aged 55 years and above) in order to compare the different impact of migration, prosperity and agricultures possibilities on elderly care. Another study about the Javanese elderly by Schroder-Butterfill (2003) focused on the Javanese elderly living in a village in the regency of Malang, East Java. According to yet another study by Badan Pusat Statistik (2001), the Javanese's three home provinces of Yogyakarta, Central Java and East Java have reached below-replacement levels of fertility. Other studies utilized the Indonesia Family Life Survey, which covers 13 provinces and represents 83 per cent of the Indonesian population. However, the sample of this particular survey was not designed to gather sufficient information from small areas such as districts.

By contrast, the sample of the 2002 National Socio-economic Survey (SUSENAS), which forms the basis for this paper, allows the estimation of statistics which are representative at the district level. Relying on those data, this paper examines and compares the living arrangements of older persons taking into account differentials in their socio-demographic factors among the three selected districts of the province of East Java, at different stages of economic development. This paper also explores the hypothesis that the more "modern" an economy or the household is, the less likely elderly parents are to stay with their children. The paper also discusses the possible factors influencing living arrangements of older persons derived from other research findings. The data set is described before the discussion on the findings of this study. The paper ends with a concluding section.

Trends and context of population ageing in Indonesia and East Java

The Indonesian archipelago contained a population of 205.8 million people in 2000 consisting of various ethnic groups. The proportion of older persons aged 65 and above increased from 2.5 per cent in 1971 to 4.5 per cent in 2000 (Suryadinata, Ananta and Arifin, 2003). As shown in figure 1, the process of ageing in Indonesia, as in some other South-East Asian countries, is just beginning to accelerate. It was projected that this figure would grow to about 7.0 per cent in 2020 based on scenario 1 of Ananta, Arifin and Bakhtiar's study (2005). Furthermore, the proportion of older persons in 2040 will probably be more than double that of 2020 and exceed the proportion of young persons aged 0-14 years in 2040. In terms of absolute numbers, older persons increased from being nearly 3.0 million in 1971 to 9.1 million in 2000. Ananta, Arifin and Bakhtiar (2005) project that their number will increase to 10.7 million in 2005 and to 17.5 million in 2020, before reaching 47.4 million in 2040.

Figure 1. Percentages of elderly and young persons: Indonesia, 2005-2050



Note: Data compiled from scenario 1 in table 4 (Ananta, Arifin and Bakhtiar, 2005)

Indonesia is a very large country with various stages of development. It is not surprising, therefore, that stages of population ageing also varies among regions (Ananta, Anwar and Suzenti, 1997a) and ethnic groups (Ananta, Arifin and Bakhtiar, 2005) within the country. Table 1 shows that the Javanese is the oldest among the five largest ethnic groups in Indonesia3 and will continue to be the oldest at least until 2050.

Based on the 2000 population census data set, the province of East Java was one of the provinces having a high percentage of people aged 65 and over (6.0 per cent). The percentage was even larger in some districts of the province (see figure 2). Further, as seen in figure 2, the higher ageing proportion was concentrated in

the western part of East Java, while the proportion became smaller as it moved to the eastern part of the province. The two oldest districts (with the percentages of people aged 65 and over exceeding 10 per cent of the population) were the regencies of Pacitan (10.1 per cent) and Magetan (10. 1 per cent). The lowest one had already been as low as 3.6 per cent in the city of Surabaya, the second largest city in Indonesia, in which migrants accounted for a significant portion of the city's population and where fertility has dropped to below replacement level. Furthermore, the absolute number of older persons, and its related social and economic conditions, is another crucial issue in Indonesia in general, and in East Java in particular. As mentioned earlier, the number of older persons aged 65 and above reached 9.1 million in Indonesia as a whole and 2.1 million in East Java in 2000. In other words, elderly in East Java accounted for 23.1 per cent of the total Indonesians elderly. Furthermore, among districts in East Java, the elderly living in the three selected districts (Pacitan, Malang, and Surabaya) accounted for about 14.1 per cent of the entire elderly population in the province.

Table 1. Ageing proportion by ethnicity: Indonesia, 2005-2050

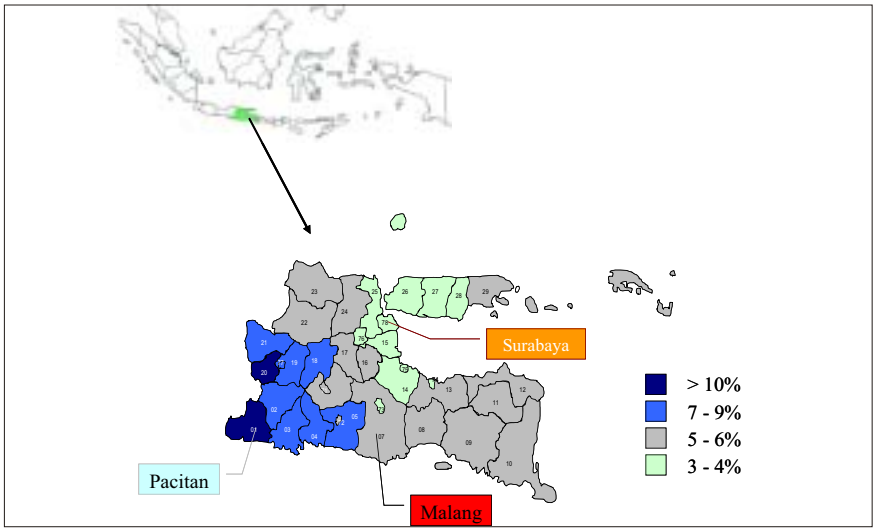
Ethnic group	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Scenario 1										
Javanese	5.97	6.34	7.02	8.44	10.79	13.93	17.22	20.54	23.55	26.81
Sundanese	5.03	5.02	5.59	6.62	8.43	10.83	13.46	16.44	19.15	21.75
Malay	3.25	3.46	3.95	4.87	6.36	8.23	10.12	12.52	15.08	17.78
Batak	3.43	3.76	4.27	5.19	6.58	8.24	10.05	11.93	13.84	16.49
Madurese	5.81	6.20	7.10	8.34	10.14	12.41	14.47	17.15	19.14	21.85
Others	4.12	4.32	4.93	5.83	7.27	9.10	11.20	13.68	15.81	18.12
Scenario 2										
Javanese	5.97	6.32	6.96	8.29	10.50	13.40	16.36	19.22	21.68	24.20
Sundanese	5.03	5.01	5.53	6.50	8.21	10.43	12.80	15.40	17.65	19.66
Malay	3.25	3.45	3.92	4.80	6.21	7.96	9.68	11.81	14.01	16.25
Batak	3.43	3.74	4.20	5.04	6.29	7.72	9.19	10.61	11.93	13.71
Madurese	5.81	6.18	7.03	8.18	9.84	11.87	13.60	15.78	17.20	19.09
Others	4.12	4.31	4.89	5.76	7.12	8.84	10.78	13.01	14.83	16.74

Source: Ananta, Arifin and Bakhtiar, 2005.

Note: Ageing proportion refers to the percentage of those aged 65 and above to the total population.

East Java has significantly reduced its mortality and fertility rates. Data show that the life expectancy at birth increased by 15 years within three decades, from 50 years in 1967-1971 to 65 years in 1996-2000 (Badan Pusat Statistik, 2001). This rate and the trend in its change are similar to those at the national level. At the same time, its fertility decline had been impressive compared to the one in many other provinces in Indonesia. The province's TFR dropped more than twice within the same period from 4.7 in 1967-1971 to 1.7 in 2000-2005 (Badan Pusat Statistik, 2001). East Java has reached below replacement level since the early 1990s and its TFR stood at 1.7 in 1996-1999, only slightly above Singapore's TFR which stood at 1.5 in 1998 (Saw, 2005). Therefore, demographically, East Java has been at an advanced stage.

Figure 2. Ageing proportion by district: East Java, 2000



This demographic revolution can be explained partly by the successful implementation of family planning programmes. The success in reducing both mortality and fertility has turned this province into one of the oldest of Indonesia; a position that it will remain at least until 2020 (Ananta, Anwar and Suzenti, 1997a). In other words, the province of East Java can be compared to European countries and to a few Asian ones such as Japan, Singapore and the Republic of Korea, in terms of attention required to be paid to the needs of the ageing population.

Urbanization and migration are part of the globalization process. In 2005, the urban population accounted for 48.3 per cent of the total population. It is projected that the urbanization rate in Indonesia will continue to increase and will reach at least 55.2 per cent in 2020, an increase from 30.9 per cent in 1990 (Ananta, Anwar and Suzenti, 1997b). Indonesians are also on the move and are becoming more educated. Some studies have indicated that urbanization and migration may lead to an abandonment of older persons in rural areas as their children migrate to cities or to other countries. Moreover, female participation in the labour market will also increase significantly, rising from 38.1 per cent in 1990 to 54.2 per cent in 2020 (Ananta and Anwar, 1995). This more widespread female participation in the labour force may lead to a decrease in the number of potential caregivers available in families.

Alike in other developing countries, the ageing process in Indonesia as a whole and in East Java in particular, is occurring much faster than the one in most developed countries. By contrast, the economic development of East Java has not been as advanced as other countries when they themselves started facing population ageing. The East Java's per capita gross regional domestic product was only US $ 7014 in 2002. Therefore, East Java is growing old before getting rich.

