

IMPACT OF DEMOGRAPHIC CHANGE IN THAILAND



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1960

2020



The image features a population pyramid on an orange-to-yellow gradient background. The pyramid is divided into two main sections: a narrower, taller section on the left representing the year 1960, and a wider, shorter section on the right representing the year 2020. The 1960 section shows a high concentration of population in the younger age groups, while the 2020 section shows a more balanced distribution across age groups, with a significant increase in the middle and older age groups. The text 'IMPACT OF DEMOGRAPHIC CHANGE IN THAILAND' is centered over the pyramid in white, bold, sans-serif font.

IMPACT OF
DEMOGRAPHIC CHANGE
IN THAILAND

Preface



Over the years, Thailand has seen several shifts in its population policy that aimed at reducing fertility rates that were considered to be too high, to the current policy of maintaining fertility at replacement level as stated in the Ninth and Tenth National Plans, covering the periods 2002-2006 and 2007-2011 respectively. But given the dramatic changes in the current context where fertility has dropped to startlingly low levels, with implications for population aging, decrease in the size of workforce and eventual population decline, there is a need to reconsider Thailand's population policy and explore and deliberate upon different options and strategies.

While there has been increasing awareness and policy response to rapid demographic change in developed countries in the past decades, similar timely response to address this emerging concern in developing countries has been missing. Thailand has some unique features, which means that policies adopted by other countries with somewhat similar characteristics may not be appropriate for Thailand. Unique circumstances may require unique policies. However, at the same time, lessons can undoubtedly be learned from other countries, to avoid pitfalls and adopt what is applicable. Hence, a report on 'the Impact of Demographic Change in Thailand' was jointly commissioned by the National Economic and Social Development Board (NESDB) of the Royal Thai government and the United Nations Population Funds (UNFPA). It was prepared by a team of eminent international and local experts in the field of demography, health, economics and

social sciences. The report has documented the trends of population evolution in Thailand and analyzed some significant implications and policy issues. It analyses the impact of demographic changes on education, labor-force participation, urbanization, migration, and health. It also probes into past population policies, examines recent policy changes and critically discusses the different threads of arguments vis-a-vis policy implications of Thailand's demographic trends.

As Thailand's population growth is predicted to decline further in the near future, it is the changing population structure that is emerging as an issue of critical importance - changes in age structure, educational and skill structure, state of health and geographical distribution. In respect to all of these issues, changes in Thailand's population over the next two decades promise to be far-reaching, raising important planning issues, both with regard to adapting to those population changes that are inevitable and influencing aspects of demographic change that are amenable to modification. This report will shed the lights about the rapid change of population structure in Thailand as well as trends in demographic variables in the future, and their implications for all aspects of human life and wellbeing in Thailand.

It is our hope that the findings of this report raises awareness, fosters cooperation, and stimulates actions and policy development in preparation for the impact of demographic change in Thailand.

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The analysis and policy recommendations of this report do not necessarily reflect
the views of the Royal Thai Government or United Nations Population Fund,
including its Executive Board or its affiliated organizations.

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List of Acronyms



ADL	Activities of Daily Living
CPR	Contraceptive Prevalence Rate
DM	Diabetes Mellitus
DALY	Disability Adjusted Life Year
HDI	Human Development Index
HWS	Health and Welfare Survey
IADL	Instrumental Activities of Daily Living
ICPD	International Conference on Population and Development
ILO	International Labour Organization
IPSR	Institute for Population and Social Research
IMR	Infant Mortality Rate
IUD	Intra-Uterine Device
GDP	Gross Domestic Products
GIS	Geographical Information System
MIS	Migration Impact Survey
MOL	Ministry of Labour
MOPH	Ministry of Public Health
MWRA	Married women of reproductive age
NIC	Newly Industrialized Countries
NCD	Non-communicable diseases
NESDB	National Economic and Social Development Board
NESDP	National Economic and Social Development Plan
NHES	National Health Examination Survey
NGO	Non-governmental Organization
NMS	National Migration Survey
NSO	National Statistical Office
OECD	Organization of Economic Cooperation and Development
ONESQA	Office for National Education Standards and Quality Assessment
OPA	Older Persons Associations

SES	Socio-economic Survey
SMAM	Singulate Mean Age at Marriage
SWET	Survey of Welfare of the Elderly in Thailand
TAO	Tambon Administration Organization
TB	Tuberculosis
TDRI	Thailand Development Research Institute
TFR	Total Fertility Rate
UN	United Nations
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
WHO	World Health Organization
YLD	Years Living in Disability
YLL	Years of Life Losses

Executive Summary



Thailand's population growth has slowed considerably and is predicted to decline further. It is the changing population structure that is emerging as an issue of critical importance – changes in age structure, educational and skill structure, state of health and geographical distribution. In respect to all of these issues, changes in Thailand's population over the next two decades promise to be far-reaching, raising important planning issues, both with regard to adapting to those population changes that are inevitable and influencing aspects of demographic change that are amenable to modification. This report has documented the trends of population evolution in Thailand and analyzed some significant implications and policy issues. It analyses the impact of demographic changes on education, labor-force participation, urbanization, migration and health. It also probes into past population policies, examines recent policy changes and critically discusses the different threads of arguments vis-a-vis policy implications of Thailand's demographic trends.

Chapter 1 – Tracking Demographic Changes in Thailand and Policy Implications

- **Population decline:** Thailand is entering a new era of slow population growth and probably eventual decline. The population is expected to grow, at most, by five million over its current level, and very likely by only one million or so. Decline is quite likely to set in before 2020. The reason is that fertility has been below replacement level for two decades, and is continuing to decline.
- **Rapid decline in fertility:** The pace of Thailand's fertility decline was remarkable. The length of time taken for TFR to decline from 5.5 to 2.2 was only approximately 20 years, between 1970 and 1990. This was the fastest decline over the

period amongst all countries in Southeast Asia. It is important to note that Thailand achieved replacement-level fertility with more than two thirds of its population living in rural areas, and almost two thirds of its female workforce in agriculture, much higher than any of its East Asian neighbours at the time they reached replacement-level fertility. Compared to these countries, the average level of educational attainment of Thai women was relatively very low and women's labour force participation rates were high.

- **Declining births:** Declining fertility rates have led to a declining number of births, and to a changing population structure as these smaller birth cohorts move up the population pyramid. The proportion of children has been declining for decades. Even the United Nations' low projection, which appears more likely to track emerging fertility trends than the United Nations medium projection, overestimates the annual number of births in 2010, as the actual number recorded was around 800,000 rather than 970,000 as in the low projection. However, the sharp downward trend in births projected in the low projection to less than 500,000 in 2045-50 is not implausible and could well occur.
- **Some impacts of rapid fertility decline:** It is the changing population structure that is now of crucial importance – changes in age structure, educational and skill structure, state of health and geographical distribution. In all these respects, changes in Thailand's population over the coming two decades promise to be far-reaching, raising important planning issues both with respect to adapting to those population changes that are inevitable and influencing aspects of demographic change that are amenable to modification.

Chapter 2 – Fertility Transition

- **Ultra-low Fertility and fewer births:** Before 1970 Thai families had around 6 children on average; at the present time the TFR has reached 1.5 children per women. Although fertility was declining rapidly after 1970, the annual number of births fluctuated around 0.95 million for more than a decade, due to “population momentum”. From 2000 onwards, the number of births was around 0.8 million annually.
- **Differentials in fertility levels:** Urban-rural fertility differentials were small. Fertility decline was slowest in the South. The Thai Muslims and the ethnic groups in the north have higher fertility than the general population. While it is difficult to estimate the fertility of foreign workers, based on limited data, it is estimated that the number of births to foreign workers is somewhere in the range between 42,000 and 98,000 in 2010.
- **High contraceptive use and delayed marriage:** The contraceptive prevalence rate increased rapidly from 15% in 1970 to higher than 70% in 1987 and stayed at around 80% at the present time. The increasing cost of children, together with increasing employment of women in formal sector jobs making it harder to combine work with childrearing, drove the desired family size lower. Age at marriage has increased and the proportion of single women aged 50-54 years old has increased from only 2% in 1960 to 8% in 2010.
- **Many abortions and rising teenage pregnancy:** While the total number of births is declining, it is alarming that births to teenagers are rising. Although most births to teenage mothers occurred to the late teen group (15-19), an increase of births from the early teen group (younger than 15 years old) is observed. Induced abortion is high. Economic reasons followed by social reasons, women’s age and number of children, student status, family problems, and contraceptive failure are the top reasons for women to have induced abortions. Although the reported figure of unmet need for family planning among Thai women is low, it is likely that a number of sexually active unmarried women and men were missed from the data collection so the

unmet need for family planning of these women is not really known.

- **Policy Implications:** The recently approved First National Reproductive Health Development Policy and Strategy (2009-2013) aims to ensure that all births are desirable, safe, and attended with quality services and to bring good reproductive health to Thai people of all sexes and ages, with an emphasis on adolescent sexual health, on a voluntary, equitable, and inclusive basis. This policy suggests that quality births should begin with intended pregnancy at appropriate ages. All pregnancies should be under good maternal care and delivered by medical or health personnel. The policy implies many action programmes to ensure that every birth is wanted, safe and healthy. This assurance should be extended to cover the child’s health during the infancy and childhood periods.

Chapter 3 – Impact of Population Change on Well-being of Elderly in Thailand

- **Rapid population ageing:** Population ageing in Thailand is occurring faster than it did in the past in more developed countries in the West. The rapid growth in the numbers of older persons and the increasing share that they represent of the total population is attributable mainly to the rapid decline in fertility. Improved life expectancy is also contributing to the ageing of Thailand’s population.
- **Improvements in material well-being:** The rapid ageing of the Thai population has been occurring within a context of substantial economic and social development. The improvements in material well-being (e.g. improved quality of housing, more appliances and amenities) appear to have benefited both older women and men. The spread of phones has radically altered the ability of older persons to keep in contact with adult children who live elsewhere and thus has important implications for their social well-being. Incomes of older persons have also increased considerably.

- **Trends in likely determinants of elderly well-being**

Declining potential support ratio—A falling potential support ratio reflects a shrinking support base of adults on whom the old age population can depend. There will be far fewer productive age persons per capita to support older age Thais in the future.

Declining family size—Very substantial declines in the average number of living children have already taken place among the older persons. A contributing factor to increased childlessness in the future is the likely increase in the proportions who never marry.

Increased dispersion of children—In addition to declining family size, the increased tendency for adult children to migrate for employment in recent years further contributes to lesser availability of children nearby who could assist their older age parents on a routine basis.

Changing living arrangements—Co-residence of older persons with children has declined over the last two decades, from 77% in 1986 to only 59% by 2007. However, in a substantially share of non-coresident cases, the older persons are living very nearby one of their children.

Age and gender composition—In the intermediate future the population of older persons in Thailand will itself be ageing. Feminization of ageing is also apparent. The excess of women over men at older ages is a result of more favorable female than male survival rates at virtually all ages and an even more pronounced female survival advantage at the older ages.

Differences in marital status—Only 3% of Thai elders never married. Over 60% remain married and reside with their spouse while almost a third is widowed. The share of the elderly population that has never married in Thailand is likely to increase in the near future.

Improving educational composition—Future elderly in Thailand will be increasingly better educated than those currently in older ages. This improvement in education among older persons will undoubtedly contribute to their well-being. In addition, the eventual closing and even reversal of the gender gap in education will remove an important source of disadvantage among older women. At the

same time, however, older persons will still remain considerably less educated than younger adults at any given time.

Improved overall health and vision—Both self assessed health and good vision of the elders have improved.

Work status—The percentage of older persons who are working declines sharply with increasing age. Labor force participation is substantially higher among rural than urban older persons.

Increased formal support—In general men are somewhat more likely to have entitlement to retirement benefits than are women. Urban dwellers are much more likely to have retirement benefit coverage than their rural counterparts regardless of age cohort. This reflects the far higher portion of urban compared to rural residents who are employed in the formal private sector and in civil service or state enterprises.

Sources of income—Children are by far the most common source of income for the elders followed by the older persons' own work.

Family size and filial financial support—A reduced number of children is associated with reduced financial support. However, it cannot be concluded that the smaller family sizes of the future elderly could jeopardize their material well-being as the elders may benefit from greater wealth accumulation due to having fewer children to support.

Migration of children and material support—the proportion of children of older persons who migrate away from their parents' locality is on the increase in Thailand. Adult children who migrate out of the province tend to be better educated and have higher incomes. Thus migrant children are often in a better position to provide meaningful monetary support than non-migrants.

- **Implications for social support and personal care**

Social contact and psychological well-being—For most older-age parents, maintaining contact with children who move out of the household is important for their social and emotional well being. Migration of children reduces opportunities for face-to-face

interactions although contact can be maintained through other means, especially phone calls now that cell phones are common.

Personal care—The large majority (88%) of persons age 60 and over indicated that they could take care of themselves and thus presumably did not need a caregiver. Among those who did not indicate they could take care of themselves, most had a caregiver although some indicated that they needed assistance but no one provided care.

• **Preparation for old age**

Preparation at the national level—During the last decade, the Thai Government has increasingly recognized that the potential impacts of the rapid population ageing require attention and it has responded in various forms. These include the establishment of the National Commission on the Elderly in 1999, and launching the Second Plan for Older Persons covering the period 2002-2021. Others include—the enactment of the 2003 Elderly Act, the establishment of the Elderly Fund and an agency specifically responsible for work on older persons, and the inclusion of elderly issues in the 10th Five Year Socio-Economic Development Plan. The National Pension Fund scheme was approved in March 2011.

Preparation at local and community levels—In theory the Tambon Administration Organization (TOA) understands the problems and needs of elderly within a local context and should be in a better position than other agencies to respond. However, weaknesses in management and budget allocation as well as lack of personnel knowledgeable about geriatrics have been obstacles to carrying out this responsibility. One crucial obstacle to the effectiveness of local programs for older persons is the lack of updated databases providing detailed attributes of older persons at the local level. This is a barrier especially for identifying appropriate target groups for services and protective measures.

Preparation at the individual level—Since both formal and informal systems of support for the elderly have limitations, self responsibility to prepare for quality ageing is essential. The preparation for old age among future cohorts of elderly of both sexes in Thailand appears to be expanding and starting earlier than was the case for the present elderly.

- **Policy Implications:** Future elderly will differ considerably from those of today. They will be *better educated*, likely in *better health*, and far more will be covered by some form of formal retirement benefits. It also appears that an increasing number will have made preparations for old age in a variety of ways. The higher education and changing employment patterns of adult children may improve their ability to provide financial support and compensate for their lesser numbers. In addition, the *expansion of retirement coverage* of future older persons through the Old Age Pension Fund under Social Security as well as new government initiatives underway or being planned can also help compensate for any declines in filial material support. Another approach to promote material well-being among older persons is to increase the proportions that *remain economically active* and thus contribute to their support through their own work. One positive trend that should facilitate this possibility is improving health of older persons. The possibility of extending the official retirement age from 60 to 65 has received some attention as a way to increase work among the 60-64 age group. In addition, with respect to formal sector jobs, assessments are needed of the willingness of employers to hire or retain older workers. Possibly more *flexible work conditions* could be developed that would meet the concerns of both parties. Personal care clearly requires physical presence. It can and often is provided by a spouse. If a spouse or other relative is unavailable and no children live nearby, short term care associated with acute illness or other brief emergencies could still be provided by a child as long as temporary leaves of absence from employment are possible. Besides fostering changes that would facilitate caregiving for older persons by children or non-family personnel, the government should also consider programs that lengthen the period of self dependence. This could involve providing or subsidizing assistive equipment aids, modifications of in-home physical environments, and medical treatments that directly address sources of disability such as cataract surgery.

Chapter 4 – Health Systems Challenges and Future Direction

- **Profile of the burden of disease:** While longevity of Thai men and women is on the rise, this does not always mean that the years gained are lived in healthiness. Unlike the burden among pre-elderly adults, the burden among older people shows little gender difference. The pre-elderly and elderly groups had a large increase with cancers and cardio-vascular diseases as the two leading burdens of disease in elderly men and women. Hypertension and diabetes are major risk burdens among elderly women while tobacco and hypertension are major risks among older men.
 - **Coverage of services for selected non-communicable diseases:** Despite the high level of risk burden from hypertension and diabetes, a high proportion of elderly are unaware of their high blood pressure. Factors associated with unawareness and inadequate controls of the illnesses are living in rural areas, having low income, low educational levels, currently working and the oldest age group.
 - **Self-perceived health:** While self-rated overall health status of the elderly has improved, functional limitation including memory loss and limited activities of daily living increases with age.
 - **Health care utilization:** The hospital use rates among elderly are much higher than the national average, up to more than 12 visits per year for those older than 80+ years in 2009, and the elderly's hospital admission rates are also higher. Although it is likely that the elderly patients had a longer stay as in-patients, there is no clear pattern in the average length of stay by age group, as different levels of hospitals admitted patients differently.
 - **Health expenditure by the elderly:** Based on limited data, it was projected that expenditure for personal healthcare of the whole population would gradually increase from 80% of total health expenditure in 2009 to 84% in 2015, while the expenditures for elderly personal health care would increase from 29% of total health expenditure in 2009 to 31% in 2015.
- As the modest increase is probably due to an assumption that outpatient expenditure profiles are similar to that of admission, cautious interpretation of this projection is needed. Consistency of data collection over time is required to be able to properly project the trend of health expenditure by different population characteristics over time.
- **Situation and trend of the health workforce–** The shortage of health personnel, particularly in the rural areas, persists. The ratio of doctors per person in Bangkok is 10 times higher than that of the North-eastern region. The Ministry of Public Health has not been successful in retaining doctors in the public sector; internal brain drain from the public to the private sector is a common phenomenon in particular in the economic boom time which has led to increasing demand for private health services. The promotion of Thailand as an Asian medical hub catering to international patients significantly increased medical care demands and has major ramifications for domestic brain-drain of super-specialists from teaching hospitals. The strain on the limited number and skill-mix of the health workforce and non-formal care givers is further increased by the demographic and health transitions. These are major policy concerns.
 - **Demand for and supply of health workforce catering to the elderly:** Shortages of mainstream health workforces, particularly doctors, nurses, physio-therapists, and social workers indicate that health workforce requirements for elderly and chronic disease require immediate systematic policy intervention. In addition, only a minority of these mainstream health workforces were posted in rural areas where the people need them most. High turn-over of these limited personnel from rural to urban and from public to private requires better planning and dialogues between public and private sectors.
 - **Policy Implications:** First, *keeping the pre-elderly cohorts healthy*. Alcohol, tobacco and high blood pressure are three major risks among pre-elderly men, while among pre-elderly women, high body mass index, unsafe sex and blood pressure are three major risks. Active lifestyle, healthy diet and calorie expenditure are effective in containing overweight and obesity. A conducive

environment is required for active lifestyle and energy consumption such as friendly pedestrian walkways in city planning, recreation parks, and support to civil society groups in promoting their physical health. Second, *elderly responsive health systems* need to be developed. Health delivery systems are traditionally designed to cope with infectious diseases and have a treatment orientation. Public health program efforts are not adequate to effectively reduce primary risk exposures such as use of tobacco and alcohol, and promote a healthier diet and physical activities. Home care is at the early stage of development, prompted by the era of universal coverage since 2002. Skill in home healthcare provision needs to be developed in conjunction with effective interface between home, community and institutional based care for the elderly. In addition, elderly-responsive systems require pre-service education and in-service training of appropriate numbers and skill-mix not only of mainstream health personnel but also of other cadres. Thirdly it is important to *promote evidence-informed policies*, based on monitoring of risk exposure and burden of diseases, effective coverage of essential interventions, and self-assessed health status in the population, both pre-elderly and elderly. The institutional capacity to monitor the financing impact on the health care system of the demographic and epidemiological transitions should be strengthened.

Chapter 5 - Economic Impact and Human capital

- Declining number of students:** The projected number of school-aged population is declining. With the declining birth rate, the number of children age 0 to 14 peaked at 18.6 million in 1980 and declined thereafter, leading to declining number of students at the primary school level and, after 2000, at the secondary school level despite increasing enrollment rates.
- High number of students not in the school system:** Even though Thailand has a Constitution and education laws that emphasize the right of children to universal and quality education for 12 years, the practical enforcement of the laws is not effective. In 2009, about 2 million children or 20% of those aged 5-14 were not in the school system and the situation is worse in the Northeast and South, where about 25% of children age 5-14 are not in school. The retention rates from entering primary school to the highest grade of primary education and from entering the upper secondary level to the highest grade of upper secondary education are 88% and 53 % respectively in 2008.
- Limited quality of education:** The quality of education is a concern. It varies widely between large and medium schools in the city and small schools in rural areas. Evaluation of the quality and standard of basic education showed that Thai students lacked analytical skill and self learning, teachers did not focus on student centred learning or manage the curriculum effectively. A report suggests that only 35% of 35,159 schools were up to the national standard. In the national test run, students in the secondary school had poor performance in English, Science, and Mathematics. Student performance has been consistently poor from 2003 to 2008.
- International competitiveness:** Thailand may lose its international competitiveness due to the low achievement of the education system. However, as the projected number of school-aged students is declining – at primary school ages from 5.5 million in 2010 to 3.5 million in 2040, and in university ages from 7 million to 4.8 million for the same period, it should be possible to use educational budgets to raise enrollment rates at the upper levels of education and to focus more on the quality of education in the future.
- Ageing and labor productivity:** In 2009, 60% of employment in Thailand is in the informal sector, which mainly covers the agriculture and service sectors characterized by older workers and low educational attainment. While there is a rising trend in the level of educational attainment of workers in informal sectors, this improvement does not seem to be having an impact on labour productivity. As more Thai workers attain a higher level of education, they will divert away from low paying jobs, and older workers who tend to have low education will be too old to work. To achieve a higher economic growth rate using current technology, the gap between the demand for and supply of labour will be filled by

migrant workers. An alternative way to achieve high growth is to invest more in physical and human capital. With an ageing population, assuming other things constant, Thailand's annual growth rate will be negative in the near future. An increase in the number of unskilled migrant workers will improve the growth rate, but will lower the per capita income.

- **The Demographic Dividend** is the favorable effect of an increase in the share of working aged population on economic growth. It is commonly measured by demographic dependency ratios, purely based on number of children (those aged 0-14), working-age adults (those aged 15-64) and the elderly (those aged 65 and older). However, this method does not capture variations in productivity of workers and consumption needs of the population in different age groups. The concept of the economic support ratio was introduced to overcome this deficiency.
- **Demographic ratio VS economic support ratio:** Comparison of the demographic dependency ratio with the economic support ratio shows strikingly different lengths of the dividend period. The shortage of labor income, or lifecycle deficit, makes the young and the elderly depend on resources reallocated from the working or lifecycle surplus ages. If the economy has a large share of population concentrated at the lifecycle surplus ages, there will be excess resources available to save, invest and generate output, leading to a larger effect of the first demographic dividend. The method used to estimate these age profiles follows the National Transfer Accounts.
- **The 1st demographic dividend** is recognized by the growth rate of the economic support ratio. Thailand's economic support ratio reached its peak in 2009 and it is expected to begin declining in 2010. Demographic changes will no longer yield a positive gain to the economy. If other factors remain constant, population aging will eventually result in negative economic growth in Thailand, though growth could be sustained through accumulation of physical and human capital.
- **The 2nd Demographic dividend:** Physical capital accumulation could generate sustainable economic growth, called the second demographic

dividend. Unlike the first demographic dividend, the second demographic dividend is not transitory. Physical capital accumulation could lead to a permanent increase in capital deepening—a higher level of capital per unit of labor allowing individual consumption to rise. The second demographic dividend is influenced by how population aging affects the demand for wealth. First, there is a compositional effect, caused by an increase in the share of individuals who have nearly or fully completed their productive years. These individuals must have accumulated wealth in order to finance consumption in excess of labor income for many of their remaining years. Second, there is a behavioral effect, caused by an increase in life expectancy and the accompanying increase in the duration of retirement, leading to an increase in the demand for wealth. Individuals may rely on different forms of wealth. Retirees may rely on transfers from public pension and other public welfare programs or from familial transfers from their working adult children to support consumption during their retirement years, or they may rely on capital accumulated during their working years. Both forms of wealth can be used to support the lifecycle deficit at older ages. The effect of capital accumulation as an engine of growth is the source of the second demographic dividend.

- **Intergenerational transfer of human capital:** Human capital accumulation could increase productivity of workers, which could accelerate economic growth. The question is whether declining fertility could lead to an increase in intergenerational transfers of human capital to each child, which could raise productivity of the future labor force. If there is no change in the amount of total education spending, lower fertility leads to higher human capital investment per child. In such case, the economy may extend the period of the first demographic dividend due to a higher productivity level of workers, which enables the future workforce to generate more output. Intergenerational transfers of education in Thailand are large and important. Children receive transfers from other age groups through the family and the public sector. In Thailand, public education transfers are much greater than private education transfers for all age groups.

- **Policy implication:** Without any policy change, Thailand will continue to have smaller numbers of children and working age population. Longer life expectancy increases the proportion of old age dependents. As the first demographic dividend ended in 2010, more hope will attach to the second dividend or an import of work force from neighboring countries or both. Thailand can actually benefit from population aging if people accumulate capital. The government should therefore establish a *savings plan for the current working age population* so that they can prepare themselves for retirement age. A retirement pension may not only reduce the likelihood of being poor for an old person, but may also improve well-being of other household members. Thailand may also choose to *promote migration from neighboring countries* to cope with its aging population. Thailand will need 6 million migrant workers in the next 10 years, to meet the excess demand and to continue its economic growth path. With a large pool of migrant workers, appropriate social policies must be conducted seriously. Migrant workers should be treated like Thai workers, and their children should be treated like Thai children. Therefore, social expenditure on education, medical care and other social insurance will increase. The public will have to weigh this social cost against the cost of improving human capital and accumulating physical capital if it chooses the growth path focusing on high labour productivity.
- **The 1990s economic crisis:** Internal migration flows greatly increased during the 1997-99 economic crisis, with a reversal of the prevailing pattern of rural-urban migration as migrants losing jobs in urban and peri-urban areas returned home. In Thailand, where manufacturing and construction were particularly hard-hit, it was estimated that two-thirds of the unemployed were rural migrants; return migration to rural areas increased four-fold as 75% of these returned home.
- **Recent trends in internal migration:** There has been a steady decline in domestic migration rates since 2002. Males migrate at a higher rate than females, but the gap has narrowed in recent years. Looking at differentials by age, the young working age groups (age 18-34) have much higher migration rates than other groups. Moreover, while migration rates of those less than age 18 or older than 35 remained fairly constant, young working adults had both a sharp increase in migration from 1997-2002 and a steeper decline from 2002-2009. The 18-24-year-olds were the only group to show an increase in migration rates in 2009.
- **Urbanization patterns:** By 1981, Bangkok's population was 50 times that of the second largest city. Bangkok's growth increased further when the country rapidly industrialized; by 2000, Bangkok had half of the country's urban population and produced 35% of its GDP. The dominance of the capital in providing job opportunities is seen by the fact that rural-urban migration has not historically followed a stepwise pattern in Thailand; many seasonal and long-term migrants moved directly to Bangkok without ever migrating to a smaller urban center. In response to this rapid growth, the Thai government implemented decentralization policies in the 3rd and 4th national plans. These included incentives to promote the Eastern Seaboard as a manufacturing hub and to encourage the growth of regional urban centers through industrialization. Bangkok's dominance is slowly declining; the population growth rate for other urban areas was higher than for the Bangkok agglomerated area including peripheral provinces throughout the 1990s and 2000s.

Chapter 6 – Migration and Urbanization

- **Long-term patterns of internal migration:** Migration is not a new phenomenon in Thailand, nor does it result mainly from the industrialization and economic growth of the past twenty-five years. Rural people have migrated to supplement farm income since the 19th century, usually during the dry season when rice farming production is dormant. The abundance of unoccupied land and the ease of taking de facto ownership through cultivation and occupancy led to high mobility as the population increased. Seasonal migration was also common in the 1950s, for both men and women, driven partly by improvements in road transport. Residents of upland areas migrate at younger ages than those in the lowland rural areas, and land pressure is a factor.

- **International migration**

Out - migration from Thailand - Most Thai out-migrants counted by official statistics are males and the majority of these are contract workers in low-skilled jobs. The destinations of Thai out-migrants have been shifting; numbers of Thai workers in East Asia and in Southeast Asia have declined, but the number in the Middle East nearly doubled from 2005-2007, almost entirely due to the large construction projects in the UAE (Dubai) during that period. The number in the West also increased steadily. While it is difficult to estimate the number of irregular Thai migrants to other countries, it is likely that their numbers are larger than those of "official" migrants.

Immigration to Thailand -Historically, Thailand has been a destination for migrants from other countries. Thailand is not only the host of a large number of people who escaped armed conflicts between ethnic minority opposition groups and the central government of its neighboring countries, but it has been an important receiving country for migrants since the early 1990s, when the influx of low skilled migrants from the Greater Mekong Subregion countries particularly those from Myanmar began to outnumber Thai outflows. The total number of foreigners working and living in Thailand was estimated at 2.8 million at the end of 2007. Aside from low skilled migrants, there are foreigners holding Thai work permits (210,745 at the end of 2009), students, those who live in Thailand because of marriage and those who settle there after retirement. Some tourists also overstay their visas or become permanent residents.

- **Impact of migration**

Socio - demographic differentials - Both rural and urban areas are more affected by the overall aging of the population than by migration or urbanization patterns. A source of concern is the inequity between rural and urban areas caused by the "brain drain", when more educated and skilled workers migrate to urban areas because they are unable to find appropriate jobs in rural areas.

Occupational segregation and income disparity - Migrants are concentrated in manufacturing; in addition, for men construction is an important category and women have a high proportion working in services. For other categories such as sales and government work, the percentage

of migrants employed is similar to that of non-migrants. However, fewer one-year migrants work in agriculture than non-migrants, particularly for women. In terms of income gaps, while Thailand has successfully lowered poverty rates in the past 10-15 years, the gap between rural and urban areas and Bangkok is still large. Fully 10% of rural households were classified as living in poverty in 2009, while in Bangkok the percentage was less than 1%.

Impact of migration and urbanization on the environment-Environmental change can be both a cause and an effect of migration. Land productivity decline has been one of the major factors driving the migration of subsistence farmers to slums of major cities. Climate change can cause changes in water availability including both drought and flooding, and other natural disasters. Modernization and urbanization are linked; as the benefits of modernization go mainly to elite groups, urbanization can exacerbate inequality.

- **Policy implication:** Demographic trends will continue to drive the forces affecting migration. This is particularly the case for population aging in Thailand, resulting in a lower proportion economically active and a higher dependency ratio. Dependency is often tied to those outside the household, and thus economic changes and urbanization are particularly critical. Thailand's strategic planning should include consideration of these dynamic demographic forces that both drive and respond to economic change.

Chapter 7 - Policy Implications

- Type of population policies: "Population-responsive" policies attempt to strengthen the positive outcomes of demographic trends and to counter any deleterious consequences. "Population -influencing" policies seek to modify the projected demographic changes in the interests of avoiding outcomes that are judged to be unfortunate. Over a long period in Thailand, the main plank of population policy was the aim of reducing fertility rates judged to be too high. With the steady decline in fertility to replacement level and below, this aim was dropped in the 8th Five Year Plan (1997-2001). The 9th and 10th Plans mentioned the need to

maintain fertility at around replacement level. A key issue facing Thailand now is the need to raise fertility from the low levels it has reached.

- **Responding to demographic trends**

Ageing of the population is a key trend in Thailand. Children remain an important safety net for ageing parents, but planning needs to take into account the possibility that in the future, filial material support may diminish due to the reduction in family size of the future elderly, and the clear evidence that the proportion of elderly who are childless will increase. The expansion of the retirement pension among insured workers under the Social Security system and savers under the upcoming National Saving Scheme is designed to counterbalance this likely loss of support.

Material well-being of the elderly could be promoted through improving the health of older persons to allow them to work longer. A substantial degree of self-dependency and positive life style practices need to be encouraged, linked with an extension of the retirement age from 60 to 65 and new employment arrangements for elderly to work part-time. Government resources should be targeted to those groups of elderly with greater need, such as the poor, the oldest old, or the disabled rather than to all elderly equally.

A clear strategy is needed for the health care needs of the elderly. Public health interventions should be oriented to reduction of primary risk exposures such as use of tobacco and excessive alcohol, improving diet and promoting physical activities. Skill in home healthcare provision needs to be developed in conjunction with effective interface between home, community and institutional based care for the elderly. Long term care for severe disability or serious chronic illness presents the greatest challenge in the face of smaller family size, the greater dispersion of adult children, and increased proportion of elderly with no children. While the health care needs of the elderly will be a major focus of health sector planning, continuing attention needs to be paid to achieving a better balance between supply of medical personnel and needs for their services in different regions of the country.

- **Human capital**

Raising the quality of human capital is crucial for Thailand's future. Smaller student numbers should enable education budgets to be oriented to this task, but a focus on key weaknesses is needed. For example, the quality of primary and secondary education differs widely between rural and urban areas and between well developed and less developed provinces. Declining numbers of school-age children do not mean that the education budget can be cut; investment needed to raise the quality of education will require considerably higher expenditure per pupil. Opportunities to enter higher education are highly unequal. Student grants for the poor and student loans for middle income households should be extended. This is expected to improve not only Thai human capital, but also income distribution.

- **Influencing demographic trends**

Fertility: Most Asian countries that have reached very low levels of fertility have been slow to respond with policies designed to support childbearing. Thailand is no exception. It has now reached fertility levels (TFR=1.5) so low that they are a reason for concern. Fertility maintained for very long at this level or lower will lead to rapid ageing of the population and to a decline of each generation by about 30% compared to the preceding generation, leading eventually to a sharp contraction of population that is hard to reverse because of negative "population momentum". East and Southeast Asian countries facing very low fertility have not yet utilized the full range of policy approaches designed to widen the choices open to parents and potential parents, in ways that will foster higher fertility. It appears appropriate for Thailand to introduce a number of policy changes with a view to encouraging marriage and childbearing, in the context of general family policy. Some suggested approaches for the government to consider are

Paid maternity leave: at present, Thailand provides less than the ILO convention stipulates (which is at least two thirds of the woman's previous or insured earnings for a minimum period of 14 weeks). ***Paternity leave:***

a short period of leave taken by a father around the time of the birth of his child. The aim here is to assist men to play a more prominent part in parenting. *Flexible working hours:* to assist parents to spend more time with family at times when this is needed, and to take childcare leave where necessary. *Eldercare:* Subsidies for frail parental nursing care, better community care for frail older persons and compassionate leave for eldercare may lessen the burden on working women and provide an environment more conducive to having children. *Improved subsidized childcare:* Without access to such childcare, women tend to find it hard to return to full-time employment within a reasonable time period, thus affecting their job continuity and chance of promotion and career development. This deters them from having a child, or an additional child. *Tax incentives and/or baby bonus schemes:* The basic principle underlying baby bonus schemes or tax deductions for children is that the social contribution of those who produce and raise children justifies transfer payments to compensate them to some extent for the costs incurred in raising their children. The desirable aim is to develop a package of policies that strengthens the coherence and wellbeing of the family as well as raising the fertility rate. This should be the goal of Thailand's family and fertility policies. At the same time, unwanted teenage pregnancy remains a serious issue for Thailand, and is addressed in the First National Reproductive Health Development Policy and Strategy.

- **Migration and urbanization:** Explicit or implicit policies to control the growth of the Bangkok mega-urban region population should be avoided, and policies to foster the growth of smaller cities should be pursued only with care, and in a broader regional development context. Costly incentives for location in lagging regions should not be relied on. It is likely that some regions will lose population, because rural depopulation will not be fully made up for by the growth of towns and cities in these regions. Planning for population decline is important, and there is much international experience to guide such planning. The very slow increase in Thailand's labour force, along with wide earnings differentials between Thailand and a number of its neighbouring countries, will almost guarantee

continuing international migration flows into Thailand. Migrant workers provide much needed flexibility to the labour market, but policies are needed to reduce their mobility-related risks and effectively deliver social services, especially education and health. Administrative data systems need to be further refined to enable better recording of mobile populations and their needs.



Tracking Demographic Changes in Thailand and Policy Implications

This chapter provides a brief background to the demographic and economic context of Thailand, and where it fits into the regional and global picture in terms of demographic transition. It highlights key demographic changes in Thailand and their impact on education, occupation, labor-force participation, urbanization, migration, and health. It also summarizes past population policies, recent policy changes and some of their implications.

Thailand is not one of the Asian “tigers”, but its economic performance over recent decades has nevertheless been very impressive. Thailand is a lower middle income country and it ranks relatively high on the United Nations’ Human Development Index - HDI (not far below Malaysia, which has double its per capita GDP). In 1960, Thailand shared roughly equal development rankings with the Philippines and South Korea. Its economic growth performance since 1960 has lifted it well above the Philippines, but left it well behind South Korea. The basis for Thailand’s growth performance in the 1960s and 1970s was very different from that characterizing the densely populated “tiger economies”. Its growth remained very much driven by expansion of the farmed area (see Pongpaichit and Baker, 1998: 188-90), though this was characterized by development of new crops including maize, kenaf, cassava, and sugar cane, much of it grown in upland, rain-fed areas, leading to a structure of agriculture very different from the traditional irrigated and rain-fed padi farming, and one in which agro-processing was playing an increasingly large role (Siamwalla et al., 1993). Manufacturing was playing a gradually increasing role throughout this period, but expanded more rapidly from the mid-1980s on, with an influx of foreign capital, and a boom period from the late 1980s to the mid-1990s. Thailand’s growth

performance could not match that of the Newly Industrialized Countries-NICs (Japan, South Korea, Taiwan, Singapore) over the 1960-1990 period, but then it did not suffer the “lost decade” experienced by Japan in the 1990s. It did, however, suffer greatly from the Asian financial crisis of 1997-9, a crisis which was indeed initiated in Thailand.

Tables 1.1 and 1.2 show some salient facts about Thailand’s development performance compared with some of the other Asian countries. A few points need to be stressed. Over the 1960-2000 period, Thailand’s economic growth was strong, though not as rapid as that of the Asian tigers. It was seriously affected by the Asian economic crisis of 1997-99. During the first decade of the 21st century, Thailand experienced steady though unspectacular growth, at much the same pace as its Southeast Asian neighbours - Malaysia, Singapore and Indonesia, though not as high as Myanmar or Vietnam. Thailand in 2008 had a per capita GDP (expressed in purchasing power parity terms) double that of Indonesia and more than double that of the Philippines. It remained well ahead of China, but was only half that of Malaysia. Its ranking relative to these countries on the HDI was the same, though the differences in values were much less marked. Thailand’s health situation is favourably reflected in its substantially lower infant mortality rate than in China, the Philippines and Indonesia. The relatively greater importance of the agricultural sector in Thailand than in Indonesia and the Philippines is striking, as reflected in the higher proportion of male employment in agriculture, and the lower urbanization level in Thailand, although the latter indicator is somewhat misleading as Thailand uses a less inclusive definition of urban areas than either Indonesia or the Philippines.

TABLE 1.1 DEVELOPMENT INDICATORS – THAILAND AND OTHER ASIAN COUNTRIES (2009 UNLESS OTHERWISE STATED)

Country	Population (million)	Per capita GDP growth rate (av. ann. %)		Per capita GDP 2008	HDI	% urban 2000	IMR	Secondary school enroll. rate (net) 2000	Depend. ratio	Employment in agric. Sector (males) %-2000	Ratio of females to males in employ.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
		1960-2000	2000-2010								
Japan	127.0	4.7	1.6	31,464	0.953	65.2	3	99	55	99	70.2
South Korea	48.5	7.2	4.4	25,498	0.921	79.6	4	94	38	94	70.1
Singapore	4.8	7.5	4.7	45,553	0.922	100.0	3	64	36	64	66.0
THAILAND	68.1	6.9	4.0	7,469	0.781	31.1	13	71	41	71	88.7
Malaysia	27.9	6.6	4.6	13,129	0.811	62.0	9	65	52	65	56.3
Indonesia	232.5	5.4	4.9	3,689	0.728	42.0	25	50	49	50	58.1
Philippines	93.6	3.8	4.1	3,244	0.771	48.0	22	62	62	62	67.3
Myanmar	50.5	3.2	8.9	n.a.	0.583	27.8	72	34	48	34	82.3
Vietnam	89.0	n.a.	7.2	2,574	0.733	24.5	19	61	40	61	93.3
China	1,354.1	7.5	9.9	5,515	0.777	35.8	22	n.a.	40	n.a.	80.6
India	1,214.5	4.6	7.2	2,721	0.619	27.7	53	n.a.	57	n.a.	38.9
Bangladesh	164.4	n.a.	5.8	1,233	0.547	25.6	43	41	54	41	57.8

Source: Col. 2 - United Nations 2009; Cols. 5, 7, 9, 11 - 2009 ESCAP Population Data Sheet; cols. 3, 4, 8, 10 - World Bank, *World Development Indicators*, col. 6 - UN *World Urbanization Prospects 2009*.