Growing old before becoming rich is particularly problematic. Such a fast pace of ageing has serious consequences for East Javanese families because public institutions, such as social security and health system, have not been fully prepared to support this growing elderly population. However, some progress has been made. As described in Arifianto (2006), on 28 September 2004, the Indonesian House of Representatives (*Dewan Perwakilan Rakyat*) passed the law on the National Social Security System (*Undang-Undang Sistem Jaminan Sosial Nasional*). It became a public law (No. 40/2004) the following month, on 19 October 2004. The distinguishing feature of this new law is its mandate on the creation of several social security schemes for Indonesian citizens: old-age pensions, old-age savings, national health insurance, work injury insurance, as well as death benefits for survivors of deceased workers. The schemes were to be financed through the payroll tax mostly from the formal sector. Law No. 40/2004 implies that the existing social security programmes were to be expanded to cover not just those employed as civil servants and private formal-sector workers, but eventually also those working in the informal sectors. More concretely, the law stipulates that the social security scheme would also cover the informal sector and the poor. Nevertheless, the traditional family support system that has been the main provider of old-age income security to this day in Indonesia was not included in the above-cited law.

Factors influencing living arrangements of older persons

Factors such as family size and structure, economic well-being, health status of older persons and cultural tradition, as well as norms are some of the possible factors influencing living arrangements of elderly. Furthermore, whether older persons will co-reside with their children can be determined to some extent by examining the costs and benefits of co-residence, opportunities and preferences. Based on existing studies, some reasons explaining older person's preference to live with their offspring are also presented below.

Why would older persons prefer to stay with their offspring?

Co-residence with children offers a range of benefits from companionship and emotional support to the fulfillment of the physical and financial needs of both parents and children. Because spouses tend to be in a spatial proximity and to have cultivated long-term ties and commitments, studies have demonstrated that married parents were less likely to co-reside with their children (Natividad and Cruz, 1997; Cameron, 2000). In this respect, men were favoured because wives were generally younger and socially prepared to take care of others. By contrast, the benefits of being married for women were much less apparent because husbands tended to be older and therefore wives were more likely to be the main source of support for their spouses, while children were generally the main source of care for women. Keasburry (2001) showed that, in rural Yogyakarta, 70.4 per cent of male elderly lived with their spouses and others, while only 32.8 per cent of female lived in such an arrangement.

Co-residence between elderly parent and children may allow for mutual financial support or domestic services. If the children live with their parents, they may be able to provide goods and services that their parents would have had to purchase. This may be especially important for those who are in poor health. The argument is that poor health status and disability decrease the likelihood of living independently at older age and increase the likelihood that a parent co-resides with a child (or sibling). Studies have demonstrated that, rather than a linear shape, the age patterns of co-residence with children follows a U-shape curve. In other cases, the association between age and disability is so strong that age becomes weakly associated with co-residence when health status is controlled for (DaVanzo and Chan, 1994). Generally it is assumed that poor health and disability trigger parents to move into children's households or induce their children to move into the parental house. The market care that could be an alternative to parental care is not always available, accessible, nor affordable. Therefore, in many circumstances, relatives, particularly children, are the only potential caregivers because the option

of buying services from the market is prohibitive for most families. This is particularly true in developing countries where services provided by Governments are so limited and precarious that families have no option other than providing themselves the necessary care for their elderly relatives.

Health status can be a result rather than the cause of specific living arrangements. For example, parents co-residing with their children, receiving emotional support may feel less lonely and thus be less prone to depression than those living alone; similarly those parents who were sick might have decided to move into their children's home.

Co-residence can also minimize the cost of living and therefore both parents and children can save money. The case for minimization of cost of living can be made in many developing countries, especially in areas where housing costs are very high and increasingly so. Studies have shown that in Asian countries such as the Republic of Korea co-residence with children is more prevalent in urban areas than in rural areas (Kim and Choe, 1992; Kim and Rhee, 1997). Housing shortages in urban areas might motivate co-residence, whereas in rural areas, children's out-migration might lessen the opportunity for co-residence. Land availability in rural areas made it easier for elderly to remain in a separate house, although children might live nearby. Schroder-Buttterfill (2004) pointed out, nevertheless, that the availability of children was not a guarantee for an adequate support.

By contrast, as mentioned earlier, co-residence may have some disadvantages for both parents and children. Co-residence with children can be viewed as a loss of privacy. With a larger income, people can afford to buy and enjoy privacy in independent living arrangements. Vast empirical evidences support the premise that higher income is associated with independent living. In other words, extended living arrangements can be seen as a means to obtain economies of scale or to exchange services. However, in some cases, higher income persons are associated with less co-residence.

There are problems with this view however. First, some literatures provide a measure of the effect of income on the probability of living alone (or co-residing), but they do not specify whether those living alone would be better off if they were co-residing nor whether those co-residing with children would be better off living alone (Palloni, 2000). Another problem is that the use of the economic approach frequently neglects the fact that household composition is influenced by cultural factors, while individuals in different societies may evaluate privacy and companionship differently. Ties that link generations can become weaker as a result of the increased individualism that generally accompanies the modernization and urbanization processes. In fact, it has been demonstrated that household

composition differs considerably across cultural and racial groups. Being Malay in Malaysia reduces the probability of living with children (Da Vanzo and Chan, 1994) whereas being religious in the Republic of Korea is associated with a higher probability of preferring separate residence (Kim and Rhee, 1997).

Da Vanzo and Chan (1994) mentioned that "opportunities" may affect decision to co-reside. Family size and structure may also play important roles. Childless older persons – whether de facto or de jure – are more likely to co-reside with others, either relatives (nieces/nephews) or maids. Studies have shown that in many Asian countries, older persons living alone represent consistently the smallest proportion of living arrangements (Cameron, 2000; Keasburry, 2001; Frankenberg, Chan and Ofstedal, 2002). Adopting or acquiring a grown-up child is rather common among childless people in South-East Asia and adoption is considered an ideal solution although it rarely comes without problem (Schroder-Butterfill, 2004).

No doubt that the availability of children constrains the set of possible living arrangements. Studies in general support the view that the number of living children is positively associated with the probability of living with (a) child(ren) and negatively associated with living alone (Natividad and Cruz, 1997; DaVanzo and Chan, 1994; Keasburry, 2001). The idea has been that more children increase the chances that at least one child will be willing to help a parent and that a higher numbers of sibling increases the chances that two or more of them will share the provision of care. A child's gender and/or marital status may be important as well. In western countries, daughters are much more likely than sons to co-reside with their parents and to provide care for them. However, the opposite may be true in some non-western countries. In Malaysia for example, sons are expected to be responsible for taking care of their parents (DaVanzo and Chan, 1994). Among the Javanese in rural Yogyakarta, older persons appear to have a preference for co-residing with their sons.

Fertility decline in the past has raised issues regarding the potential decline of co-residence among elderly parents and their children. The high number of living children among the present generation of older people actually facilitated co-residence in the recent past. However, given the current fertility decline and the increased life expectancy, the availability of caregivers for elderly parents is expected to decrease. Therefore, the decrease in the number of children may pose constraints on co-residence between generations. Yet, childlessness, as explained by Kreager (2004) is not adequately measured by reported data on the number of children ever born. Industrialization and urbanization processes, which increase spatial mobility, tend to further decrease the availability of children.

Modernization is also associated with a higher participation of women in the labour force. Since daughters (alike daughters-in-law) are the main source of care for their parents (and stepparents), the modernization process is likely to have an effect on intergenerational transfers.

Analysis of data

This study utilizes the 2002 Indonesia National Socio-economic Survey data set, known as 2002 SUSENAS, regularly conducted by the BPS (Indonesian Central Board of Statistics) and designed to collect information on demographic and socio-economic aspects of the population. This study limits its focus to three districts in the province of East Java, as shown in figure 2.5 These districts are selected in order to compare different impact of macro-geographical variables such as migration, urbanization and per capita income (gross regional domestic product).

The regency of Pacitan is selected to represent the elderly living in the area described as "Old before Rich". Pacitan is the oldest regency in the province with 10.1 per cent of its population aged 65 years and above. Moreover, its urbanization rate was only of 11.0 per cent in 2000, while its per capita regional gross domestic product stood at 1.9 million rupiah (1USD = 9,000 IDR) (or US$ 208) in 2002, making this regency the poorest and "less modernized" in the province. These conditions are certainly among the push factors for its population to out-migrate. The 2000 population census data show that out-migration from Pacitan to other districts within the same province is about 5 per cent.

Pacitan is completely in contrast with the city of Surabaya, the capital city of the province, which has a 100 per cent urbanization rate. Surabaya is just like other big cities, attracting migrants from surrounding areas. It is considered as the second biggest city in Indonesia and migrants account for a significant proportion of its population; 18.3 per cent in 2000 (Ananta, Arifin and Suryadinata, 2004). Surabaya's per capita gross regional domestic product in 2002 stood at about 23 million rupiah (or US$ 2,560). It is the second richest district after the regency of Kediri in East Java. Fertility in Surabaya has already reached below replacement level, but its population has not been ageing. The proportion of older persons was still as low as 3.6 per cent in 2000. The youth of Surabaya's population, despite the city's low levels of fertility and mortality, is due to a high influx of migrants.

Finally, the regency of Malang, a district in transition, was also selected for the study. It had an urbanization rate of 39.4 per cent in 2000, while the migrants coming to this regency accounted for 6.7 per cent of its population. In 2002, Malang's per capita gross regional domestic product stood at 4.2 million rupiah

(US$ 467), which represents twice Pacitan's income but is much lower than that of Surabaya.