Note: Col. 4 shows per capita GDP at PPP (constant 2005 international \$). Col. on per capita growth rates 1960-2000 was derived by simple averaging of annual average per capita growth rates for decades within this time span. Some figures in col. 8 are from other sources.

TABLE 1.2 GROWTH RATES OF REAL GDP (% PER ANNUM)

Country	1960-70	1970-80	1980-90	1990-94	1995-99	2000-09
Japan	8.9	5.0	3.7		1.1	1.6
South Korea	9.5	8.2	12.7	7.6	5.0	4.5
Taiwan	9.6	9.7	8.0	6.5	5.8	3.2
Singapore	9.2	9.3	6.5	8.4	6.0	5.8
THAILAND	7.9	6.9	7.9	9.0	0.7	5.2
Malaysia	n.a.	7.9	5.2	8.7	6.6	5.5
Indonesia	3.8	8.0	6.0	8.0	1.7	5.2
Philippines	5.2	6.3	1.0	1.8	3.7	5.1
Myanmar	2.8	4.2	-0.1	4.9	7.1	8.9
Vietnam	n.a.	n.a.	7.1	6.8	7.2	7.7
China	4.0	5.8	10.4	10.5	8.8	10.4
India	3.9	3.2	5.6	4.5	6.6	7.9
Bangladesh	n.a.	5.8	4.3	4.6	6.1	5.8

Source: Hollingsworth, 2007, Table 1.3; James et al., 1987, Table 1.3. 1995-99 - from ADB Asian Development Outlook 2001 - yearly growth rates averaged. 2000-09 from World Bank, *World Development Indicators 2010* - average annual growth of GDP.

Trends in key demographic variables

Where is Thailand placed in the historical context of international fertility and mortality trends? Table 1.3 shows the length of time taken for TFR to decline from 5.5 to 2.2 – in other words, to decline from high levels almost to replacement level. Thailand achieved this in a very brief period of approximately 20 years, between 1970 and 1990. It is sometimes claimed that Thailand had the most rapid decline in fertility in the world, but as Table 1.3 makes clear, this is not quite the case, as Singapore and Iran achieved this decline in an even shorter period, and Thailand's decline was more or less matched by those of South Korea and China (and Tunisia – not shown in the table). Even so, the pace of Thailand's fertility decline was remarkable. No country in Latin America achieved such a decline in less than 30 years.

Another important point to be made is that Thailand achieved replacement-level fertility with more than two thirds of its population living in rural areas, and almost two thirds of its female workforce in agriculture. Aside from China, where urbanization was artificially held down by policy (Kojima 1995; Feng and Li 2006), Thailand achieved replacement

level fertility at a lower level of urbanization and of the movement out of agriculture than any of its East Asian neighbours (see Table 1.4). In South Asia, the only other countries or regions in which replacement level fertility was reached with a population still two thirds rural and agriculture featuring prominently in the employment structure appear to be Sri Lanka (though fertility there hovers just above replacement level) and the states of Kerala and Tamil Nadu in India.

A final point to be made about the comparative conditions in Thailand when fertility reached replacement level, compared to other countries of Asia, is that in Thailand, the average level of educational attainment of women was relatively very low, women's labour force participation rates were high and a substantial proportion of the women who worked were working in the agricultural sector (see Table 1.4).

A precondition for rapid declines in fertility is achievement of relatively low levels of mortality. In Thailand's case, mortality improved greatly in the decades just prior to rapid fertility decline. Between 1950–55 and 1970–75, Infant Mortality Rate (IMR)

TABLE 1.3 NUMBER OF YEARS FOR TFR TO DECLINE FROM 5.5 TO 2.2

Country	Period*	Approximate no. of years
Singapore	1960-1975	15
Iran	1986-2001	15
Thailand	1970-1990	20
South Korea	1963-1984	21
China	1969-1990	21
Vietnam	1979-2005	26
Myanmar	1985-2010	35
Sri Lanka	1960-1997	37
Indonesia	1966-2007	41
Japan	1915-1957	42

*Source: Estimated from data in the World Population Prospects The 2008 Revision (United Nations Population Division 2009) Exact years of beginning and end point not always certain.

declined from 94 to 58 per 1,000 live births and expectation of life at birth (both sexes) rose by 8 years – from 51.6 to 60.8. In the following 20 years, simultaneously with the sharp decline in fertility, IMR fell dramatically, to 19 per 1,000 live births and expectation of life at birth rose by a further 8 years (data from United Nations Population Division 2009).

After reaching replacement level, Thailand's fertility has declined further, reaching an estimated TFR of 1.8 in 2000–2005. UN estimates show it leveling off at 1.8 in the 2005–2010 period as well, though the basis for such an assumption is suspect.¹ In any case, based on analysis of trends in registered births, our study concludes that the TFR in Thailand has already declined further to a level of about 1.5 in 2009. This raises important issues for population policy, which will be discussed below.

Some impacts of rapid fertility decline

Fertility decline since the 1960s has led to dramatic changes in growth of different age segments of the population, and correspondingly, to sharp changes in age structure. These are very obvious in the age pyramids shown in Figure 1.1. Between 1960 and 2000, Thailand's age pyramid changed from a broad-based, high fertility age structure to one in which each of the 5-year cohorts aged 15–39 was larger than the 5-year cohorts in the childhood ages. By 2020, the “undercutting” in the age pyramid will be even more pronounced at the childhood ages, and numbers will be swelling at ages 50 and above. The implications of these changes will be discussed at greater length in various chapters of this report. Here just a few salient points will be made.

TABLE 1.4 INDICATORS OF WOMEN'S CONDITION AT TIME REPLACEMENT LEVEL FERTILITY WAS REACHED, VARIOUS ASIAN COUNTRIES

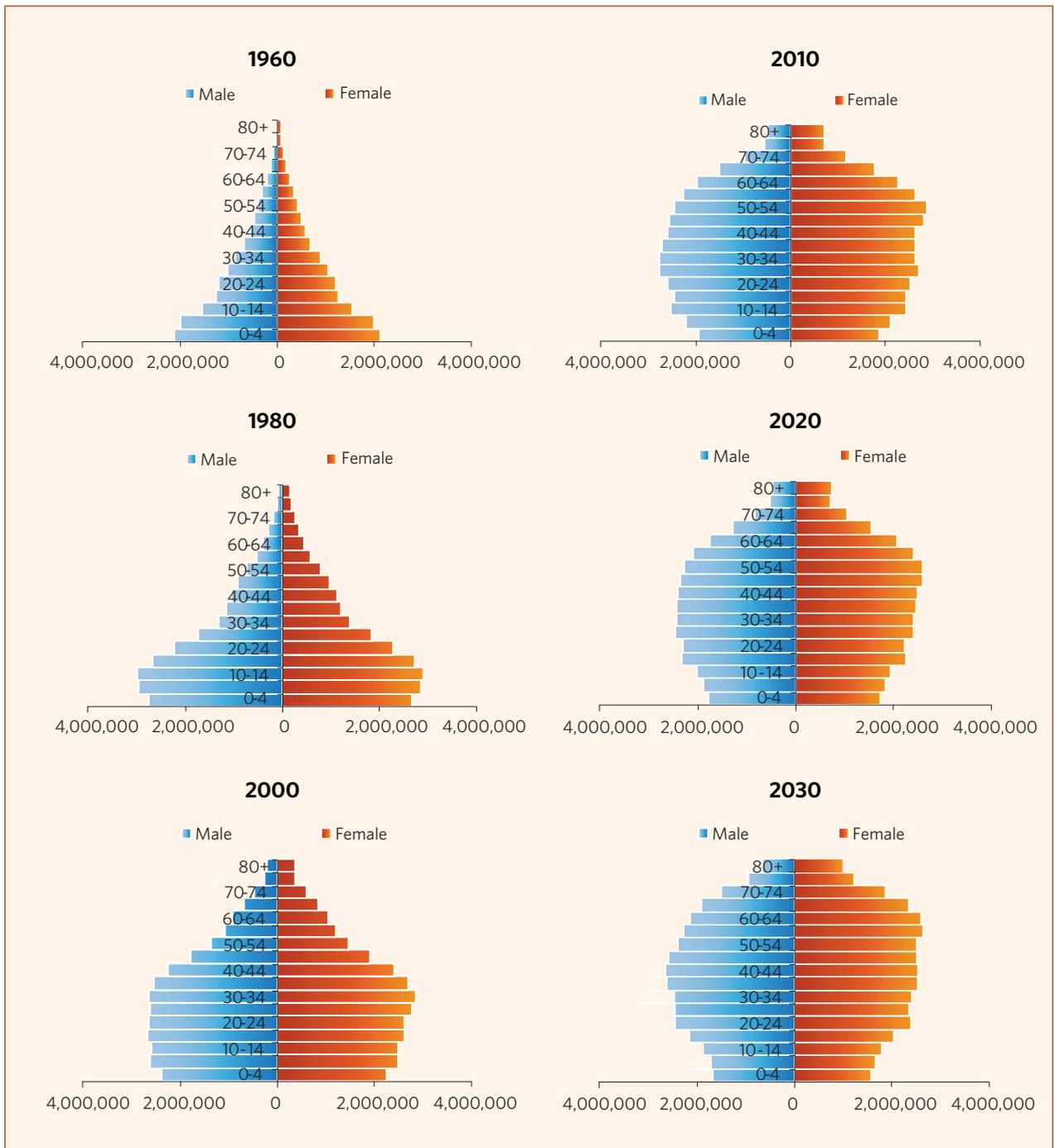
Country	Year replacement fertility reached	% of women aged 20–29 with secondary education	Female labour force participation rate, ages 15–64	% of employed women in agriculture
	(1)	(2)	(3)	(4)
Thailand	1991	16.9 ¹	73.0	63.0
China	1990	65.0	73.0	NA
South Korea	1984	80.0	41.0	30.0
Japan	1960	n.a.	54.5	36.6
Singapore	1975	30.6 ²	45.0 ²	1.02
Vietnam	2005	71.2 ³	69.0	60.0 ⁴

¹ 1990 ² 1980 ³ 2009 ⁴ 2004

Source: Column 2 -Population and Housing Census, National Statistical Office, Thailand (1990). Census of Population Singapore, Release No. 2 Demographic Characteristics, Release No. 3 Literacy and Education, Department of Statistics Singapore (1980). Vietnam Population and Housing Census: Completed Results, General Statistics Office of Vietnam (2009). Jones and Gubhaju, 2009, Tables 4 and 7. Columns 3 and 4- data from the World Bank, except for Japan, data from the Statistics Bureau of Japan, Ministry of International Affairs and Communications (1960).

¹ The assumption about TFR in 2005–2010 is crucial for the UN projections as well, because for countries with TFR below 1.85 in 2005–2010, the United Nations assumed fertility over the first five or ten years of the projection period would follow the recently observed trends in each country. The fact that they assumed essentially no change (actually a slight rise) in Thailand's fertility to 1.85 in 2010–2015 and 2015–2020 follows from their judgment that fertility had been roughly unchanged over the period since the turn of the 21st century.

FIGURE 1.1 POPULATION PYRAMIDS OF THAILAND 1960-2030



Source: Population in 1960-2000 from Thailand Population Census. Population in 2010 and 2030 from World Population Prospects The 2008 Revision, United Nations Population Division 2009. (low projection)

First, the decline in fertility facilitated the attainment of universal primary education. This was achieved around the mid-1980s, just at the time when the number of school-aged children peaked and began to decline somewhat (Jones, 1990: 39). The decline in fertility greatly lessened the burden on government budgets in attaining universal primary school education and turning attention more to lower secondary education.

However, the progress and shortcomings of Thailand's education system need to be viewed in broader perspective. In the 1930s, Thailand had better literacy rates than most of its neighbours, thanks to a long history of government emphasis on provision of basic education, resulting in high levels of enrollment in 4-year primary education, including that provided in temple schools. But despite the success in achieving universal primary education in an expanded 6-year primary school system, and success in expanding university education, Thailand was long characterized by a major gap at the lower secondary level of education, which was only seriously tackled in the 1990s (Khoman, 1993: 329-330; Jones, 2005; Booth, 2003: 181). Rate of returns studies showed the highest (social) rate of return at the lower secondary level of education. Why, then, were enrollment rates so low? This was no doubt related to the pattern of economic growth based on expansion of the cultivated area referred to earlier, the ease of obtaining jobs in the factories, construction and various service sector activities in the boom years of the late 1980s and 1990s, and the difficulties for many poor rural parents of sending their children to lower secondary school because of high costs and distance to schools (Sussangkarn, 1988; Knodel and Wongsith, 1989). But serious industrialization requires higher levels of human capital investment, and Thailand was not well placed in this regard to profit from the chance to industrialize and attract foreign investment. This was noted by many economists (e.g. Myers and Sussangkarn, 1992).

Thailand managed to achieve major increases in secondary school enrollment rates in the 1990s (Jones, 2005: 183-188; Booth, 2003: 181-2). This demonstrates that "determined public action can make a difference to post-primary participation rates, even over a relatively short space of time" (Booth, 2003: 182). Further increases in secondary school enrollment ratios have been achieved in the

first decade of the 21st century (see Chapter 5). Even so, "demographic inertia" (the only slow passage out of the labour force of the poorly educated cohorts born before the educational expansion) prevents rapid improvements in the overall educational level of the labour force. Thus Thailand cannot quickly overcome the adverse consequences of an earlier under-investment in secondary education.

Future trends in population and its component age groups

It needs to be noted here that this is a particularly difficult time to be making projections of Thailand's population. The initial results of the 2010 Population Census will be released just at the time this report is published. They may well show some of the figures used in the current report to be incorrect, as the 2010 figures are projections from earlier estimates of Thailand's population and demographic parameters.² Fertility trends may have differed from the projected trends, and migration assumptions used in the projections could be substantially off the mark. Given the timing of the present report, the decision was made to use the United Nations Population Division projections as updated in 2008 (United Nations Population Division 2009), in most cases the medium projection. This projection, however, assumed that the TFR would remain roughly constant at 1.85 in both 2010-2015 and 2015-2020. This now appears to be unlikely, because of the estimate produced during the course of preparing the present report, namely that fertility has now declined to 1.5. For this reason, the United Nations low projection (which assumes that TFR in Thailand will decline to 1.60 in 2010-2015 and to 1.45 in 2015-2020) appears to be closer to the

2 There are at least four sources of population figures in Thailand: 1) the population size according to the civil registration statistics which show a population of 63.87 million in 2010; 2) the population size according to four population projections made by different agencies: a) Thailand Population Projection, 1999-2016 by the Office of the Education Council; -- 67.68 million (2010); b) The United Nations projection in World Population Prospects: the 2008 Revision --68.13 million in 2010, according to both medium and low projections; c) Mahidol University Population Projections for Thailand (2006) --63.35 million in 2010; d) the Population Projection 2000-2030 by NESDB - 68.5 million in 2010. In brief, estimates of the population size in Thailand in 2010 range from 63.9 to 68.5 million (using the medium variant in all cases where more than one projection is provided), a range of over 4 million people. The 2010 Population and Housing Census released by the National Statistical Office in April 2011 suggests that Thailand has 65.4 million population which is about 2.73 million persons lower than the UN Population Estimates for 2010.

mark. The two projections give widely differing dates for the onset of population decline in Thailand. In the medium projection, decline begins in 2040 from a population size of 74 million. In the low projection, decline begins much earlier, in the 2020–2025 period from a population of just under 70 million.

Despite these uncertainties, it should be stressed that the broad dimensions of future population trends and structure are now clear. A key point to stress is that, largely as a result of the sharp decline in fertility, the growth of different age segments of the Thai population now differs dramatically (see Table 1.5 and Figure 1.2). Both the numbers of children and of young working-age population are declining steadily, whereas numbers in the mature working ages (30–64) are still increasing, albeit only very slowly. At the same time, the numbers aged 65+ are increasing very rapidly indeed.

The working-age population as a whole (aged 15–64) will begin to decline after 2020, or even a little earlier, as even the United Nations low projection has probably understated the decline in fertility over the past decade. It should be borne in mind that the educational attainment of the young working-age population is much higher than was the case for the larger cohorts moving through this age range 20 years earlier. Since technological change tends to be embodied in younger workers, the decline in number of young workers could be considered a barrier to more rapid economic development. However, this disadvantage could be offset by capturing the benefits of their higher educational levels as effectively as possible. In order to do this, some changes in Thailand’s economic structure and development policies may be needed. At the same time, it is possible that selective recruitment of skilled workers (and even, perhaps, less skilled workers) from abroad may be needed to fill the gaps.

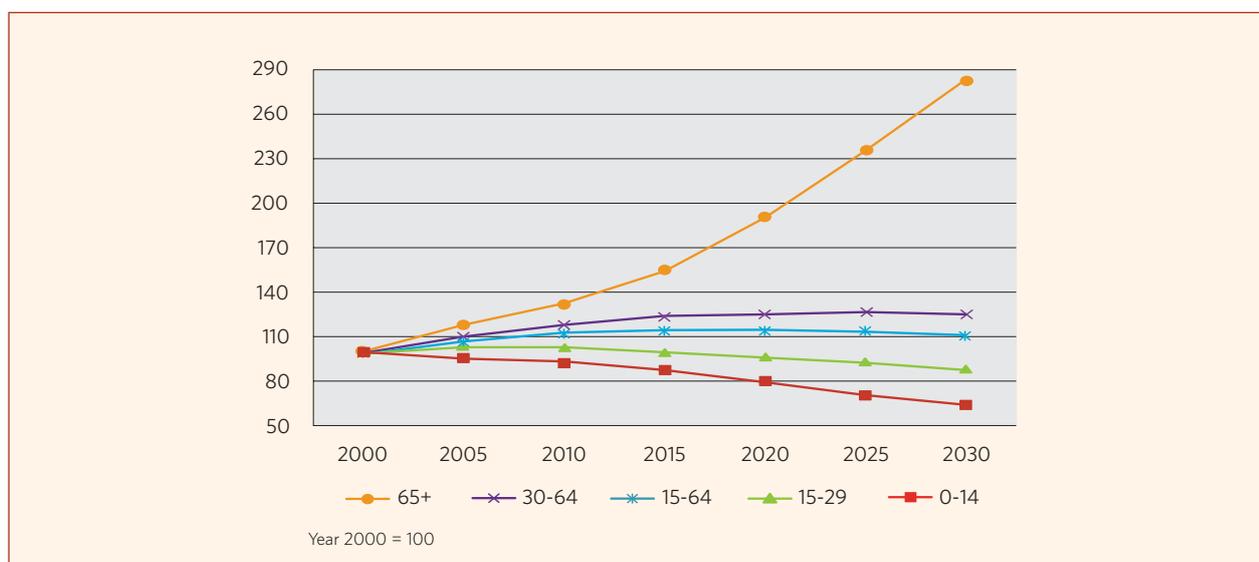
TABLE 1.5 THAILAND: POPULATION IN BROAD AGE GROUPS, 2000–2030 (NUMBER IN THOUSAND)

Age group	2000	2005	2010	2015	2020	2025	2030
Medium projection (number)							
0–14	15,674	15,127	14,629	14,484	14,322	14,026	13,651
15–29	15,517	16,209	16,076	15,517	14,989	14,515	14,403
30–64	27,198	29,925	32,183	33,794	34,539	34,692	34,199
(15–64)	(42,715)	(46,134)	(48,259)	(49,311)	(49,528)	(49,207)	(48,602)
65+	3,958	4,685	5,251	6,142	7,594	9,394	11,209
Total	62,347	65,946	68,139	69,939	71,443	72,628	73,462
Low projection (number)							
0–14	15,674	15,127	14,629	13,834	12,661	11,140	10,203
15–29	15,517	16,209	16,076	15,517	14,989	14,515	13,857
30–64	27,198	29,925	32,183	33,794	34,539	34,692	34,199
(15–64)	(42,715)	(46,134)	(48,259)	(49,311)	(49,528)	(49,207)	(47,956)
65+	3,958	4,685	5,251	6,142	7,594	9,394	11,209
Total	62,347	65,946	68,139	69,288	69,782	69,741	69,369
Medium projection (% distribution)							
0–14	25	23	21	21	20	19	19
15–29	25	25	24	22	21	20	20
30–64	44	45	47	48	48	48	47
(15–64)	(69)	(70)	(71)	(71)	(69)	(68)	(66)
65+	6	7	8	9	11	13	15
Total	100						

Age group	2000	2005	2010	2015	2020	2025	2030
Low projection (% distribution)							
0-14	25	23	21	20	18	16	15
15-29	25	25	24	22	21	21	20
30-64	44	45	47	49	50	50	49
(15-64)	(69)	(70)	(71)	(71)	(71)	(71)	(69)
65+	6	7	8	9	11	13	16
Total	100	100	100	100	100	100	100

Source: United Nations Population Division, 2009.

FIGURE 1.2 THAILAND: INDEX OF GROWTH OF AGE GROUPS, 2000-2030



Source: Calculated from United Nations Population Division 2009, low projection.

In this regard, it is important to note that Thailand, like Malaysia, is one of the relatively few countries in the world with large flows of both emigration and immigration. In Malaysia's case, the emigration is largely of educated and skilled workers, while the immigration is largely of unskilled workers, on balance making for a lowering of the quality of Malaysia's human capital. In Thailand's case, the balance is less clear, as the emigration flow is of lower skill and education than in the case of Malaysia. In any case, numbers migrating to Thailand (including both documented and undocumented) considerably exceed numbers leaving (see Chapter 6). It is fairly clear that the flow of unskilled workers from Thailand is likely to decline over time, because of a contraction in supply resulting from contracting numbers of young Thais entering the workforce, and rising education levels among labour force entrants. It is also important to note that the contrast between

levels of economic development (and wage rates for the unskilled) in Thailand and in a number of its neighbouring countries (Myanmar, Cambodia, Laos and Bangladesh), not to mention ongoing political troubles in Myanmar, will provide a continuing incentive for many unskilled workers from these countries to seek work in Thailand. Thus policy issues with respect to such migration will not go away.

The other key impact of rapid fertility decline is increasing population ageing and decline in the support ratio of working age population to dependants, both at a macro level and within individual families. This has, not surprisingly, come to occupy centre stage in discussions of implications of population trends, and will be given considerable attention in this report.

Policy implications of rapid fertility decline

The context of population policy formulation in Thailand has changed dramatically in recent decades. Beginning in 1970, with the acceptance by the Royal Thai Government of the need to reduce population growth, the key aim in each 5-year plan (beginning with the Third Plan (1972–76) was to lower population growth rates. From the Sixth Five-Year Plan (1987–91) on, emphasis also began to be placed on enhancing the quality of the population (Robinson and Rachapaetayakom, 1993) and other population-related issues aside from simply getting fertility rates down. By 1997, it was clear that fertility had already fallen to below replacement level, and population projections indicated a slowing of growth and eventual leveling off in population size. The Eighth Plan (1997–2001) was the first to set no target for reducing the population growth rate. However, its population policy “was rather vague and merely advocated maintaining appropriate family size and a reasonably distributed population based on the potential and opportunities for development present in various parts of the country” (Prachuabmoh and Mitranon, 2003: 46). Human resource development was emphasized as both the means and end of sustainable development.

The Ninth Plan (2002–2006) mentioned a goal of maintaining fertility at around replacement level. It also noted the need to improve accessibility and quality of reproductive health and family planning programs. Other goals included improvement of quality of life through further development of public health and education, appropriate regional population distributions, better management of both internal and international migration, and more scope for regions to develop their own programs to deal with specific demographic trends (Prachuabmoh and Mitranon, 2003: 46). The Tenth Plan (2007–2011) focused on issues of preparing for ageing and improvement of labour productivity and social services relating to the elderly.

The last two Five-year Plans in Thailand (the Ninth and Tenth Plans) have mentioned the need to maintain fertility at around replacement level. But the context has now changed. When these Plans were prepared, fertility was already below replacement, but not dramatically so. We now know that fertility has reached really low levels.

A TFR of 1.5, if maintained over time, eventually results in a decline of about 30 per cent in the size of each successive generation, or in other words roughly a halving of population size every 60 years. No government interested in maintaining a cohesive population can ignore such a trend. It is also generally conceded that when fertility falls below 1.5, it is very difficult to raise it again towards replacement level.³ While immigration may be able to make up the losses, it will certainly lead to a major change in the nature of the population, and also raises many issues about balancing human capital changes with the needs of the economy. Thus a key issue for this report is whether the policy stance toward fertility in Thailand now needs to be altered.

Other East Asian countries waited a long time before TFR fell below replacement level before they adopted policies designed to foster higher fertility – typically, about 20 years (Jones et al, 2009: Table 1.2). It is already about 20 years since Thailand reached replacement level fertility, and specifically pro-natalist policies have not been introduced. In this respect, Thailand is therefore following in the path of the other East Asian countries which reached replacement fertility earlier. Certainly, there has been some difference between their fertility trajectories and that of Thailand. In less than 20 years after reaching replacement level fertility, S. Korea and Taiwan had TFRs well below 1.5. The decline to below 1.5, with clear indications that fertility was going even lower, led them eventually to adopt pro-natalist policies (though in the case of Korea, TFR had been at the extremely low level of below 1.2 for five years before pro-natalist policies were introduced). But while the further decline in fertility after reaching replacement level has been a little slower in Thailand than in these countries, the fact is that the TFR in Thailand has now reached levels sometimes designated as “ultra-low”. The key issues for Thailand, then, appear to be:

- Is Thailand's TFR likely to continue declining to levels below 1.5?
- If so, are pronatalist policies justified?
- If so, when should they be introduced and what kinds of policies should they be?

³ Admittedly, a decline in period TFRs can be “exaggerated” by tempo effects resulting from postponement of childbearing, and a cessation of such delays in childbearing can raise TFR somewhat, as appears to be happening in some countries in Europe (Goldstein, Sobotka and Jasilioniene, 2009). These effects, however, seem to be muted in East Asian countries (Frejka, Jones and Sardon, 2010).

The delayed response in other East Asian countries appears to have been a mistake. The lower fertility goes, the more difficult it appears to be to find policy levers to raise it, although there is no consensus as to whether policy levers are lacking, or whether East Asian countries have simply failed to exercise the available policy instruments in a robust fashion (McDonald, 2002). Thailand should profit from the experience of these countries by addressing the issue of the appropriate policy stance on fertility, and appropriate policy responses, as a matter of some urgency.

The history and nature of pro-natalist policies in other low-fertility Asian countries

Of the other Asian countries with very low fertility, two – Japan and Singapore – have a fairly long history of pro-natalist policies. Two others – South Korea and Taiwan – only began to introduce pro-natalist policies in 2006, while two others – China and Hong Kong – have not introduced pro-natalist policies. In Hong Kong's case this is because it has a fairly *laissez-faire* approach to planning (and perhaps because it can always increase its population by letting in more people from China); in the Chinese case, it is because the Chinese government, though it has modified its strongly anti-natalist policies to some extent, has not accepted the need for pro-natalism, fearing a sharp rebound in fertility if it does so (Gu, 2009).

Japan and Singapore have been strengthening their pro-natalist policies over the past two decades. Both have direct subsidies for childbearing, both aim to change the institutional framework to facilitate marriage and childbearing, and both have increased the provision of paid maternity and childcare leave, and subsidize the provision of daycare for infants and young children. Korea and Taiwan have a less developed set of pro-natalist measures, focusing on subsidized childcare, maternity leave and parental leave benefits, but not including direct subsidies for childbearing. None of these countries provides paternity leave, though in Japan and Singapore, childcare leave is available to husbands as well as wives. (For more detail on these policies, see Jones, Chan and Straughan, 2009; Frejka, Jones and Sardon, 2010, and references cited therein).

The cultural and institutional structure in these countries works against making some of these programs effective. For example, in Japan and Singapore, many employees do not avail themselves of available maternity and childcare leave for fear of losing out in promotion prospects, or incurring the displeasure of bosses or of co-workers. Governments fear that too many provisions to assist working mothers may backfire by leading to employers resisting employing women who are considered likely to become pregnant. A family friendly working environment needs to be developed, but this is not easy in Confucianist-influenced societies. Thailand should face fewer problems in this regard.

Unfortunately, the pro-natalist policies in these countries are generally judged to have failed. After all, there have at most been only slight increases in fertility. However, the policies may have prevented fertility from going even lower. It is also important to note that the policies in East Asia are not as comprehensive as those in many European countries such as France and Scandinavian countries, where an upturn in fertility to levels close to replacement has been achieved. If Thailand is to introduce pro-natalist policies, it should certainly aim to learn from not only other East Asian countries, but also from European countries where a wide range of pro-natalist and family policies are in place. Whatever policies are adopted, they should be designed with Thailand's particular cultural, economic and institutional structure in mind.

Population and development

The title of this report – "impact of Demographic Change in Thailand" – indicates that its main thrust is on dealing with the implications of demographic trends – that is, on population-responsive policies. This does not mean that it is not also recommending policy changes to influence those very demographic changes (population-influencing policies). But the demographic changes that have been taking place over a long period of time are already working their way through the economy and society in ways that need to be dealt with. Therefore many chapters of the report will be considering ways to react to ongoing demographic trends and their influence on health care needs and their implications of the healthcare system, trends in migration and urbanization, the

demographic dividend and human capital, ageing and its implications in many aspects of social and economic planning, and environmental change. This introductory chapter will now turn to a brief consideration of some of the issues involved.

Ageing and family change

Ageing in Thailand, as elsewhere, is affected by both fertility and mortality trends, though more strongly by fertility trends. This means that the recent patterns of fertility decline have flowed through to the changes in proportion of elderly in all the countries undergoing fertility decline. This is shown in Table 1.6. Thailand is far behind Japan in its ageing process, and well behind Korea and Singapore, because they experienced sustained fertility declines earlier. It is far ahead of the Philippines, though, where fertility decline has been slow. But interestingly, its trend in proportion of elderly tracks very closely that in China. It is therefore not surprising that in both Thailand and China, ageing is considered to be a very important issue. According to the projections in Table 1.6, the proportion aged 65+ in Thailand is expected to double over the 20-year period 2010–2030. This will be happening at much lower levels of per capita GDP than in Japan, South Korea or Singapore when they had comparable levels of ageing. There is clearly a need to give ongoing attention to all the issues raised by ageing, while avoiding a doomsday approach.

As stressed in Chapter 3, there are many positive aspects of the situation of the elderly in Thailand. The cohorts entering the older ages are better educated and better off economically than those that preceded them. This should continue to be the case. And although there has been a gradual rise in the proportion who live alone or only with their spouse, over half are still co-resident with a child, and this proportion rises to over 70 per cent if we include children living next door. Reduced family size and increased migration of children will certainly affect potential for support, but the impact of this will differ, depending on the kind of support considered. Material support does not require close proximity, and the cell-phone has greatly increased the capacity for social support to be provided at a distance. It is routine personal daily care that requires continual physical presence. It is here that the greatest difficulties are likely to arise.

The projections show that there will almost certainly be a sharp increase in the numbers of frail and disabled elderly, and those with chronic illnesses, even allowing for improved health among the elderly. This is likely to result in an increase in demand for the kinds of labour intensive care required by this section of the population, though this increase may be partly or even fully offset by medical and other technological advances that will assist in such care. The family continues to provide a great deal of such care, but with projected sharp declines in the ratio of potential caregivers to those needing care, the

TABLE 1.6 TRENDS IN PERCENTAGE OF POPULATION AGED 65+

	2005	2010	2020	2030
Japan	19.9	22.6	28.5	30.8
South Korea	9.3	11.0	15.4	23.2
Singapore	8.5	10.2	17.9	27.5
Thailand	7.8	8.7	12.4	17.4
China	7.6	8.2	11.7	15.9
Philippines	3.9	4.3	5.7	7.6
USA	12.4	13.0	16.1	19.8
Germany	18.9	20.5	23.0	28.2

Source: World Population Prospects: The 2008 Revision, United Nations Population Division 2009, medium projection.

potential for care to be provided within the family is decreasing. Provision of such care by the community is another possibility, particularly for help with instrumental activities. But overall, it is only realistic to expect that increasing governmental resources will have to be allocated to the provision of such care.

The big issues relating to ageing are the impacts of the rising population in old ages on the health care system, and on the tax base for pension and social security programs. The first of these is dealt with in Chapter 4, and will be discussed below. The second is discussed in Chapter 5. The key point to make on pensions and social security programs is that most of the Thai population is not yet covered by them. Only those in the formal sector and in government employment are covered by pensions. This at least has the advantage of enabling innovations to be made in planning ahead for a more comprehensive system. The main pitfall to avoid here is reliance on pay as you go systems, which tend to become unsustainable over time in a low fertility population.

Major expansion of retirement income programs is currently envisaged. The Ministry of Finance expects the National Savings Fund Act to be implemented in 2011. The fund aims to cover retirees who are not covered by the social security and pension schemes, especially those 23 million Thais working in the informal sector. People aged 15-60 years old could join the fund, for which the sources of contribution payments come from two parties: fund members and government contribution. The government will contribute to each member depending on their age and their actual contribution. The government's contribution to the National Savings Fund is on top of the 500 baht allowance provided by the government to all Thais over 60 years not supported by any pension schemes. In addition, the government has recently approved the extension of old age security to the informal sector according to article 40 of the Social Security Act to cover five types of benefits, namely maternity, invalidity, death, sickness and old age pension.

Health transition

A universal feature of declining mortality rates over the course of economic development is that the "mix" of morbidity and mortality changes, both because of the near-demise of certain causes of death that were

once major health concerns, in the face of medical, public health and economic developments, and the change in age structures (in particular, declining proportions of children and increasing proportions of elderly), which shifts the health care needs even without any change in underlying age-specific patterns of morbidity and mortality. Examples of health problems that decrease over the course of the epidemiological transition are infectious and respiratory diseases, and ones that increase include cardiovascular diseases, cancer and "unintentional injuries" (motor vehicle accidents, etc).

While Thailand has achieved notable successes in building a health care system meeting most of the needs of its population, the system faces a number of challenges resulting from the changing population structure and changes in the pattern of health care needs. This translates into changes in the required service mix (medical versus social services) and resources for these services. The changes in health services demand will require adaptation and re-orientation of the current health systems (delivery, human resources and skill mix).

The changing pattern of disease and disability and its implications for Thailand's health care system and its financing are discussed in Chapter 4 of this report.

Reproductive health

With low levels of fertility and effective reproductive health services, unmet need for contraception among married couples in Thailand is now very low - about 1.2 per cent (Chayovan et al., 2003). An important factor contributing to the low fertility in Thailand is delayed marriage. Very high proportions of men and women in their 20s and even 30s now remain single (for example, 16 per cent of women and 23 per cent of men aged 30-34 in 2000, and much higher proportions at ages below this). This raises important issues for reproductive health policies. Levels of sexual activity are quite high among adolescents and unmarried adults (see Chapter 2; also Podhisita and Xenos, 2008). Thus studies of married couples which show low levels of unmet need for contraception are misleading. Even leaving adolescents aside, an increasing proportion of young adults are not married. The unmarried have typically faced obstacles in gaining access to contraception. Thus unmet need is considerably higher than

indicated by the typical fertility survey confined to married people. The issue of reproductive health needs of the unmarried is therefore increasing in importance as a consequence of delayed marriage.

Economic impact and human capital accumulation

Chapter 5 deals with the implication of population trends for the future trajectory of the economy. A key emphasis is on the impact on human capital, because of the key role of human capital in economic growth. The context is that Thailand has been enjoying the so-called “demographic dividend”, a period of some decades when the decline in fertility leads to increasing proportions in the working-age population. This should make for higher rates of economic growth, provided that the bulge in working-age population is equipped with the necessary skills to be productive members of the workforce, and that job opportunities are available.

The period of the demographic dividend, as conventionally measured, is almost over. The proportion of working-age population is peaking around 2010, though up to 2020 it will decline only slightly. The size of the working-age population, as noted above, will peak around 2020 or a little earlier and start to decline gradually thereafter. In these terms the demographic structure remains reasonably favourable to development, but is gradually becoming less so. The analysis to be presented in Chapter 5 gives a somewhat more somber picture of the depletion of the dividend. It focuses on the economic support ratio or the ratio between the effective number of producers and the effective number of consumers, calculated using variation in productivity and consumption needs of individuals in different age groups. This analysis shows the demographic dividend ending in 2010, the year the proportion of working-age population peaks, and a fairly rapid growth of a negative dividend after that point. To offset this negative effect, it is crucial that Thailand prepare for the gradual decline in the share of the working-age population, which will accelerate after 2020, notably through strong attention to human resource development.

A demographic dividend caused by fertility decline is of limited duration and will inevitably end. The fact that Thailand's demographic dividend has now drawn to a close is not so much a cause for regret as for celebration of the developmental advantages reaped over several decades as a result of its fertility decline. Thailand has taken fairly good advantage of this demographic dividend to improve its human capital stock and raise levels of income and welfare that could probably not have been achievable without it. This should have prepared Thailand to deal more effectively with the issues faced by countries ending the demographic bonus period and facing an increasingly aged population.

However, it is also true that, just as Thailand is tracking China's ageing trend quite closely, the often-invoked lament that China “will grow old before it grows rich” may also be applicable to Thailand. Thailand will not be a high-income country when its ageing process is quite advanced in 20 years time, although it may well have managed to double or possibly even treble today's per capita income levels.

Chapter 5 notes that there is the possibility of a second demographic dividend, once the first dividend has ended. This second dividend could result from the growth in productivity induced by an increase in the demand for lifecycle wealth. As the population becomes more concentrated at older, high wealth ages, a behavioural effect—a greater accumulation of wealth due to delayed retirement and setting aside resources for retirement – can have beneficial macro-economic consequences. This second dividend is not automatic; it requires policy that encourages capital accumulation rather than rely on “pay as you go” pension wealth to finance consumption during retirement ages. It is also dependent on increasing numbers with sufficiently high incomes to set aside money for retirement, and the will to work longer and the ability to find employment at older ages.

Migration and urbanization

In the Thai context, as in most countries at a relatively early stage of the urbanization process, migration plays a major role in urbanization. In Thailand's case, this is complicated by the fact that the migration being referred to is of two

kinds - internal and international migration. Internal migration has certainly fuelled the urbanization process, because the pattern of permanent movement has shifted over time from a predominantly rural-rural movement up to the end of the 1970s (see Goldstein and Goldstein 1986, Table 10) to a predominantly rural-urban and urban-urban flow in the first decade of the 21st century. Much of the rural-urban movement has been of a temporary and seasonal nature, particularly that from the Northeast and Central Plains to Bangkok, thus being matched by an almost equally large urban-rural flow. However, movements of this kind do lead to considerable permanent movement to urban areas. As far as international migration is concerned, in Thailand's case it appears to have helped to fuel the urbanization process, based on evidence of where migrants from Myanmar, Laos and Cambodia have settled (discussed in Chapter 6). It is clear, though, that substantial numbers of those moving to Thailand from Myanmar have settled near the borders, many of them in refugee camps, in the hope of returning if and when conditions in Myanmar improve.

It is noteworthy that Thailand's level of urbanization (34% in 2010) is low, not only in relation to some other countries in Asia with lower levels of economic and human development (e.g. see China, Indonesia and the Philippines in Table 1.1), but also in relation to Latin American countries with roughly similar levels of development (e.g. Colombia and Peru, both with over 75% urban, and Ecuador, with 67% urban, in 2010). There is little doubt that the measure of urbanization used in Thailand, though modified in 1999 to enable sanitary districts to be counted as urban, excludes many localities that would be considered urban in these other countries (Jones, 2004: 114-117). But even so, it does appear that Thailand's level of urbanization is lower than in many other countries with roughly similar development indicators, because of the continuing high proportion of Thailand's workforce in the agricultural sector. This can on the one hand be interpreted to mean that Thailand's agriculture is relatively efficient, enabling relatively high level of per capita income to be achieved with a high proportion of the labour force remaining in agriculture. But on the other hand, because of evidence that labour productivity is much lower in agriculture than in other sectors (see Chapter 5), it can be argued that Thailand can reach much

higher levels of income if the movement of the workforce out of agriculture and into other sectors is accelerated.

Rapid urban growth has meant that more of Thailand's population has been able to take advantage of the higher living standards in the cities. At the same time, the gap in household incomes between urban and rural areas has remained roughly constant, despite average incomes increasing in all areas. Likewise, while levels of poverty have declined throughout the country, they remain much higher in rural areas, where in 2006 12 per cent lived in poverty, than in urban areas, where 3.6 per cent lived in poverty. The urban poor are a relatively small component of Thailand's population, but the particular vulnerability of the urban poor may justify more attention to this group than their relatively small numbers may suggest is needed.

Bangkok was until recently an extreme example of urban primacy, with a population in 1993 between 7.5 and 11 times larger than the combined population of the next three cities (Boonpratuang et al., 1996, Table 4). This degree of primacy has been declining somewhat in recent years, as the Bangkok Metropolitan Area (BMA) population has increased less rapidly than the rest of Thailand's urban population. Even when the Bangkok population is adjusted to incorporate some surrounding areas that fall within its built-up area, and whose population has been growing more rapidly than that of the BMA, the growth of this adjusted Bangkok population was slightly less rapid than that of Thailand's total urban population (Jones and Douglass (eds), 2008: Table 3.4; and Chapter 6, this study).

Environment and population change

Environmental sustainability has come to centre stage in the world's concern for its future. Population-environment interactions, while they have not received the attention they deserve, are an increasingly important field of study, but an exceedingly complex one. Lutz et al. (2002:5) describe population-environment (P-E) research as a chair with four legs: (1) P (population dynamics), (2) E (environmental dynamics), (3) influences of

P on E,⁴ and (4) influences of E on P. Unfortunately, little work has been done on (4).

Climate change will expose large populations to drought and increased variability of weather. It will reduce agricultural fertility and the productivity of fisheries. It can also increase deaths from sudden events such as tropical cyclones and floods (IPCC 2007: 393). It is expected to raise sea levels which will not only endanger productive land but also threaten areas currently safe from sea surges (UNFPA 2009). This is a real issue for Thailand, with its long coastline and low elevation of some of its most densely populated areas. The capital city, Bangkok, is vulnerable to sea level rise, along with the entire lower Chao Phaya River Valley, which is tidal for a considerable distance inland from the sea. Climate change will also promote heat stress, particularly in large urban areas with concrete and asphalt 'heat islands' (McMichael et al. 2006).

Where environmental factors are likely to have their greatest effect is on migration and the dynamics of settlement change (O'Neil 2005: 176). Aspects of settlement change such as urbanization and peri-urbanization, intensification of rural settlement, and local displacement are increasingly becoming mechanisms for adaptation to environmental change. Economic development in urban centres and environmental degradation in rural areas may accelerate population shifts from the countryside to cities. Over time, the proportion of urban dwellers

with village links steadily declines, thus in some ways increasing the vulnerability of large urban populations to food and job insecurity in times of crisis.

Given the very slow increase expected in Thailand's population, it is not the effect of population change on environment that requires intensive study in Thailand. Rather, it is the effect of changing population composition and life style patterns, including patterns of consumption and the carbon footprint left by these changing lifestyles, that requires attention, along with the effect of environmental change on population.

Conclusion

Thailand's population growth has slowed considerably, and little further growth is expected. It is the changing population structure that is now of crucial importance - changes in age structure, educational and skill structure, state of health and geographical distribution. In all these respects, changes in Thailand's population over the coming two decades promise to be far-reaching, raising important planning issues both with respect to adapting to those population changes that are inevitable and influencing aspects of demographic change that are amenable to modification. The following chapters of this report will examine in more detail some of the key aspects of demographic change in Thailand from this perspective.

4 For a good summary, see Hunter, 2000.



Fertility Transition and Its Impact

Among Southeast Asian countries, Thailand, along with Singapore, has had the most rapid fertility decline and the shortest period of fertility transition. High contraceptive use and a sharp decline in proportion married have contributed significantly to low fertility in Thailand. Despite Thailand serving as a well-known success story in providing good coverage of family planning throughout the country, young people and some adults still lack access to quality contraceptive services. The level of fertility is now below replacement and the population growth rate of the country is decreasing to approach zero. The key question facing Thailand is how to respond to the low level of fertility.

Rapid fertility decline

Level and trend at national level

Fertility transition in Thailand can be divided roughly into four periods, high fertility (before 1970), fertility decline (1970-1990), low fertility (1991-1996), and below replacement fertility (1997-present). During the high fertility period, a family would have 6 children on average, as the total fertility rate (TFR) was around 6.3 to 6.6 (Guest, 1995). This period can be described as being characterized by “natural fertility” in which marriage was nearly universal and there was little regulation of birth and pregnancy. Women tended to bear children until near the end of their reproductive period.

The high population growth rate before the 1970s came to be seen as an obstacle to the economic development of the country and led to the policy towards fertility reduction. In 1970, the government set up the National Family Planning Programme to promote voluntary use of contraception. However, the Ministry of Public Health had provided contraceptive service since 1965 (Knodel et al.,

1987). From this period onwards, Thai fertility can be described as “controlled fertility”.

The National Family Planning Programme coincided with the acceleration of economic development, and the combined impact was to reduce the fertility rate within 20 years from a TFR of 6.3 in the 1970s to 2.2 in the 1990s. Given the brevity of this period of fertility transition, some demographers called it a “fertility revolution” (Knodel et al., 1987).

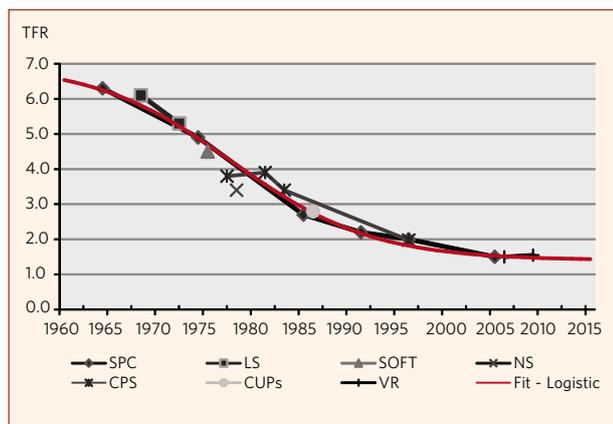
Between 1990 and 1996 Thailand was in the period of low fertility, in which fertility was declining slowly till it reached replacement level in 1996. However, the fertility decline did not stop there but declined further to a TFR of 1.47 in 2005-2006 (NSO, 2007) which is below replacement level. Alternative estimates based on vital registration show the TFR dropping to 1.5 in 2010 (see Figure 2.1).

Number of births

Although TFR is a good indicator of fertility, it does not tell much about the actual number of births, which should also be taken into consideration. According to the registration record, the number of registered births before 1952 was about 0.4 - 0.6 million annually, a number which increased rapidly to reach 0.8 million in 1956 and one million in 1963 (see Figure 2.2). During the 20-year period 1963 - 1983 there were more than one million births registered annually (Pramote and Patama 2005). The peak in number of births - 1.2 million - was reached in 1970, the year that fertility started to decline. The number of births then declined slowly until it was under one million births again in 1984.¹

¹ The figures given in Figure 2.2 have not been adjusted for under registration of births which has improved over time. In 1985-1986, the completeness of official birth registration was 88.4% (NSO, 1987) and has increased to 96.7% in 2005-6 (NSO, 2007).

FIGURE 2.1 TRENDS OF TOTAL FERTILITY RATE (TFR) IN THAILAND



Note: SPC = Survey of Population Change
 LS = Longitudinal Survey
 SOFT = Survey of Fertility in Thailand
 NS = National Survey
 CPS = Contraceptive Prevalence Survey
 CUPS = Contraceptive Use Patterns in Thailand
 VR = Calculated from birth registration in 2009

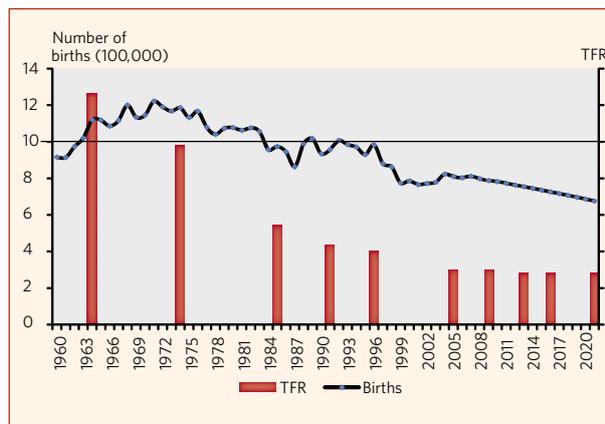
Although fertility was declining rapidly after 1970, the number of births was not. Annual births fluctuated around 0.95 million for more than a decade, due to “population momentum” (a high proportion of the population in the reproductive age groups, thus offsetting to a considerable extent the decline in births resulting from sharply lower fertility levels). From 2000 onwards, the number of births was around 0.8 million annually.

Those who were born between 1963 and 1983 were labeled as the ‘one million birth population cohort’ (Pramote and Patama 2005). Currently (2010), they are aged between 27 – 47 years old. This cohort is akin to a large wave of population that is in the labour force at present and moving to become elderly in the near future.

International comparisons of fertility

Before 1970, fertility was high in most of the countries in Southeast Asia with the exception of Singapore. The TFR ranged from 5.6 in Indonesia to 7.3 in Vietnam, whilst Singaporean fertility was less than half of Vietnamese fertility. The TFR in Thailand was about 6.0, the same level as Lao PDR and Malaysia (see Table 2.1).

FIGURE 2.2 TOTAL FERTILITY RATES (TFRs) AND NUMBER OF REGISTERED BIRTHS IN THAILAND



Note: Before 2009, numbers of births are from vital registration and TFRs are from Survey of Population Change. After 2009, numbers of births are from projection and TFRs are from logistic fitted in Figure 2.1

All of the countries in Southeast Asia experienced fertility decline during the last four decades (1970 – 2010). Besides Singapore, Thailand is the only country that has fertility below the replacement level at present. This is because of an earlier and sharper decline in fertility in Thailand than in the other Southeast Asian countries except Singapore. Furthermore, Thailand experienced the rapid fertility decline in the first half whilst other countries experienced fertility decline throughout the whole period with the exception of Cambodia and Lao PDR where the rapid decline occurred in the latter half (see Table 2.1). It can be seen that the speed of fertility decline of the Thai population during 1970 to 1990 was the fastest (62%) amongst all countries in Southeast Asia.

Fertility differentials by residence and region

The fertility decline in Thailand has not occurred evenly in all areas throughout the country. Fertility differentials according to residence and region are still observed. Urban women tend to have lower fertility than rural women due to urban lifestyle that is conducive to a small family. By definition, urban areas refer to municipal areas and non-municipal areas are rural areas.

TABLE 2.1 TOTAL FERTILITY RATE (TFR) AND PERCENT CHANGE BY COUNTRIES IN SOUTHEAST ASIA

Country	TFR			Percent	
	1965-1970	1985-1990	2005-2010	1965-70 to 1985-90	1985-90 to 2005-10
Thailand	5.99	2.30	1.81	-61.6	-21.3
Cambodia	6.22	6.00	2.96	-3.5	-50.7
Indonesia	5.57	3.40	2.19	-39.0	-35.6
Lao PDR	6.00	6.20	3.54	3.3	-42.9
Malaysia	5.94	4.00	2.58	-32.7	-35.5
Myanmar	6.10	3.80	2.32	-37.7	-38.9
Philippines	6.50	4.55	3.11	-30.0	-31.6
Singapore	3.46	1.71	1.27	-50.6	-25.7
Vietnam	7.25	4.02	2.08	-44.6	-48.3

Source: United Nations Population Division 2009 (medium variant)

Note: The UN estimates of TFRs for Thailand are higher than the estimates based on national sources used in this chapter.

TABLE 2.2 TOTAL FERTILITY RATES (TFRs) AT NATIONAL LEVEL, RESIDENCE, AND REGIONAL LEVEL, 1974-2006

	1974-76	1985-86	1989	1991	1995-96	2005-06
National level	4.9	2.7	2.4	2.2	2.0	1.5
Residence						
• Urban	4.5	1.8	1.6	1.4	1.3	1.0
• Rural	5.0	3.0	2.6	2.4	2.3	1.7
Differences (Rural - Urban)	0.5	1.2	1.0	1.1	1.0	0.7
Regional level						
• Bangkok	3.5	1.7	1.4	1.1	1.3	0.9
• Central	4.1	2.5	2.2	2.0	1.7	1.2
• North	3.7	2.3	2.1	2.0	1.9	1.6
• Northeast	6.3	3.1	2.9	2.7	2.4	2.0
• South	6.1	4.1	3.3	3.0	2.9	1.5

Source: National Statistical Office, Report on Survey of Population Change (Direct estimation)

Although fertility in urban areas declined faster than fertility in rural areas, the differences were small at the beginning of fertility decline. As seen in Table 2.2, whilst the national TFR was at 4.9 in 1974-76, the differences between urban TFR and rural TFR were only 0.5. But a decade later, the differences were much wider. Fertility in urban areas was

already below replacement level in 1985-86 (TFR = 1.8) but fertility in rural areas was still high (TFR = 3.0). It took more than a further two decades for rural fertility to be below replacement level (see Table 2.2). At this fertility level, urban-rural fertility differentials were small again.

There are fertility differentials amongst regions in terms of level and trend. As shown in Table 2.2, fertility decline was fastest in Bangkok, where fertility was already below replacement level by the mid-1980s. Fertility in the Central and Northern regions fell below replacement level in the early 1990s. However, it took another decade for fertility in the Northeast to reach the replacement level in the early 2000s. Fertility decline was slowest in the South. It took more than three decades from the mid-1970s for fertility in the South to fall below replacement level in the mid-2000s.

The main reason for the slowest fertility decline in the South is the concentration of Muslim population, especially in the three border provinces (Pattani, Yala, and Narathiwat). Muslims constitute

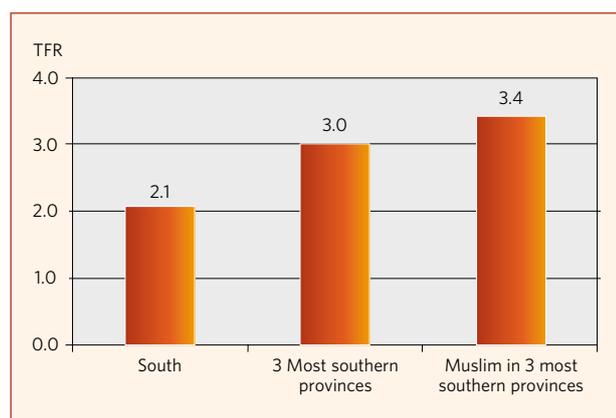
75 percent of the population in these three provinces. The recent Reproductive Health Survey in the South indicated that Muslim women in the three southernmost provinces had an average of 3.4 children as compared to only 2.1 children for women in the South as a whole (see Figure 2.3).

Fertility of the ethnic highlanders

Besides the Thai Muslims, the ethnic groups in the north also have higher fertility than the general population. Most of them live along the border with Myanmar and Laos in the northern part of Thailand. Each ethnic group has its own language, tradition, and culture, and tends to marry within its own group. The largest group is the Karen, followed by the Hmong. Agriculture is the way of life and also the major source of income. Since their villages are on the hills, their access to public health facilities is more difficult as compared to lowland population. Data collection of the ethnic highlanders from 20 provinces in the north and western region suggested that there were 1,164,545 persons, consisting of 258,768 houses in 1,750 villages with a population growth rate of 0.3% per year. About half of them are Karen followed by Hmong (18%), and Lahu (10%) (Ministry of Social Development and Human Security 2010).

Fertility decline was also observed amongst this population. The overall TFR declined from 5.6 in 1975-79 to 3.4 in 1992. However, fertility reduction occurred only in some ethnic groups but not others. On the one hand, fertility of the Karen declined continuously from 5.5 in 1975-79 to 3.2 in 1992. On the other hand, fertility of the Hmong barely changed during this period (see Table 2.3).

FIGURE 2.3 TOTAL FERTILITY RATES (TFRs) AMONGST REPRODUCTIVE AGE WOMEN IN THE SOUTH, THREE SOUTHERNMOST PROVINCES, AND MUSLIMS IN THREE SOUTHERNMOST PROVINCES, 2003



Note: Indirectly estimated using P/F ratio method applied to the Southern Thailand data in the 2003 Reproductive Health Survey conducted by National Statistical Office

TABLE 2.3 TOTAL FERTILITY RATES (TFRs) OF HIGHLAND ETHNIC GROUPS, KAREN AND HMONG, 1975 - 2010

	1975-1979a	1982a	1985-1989a	1992a	2010b
Highland ethnic groups	5.6	4.3	4.4	3.4	2.3
Karen	5.5	4.0	4.1	3.2	2.2
Hmong	6.6	6.6	6.4	6.0	4.8

Note: a TFRs from 1975-1979 to 1992 are from Gray et al. (2004)
b Estimated from logistic fitted.

The plan to reduce fertility of this population as well as to promote their reproductive health was introduced in the Eighth National Economic and Social Development Plan (1997-2001). Hence, it was expected that the fertility of the ethnic groups in the north would be near replacement level in 2010. However, Hmong's fertility is still far from replacement level in 2010 (see Table 2.3). Therefore, special attention should be paid to tracking fertility trends among ethnic groups in the northern region, particularly among the Hmong. Moreover, fertility of stateless people, estimated to number 3.5 million persons, 20% of whom are women in reproductive age (UNHCR 2010), needs to be further explored.

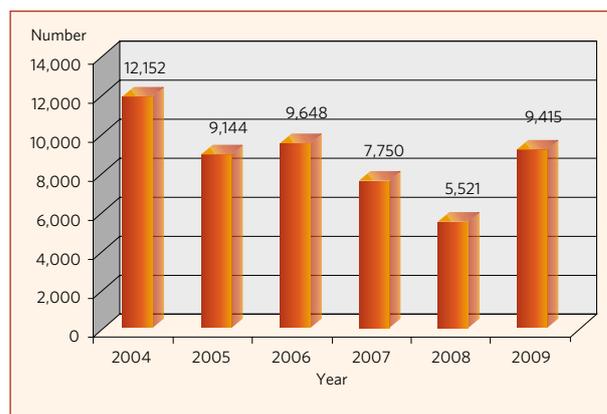
Fertility of foreign workers

Because of the shortage of labour in some industries (3D jobs, namely dirty, difficult and dangerous jobs), there are a large number of foreign workers in Thailand, both legal and undocumented migrants. The database of the Office of Foreign Workers Administration (2010) indicated that there were 1,093,237 foreign workers who had work permits in March 2010. Of these foreign workers, only 17 percent entered Thailand legally. Most of these foreign workers are in reproductive age and half of them are women.

One source of data on fertility of foreign workers is the Ministry of Public Health (MOPH) report. Each month, every province sends aggregate data of services provided by health facilities under MOPH to the Bureau of Health Administration. These aggregate data also include mother and child health services from which the number of pre-natal care services provided to foreign workers can be extracted. Although the data are far from perfect because not every province sent in the data every month and also there are other types of health facilities for migrant populations not included in the MOPH's health facilities, at least it can be said that in the last six years (2004 - 2009), the number of foreign workers who seek pre-natal care has ranged between 6,000 and 12,000 cases annually (see Figure 2.4). On the other hand, only a number of pregnant migrants receive ANC in Thailand - many of the health facilities along the border also receive cross-border clients due to closer distance and better quality of care. If it is assumed that one

fourth of pre-natal cases result in abortion, there will be at least 4,000 to 9,000 births to such foreign workers every year.

FIGURE 2.4 NUMBER OF PREGNANT CROSS BORDER MIGRANT WORKERS UTILIZING HEALTH SERVICES IN HEALTH FACILITIES UNDER MINISTRY OF PUBLIC HEALTH, 2004-2009



Source: Bureau of Health Administration, Ministry of Public Health (data as of April 12, 2010)

Another way to estimate the number of births of foreign workers is to apply an appropriate fertility pattern and age distribution of female foreign workers in reproductive ages to the total number of foreign workers. The fertility pattern and female age distribution data are from a Study of Border Population and Reproductive Health in Thailand Phase I (see first two columns in Table 2.4). The study was done in Ranong province where a large number of Myanmar migrants were concentrated. It was found that the number of children ever born to female migrants was 2.6 on average, TFR was 3.6, and 47 percent of currently married women were using contraception (Pimonpan and Sukunya, 2004).

Based on the assumption that all 1,093,237 foreign workers who had work permits in March 2010 are in the reproductive ages and the proportion of women ranges from 30 - 70 percent, the estimated total number of women in the reproductive age groups is between 328 thousand and 765 thousand (see last row in Table 2.4). Therefore, it can be estimated that the number of births to foreign workers is somewhere in the range between 42,000 and 98,000 births in 2010 (see Table 2.4). There is a large discrepancy between this figure and that for the number of such migrant women utilizing health services in facilities

TABLE 2.4 DISTRIBUTION OF CROSS-BORDER MIGRANT WOMEN, AGE-SPECIFIC FERTILITY RATES, AND ESTIMATED BIRTHS, ASSUMING DIFFERENT PROPORTIONS OF WOMEN AMONG CROSS-BORDER MIGRANTS, 2010

Age	% of women ^a	Age Specific Fertility Rates (per 1,000 women) ^a	Estimation of births by assuming % of women among total cross-border migrants				
			30%	40%	50%	60%	70%
15-19	11.5	109.6	4,134	5,512	6,890	8,267	9,645
20-24	21.3	154.5	10,793	14,391	17,988	21,586	25,184
25-29	27.2	125.0	11,151	14,868	18,585	22,302	26,019
30-34	18.5	197.5	11,983	15,978	19,972	23,966	27,961
35-39	9.1	44.4	1,325	1,767	2,209	2,650	3,092
40-44	8.0	95.2	2,498	3,330	4,163	4,996	5,828
45-49	4.4	0.0	0	0	0	0	0
Total	100.0		41,884	55,845	69,807	83,768	97,729
	Total women		327,971	437,295	546,619	655,942	765,266

Note: a/ Percent of women and ASFRs are from Pimonpan and Sukunya (2004).

under MOPH, shown in Figure 2.4, which comes to only about one tenth as many. Even if underreporting of the numbers using facilities under the MOPH partly explains the discrepancy, it seems likely that many migrant women are not receiving quality prenatal care and assistance in childbirth. This issue should be considered by all agencies concerned with providing support and quality of care for childbearing.

Factors for rapid fertility decline

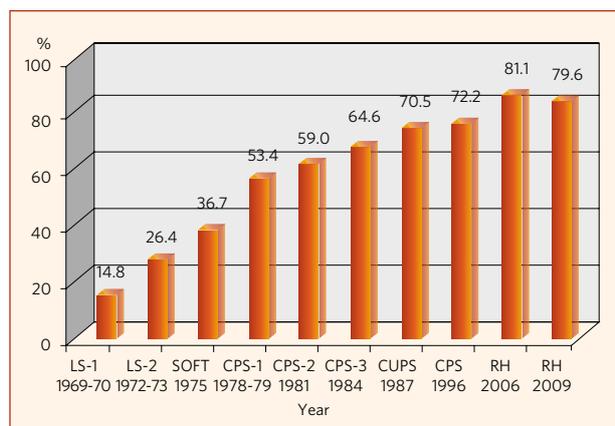
As pointed out by Bongaarts (1982, 1983), the proximate determinants of fertility are proportion married, contraceptive use, induced abortion, and postpartum infecundability (or breastfeeding). In Thailand, contraceptive use is the most important factor for fertility decline, followed by proportion married. Induced abortion and breastfeeding have less effect on fertility decline. However, there are also other factors that affect fertility indirectly through contraceptive use and proportion married. Factors affecting contraceptive use are desired family size, and availability and accessibility of contraception. Factors affecting proportion married are age at first marriage and dissolution of marriage. There are also a whole range of underlying factors that affect women's desire to marry and desired family size. These underlying factors include urbanisation,

women's education, labour force participation, and status.

Contraceptive use

The rapid decline of fertility during 1970 - 1990 was largely due to the increase in use of contraceptives. The contraceptive prevalence rate increased rapidly from 15 percent in 1970 to higher than 70 percent in 1987. It reached its peak at about 81 percent in 2006 and stayed at around 80 percent till the present (see Figure 2.5). However, in the past decade there has been a sharp increase in the annual production and import of emergency pills from 3-4 million tablets in 1997 to about 11 million tablets since 2005 (Food and Drug Administration Office, 1997-2008). More effort should be made to attend to the needs of unmarried women and young people. Contraceptive Prevalence Rate (CPR) data are scarce and unsystematic for the unmarried but sexually active population, especially adolescents.

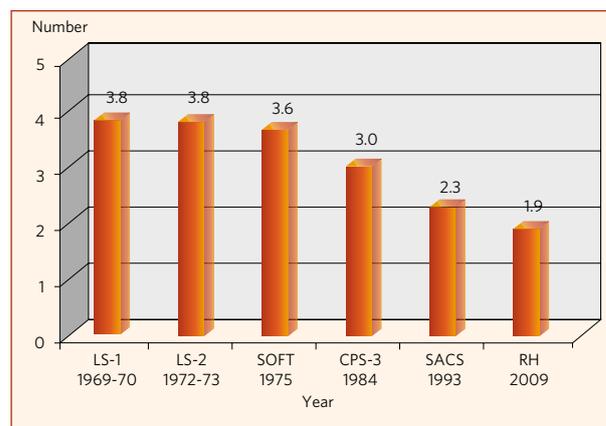
FIGURE 2.5 PERCENT CONTRACEPTIVE USE BY CURRENTLY MARRIED WOMEN, THAILAND 1969-2009



Note: LS = Longitudinal Survey
 SOFT = Survey of Fertility in Thailand
 CPS = Contraceptive Prevalence Survey
 CUPS = Contraceptive Use Patterns in Thailand
 RH = Reproductive Health Survey

Source: Knodel et al. 1982; Kamnuansilpa and Chamratrithirong 1985; Leoprapai and Thongthai 1989; Aphichat et al. 1997; National Statistical Office 2006, 2010

FIGURE 2.6 PREFERRED NUMBER OF CHILDREN AMONG MARRIED WOMEN AGED 15-49



Note: LS = Longitudinal Survey
 SOFT = Survey of Fertility in Thailand
 CPS = Contraceptive Prevalence Survey
 SACS = Social Attitude Towards Children Survey
 RH = Reproductive Health Survey

Sources: Knodel et al. 1982; Kamnuansilpa and Chamratrithirong 1985; National Statistical Office 1993, 2010

Desired family size

Desired family size has declined since 1975 (see Figure 2.6). In the earlier stage, the decline was partly due to the decline of infant and child mortality, as couples gradually realized that there was no need to have a large family in order to compensate for the death of children before they reached adulthood. In the later stage, factors such as the increasing cost of children, together with higher status of women and increasing women's labour force participation, drove the desired family size lower (Knodel et al. 1982).

Availability and accessibility of contraception

In order to fulfill the desired family size (demand for children), family planning methods should be affordable (Easterlin 1975). Since the Family Planning Programme is under the Ministry of Public Health, which has a network of hospitals and health centres throughout Thailand, contraception has always been available and accessible. The contraceptive methods provided by the government outlets are normally at low cost or free of charge. Furthermore, with the cafeteria approach, the users can choose contraceptive methods that fit their needs, whether to postpone pregnancy or stop pregnancy.

Proportion married

The changes in proportion married certainly had some negative effect on fertility. The proportion ever married amongst women aged 15-49 years old decreased from 71 percent in 1960 to 68 percent in 2000. It is estimated that it will decline further to 67 percent in 2010 (see Table 2.5).

Another perspective on marital status is provided by the proportion of women who remain never married at the end of their reproductive span. As presented in Table 2.5, the proportion of single women aged 50-54 years old was only 2 percent in 1960. It had increased three fold to 6 percent in 2000 and was expected to increase to 8 percent in 2010. The increasing level of education of women is an important element in the rising proportion of single women over these periods (Jones 2005).

TABLE 2.5 PERCENT OF EVER-MARRIED WOMEN IN REPRODUCTIVE AGE, PERCENT OF SINGLE WOMEN AGED 50-54 YEARS OLD, AND SINGULATE MEAN AGE AT MARRIAGE (SMAM) OF WOMEN, 1960-2010

Indicators	1960	1970	1980	1990	2000	2010
% ever-married amongst women aged 15-49	70.5	69.1	65.3	66.7	68.1	67.3
% single amongst women aged 50-54	2.3	2.5	3.4	4.2	6.5	7.6
SMAM	22.1	22.0	22.8	23.5	24.0	24.4

Source: Calculated from population census, 1960-2000. The figures for the year 2010 are estimated.

Age at first marriage

Age at first marriage as measured by singulate mean age at marriage (SMAM) also increased from 22.1 years old in 1960 to 24.0 in 2000. The higher the age at first marriage, the shorter the time spent in a married state during the reproductive period, which will reduce fertility. It is projected that age at first marriage will increase to 24.4 years old in 2010 (see Table 2.5). An important reason for the declining proportion married and increasing age at first marriage is the increase of Thai women's status. Many indicators that can reflect the higher status of women such as rising education, changes in labour force participation rates, changing occupational patterns, and changing influence of women in the household are likely to have affected, not only marriage patterns, but also desired family size among married people (Chamratrithirong 1980, Bhassorn 1983, Guest and Tan 1994, Phananiramai 1997).

Woman's status

If educational attainment by sex is used as an indicator to reflect the gender status, the improvement of status amongst Thai women is clearly seen. As shown in Table 2.6, in 1960 less than 2 percent of population aged 20-24 years old had a bachelor degree, and the percentage of men who had a bachelor degree was slightly higher than for women. As time passed, the trend shows a rise in the proportion of people who have a bachelor degree, and a remarkable increase in the ratio of women to men. By the year 2000, the proportion of women with a bachelor degree was larger than the proportion of men with a bachelor degree by 5 percentage points and this is estimated to have increased to six percentage points in 2010.

TABLE 2.6 PERCENTAGE OF POPULATION AGED 20-24 YEARS OLD WHO HAVE BACHELOR DEGREE BY SEX, 1960-2010

Year	Men	Women
1960	1.6	1.1
1970	1.7	1.6
1980	6.1	6.6
1990	8.8	10.8
2000	15.3	20.7
2010	17.1	22.7

Source: Calculated from population census, 1960-2000. The figures for the year 2010 are estimated.

Population Policies and National Reproductive Health Policies

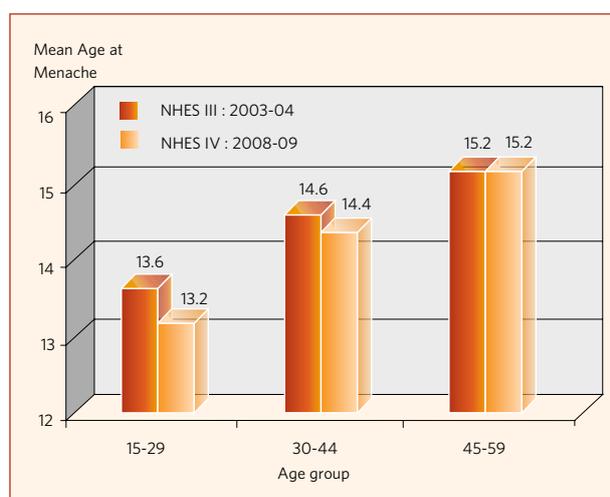
As noted in Chapter 1, the Third National Economic and Social Development Plan (1972-1976) was the first plan that aimed to reduce population growth rate by reducing fertility rate through the voluntary use of contraception. The plan was implemented by the National Family Planning Programme under the Ministry of Public Health.

Following its commitment to the Programme of Action of the 1994 International Conference on Population and Development (ICPD) in Cairo, in July 1997 Thailand released a National Reproductive Health Policy statement reinforcing that “*All Thai citizens at all ages must have good reproductive health throughout their entire lives*” (UNFPA 2005:14). Reproductive health includes adolescent health, safe abortion, sex education, HIV/AIDS, infertility, reproductive tract infections, post-reproductive age care, and gender-based violence.

Changing sexual behavior amongst Thais

There is concern about unwanted pregnancy of teenagers and school age population due to their changes in sexual behaviour. These changes are the results of socio-economic development and globalization as well as their earlier physical development. Because of the improvement in nutrition, the age of puberty is now beginning earlier. From the National Health Examination Survey Round 3 (NHESIII), women who were born more recently experienced their first menstruation at an earlier age. The mean age at menarche of women who were born during 1945-1959 was 15.2, as compared to those who were born during 1960-1974 (14.6) and those who were born during 1975-1989 (13.6). In Round 4 which was conducted 5 years later, the same pattern was also found (see Figure 2.7).

FIGURE 2.7 MEAN AGE AT MENARCHE BY AGE GROUP OF WOMEN



Source: Yawarat and Porapan 2006; Wichai 2010

The changes in sexual behaviour that will be discussed here are pre-marital sex, cohabitation, and same sex partners. These changes in sexual behaviour affect not only fertility but also reproductive health.

Pre-marital sex

There have been many surveys on sexual behaviour of teenagers and youth, including large and small-scale surveys, and representative and non-representative surveys. In most surveys, data were collected by face to face interview questionnaire and questions concerning sexual intercourse were asked only of married respondents. Since sexual activity is a sensitive issue, respondents tend not to tell the truth or be afraid of being heard by parents or guardians.

In 2006, a National Sexual Behaviour Survey was conducted, with about 6,000 respondents of both sexes, aged 18-59 years old, and regardless of marital status. To make respondents feel at ease on questions concerning sexual issues, interviewers were the same sex as respondents (Chamrathirong, et al. 2007). Although there was no direct question on pre-marital sex, the information can be extracted from other questions (ever had sexual experience, age at first sexual experience, and type of partner at first sexual experience).

The study results indicated that 82 percent of respondents ever had sexual experience. Three in four male youths (aged 18-24 years old) reported ever having sexual experience as compared to six in ten female youths. Of those who had sexual experience, a higher proportion of males reported having pre-marital sex than their female counterparts. A higher proportion of younger respondents reported having pre-marital sex than older respondents (see Table 2.7). It should be noted that almost all of male youths' sexual experiences were pre-marital sex, compared with only 70 percent of female youths' sexual experiences. For older respondents (aged 25-59), the proportion of males having pre-marital sex was not much different from male youths (89 percent) but the proportion of females having pre-marital sex was only about one-third that of female youths (see Table 2.7). This is strong evidence of an increase in pre-marital sex amongst female respondents. The wide practice of pre-marital sex amongst youths, especially females, is a source of concern.

Turning to attitudes, the 2008 Survey on Conditions of Society, Culture and Mental Health conducted by the National Statistical Office found that younger generations of both sexes tended to

accept the practice of pre-marital sex more than older generations. Nevertheless, the acceptance is higher in the case of males than females (see Table 2.8).

TABLE 2.7 PERCENT EVER HAD SEX AND PRE-MARITAL SEX BY AGE AND SEX, 2006

Age / Sex	Ever had sex		Pre-marital sex, among those who ever had sex	
	%Yes	Total (N)	%Yes	Total (N)
Male (yrs old)				
18-24	77.7	1,512	98.5	1,175
25-59	97.4	1,512	88.8	1,472
Female (yrs old)				
18-24	60.7	1,512	88.8	918
25-59	93.8	1,512	26.9	1,418

Note: Calculated from the National Sexual Behavior Survey of Thailand 2006 data.

TABLE 2.8 PERCENT ACCEPTANCE OF SEXUAL BEHAVIOUR BY TYPE, AGE AND SEX, 2008

	Age group			
	18-24	25-34	35-44	45+
Male				
a. Pre-marital sex among men	40.9	39.9	28.1	20.3
b. Pre-marital sex among women	34.9	33.3	21.5	15.4
c. Cohabitation	43.8	42.1	30.6	21.8
d. Men who have sex with men	14.4	13.7	9.7	6.0
e. Women who have sex with women	15.9	14.4	10.2	6.2
Female				
a. Pre-marital sex among men	40.0	28.8	22.3	15.0
b. Pre-marital sex among women	28.8	25.5	18.7	11.8
c. Cohabitation	35.4	33.3	26.5	17.9
d. Men who have sex with men	14.5	13.4	9.5	5.6
e. Women who have sex with women	14.5	14.1	10.0	5.8

Source: Calculated from the 2008 Survey on Conditions of Society, Culture and Mental Health carried out by National Statistical Office

The increase in pre-marital sexual behavior will have some effects on fertility. On the one hand, fertility will increase due to accidental pregnancy if partners do not have knowledge or access to contraception, or cannot afford it. On the other hand, fertility will decrease if partners know how to prevent pregnancy. Since marriage is not a pre-condition of having sex, marriage may be delayed or postponed. The delay of marriage will increase the age at first birth, which is an important determinant of low fertility (Varachai 2001).

Cohabitation

Cohabitation means a man and a woman living together without having gone through the formal marriage procedures. This sexual behavior is more acceptable to men than women. The younger generations tend to be more accepting than older generations (see Table 2.8). The increase of cohabitation will drive down fertility if childbearing in cohabiting relationships continues to be frowned on in the society.

Same sex partners

Because of globalization, younger generations are more open minded to same sex partners,

regardless of whether it is man with man or woman with woman. There is no difference between male and female opinion on same sex partners (see Table 2.8). The greater the prevalence of same sex partners the lower the fertility is likely to be.

Late marriage and emerging trend of infertility

Late marriage

When marriage is universal, women tend to marry at a younger age. In 1970, women born before 1921 were almost all married before reaching the end of their reproductive ages, but this proportion has trended downwards over time (see Table 2.9). Up to 1970, more than 60 percent of women were already married by the age of 25, but by the year 2000, less than half of women were married at the age of 25. It is projected that an increasing proportion of women will marry later or stay single. This is certainly continuing to be the case in countries such as Japan, South Korea and Malaysia (Jones and Gubhaju, 2009; Tey, 2007).

TABLE 2.9 PERCENT OF WOMEN EVER-MARRIED BY AGE, 1960 – 2010

Age	1960 ^{1/}	1970 ^{1/}	1980 ^{1/}	1990 ^{1/}	2000 ^{1/}	2010 ^{2/}
15-19	13.8	19.0	16.7	14.9	11.7	12.7
20-24	61.3	62.1	56.5	51.8	44.5	42.0
25-29	85.9	84.4	79.1	74.6	71.3	67.3
30-34	93.3	91.9	88.2	85.9	83.9	81.2
35-39	95.8	94.8	92.7	90.4	88.4	86.6
40-44	96.9	96.1	94.7	93.0	90.7	89.6
45-49	97.4	97.0	95.9	94.8	92.0	91.5

Note: 1/ Calculated from population census, 1960-2000

2/ Estimated by Chai et al., 2009. Linear trend estimation from Population Census 1960-2000

Trend of infertility

Although women's reproductive period does not end until around the age of 50, women who get pregnant after 35 years old will have an increased risk of having a baby with Down's Syndrome and the risk of miscarriage. Furthermore, the older the woman is, the higher her chance of infertility (see Figure 2.8).

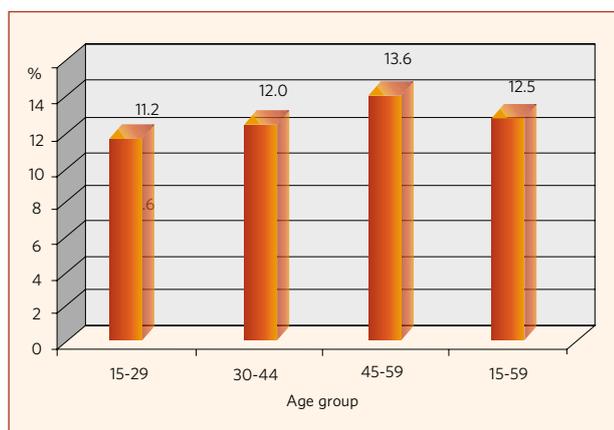
Besides increasing the age at first birth, late marriage also increases the chance of having no children at all. From the census data, the proportion of ever-married women with no children was only 2 percent in 1970. The proportion increased rapidly to 4 percent in 1990 and to 6 percent in 2000. It is projected that it will reach 7 percent in 2010 and 8 percent in 2020 (see Figure 2.9).