For the analysis, the selected sample includes persons aged 60 years and above. The weighted count is used for the analysis of differentials in living arrangement of older persons so as to capture representative figures for each of the districts. This study analyses living arrangements and well-being of 83,866 older persons in Pacitan, 258,934 in Malang and 189,013 in Surabaya.

Living arrangements are defined here based on the information regarding the relationship of the various household members to the head of the household since most censuses and surveys are household-based and information is collected only for those living in the household. It is then categorized into three groups: older persons living with children, older persons living in a child's house and older persons living without children. The category "older persons living with children" encompasses elderly co-residing with at least one child and functioning as head of the household. This includes older persons living with a spouse and (a) child(ren), as well as older persons living with a child(ren) but without a spouse. Child or children are defined in the broad sense which can include grandchildren. If older persons live with children and are the parents or parents-in-law of the head of the household – not the head of the household themselves – this arrangement is categorized as older persons living in a child's house. In this particular arrangement, the children reciprocate the parents, who used to take care of them as children. The last group is that of older persons sharing a household with others. In this case, elderly can either be head of the household or members of the household. There is no gender division between son and daughter in this arrangement because numerous older persons live with more than one child. Therefore, the first two categories can be descr bed as co-residence with (a) child(ren) or co-residence in multigenerational household. The last group can be a quasi-co-residence, where the elderly parents live on their own but in close proximity to their children or other kins. However, it is not possible to report this quasi co-residence as there is no information available on children or other relatives living outside the household and the relative proximity between the residence of the parents and that of the children or other kins. It should be then noted that the more complex the exchange and network of support between elderly parents and adult children the less information can be provided by the SUSENAS.

Some of the socio-demographic and economic factors which have a bearing on the living arrangements of older persons include age, gender, marital status and employment status.

Findings

Description of the data

In this study, older persons, aged 60 years and above, comprised 16.2 per cent of the population in the regency of Pacitan, 10.8 per cent of the population in the regency of Malang and 7.3 per cent of the population in the city of Surabaya. Young elderly, aged 60-64 years, accounted for about 30 per cent of the total elderly in the regency of Pacitan, 33.9 per cent in Malang and 40 per cent in Surabaya, respectively.

As in many other countries, female older persons outnumbered male elderly in the regencies of Pacitan and Malang. By contrast, in the city of Surabaya, the numbers of female and male are similar. The majority of older persons were married (56.0 per cent, 61.6 per cent and 65.5 per cent in Pacitan, Malang and Surabaya, respectively) and some were widowed (40.2 per cent in Pacitan, 36.3 per cent in Malang and 30.8 per cent in Surabaya). A small percentage of older persons were divorced and an ever smaller percentage of them were single.

In rural areas, where agricultural-based jobs were the only viable options, it could be expected that older persons easily find opportunities to continue working. As shown in Pacitan, 66 per cent of older persons indeed worked the majority of them in agriculture. This was in contrast to Surabaya where only 33 per cent of older persons worked, many of them in trading (retail businesses).

Living arrangements

Table 2 shows that in all districts, the majority of elderly co-resided with at least one child. In Pacitan, 57 per cent of older persons co-resided with (a) child(ren), while in Malang and Surabaya 69 per cent and 70 per cent, respectively, did. It is interesting to examine the role played by older persons when living in such an arrangement. In Pacitan, the role they played was evenly divided between "own household" (as head of the household, assuming that children were perhaps still supported by their parent), and "live in child's household" (as dependent, living with the children, themselves playing the role of head of the household). This division was important and pointed out to the existence of reciprocity in parent-child relations. However, in Malang and Surabaya, the percentage of older persons housing their children in their own household was much higher than that of those living in their child's household. It appears that data from the survey did not support the hypothesis that living in more urbanized areas prevented older persons from living with their children.

Table 2. Living arrangement of elderly people in 3 selected districts in East Java by sex: 2002

	Living arrangement			Total	
	Own household	Child's household	Without children		
Pacitan					
Male	36.90	16.93	46.17	100.00	46.4
Female	21.64	38.56	39.80	100.00	53.6
Total	28.72	28.52	42.76	100.00	
Malang					
Male	64.24	10.09	25.68	100.00	42.8
Female	35.33	30.24	34.43	100.00	57.2
Total	47.70	21.61	30.68	100.00	
Surabaya					
Male	62.42	6.06	31.52	100.00	50.3
Female	50.31	21.47	28.22	100.00	49.7
Total	56.40	13.72	29.88	100.00	

The percentage of older persons living without children – whether alone, with spouse only or with others – varied from 30 per cent in Surabaya to 43 per cent in Pacitan. The percentage of elderly living both alone and with spouse accounted for 24 per cent in Surabaya, 25 per cent in Malang and 34 per cent in Pacitan. The finding of the high level of childlessness among older persons in East Java should be viewed in the wider context of the historical pattern of fertility in Indonesia. From the 1971 Indonesian census, it was shown that East Java had the highest percentage of childless women among ever married ones aged 30 years and over (as quoted by Schroder-Butterfill, 2004 from Tukiran and Hull, 1976). Another possible explanation is the high level of out-migration from this regency.

In terms of gender differences in the case of co-residence with children, as shown in table 2, there is a similar pattern among the three selected districts; older women tend more frequently to live in a child's household than do male elderly. Also, living in their own household with their children, male elderly were more likely to retain the position of head of household as compared with females. This indicates that women tend to benefit more from co-residing with their children, while men may not to inspire the same level of loyalty. In Malang, the male elderly burden was higher than that of female: 64.2 per cent of them remained head of the household when living with their children, as compared with 35.3 per cent of female. Gender difference in the living arrangements of older persons was

probably contributed by gender differences in some basic demographic and social characteristics.

Table 3. Living arrangements of elderly people in 3 selected districts in East Java by age: 2002

	Living arrangement			Total	
	Own household	Child's household	Without children		
Pacitan					
60-64	43.23	13.21	43.57	100.00	29.5
65+	22.65	34.94	42.42	100.00	70.5
Malang					
60-64	58.05	16.01	25.94	100.00	33.9
65+	42.39	24.49	33.12	100.00	66.1
Surabaya					
60-64	65.12	7.75	27.13	100.00	39.3
65+	50.75	17.59	31.66	100.00	60.7

Table 4. Living arrangement of elderly people in 3 selected districts in East Java by marital status: 2002

	Living arrangement			Total	
	Own household	Child's household	Without children		
Pacitan					
Single			100.00	100.00	0.3
Married	36.60	12.83	50.57	100.00	56.0
Divorced	17.18	17.18	65.63	100.00	3.5
Widowed	16.17	55.92	27.90	100.00	40.2
Malang					
Single			100.00	100.00	0.3
Married	66.99	4.96	28.05	100.00	61.6
Divorced	15.48	30.93	53.59	100.00	1.8
Widowed	23.97	44.17	31.86	100.00	36.3
Surabaya					
Single			100.00	100.00	1.2
Married	65.58	2.79	31.63	100.00	65.5
Divorced	37.50	25.00	37.50	100.00	2.4
Widowed	40.60	36.63	22.77	100.00	30.8

A similar pattern was found in all districts where the pattern of living arrangement differed by age group (table 3). The percentage of those living with children and playing the role of head of the household was higher among younger elderly, aged 60-64, than among older ones. Moreover, living in the child's household was associated with older age and might have occurred as a result of widowhood, financial, physical and emotional constrains, etc. The effect of widowhood on living arrangements of older persons became clearer with the results presented in table 4. In all districts, a widowed elderly was more likely to live in his/her child's household than a married or divorced one.

Participation in the labour market

In general, older persons in Indonesia were still economically active in the labour market. In most of the regencies, more than 50 per cent of them are still working (Arifin and Ananta, 2004). These older persons might work because of economic necessity – if this were to be true, the number of elderly working in regencies would be more than that in cities. If older persons worked not because of economic necessity, then the numbers in the regencies would be lower than that in cities. The results presented in table 5 show that the percentage of older persons working in the regency of Pacitan was higher than that in the city of Surabaya. A possible explanation for this disparity was that elderly in urban areas were likely to work in informal sectors, where there is not retirement age. Furthermore, in rural areas, agricultural sector is always open to people willing to work.

Table 5. Living arrangement of elderly people in three selected districts in East Java by employment status: 2002

	Living arrangement			Total	
	Own household	Child's household	Without children		
Pacitan					
Working	33.29	18.21	48.50	100.00	66.21
Not Working	19.79	48.72	31.49	100.00	33.79
Malang					
Working	53.57	8.16	38.27	100.00	46.81
Not Working	42.54	33.45	24.01	100.00	53.19
Surabaya					
Working	57.01	4.67	38.32	100.00	32.62
Not Working	56.10	18.10	25.79	100.00	67.38

A similar pattern was found on the relationship between employment status and living arrangements of older persons. In all districts, the working elderly were more likely to live without children than non-working ones. Table 5 also shows a similar trend: non-working elderly were more likely to live in their child's house than those working.