Abortion and teenage pregnancy

Abortion

As mentioned earlier, changes have been observed in the sexual attitudes and behaviour of Thais, especially amongst the young generation. They are more likely to accept pre-marital sex, having sex at a young age, cohabitation, and having same sex partners. These behaviours may lead to unwanted pregnancy or being infected by HIV/AIDS, if safe

FIGURE 2.8 PERCENT INFERTILITY OF MARRIED WOMEN BY AGE, 2008-2009



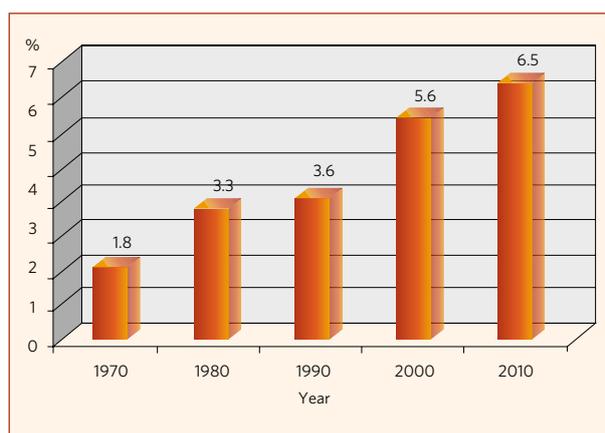
Source: Wichai 2010

sex is not always practiced. In the case of unwanted pregnancy, abortion is most likely to follow.

In Thailand, abortion is illegal unless it is performed by a medical practitioner under certain conditions. These conditions are (a) to save a woman's life or (b) to preserve woman's physical or mental health or (c) if the pregnancy is the result of a criminal offence. However, a physician has to evaluate risk and benefit before formally performing this therapeutic abortion. Nevertheless, the abortion law is rarely enforced. Therefore, many women decide to end their unwanted pregnancies by recourse to illegal practitioners.

The major source of induced abortion data is health statistics gathered from in-patients who had complications after induced abortion and were admitted to MOPH's facilities in all provinces except Bangkok. Hence, the number of induced abortions is underestimated in this source, since it captured only those who had serious complication after induced abortion and needed further treatment. Nevertheless, the number of induced abortions as indicated by this source increased in the last four years, exceeding 60,000 cases annually (see Figure 2.10).

FIGURE 2.9 PERCENT EVER-MARRIED WOMEN AGED 50-59 WITH NO CHILDREN EVER BORN, 1970-2010

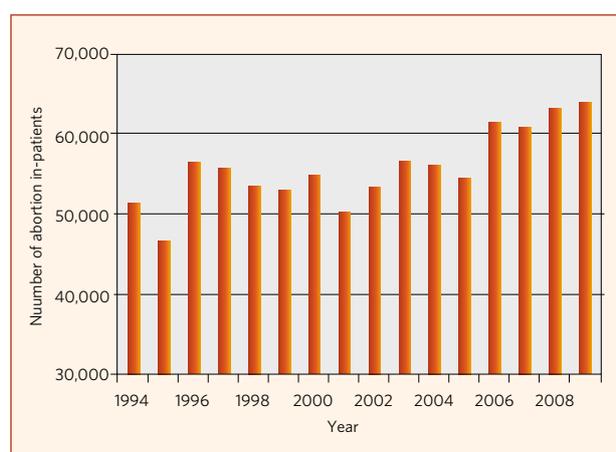


Note: Calculated from population census, 1970-2000.

The figure for the year 2010 is estimated from exponential fit.

The magnitude of abortion and related problems is unknown. The 2nd and 3rd National Health Examination Survey conducted in 1996-97 and 2003-4 revealed that 19.3% and 19.8% respectively of women aged 15-59 years had had abortion experiences. About 13.5-14.4 % were spontaneous abortions and 3.6-5.4% were induced abortions. These rates of induced abortion would translate into about 700,000 to 1.1 million Thai women aged 15-59 years ever having an induced abortion at the time of the survey. The 2nd National Health Examination Survey also showed that 8.4% of women had abortion experiences in the past year and 1.8% was induced abortion (Yawarat and Porapan, 2006; Wichai, 2010). However, another population based survey suggested that 17.8% of women aged 15-49 years old had induced abortion in the past year and around 4% of the pregnant women were physically abused by their partner during pregnancy (Thai Health Report, 2005).

FIGURE 2.10 NUMBER OF IN-PATIENTS RECEIVING HEALTH SERVICES FROM HEALTH FACILITIES UNDER MOPH DUE TO INDUCED ABORTION, 1994-2009



Source: MOPH, Public Health Statistics

A study conducted in 1999 in 787 government hospitals (out of 830 government hospitals) using data collected prospectively through the case records demonstrated that 71.5% of women (or 32,900 from 45,990 cases) turning up for treatment for post-abortion complications had spontaneous abortion and 28.5% had induced abortion (Warakamin et al., 2004). Of the 13,090 induced abortions, 29.2% had serious complication namely septicemia, uterine complication and death. Almost half of the induced abortions were in young women under 25 years (0.7%, 20%, and 26% in women aged below 15, 15-19, and 20-24 years, respectively).

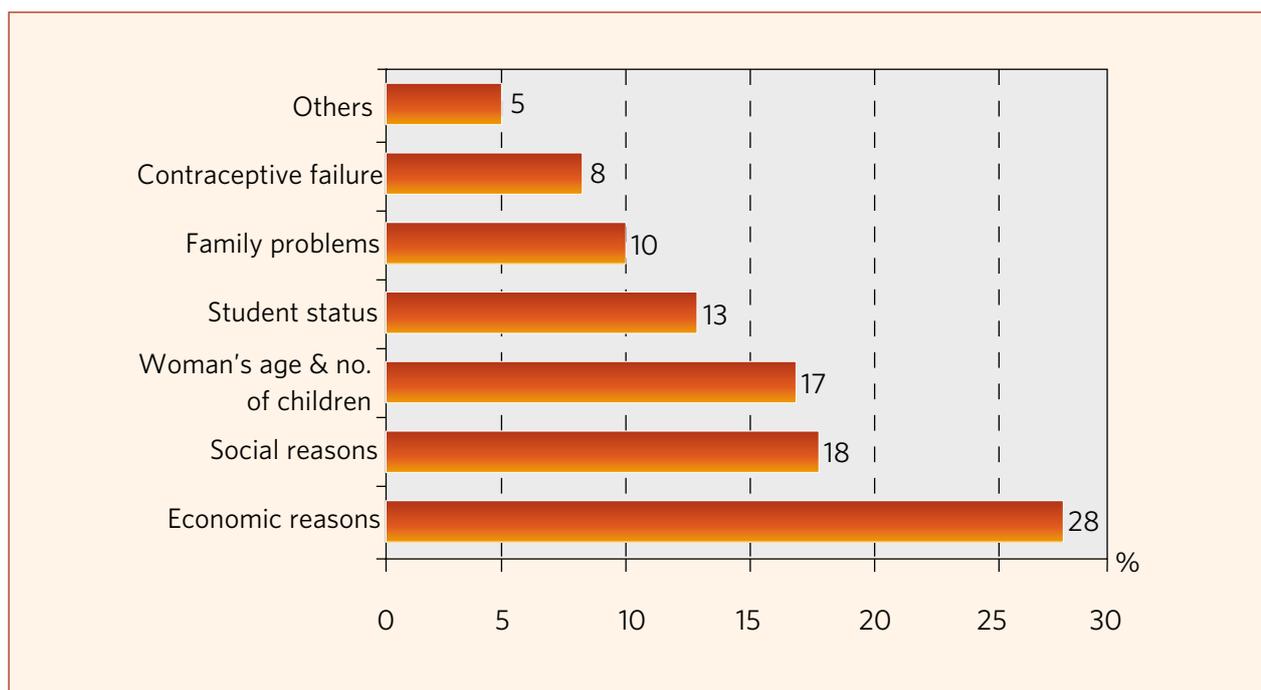
The pattern of both spontaneous and induced abortion was similar, ie. low at the early age and rising to the peak at age 20-24 and declining thereafter (see Table 2.10). It should be noted that teenagers experienced more induced abortion than spontaneous abortion (20 per cent versus 14 percent).

TABLE 2.10 PERCENT DISTRIBUTION OF IN-PATIENTS WHO HAD SPONTANEOUS AND INDUCED ABORTIONS BY AGE, 1999

Age	% of in-patients with abortion	
	Spontaneous (n=32,900)	Induced (n=13,090)
<15	0.3	0.7
15-19	14	20
20-24	25	26
25-29	24	20
30-34	19	17
35-39	12	11
≥40	6	6
All ages	100	100

Source: Warakamin et al. 2004

FIGURE 2.11 REASONS FOR INDUCED ABORTIONS PERFORMED OUTSIDE HOSPITALS: PATIENT INTERVIEWS, 1999 (PER CENT)



Source: Warakamin et al. 2004

A total of 1,438 in-patients who had induced abortions performed outside hospitals were selected to be interviewed. Economic need was a major reason as cited by 28 percent of them. Social reasons ranked second, followed by concern about their age and number of children. Being a student ranked fourth, followed by contraceptive failure, which was responsible for 8 percent of induced abortions (see Figure 2.11).

Teenage pregnancy

As the total number of births is declining, it is quite alarming that the number of births to teenagers is rising. This is partly because considerable numbers of teenage girls are married (estimated at about 330,000 of ever married women aged 15-19 years old in 2010), and some of the births are to these married teenagers, although an unknown proportion are to unmarried teenagers. As Table 2.9 shows, the percentage of young women aged 15-19 in Thailand who are ever-married has remained above 10 per cent ever since 1960. The figure reached its peak in 1970, at 19 per cent, and fell over subsequent decades, to 11 per cent in 2000. Birth registration data shows that number of teenage births was about 50,000 in 1960, or only 6 percent of total births. Ten years later the number was nearly double (consistent with the sharp rise in

proportion of young women who were married over this period). Births to teenage mothers reached its peak in 1990 at about 130,000 births or 14 percent of total births. Although the number of teenage births declined by the year 2000, it increased again in 2009 (see Table 2.11).² Since not every pregnancy will come to full term and result in a live birth, the number of teenage pregnancies is much larger than the number of live births.

Although most births to teenage mothers occurred to the late teen group (15-19), an increase of births from the early teen group (younger than 15 years old) is observed (see Table 2.11). In 1960, there were only 250 births registered to mothers younger than 15 years old. The number doubled ten years later, trebled again twenty years after that (1990), then declined slightly by 2000, but doubled again within nine years to 2009.

Teenage mothers tended to have lower levels of education and higher levels of inadequate antenatal care. Watcharaseranee et al. (2006) noted that low birth weight infants were more prevalent amongst teenage pregnancies. Therefore, the high number of teenage pregnancies will affect the quality of babies. With low fertility, every birth is significant.

² Note that the birth rate for women aged 15-19 years old was 39.7 per 1,000 women (of the same age) in 1990 and came down to 31.1 per 1,000 women in 2000 and went up again to 50.1 per 1,000 women in 2008 (UNFPA, ICPD+15 Report 2011).

TABLE 2.11 NUMBER AND PERCENTAGE OF LIVE BIRTHS TO TEENAGE MOTHERS, 1960-2009

Age of mother	1960	1970	1980	1990	2000	2009
Percentage						
• Below 15 yrs old	0.03	0.05	0.04	0.18	0.19	0.38
• 15-19 yrs old	5.5	8.6	10.5	13.4	11.5	15.7
Number						
• Below 15 yrs old	250	549	409	1,684	1,478	2,938
• 15-19 yrs old (x 1,000)	50.2	98.1	123.0	128.6	88.7	120.1
Number of total births (x 1,000)	915.5	1,145.3	1,166.3	956.2	773.0	765.0

Source: Calculated from registered births reported in Public Health Statistics, not adjusted for under registration of births over time.

Unmet need for family planning

Unmet need for family planning is defined as those who want to stop or postpone pregnancy but do not use any kind of contraceptive method. When the contraceptive prevalence rate is high, unmet need for family planning is low. However, only married women of reproductive age (MWRA) are the primary target group of the Family Planning Programme. The contraceptive prevalence rate only reflects the percentage of MWRA who are currently using contraception. So, there are other groups of women who are sexually active but cannot readily access family planning services. These groups are mostly youth, unmarried women, and migrants.

According to a survey in 2002, only 1.2 per cent of married women of reproductive age had an unmet need for contraception (Chayovan et. al., 2003). This reflects a very effective reproductive health program. However, since in all fertility and reproductive health surveys in Thailand, the question about contraceptive use was asked only to married women, including those living together with their partner without a formal marriage, it is likely that a number of sexually active women were missed from these surveys and the unmet need for family planning of these women is not really known. The evidence of both abortion and teenage pregnancy presented earlier suggest high unmet need amongst these groups.

Impacts of fertility decline

Impact on population growth rate

The rapid fertility decline in Thailand during the past half century has contributed markedly to the country's demographic transition. The crude birth rate at about 40 per 1,000 population before the national policy has declined to 13 per 1,000 in 2010. Reduction of the population growth rate, the main target of the Thai national population policy, has indeed occurred, falling from over 3 percent per annum during the late 1960s to only 0.5 per cent per annum in 2010. The growth rate will be approaching zero and even moving into a negative growth phase in 10 years time. The future trend of population size in Thailand depends mainly upon how fast and deep the further fertility decline will be.

Impact on family size

The fertility decline has contributed to the decline in average family size, which is now much smaller than before. According to the population census, the average household size (number of population divided by number of households) has declined from 5.7 in 1970 to 4.4 in 1990 and to only 3.8 in 2000 (Pramote and Patama 2009). Although the household does not include only parents and

children, its declining size certainly reflects the decline in fertility to a considerable extent. In the traditional Thai society, one can imagine a large bunch of stems and branches extending from a family tree, since a parent has many children and even more grandchildren. The fertility decline would make the Thai family trees slim down which would change the social relationships in Thai society further.

Impact on age structure

The most obvious impacts of fertility decline are on the age structure (see Figures 1.1 and 1.2 and Table 1.5 in Chapter 1). The population pyramid of Thailand has been transforming from one with a large to a narrow base, and from a sharp to an expanded top. The rapid fertility decline has turned the young Thai population with a median age of under 20 years in the 1970s to a more aged one with more than half of the people aged over 30 years in 2010.

During the past three decades, the proportion of population under 15 years of age has been continuously decreasing due to the fertility decline. The proportion of children has declined from 29 percent in 1990 to 21 percent in 2010. It is projected to decline to only 19 percent in 2030. Meanwhile, the proportion of Thai population aged 65 years and over has been rapidly increasing, from less than 5 percent in 1990 to 8 per cent in 2010. This proportion of elderly is projected to be over 15 percent in 2030 (see Table 1.5). The implications of these changes in age structure will be discussed in detail in Chapters 3, 4 and 5 of this report.

Policy recommendations

The sharp decline in fertility to below replacement level raises the issue of whether Thailand should have a pro-natalist policy to avoid depopulation and shortage of labour in the near future. The birth promotion scheme, however, has not been widely discussed in the Thai society so far. This may be because other issues concerning quality of population distract people's interest from a potential decline of population size in the near future.

It appears certain that fertility in Thailand will decline further. The fertility rate of Thai women may sink to below 1.5, as low as that of Singapore, Japan and South Korea. This alarming trend suggests that Thailand needs some plans and policies to deal with the situation of fertility decline. On September 14th, 2010, the cabinet approved the 1st National Reproductive Health Development Policy and Strategy (2009-2013), "to ensure that all births are desirable, safe, and attended with quality services and to bring good reproductive health to all Thai people of all sexes and ages, with an emphasis on adolescent sexual health, with a voluntary, equitable, and inclusive basis". The draft strategy and action plan outlines 6 strategies:

1. Enhance the strength and quality of new families and new generations of youth.
2. Promote proper reproductive behavior and sexual health among Thai people of all sexes and ages.
3. Develop quality and efficiency of reproductive health and sexual health services.
4. Develop an integrated management system of reproductive health and sexual health.
5. Develop legislations, rules, and regulations for reproductive health and sexual health.
6. Develop and manage the body of knowledge and technologies on reproductive health and sexual health.

The above policy implies many action programmes. Quality births should begin from intended pregnancy at appropriate ages. All pregnancies should be under good maternal care and delivered by medical or health personnel. This policy would ensure that every birth is wanted, safe and healthy. This assurance should be extended to cover the child's health during the infancy and childhood period.

Pregnancies among teenagers are not considered as appropriate, thus, measures to foster later marriage among those marrying as teenagers and other programs on adolescent fertility should receive special attention. Sex education and access to contraceptive methods should be provided for the population in this young age group. There should also be reproductive health programs that help vulnerable people including those living in

remote areas and cross-border migrant workers, to have easy access to contraceptive and maternal and child care services. The policy will aim to reduce to the minimum, the unplanned pregnancies due to the lack of knowledge, and lack of access to contraceptive services including other forms of involuntary pregnancies.

To ensure that the above policy and strategies would be effective, the participation of all sectors, including government and non-government organizations, public and private sectors is required.

Conclusion

Thai fertility has been declining since the government set up the National Family Planning Programme, under the Ministry of Public Health in 1970, which promoted voluntary use of contraception. Since then the fertility pattern has changed from “natural fertility” to “controlled fertility”. At first, fertility declined rapidly, though the decline slowed down when it was nearing replacement level. Yet, fertility still continues to decline and is presently well below replacement level. The underlying factors affecting the declining trend are higher women’s labour force participation and higher women’s status, which in turn are related to lower desired family size, later marriage and a higher proportion of single women. Availability and accessibility of family planning services enables most women and most couples to avoid having unwanted children.

Despite the declining trend, fertility is still relatively high amongst some population groups, such as among the Muslims in the three southernmost provinces, the Hmong ethnic group, and cross-border migrants. The TFR of Muslim women in the three southern border provinces is still above 3.0, whilst Hmong women have 5 children on the average. The high fertility amongst cross-border migrants is alarming. It is estimated that there will be at least 40,000 births from cross-border migrants in 2010. Safe childbirth and adequate care in the prenatal and postnatal periods are needed to ensure that these children are not seriously disadvantaged in terms of health and early childhood development.

Other reproductive health issues include teenage pregnancy and induced abortion. Although there are no official statistics on induced abortion, there is an increase in the proportion of births from females under 20 years old. Moreover, the proportion of births to teens under 15 years old, although small, is also increasing.

The fertility decline in Thailand has already led to new directions in population policy. In the past, the policy placed emphasis on fertility reduction. Recently, the policy has been shifting to promotion of the quality of population. The National Family Planning Programme was a tool to reduce fertility for the last 40 years. Recently, Thailand has declared a National Reproductive Health Policy aiming to ensure that all births are not only desirable and safe but attended by quality services.



Impact of Population Change on Well-being of Elderly in Thailand

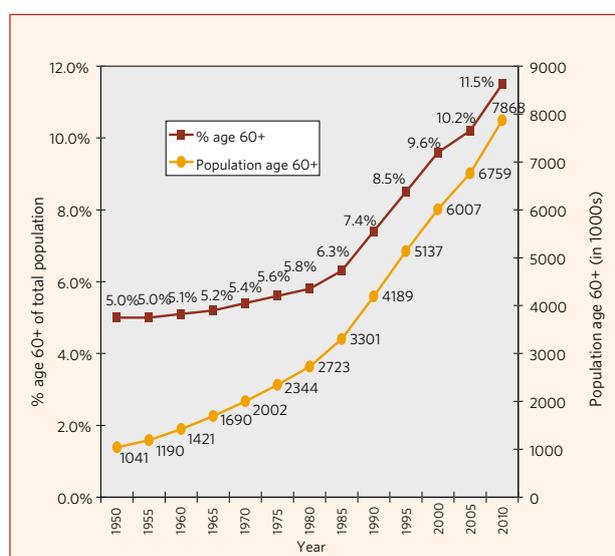
An ageing population in the context of economic growth

Population ageing

Among the most prominent features of Thailand's population in recent decades is the rapid growth in the numbers of older persons and their increasing share of the population. The rapid growth is a legacy of the high levels of fertility that prevailed at the time when the cohorts now entering older ages were born and the subsequent improvements in mortality over their lifetime. The increasing share that they represent of the total population is attributable mainly to the rapid decline in fertility during the three decades following the mid-1960s and the below replacement level of fertility since the early 1990s. Improved life expectancy is also contributing to the ageing of Thailand's population but to a lesser extent.

Figure 3.1 shows the very substantial growth in the number of persons 60 and older as well as the increase in the percent they represent of the total population between 1950 and 2010 based on estimates and projections from the 2008 assessment by the United Nations Population Division. Population ageing, as distinct from increases in the number of older persons, occurs when the growth rate of older population exceeds that of the total population, a circumstance that has increasingly characterized Thailand in recent decades. The Thai population age 60 and over more than doubled between 1950 and 1975 even though their share of the total population increased only very modestly from 5.0 to 5.6 percent. This was so because the overall population growth rate was also high during those years. Since then, fertility decline slowed overall population growth while the growth rate at older ages remained high and even accelerated. As a result population ageing and the size of the older population rose in tandem.

FIGURE 3.1 POPULATION AGEING AND GROWTH OF THE OLDER POPULATION, THAILAND 1950-2010



Source: United Nations *World Population Prospects: The 2008 Revision* (Medium Variant)

In the coming decades beyond those shown in Figure 3.1, the UN projections anticipate even more dramatic population ageing. According to the medium variant projection, the numbers of persons age 60 and above will approach 14 million by 2025 and exceed 19 million by 2050. At the same time their share of the population will rise to 19% by 2025 and will constitute 26% of all Thais by 2050.

Population ageing in Thailand, as in a number of other Asian countries, is occurring faster than in more developed countries in the West in the past. For example, the amount of time it took for the percent of the population in ages 65 and over to double from 7% to 14% took many decades in the developed countries of the West (UN 1956). In contrast, UN projections indicate in Thailand it will take just under two decades. Thus Thailand will need to adapt far more rapidly to the transformation in

its age structure than has been the case historically in those countries where population ageing is already advanced. This adaptation, however, will be occurring within a very different and evolving social, economic and technological environment.

Past trends and differences in material well-being

The rapid ageing of the Thai population has been occurring within a context of substantial economic and social development. Although there have been spells of economic downturn, the most notable during the latter part of the 1990s, much of the period during which population ageing has been taking place was also characterized by a thriving economy. To be sure, the benefits from this have been unevenly shared across different segments

of Thai society. Still the economic growth and improved standards of living that characterized Thailand during most of the last several decades also benefited many older persons. This is apparent in the improved quality of their housing and the far higher proportions that live in households with appliances and amenities that make daily life more convenient.

As Table 3.1 shows, there has been a clear trend for older persons towards residing in better constructed houses. Between 1994 and 2007, those that lived in dwellings made of cement or brick increased from 14% to over one third by 2007 and the share who lived in houses with a flush toilet rose from one tenth to almost one fourth. Even more dramatic is the increased availability of piped water inside the dwelling which rose sharply from under a third to almost four-fifths.

TABLE 3.1 HOUSING QUALITY AND HOUSEHOLD POSSESSIONS, PERSONS 60 AND OLDER, 1986-2007

	All persons age 60 and older				Residence 2007	
	1986	1994	2002	2007	Urban	Rural
% in dwellings made of mainly cement or brick	n.a.	14.4	21.4	34.1	53.1	26.6
% in dwelling with flush toilet	n.a.	9.9	12.2	24.2	49.8	13.9
% with piped water inside house	n.a.	31.9	54.6	79.1	91.5	74.2
% in households with the following possessions						
Television	47.7	83.7	n.a.	95.7	98.0	94.8
Video/DVD	—	17.3	n.a.	63.0	74.5	58.5
Refrigerator	24.5	52.5	n.a.	87.4	95.0	84.3
Phone (landline or cell)	—	15.4	n.a.	76.0	89.5	70.6
Air conditioner	1.4	7.0	n.a.	16.0	39.2	6.7
Washing machine	—	14.7	n.a.	48.0	69.6	39.3
Motorcycle	27.8	45.9	n.a.	67.2	56.1	71.6
Car/truck	7.1	16.7	n.a.	30.9	48.6	23.8
Computer	n.a.	n.a.	n.a.	17.1	35.0	9.9
Annual income in 2007 Baht (% distribution)						
Under 10,000	56.4	38.6	23.8	16.8	10.5	19.3
10,000 to 99,999	39.9	53.9	65.8	67.8	61.3	70.4
100,000+	3.8	7.5	10.5	15.4	28.2	10.3
Total	100	100	100	100	100	100

Sources: 1986 Survey of Socio-economic Consequences of Aging of the Population in Thailand; 1994, 2002 and 2007 Surveys of Older Persons in Thailand

Table 3.1 also reveals substantial increases in percentages of older age Thais who live in households with a number of important possessions. For example, although less than a fourth lived in a household with a refrigerator in 1986 the vast majority did by 2007. One of the most striking changes is the increased access to telephones. In 1994 only 15% of older persons lived in households with a telephone compared to over three fourths by 2007. This increase is due largely to the spread of mobile (cell) phones. As with other household possessions, even if the mobile phone belonged to another household member, the elderly member would still likely be able to benefit from it. The spread of phones has radically altered the ability of older persons to keep in contact with adult children who live elsewhere and thus has important implications for their social well-being (Knodel & Chayovan 2008; Knodel & Saengtienchai 2007). In addition phones can be used to get help in case of health emergencies, a major concern for many older persons and this allows their children to communicate with each other about the situation of their parents and better coordinate assistance when needed.

Incomes of older persons have also increased considerably. As Table 3.1 shows, over half of persons age 60 and above in 1986 reported annual incomes of less than 10,000 Baht (expressed in 2007 values to adjust for inflation). By 2007 this declined to only 17%. During the same period, the percent reporting incomes of 100,000 Baht or more rose from only 4% in 1986 to over 15% by 2007.

The improvements in material well-being appear to have benefited both older women and men. According to the 2007 Survey of Older Persons, there is little difference with respect to the percent of men and women that live in better quality housing and in households with important appliances and amenities (Knodel and Chayovan 2008). In addition the percents who report sufficient income and satisfaction with their financial situation are almost identical for men and women. Among married persons, women disproportionately report low personal income and lower wealth compared

to men but as wives they likely share in the benefits from their husbands' income and wealth. In contrast, among unmarried older persons, women fare at least as well as men. The general lack of gender inequality in material well being among older Thais is fortunate given the predominance of women within the older age population (as discussed below).

Although the material situation of older persons has clearly improved in urban and rural areas, substantial rural and urban differences remain and are often quite pronounced. For example, as Table 3.1 shows, in 2007 more than twice the percent of urban than rural elderly lived in houses made of cement or brick and those who lived in dwellings with a flush toilet constituted almost half of urban but only 14% of rural older persons. Urban dwellers are considerably more likely to live in better constructed houses and to live in households with the possessions shown than their rural counterparts. While some items such as televisions, refrigerators, electric fans, and rice cookers are almost universal even in rural areas, motor vehicles, air conditioners, microwave ovens, and computers are still largely limited to urban households. Likewise substantial income differences are evident. In 2007, urban elderly were more than twice as likely as rural elderly to report incomes of 100,000 Baht or more and only half as likely to report incomes of under 10,000 Baht.

Despite the significant improvement in material well-being, considerable poverty and economic hardship remains among substantial numbers of older people. According to the 2007 Survey of Older persons, 21% of persons 60 and older said that their income was inadequate and an equal share said that their income was adequate only sometimes. In addition 28% said that they were not satisfied with their financial situation. Together, almost a fifth (19%) reported both an inadequate income and dissatisfaction with their financial position. This differed considerably between rural and urban older persons with only 13% of urban elderly compared to 21% of rural elderly saying both that their income was inadequate and financial position unsatisfactory.

Trends in likely determinants of elderly well-being

Declining potential support ratio

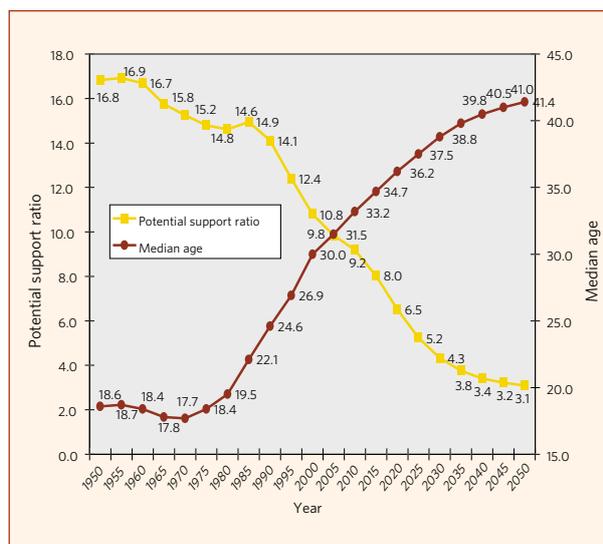
Dramatic shifts in the relative numbers of economically active persons available to support those who are no longer active are accompanying population ageing. At the societal level, a common age structure measure that captures this change is the potential support ratio, defined as the ratio of the population aged 15-64 to that aged 65 and older. The measure is intended to reflect the support base of persons in ages most likely to be economically productive and hence able to support those in older ages through taxes to pay for retirement benefits and health care.

Although most of this chapter refers to the older population as age 60 and above, for the purpose of calculating this measure those 60-64 are grouped together with productive age adults to conform with the standard definition of this measure and also because more than half of Thais age 60-64 are still working (see Table 3.5 below). A falling potential support ratio reflects a shrinking support base of adults on whom the old age population can depend. The ratio is only an approximate measure of this issue since some persons age 65 or older still work or are otherwise self-supporting and not all persons in ages 15 to 64 are economically active, especially among those at the low end of this age range who are still attending school. Nevertheless, as evident in Figure 3.2, the median age of the Thai population is projected to more than double by 2050 while the support ratio declines precipitously, from a high of almost 17 to 3 over the hundred year period shown. There can be no doubt that there will be far fewer productive age persons per capita to support older age Thais in the future.

Declining family size

The fertility decline that started over four decades ago and is largely responsible for the dramatic changes in the potential support ratio is equally evident at the family level. This is clearly seen in the declining family size of the cohorts that have been successively entering the older age range and that are poised to do so in the coming years. Figure 3.3 shows the mean number of living children of the different age groups that constitute the population

FIGURE 3.2 MEDIAN AGE AND POTENTIAL SUPPORT RATIO (POPULATION 15-64/65+), 1950-2050

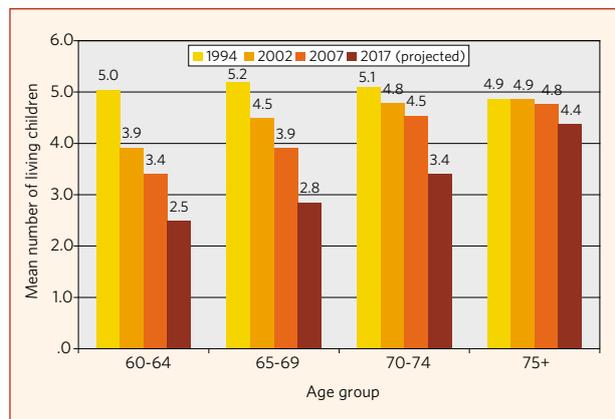


Source: United Nations *World Population Prospects: The 2008 Revision* (Medium Variant)

age 60 and over as documented in the 1994, 2002 and 2007 NSO Surveys of Older Persons and estimates for these age groups in 2017.

Very substantial declines in the average number of living children have already taken place among the youngest elderly, i.e. those in the 60-64 age group and fairly substantial declines have also characterized the 65-69 age group. By 2017, all age groups under 75 will show very substantial declines in their average number of living children. Moreover, these declines will continue past 2017 given that persons in the prime adult ages have been averaging two or fewer children over the last two decades. So far childlessness among older persons has been rare although it is beginning to increase. In 1986, only 3% of older persons had no living children and this increased to only 5% by 2007. However, this could increase by at least a moderate extent in the future as suggested by the fact that 7% of persons age 55-59 and 8% of those 50-54 were childless in 2007. A contributing factor to increased childlessness in the future is the likely increase in the proportions who never marry (see discussion below).

FIGURE 3.3 MEAN NUMBER OF LIVING CHILDREN BY AGE, 1994-2017



Sources: 1994, 2002 and 2007 Surveys of Older Persons in Thailand.

Note: Living children include own, step and adopted children. Estimates for 2017 equal the mean number of children of the age cohort that is 10 years younger in 2007 than that shown for 2017. These estimates do not allow for the fact that some children may die, that some elderly men may have additional children if they remarry women below reproductive ages, and there may be differential mortality among the elderly in relation to the number of children they have. Nevertheless they should be approximately correct.

Increased dispersion of children

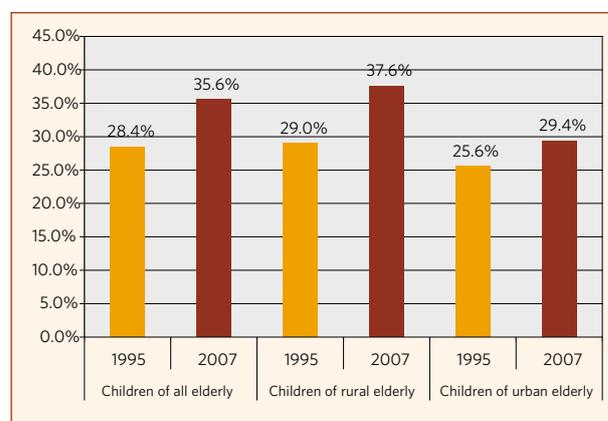
In addition to declining family size, the increased tendency for adult children to migrate for employment in recent years further contributes to lesser availability of children nearby who could assist their older age parents on a routine basis. As Figure 3.4 shows, the percentage of children of persons aged 60 and older who lived outside their parents' province not only is substantial but increased considerably between 1995 and 2007. In both years, the proportions that lived outside the province of their parents are greater for children of rural than urban elderly. This likely reflects the better employment opportunities available in urban areas and thus the greater necessity for rural compared to urban young adults to migrate to take advantage of them. Moreover, increases in the percent that lived outside their parents' province were greater among children of rural than urban elderly. Given the directions in which the Thai economy is heading, it seems reasonable to expect further increases in the migration for employment of both rural and urban young adults.

Changing living arrangements

The decline in the average number of living children of older persons that has already taken place and the increase in the proportion of children that moved away both contribute to changes in the living arrangements of Thai elderly. As Figure 3.5 shows a clear decline in coresidence with children is evident over the last two decades. The overall percent of persons 60 and above who live in the same household with a child fell from 77% in 1986 to only 59% by 2007. Also of interest is the proportion of older persons that lives independently of others, either alone or with only a spouse. The percent who live alone has been quite low although it increased during the last decade to almost 8%. However if those who live only with a spouse were included, the percentage living independently increased steadily during the last two decades reaching almost one fourth of Thais age 60 and over by 2007, up from only 11% in just over two decades earlier.

Measures of literal co-residence ignore situations in which elderly parents and their children live very near each other but in separate dwellings, an arrangement that can meet many of the same needs of both generations as coresidence. Such situations are common in Thailand, especially in rural settings (Cowgill, 1972; Knodel & Saengtienchai, 1999). Figure 3.5 thus includes the percent of persons who either lived with or very near to a child for the three

FIGURE 3.4 PERCENT OF CHILDREN OF PERSONS AGE 60+ WHO LIVE OUTSIDE THEIR PARENTS' PROVINCE



Sources: 1995 Survey of Welfare of Elderly in Thailand; 2007 Survey of Older Persons in Thailand

surveys that included the requisite information. While this situation declines more or less in parallel to the decline in coresidence, significantly higher percentages of older persons are encompassed by this more inclusive measure.

When interpreting the measures of living alone or living only with a spouse, it is important to recognize that in a substantial share of these cases, the older persons are living very nearby one of their children. For example according to the 2007 Survey of Older Persons, both among those who lived alone and among those who lived with only a spouse about a third lived next door to a child and slightly over half either lived next door or within the same locality (Knodel & Chayovan 2008).

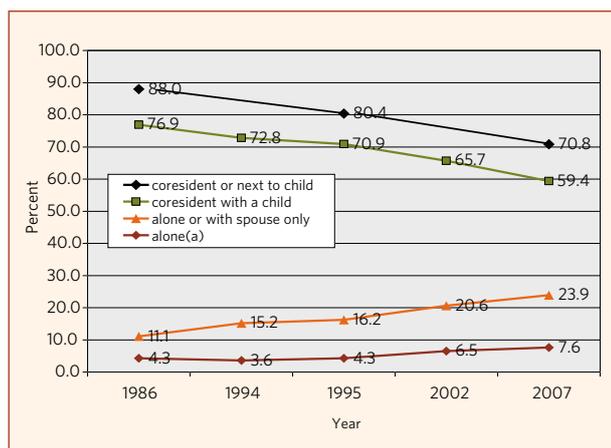
Age and gender composition

The elderly age span, especially when defined as starting at age 60, covers a wide range of ages. Since important characteristics and situations are closely associated with age, changes in the age composition of older persons are of considerable interest. According to the 2007 Survey of Older Persons, almost 60% of the population age 60 and above are under 70 and only 10% are 80 and

older. The 2008 medium variant United Nations projection for Thailand indicates that the projected age distribution of older persons for 2030 will be similar to that in 2010. However, the projections anticipate considerable ageing of the older population in the subsequent two decades. The share in their 60s is projected to fall from 56% to 45% and those in their 80s to double from 10% to 20%. Although projections for situations so far in advance are necessarily uncertain, unless mortality or international migration change in quite unexpected ways, in the intermediate future the population of older persons in Thailand will itself be considerably older than it is currently.

One feature of the current older population is the predominance of women, especially among the very old. According to the 2008 United Nations assessment, currently (in 2010) women constitute 55% of persons 60 and older and 59% of those 80 and above. The relative excess of women over men among the Thais 60 and older is projected to change little during the coming decades, rising slightly to 56% by 2030 and 57% by 2050. Among the population age 80 and over, the share that is women is projected to remain at 59% through 2025 but then to rise steadily to 67% by 2050. The excess of women over men at older ages is a result of more favorable female than male survival rates at virtually all ages and an even more pronounced female survival advantage at the older ages.

FIGURE 3.5 LIVING ARRANGEMENTS OF PERSONS AGE 60 AND ABOVE, THAILAND 1986-2007



Sources: 1986 Socio-economic Consequences of the Ageing Population in Thailand; 1995 Survey of Welfare of Elderly in Thailand; 1994, 2002 and 2007 Surveys of Older Persons in Thailand.

Notes: (a) 1/3 of those who live alone live next door to children and 1/2 live next door or in the same locality as one of their children. The 1986 percent for 'coresident or next to a child' refers to 'coresident or in daily contact with a child'.

Age and gender differences in marital status

Spouses can be primary sources of material, social and emotional support for older persons and provide personal care during times of illness or frailty. Thus an elderly person's marital status has important implications for many aspects of their well-being. As Table 3.2 shows, only 3% of Thai elders never married. Over 60% remain married and reside with their spouse while almost a third is widowed. Almost all who are married live together with only a few percent living separately. Likewise only a small share are separated or divorced. At the same time, pronounced age and gender differences in marital status are apparent.

TABLE 3.2 MARITAL STATUS DISTRIBUTION, BY AGE AND GENDER, PERSONS 60 AND OLDER, 2007

	Total	Current age				
		60-64	65-69	70-74	75-79	80+
Total						
single	2.7	3.0	3.2	2.1	2.5	2.1
married living together	60.1	72.1	65.8	55.3	47.1	29.4
married living separately	2.4	3.0	2.1	2.2	1.8	2.2
widowed	32.4	18.7	26.4	38.2	47.0	65.1
separated/divorced	2.4	3.2	2.4	2.3	1.7	1.2
total	100	100	100	100	100	100
Men						
single	1.5	1.4	1.9	0.8	1.7	1.7
married living together	79.8	87.3	84.5	77.4	66.3	57.8
married living separately	2.7	2.8	2.0	3.2	2.6	2.9
widowed	14.3	6.9	9.9	16.7	27.6	35.9
separated/divorced	1.7	1.7	1.7	2.0	1.8	1.6
total	100	100	100	100	100	100
Women						
single	3.8	4.5	4.3	3.1	3.1	2.4
married living together	44.2	58.8	50.2	37.9	33.1	11.6
married living separately	2.1	3.0	2.2	1.5	1.3	1.7
widowed	46.9	29.1	40.2	55.0	61.0	83.4
separated/divorced	3.0	4.6	3.0	2.5	1.6	0.9
total	100	100	100	100	100	100

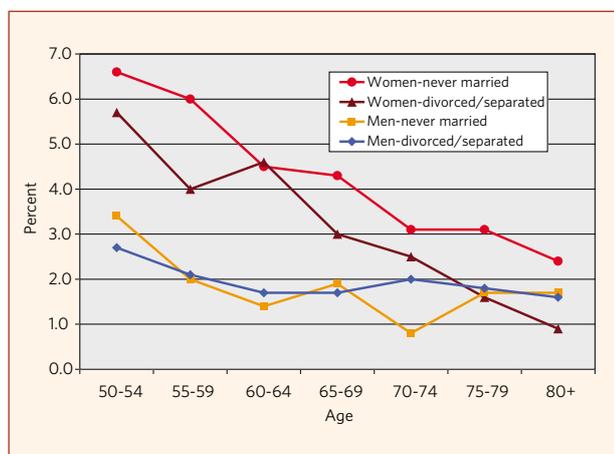
Source: 2007 Surveys of Older Persons in Thailand

The percent that are currently married declines sharply with age accompanied by a commensurate increase in the percent widowed. Pronounced gender differences are also evident. Among the total population of persons age 60 and over, 80% of elderly men are currently married and living with a spouse compared to less than half of elderly women. Moreover, these gender differences increase with age so that among persons aged 80 and above the proportion of men who are married and living with a spouse is five times greater than for women. Women are far more likely to be widowed than men throughout the elderly age span and among all elderly women the number who are widowed actually exceeds the number in an intact marital union. These gender differences reflect a combination of higher male mortality, a tendency for men to marry women younger than themselves,

and more frequent remarriage among men than women following marital dissolution, situations that are unlikely to change in the foreseeable future.

Over recent decades, the proportion of Thai adults remaining unmarried during their lifetime has been increasing (Jones 2008). Figure 3.6 provides evidence suggesting that this is beginning to affect the marital status distribution of the older population and will become more evident in the coming years. The proportion who never married among women as recorded in the 2007 Survey of Older Persons declines fairly steadily with each successive five-year age group from ages 50-54 on. Given that few women are likely to marry for the first time after age 50, the higher proportions single in the younger age groups are very likely to translate into higher proportions single in older age groups in

FIGURE 3.6 PERCENT NEVER MARRIED AND PERCENT DIVORCED OR SEPARATED, BY AGE AND GENDER, THAILAND 2007



Source: 2007 Survey of Older Persons in Thailand

the coming years through cohort succession. While association between age and proportion single is slightly more irregular among men, the pattern is more or less similar. Hence the share of the elderly population that has never married in Thailand is likely to increase in the near future.

Figure 3.6 also shows the proportions that are currently divorced or separated (not counting those who are married but living separately). The fact that the proportions of both men and women who are divorced or separated are highest in the age group 50-54 and at least as high as any subsequent age group for those 55-59 suggests that more elderly in the future will be from broken marriages.

Another potential change in the marital status distribution of older persons is the likelihood that, as a result of improving mortality at older ages, the proportion of elderly who were widowed at any given age will decline. Women will be especially affected because they are much more likely than men to be widowed (East West Center 2002).

Improving educational composition

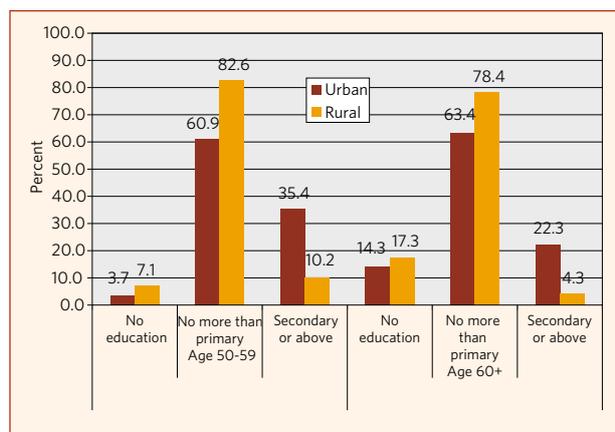
Literacy and educational levels of the older population have important links to their well-being. Literacy provides much greater access to information. Formal education not only influences

employment opportunities but is strongly correlated with health. Moreover, education enables older persons to deal more effectively with government agencies and health services.

Universal education was enacted into law in Thailand before all but the very oldest elderly were born. Implementation was a prolonged process and involved a number of changes in the educational system that impacted men and women differently. The spread of literacy and how it differed by gender is evident from results from the 2007 Survey of Older Persons. For example, only 48% of persons age 80 and older were literate compared to 86% of those 60-64 and 91% of those 50-54. Likewise the percent with any formal schooling was only 62% for persons age 80 and older compared to 90% of those age 60-64 and 94% of those 50-54. The fact that the percent literate declines and the percent with no education increases with age among the elderly population testifies to the rapidly increasing availability of education during the past when the current cohorts of older persons were school age. Gender differences are also very apparent testifying to the slower spread of universal education to girls than boys. Among all persons 60 and older, 85% of men were literate compared to only 69% of women while only 10% of men lacked any formal education compared to 22% of women.

Considerable differences in educational attainment among older-age Thais are also evident by area of residence. Figure 3.7 clearly shows that in 2007 rural residents were more likely to lack formal schooling both among persons 60 and older and those currently in their 50s, although this is becoming a small minority for both groups. Very substantial differences exist in terms of the percent that have no more than a primary education as well as those who completed at least lower secondary school or beyond. The fact that the difference is at least as pronounced among those age 50-59 compared to persons 60 and older strongly suggests that pronounced inequality in education between the urban and rural elderly will persist for at least some time into the future.

FIGURE 3.7 EDUCATIONAL ATTAINMENT, BY AGE AND AREA OF RESIDENCE, THAILAND 2007



Source: 2007 Survey of Older Persons in Thailand

The fact that formal education in Thailand has been continually expanding at all levels means that educational levels of younger adults are substantially higher than those of older persons. At the same time, this also means that those who will be entering their elderly years in the future will be better educated than those currently in older ages and that through the process of cohort succession educational levels of elderly will improve considerably. Educational attainment is generally completed by early adulthood and thus remains a relatively fixed characteristic from then on. Thus the future educational attainment of persons in older ages can be projected based on the levels of younger cohorts that have passed the ages when schooling typically takes place (Hermalin, Ofstedal & Tesfai 2007). Table 3.3 provides the current and projected percent that lack any formal education and who have at least secondary or higher education for three broad age groups within the elderly age span for the period 2010-2050. Results are based on the 2010 Labour Force Survey conducted by NSO in the first quarter of the year. Information in the survey permits determination of these measures for persons age 20 and above including cases of those who are still in school (see Appendix A for details).

The results clearly point to the fact that future elderly will be increasingly better educated than those currently in older ages in Thailand. Increases in the compulsory level of education that have taken place in Thailand ensure that this trend towards a better educated older population will continue for quite some time. The percent that lack any formal education will dwindle to only a few percent while the percent that has at least some secondary education will increase dramatically, rising from 12% to 80% among those in their 60s between 2010 and 2050.

Besides the fact that educational levels will improve dramatically among older persons, several other patterns are clear from the results in Table 3.3. The considerable differences by age within the elderly age span that are evident currently with respect to the percent with no education will essentially disappear. In contrast, age differences in terms of the percent that have a secondary or higher education that are currently evident within the elderly age span will become increasingly pronounced. This reflects the rapid change that has occurred among young adults during the last two decades particularly with respect to increases in the compulsory level of education. In addition, gender differences in education which are prominent currently will contract and even start to reverse by 2050 when the percent with secondary or higher education among persons in their 60s will be higher for women than for men. This reflects the closing and reversal of the gender gap in education that has taken place in Thailand during the last couple of decades (Knodel 1997). However, it is clear that for the next several decades, older-age women in each age group will continue to be substantially less educated than men although their education levels will increase even more rapidly.

This improvement in education among older persons will undoubtedly contribute to their well-being. In addition, the eventual closing and even reversal of the gender gap in education will remove an important source of disadvantage among older women. At the same time, however, older persons will still remain considerably less educated than younger adults at any given time. This in turn may affect intergenerational relations and also affect the competitiveness of older persons compared better educated younger persons for employment in the formal sector.

TABLE 3.3 CURRENT AND PROJECTED PERCENT WITH NO EDUCATION AND WITH SECONDARY OR HIGHER EDUCATION, BY AGE AND GENDER, 2010-2050

<i>No education</i>	2010	2020	2030	2040	2050
Total					
60-69	9.0	5.0	3.1	2.3	2.2
70-79	16.8	9.0	5.0	3.1	2.3
80-89	26.0	16.8	9.0	5.0	3.1
Men					
60-69	5.5	3.4	2.2	2.1	2.2
70-79	10.4	5.5	3.4	2.2	2.1
80-89	16.4	10.4	5.5	3.4	2.2
Women					
60-69	12.1	6.5	3.8	2.6	2.2
70-79	21.4	12.1	6.5	3.8	2.6
80-89	32.4	21.4	12.1	6.5	3.8
<i>Secondary or higher</i>					
Total					
60-69	12.3	20.0	33.4	53.3	79.6
70-79	6.7	12.3	20.0	33.4	53.3
80-89	5.6	6.7	12.3	20.0	33.4
Men					
60-69	16.4	25.0	36.9	54.2	76.5
70-79	10.4	16.4	25.0	36.9	54.2
80-89	8.0	10.4	16.4	25.0	36.9
Women					
60-69	8.8	15.5	30.2	52.4	82.8
70-79	3.9	8.8	15.5	30.2	52.4
80-89	4.0	3.9	8.8	15.5	30.2

Source: 2010 Labour Force Survey, First Quarter.

Note: Information on the projection method is provided in Appendix A.

Improved overall health and vision

Although the NSO Surveys of Older Persons included a number of items concerning health, only those asking about specific diseases, self assessed health, and vision permit comparable measures to be constructed across all three surveys. Accurate knowledge of many specific diseases, however, requires diagnosis by professionals and thus trends in self reports can be misleading and are not presented here. Instead the consideration is limited to self-assessed overall health and vision. Although

self assessments are subjective, ones that refer to overall health have been shown to be reasonably valid, relating well to other more objective measures as well as being a reasonably effective predictor of mortality (Jylha 2009).

Table 3.4 shows the percent who reported their health as good or very good and who reported they could see well without glasses among persons age 50 and older in each of the three NSO Surveys of Older Persons. Both self assessed health and good vision have improved over the period covered.

Improvements are evident for men and women, all three age groups shown, and those in rural and urban areas. The results also indicate that in each survey women are less likely to report good health than are men and that the percent with good health declines considerably with age. There is also a moderately higher percentage of urban than rural residents reporting good health.

The reported improvement in vision over the period covered is even more substantial than in overall health. Gender differences in the percent reporting good vision are modest but there is a substantial decline in the percent reporting good vision by age.

Rural residents are also more likely to report good vision without glasses than are urban residents. This latter difference reflects the far greater tendency to have glasses among urban than rural residents and to be able to see well with them. The share who say they see well (with or without glasses) is higher for urban than rural residents (86% vs. 76%—not shown in table). The dramatic improvement in vision overall undoubtedly reflects the active government program to provide cataract and other eye surgery to all who need it that has operated during the period being covered (Jenchr & Pongprayoon 2003).

TABLE 3.4 SELF ASSESSED GOOD HEALTH AND GOOD VISION WITHOUT GLASSES, BY GENDER, AGE, AND RESIDENCE, PERSONS 50 AND OLDER, 1994-2007

	Good health (%)				Good vision w/o glasses (%)			
	1994	2002	2007	Ratio 2007/1994	1994	2002	2007	Ratio 2007/1994
Total sample	47.5	55.5	56.3	1.19	42.5	51.7	61.5	1.45
Gender								
Men	53.8	62.4	62.1	1.15	41.8	53.4	63.2	1.51
Women	42.1	49.5	51.4	1.22	43.0	50.1	60.0	1.40
Age								
50-59	56.7	66.0	65.9	1.16	48.8	61.5	69.3	1.42
60-69	43.5	52.9	55.1	1.27	40.8	48.1	60.7	1.49
70+	29.1	33.6	35.1	1.21	27.7	32.9	43.7	1.58
Residence (a)								
Rural	47.2	53.9	55.2	1.17	44.6	53.5	64.6	1.45
Urban	48.4	59.1	59.1	1.22	37.4	47.8	54.0	1.44

Source: 1994, 2002 and 2007 Surveys of Older Persons in Thailand

Notes: Good health includes those who rate their health as very good or good.
(a) urban residence includes sanitary districts in 1994

Work status

Information on the work status of older persons is available from the several rounds of the Labor Force Survey conducted by NSO each year. A recent report issued by the ILO Regional Office summarizes trends based on published reports for the third quarter rounds for selected years (Fujioka & Thangphet 2009). Since the NSO reports group all persons 60 and older into a single category, differentiation by age within the elderly age span is unavailable from this source. Results from the ILO report plus updated results for 2008, provided in

the top panel of Table 3.5, make clear that there is no consistent trend in the percents of either older men or women who are working (i.e. considered in the labor force). Although there is some fluctuation over time, the percentages for 1991, the first year shown, and those for 2008 are remarkably similar. Moreover all surveys show quite similar gender differences with men considerably more likely to be working than women. The exclusion of housework from "work" accounts at least in part for this difference.

TABLE 3.5 TRENDS AND DIFFERENTIALS IN LABOR FORCE PARTICIPATION FOR PERSONS 60 AND OLDER.

	Total	Men	Women
<i>From Labor Force Surveys</i>			
1991	37.7	50.1	27.4
1995	35.4	47.6	25.0
2000	33.6	45.8	23.1
2005	38.8	51.0	28.8
2008	37.9	50.3	28.1
<i>From 2007 Survey of Older Persons</i>			
Total	37.3	50.4	26.7
By area of residence			
Rural	40.8	55.3	28.8
Urban	28.5	37.6	21.6
By age			
60-64	56.7	71.0	44.1
65-69	41.3	55.4	29.5
70-74	26.2	37.2	17.5
75+	13.2	20.5	8.2

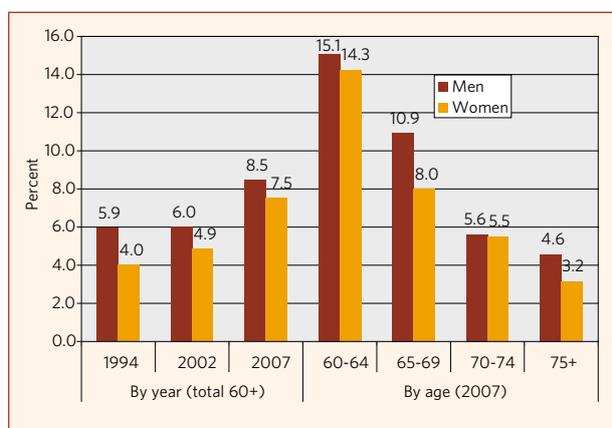
Sources: 1991 to 2005 labor force participation rates from Fujioka & Thangphet 2009; 2008 from Labor Force Survey report published by NSO (Table C).

Notes: The Labor Force Survey results refer to the third quarter of each year shown. Both the Labor Force Survey results and those for the 2007 Survey of Older Persons treat persons who are waiting for season as participating in the labor force. The Labor Force Surveys also include the small number of unemployed persons who are looking for work in the participation rate while the 2007 Survey of Older Persons results exclude the 0.1% who are unemployed and looking for work.

The bottom panel of Table 3.5 shows labor force participation by area of residence and age groups within the elderly age range based on the 2007 Survey of Older Persons. Labor force participation is substantially higher among rural than urban older persons. The percent of persons age 60 and older who are working declines sharply with increasing age. Over half of persons age 60-64 worked compared to only a small minority of those 75 or older. In addition, for any given age group, men were considerably more likely than women to work.

There are numerous reasons why persons stop working as they get older. In Thailand the conventional retirement age is typically considered to be 60, the mandatory retirement age for government employees and workers in state enterprises. Only a minority of the population, however, are subject to such mandatory retirement requirements. Although employees in private sector enterprise may have retirement ages set in their contract, the age is up to the enterprise. In addition, it is thought that many stop working before reaching the set age (Fujioka & Thangphet 2009). For the large share of persons who are self employed, including most farmers and informal sector workers, both the concepts of mandatory retirement and a discrete retirement age are inapplicable. Instead, exiting from economic activity is likely a process of reducing activity over time and is a matter of their own discretion. This

FIGURE 3.8 PERCENT WHO ARE WILLING TO WORK AMONG THOSE WHO DID NOT WORK DURING PREVIOUS WEEK AND ARE NOT WAITING FOR SEASON TO WORK, PERSONS 60 AND OLDER



Source: 1994, 2002 and 2007 Surveys of Older Persons in Thailand

likely accounts for the higher participation rates among rural compared to urban elderly given that far higher proportions in rural than urban areas are in the informal agricultural sector and are own account workers while formal sector work is far more common in urban areas.

In each of the three NSO surveys of older persons, respondents were asked if they were willing to work. Figure 3.8 indicates the proportion willing to work among those who not working during the previous week nor waiting for the season to work. Only a modest minority of men and women aged 60 and older among this group were willing to work. In all three surveys, the percentages are somewhat higher for men than women. The percentage who indicated a willingness to work, however, increased for both sexes between 1994 and 2007.

Figure 3.8 also shows that the percent of those who were not working but said they were willing to work in 2007 clearly declines with advancing age. Among 60-64 year-olds, 15% of men and 14% of women who were not working said they were willing to work but less than 5% of non-working men and only 3% of women age 75 and older were willing to work. At each age, higher proportions of nonworking men than women indicate a willingness to work.

Increased formal support

In recent years the proportion of the labor force that is covered by some formal scheme that will provide financial benefits during retirement has expanded considerably. At present this is largely limited to those employed in the formal sector of the economy although efforts are underway to launch a nationwide savings program for informal workers including farmers and other self employed persons (Bangkok Post 2010). Government and state enterprise employees have long been covered by government guaranteed retirement benefits but broader coverage to employees in the private sector is only recent with the most significant advancement being the establishment in 1999 of the Old Age pension Fund within the national Social Security System. As a result of these ongoing developments, the share of the older population with some source of formal financial retirement

benefits is virtually certain to increase substantially in coming years.

In conjunction with the 2007 Survey of Older Persons, a supplementary survey of adults age 18 to 59 was also conducted. Results for persons age 25 and over are presented in Table 3.6 and provide some evidence of the substantial increase in the proportion covered by formal support that will characterize cohorts entering the older age span in coming decades. The proportion of adults who have some sort of formal financial retirement benefit declines with each successive five-year age group. This undoubtedly reflects cohort differences in types of employment. The proportion who work as employees in the formal sector (both private and government) declines steadily with age falling from 53% for those 25-29 to only 9% of those 55-59, a pattern that likely reflects in part the increased educational attainment over time among those entering the labor force (not shown in table).

Also shown in Table 3.6 are differences according to gender and area of residence. As indicated by the ratio of the men to women that have some coverage, in general men are modestly more likely to have entitlement to retirement benefits than are

women. However, the male advantage is limited to ages 35 and over. At younger ages women are either equally or more likely to be covered. Far more pronounced and consistent than differences associated with gender are those associated with place of residence. Urban dwellers are much more likely to have retirement benefit coverage than their rural counterparts regardless of age cohort. This obviously reflects the far higher portion of urban compared to rural residents who are employed in the formal private sector and in civil service or state enterprises. At the same time, a decline in the portion entitled to retirement benefits with successive age is clearly evident both among urban and rural residents again reflecting the fact that elderly will be more likely to have formal sources of support in the future even if current benefit plans are not expanded. Since expansion seems virtually certain, the actual increases through cohort succession over the coming decades in the proportion of elderly who have retirement benefits could be far greater than even the current cohort differences among those under the elderly age range suggest.

An additional form of formal support that has expanded substantially in recent years is the government welfare allowance that is provided to

TABLE 3.6 PERCENT OF PERSONS AGE 18-59 WHO HAVE SOME FORM OF FORMAL FINANCIAL COVERAGE FOR RETIREMENT, BY AGE, PERSONS 18-59, 2007

Age	Total	Gender			Area of residence		
		Men	Women	Ratio (men/women)	Urban	Rural	Ratio (urban/rural)
25-29	51.9	51.0	52.6	0.97	61.7	41.1	1.50
30-34	44.6	44.5	44.7	1.00	55.3	35.0	1.58
35-39	38.3	42.8	34.7	1.23	51.6	27.1	1.90
40-44	28.1	29.2	27.2	1.08	38.8	20.9	1.85
45-49	26.3	31.7	21.3	1.49	35.7	20.8	1.71
50-54	19.9	24.5	15.9	1.53	29.4	13.4	2.20
55-59	16.6	18.5	14.8	1.25	21.3	13.3	1.60
Total	31.8	34.2	29.8	1.15	42.9	23.4	1.83

Source: 2007 Survey of Knowledge and Attitudes on Elderly Issues among Population Age 18-59.

Note: Old age financial coverage includes persons who are currently civil servants or members of the social security system, are government or state enterprise employees and expect to have pension or lump sum payment when they retire, or are aged 50+ and are not currently working but have a pension.

persons age 60 and over. It was established in 1993 and originally intended for indigent older persons. Subsequently coverage expanded and currently is virtually universal for all elderly regardless of financial need. In addition, while still quite modest, the amount of the allowance has increased from 200 to 500 Baht. Whether or not this will be sustained in the indefinite future in its present form is uncertain but at least currently this formal mechanism is available as a modest supplement to the income of all who apply for it.

Implications for material well-being

As noted above, two major demographic trends that could potentially impact the material well-being of older persons in Thailand are the decline in the number of living children that will characterize

future cohorts of older persons and the increased likelihood of migration of those children leading to a reduction in the proportion that remain in the same household or locality as their parents. The decline in the number of living children raises questions concerning the availability of filial material support and, together with the increased migration of children, raises questions concerning availability for personal care and assistance, especially once frailty or chronic illness set in. In addition to these demographic trends, other factors come into play, not the least of which, given the traditional dependence of parents on their children in old age, is possible weakening of a sense of filial obligations on the part of both generations. At the same time the educational levels of adult children of older Thais are improving and likely increasing their earning power.

TABLE 3.7 SOURCES OF INCOME DURING THE PREVIOUS 12 MONTHS, 1994 AND 2007, AND BY AGE AND AREA OF RESIDENCE, PERSONS AGE 60 AND OLDER, 2007

	Total population age 60 and over		Population age 60 and over in 2007			
	1994	2007	Age		Area of residence	
			60-69	70+	Urban	Rural
Any income from source						
work	38.0	37.8	50.2	20.1	28.7	41.4
pension (a)	4.1	5.4	6.2	4.2	12.2	2.6
elderly allowance	0.5	24.4	17.7	34.0	14.1	28.6
interest/savings/rent	18.2	31.7	33.7	29.0	36.8	29.7
spouse	21.4	23.3	30.0	13.7	20.3	24.5
children	84.5	82.7	79.0	87.9	77.6	84.8
other relatives	11.4	11.0	9.7	12.9	11.0	11.1
Main source of income						
work	32.0	29.0	39.7	13.7	23.5	31.2
pension (a)	4.0	4.4	4.9	3.7	10.2	2.1
elderly allowance	0.0	2.8	1.2	5.0	1.4	3.3
interest/savings/rent	1.7	2.9	2.6	3.3	5.1	2.0
spouse	4.7	6.1	7.9	3.6	6.7	5.9
children	55.0	52.5	41.9	67.8	50.1	53.5
other relatives	2.5	2.3	1.8	3.0	2.9	2.0
total	100	100	100	100	100	100

Sources: 1994 and 2007 Surveys of Older Persons in Thailand

Note: results exclude a small number of cases who reported no income or income from other non-classified sources.

(a) 2007 includes lump sum payments on retirement

Sources of income

Table 3.7 examines the various sources of income as well as their main source that persons age 60 and over reported in the 1994 and 2007 Surveys of Older Persons. Among all persons age 60 and above, their children are by far the most common source of income as well as the most common main source. In both surveys over 80% reported at least some income from children during the prior 12 months and over half reported children as their main source. In addition, only rather modest declines are evident for both of these measures between the two surveys.

Older persons' own work is clearly the second most common source as well as second most common main source with just under two fifths overall reporting income from work. The importance of work is likely understated in the sense that responses refer to own work and do not take account of income from a spouse's work which most married couples likely put to mutual use. Note that almost a fourth of respondents cite their spouse as a source of income although far smaller percentages say that it is their main source. Assuming that this category mainly reflects income from a spouse's economic activity, the vast majority of older Thais in both surveys rely either on children or work as their main income source. The substantially increased percentages reporting income from welfare allowances between 1994 and 2007 reflects the expansion of the program as noted above. However, few report the elderly allowance as their main source of income reflecting the modest sizes of the allowances. Another interesting change between the 1994 and 2007 survey is the substantial increase in older persons who report their own financial resources (investments, savings or rent) as a source of income although very few in both years cite this as their main source. This increase likely reflects the changing nature of the Thai economy, especially the expansion of financial institutions and their accessibility to the general population.

Results from the 2007 survey make clear that sources of income and especially the main source vary considerably with age. Consistent with the decline in economic activity with age discussed above, work is much less common as a source of income and infrequently cited as the main source

for persons age 70 and over compared to those in their sixties. The decline in economic activity with age, together with increases in widowhood, likely account for the lower percentages of persons 70 and above reporting their spouse as a source of income compared to those in their sixties. In contrast, while children are commonly reported as a source of income even for younger elderly, their importance as a main source of income increases very substantially with age.

Several differences among rural and urban elderly are also pronounced. Rural elderly are considerably more likely to report work both as a source of income and as the main source, reflecting the tendency to remain economically active longer into life among persons engaged in agriculture where retirement is likely to be a gradual process and not subject to a prescribed age. At the same time, urban elderly are far more likely than their rural counterparts to report pensions either as a source of income or a main source although even for urban elderly only a modest 12% receive pensions. The contrast in pensions between urban and rural older persons undoubtedly reflects differences in lifetime occupational histories. Urban elderly are more likely than those in rural areas to have had jobs in the formal sector and particularly in the government civil service. As noted above, this urban-rural difference is likely to remain in the future, although efforts to widen coverage to self-employed and the informal sector may mitigate the gap.

Support from children

Of particular interest in Table 3.7 is the minimal change evident between 1994 and 2007 in children as a source of income and particularly as the main source. Although some financial contributions from children are of little more than symbolic value, in many cases the extent of such support is sufficient to serve as the main income source. Table 3.8 focuses more closely on changes in the extent that children serve as a source of income and how these changes correspond to changes in the family size of different age groups of persons age 50 and above based on the 1994 and 2007 Surveys of Older Persons. Results are limited to those who have at least one living child.

TABLE 3.8 CHILDREN AS A SOURCE OF INCOME AND MEAN NUMBER OF LIVING CHILDREN AMONG PERSONS 50 AND OLDER WITH AT LEAST ONE CHILD, BY AGE, 1994 AND 2007.

Age	Any income from children			Children as main source of income			Mean number of living children		
	1994	2007	2007/ 1994	1994	2007	2007/ 1994	1994	2007	2007/ 1994
50-54	66.2	57.9	0.87	15.5	12.4	0.80	4.15	2.72	0.65
55-59	76.0	71.7	0.94	23.0	20.8	0.91	4.76	3.06	0.64
60-64	82.2	81.1	0.99	39.6	37.7	0.95	5.26	3.60	0.68
65-69	87.8	85.9	0.98	52.9	51.7	0.98	5.33	4.11	0.77
70-74	92.4	89.9	0.97	72.2	65.5	0.91	5.32	4.73	0.89
75+	93.6	93.3	1.00	78.4	74.4	0.95	5.04	4.98	0.99
Total	79.4	75.5	0.95	37.6	35.8	0.95	4.86	3.57	0.74

Sources: 1994 and 2007 Surveys of Older Persons in Thailand

Although in all age groups there has been some decline in the percent of respondents who reported any income from children as well as who indicated their children as their main source, the reductions are modest. Declines in the mean number of living children, however, are quite substantial especially for the cohorts that are below age 70 and in these cases far greater than the proportionate reductions in the percent who cite children as an income source. For example, among persons in their 60s, there is little decline in the percent who received any income from children and only a very small decline in the proportion for whom children were their main source. Yet the average number of living children for persons in these ages fell substantially. Nevertheless, there is some suggestion that a reduced number of children is associated with reduced financial support. Among persons in their 50s, especially those age 50-54, declines in support from children and in the number of living children are both above average.

Family size and filial financial support

A more direct examination of the association between number of living children and filial financial support is provided in Figure 3.9 for persons age 60 and above in 2007. Since both the number of children and dependence on children for support increases with the age of parents, the results are adjusted by linear regression for the age of

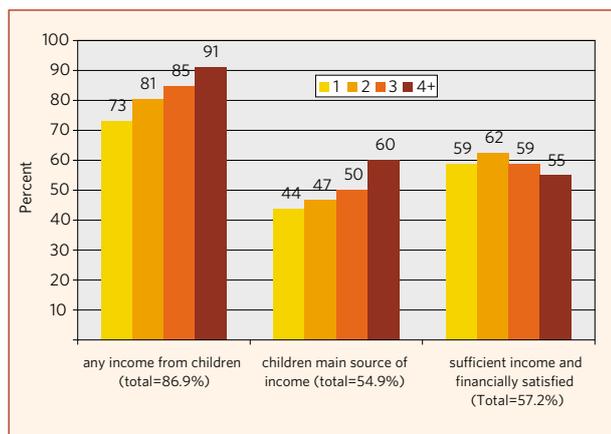
respondent. Successive increases are evident in the proportion who receive at least some income from children and who rely on children as their main income source. For both cases, those with four or more children are more likely to receive financial support than those with fewer children, suggesting that the reduced family sizes of future cohorts of elderly Thais could portend lesser financial support.

Also shown in Figure 3.9 is the association between number of children and the percent of older persons who said both that their income is sufficient and that they are satisfied with their financial situation, presumably implying that their economic situation is adequate for their needs. The share of older persons with small families is actually somewhat above average in expressing economic satisfaction compared to those with more children. Indeed the lowest percent is found among those with four or more children.

One possible reason underlying this finding despite the lower likelihood of financial support from children among those with only few could be that older persons with few children are less likely to be in financial need compared to those with more. One study conducted in rural Thailand two decades ago found that couples with few children were better able to accumulate wealth than those with larger numbers (Havanon, Knodel & Sittitjai 1992). This suggests that smaller family sizes could

possibly facilitate wealth accumulation for later in life thereby reducing a need to depend on filial financial support. Just what the implications are for estimating the impact of smaller family sizes on material well being of the coming generation of older-age Thais depends on how the causal connections between support, wealth accumulation and family size operate. Moreover, future declines in family size among older age groups will be very substantial and any offsetting benefits for wealth accumulation may be overwhelmed by the smaller number of children on whom elderly parents will be able to depend. Thus firm conclusions about the future implications of declining family size remain elusive. The safest approach is simply to recognize that the extent to which the smaller family sizes of the future elderly may jeopardize their material well-being is uncertain.

FIGURE 3.9 CHILDREN AS SOURCE OF INCOME AND SELF ASSESSED ECONOMIC SITUATION, BY NUMBER OF ADULT CHILDREN, PERSONS AGE 60 AND ABOVE, THAILAND 2007 (ADJUSTED FOR AGE)



Source: 2007 Survey of Older Persons in Thailand

Notes: Results are adjusted by linear regression for the age of respondents. Adult children include all children who live outside the household and children age 18 and over who live in the household.

Migration of children and material support

Migration of adult children, especially from rural areas, is virtually an inevitable aspect of economic development. As noted above, the proportion of children of older persons who migrate away from their parents' locality is on the increase in Thailand. Concern is often expressed in the mass media and even in UN forums that such geographical dispersion of adult children poses risks of undermining material support as well as personal care to elderly parents (e.g. Charasdamrong 1992; United Nations 2002, paragraph 29). Yet material support does not require geographical proximity, a point often overlooked in such discussions.

Table 3.9 examines monetary support to parents from non-coresident adult children during the previous year according to their location in relation to their parents. Such support from coresident children is not shown because of the difficulty of interpretation when the children giving the money are part of the same household economy. One set of results is based on the 2006 Migration Impact Survey (MIS) which was conducted in rural and semi-urban areas of three Thai provinces and focused on parents in the age groups 50-54, 60-64 and 70-79 (Knodel et al. 2007). Another set of results comes from the nationally representative Survey of Welfare of the Elderly in Thailand (SWET) conducted in 1995 of persons age 50 and over. Both surveys asked respondents how much monetary support was provided from each of their children during the previous year. The measures in Table 3.9 focus on provision of more than a token amount of money. Due to differences in the information collected, the measure for SWET refers to at least 1000 Baht and for MIS to over 5000 Baht. The table also shows the relationship of the educational attainment of adult children to the provision of monetary support. Note that adult children who migrate out of the province tend to be better educated than those who do not (Knodel et al. 2007). The relation of location and provision of monetary support is also shown within each educational category to enable assessment of the association with each characteristic independent of the other.

TABLE 3.9 MONETARY SUPPORT IN PREVIOUS YEAR TO PARENTS AGE 50 AND OVER FROM NON-CO-RESIDENT GROWN CHILDREN, BY EDUCATION AND LOCATION OF CHILD, 1995 AND 2006

Year of survey and location of child in relation to parent	Total (a)	Educational attainment of child			
		Primary or less	Lower secondary	Upper secondary	Tertiary
% giving 1000+ Baht, 1995 (based on national sample)					
Same locality	22.1	19.9	29.9	41.8	54.2
Same province	32.1	24.6	46.4	52.3	60.1
Elsewhere	48.0	43.5	53.4	58.1	59.0
Total	35.2	29.3	46.5	54.3	58.9
% giving over 5000 Baht, 2006 (based on non-urban sample from 3 provinces)					
Same locality	10.6	7.5	19.1	22.6	47.8
Same province	18.9	9.1	27.1	30.1	41.7
Elsewhere	37.3	27.9	43.8	42.6	60.5
Total	26.4	17.0	36.5	37.4	54.5

Sources: 1995 Survey of the Welfare of Elderly in Thailand and 2006 Migration Impact Survey.

Notes: The Survey of the Welfare of Elderly in Thailand is nationally representative; the Migration Impact Survey covered persons age 50-54, 60-64 and 70-79 in rural and semi-urban areas (tetsabaan tambol) in three provinces (see Knodel et al. 2007). Grown children include all children age 16 and older.

(a) includes unknown education

The results from both surveys are quite consistent. Almost without exception, regardless of educational level, monetary support to parents was most likely to be provided by children who lived outside the province and least likely by non-co-resident children who lived in the same locality as their parents. Moreover, regardless of where the non-co-resident child was located, the higher their education the more likely they were to provide meaningful monetary support. These findings likely reflect the fact that much migration of adult children is related to seeking better employment opportunities and that better educated children are able to earn better incomes which many still appear to be willing to share with parents. Overall, these results are reasonably encouraging concerning the implications of the trends towards increased migration and higher levels of educational attainment of children for monetary support of older age parents in the future.

Expectations of filial financial support in the future

Results of the 2007 survey of adults aged 18 to 59 referred to above indicate the extent to which a sense of filial obligations will be maintained by future older persons. Respondents were asked if they expected to receive money from various sources including from children and which source they expected to be the most important. As evident in Table 3.10, expectations of filial support in old age are shared widely by the current generation of adults. Even among adults under age 30, almost three fourths expect to receive some financial support from children in old age and among those who had ever married (i.e. the ones most likely to have children), four fifths expect such support. It is also striking that almost 90% of ever married persons aged 50-59 (i.e. those who will enter the elderly age span in the following decade) expect such support.

TABLE 3.10 EXPECTATIONS OF FINANCIAL SUPPORT IN OLD AGE, BY AGE, PERSONS 18-59, 2007

Age	% expecting to receive financial support from children in old age			% expecting children to be main financial support source in old age		
	All	Ever married	Never married	All	Ever married	Never married
under 30	72.7	80.4	69.3	22.7	28.8	20.1
30-39	76.5	83.2	46.7	27.2	30.0	14.6
40-49	80.3	83.9	34.9	35.1	36.9	12.4
50-59	86.4	88.7	29.6	45.4	47.0	6.9
Total	60.1	84.8	79.0	32.6	37.1	17.8

Source: 2007 Survey of Knowledge and Attitudes on Elderly Issues among Population Age 18-59.

Although it is common for even the youngest adults to expect some financial support from children, there is a much more pronounced age pattern with respect to the percent who expect their children to be their main source of support in old age. Among ever married persons age 50-59, almost half expect that their children will be the main source of support, a share that is only slightly below the reported percent of persons currently in their older ages who report children as their main source of support as noted above. However, the percentage expecting children to be their main source of financial support decreases with each successively younger age group. Among those under age 30, even for those who are ever married, less than 30% have this expectation. Whether this reflects a weakened sense of filial obligations to parents among younger cohorts is unclear. It could instead reflect anticipation among younger adults that when they reach old age they will have other sources than their children as a means of material support, particularly formal channels such as the retirement benefit plans as discussed above.

Expectations for filial financial support are not static and may well change in the future especially as older persons' abilities to support themselves increase or the sense of obligation of children to support parents decreases. Nevertheless, these results suggest that despite the major social and economic changes that have characterized Thai society, the normative foundation of family support for older persons is still widely shared even if the role it plays may be reduced.

Implications for social support and personal care

Unlike material support, social support in the form of frequent face-to-face interaction requires some level of physical proximity. However, technological advances in communications, especially widespread accessibility to cell phones, have greatly enhanced the ability of migrant children to keep in contact with their older age parents other than through face-to-face interactions. Thus the ability to provide social support by children who are geographically distant from their parents varies according to the type of social support being considered. Routine personal care by an adult child, however, requires very close proximity typically in the form of coresidence or residing very nearby. Thus to better understand how changing family size and increased migration of children affects social support and personal care it is useful to examine the association between family size and proximity to children. As Figure 3.10 shows the location of the nearest adult child is clearly associated with family size. The greater the number of adult children the more likely that an adult child coresides, that one is either in the household or next door, that at least one is in the same locality, and that at least one is within the same province. This in turn affects the likelihood that services which depend on an adult child being close by or at least not at a substantial distance will be provided.

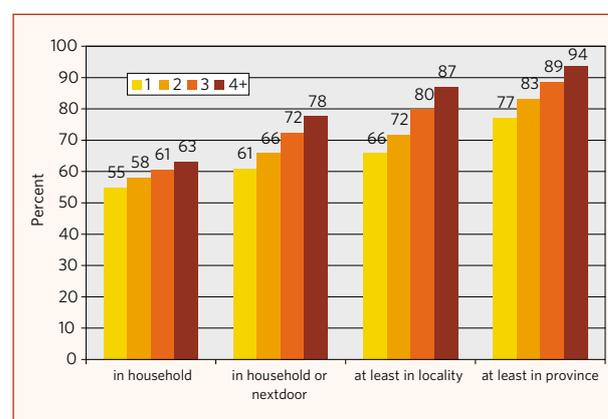
Social contact and psychological well-being

For most older-age parents, maintaining contact with children who move out of the household is important for their social and emotional well being, especially if no other children are nearby. Migration

of children reduces opportunities for face-to-face interactions although contact can be maintained through other means, especially phone calls now that cell phones are common.

The 2007 Survey of Older Persons included questions about the frequency of visits and phone contact with non-coresident children. The questions were phrased in terms of non-coresident children overall rather than individual children. Also the survey did not enquire about contact with coresident children since it presumably occurs on a daily basis. As results in Table 3.11 show, the percentage who reported face-to-face contact on either a weekly or a monthly basis with a non-coresident child increases with the number of adult children among those respondents age 60 and over who had at least one non-coresident child. When telephone contact is included, however, the relationship disappears. Note that if the measures of contact encompassed coresident children, the association with family size would be stronger given that the likelihood of coresidence increases with family size as discussed above.

FIGURE 3.10 LOCATION OF NEAREST ADULT CHILD, BY NUMBER OF ADULT CHILDREN, PERSONS AGE 60 AND ABOVE, THAILAND 2007



Source: 2007 Survey of Older Persons in Thailand.

Notes: Adult children include children age 18 and over who live in the household and all children who live outside the household. Each successive location category includes the previous categories as well.

TABLE 3.11 CONTACT OF PARENTS DURING THE PAST YEAR WITH NON-CORESIDENT CHILDREN, BY NUMBER OF TOTAL ADULT CHILDREN AND LOCATION OF CHILDREN, PARENTS AGE 60 AND OLDER OF NON-CORESIDENT CHILDREN, 2007

	Face-to-face contact		Face-to-face or telephone contact	
	At least weekly	At least monthly	At least weekly	At least monthly
Total	37.8	55.9	58.7	85.9
Number of adult children				
1	27.0	48.9	57.9	85.1
2	33.2	54.4	58.1	85.9
3	36.5	56.2	59.3	86.4
4+	39.9	56.6	58.8	85.7
Location of nearest child (excluding coresident children)				
same locality	63.6	71.3	75.0	90.4
same province	26.4	56.3	54.0	86.6
elsewhere	0.0	5.9	34.6	82.8

Source: 2007 Survey of Older Persons in Thailand.