Conclusion

Three different districts were selected in this study so as to capture a range of demographic and socio-economic conditions and assess their impact on the living arrangement and well-being of older persons. The regency of Pacitan is home to the oldest population in the province of East Java, having a percentage of persons aged 65 and above which neared 10.1 per cent in 2000. Pacitan is also the poorest district in the province as it has the lowest per capita gross regional domestic product and urbanization rate. Thus, Pacitan has "become old before getting rich". By contrast, the city of Surabaya is fully urbanized and is the second largest city in Indonesia. However, the proportion of older persons is the lowest (3.6 per cent) in the province as a result of the big influx of migrants. The per capita gross regional domestic product of Surabaya is the second highest in the province. Unlike Pacitan, Surabaya has "become rich before getting old". On the other hand, the Regency of Malang is a district in transition. The ageing proportion, urbanization rate and per capita gross regional domestic product lie between those in Pacitan and Surabaya. Malang's urbanization rate is approaching 50 per cent and its per capita gross regional domestic product is about twice that of Pacitan.

It was hypothesized that as developing countries continue to modernize (becoming increasingly industrialized and urbanized), the proportion of adult children co-residing with their ageing parents would diminish (Nitividad and Cruz, 1997; Cameron, 2000). The paper finds that the majority of older persons in Indonesia co-resided with their children, although parents' role in the household varied according to districts. Contrary to the hypothesis, the percentage of older persons co-residing with the children was found to be higher in districts with more advanced stages of economic development (such as Malang and Surabaya). In rural areas, older persons were, by contrast, more likely not to co-reside with their children.

The cost of housing might be one of the explanations for this disparity. Young adults in an urbanized district such as Surabaya might find it difficult to own a house and therefore may continue to live with their parents. The results (not presented here) also showed that nearly every household in Pacitan owned at least a piece of land, whereas in Surabaya very few did (10 per cent). In the inheritance system, the land would be inherited by the children who get married first. In addition, nearly every household in Pacitan owned a house while in Surabaya the

percentage of ownership of a house was smaller. People's lives were also generally busier in the district with a higher stage of economic development and, as a result, people may opt to live together. It seems that urbanization did not always prevent older persons from co-residing with their children although Indonesia does not have any financial incentives in place to encourage co-residence with ageing parents as is the case in Singapore.

In Pacitan, older persons were found to be either the head of the household or a dependent in their children's home. In more urbanized areas, the picture is different as most elderly appeared to play the role of head of the household. In Surabaya, 56 per cent of older persons co-resided with their children and retained the status of head of the household while in Malang, only 48 per cent of them did. In other words, young adults in Malang and Surabaya might still be financially dependent on their elderly parents. This highlights parents' altruistic behaviour and role as they provide housing for their children in rather costly urban areas.

In all districts, the percentage of persons living without children was greater among those who were working than that among those not working. It suggests that living independently appeared more attractive to those older persons still actively participating in the labour market. In addition, higher levels of income might be associated with a greater tendency not to co-reside with children.

The pattern of living arrangements of older persons may remain the same in the next few years. In other words, kin availability or familial support would continue to remain an important factor of living arrangements of the elderly. Despite the pressures of globalization, family structures have endured in the three districts surveyed in this paper and, by and large, older persons have been looked after by their offspring. However, as the pace of population ageing increases, there will be an increased scope for institutional arrangements for elderly care. This may come about through an expansion of the social security system, as well as the strengthening of those infrastructures for elderly care that may be required in the future.

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Endnotes

1. Beard and Kunhariwibowo's study relied on a case-study strategy with 20 case studies involving elderly respondents aged 60 years old and above and their adult children defined as persons over 18 years old. The 20 cases were evenly scattered in two provinces, the Special Province of Yogyakarta and the Province of North Sumatra. Ten case studies involved the Javanese respondents with 5 cases in urban and 5 cases in rural. Similar number of cases among the Batak Karo (5 cases in urban and 5 cases in rural) were selected in the Province of North Sumatra.

2. Keasburry's study was carried out using a questionnaire and face-to-face interviews. The village of Kebonagung, the subdistrict of Imogiri, the Regency of Bantul and the Village of Giriwungu, subdistrict of Panggang, regency of Gunung Kidul were selected. The former has characteristics representing a relatively more prosperous village with economic opportunities outside agriculture but still having agriculture as the main employment. The latter is a poor village with limited agricultural possibilities and almost no other opportunities to generate income. It was hypothesized that the out-migrants from Giriwungu would be higher than from Kebonagung.

3. The rank of the five largest ethnic groups in Indonesia is as follows: The Javanese, Sundanese, Malay, Batak and Madurese (Ananta, Arifin and Bakhtiar, 2005).

4. 1USD is assumed to be equivalent to 9,000 rupiah.

5. East Java in 2002 had 37 districts consisted of 29 regencies and 8 cities. The geographical locations are referred to the figure 2. The 8 cities have a code beginning with 7: 71 for the city of Kediri, 72 for Blitar, 73 for Malang, 74 for Probolinggo, 75 for Pasuruan, 76 for Mojokerto, 77 for Madiun and 78 for Surabaya. The regencies are ordered as follows: 01 Pacitan, 02 Ponorogo, 03 Trenggalek, 04 Tulung agung, 05 Blitar, 06 Kediri, 07 Malang, 08 Lumajang, 09 Jember, 10 Banyuwangi, 11 Bondowoso, 12 Situbondo, 13 Probolinggo, 14 Pasuruan, 15 Sidoarjo, 16 Mojokerto, 17 Jombang, 18 Nganjuk, 19 Madiun, 20 Magelang, 21 Ngawi, 22 Bojonegoro, 23 Tuban, 24 Lamongan, 25 Gresik, 26 Bangkalan, 27 Sampang, 28 Pamekasan and 29 Sumenep.

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Attributes of Active Ageing among Older Persons in Thailand: Evidence from the 2002 Survey

Active ageing groups were found mostly among males, "younger" and married elderly, with a rather high prestige occupation and high levels of education, suffering from no chronic illnesses.

By Kattika Thanakwang and Kusol Soonthorndhada*

Thai people's life expectancy has risen from 59 to 72 years between 1964 and 2005 (Prasartkul and Vapattanawong, 2005), while the proportion of persons aged 60 years and over in Thailand has been dramatically increasing, from 4.6 per cent in 1960 to 9.5 per cent in 2000 (National Statistical Office (NSO), 1960 and 2000). It is expected that Thailand will face a "population ageing" crisis in the

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year 2017, when older persons will constitute approximately 14 per cent of the total population, an increase from 7 per cent in 1987 (Jitapunkul, 2000). In other words, the percentage of older persons will double within 30 years and will further increase to 25 per cent of the total in 2035, based on a recent population projection done by the Institute for Population and Social Research, Mahidol University (2006). This means that Thailand has only a relatively short time to prepare to respond to the various challenges brought about the greying of its population and in particular issues related to the health, welfare, housing and long-term care of older persons.

Old age is the period of obvious changes in both physical and mental capacities, which result in many inevitable health problems. Older persons usually fall victim to various illnesses and diseases, both communicable and non-communicable. Hoffman, Rice and Sung (1996) report that 88 per cent of all older adults in the United States of America suffered from at least one chronic condition and that 69 per cent of them had more than one such condition. According to a study conducted by the Health Research System Institute in 1999, older persons in Thailand have been increasingly afflicted by chronic conditions and are facing more and more disabilities. It was found that 74.3 per cent of Thai elderly had at least one chronic illness and that most of them suffered from many chronic illnesses simultaneously (Chooprapavan, 2000). Several studies are showing that the origins of risk for chronic conditions are socio-economic factors, inadequate diet and other established risky health behaviours such as smoking, drinking alcohol and not performing physical activities (Chayovan and Knodel, 1996; Jitapunkul and others, 1999; Chooprapavan, 2000).

Normally, some chronic illnesses can be prevented and controlled by engaging in health-promoting behaviours. However, various studies note that the Thai elderly tend precisely to avoid such behaviours. For example, a study by Chayovan and Knodel (1996) found that less than half (48 per cent) of older persons exercised and only about 31 per cent had regular physical check-ups. The Survey of the Elderly in Thailand conducted by the NSO in 2002 found that most Thai older persons ignored exercise and that only 22 per cent actually did exercise, while only one third had annual check-ups performed. This indicated that Thai older persons rarely nurture their health, which can lead to various health problems in later life. Nearly one fourth of older persons suffered from poor and very poor health, and 3 per cent had disability conditions (Chayovan, 2005). As a result, the Government of Thailand will have a heavier burden in providing health services for older people, especially regarding their illnesses. These conditions also drain a family's financial resources as well as have an adverse effect on the national economy.

Another important problem faced by the Thai elderly is their economic condition. The average annual income of older persons was about 29,000 baht (US$1 = about 36 baht) and the median annual income was about 10,000 baht. One third of older persons had an average annual income of less than 5,000 baht or less than the median income of the Thai elderly population in general and well below the poverty line (Chayovan, 1999). Another study, "Thai Vulnerable Elderly" conducted by Chayovan (2005), found that approximately 14 per cent of older persons in Thailand faced economic problems. Most of them were female, living in rural areas and having little education. In addition, most of those disadvantaged elderly had a lack of the knowledge about how to prepare themselves to face the "golden years", especially possible health and economic problems. Only one fifth had made some kind of preparation for their economic well-being and health before ageing.

Although preparation for a future "ageing society" in Thailand has still not been set as priority item in the national agenda, many laws and various plans for older persons have been promulgated and implemented, such as the Act on Older Persons, 2003, which guarantees the right to receive social welfare services and tax privileges for those who take care of their elderly parents. There was also the first National Plan for Older Persons (1986-2001) which aimed to stimulate public awareness for society's responsibility to take care of older persons and encourage them to retain their roles as "active participants of the societies". The Second National Plan for Older Persons (2002-2021) is aimed at promoting well-being and social security, including preparation for good quality ageing (Ministry of Social Development and Human Security, 2005; National Economic and Social Development Board (NESDB), 2005). As the population ages, there will be increasing demand for policies and plans to encourage more and more individuals to reach old age in good health. Thus, an "active ageing" approach to policy and programme developments has the potential to address the many challenges faced by both individuals and an ageing society (WHO, 2002). This would help to offset the rising costs in pensions and income-security schemes as well as those increasing expenses related to medical and social care.

One of the most important issues that the related government agencies plan to promote to set the direction for addressing the needs of older persons in the future is "active ageing" (National Commission on the Elderly and Bureau of Empowerment for Older Persons, 2004; NESDB, 2005). This initiative is in line with the Policy Framework for Active Ageing launched by WHO in 2002. WHO defines "active ageing" as "the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age". Active

ageing enables people to realize their potential for physical, social and mental well-being throughout their life course and to participate in society according to their needs, desires and capacities. The word "active" refers to older persons who are independently and continuously interacting with others, both family members and others in the larger society – not just those who are physically active or who participate in the workforce. In addition, active ageing is also important for improving the quality of life in later life. Thus, individuals should be aware and should prepare themselves in order to maintain health, independence, security and produce some benefits for society (WHO, 2002: 12).

In Thailand, "active ageing" is still not a concept widely accepted by all sectors. However, Jitapunkul (2001) coined an expression in the Thai language, *phleutta palang*, which corresponds in meaning to WHO's concept, and he mentions that active ageing should be considered as representing a new direction in older persons' development.

Although concepts of "active ageing" refer to all ages and require multidisciplinary study on ageing, in many countries, including Thailand, only fragmented research on health, participation and security of older persons has been carried out. Research using the WHO framework based on the integration of these three basic factors represents a challenge. In Thailand, such research on active ageing using the WHO framework is still limited to a very small number of studies. A study by Yatniyom (2005) for example, explored active ageing among elite Thai older persons, but involved only a case study using a qualitative approach. The present paper is the first to use the latest national survey data of the Thai elderly. The findings from this latest study will constitute the ground for further research to construct an appropriate active ageing conceptual framework and build a knowledge base useful for shaping policies on active ageing in Thailand.

Objectives

This study aims to assess active ageing attributes of Thai older persons in relation to sociodemographic characteristics and active ageing-related factors using the WHO framework, which consists of three components: health, community participation and security.

Methodology

Data source

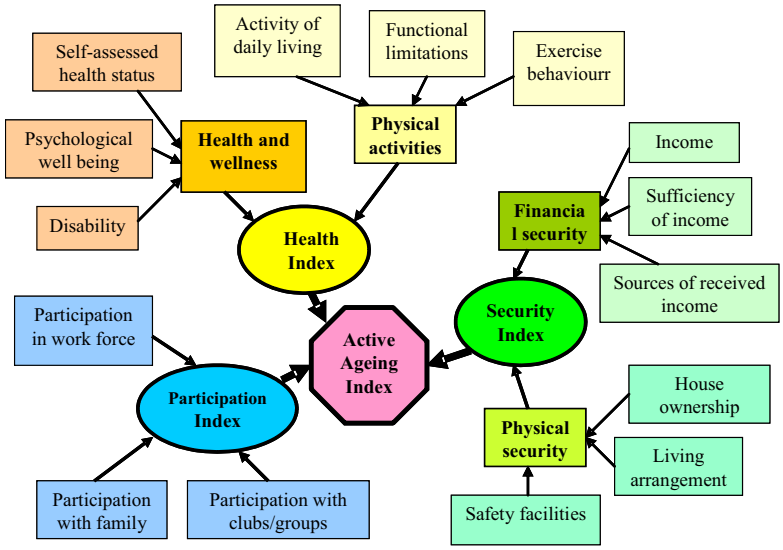
The source of data was the 2002 Survey of the Elderly in Thailand conducted by NSO. The population in the survey covered all persons aged 50 years and over

who resided in the sample households. Stratified two-stage sampling was employed to produce nationally and regionally representative samples. Seventy-six provinces in five regions of Thailand in the year 2002 were allocated to the stratum, and each province was divided into municipal and non-municipal areas, according to the administrative classification. The first sampling, in which units were blocks selected from the municipal area and villages selected from the non-municipal area, was conducted by using probability random sampling in all 109,966 blocks/villages. The first samples consisted of 5,796 blocks/villages. The second sampling units were private households selected by using systematic random sampling from the list of all enumerated households in each block/village of the first sampling. Sample size was determined by selecting 15 households per block in municipal areas and 12 households per block in non-municipal areas; there were 79,560 household samples. All persons aged 50 years and over in selected households were interviewed. Data were collected from April to June 2002, yielding 43,447 completed interviews. In this study, the analysis was restricted to the older population aged 60 years and over, which reduced the number of the samples to 22,825 persons. Sample weights were applied in order to make the sample nationally representative. In this paper, results were appropriately weighted by calculating new weight so that the number of older persons used in the analysis was equal to the actual samples.

Measurement of variables

Although the 2002 Survey of the Elderly in Thailand was not designed to capture the specific concept of "active ageing", the information in this survey did cover the major components of this concept, namely, health, community participation and security. The indicators for active ageing recommended by the Active Ageing Taskforce of the Western Australian Government (Active Ageing Taskforce, 2003) were applied to measure the active ageing of Thai older persons. The composite indices of health, community participation and security were constructed first. Then the active ageing index was constructed by combining these three above-cited indices. They consisted of a total of 15 indicators: six indicators for health (three indicators for health and wellness, and three indicators for physical activities), three indicators for community participation, and six indicators for security (three indicators for financial security and three indicators for physical security). These are illustrated in figure 1:

Figure 1. Active ageing index: 3 dimension indices and 15 indicators



Each dimension of active ageing (health, community participation and security) was constructed using a weighted score for each of the indicators. Each composite score was the sum of answers to several indicators within each dimension. However, since there was variability in the range of possible answers to the questions within a single composite, a simple summation of answers would not have insured equal contribution of all questions, and there would have been an obvious inequality in the contribution of the total variability of the composite score. In order to correct this, the method to adjust each composite for the answer range of each indicator and for the total number of indicators in the composite was applied (McGahan and others, 1986). For example, the composite score on the health dimension is composed of six indicators (X_1 – X_6). This is done mathematically as shown in the formula below:

$$\text{Composite score} = X_1/MxT + X_2/MxT + X_3/Mxt + X_4/MxT + X_5/MxT + X_6/MxT$$

Where: X = the score of the each indicator

M = the maximum answer value of each indicator

T = the total number of indicators of a dimension

$$\text{Composite score of health} = X_1/5x6 + X_2/3x6 + X_3/1x6 + X_4/1x6 + X_5/1x6 + X_6/1x6$$

Then an index of each dimension (health, community participation and security) was constructed. To calculate these dimension indices, minimum and maximum values (goalposts) were chosen for each underlying indicator. Performance in each dimension is expressed as the minimum and maximum value between 0 and 1 in accordance with the construction method of the Human Development Index developed by the United Nations Development Programme (UNDP, 2005) as follows:

$$\text{Dimension index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

According to the WHO's concept of active ageing, health, participation and security are inextricably linked. The active ageing index (AAI) is computed in a straightforward manner. It is a simple average of these three indices according to the formula below:

Active ageing index = 1/3(health index) + 1/3(participation index) + 1/3(security index).

Each index was classified into three levels based on the UNDP criteria of human development level, which constitutes an indicator of the quality of life, as follows:

(1) Index score less than 0.5 is low level;
(2) Index score between 0.5 and 0.79 is moderate level;
(3) Index score equal or higher than 0.8 is high level.

Table 1. Description of indicators and dimensions for constructing active ageing index

No.	Component	Indicators	Description	Measurement scale	Frequency (per cent)
1	**Health index**	Self-assessed health status	Self-assessed health status is an individual's own assessment of his or her health.	5=very good 4=good 3=Fair 2=poor 1=very poor	5.2 39.3 29.0 22.4 4.1
2		Psychological well-being	The perception of sense of mental wellness in term of self-esteem.	3 = high 2= moderate 1=low 0= no	42.3 36.3 4.0 17.4
3		Disabilities	The numbers of handicaps such as paralysis, blindness and deafness.	1 = no 0 = 1 or more	92.0 8.0

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Table 1 *(Continued)*

No.	Component	Indicators	Description	Measurement scale	Frequency (per cent)
4		Activity of daily living (ADL) limitations	ADL limitations consider inability in performing one of these three activities: eating, dressing, and bathing.	1 = no 0 = 1 or more	92.8 7.2
5		Functional limitations	Physical limitation, such as squatting, lifting up object weighing 5 kg, walking about 1 km, and climbing stairs (2-3 steps).	1 = no 0 = 1 or more	54.0 46.0
6		Exercise behaviour	Older persons having performed any exercise 6 months prior to the interview.	1 = yes 0 = no	18.3 81.7
7	**Community participation index**	Participation in work force	The elderly still participates in paid and unpaid work.	1 = yes 0 = no	35.4 64.6
8		Interaction with family members	The elderly's support to family members, e.g. food supply, house keeping and child care.	1 = 1 or more 0 = no	59.0 41.0
9		Participation in clubs/groups	The elderly takes part in activity proposed by various groups, i.e. elderly group, funeral group, vocational group, house wife group, cooperatives group, and volunteer scout group.	1 = 1 or more 0 = no	40.6 59.4
10	**Security index**	Income	An average income categorized according to poverty line.	2 = > poverty line 1 = < poverty line 0 = no income	77.2 20.5 2.3
11		Sufficiency of income	The self-assessment by the older persons on whether his/her income is sufficient for a living.	2 = sufficient 1 = not sufficient 0 = no income	66.9 30.8 2.3

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Table 1 *(Continued)*

No.	Component	Indicators	Description	Measurement scale	Frequency (per cent)
12		Sources of income	The number of sources of income that the elderly receives, i.e. work, pension, government living allowance, saving/interest, spouse, children, relatives, or others.	2 = 2 or more 1 = 1 source 0 = no	66.1 31.7 2.2
13		House ownership	The ownership of the dwelling in which older person is living.	1 = yes 0 = no	79.8 20.2
14		Living arrangement	The co-residence of the elderly with family members or others in their household	1 = with spouse, children or others 0=living alone	93.8 6.2
15		Safety facilities	Safety facility denotes to the safe material facilitating in a toilet.	1 = yes 0 = no	5.0 95.0
16	**Active ageing index**	A composite index constructed from 3 dimensions	The positive or active living of the elderly based on the WHO concept (a combination of health, community participation and security indices).	Three level 3 = high 2= moderate 1 = low	22.6 66.5 10.9

Note: In this study, older persons with an annual total income below 10,000 baht (about US$278) are categorized as poor.