Notes: Adult children include all children who live outside the household and children age 18 and over who live in the household.

Not surprisingly, the frequency of face-to-face contact with non-coresident children is strongly associated with their location relative to the parents. If a non-coresident child is in the same locality as the parent, almost two-thirds of parents report seeing a child at least weekly and over 70% at least monthly. In contrast, weekly contact is nil for parents whose non-coresident children all live outside the province and only a very small percent report even monthly face-to-face contact with such children. However when telephone contact is also included, the relationship between location of the nearest non-coresident child and frequency of contact is considerably weakened. Although contact either through visits or telephone calls, especially on a weekly basis, still has a clear relationship to the location of the nearest non-coresident child, monthly contact is quite common even if the nearest child lives outside the province.

Presumably social contact with children generally promotes psychological well-being. In addition to asking about contact with children, the 2007 Survey of Older Persons included a series of questions intended to measure psychological well-being. The questions asked how often during the past month the respondent lacked appetite or felt stressed, moody, hopeless, useless, unhappy and lonely. To calculate an overall psychological well-being score for each item 2 points were assigned for "not at all", 1 point for 'sometimes', and no points for 'always' and summed across all seven items. Thus higher scores signify better psychological well-being. Given that migration of children as well as being childless could deprive older-age parents of important social interaction, responses concerning feeling lonely are of particular interest. Table 3.12 therefore shows both the percent who said they were lonely at least sometimes during the last month and the mean overall psychological well-being score.

TABLE 3.12 PERCENT WHO FELT LONELY AT LEAST SOMETIMES IN THE LAST MONTH AND PSYCHOLOGICAL WELL BEING SCORE, PERSONS 60 AND OLDER, 2007

	% lonely at least sometimes	Psychological well being score
All persons 60 and older	34.9	11.43
Number of children		
0	42.9	11.30
1	34.0	11.50
2	30.7	11.79
3	30.6	11.69
4+	36.8	11.26
Nearest child (among those with living children)		
same household	30.9	11.51
next door	39.4	11.26
same locality	44.3	11.21
same province	40.8	11.32
elsewhere	38.3	11.51

Source: 2007 Survey of Older Persons in Thailand.

Notes: See text for definition of psychological well being score.

The results show that older persons who are childless are distinctly more likely to say they were lonely. They also score lower than average on overall psychological well being although no lower than those with four or more children. Among those who have a least one living child, no consistent relationship between the number of children and either the percent who felt lonely or the overall psychological well-being score is evident. The association with the location of the nearest child also generally lacks a consistent pattern with these two measures. However, those who have a child in the household were the least likely to say they felt lonely during the previous month. However, among non-co-resident respondents loneliness does not appear to be related to how near their children are. The highest overall psychological well-being scores are found both for those respondents who co-reside with a child and for those whose children all live outside their parents' province. These findings suggest that reduced family size as long as

there is at least one child and increased migration of children will not necessarily undermine older age parents' psychological well-being in the future. Nevertheless the association could change once much smaller families characterize older persons and few children remain nearby.

Personal care. The 2007 Survey of Older Persons asked respondents if anyone provided care and if so who was the main caregiver. The large majority (88%) of persons age 60 and over indicated that they could take care of themselves and thus presumably did not need a caregiver. This percent declined modestly with age, falling from 94% of those age 60-64 to 83% of those 75-79. Among those 80 and over, however, only two thirds indicated that they could take care of themselves. Among those who did not indicate they could take care of themselves, most had a caregiver although some indicated that they needed assistance but no one provided care.

TABLE 3.13 PERCENT WHO CAN CARE FOR SELF AND DISTRIBUTION OF CAREGIVERS FOR THOSE WHO NEED HELP OR ARE RECEIVING CARE, BY NUMBER OF ADULT CHILDREN AND LOCATION OF NEAREST ADULT CHILD, PERSONS AGE 60 AND OLDER, 2007

	Percent who can take care of self	Caregiver among those who need help or are being cared for (percent distribution)						Total
		No one, but needs help	Spouse	Child/child-in-law	Other family member	Paid-help (a)	Other	
Total	88.0	9.2	26.3	56.7	4.7	2.6	.5	100
Number of adult children								
1	88.0	10.2	26.3	47.0	9.7	6.8	0.0	100
2	91.3	8.7	41.0	42.3	5.2	2.2	0.5	100
3	88.9	12.6	24.8	51.8	5.3	4.1	1.4	100
4+	86.8	8.2	24.1	61.7	3.9	1.8	0.3	100
Location of nearest adult child								
same household	85.7	7.1	17.1	69.6	3.1	2.6	0.6	100
next door	90.8	10.3	39.9	39.9	8.0	1.7	0.3	100
same locality	88.8	13.3	56.0	22.2	8.1	.4	0.0	100
same province	92.2	19.3	61.4	6.0	8.4	4.8	0.0	100
elsewhere	94.1	20.0	53.8	6.3	13.8	5.0	1.3	100

Source: 2007 Survey of Older Persons in Thailand

Notes: Adult children include all children who live outside the household and children age 18 and over who live in the household.

(a) Nurses and servants

As Table 3.13 shows, in general, the percent of older persons that can care for themselves shows no consistent relationship with the number of adult children. At the same time, there is some suggestion that those who coreside with a child are less likely to be able to care for themselves than those who do not and especially than those whose nearest child lives outside their province. This is consistent with a recent analysis based on the Migration Impact Survey that found some tendency for migrant children to return to their parental household if parents are in poor health (Zimmer & Knodel, forthcoming). Having a parent who needs help may also deter children from leaving the parent without assistance.

Among those who do not indicate that they can take care of themselves, the percent that need assistance but have no one helping them shows no consistent relationship with the number of adult children although some difference in who acts as caregiver is apparent. Most striking is that those with one or two adult children are considerably less likely to be cared for by a child or child-in-law than those with three and especially those with four or more children. They also tend to rely more on a spouse. Only a small minority rely on paid help for their care although this is highest for those with only one adult child.

In contrast to the number of adult children, the location of the nearest adult child is clearly associated with the percent who indicated that they need care but do not receive help among those who can not care for themselves. The further away that the nearest adult child lived, the more likely a respondent was to lack a caregiver even though assistance was needed. Among those older persons who could not care for themselves, fully one fifth of those whose nearest child lived outside the province indicated that no one provided care for them. This is almost triple the share that lacked needed assistance for those who had a adult child coresident in the household suggesting that migration of children puts some older parents who need personal care at risk of lacking it.

Attitudinal data from the 2006 Migration Impact Survey indicates that almost 90 percent of parents feel that the absence of children nearby is acceptable as long as social contact is maintained and parents are still in good health (Knodel et al.

2007). However, less than 30 percent said it was acceptable for their children to hire someone to help the parents if parents are old, not in good health and all their children live elsewhere. Moreover over 80 percent felt under such circumstances it is better for parents if a child moves back to care for them rather than if they move to join a child. Thus there still appears to be a strong preference for children to care for parents once frail health sets in and that at least one child should return if all have moved away.

Preparation for old age

Well-being during old age largely depends on how well the society and individuals prepared for quality ageing. Insufficient, inappropriate or late preparation at the national, community and individual levels may degrade the quality of life of older persons and their ability to make contributions to society.

Preparation at the national level

During the last decade, the Thai Government has increasingly recognized that the potential impacts of the rapid population ageing require attention and it has responded in various forms. These include the establishment of the National Commission on the Elderly in 1999, and launching the Second Plan for Older Persons covering the period 2002-2021. One main strategy of the plan is to promote preparation for quality ageing. Several measures are stipulated to achieve this goal. These include expansion of old age financial security coverage, curriculum development at the primary and secondary education levels regarding self-preparation for a good quality life in later years and improvement of environment and public facilities for older persons. The enactment of the 2003 Elderly Act, the establishment of the Elderly Fund and an agency specifically responsible for work on older persons, and the inclusion of the elderly issues in the 10th Five Year Socio-Economic Development Plan can all be seen as part of a national preparation to cope with rapid population ageing in Thailand.

Preparation at local and community levels

Local government, especially the Tambon Administration Organization (TOA) at the

sub-district level, is the agency closest to the community. In theory it understands the problems and needs of elderly within a local context and should be in a better position than other agencies to respond. However, weaknesses in management and budget allocation have been obstacles to carrying out this responsibility. Lack of personnel knowledgeable about geriatrics and frequent turnover of top-executives by political decisions has led to discontinuity in plans and policies regarding older persons (Prachuabmoh, Vipap et al., 2008). Moreover, TAO tend to give higher priority to work on infra-structure than on quality of life and geriatrics.

One crucial obstacle to the effectiveness of local programs for older persons is the lack of updated databases providing detailed attributes of older persons at the local level. This is a barrier especially for identifying appropriate target groups for services and protective measures. Moreover, some TAO are primarily interested in older-persons as electoral bases rather than in developing solutions to issues related to their problems. Some also lack proactive action plans beyond providing living allowances to deal with the increasing number of older persons in the community (Prachuabmoh, Vipap et al., 2008).

Preparation at the individual level

Since both formal and informal systems of support for the elderly have limitations, self responsibility to prepare for quality ageing is essential. Information on this matter is available from both the 2007 Survey of Older Persons and the supplemental survey of adults in ages 18-59. Respondents in both were asked whether they had thought about and made preparation for old age with respect to finance, living arrangements, physical health, care giver arrangements, and spiritual/religious practice. Those who reported preparation in any of the five areas before age 60 are classified as having done something to prepare for old age.

Results in Table 3.14 reveal that the present elderly are less likely to have prepared for old age than the future elderly (57% versus 76%). This could possibly reflect bias in the reporting of this by the older elderly, who may be overlooking some of the things they did (quite some time ago) to prepare for old age. The near elderly group (50-59) is

characterized by a higher proportion preparing for old age than either younger or older age groups. The lower percentage that prepared for old age among younger cohorts (distant future elderly) likely reflects that they are still far from old age. Gender differences are minimal although those that are evident are in opposite directions among the present elderly and future elderly cohorts. Rural residents among the present elderly are less likely to have prepared for old age than their urban counterparts but this is less pronounced among those in the adult sample. Previous analysis indicates that the present elderly started making preparation for old age relatively late with about one-fifth starting only after reaching age of 60 and another one-third when they were in their 50s (Prachuabmoh 2009).

Examination of the specific types of preparation made reveals only small differences in the percent reporting each type ranging only from 34 for caregiver arrangements to 44 percent for physical health (not shown in table). The emphasis in the Second National Plan on the Elderly on health promotion and economic security, however, may be enhancing awareness of the need to prepare in these areas and explain why these are clearly the most common types of preparation reported by the adult sample.

In sum, preparation for old age among future cohorts of elderly of both sexes in Thailand appears to be expanding and starting earlier than was the case for the present elderly. However, the expected age to start preparation for the majority is still after the age of 40. Several types of preparation, such as those regarding health and savings, are best started earlier and sustained throughout adulthood. The government should incorporate efforts to encourage such preparation at an early age through both formal and informal educational channels. It should also promote realistic expectations regarding how much financial support can be expected from the various measures and programs that it is establishing. Given limited national financial resources and rapid growth in the number of older persons, a substantial degree of self-dependency and life style practices need to be encouraged. At the same time, the government should recognize its responsibility to provide assistance with respect to the needs that individuals, their families, and communities

cannot adequately provide by themselves. Given limited government resources, efforts will likely need to be targeted to those groups of elderly with greater need, such as the poor, the oldest old, or the disabled rather than to all elderly equally.

Conclusions and recommendations

Population ageing is well underway in Thailand driven largely by the past decline in fertility and the below replacement levels that have prevailed since. The size of older population and its share of the total have been increasing dramatically and will continue to do so in the coming decades. Sharp decreases are underway in the potential support ratio as the number of non-working seniors increases while the number of working age adults who typically provide support through taxes to pay for retirement

and health care benefits stagnates and then declines. These trends have important economic as well as social implications at the macro societal level, although their nature and extent remain a matter of debate. While many commentators stress the potential threats to economic growth and exacerbated competition between generations for resources, others take a more benign view, emphasizing compensating effects of low fertility. These include the reduced youth dependency ratio, increased female labor force participation and improved human capital accumulation that lower fertility likely promote as well as increased labor productivity from a better educated work force combined with technological advancements (e.g. Bloom, Canning and Fink 2009).

While such macro societal implications are of great importance, in this chapter we focus on the implications of trends at the family level. We view

TABLE 3.14 PERCENT WHO MADE ANY PREPARATION FOR OLD AGE BY AGE GROUP, GENDER AND AREA, THAILAND, 2007

Age	Percent who prepared for old age				
	Total	Gender		Area	
		Males	Females	Rural	Urban
<20	57.1	50.7	63.6	57.0	57.3
20-29	63.5	62.5	64.2	63.2	63.7
30-39	75.1	72.3	77.5	75.3	74.9
40-49	79.7	78.7	80.6	78.5	81.6
50-59	85.5	84.0	86.8	83.9	87.8
Total for future elderly (aged 18-59)	75.8	74.1	77.3	76.0	75.6
60-69	64.0	65.3	63.0	63.0	66.7
70-79	48.1	49.3	47.2	45.4	55.0
80+	40.3	42.5	39.0	38.3	45.2
Total for present elderly (aged 60+)	56.7	58.5	55.3	55.0	60.9

Note: Preparation for old age refers to preparing in at least one of the following five areas: finance, living arrangements, physical health, care giver arrangement and spiritual practice.

Sources: 2007 Survey of Knowledge and Attitudes on Elderly Issues among Population Age 18-59; 2007 Survey of Older Persons in Thailand.

such a focus as appropriate given that traditionally primary responsibility for the care and support of older persons and hence their well being lay with the family through a system defined mainly in terms of filial obligations of adult children. In particular, we examine the trends and potential implications of two demographic trends that are commonly cited as threatening family support for the elderly: 1) the decline in the number of living children of older persons brought about through cohort succession and 2) the increasing dispersion of adult children away from their parents' locality due to migration typically related to employment opportunities. Together, these trends are resulting in continuing change in the living arrangements of older persons including a decline in coresidence with a child among persons 60 and older from 77% in 1986 to 59% by 2007.

There are several important issues that contribute to uncertainty when attempting to assess implications of population ageing at the family or societal level. The economic, social, political and technological environments in which Thais live out their lives are constantly changing, often in substantial ways. In addition, future elderly will differ considerably from those of today. They will be better educated, likely in better health, and far more will be covered by some form of formal retirement benefits. Given a strong association between health and education, the higher educational attainment that will characterize future older age cohorts should reinforce the trend towards better health. It also appears that an increasing number will have made preparations for old age in a variety of ways. At the same time, a growing proportion of elderly in the future will have never married and among those who have married more may remain childless. Finally, it is critical to recognize that parents and their adult children as well as those who will be childless in old age are unlikely to stand by passively as the world about them changes. Instead, they will exercise human agency to minimize negative impacts and maximize potential benefits, thereby modifying their current arrangements to adapt to new circumstances.

Despite these sources of uncertainty, it is safe to assume that the implications of demographic change for the existing family support system differ by type of support and services under consideration and thus so will the need for related government responses. So far filial material support shows

only modest decline. Financial support does not require physical proximity and the size of monetary contributions appears to be enhanced by the better employment opportunities that migration can facilitate. Thus greater dispersion of children may well not threaten filial financial support. Although older persons with larger numbers of children are somewhat more likely to receive financial support, they are somewhat less likely to indicate that their economic situation is better than those with few children. While the underlying mechanisms for these seemingly anomalous findings remain unclear, restricting family size may permit greater wealth accumulation and thus compensate for fewer children to provide material support.

An important caveat to the suggestion that the threats to filial material support are modest is that reductions in family size of the future elderly will be far more drastic than has occurred so far and be accompanied by even greater geographical dispersion of adult children. Hence past trends may not be appropriate as guides to the future. Still, the higher education and changing employment patterns of adult children may improve their ability to provide financial support and compensate for their lesser numbers. In addition, the expansion of retirement coverage of future older persons through the Old Age Pension Fund under Social Security as well as new government initiatives underway or being planned can also help compensate for any declines in filial material support. Increased formal support can also be important to counteract the increased proportion who are childless and thus for whom filial support is clearly unavailable.

Another approach to promote material well-being among older persons is to increase the proportions that remain economically active and thus contribute to their support through their own work. One positive trend that should facilitate this possibility is improving health of older persons. The possibility of extending the official retirement age from 60 to 65 has received some attention as a way to increase work among the 60-64 age group. However the impact of such a change is likely to be quite modest since, as already noted, only a minority of the population, primarily those in government employment, is subject to a mandatory retirement age. Moreover, a more general barrier to expanding employment is that the large majority of older persons who are not economically active express

a lack of willingness to work. Research is needed into the reasons that underlie the lack of interest in working among older persons and whether or not the causes can be addressed. In addition, with respect to formal sector jobs, assessments are needed of the willingness of employers to hire or retain older workers. Possibly more flexible work conditions could be developed that would meet the concerns of both parties. These might include options for part-time employment, flexible hours, and adjusting compensation to productivity rather than being based on seniority. Also within the informal sector, income generation activities through community-based cottage industry could be organized through Old Persons Associations with government or NGO guidance to provide at least a supplemental source of livelihood (Fujioka & Thangphet 2009).

With respect to social support, frequent face-to-face interaction requires some level of physical proximity. Yet distance does not prevent contact in other forms. Advances in communications technology, especially the spread of cell phones, has made such contact far more possible currently than just a decade or so earlier. Phone contact has been replacing and complementing face-to-face interactions. Future advances in communication technology as well as the spread of home computers are likely to increase the ability of parents to keep in touch with their adult children who live at a distance and further mitigate the effect of increased dispersion of adult children on social support. Efforts by the government and NGOs to encourage and improve computer literacy among older persons and those soon to reach old age could usefully contribute to this end which in any event will be facilitated by the increased educational attainment of the cohorts that will be entering old age. In addition, measures to expand community based social support outside the family deserve consideration including strengthening Older Persons Associations (OPA).

Personal care clearly requires physical presence. It can and often is provided by a spouse. If a spouse or other relative is unavailable and no children live nearby, short term care associated with acute illness or other brief emergencies could still be provided by a child as long as temporary leaves of absence from employment are possible. The need for long term personal care from an adult child that arises

when severe disability, serious chronic illnesses, or advanced frailty set in, however, present the greatest challenge in the face of smaller family sizes, the greater dispersion of adult children, and increased proportions who have no children. How both future older persons and their children anticipate dealing with the potential need for long term care is an important question needing study.

The Thai government is clearly aware of the challenge that long term care arrangements in the context of reduced availability of family assistance poses and is actively experimenting with pilot programs to promote community based home care assistance through either paid or non-paid volunteers. This could prove to be an effective strategy to help meet the need for assistance with instrumental activities such as meal preparation, shopping and cleaning that are typically required only on a part time basis. It is harder, however, to see this as a realistic solution when personal care is required on a sustained full time basis as would be the case for those who suffer serious chronic illnesses, are bedridden or severely disabled (Chen & Thompson 2010).

Hired full time help with eldercare is likely on the rise in urban areas among middle class families in which a child is coresident or lives nearby but needs to work outside the home. Such services and the private agencies that offer or arrange them are largely unregulated, a matter that deserves government attention (Jitapunkul et al. 2008). While full time hired help is one solution to long term care, it is an option only for families with sufficient incomes. Moreover, attitudinal data suggest that many elders still believe that if no child is present when the need for long term care arises, at least one should return to provide care rather than hiring someone else to do so (Knodel et al. 2007). If the government could promote 'elder care leave policies' in employment contracts it might help provide a partial solution to this dilemma. At a minimum, leave for short term elder care when needed in association with acute illness or other short term health problems should be institutionalized. Getting employers to institute policies that permit longer term leaves of absence for eldercare will be more difficult. In addition, more in-depth studies of attitudes towards non-familial personal care arrangements and how to overcome

barriers to their acceptability would be helpful in guiding their likely expansion.

While meeting long term care needs either through family or non-family means, it is important to recognize that in most cases, severe disability that causes the need for long term care generally characterizes only a relatively short period of the full elderly age span (Knodel & Chayovan 2008). One strategy for coping with the need for such care is to lengthen the period during which older persons can function independently. This could be done through strategic health interventions targeting treatable problems that cause disability. A prime example is the government's eye surgery program that has targeted cataracts and has greatly improved vision of older persons (Jenchitr & Pongprayoon 2003).

Also promising for shortening the period when long term care is needed would be efforts to promote modifications in the home physical environment such as installing ramps and hand rails as well as increasing the use of equipment aids to enable mobility and the performance daily living activities. This would not only facilitate independent living but also help prevent accidents. In cases where the expense of such modifications or assistive aids is beyond the family's financial ability, government subsidies may be necessary. Such assistance might pay for itself through savings in health care costs that result.

Considerable progress is being made in the development of assistive technologies including emergency alert systems. Already major advances have been made in technology that enables adult children to monitor their elderly parents' situation and activities from a distance (Taub 2010). In

the US, these technologies are starting to make it possible for elderly people to stay in their homes without a hired or family caregiver rather than move to an assisted-living facility or nursing home. Although such technologies may be impractical for Thailand at this point due to cost and degree of sophistication necessary to implement them, this could change in the future as costs go down and incomes and educational levels in Thailand increase. At a minimum they illustrate that the implications of population ageing for Thailand in the coming decades will play out in a changing context and are unlikely to be accurately assessed simply by extrapolating past trends or based on the current context in which it is taking place.

Given the substantial changes that continue to take place in the economy and broader society in Thailand, an assessment of the implications of any one aspect of that change such as population ageing is necessarily subject to considerable uncertainty. Thus the forgoing analyses serve more to raise issues for consideration than permit clear answers to what the future holds and how to deal with it. Some issues related to ageing are suitably addressed by broad policies and programs that encompass most or even all older persons. Many others will require taking into account the differential needs among various subgroups such as demarcated by age, gender, marital status, education and area of residence. The evidence so far clearly points to greater needs on a variety of fronts that are associated with more advanced age, rural residence and poverty status. Continuing to monitor the situation of older Thais is essential to keep such programs targeted appropriately and help ensure their effectiveness and affordability.



Demographic and Health Transition: Health Systems Challenges and Future Direction

As noted earlier in the report, Thailand has undergone rapid demographic and epidemiological transition during the last 20 years. The national population policy, in concert with socio-economic development over the period, brought down total fertility rate below the replacement level in the 1990s (Van Landingham and Hirschman, 2001; Greenspan, 1994). By 2002 universal health coverage was achieved (Tangcharoensathien et al, 2009) whereby the whole population was covered by one of the three public insurance schemes. Undeniably, the national family planning program contributed to successful health development in Thailand (Patcharanarumol et al, 2010).

In the light of the increase in number of elderly and prevalence of chronic non-communicable diseases (NCD), this chapter (1) investigates the profile of the burden of diseases—as measured by Disability Adjusted Life Year (DALY) loss among pre-elderly compared to the elderly, self assessed health status and effective coverage of essential interventions for chronic NCD; (2) reviews outpatient and inpatient utilization rates between 2002 and 2009, and estimates total expenditure on outpatient and inpatient services for the pre-elderly and elderly from 2008 to 2015; (3) reviews the current situation of the health workforce in providing care to the elderly, and estimates future demand and current production capacities of carers for the elderly. In this review, the pre-elderly group (45-59 years) is compared with three subgroups of elderly, 60-69, 70-79 and 80+ years. Based on this review, policies are recommended on health delivery systems, financing and health personnel

in order to respond to changing demand posed by demographic and epidemiologic transition.

Profile of the burden of disease

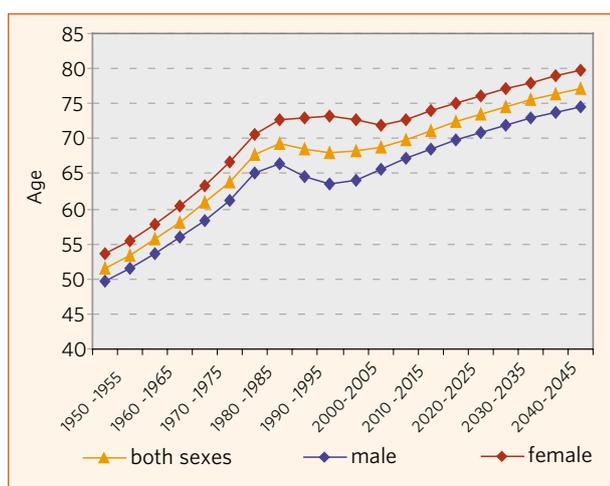
Trend and profile of demographic and epidemiological transition

Life expectancy in Thailand has increased substantially from 1950 to 1980 with a slightly different pace of achievement between men and women (Figure 4.1). An actual decline in life expectancy was observed among men for a decade, between 1995 and 2005; but men started to catch up thereafter. Female life expectancy rose rapidly from 1950 until 1990 when stagnation was observed up to 2010, though there was no drop as observed for men. It was projected to grow from 2010 at a similar speed to men's (see Figure 4.1).

Between 1975 and 1985, average life expectancy increased by 4 years for both women and men. The increase in life expectancy before 1985 could primarily be attributed to a rapid decline in the infant mortality rate over that time. Along with declining fertility, this resulted in rapid demographic change (Knodel & Chayovan, 2008). After 1990, the interruption in the increase in life expectancy probably resulted mainly from the HIV/AIDS epidemic (Tantivess and Walt, 2008) but also from traffic injuries (Patcharanarumol et al, 2010). The improvement in life expectancy thereafter is a result of successful HIV/AIDS prevention when the epidemic started to reverse around the late 1990s.

While longevity is on the rise, this does not always mean that the years gained are lived in healthiness. Katz and others (1983) developed the concept of active life expectancy to measure expected years of life in a healthy state. According to this concept, differences between active life expectancy and overall life expectancy indicate the losses of healthy years due to poor health or disability.

FIGURE 4.1 LIFE EXPECTANCY AT BIRTH OF THAI POPULATION, 1955-2050



Source United Nations Population Division (2008) using constant fertility rate

Evidence is inconclusive as to whether healthy year losses of Thai older people have been decreasing over the period. The series of studies are not comparable due to changes in methodological approaches (Thai Health Research Institute, 1992; NSO: 1994, 2002, 2007; MOPH: 1997, 2004). In addition, the disability survey, with changes in sampling methods and definition, showed increasing prevalence of disability (NSO: 1986, 2002, 2007).

Burden of disease in pre-elderly and elderly

A widely accepted measurement of burden of diseases is the application of Disability Adjusted Life Years (DALY) introduced in 1999 by WHO aiming at international comparison. DALY is the combination of number of years of life losses—YLL—due to premature deaths, and years living with disability—YLD. Fatal and non-fatal health outcomes are measured in a comparable unit, i.e. equivalent healthy years.

The disease burden as measured by DALY losses for the Thai population in 2004 (The Thai Working Group on Burden of Disease, 2008) is examined for the pre-elderly (45-59 years) and elderly (60 years and over) (Tables 4.1-4.4).

TABLE 4.1 TOP TEN DALY BY DISEASE CATEGORY IN PRE-ELDERLY (45-59 YEARS), 2004

Rank	Disease category	Male		Female		Disease category
		DALY per 1,000	YLD/DALY (%)	DALY per 1,000	YLD/DALY (%)	
1	Cancer	47	2	34	3	Cancer
2	Cardiovascular diseases	36	15	23	17	Cardiovascular diseases
3	Unintentional injuries	26	10	18	97	Mental disorders
4	HIV/AIDS	22	0	16	39	Diabetes
5	Mental disorders	22	91	15	89	Musculo-skeletal diseases
6	Digestive disorders	17	8	8	11	Unintentional injuries
7	Genito-urinary diseases	11	51	7	23	Infectious diseases
8	Diabetes	11	42	7	14	Digestive disorders
9	Musculo-skeletal diseases	11	91	7	0	HIV/AIDS
10	Infectious diseases	10	12	7	65	Chronic respiratory diseases
11	All others	33	42	26	55	All others
	Total	246	26	167	39	

Source: The Thai Working Group on Burden of Disease 2004 (2008)

In Table 4.1, DALY loss in pre-ageing women is smaller, 167 per 1,000 women than for men, 246 per 1000 men. Cancer and cardiovascular diseases are the two major causes of loss in both men and women 45-59 years. The percent of YLD to DALY reflects the magnitude of non-fatal loss, for example, 0% for HIV/AIDS means the DALY loss is all fatal loss. The larger the percentage is, the more the health care burden from non-fatal conditions.

As shown in Table 4.2, unlike the burden among pre-elderly adults, the burden among older people (60 years and over) shows little gender difference-422 per 1000 women and 460 per 1000 men.

The profile of the burden in the pre-elderly and elderly groups showed a large increase for some particular diseases. Cardiovascular diseases ranks first among the elderly group, being three to four times higher compared to the pre-elderly group in both men and women, as measured by DALY loss per 1000 population. Cancer ranks second after cardiovascular diseases. The burden from cancer among the elderly group is double that of the pre-elderly. HIV/AIDS, which was among the top ten causes of DALY losses in the pre-elderly

group, disappeared from the top ten list among the elderly group. Conditions which replaced these two disease categories in the top ten list among the elderly population were disorders of sensory organs such as vision and hearing loss and neurological disorders such as dementia. This reflects the frequent development of degenerative conditions during the ageing process.

Disorders of the sensory organs rank fourth in the top ten DALY losses among older people and have a wholly non-fatal burden. Cataracts were the largest cause of disability in this disease group. In 2009, cataracts were diagnosed in 18% and 24% of men and women respectively (Ekpalakorn et al, 2009). Older people living in rural areas showed higher prevalence than those in the urban areas. Approximately 57% and 50% of men and women diagnosed with cataract received treatment respectively. Hearing loss was found to be a problem for 30% and 26% of older men and women respectively. Those with severe problem such as cannot hear in at least one ear were 5% and 3% in older men and women respectively. They have limited access to elderly support and services, as evident from the fact that only 3% and 2% of them were using hearing aids, respectively.

TABLE 4.2 TOP TEN DALY BY DISEASE CATEGORY AT AGE 60 YEARS AND OVER (2004)

Rank	Disease category	Male		Female		Disease category
		DALY per 1,000	YLD/DALY (%)	DALY per 1,000	YLD/DALY (%)	
1	Cardiovascular diseases	100	10	97	9	Cardiovascular diseases
2	Cancer	99	2	66	3	Cancer
3	Chronic respiratory diseases	48	26	44	28	Diabetes
4	Sense disorders	33	100	37	100	Sense disorders
5	Diabetes	25	28	27	9	Infectious diseases
6	Infectious diseases	25	10	26	80	Neurological disorders
7	Digestive disorders	22	12	22	34	Chronic respiratory diseases
8	Genito-urinary diseases	20	32	21	79	Musculo-skeletal diseases
9	Unintentional injuries	19	7	18	13	Digestive disorders
10	Neurological disorders	17	77	15	6	Genito-urinary diseases
11	Others	53	47	50	35	All others
	Total	460	25	422	30	

Source: The Thai Working Group on Burden of Disease 2004 (2008)

TABLE 4.3 DALY PROFILE OF PRE-ELDERLY AND ELDERLY MEN, 2004

Rank	Male age 45-59		Male Age 60-69		Male Age 70-79		Male age80+	
	Disease category	DALY (% of Total)	Disease category	DALY (% of Total)	Disease category	DALY (% of Total)	Disease category	DALY (% of Total)
1	Cancer	19%	Cancer	24%	Cardiovascular diseases	22%	Cardiovascular diseases	25%
2	Cardiovascular diseases	15%	Cardiovascular diseases	21%	Cancer	20%	Chronic respiratory diseases	15%
3	Unintentional injuries	11%	Chronic respiratory diseases	8%	Chronic respiratory diseases	11%	Cancer	15%
4	HIV/AIDS	9%	Sense disorders	7%	Sense disorders	8%	Infectious diseases	7%
5	Mental disorders	9%	Diabetes	6%	Infectious diseases	6%	Neurological disorders	7%
6	Digestive disorders	7%	Unintentional injuries	5%	Diabetes	5%	Sense disorders	5%
7	Genito-urinary diseases	4%	Infectious diseases	5%	Digestive disorders	5%	Diabetes	5%
8	Diabetes	4%	Digestive disorders	5%	Neurological disorders	4%	Genito-urinary diseases	5%
9	Musculo-skeletal diseases	4%	Musculo-skeletal diseases	4%	Genito-urinary diseases	4%	Respiratory infections	5%
10	Infectious diseases	4%	Genito-urinary diseases	4%	Unintentional injuries	3%	Digestive disorders	5%
	Top five	63%		66%		67%		69%
	Top ten	87%		89%		89%		93%
	All others	13%		11%		11%		7%
	Total %	100%		100%		100%		100%
	Total DALY per 1000	246		389		535		654

Source: The Thai Working Group on Burden of Disease 2004 (2008)

Table 4.3 compares the burden profile between pre-elderly and three groups of elderly males. Total DALY per 1000 men increased consistently with age, from 246 per 1000 in the pre-elderly group to 654 per 1000 in the oldest group of >80 years old. Interestingly, the top ten disease categories had the lion's share: between 87% of total DALY rate among the pre-elderly group, and 93% of total DALY loss among the very old. Indeed, there

is a heavy concentration in the top five disease categories which constitute around two thirds of total DALY per 1000.

Except in pre-elderly men, the top three disease categories in men are the same: prevention of cancers, cardiovascular and chronic respiratory diseases, thus requiring major policy attention in maintaining healthy ageing.

TABLE 4.4 DALY PROFILE PRE-ELDERLY AND ELDERLY WOMEN, 2004

Rank	Female age 45-59		Female Age 60-69		Female Age 70-79		Female age80+	
	Disease category	DALY (% of Total)						
1	Cancer	20%	Cancer	19%	Cardiovascular diseases	24%	Cardiovascular diseases	32%
2	Cardiovascular diseases	14%	Cardiovascular diseases	19%	Cancer	15%	Cancer	10%
3	Mental disorders	11%	Diabetes	13%	Diabetes	10%	Neurological disorders	10%
4	Diabetes	10%	Sense disorders	10%	Sense disorders	9%	Infectious diseases	9%
5	Musculo-skeletal diseases	9%	Musculo-skeletal diseases	6%	Infectious diseases	7%	Chronic respiratory diseases	6%
6	Unintentional injuries	5%	Chronic respiratory diseases	5%	Neurological disorders	7%	Diabetes	6%
7	Infectious diseases	4%	Infectious diseases	5%	Chronic respiratory diseases	5%	Sense disorders	5%
8	Digestive disorders	4%	Neurological disorders	4%	Musculo-skeletal diseases	5%	Respiratory infections	5%
9	HIV/AIDS	4%	Digestive disorders	4%	Digestive disorders	4%	Digestive disorders	4%
10	Chronic respiratory diseases	4%	Genito-urinary diseases	3%	Genito-urinary diseases	3%	Genito-urinary diseases	4%
	Top five	64%		67%		65%		67%
	Top ten	85%		88%		89%		91%
	All others	15%		12%		11%		9%
	Total %	100%		100%		100%		100%
	Total DALY per 1000	167		329		495		645

Source: The Thai Working Group on Burden of Disease 2004 (2008)

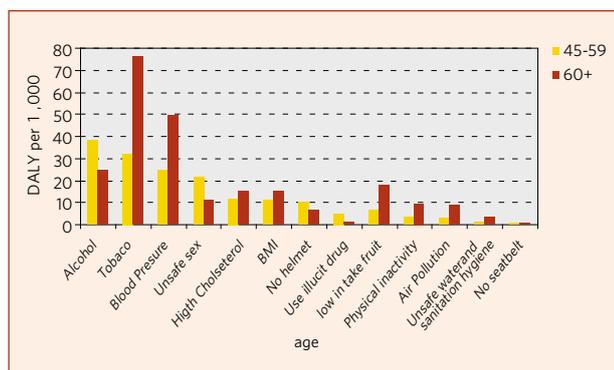
Table 4.4 compares the burden profile between pre-elderly and three groups of elderly women. Total DALY per 1000 women increased consistently by age, from 167 per 1000 in the pre-elderly group to 645 per 1000 in the oldest group.

The top ten disease categories had the lion's share-between 85% of total DALY rate among the pre-elderly group and 91% of total DALY loss among the very old. The top five disease categories make up around two thirds of total DALY per 1000. The top causes of DALY loss among Thai women in all four age groups are cancers, cardiovascular disease and diabetes. In achieving healthy ageing, policy should focus on prevention of these three

diseases. Note that diabetes is more common among women than men.

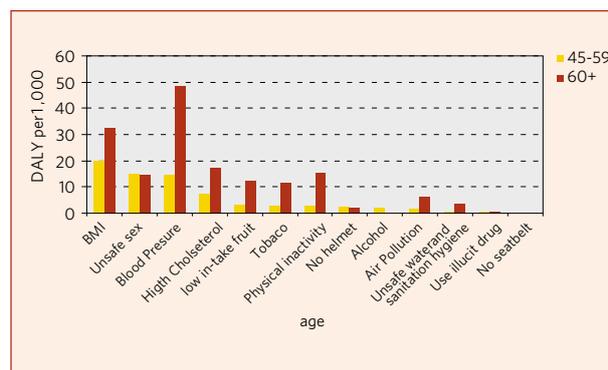
Comparing the risk burden between pre-elderly and elderly people, risk profile is concurrent with disease burden. The burden attributable to physiochemical risks such as high blood pressure, high BMI, and cholesterol is noticeably higher in elderly people than in the pre-elderly group. By contrast, the burden attributable to alcohol is lower in the elderly than the pre-elderly group. Hypertension and diabetes are major risk burdens among elderly women while tobacco and hypertension are major risks among older men. Elderly women had a higher risk burden from high BMI than men (See Figures 4.2 and 4.3).

FIGURE 4.2 RISK BURDEN AMONG PRE-ELDERLY AND ELDERLY MEN



Source: The Thai Working Group on Burden of Disease 2004 (2008)

FIGURE 4.3 RISK BURDEN AMONG PRE-ELDERLY AND ELDERLY WOMEN



Source: The Thai Working Group on Burden of Disease 2004 (2008)

TABLE 4.5 EFFECTIVE COVERAGE OF HYPERTENSION SERVICES (%)

	45-59		60-69		70-79		80+	
	2004	2009	2004	2009	2004	2009	2004	2009
Male								
Prevalence, %	36	28	47	43	52	51	59	54
• not aware	74	59	61	45	62	38	65	47
• know but do not treat	6	11	8	9	7	6	4	6
• treat but uncontrolled	14	17	22	25	20	23	23	23
• treat controlled	6	13	10	22	11	25	9	25
Female								
Prevalence, %	34	31	48	45	54	52	62	57
• not aware	59	42	52	32	50	33	61	37
• know but do not treat	6	7	7	7	7	7	8	8
• treat but uncontrolled	22	23	26	27	28	33	20	32
• treat controlled	13	28	15	34	15	28	11	23

Source: NHES (2004, 2009)

Effective coverage of services for selected non-communicable disease (NCD) conditions

Despite the high level of risk burden from hypertension and diabetes, a high proportion of elderly were unaware of their high blood pressure. For those who were treated with anti-hypertensive medicines, the proportion of well controlled blood pressure was low. Age-adjusted prevalence of hypertension among the elderly was 51.1 percent,

diabetes mellitus 14.0 percent, and diabetes mellitus with hypertension 8.0 percent.

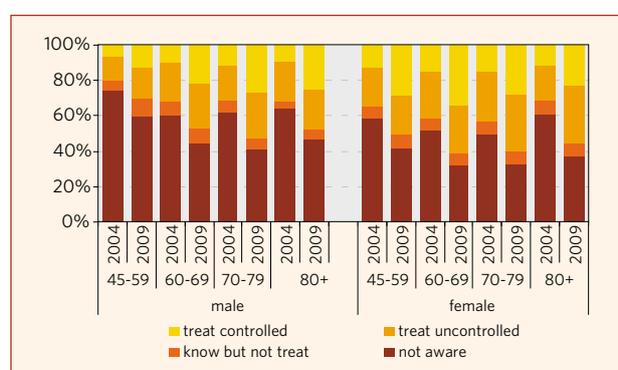
Effective coverage means the net proportion of population affected by a condition which had adequate control of the condition. This excludes the proportion who are (a) not aware of the condition and thus did not access treatment, (b) aware but did not access treatment, (c) aware, accessed treatment but the condition was poorly controlled. Overall, the proportion of those suffering from high blood pressure, diabetes mellitus or the combined

two conditions who were unaware of their condition was 56.1, 41.2 and 21.9 percent respectively. The proportion of adequate control for those undergoing treatment for blood pressure (less than 140/90 mmHg) was 12.4 percent, diabetes mellitus (fasting plasma glucose less than 140 mg/dl) 26.4 percent, and control of both combined conditions was 7.4 percent. These figures indicate level of effective coverage of interventions.

Comparing the 2004 with the 2009 National Health Examination Survey (NHES), it is clear that the proportion of treated and controlled groups in both hypertension and diabetes has increased in

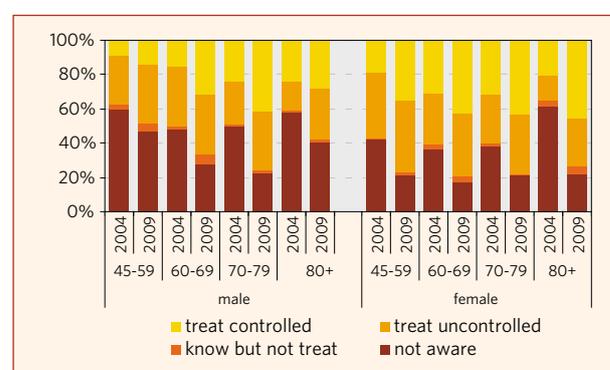
2009 (see Tables 4.5 and 4.6 and Figures 4.4 and 4.5). People with hypertension and diabetes (DM) were more aware of their condition than in the previous survey. However, those who underwent treatment but failed to control their conditions were still high. This reflects better access to treatment in 2009 but still poorer control of the conditions. Increase in awareness could partly be explained by improvement in socioeconomic conditions, as it was found that factors associated with unawareness and inadequate controls of the illnesses were living in rural areas, with low income, low educational levels, currently working and the oldest age group (Porapakham et al, 2008).

FIGURE 4.4 EFFECTIVE COVERAGE OF HYPERTENSION SERVICES



Source: NHES (2004, 2009)

FIGURE 4.5 EFFECTIVE COVERAGE OF DIABETIC SERVICES



Source: NHES (2004, 2009)

TABLE 4.6 EFFECTIVE COVERAGE OF DIABETIC SERVICES (%)

	45-59		60-69		70-79		80+	
	2004	2009	2004	2009	2004	2009	2004	2009
Male								
Prevalence, %	11	9	14	14	12	14	10	13
• not aware	60	47	48	28	50	23	58	41
• know but do not treat	3	5	2	6	1	2	1	2
• treat but uncontrolled	28	34	35	34	25	34	17	30
• treat controlled	9	14	15	32	24	41	24	28
Female								
Prevalence, %	13	12	19	19	16	17	9	11
• not aware	42	21	37	18	38	21	62	22
• know but do not treat	1	2	3	2	2	1	4	5
• treat but uncontrolled	38	43	30	37	28	35	14	28
• treat controlled	19	35	31	43	32	43	21	46

Source: NHES (2004, 2009)

Self-perceived health

A comparison of self-perceived reported health status between 2003 and 2006 shows that for most of the measurements, health is improving (see Tables 4.7 and 4.8). Memory loss is rapidly

increasing in the very old group, compared to other functions which gradually increase with ageing. An effective prevention and promotion program for the pre-ageing group in this area could be expected to reduce the burden in the future.

TABLE 4.7 SELF REPORTED HEALTH STATUS, STATUS RELATIVE TO PEERS, COMPARING 2003 AND 2006

		Age group	2003 (%)	2006 (%)	Change between 2003-2006 (%)
Poorer health than last year	male	45-59	25	24	-2
		60-69	40	39	-4
		70-79	50	47	-7
		80+	60	58	-3
	female	45-59	30	29	-4
		60-69	48	46	-4
		70-79	55	52	-6
		80+	64	59	-7
Poorer health compare with peers	male	45-59	14	17	19
		60-69	23	24	8
		70-79	29	30	3
		80+	33	35	8
	female	45-59	19	20	3
		60-69	29	30	3
		70-79	31	34	10
		80+	30	34	10

Source: Health and Welfare Survey (2003, 2006)

TABLE 4.8 FIVE DIMENSIONS OF LIMITATION, BY GENDER, COMPARING 2003 AND 2006

Severe to very severe limitation		Age group	2003 (%)	2006 (%)	Change between 2003-2006, %
Mobility	Male	45-59	3	2	-53
		60-69	7	4	-43
		70-79	12	6	-53
		80+	19	10	-46
	Female	45-59	4	2	-52
		60-69	11	4	-63
		70-79	13	9	-29
		80+	22	11	-50
Pain, discomfort	Male	45-59	3	2	-17
		60-69	5	2	-55
		70-79	9	4	-49
		80+	15	8	-45

Severe to very severe limitation		Age group	2003 (%)	2006 (%)	Change between 2003-2006, %
	Female	45-59	3	2	-27
		60-69	8	3	-58
		70-79	9	6	-32
		80+	12	10	-18
Depression	Male	45-59	2	2	3
		60-69	3	3	-15
		70-79	5	4	-8
		80+	7	4	-39
	Female	45-59	3	3	1
		60-69	6	4	-35
		70-79	6	3	-41
		80+	9	2	-74
Concentration	Male	45-59	1	1	-7
		60-69	3	3	-10
		70-79	7	7	9
		80+	17	11	-36
	Female	45-59	2	2	-12
		60-69	4	4	-7
		70-79	9	8	-4
		80+	16	12	-25
Participation	Male	45-59	2	1	-63
		60-69	3	2	-54
		70-79	6	6	2
		80+	19	11	-41
	Female	45-59	1	1	-32
		60-69	3	2	-34
		70-79	8	6	-25
		80+	19	14	-23

Source: Health and Welfare Survey (2003, 2006)

Limitation of daily activities

Studies show that limitation in activities of daily living (ADL) increases with age. The 4th NHES shows that both limitations measured by ADL and instrumental activities of daily living (IADL) increased with age (Table 4.9). Women have higher limitation than men as measured by proportion having limitation in at least three out of the eight ADL dimensions: (1) bathing, (2) dressing, (3) eating, (4) toileting, (5) getting up from bed, (6) in-house walking, (7) bowel and (8) urine control and the ten activities of

IADL: using money, self-medication, light and hard housework, cutting own foot nail, walking outside the house, carrying heavy things, walking over 400 metres, transportation, telephoning, particularly at ages 80 and over. IADL impairment in total was double among women compared to men. Although self perceived health generally decreased from 2003 to 2006, Ekpalakorn et al (2010) compared ADL limitation of 2 activities and more to the 3rd NHES and found that it increased from 9.6 and 15.4 per cent in 2004 to 12.7 and 17.8 percent in 2009 in men and women respectively.

TABLE 4.9 OLDER PERSONS WITH ONE OR MORE ADL LIMITATION (%)

Age	ADL Limitation					
	Male			Female		
	1	2	3+	1	2	3+
60-69	5.8	4.8	0.7	7.6	6.3	0.6
70-79	4.8	7.7	1.7	9	11.2	1.2
80+	7	9.8	4.2	12.8	11.8	6.8
Total	5.6	6.3	1.4	8.6	8.6	1.5

Age	IADL Limitation					
	male			Female		
	1	2	3+	1	2	3+
60-69	19.9	6.4	6.5	23	12.8	19.5
70-79	21.6	9.3	19.1	22.3	14.5	39
80+	18.5	15.8	38.3	14.1	14.3	59.6
Total	20.4	8.3	14	21.8	13.5	30.5

Source: NHES (2009, p 252-53)

Health care utilization and expenditure

Health services utilization rate

Figure 4.6 shows outpatient utilization rate per capita per annum from 2003 to 2009, using National Statistical Office Health and Welfare Surveys (HWS). Not unexpectedly, use rates among elderly, 60-69, 70-79 and 80+ are much higher than the national average, up to more than 12 visits per year for 80+ groups in 2009. The use rate among the pre-elderly group, 45-59 years old is lower than the elderly group and much higher than the national average. Adults aged 15-44 years have the lowest utilization rate.

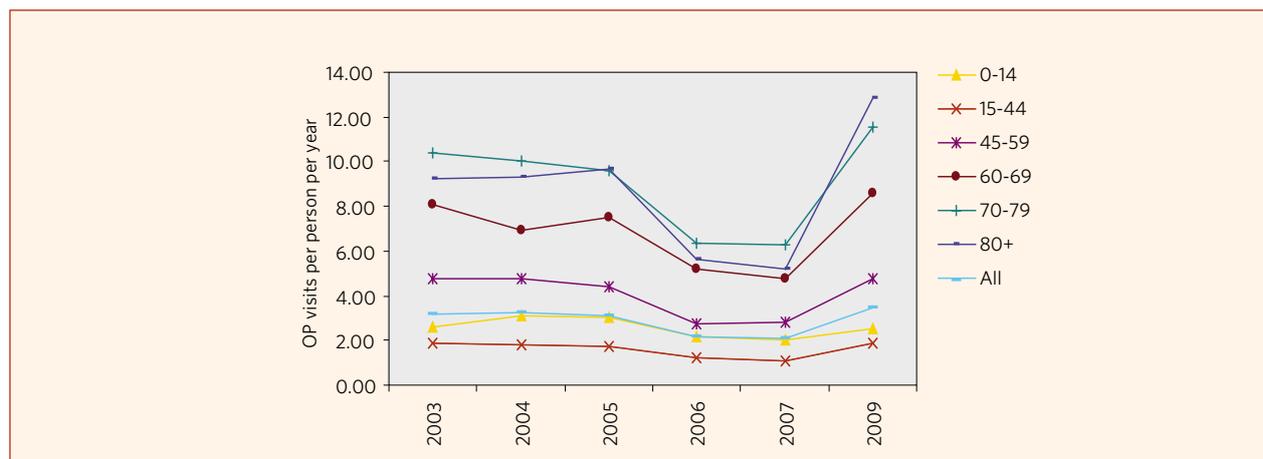
Unfortunately due to changes in the survey, in 2006 and 2007 HWS were combined with Socio-economic survey (SES). This resulted in a bulky interview questionnaire, in which the HWS module was interviewed at the end when household respondents were exhausted. The combined, lengthy

survey, more than 2 hours per household jeopardized the quality and reliability of HWS. In 2006 and 2007, there was a sharp drop in outpatient use rates despite the fact that routine administrative data show consistent increase over these years.

Having realized the reliability problem resulting from the combined HWS and SES, NSO decided to make HWS a stand alone survey from 2009 onward. Note that the annual HWS between 2003 and 2007 was conducted upon requests by the MOPH to assess the outcome of universal health coverage policy. After 2007, HWS has become a biennial survey; hence there are no figures for 2008 in Figure 4.6.

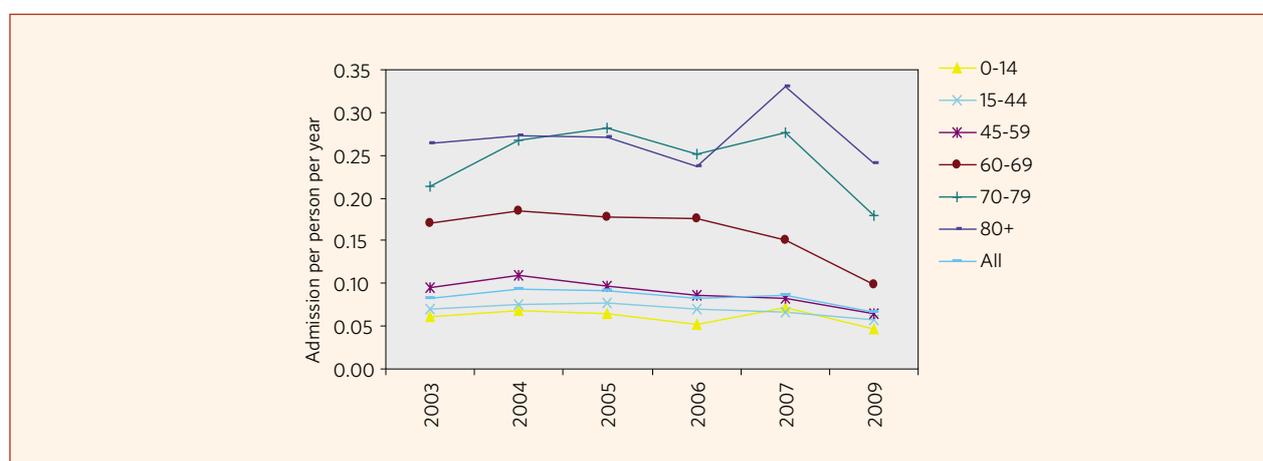
Figures for hospital admissions per capita per annum by age group also confirmed higher rates among the elderly than the national average. Due to problems of combining two surveys in one questionnaire, the admission rates for 2006, 2007 and 2009 should be interpreted with care (see Figure 4.7).

FIGURE 4.6 OLDER PERSONS USE RATE, VISIT PER PERSON PER YEAR, BY AGE GROUP, 2003-2009.



Source: Health and Welfare Survey (2003, 2006)

FIGURE 4.7 HOSPITAL ADMISSION RATE, PER PERSON PER YEAR, BY AGE GROUP, 2003-2009.



Source: Health and Welfare Survey (2003, 2006)

TABLE 4.10 AVERAGE LENGTH OF STAY FOR IN-PATIENTS BY AGE GROUP, 2003-2009

Age group	2003	2004	2005	2006	2007	2009
• 0-14	3.54	3.32	3.31	3.95	2.60	3.59
• 15-44	4.74	4.27	4.11	4.51	4.19	4.16
Pre-elderly						
• 45-49	5.87	4.71	4.98	4.80	4.15	4.37
Elderly						
• 60-69	3.88	4.04	4.13	3.53	3.53	6.34
• 70-79	4.60	4.22	4.28	4.45	3.08	4.10
• 80+	3.70	5.36	4.35	4.58	3.56	3.81
All	4.58	4.19	4.15	4.35	3.66	4.30

Source: HWS 2003-2009

Although it is likely that the elderly patients had a longer stay as in-patients in 2009, there is no clear pattern in the average length of stay by age group as different levels of hospitals admitted patients differently (see Table 4.10).

Health expenditure by the elderly

The objective of this section is to project into the future the amount of financial resources that would be spent on elderly groups compared to all other age groups. The downward trend of outpatient and inpatient use rate in 2006-2009 complicates the authors' attempts to project utilization rate of the pre-elderly and elderly groups into the future. Given these limitations, the feasible methodological approaches are;

1. Use the existing long term projection of Total Health Expenditure between 2007 and 2020 which utilizes the 1994-2006 National Health Account as a major platform.
2. Break down the projection of total health expenditure into personal and non-personal health care using data of National Health Account 2008.
3. For personal healthcare expenditure, further break down by age group using the proportion of charge for inpatient services by age group; by assuming the charge profile by age group of outpatients is similar to inpatient services. This is because of lack of data on outpatients.

Using national admission dataset on individual patient electronic records held by the National

Health Security Office for admission by three public insurance schemes (Civil Servant Medical Benefit Scheme, Social Health Insurance and Universal Coverage) in public and private hospitals, Table 4.11 analyzes charges to services rendered to each age group in 2007, 2008 and 2009 respectively. Number of admissions had a minimum increase from 6.41 million in 2007 to 6.56 million admissions in 2009. At the same time charges to patients increased from 70 billion baht in 2007 to 81 billion baht in 2009. Although the patients did not pay, as the three public health insurance schemes are the purchasers of services and pay on their behalf based on different provider payment methods, hospitals are required to report their charge data to insurance Funds. Average charge per admission also increased from 11,009 baht per admission in 2007 to 12,349 baht per admission in 2009. The average charge per admission among the elderly was more expensive than for other groups. For example, the disparity ratio in 2007 was 1.41, 1.49 and 1.66 for three elderly groups, against 1.0 for the overall population average. A consistent pattern of disparity was observed throughout 2007 to 2009.

The proportion of admissions by age group varied in 2007, 2008 and 2009. However, admission user charges by age group in 2007, 2008 and 2009 shows similar proportions. The average of these three years was the same as in 2008. Therefore, admission user charges by age group in 2008 are applied to break down personal care expenditure which includes both outpatients and inpatients, as there is no accurate information on charges to outpatients.

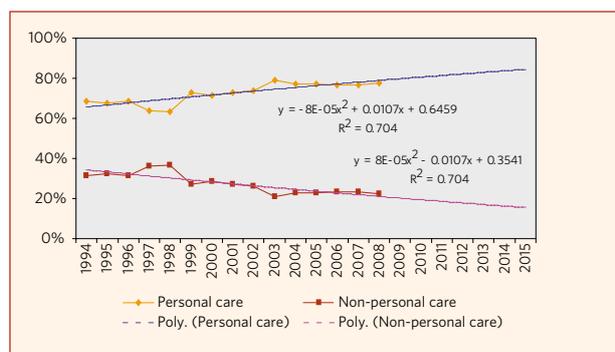
TABLE 4.11 CHARGE PROFILE FOR ADMISSION BY AGE GROUP IN 2007

Age Group	No. of admissions, million		Admission Charges, million Baht		Admission charge, Baht/admission	Disparity Ratio
2007						
0-14	1.59	25%	8,252.6	12%	5,161	0.47
15-44	2.23	35%	21,967.28	31%	9,830	0.89
45-59	1.01	16%	14,739.40	21%	14,608	1.33
60-69	0.66	10%	10,187.11	14%	15,520	1.41
70-79	0.64	10%	10,425.96	15%	16,353	1.49
80+	0.28	4%	5,017.79	7%	18,230	1.66
All groups	6.41	100%	70,590.18	100%	11,009	1.00

Age Group	No. of admissions, million		Admission Charges, million Baht		Admission charge, Baht/admission	Disparity Ratio
2008						
0-14	1.61	25%	8,855.62	12%	5,506	0.47
15-44	2.09	33%	22,318.80	30%	10,666	0.91
45-59	1.05	16%	16,300.70	22%	15,580	1.33
60-69	0.68	11%	10,955.20	15%	16,142	1.38
70-79	0.67	10%	11,063.60	15%	16,481	1.41
80+	0.30	5%	5,380.81	7%	17,644	1.51
All groups	6.40	100%	74,874.73	100%	11,695	1.00
2009						
0-14	1.69	26%	9,708.90	12%	5,728	0.46
15-44	2.10	32%	23,806.40	29%	11,346	0.92
45-59	1.09	17%	18,216.50	22%	16,740	1.36
60-69	0.70	11%	11,916.80	15%	16,991	1.38
70-79	0.67	10%	11,681.50	14%	17,319	1.40
80+	0.30	5%	5,685.52	7%	18,751	1.52
All groups	6.56	100%	81,015.62	100%	12,349	1.00

Source: analysis from national IP dataset 2009

FIGURE 4.8 PREDICTION OF PROPORTION OF PERSONAL AND NON-PERSONAL CARE EXPENDITURE, 2009-2015



Note: using actual NHA data, 1994 to 2008

With reference to the OECD Systems of Health Accounts, a long series of 1994-2008 National Health Accounts (The Thai Working Group on National Health Account, 2010) generates data on total health expenditure by health care function. From Table 4.12, it is clear that personal healthcare for the whole population took the lion's share in the Thai health system. It accounted for 77 per cent of the total health expenditure of 367 billion Baht in 2008, of which 42 per cent of total health expenditure was

FIGURE 4.9 PROJECTION OF PERSONAL CARE EXPENDITURES AS % OF TOTAL HEALTH EXPENDITURE, 2009-2015



on outpatient and rehabilitation services and 36 per cent on inpatient care including day cases.

Fortunately, the Thai NHA is available for the last fifteen consecutive years, 1994 to 2008 which furnishes a platform for a robust prediction using the polynomial formula with correlation of 0.704 for both personal and non-personal care formula for a medium term prediction between 2009 to 2015 (Figure 4.8).

TABLE 4.12 TOTAL HEALTH EXPENDITURE, BY HEALTHCARE FUNCTIONS, 1994-2008 (%)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1. Personal care	69	68	69	64	63	73	71	73	74	79	77	77	77	77	77
1.1 Outpatient & rehabilitative care	43	42	42	38	37	41	41	40	44	45	44	43	41	40	42
1.2 In-patient care including day cases	26	26	27	26	26	31	31	33	30	34	33	34	35	36	36
2. Ancillary services and medical goods dispensed to out-patients	6	6	5	4	6	6	6	6	4	4	5	5	5	4	5
3. Prevention and public health services	7	7	7	7	7	8	8	8	12	9	8	5	4	7	4
4. Health administration and health insurance	4	4	4	7	7	8	8	8	5	5	6	9	9	8	8
5. Gross capital formation	14	14	15	18	16	6	6	5	5	3	4	4	5	4	6
Total	100														
Total Health Expenditure (million baht)	127,655	147,837	177,103	189,143	172,811	162,124	167,147	170,203	201,679	211,957	228,041	251,693	291,294	319,456	367,767

Source: National Health Account 1994-2008

TABLE 4.13 PROJECTION OF HEALTH EXPENDITURE AND BREAKDOWN OF PERSONAL HEALTHCARE BY AGE GROUP, 2009-2015

Health Expenditures	Actual Figure*	Projection figure**						
	2008	2009	2010	2011	2012	2013	2014	2015
1. Total Health Expenditure (THE), million Baht	367,767	419,585	463,193	505,593	544,336	588,467	633,640	682,320
2. Annual growth rate, %		14	10	9	8	8	8	8
3. THE, % GDP	4.04	3.96	4.02	4.07	4.11	4.18	4.23	4.28
4. Non-personal care (%)	23	20	20	19	18	17	16	16
5. Personal care (%)	77	80	80	81	82	83	84	84
6. Non-personal care, million baht	82,997	85,335	90,471	94,758	97,806	101,275	104,348	107,411
7. Personal care, million baht	284,771	334,250	372,722	410,835	446,529	487,192	529,292	574,909
8. Personal care by age group, million Baht								
• 0-14	33,681	39,533	44,083	48,590	52,812	57,621	62,601	67,996
• 15-44	84,885	99,634	111,102	122,462	133,102	145,223	157,772	171,370
• 45-59	61,996	72,768	81,144	89,441	97,212	106,065	115,230	125,161
• 60-69	41,666	48,905	54,534	60,111	65,333	71,283	77,443	84,117
• 70-79	42,078	49,389	55,074	60,706	65,980	71,988	78,209	84,949
• 80+	20,465	24,021	26,785	29,524	32,089	35,012	38,037	41,315
9. Personal care as % of THE								
• 0-44	32	33	34	34	34	34	35	35
• Pre-elderly	17	17	18	18	18	18	18	18
• Elderly 60+	28	29	29	30	30	30	31	31

Sources:

- *data from National Health Account,
- Row 1-3, long term projection (Sakunpanich et al, 2009)
- Row 4-5 is the projection by authors using 1994-2008 National Health Account
- Row 6-8 is computed by authors, using percent distribution of admission charge by age group in 2008 (in Table 4.11 last column disparity ratio)
- Row 9; personal health care expenditures are re-classified into three age groups and then calculated as % of THE

Table 4.13 estimates the total personal healthcare expenditure by age group including the pre-elderly and the elderly. From the authors' projection using 1994-2008 National Health Accounts, personal health care expenditure would be at 334.2 billion baht in 2009 and would increase to 574.9 billion baht in 2015.

As data on admission charge profile are available for three years between 2007 and 2009 and these three years have a consistent pattern, the charge profile in 2008 is used to break down total health

expenditure for personal healthcare by age group for all years 2009 to 2015. With the application of the last column, disparity ratio, of Table 4.11, it was found that by 2015, the pre-elderly group 45-59 years would consume 125 billion baht while the three elderly groups (60-69, 70-79 and 80+) would use resource of 84.1, 84.9 and 41.3 billion Baht, respectively. The figures in Table 4.13 are used to produce Figure 4.9 Personal care expenditure of the elderly (60+) would increase from 29% of total health expenditure (122.3 billion baht) in 2009 to 31% (210.4 billion baht) in 2015.

Future demand for elderly caregivers

Situation and trend of the health workforce

The health workforce is the foundation of an accessible, effective and efficient health service delivery system (WHO, 2006). The shortage of health personnel, particularly in the rural areas, persists. Furthermore, the problem of inequitable distribution of the health personnel, particularly inequitable geographical distribution, has added to the magnitude of the problems.

Evidence shows that the ratio of doctors per 10,000 population in Bangkok is 10 times higher than that of the North-eastern region (Wibulpolprasert et al, 2008). At the same time, the Ministry of Public Health has not been successful in retaining doctors in the public sector; internal brain drain from the public to the private sector is a common phenomenon in particular in the economic boom time which has led to increasing demand for private health services.

The problem has been aggravated by two mismatched factors: increase in health demand and inadequate workforce supply. The government policy to implement a universal coverage scheme in 2001 has resulted in the increase of service utilization from 2.45 visits per capita in 2003 to 2.75 in 2007 (NSO: 2003, 2007). After the economic crisis of 1997, an intensive marketing policy was initiated to attract foreign patients as a means of stimulating economic growth. The policy to promote Thailand as the medical hub of Asia, initiated in 2004, had resulted in increasing demand for care by international patients (Pachanee & Wibulpolprasert, 2006). Approximately 1.39

million international patients were attracted to Thai health services in 2008 (Ministry of Commerce-Department of Export Promotion, 2008). Data is limited on the age profile of these international patients, however plausibly a large number of patients should be non-elderly, as elderly patients may have more difficulties in international travel than the non-elderly.

The demographic and epidemiological transition resulting in increased number of elderly and of chronic non-communicable diseases suggests the need for appropriate balance between home health care and facility-based health care. Health workforce requirements thus need appropriate skill-mix between the mainstream health workforce and non-formal care providers (Pagaiya, 2008). Moreover, the government measure to freeze the hiring of health workforce under the status of civil servants, as part of the public sector reform policies, has made health workforce employment in the public sector more difficult. Trends suggest that health workforce demand in the future will increase with limited opportunity of hiring in the public sector.

Though the production of health workers has been increased in order to keep up with the demand (Table 4.14), the difficulty of attracting and keeping them in rural areas has been more problematic. Not only has the high demand for health workforce not been met, but also the rapid growth in the private hospital share in the healthcare market during the time of favourable economic growth and active government promotion of medical tourism, drew doctors and nurses from the rural public facilities to the private facilities.

TABLE 4.14 NUMBER OF STUDENTS ENTERING MEDICAL AND NURSING EDUCATION DURING 2000-2010

Professional	Year									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Doctors	1,518	1,417	1,374	2,020	2,139	2,179	2,247	2,247	2,282	2,282
Nurses	4,428	4,319	4,400	4,505	5,175	7,550	10,592	7,770	7,810	7,895

Sources: Wibulpolprasert et al (2008) and Nursing Council (2010)

Over the past four decades, the Thai government has implemented financial and non-financial strategies to attract and retain doctors in rural areas (Wibulpolprasert & Pengpaiboon, 2003). A three year compulsory service was introduced in 1971, and some other non-financial measures introduced, including career advancement, best rural doctor awards, rural recruitment scheme and preferential opportunities for specialty training. Realizing the large gap between public and private sector income, another important strategy has been to increase the income of doctors serving in rural areas in the form of hardship allowance, non-private practice allowance, professional allowance and pay for overtime duty.

The strategy has been implemented in a consistent manner, in 1975, 1995, 1997, 2005 and 2009. Nevertheless, the ratio of doctors who moved out from MOPH public facilities, in relation to the new entrants, increased from 22% in 2001 to 80% in 2008 (MOPH 2008, 2010). The extraordinary increases in financial incentives implemented in 2009 had a significant effect on retention of doctors in rural areas. The turn-over ratio of doctors from MOPH to new entrants to MOPH has reduced to 63% in 2009 from 80% in 2008 (MOPH, 2010). In 2009, the total income of new graduate doctors working in rural hospitals was 29-65% higher than that of new doctors working in urban areas (Noree, 2010).

Demand for and supply of health workforce catering to the elderly

The demographic and health transition indicate the need to develop an appropriate balance of health and other related services for the elderly between home-based and facility-based care as well as a good coordination between the two. Health workforce requirements thus need appropriate skill mix between the mainstream health workforce, the community health workforce and other non-formal care providers. At home base, family members, voluntary care givers as well as paid care givers have been in higher demand.

It has been forecast that, besides the relatives of the elderly patients, a total of 106,000 care givers will be required by 2020 (Pagaiya, 2008), while a substantial increase will also be needed in the mainstream health workforce. The country needs 33,880 additional nurses to provide care for the elderly. To provide rehabilitation services, an additional 3,708 physio-therapists will be required by 2020, whereas the existing number of physio-therapists who are active in the labour market is only 2,000. Social workers as well as psychologists will be in high demand (see Table 4.15). Given that Thailand has encountered a shortage of health workers, additional health workforce requirements will only add to the health workforce shortage problems which need to be resolved.

TABLE 4.15 HEALTH WORKFORCE REQUIREMENT FOR ELDERLY CARE IN 2010 AND 2020

Type	Existing number	Additional health workforce requirement	
		By 2010	By 2020
Relatives and family members	N/A	499,873	741,766
Care givers	N/A	71,410	105,967
Nurses	97,942	23,888	33,880
Physio-Therapists	2,000	2,499	3,708
Social workers/ Psychologists	214/230	1,528	2,155

Source: Pagaiya (2008) N/A - data not available

However, the existing situation of health workforce availability and production plans do not fully match the future requirements in terms of both numbers and skill-mix.

The shortages of mainstream health workers, particularly doctors, nurses, physio-therapists, and social workers indicate that health workforce requirements for elderly and chronic diseases require immediate systematic policy intervention. In addition, only a minority of these mainstream health workers were posted in rural areas where the people need them most. High turn-over from rural to urban and from public to private of these limited personnel requires better planning and dialogues between the public and private sectors, both in relation to employment of and production of health workers.

Conclusions

This chapter contributes three major kinds of evidence in relation to pre-elderly and elderly burden of disease, estimates of total health expenditure required in 2015 and health workforce needs in general and carers for the elderly in particular.

Evidence shows that two major chronic diseases, cancers and cardio-vascular diseases are the two leading burdens of disease in elderly men and women. Sense organ disorders and neurological diseases provide a larger burden among the very old people, aged 80 and above.

Degenerative and chronic non-communicable diseases contribute a higher proportion of the burden among the pre-elderly and elderly. This calls for interventions in life-style modification for pre-elderly population in order to improve their health in old age. For people with diabetes and hypertension, the effective coverage of essential interventions such as control of blood sugar and high blood pressure is clearly far from satisfactory.

Though there is an encouraging trend of improving effective coverage in 2004-2009 as reported by the National Health Examination Surveys 2004 and 2009, the effective control of diabetes and hypertension is unsatisfactory. This requires significant improvement in the performance of delivery systems and mobilization of public awareness.

Encouraging findings show improving self-rated health status by elderly people, between the 2003 and 2006 Health and Welfare Surveys. Although self-perceived health in the very old largely improved, functional limitation in this group is inevitably much higher than among the younger old.

Frequency of health service utilization increases by age, more so among the elderly than the pre-elderly. The unreliable healthcare utilization rates in 2006-07 reported from household surveys, due to the combination of two major surveys by the National Statistical Office, namely the Socio-Economic Survey and the Health and Welfare Survey into one, prevent the authors from conducting projections of the service utilization rate which is the ground for projection of total health expenditure requirement for an ageing population.

Acknowledging these data limitations, the projection of expenditure for personal healthcare of the whole population indicates that it would gradually increase from 80% of total health expenditure in 2009 to 84% in 2015. Expenditures for the elderly would gradually increase from 29% of total health expenditure in 2009 to 31% in 2015. The modest increase is probably due to our assumption that outpatient expenditure profiles are similar to that of admission. Cautious interpretation of this finding is needed.

In the light of universal coverage achieved by 2002, demand for healthcare by domestic patients significantly increased due to geographical proximity of services in rural areas, adequate quality of service provision throughout the country and no financial barriers in access to care by people.

The active promotion of Thailand as an Asian medical hub catering to international patients significantly increased medical care demands (Smith et al, 2009) and has major ramifications for domestic brain-drain of super-specialists from teaching hospitals. The strain on the limited health workforce is further increased by the demographic and health transitions, not only on the number, but also on the skill-mix of the health workforce and non-formal care givers. These are major policy concerns.

Recommendations

A number of policy recommendations are generated from this review of the evidence though some have already been taken seriously, such as by the national non-communicable diseases plan.

First and foremost: keeping the pre-elderly cohort healthy. Using evidence from health risk assessment, effective program design aims to minimize exposure to key risk factors. Alcohol, tobacco and high blood pressure are three major risks among pre-elderly men, while among pre-elderly women, high body mass index, unsafe sex and blood pressure are three major risks.

In keeping the pre-elderly population healthy, social mobilization towards a healthy life style is required. Though there are legislative provisions for the control of alcohol and tobacco consumption, specific and effective interventions require evidence from health systems and policy research, civic movements, as well as effective law enforcement; these are less rigorous in relation to restraining alcohol consumption than in containing tobacco consumption. Active lifestyle, healthy diet and calorie expenditure are effective in containing overweight and obesity. A conducive environment is required for active lifestyle and energy consumption—for example, user friendly pedestrian walk ways in city planning, recreation parks, and support for civil society groups which are active in promoting physical activities.

Second: elderly responsive health systems. Health delivery systems are traditionally designed to cope with infectious diseases and have a treatment orientation. Public health interventions are conventionally dominated by clinical preventive

and promotive services; program efforts are not adequate to effectively reduce primary risk exposures such as use of tobacco and alcohol, and promote a healthier diet and physical activities. Home care is at the early stage of development, prompted by the era of universal coverage since 2002. Skill in home healthcare provision needs to be developed in conjunction with effective interface between home, community and institutional based care for the elderly.

Elderly-responsive systems require pre-service education and in-service training of appropriate numbers and skill-mix not only of mainstream health personnel but also of other cadres. There is neither systematic long term care services development nor clear policy to produce health and paramedical personnel for long term care, including an appropriate financing policy. As a result of limited home healthcare and long term care, the care for chronic dependent frail elderly occupies some portion of acute care hospitals or else is absorbed by home carers, often women who face a huge burden and psychological stresses. Evidence-based and constructive dialogues between public and private employment sector are two important needs.

Third: evidence-informed policies. It is strongly recommended to continue monitoring risk exposure and burden of diseases, effective coverage of essential interventions, self-assessed health status in the population, both pre-elderly and elderly. These evidences support informed policy decisions. There is a need to strengthen the institutional capacity to monitor the financing impact on the health care system of the demographic and epidemiological transitions.



Economic Impact and Human Capital

Thailand is among several countries in Asia that have experienced demographic transition from high fertility and mortality rates to currently low fertility and mortality rates. Rapid decline in fertility has led to a smaller share of the young population. During this period of demographic transition, the number of working age population has increased more rapidly than the total population. Other things being equal, such demographic trends lead to an increase in total production and higher economic growth rates. However, this favorable effect of population change is diminishing. Continual decline in fertility and mortality rates inevitably lead to population aging. A smaller share of population in the working ages and a larger share of the elderly could deter economic growth. However, this study points out that economic growth could be sustained if there is a prudent policy that encourages people to accumulate capital to improve labour productivity, finance old-age consumption and invest more in the human capital of children.

The first section of the chapter will examine the implication of demographic change for the education system. Thailand has education laws aimed at improving the educational attainment of the younger workers. However, we cannot compete with many countries in the region because of low quality of education. This has an implication for labour productivity that is discussed in section III. If Thailand chooses to grow with low labour productivity in the future, the country will need more unskilled migrant workers. If the Thai economy had a large share of population concentrated at the lifecycle surplus ages, more migrant workers would not be required. Section IV shows that Thailand enjoyed the positive effect of demographic transition on economic growth until 2010 when the first demographic dividend for Thailand is expected to end. The second demographic dividend and transfer to children for

human capital investment, shown in Section V, can help the Thai economy to continue positive growth rates. The last section discusses options to cope with demographic changes.

Demographic Change and Implications for the Education System

Thailand experienced outstanding economic growth rates in the 1960s when the first and second social and economic development plans were being implemented. Oil price crises in the early 1970s and early 1980s slowed down the growth rate. However, economic growth was still over 5 percent on a five year average (Figure 5.1). The economic booms in the decade of 1985 to 1995 were followed by the financial crisis in 1997. The country's dream of being the fifth Asian Tiger, after Hong Kong, Singapore, South Korea and Taiwan, disappeared.

Unlike economic growth, Thailand's birth and death rates have not fluctuated with business cycles. The crude birth per 1,000 people has been monotonically declining from 42.9 in the early 1960s to 14.6 in the late 2000s as shown in Figure 5.1. This is consistent with cross-country evidence that the crude birth rate declines when per capita income increases. The downward movement of the birth rate has been faster than that of the death rate. The crude death rate per 1,000 people declined from 12.5 in the early 1960s to 5.9 in the late 1980s and then turned upward, due to HIV/AIDS related deaths. HIV/AIDS was the main cause of death among those aged 20-44 (Rumakom et al., 2002). There was a sharp increase in reported deaths from tuberculosis and pneumonia after 1994. It is believed that the explosion of TB and pneumonia has been caused by HIV/AIDS. Adults aged 20-44 previously had low TB and pneumonia death rates. But, the TB death rate among those

aged 20-29 increased from 1.7 to 9.6 per 100,000 people between 1992 and 2000. The death rate from TB among those aged 30-44 increased from 4.4 per 100,000 people in 1992 to 15.7 per 100,000 people in 2000. The increased mortality affected males more than females. An increase of the death rate among fertile and working age groups can be expected to have adverse impact on the number of births and on the labour force (See more details about the causes of death in Chapter 4).

With the declining birth rate, the number of children age 0 to 14 peaked at 18.6 million in 1980 and declined thereafter. The number of children in 2010 is about the same as in 1965. The burden of raising children on private and public budgets should be declining, but with the universal access to longer periods of education and higher expectations from parents, such a hypothesis may not be true.

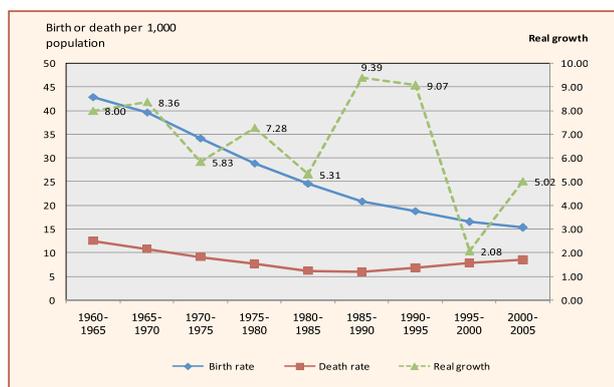
The current Thai constitution gives all children the right to a quality basic education of 12 years. Another two important laws for children's education are the education law in 1998 and compulsory education law in 2002. The law in 1998 raised compulsory education from 6 years to 9 years. The age for compulsory education is from 7 to 16 years old. The government must provide free basic education for at least 12 years to every child. The law in 2002 penalizes parents who do not send their children to school. A maximum fine of 1,000

Baht (approximately USD35) will be imposed on such parents.

It is shown in Figure 5.2 that the number of students at the primary school level has been declining, due to the lower number of children. In contrast, the number of students at the secondary school level in 2000 was much higher than in 1990. The 1998 law provides a better access to secondary school to all children. The law had an outstanding effect on the number of secondary school students in the Northeast region, which increased by more than a hundred percent between 1990 and 2000 (Figure 5.3). However, after 2000, the number of secondary school students has declined, in line with the decreasing number of children in the secondary school age group.

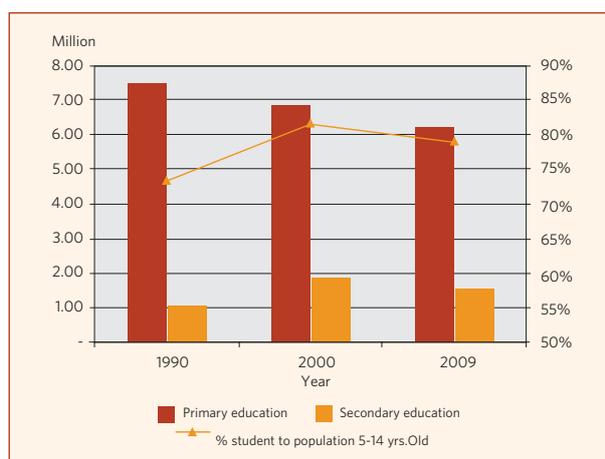
Even though Thailand has a Constitution and education laws that emphasize the right of children to universal and quality education for 12 years, the practical enforcement of the laws is not effective. In 2009, about 20 percent of children aged 5-14 (or 2 million children) were not in the school system (Figure 5.2). In the Northeast and South, about 25 percent of children age 5-14 are not in school. NESDB (2009) reports that the retention rates from entering primary school to the highest grade of primary education and from entering the upper secondary level to the highest grade of upper secondary education are 88 and 53 percent in 2008.