Statistical analysis

Univariate analysis was used in analysing characteristics of the respondents. Bivariate analysis, applying the Chi-square test, was used to analyse the distribution of indicators, components of active ageing and active ageing index.

Findings and discussions

General characteristics of respondents

Respondents in this study totaled 22,825 persons aged 60 years and over, with an average age of 69 years, with more than half (58 per cent) being aged 60-69. The number of females was higher than males (56 and 44 per cent respectively). Nearly two thirds of them were married (64 per cent) while one third

were widowed, divorced or separated (33 per cent). For education, 72 per cent had completed primary school. Two thirds of them were not working (65 per cent), and about 17 per cent were engaged in the agricultural sector. Approximately two thirds (66 per cent) suffered from two or more of chronic illnesses.

Health

The health index in table 2 was constructed based on six indicators (three indicators of health and wellness and three indicators of physical activity). Data indicated that the majority of older persons had a health index at a moderate level (69 per cent), nearly one fourth had poor health (21 per cent) and 11 per cent had good health. Moderate and good health was found among males more than among females. Good health decreased with age while poor health increased. Married elderly were generally healthier than those who were single, widowed, divorced or separated.

Table 2. Percentage of Thai older persons classified by health index levels and characteristics

Characteristics	Poor	Moderate	Good	Total	χ^2
Sex					
Males	15.7	69.6	14.7	100	481.1
Females	24.1	68.6	7.3	100	p<0.001
Age group (years)					
60-69	13.4	73.1	13.5	100	1368.0
70-79	25.3	66.8	8.0	100	p<0.001
80 and over	41.8	54.8	3.4	100	
Marital status					
Single	23.2	66.3	10.5	100	499.4
Married	16.4	71.1	12.5	100	p<0.001
Widowed/ divorced/ separated	27.8	65.2	7.0	100	
Education					
No education	30.6	64.7	4.7	100	1289.8
Primary	18.7	71.3	10.1	100	p<0.001
Secondary and above	9.0	59.7	31.2	100	
Occupation					
No occupation	25.4	65.6	9.0	100	998.1
Farmers	8.5	79.8	11.7	100	p<0.001
Merchants	11.5	76.9	11.5	100	
Services/ technician	10.9	74.2	15.0	100	
Civil servants/ professional	8.0	66.5	35.4	100	

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Table 2. *(Continued)*

Characteristics	Poor	Moderate	Good	Total	χ^2
Chronic illness (no. of diseases)					
None	14.3	68.5	17.2	100	360.9
One	15.2	72.4	12.3	100	p<0.001
Two or more	23.2	68.0	8.8	100	
Regions					
Bangkok	16.3	68.1	15.6	100	108.9
Central	20.8	69.6	9.6	100	p<0.001
North	21.9	69.0	9.1	100	
North-East	19.0	70.6	10.4	100	
South	20.2	65.7	14.1	100	
Resident					
Urban	20.3	66.8	12.9	100	168.5
Rural	20.4	72.0	7.7	100	p<0.001
All	**20.4**	**69.0**	**10.6**	**100**	

Older persons who had completed secondary school or higher had better health compared with those who had completed only primary school and with those who had received no formal education at all. The elderly who worked as civil servants and professionals had better health than those who worked as technicians, merchants and farmers or those who had no occupation. The elderly who had no chronic conditions had better health than those who suffered from one or more chronic conditions. In addition, older persons who lived in Bangkok and urban areas were healthier than those living in other regions and rural areas. This is most likely due to the fact that there are a lot of health-care facilities – hospitals, clinics and drug stores, etc. – as well as better sanitation, etc. available in Bangkok and other urban areas, so that people have more easy access to those health-care services. Chi-square tests show a significant difference among levels of health in all characteristics ($p< 0.001$).

These findings are in accordance with many prior studies such as that of Chayovan, Wongsith and Sangtienchai, (1988), which found that elderly men were generally healthier than elderly women. Self-perception of good health among the elderly declined as their age increased. Elderly women were more likely to feel unhealthy than men (Jitapunkul, 1999; Chirawatkul, 1999; NSO, 2002; Teresa, Knodel and Chayovan, 2003). According to Jitapunkul and others (1999), the Thai elderly suffered increasingly from chronic conditions such as hypertension, diabetes, heart disease and various disabilities. Three fourths (73 per cent) of those

who had chronic illness for more than six months needed full-time care (Chooprapavan, 2000).

Community participation

Community participation, which refers to an older person's active engagement with life, is considered to be one of the important aspects of successful ageing (Rowe and Kahn, 1998). In this study, community participation was measured using three indicators: participation in the workforce, participation in clubs/groups and participation within the family in terms of the support provided to family members. Males participated in the workforce more than females did. Moreover, the participation in the workforce decreased with age. The elderly living in rural areas were more likely to participate in the workforce than those living in urban areas. The findings from other studies, such as that undertaken by Knodel and others (2005), reveal that many of the Thai elderly (especially those in their 60s) remained economically active, and their work was the second most important source of income compared with income from their children. Therefore, providing suitable work for older persons who want to continue working could both reduce family and government economic burdens as well as contribute to a sense of self-esteem and fulfilment among the elderly.

For participation in clubs or groups, the Thai elderly typically participated in six elderly groups: funeral groups, vocational groups, housewife groups, cooperative groups and volunteer scout groups. About 22 per cent, 14 per cent and 4 per cent had participated in one, two and three or more groups, respectively. However, more than half of them did not participate in any such group (59 per cent).

In terms of participation within the family, which was measured in terms of food support and work contributions around the house (e.g., housekeeping and caring for grandchild(ren)), it was found that 41 per cent of older persons did not participate in any aspect of the family's daily chores. The participation of the elderly within the family decreased with age. However, most participation occurred in the period of co-residence and consisted of mutual support between parents and children. When health and physical activities declined according to age, support shifted from children to the elderly (Knodel, Chayovan and Siriboon, 1992). This finding is confirmed by a prior study from a survey of Socio-Economic Consequences of Ageing in Thailand, which found that the support provided by older persons decreased from 23 per cent for those aged 60-64 years to 5 per cent for those aged 75 and over (Chayovan, Wongsith and Sangtienchai, 1988).

Table 3. Percentage of Thai elderly classified by participation index levels and characteristics

Characteristics	Poor	Moderate	Good	Total	χ^2
Sex					
Males	49.8	33.3	16.9	100	461.1
Females	61.2	30.1	8.7	100	p<0.001
Age group (years)					
60-69	44.2	38.0	17.8	100	2215.9
70-79	67.3	26.3	6.3	100	p<0.001
80 and over	85.9	13.1	1.1	100	
Marital status					
Single	63.5	29.6	6.9	100	937.3
Married	49.1	35.0	15.9	100	p<0.001
Widowed/ divorced/ separated	69.1	25.0	5.9	100	
Education					
No education	69.0	24.5	6.5	100	452.4
Primary	52.8	33.0	14.2	100	p<0.001
Secondary and above	53.0	36.7	10.3	100	
Occupation					
No occupation	73.9	23.5	2.6	100	7934.7
Farmers	15.3	48.1	36.6	100	p<0.001
Merchants	12.6	46.3	41.1	100	
Services/ technician	22.9	52.2	24.9	100	
Civil servants/ professional	17.2	51.1	31.7	100	
Chronic illness (no. of diseases)					
None	51.8	34.9	13.3	100	80.9
One	52.2	34.2	13.6	100	p<0.001
Two or more	58.3	30.0	11.7	100	
Regions					
Bangkok	84.3	14.6	1.2	100	1056.8
Central	64.6	27.5	7.9	100	p<0.001
North	49.4	34.8	15.7	100	
North-East	44.6	36.7	18.7	100	
South	59.2	31.3	9.4	100	
Resident					
Urban	60.2	29.9	9.9	100	248.6
Rural	50.9	33.7	15.4	100	
All	**56.1**	**31.5**	**12.4**	**100**	

As for total participation index which was summed up from the three indicators (participation in the workforce, in community groups and within the family) shown in table 3, it was found that the majority of older persons maintained an active engagement with life or participated with others at a low level in the surrounding area. Obviously, low community participation was greater among females than among males and this increased with age, especially among the oldest old. The married elderly had a total participation index at high levels, generally higher than those who were single, widowed, divorced, or separated. The elderly who had received no education participated less than those who had completed primary and secondary school or higher. From table 3, it is obvious that the elderly who were unemployed participated at the lowest level.

There are regional variations to be noted, as older persons living in Bangkok had a community participation index at the lowest level while those living in the north-eastern region had a participation index at the highest level, followed by those in the northern region. Similarly, older persons living in rural areas participated in the community more than those residing in urban areas. This might be due to the difference in lifestyle and the environment, social capital and individualism of urban people. Thus, living in rural areas is more likely to enable older persons to participate actively in community activities compared with those living in urban areas. This finding is consistent with a study undertaken by Yodpet (2002), which found that most of the Thai rural elderly played a crucial role as supporters both for their own family and their community. It is clear that the participation of the Thai elderly still stands at a moderate level in Thai society.

Security

Security in this study was considered in terms of income, sufficiency of income, sources of income, house ownership, living arrangements and safety facilities. The average annual income of older persons was 45,178 baht and the median income was 20,000 baht. About 20.4 per cent relied on an annual income of less than 10,000 baht (which is below the poverty line) and 2.3 per cent had no income. Poverty was recorded as higher among females than males, among those living in rural areas than urban areas, and among those at older ages. Previous findings found that over one third of the Thai elderly had an income below the poverty line (Chayovan, 1999); the study found that nearly one fourth of the Thai elderly had an income lower than the poverty line and about 14 per cent of them were facing both poor and insufficient income (Chayovan, 2005).

Economic security was not the only type of security affecting older persons' well-being; physical security – measured by house ownership and co-residence with spouse or children – was also included. It was found that about 80 per cent of

the elderly had guaranteed physical or social security, as most of them owned a house. The majority were living with a spouse or at least one child, particularly females and frail older persons. The reason for this might be the entrenched social norm of caring for and respecting older persons in accordance with both traditional Thai culture and Buddhist practices (Yodpet, 2002). This finding indicated that although the economic security of older persons was low, they nevertheless had high and rather secure living arrangements.

By contrast, physical security in terms of accessing safety facilities for the elderly was found to be quite low. Most (95 per cent) of the Thai elderly had no devices or facilities such as supportive handrails in the toilet and on outdoor steps to prevent accidents. This finding corroborated the result of a study by the Institute of Geriatric Medicine (2001), which found that 96 per cent of the Thai elderly had no appropriate facilities in place in their toilet. This might pose a greater risk of falls (WHO, 2002).

Table 4. Percentage of Thai elderly classified by security index levels and characteristics

Characteristics	Poor	Moderate	Good	Total	χ^2
Sex					
Males	1.9	56.7	41.5	100	103.3
Females	3.0	61.4	35.6	100	p<0.001
Age group (years)					
60-69	1.6	55.9	42.5	100	461.9
70-79	3.0	61.6	35.4	100	p<0.001
80 and over	5.7	70.2	24.0	100	
Marital status					
Single	8.0	77.5	14.5	100	832.2
Married	1.7	53.7	44.6	100	p<0.001
Widowed/ divorced/ separated	3.7	68.7	27.6	100	
Education					
No education	4.0	70.6	25.3	100	722.4
Primary	2.2	58.3	39.5	100	p<0.001
Secondary and above	1.2	38.7	60.1	100	
Occupation					
No occupation	3.5	63.0	33.5	100	679.0
Farmers	0.3	54.6	45.1	100	p<0.001
Merchants	0	56.0	44.0	100	
Services/ technician	0.6	46.1	53.2	100	
Civil servants/ professional	0	42.2	57.8	100	

.../

Table 4 *(Continued)*

Characteristics	Poor	Moderate	Good	Total	χ^2
Chronic illness (no. of diseases)					
None	3.5	54.9	41.6	100	44.5
One	2.0	58.9	39.1	100	p<0.001
Two or more	2.5	60.3	37.3	100	
Regions					
Bangkok	2.4	47.9	49.7	100	217.7
Central	3.1	55.7	41.1	100	p<0.001
North	2.4	62.8	34.8	100	
North-East	1.7	64.9	33.4	100	
South	2.6	55.7	41.7	100	
Resident					
Urban	2.6	56.1	41.3	100	121.9
Rural	2.3	63.4	34.3	100	p<0.001
All	**2.5**	**59.3**	**38.2**	**100**	

A security index was constructed from six indicators (income, sufficiency of income, sources of income, house ownership, living arrangement and safety facilities) and classified into three levels: low, moderate and high (see table 4). It was found that most of the Thai elderly had security at a moderate level and tended towards a high level. The security at the high level was greater among the male than the female elderly, and decreased with increasing age and level of education. The elderly who had completed secondary school and above had higher security compared with those who had lower education. The highest security was found among the married elderly. Older persons who had been civil servants and professionals had security at a high level, higher than those working in services or as technicians, merchants, those working in agriculture and the unemployed. This can be explained simply by the fact that older persons who had worked as civil servants or as professionals had permanent incomes and retirement pensions. Similarly, older persons living in Bangkok and in urban areas had a higher level of security compared with those living in other regions and in rural areas. From the overall figures in this study most of the Thai elderly enjoyed a reasonable level of security.

Active ageing

Table 5 shows the active ageing attribution among Thai older persons, constructed from three dimensions: health, community participation and security. It was found that two thirds (66 per cent) of the Thai elderly had the

attributes of active ageing at a moderate level, 11 per cent at a high level and about 23 per cent at a low level regarding the active ageing index. Active ageing attribution was more likely to be reported among males than females and to decrease with age. Differences in active ageing by sex emerge, perhaps from social and cultural practices as well as legal systems that discriminate against women in terms of access to health care, education and social supportive services, or to resources for improving their quality of life (Brundlant, 2002 cited in Active Ageing Taskforce, 2003). Thus, the factors that result in gender inequality might cause women to have health, economic, or security problems (more likely than with men), particularly those women who are single, divorced, or widowed, and who often have the lowest level of economic security or none at all. This finding corresponds with a study by Chayovan (2005), which indicated that the most vulnerable of the elderly were women, especially those who were widows and who had received low levels of education. Therefore, in the context of active ageing policy, accurate gender analysis is essential to ensure that women will have health, community participation and security in later life.

In addition, older persons who had a higher education or had completed secondary school had higher attributes of active ageing than those with no schooling or those with only primary-level education. Older persons who had been civil servants or professionals had higher active ageing attributes than those working in other sectors. The elderly who had no occupation or who were unemployed had the lowest percentage of active ageing attribution. Similarly, the more chronic conditions that the elderly had, the higher was the percentage of inactive ageing. In terms of place of residence, although the elderly living in Bangkok and urban areas enjoyed a higher level of health and security indices compared with those in other regions and in rural areas, their participation index was lower than those living in other regions and rural areas. Thus, when the active ageing index was constructed with three indices, it was found that active ageing among older persons living in Bangkok and in other urban areas was somewhat less than that of the elderly in other regions.

The concept of active ageing refers to the fulfilment of older persons' life in different domains, namely their personal, family, social and professional lives. This relates to what people do in the later phases of their lives. Active ageing is understood to encompass a socially and individually designed mix of: continuous labour market participation; active contribution to domestic tasks, including housework and provision of care for others; active participation in community life, including voluntary or unpaid activities; and creative activities (Avramov and Maskova, 2003). Values such as health, community participation and security reflect fundamental human aspirations. All people need to have a healthy life for as

long as possible to be able to participate in activities that they choose freely, and to have income security in their old age. This study is confirmed by Yatniyom (2005), who found that active ageing among the Thai elite elderly consisted of three attributes: (a) continuous activity, which means that older persons continued to perform their favourite activities and to participate in activities in the organizations in which they were members; (b) good health, which means that the elderly were able to appropriately care for themselves with regard to physical, mental, social and spiritual levels of health and (c) security, which means that older persons felt safe and free from worries about income, housing and who would take care of them.

Table 5. Percentage of older persons classified by active ageing levels and general characteristics

Characteristics	Poor	Moderate	Good	Total	χ^2
Sex					
Males	17.3	67.1	15.6	100	605.4
Females	26.9	66.0	7.1	100	p<0.001
Age group (years)					
60-69	12.2	72.1	15.6	100	2998.2
70-79	29.7	64.7	5.7	100	p<0.001
80 and over	55.6	43.4	1.0	100	
Marital status					
Single	34.4	60.3	5.3	100	1360.8
Married	15.7	70.0	14.3	100	p<0.001
Widowed/ divorced/ separated	34.9	60.3	4.7	100	
Education					
No education	37.4	57.9	4.7	100	910.1
Primary	19.6	68.3	12.1	100	p<0.001
Secondary and above	11.2	72.8	15.9	100	
Occupation					
No occupation	32.5	64.5	3.0	100	5130.4
Farmers	0.6	70.6	28.7	100	p<0.001
Merchants	1.2	69.9	28.8	100	
Services/ technician	1.3	75.4	23.3	100	
Civil servants/ professional	0.7	65.7	33.7	100	
Chronic illness (no. of diseases)					
None	17.3	68.9	13.8	100	285.6
One	17.8	69.9	12.36	100	p<0.001
Two or more	25.2	64.9	9.8	100	

.../

Table 5. *(Continued)*

Characteristics	Poor	Moderate	Good	Total	χ^2
Regions					
Bangkok	36.0	61.5	2.5	100	497.9
Central	26.6	66.0	7.4	100	p<0.001
North	19.0	67.6	13.4	100	
North-East	17.3	67.8	15.0	100	
South	24.6	65.3	10.1	100	
Resident					
Urban	23.9	66.5	9.6	100	63.6
Rural	20.9	66.6	12.5	100	p<0.001
All	**22.6**	**66.5**	**10.9**	**100**	

Conclusion

An assessment of the three components of active ageing (health, community participation and security) showed that the health dimension of the Thai elderly was mostly at a moderate level. Meanwhile, nearly one fourth of the older persons suffered poor health. Interestingly, as regards community participation, the Thai elderly ranked quite low. More than half had very little involvement with community activity. As for security, although economic security of Thai older persons stood mainly at a moderate level, it tended to drop to a low level as age increased. Physical security, by contrast, remained at a high level, particularly in terms of living arrangements. All in all, Thai older persons tend to enjoy moderate to high levels of security.

In terms of active ageing attribution, although the majority of the Thai elderly ranked at a moderate level in this regard, nearly one fourth of them tended to have a low level of activity, particularly females, those who were single, widowed, or divorced, those with no education, the unemployed and those suffering from chronic conditions. The findings indicated that active ageing measures were higher among males than females, the young old than among the older and oldest old and among the married elderly than unmarried ones, those widowed, divorced or separated. Moreover, the level of activity was somewhat greater for older persons who had completed higher education and had been engaged in a higher status occupation (such as civil servants, professionals and technicians), and those who suffered from no chronic illnesses. However, older persons living in urban areas and in Bangkok had active ageing composites somewhat lower than those living in rural areas and other regions due to distinctly low levels of participation in community activities.

Recommendations

Based on the findings of this study, the following issues should be considered and promoted in order to improve the active ageing attributes of the Thai elderly:

1. The more chronic conditions older persons suffered the lower was their active ageing composite. Therefore, there is an urgent need to prevent the onset of chronic conditions by using health promotion initiatives starting in young adulthood. Meanwhile, older persons facing chronic illness should be treated and their conditions should be carefully monitored to prevent long-term care problems and not to constitute a burden for their children and society.

2. The active ageing index was lower among elderly women and older age groups. In the context of active ageing policy, gender analysis is essential to ensure the health, community participation and security of women in their later life. In addition, these groups may need to be supported by family, community and the Government.

3. The elderly who have had no education and no occupation have the lowest level of active ageing. These groups should be provided with opportunities to improve their quality of life, such as life-long learning or participation in paid work. Providing appropriate work for older persons not only helps them increase their income but also decreases their dependency on family and society. In the near future, the size of the workforce in Thailand will decline as a result of the rapid fertility decline in the past, so re-employing active and capable older persons in the labour market may increase national production.

4. The community participation component of active ageing was rather low, especially participation in clubs or groups. Older persons living in Bangkok and urban areas had distinctly lower participation than those in other areas. Therefore, the elderly need to be encouraged to join clubs or groups or to engage in creative, recreational activities with others because such participation promotes active, healthy, secure and positive ageing. The more the elderly are involved, the more they will participate and contribute, and the more experiences they gain, the greater will be their self-esteem.

5. The majority of Thai elderly have economic security at a moderate level. However, some tend to be at a low level, particularly those who are single, lack education or a job, or are suffering from chronic diseases. Although most of the Thai elderly receive financial or material support from their children, society is rapidly changing and the traditional family values with regard to older persons, such as caregiving and financial support, are also evolving along with new attitudes and values. Encouraging the elderly to

prepare to take care of themselves as much as they can economically in later life is an important task for our changing society. Thus, the provision of paid work for them is also greatly needed since this would allow older persons to be more economically self sufficient.

6. Most Thai elderly lack safety devices in their home to prevent accidents, particularly in toilet facilities. These findings correspond to many previous studies, so health education or social welfare support to provide assistance for improving safety at home is essential to prevent accidents and avoid the need for long-term rehabilitation and care. Rightly, personal and domestic security for older persons has been a widespread subject of community concern.

7. According to the World Health Organization's concept of active ageing, the Thai elderly can be classified as having a moderate level of active ageing. Nevertheless, policymakers should strongly promote and support active ageing of the elderly. Furthermore, a study of determinants for active ageing in the Thai context should be carried out in order to construct appropriate and valid indicators and to measure active ageing in Thailand.

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Population Ageing in East and South-East Asia: Current Situation and Emerging Challenges

By Ghazy Mujahid

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Reviewed by John Knodel*

This is the first report in a series on population ageing planned by the UNFPA Country Technical Services Team (CST) for East and South-East Asia. It provides a comprehensive and timely overview of the extent and implications of population ageing in the region and the policy responses to it. The report contains a wide range of information on one of the most critical demographic issues of the coming decades for many countries in the region. It is written with clarity, presented in an attractive format and should appeal to social and demographic researchers as well as government officials responsible for social and economic planning.

Following an informative executive summary and brief introduction, the main body of the report consists of eight chapters (referred to as sections). The first five are relatively short and deal with key demographic aspects. Population ageing at the regional level is placed in the broader global context, revealing that its pace in East and South-East Asia overall will be far more rapid than elsewhere. At the same time, the report highlights the considerable current and future diversity of the situations within the region. Perhaps most importantly, the demographic analysis underscores the virtual inevitability in all 15 countries in the region of both rapid

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growth in the numbers of older persons (defined as aged 60 and older) and the increasing share that they will constitute of the total population. The inescapable implication is that even the countries with a low percentage of older persons cannot afford to be complacent about population ageing.

The demographic analysis also brings out three features common to all countries in the region: (a) the ageing of the older population itself, with those aged 80 years and older increasing their share among older persons in general; (b) the disproportionate share of older persons who are women, especially among the oldest old; and (c) the higher levels of ageing among rural than urban populations owing primarily to out-migration of young rural adults to towns and cities.

The sixth chapter of the report reviews a wide range of social and economic implications of population ageing. These include demand for health services, long-term care requirements, changes in family support, needs for social security and welfare benefits, and the special vulnerabilities of older persons arising from the AIDS epidemic, conflict situations and emergencies (such as natural disasters). Given the many different issues covered in this section, the treatment of any specific one is necessarily succinct. Indeed, a separate report devoted solely to implications that would permit a fuller accounting of these issues could be a welcome addition to the series, especially given the burgeoning amount of research that has recently taken place on these topics in the region.

The longest chapter of the report summarizes policy responses to population ageing. It starts with a brief review of global and regional initiatives undertaken by the United Nations. The bulk of the chapter is then devoted to a country-by-country description of national responses. This useful summary makes it clear that almost all of the 15 countries in the East and South-East Asian subregions have framed some kinds of policies, plans or laws related to older persons. A critical assessment of the implementation and effectiveness of those measures is understandably beyond the scope of the report. Still, even on paper, it is evident that substantial variation exists in the importance given by different countries to dealing with population ageing. Not surprisingly, the economically more advanced countries tend to assume a higher degree of government responsibility for their elderly populations. At the same time, in most of the countries in the region, social security systems are not yet well established. Thus most Governments emphasize the responsibility of families for providing support and care for their elderly members.

The last chapter provides a series of conclusions and recommendations. Given that population ageing affects many aspects of life, for old and young persons alike, the recommendations span a wide range of issues. Taken together,

they provide a solid rationale for the need to mainstream population ageing into development policies, programmes and strategies.

Following the report text are a series of annex tables. They provide, in a convenient comparative format, much of the basic statistical information on which the report draws.

The report wisely avoids alarmist rhetoric. Thus, although it tends to characterize family support as being in decline, citing reductions of co-residence with adult children as evidence, it also recognizes that in many settings in the region, the shift has been modest and that traditional family ties largely remain strong. An important point not mentioned, however, is that technological change, particularly in communications and transportation, allows family members to maintain relationships and crucial services over a geographical distance that previously required co-residence or physical proximity. As the reviewer's recent research in Thailand has revealed, the advent of mobile (cell) phones has radically improved the extent to which contact and social support are maintained between elderly parents and their adult children who live away (Knodel and Saengtienchai, 2007). At the same time, advances in transportation have facilitated migrant children's return in times of urgent need, while financial support across almost any distance has been facilitated by instantaneous electronic transfers of remittances. Thus, the significance and meaning of living arrangements for the welfare of elderly parents are being transformed as a result.

Although not a central theme in the report, issues related to gender and ageing receive some attention. As in much of the literature of the United Nations Population Fund (UNFPA), however, only those specific to women are emphasized. Although older women are more numerous, men still constitute 47 per cent of the region's population aged 60 years and older and some consideration of their gender-specific vulnerabilities would seem justified. For example, survival of older men is lower than that of women in all 15 countries. Yet, rather than seeing this as a problem for men who are dying at higher rates and younger age, the emphasis is instead on how this disadvantages women by contributing to widowhood. Likewise, the frequent references to older women being economically disadvantaged may be overemphasized. A recent comparative study, not cited in the report, suggests that the situation is more complex than portrayed in the report and varies both by country and the particular measure of economic support and well-being examined.

Despite these minor oversights, the report is a timely and valuable contribution that should serve as a resource for calling attention to a vital population issue that Governments and societies in the region need to face sooner

rather than later. Hopefully, it will serve to reconfirm the commitment of those Governments which treat population ageing as a major social and economic policy concern and stimulate interest and awareness in those where population ageing has yet to be effectively addressed.

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