FIGURE 5.1 CRUDE BIRTH AND DEATH RATES AND ECONOMIC GROWTH



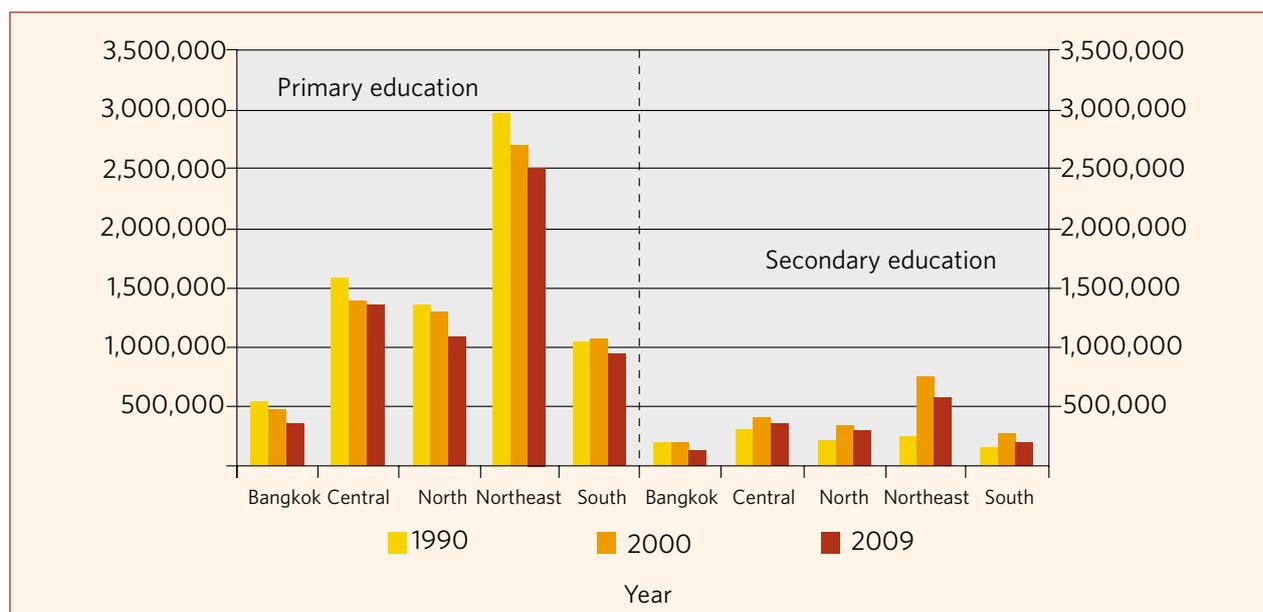
Sources: Death and birth rates are from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision, <http://esa.un.org/unpp>. Real Growth rates are from Thailand's National Economic and Social Development Board.

FIGURE 5.2 STUDENTS AGE 5-14 YEARS OLD



Source: National Statistical Office, Socio-Economic Survey.

FIGURE 5.3 NUMBER OF STUDENTS AGED 5-14 ATTENDING SCHOOL



Source: National Statistical Office, Socio-Economic Survey.

TABLE 5.1 NATIONAL TEST ON PRIMARY AND UPPER SECONDARY EDUCATION

Level/Subject	Average Scores (%)					
	Academic Year					
	2003	2004	2005	2006	2007	2008
Primary level (Pratom 6)						
Thai	45.3	44.2	n.a. *	42.7	36.6	42.0
Mathematics	41.7	43.8	n.a. *	38.9	47.6	43.8
English	41.1	37.3	n.a. *	34.5	38.7	37.8
Science	42.1	41.6	n.a. *	43.2	49.6	51.7
Lower Secondary Level (Mattayom 3)						
Thai	54.0	38.3	n.a. *	43.9	48.1	41.0
Mathematics	35.0	34.9	n.a. *	31.2	34.7	32.6
English	37.9	32.3	n.a. *	30.9	28.7	34.6
Science	38.1	37.2	n.a. *	39.3	35.2	39.4
Upper Secondary Level (Mattayom 6)						
Thai	44.5	49.3	48.6	50.3	50.7	46.4
Mathematics	34.0	35.1	28.5	29.6	32.5	36.0
English	39.1	32.5	29.8	32.4	30.9	30.6
Science	48.8	44.3	34.0	34.9	34.6	33.7

Source: Office of the Permanent Secretary, Ministry of Education (2008).

The quality of education is a concern in relation to both national standards and to international comparisons. The Office for National Education Standards and Quality Assessment (ONESQA) evaluated the quality and standard of Thai basic education in 15,601 schools in 2006-2007. The evaluation found that students lacked analytical skill and self learning, teachers did not focus on student centred learning or manage the curriculum effectively, and school's executive lacked academic improvement (ONESQA, 2008). Siritarunsri (2009) showed that 35 percent of 35,159 schools were up to the national standard, but another 65 percent were sub-standard. Another national test run by the Bureau of Education and Testing and National Institute of Educational Testing Service shows that the ability of students in the secondary school level is quite low. Students could achieve only 31, 34 and 36 percent of the test in English, Science, and Mathematics in 2008 (Table 5.1). Student performance has been consistently poor from 2003 to 2008. The quality of education varies between large and medium schools in the city and small schools in rural areas (Chiangkoon (2009)). Students in the city have a better opportunity to access knowledge in many ways.

International comparisons conducted by the World Economic Forum in 2009 show that Thailand may lose its competitiveness due to the low achievement

of the education system. Thailand ranked 69th from 133 countries in terms of the quality of primary education. Compared with its neighbors, Thailand was behind Malaysia and Indonesia. Thailand ranked behind Malaysia in every education indicator (Table 5.2). Singapore ranked first in the quality of mathematics and science, but Thailand ranked 62nd. Thailand ranked ahead of Indonesia in term of public education expenditure as percentage of GNI, but Thailand's quality of primary education ranked behind Indonesia's. About 80 percent of the education budget is for wages, salaries, and administrative costs. A significant increase in the education budget does not necessarily mean that the quality of education will improve significantly (McKinsey&Company, 2007).

Chiangkoon (2009) and McKinsey and Company (2007) emphasize the role of teachers in improving the quality of education. Chiangkoon points out that Thailand does not have enough good quality teachers. Thai teachers in the remote areas do not have good knowledge of languages, mathematics, and science. Teachers spend more time on administration and paper work than on acquiring new knowledge.

TABLE 5.2 RANKINGS ON EDUCATION INDICATORS, SELECTED ASIAN COUNTRIES

Indicator	Thailand	Malaysia	Singapore	Korea	Taiwan	Japan	Indonesia
Quality of primary education ¹	69	31	3	29	20	23	58
Education expenditure [*]	44	24	109	75	18	96	127
Higher education and training							
Quality of the educational system ¹	67	23	1	47	17	31	44
Quality of math and science education ¹	62	34	1	18	6	25	50
Education Infrastructure (2010 ranking) ²	46	25	11	20	17	13	55
Pupil-Teacher Ratio (Primary Education) (2007 ranking) ²	39	26	47	51	38	40	43
Pupil-Teacher Ratio (Secondary Education) (2007 ranking) ²	53	41	47	51	46	28	33

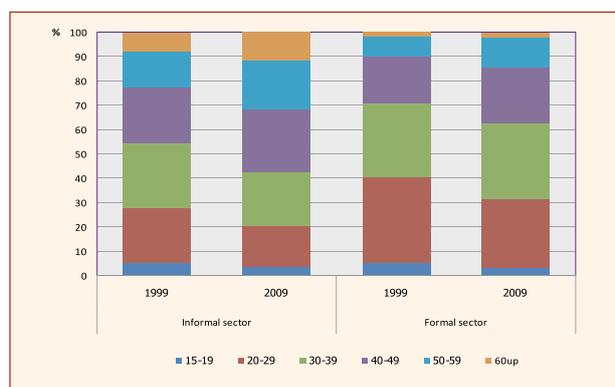
Sources: ¹The Global Competitiveness Report 2009-2010 and ²IMD World Competitiveness Yearbook 2010
 Note: * Based on public education expenditure as percentage of GNI.

TABLE 5.3 PROJECTED NUMBER OF SCHOOL-AGED POPULATION (MILLION)

	2010	2015	2020	2025	2030	2035	2040
< 3 years	2.3	2.2	2.1	1.9	1.8	1.7	1.6
pre school (3-5 yrs)	2.6	2.3	2.2	2.0	1.9	1.8	1.6
primary (6-11 yrs)	5.5	5.1	4.5	4.3	4.0	3.7	3.5
lower secondary (12-14 yrs)	2.8	2.7	2.4	2.2	2.1	2.0	1.8
upper secondary (15-17 yrs)	3.0	2.7	2.8	2.3	2.2	2.1	1.9
university (18-24 yrs)	7.0	6.8	6.3	6.2	5.4	5.1	4.8

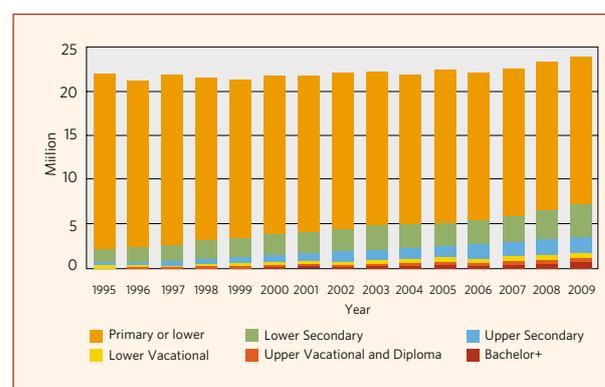
Source: IPSR, Mahidol University.

FIGURE 5.4 AGE STRUCTURE OF EMPLOYMENT IN FORMAL AND INFORMAL SECTOR



Source: National Statistical Office, Labor Force Survey quarter 3.

FIGURE 5.5 EMPLOYMENT IN THE INFORMAL SECTOR BY EDUCATION LEVEL



Source: National Statistical Office, Labor Force Survey quarter 3.

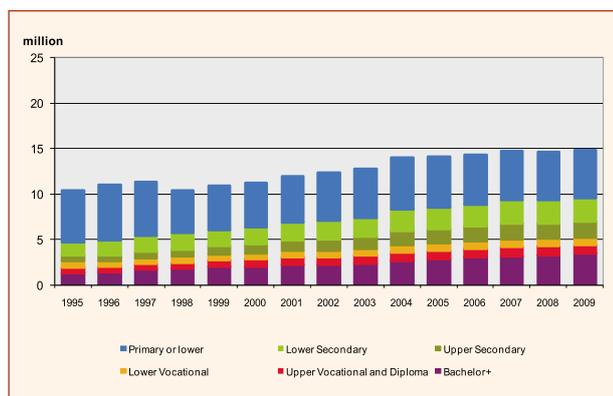
The projected number of school-aged population is declining (Table 5.3). In the next ten years, the number of students in every level will be lower than in the current period. The number of primary school students will fall from 5.5 million to 4.5 million. This provides Thailand with an unprecedented opportunity to raise the quality of its education system. Using the same amount of budget, the Thai government can focus more on the quality of education in the future. However, some hard decisions will have to be made. For example, many schools will unavoidably have to close when their administrative cost per student becomes too high.

Labor Productivity

Employment in Thailand is segmented into formal and informal sectors. The formal sector is composed of wage earners who have formal employment

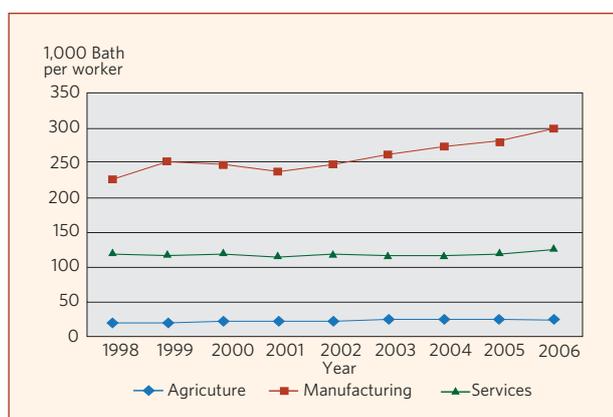
arrangement and are covered by social benefits such as medical care, disability benefit, and old age benefit. In 2009, sixty percent of employment in Thailand is in the informal sector, which mainly covers the agriculture and service sectors. Each sector has its own characteristic as well as age structure of labour. Figure 5.4 shows that the informal sector has more older workers. In 1999, almost 10 percent of workers in the informal sector were older than 60. The proportion increased to 12 percent in 2009, and is expected to increase further since the share of informal sector workers in age groups 50-59 and 40-49 is quite large. The formal sector has a large share of labour in age groups 20-29 and 30-39. Demographic changes will continuously alter the age structure of formal and informal employment.

FIGURE 5.6 EMPLOYMENT IN THE FORMAL SECTOR BY EDUCATION LEVEL



Source: National Statistical Office, Labor Force Survey quarter 3.

FIGURE 5.7 LABOUR PRODUCTIVITY

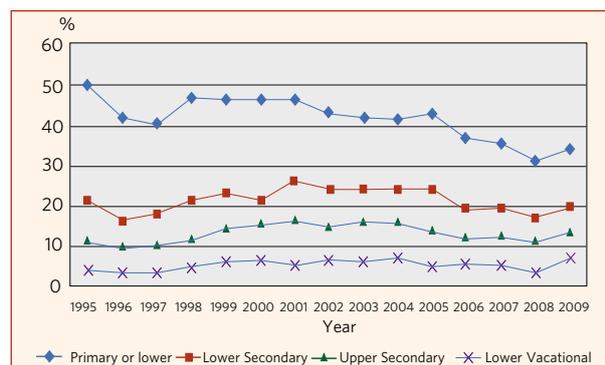


Source: Thailand Development Research Institute (2009).

Informal sector labour is also characterized by lack of skills and low productivity. This can be shown in the form of low educational attainment, with 70 percent of informal sector workers having only primary education (Figure 5.5). By contrast, half the formal sector workers have at least upper secondary education (Figure 5.6). On the positive side, however, the level of educational attainment of informal labour at present is much higher than in 1995. This trend will continue in the future.

Higher educational attainment of informal labour seems to have no impact on labour productivity. Labour productivity, measured as real value added per worker, in the agriculture and services sectors is consistently low (Figure 5.7). Both agriculture and service sectors are labour intensive. Workers in these sectors have informal employment arrangements. They move freely between sectors. Between 1998 and 2008, the share of employment

FIGURE 5.8 EMPLOYEES EARNING BELOW THE MINIMUM WAGE BY EDUCATION



Source: National Statistical Office, Labor Force Survey quarter 3.
Note: This figure uses the minimum wage for Bangkok.

in the service sector increased from 41 to 46 percent. But the share in the agriculture sector decreased from 45 to 40 percent. The main industries in service sectors include wholesale and retail trade, warehouse and transport, and hotel and restaurant (TDRI, 2009). Labour productivity for the industrial sector is more than double that of the service sector since it has more investment in capital and technology. Workers in this sector also earn a higher return to human capital.

The return to human capital increases with the level of education. The government protects those with low human capital by enforcing the minimum wage law. The minimum wage rate varies by province; in 2009, the minimum wage in Bangkok was 203 Baht per day. However, the enforcement of the minimum wage law has been ineffective, and in particular wage earners in the informal sector. In 1995, about 50 percent of employees who have primary education earned below the minimum wage. The proportion of those who earn below the minimum wage fell to 34 percent in 2009, probably because of improved law enforcement or the effect of a rising demand for labour.

Since employment in the agriculture and service sectors is labour intensive, the demand for unskilled labour in these sectors is high. However, as more Thai workers attain a higher level of education, they will divert away from low paying jobs, and older workers who tend to have low education will be too old to work. To achieve a higher economic growth rate using current technology, the gap between the demand for and supply of labour will be filled by migrant workers. An alternative to achieve high growth is to invest more in physical and human capital.

Demographic changes may have an impact on economic growth. Potipiti (2010) shows that with an aging population, and holding other things constant, Thailand's annual growth rate will be -7 percent in 2020 and -14 percent in 2040. In his study, he defines Thailand as an aging population when the proportion of working age population to total population declines by 0.25 percent annually. The counterfactual is when the proportion of working age population to total population is fixed at 60.3 percent. The proportion of labor to capital in the production process will decline. This will result in higher wages, but lower returns to capital. It was projected that wages of the aging population in 2020 will be higher than in the counterfactual by 1.8 percent, meanwhile the returns to capital will be lower than in the counterfactual by 3.1 percent. An increase in the number of unskilled migrant workers will improve the growth rate, but will lower the per capita income. In this scenario, growth of per capita GDP will be -0.8 percent in 2020 and -0.2 percent in 2040. Labour productivity of migrant workers is only half that of Thai workers.

Demographic Dividend

The First Demographic Dividend

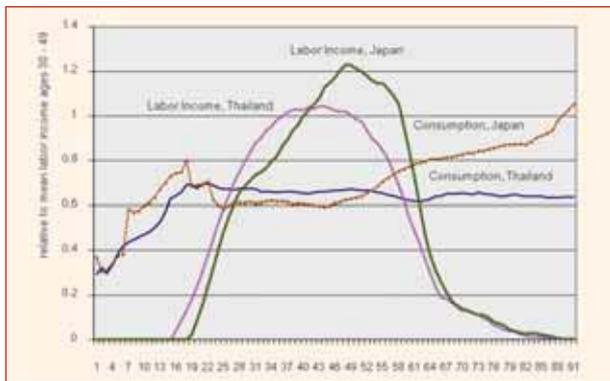
The favorable effect of an increase in the share of working aged population on economic growth is called the first demographic dividend. Several criteria have been employed to compute dependency ratios in order to evaluate whether a country has reached the dividend period. However, using demographic dependency ratios, purely based on number of children (those aged 0-14), working-age adults (those aged 15-64) and the elderly (those aged 65 and older), to measure the demographic dividend has shortcomings. This method does not capture variations in productivity of workers and consumption needs of the population in different age groups. In order to overcome this shortfall, Mason (2005) introduced the concept of the economic support ratio. The economic support ratio is computed as the ratio between the effective number of producers (calculated from the age-specific profile of labor income) and the effective number of consumers (calculated from the age-specific profile of consumption). Variations in the labor market, such as income received for part-time, full-time or self-employed workers, among population in different age groups are taken into

consideration. The growth rate of the economic support ratio is called the first demographic dividend. Ogawa et al. (2009) demonstrate the period of demographic dividend for selected Asian countries, using different approaches. The results show strikingly different lengths of the dividend period, comparing the demographic dependency ratio with the economic support ratio.

The magnitude and length of the demographic dividend is determined by the economic lifecycle. The economic lifecycle influences how the age structure that shapes the human lifecycle affects consumption, production and reallocations of economic resources. The human lifecycle begins and ends with periods of dependency when consumption exceeds labor earnings. This shortage of labor income, or lifecycle deficit, makes the young and the elderly depend on resources reallocated from the working or lifecycle surplus ages, as shown in Figure 5.9. If the economy has a large share of population concentrated at the lifecycle surplus ages, there will be excess resources available to save, invest and generate output, leading to a larger effect of the first demographic dividend. The method used to estimate these age profiles follows the National Transfer Accounts (see examples in Mason et al. 2009 and www.ntaccounts.org).

Figure 5.9 shows a comparison of the economic lifecycles in Thailand and Japan, using the per capita age profiles of consumption and labor income, normalized by average labor income at ages 30-49. The age profiles of labor income show important difference in the labor market between Thailand and Japan. Income increases with age, and it increases more steeply in Thailand than in Japan. The Japanese labor market is quite a seniority-based system. Labor income reaches its peak at around ages 40-45 in Thailand, whereas in Japan the peak is about at age 50. Then, for both countries, labor income declines steeply around the retirement ages at 60-65. The difference in the consumption age profiles is more prominent. Consumption by children increases with age for both Thailand and Japan. The increase in consumption is steeper in Japan, mainly due to higher investment in education by both the public and the family. In addition, consumption by the elderly in Japan increases much more steeply than in Thailand, mainly due to high consumption for health care and long-term care insurance in Japan. See Appendix B for the method of estimating demographic dividends.

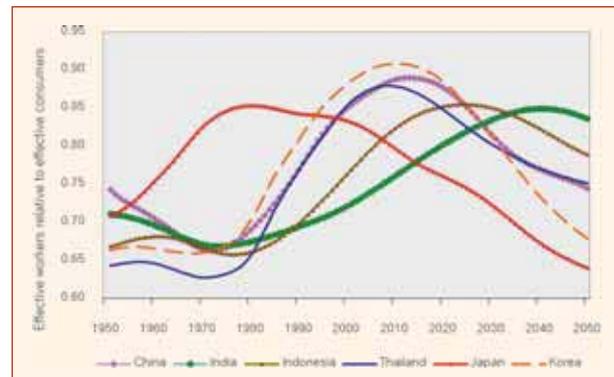
FIGURE 5.9 ECONOMIC LIFECYCLES OF THAILAND (2004) AND JAPAN (2004)



Source: Chawla (2008) for Thailand and Ogawa, Mason, et al. (2009) for Japan

The calculation of the economic support ratio is straightforward, using the age-specific profiles of consumption and labor income weighed by population age structure. The economic support ratio may rise or fall, depending on changes in age structure during the period of the demographic transition. Given constant productivity, income per effective number of consumers may increase when the economic support ratio is rising. On the other hand, when the economic support ratio is falling, income per effective number of consumers may decline. Results for the economic support ratio for selected countries in Asia are shown in Figure 5.10. It is noted that demographic transition in Japan occurred prior to any other Asian countries, resulting in an early rise and fall of the economic support ratio compared to others. The economic support ratio for Thailand was much lower than for other countries before 1980, but then it rose steeply due to a rapid increase in the share of working age adults. The economic support ratio for Thailand reached its peak in 2009 and it is expected to decline in 2010. In contrast, countries with slower demographic transition, such as Indonesia and India, could enjoy an increase in the economic support ratio for the next few decades.

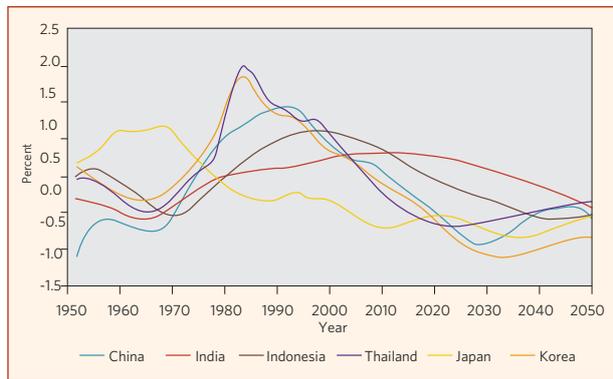
FIGURE 5.10 THE ECONOMIC SUPPORT RATIO FOR SELECTED ASIAN COUNTRIES



Source: Authors' calculation based on the economic lifecycle of Thailand

The growth rate of the economic support ratio measures the first demographic dividend. Owing to demographic transition, the first demographic dividend is transitory. A continual decline in fertility and mortality rates leads to population aging. The share of the labor force gradually declines, whereas the share of the elderly increases. The first demographic dividend will decline and eventually will turn negative when population growth is greater than the growth rate of the labor force. Examples of the first demographic dividend of selected Asian countries are shown in Figure 5.11. The first demographic dividend for Thailand was negative until the early 1970s before it turned positive, rose steeply and reached the peak in the mid-1980s. The first demographic dividend gradually declined as the economic support ratio increased at a decreasing rate. Thailand enjoyed the positive effect of demographic transition on economic growth until 2010 when the first demographic dividend for Thailand is expected to end. Demographic changes will no longer yield a positive gain to the economy. Population aging will eventually result in negative economic growth in Thailand if other factors remain constant.

FIGURE 5.11 THE FIRST DEMOGRAPHIC DIVIDEND FOR SELECTED ASIAN COUNTRIES



Source: Growth of the economic support ratio of each country

The span of the first dividend period varies from one country to another, depending on unemployment rates, labor force participation rates and other factors that influence economic lifecycles. In addition, human capital investment plays a crucial role in determining the productivity of the labor force, influencing total production of the economy. The results show that, holding other factors constant, changes in population age structure could lead to an increase in per capita income in these countries. The magnitude and length of the first dividend period depends on how rapid demographic change is in each country. Japan experienced demographic transition prior to any other Asian counterparts; therefore Japan gained the first demographic dividend even before 1950 and it lasted until 1980. Other countries did not receive benefits from the first demographic dividend until the mid to late 1970s. Some countries, such as China, South Korea and Thailand, experienced rapid demographic changes with sharp decline in total fertility rate (TFR), resulting in a large positive gain in the first demographic dividend. Population change in China, South Korea and Thailand brought about an increase in per capita income by about 1-2 percent a year during the mid-1980s. On the other hand, India and the Philippines have slow demographic change, leading to a small effect of the first dividend.

Demographic transition in these countries shows that when the smaller cohorts of children reach the working ages, the share of working age population declines and the share of the elderly increases. The economic support ratio falls, ending the period of the first demographic dividend. This raises

concerns that the favorable effect of population changes on economic growth is coming towards the end. However, economic growth in Thailand as well as other countries could be sustained despite population aging through physical capital and human capital accumulation.

The Second Demographic Dividend

Physical capital accumulation could generate sustainable economic growth, called the second demographic dividend. Unlike the first demographic dividend, the second demographic dividend is not transitory. Physical capital accumulation could lead to a permanent increase in capital deepening—a higher level of capital per unit of labor allowing individual consumption to rise.

The second demographic dividend is more complicated to estimate than the first demographic dividend. The second demographic dividend is influenced by how population aging affects the demand for wealth. Based on Mason (2005), there are two ways in which demographic transition affects demand for lifecycle wealth. First, there is a compositional effect, caused by an increase in the share of individuals who have nearly or fully completed their productive years. These individuals must have accumulated wealth in order to finance consumption in excess of labor income for many of their remaining years. Second, there is a behavioral effect, caused by an increase in life expectancy and the accompanying increase in the duration of retirement, leading to an increase in the demand for wealth.

Individuals may rely on different forms of wealth. One possibility is that retirees rely on transfers from public pension and other public welfare programs or from familial transfers from their working adult children. In such cases, individuals may rely on transfer wealth to support consumption during their retirement years. A second possibility is that individuals may rely on capital accumulated during their working years in order to support consumption during the retirement period. Both forms of wealth can be used to support the lifecycle deficit at older ages.

From the individual's point of view, transfers and assets can be used interchangeably to finance

consumption. However, from the macroeconomic point of view, only accumulation of assets leads to a higher capital-labor ratio, which enhances productivity and generates growth. Transfers do not lead to a higher level of output and cannot be used to generate economic growth, because net transfers at a point in time are summed to zero; transfers received by one age group are transfers given by another age group. Therefore, only capital may increase productivity of labor and affect economic growth. The effect of capital accumulation as an engine of growth is the source of the second demographic dividend.

Wealth can be accumulated over a lifetime in order to finance future consumption in excess of future labor income. The relevant demography is captured by the projections of the equivalent numbers of consumers and producers for each cohort. Each cohort's lifecycle wealth increases as the future person-years of consumption rises relative to the future person-years of production, both appropriately discounted. In reality, demand for life-cycle wealth is mainly concentrated among older working adults who are approaching their peak earnings and have completed their child-rearing responsibilities. See Annex A for methods to estimate the 2nd Demographic Dividend.

In order to simulate the second demographic dividend, some assumptions are necessary. First, the growth rates of consumption and labor income are exogenously determined at 1.5 percent per year and the interest rate is at 3 per cent. Second, individuals begin to accumulate wealth at age 50. Third, transfer policy is constant and the growth

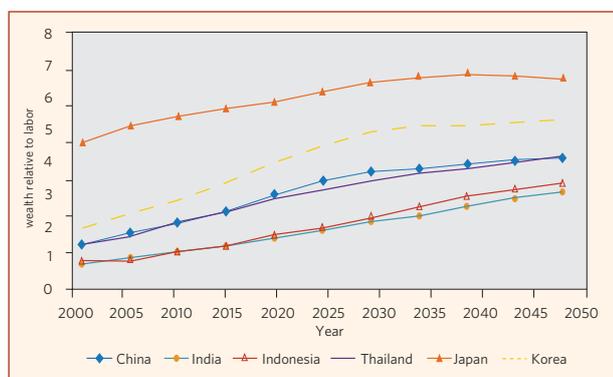
rates of the capital and life cycle wealth are equal. Fourth, the elasticity of labor income with respect to capital is 0.5, which draws from the assumption that elasticity of output with respect to capital equals one third. Therefore, the second demographic dividend is calculated as half of the growth rate of the ratio of wealth to total labor income.¹

The current trend toward population aging is unprecedented and an improvement in health care could significantly prolong life expectancy. This, together with the difficulty of raising fertility toward replacement level, makes population aging likely to be irreversible. Thus, it is important to create a prudent policy that promotes saving rather than rely on public transfers to support old-age consumption. Such policy could enable the economy to accumulate wealth relative to labor income or capital deepening, which is not as transitory as the first demographic dividend.

As shown in Figure 5.12, wealth to labor income ratio is higher in countries with a larger share of the elderly. Japan has the highest wealth to labor income ratio as Japan has experienced aging before any other Asian countries. Wealth relative to labor income in Thailand increases continually, following a similar trend to that in China. On the other hand, countries with a smaller share of the elderly, such as India and Indonesia, have the lowest wealth to labor income ratio.

The second demographic dividend can be simulated, as shown in Figure 5.13. The results show that economic growth can be attained for several more decades despite population aging. Thailand as well as other countries could benefit from population aging if their working age population accumulates capital to prepare for retirement consumption. Results also show that the magnitude of the second dividend is higher than the first dividend for all the countries.

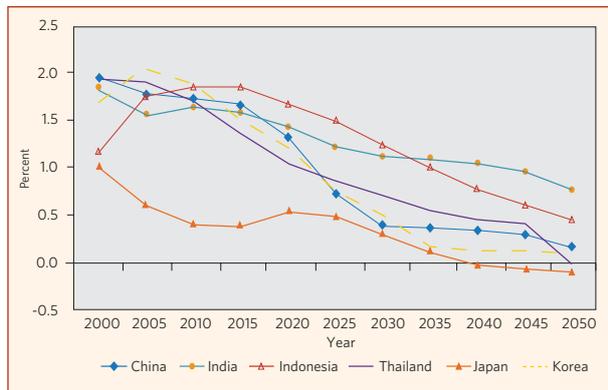
FIGURE 5.12 WEALTH TO LABOR INCOME RATIO FOR SELECTED ASIAN COUNTRIES



Source: Authors' calculation based on the economic lifecycle of Thailand

¹ It should be noted that under the golden rule, the ratio of consumption to labor income is assumed to be 1, and the rate of productivity growth and the rate of growth of equivalent consumption, g_y and g_c , expected to be constant and equal to each other.

FIGURE 5.13 THE SECOND DEMOGRAPHIC DIVIDEND FOR SELECTED ASIAN COUNTRIES



Source: Growth rate of wealth to labor income ratio of each country

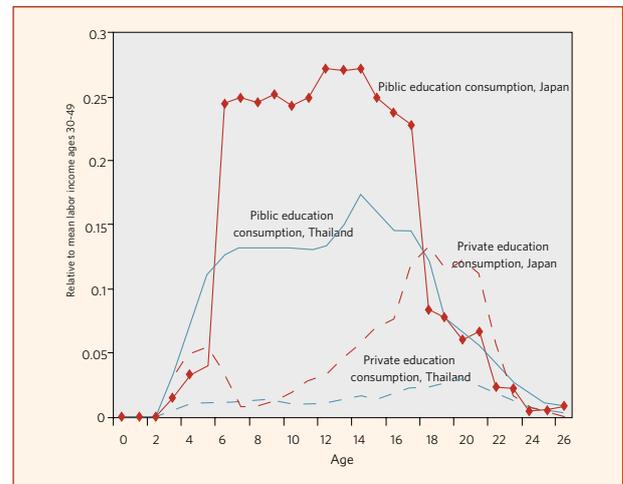
The lesson to be learned from the second dividend in Thailand as well as other Asian countries is that these countries still have time to maximize the full benefit of the second dividend. The reason is that population aging is not as prominent in Thailand as in Japan or other aging countries where capital accumulation is limited due to the smaller share of working age population. It is therefore important to produce a savings plan for the current working age population in Thailand so that they can prepare themselves for the retirement age.

At the end of the second demographic dividend period, even though demographic changes have no favorable effect on economic growth, the level of wealth to labor ratio is greater than at the beginning. An increase in wealth could be used to finance more consumption for each individual. In other words, individuals can attain a higher level of consumption in the future because capital accumulated throughout the dividend period leads to capital deepening or a higher level of productivity for workers.

Intergenerational Transfer of Human Capital

Human capital accumulation could increase productivity of workers, which could accelerate economic growth. The question is whether declining fertility could lead to an increase in intergenerational transfers of human capital to each child, which could raise productivity of the future labor force. The interactions between fertility

FIGURE 5.14 PUBLIC AND PRIVATE INTERGENERATIONAL TRANSFERS OF EDUCATION

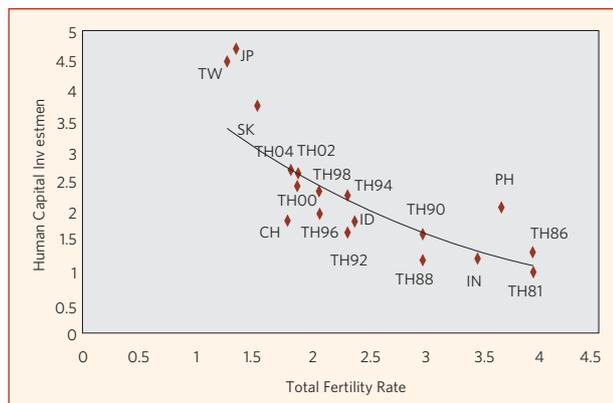


Source: Data used in Ogawa, Mason, et al. (2009)

and human capital investment or the quantity-quality trade off are introduced by Becker and Lewis (1973). If there is no change in the amount of total education spending, lower fertility leads to higher human capital investment per child. In such case, the economy may extend the period of the first demographic dividend due to a higher productivity level of workers, which enables the future workforce to generate more output.

Intergenerational transfers of education in Thailand are large and important. Children receive transfers from other age groups through the family and the public sector. Examples of familial transfers of education are tuition fees, text books and special lessons. Examples of public transfers of education are salaries, administration costs and other public education consumption in the government budget. The age pattern of human capital investment can be estimated, using the methodology of the National Transfer Accounts. Age-specific data on public and private education spending per child for selected countries are shown in Figure 5.14. In Thailand, public education transfers are much greater than private education transfers for all age groups.

FIGURE 5.15 QUALITY AND QUANTITY TRADE-OFF FOR SELECTED ASIAN COUNTRIES



Source: Based on authors' calculation, using results from the National Transfer Account Project

For each country, per capita public and private education spending for ages younger than 26 can be combined to measure synthetic cohort estimates of human capital transfers of education to children. Human capital investment relative to average labor income (E) for each country can be estimated in the natural log form. Figure 5.15 shows the relationship between total fertility rate (TFR) and human capital investment. Average TFRs for the most recent five-year interval before the period of human capital investment data (UN population data) are used.²

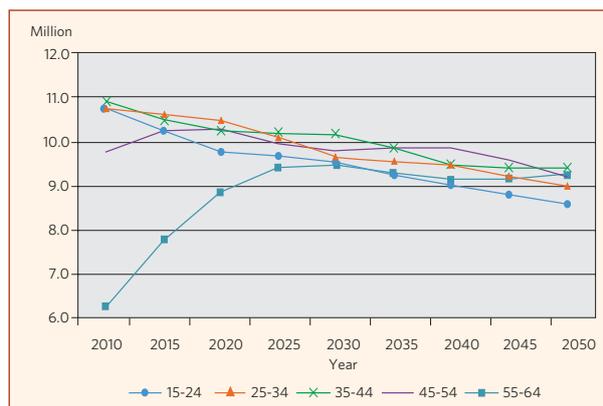
A decline in TFR could lead to a higher human capital investment per child, which improves productivity of the future workforce and accelerates economic growth.

Concluding Remarks and Challenges

The future does not look very bright, but nor does it appear impossible to cope with. Without any policy change, Thailand will continue to have smaller numbers of children and working age population. Longer life expectancy increases the proportion of old age dependency. By the middle of this century, Thailand will have 63 percent of its population in the working ages, about 9 million population in each age group of 15-24, 25-34, 35-44, 45-54,

² The regression can be shown as:
 $\ln(E) = 1.34 - 0.72 \cdot \ln(\text{TFR})$; $R^2 = 0.77$ (16.81) (-7.62)
 where the values in parentheses are t-statistics. An elasticity of -0.72 shows that if TFR is lower by 1 percent, the share of labor income spent on human capital investment will increase by 0.72 percent. The coefficient is statistically different from one. The regression result means that the increase in human capital investment in Asia is less than the proportional reduction in TFR in the region. See details of this study in Lee and Mason (2010) and Ogawa, Mason et al. (2009).

FIGURE 5.16 FUTURE WORKING AGE POPULATION



Sources: Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision, <http://esa.un.org/unpp>.

and 55-64 (Figure 5.16). Thailand will not be able to benefit from the first demographic dividend since it has ended in 2010. More hope will attach to the second dividend or an import of work force from neighboring countries or both.

Thailand can actually benefit from population aging if people accumulate capital. What the government should do is to establish a savings plan for the current working age population so that they can prepare themselves for retirement age. As a result, individuals can attain a higher level of consumption in the future because capital accumulated throughout the dividend period leads to capital deepening or a higher level of productivity for workers. Encouraging the work force to save will also serve the social protection functions. Older people are vulnerable to poverty since their income could be lower than their consumption. Without any economic support, they could fall into poverty. Figure 5.17 shows that the poverty incidence³ among the older population is higher than among the working age groups.

A retirement pension may not only be able to reduce the likelihood of being poor for an old person, but may also improve well-being of other household members. Duflo (2003) showed that households do not function as unitary entities. A retirement pension for elder women can improve weight and height of girls in the same household in developing countries. Intra-household transfers still also exists

³ This is the headcount ratio of population who has consumption below poverty line.

in developed countries like Japan. A survey in Japan in 2007 showed that the proportion of respondents in their 40s who had received financial assistance from their parents over the previous 12 months was approximately 50 percent higher than that of those who had provided financial assistance to their parents. These results suggest that Japanese elderly are still playing a vital role in providing financial support for their offspring when the latter encounter economic difficulties (Ogawa et al., 2010).

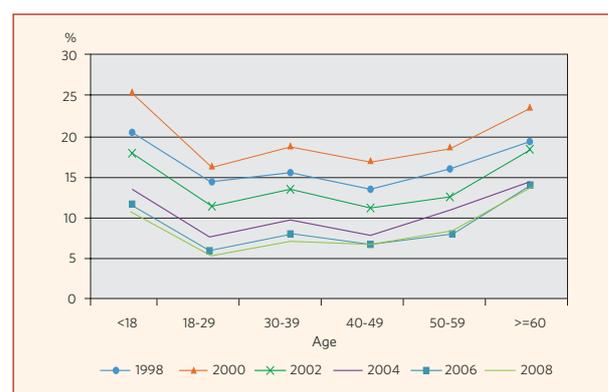
The high demand for savings for retirement is shown in the recent survey conducted by the National Statistical Office of Thailand. Social welfare questions were attached to the Socio-Economic Survey in April 2010. The survey covers 3,680 households from every province. The question on saving for retirement is: If the government asks you to save 100 Baht per month and the government will contribute another 50 Baht to your saving account, which will provide you a pension of 700 Baht per month starting from the age of 60, do you want to save? The result is shown in Table 5.4. About 80 percent of population wants to save for their retirement. But, only half of the population is certain about their capability of monthly saving. In all regions, the proportion of those who do not want to save is rather small. People in Bangkok who are richer than those in other region show more willingness to do their own saving than participate in the government saving plan.

TABLE 5.4 SAVING FOR RETIREMENT SURVEY

	Bangkok	Central	North	Northeast	South	Total
Want to save						
and capable of saving	55	49	43	47	51	48
but not sure of regular saving	14	22	24	27	20	23
but may not have money for saving	10	12	14	13	18	13
Do not want to save						
because I can manage my own saving.	7	4	5	2	1	3
because I do not need saving.	3	3	2	2	1	2
because I do not trust the government.	1	3	2	2	1	2
Don't know, not sure	11	8	11	8	8	9

Source: National Statistical Office, Demand for Social Welfare Survey 2010.

FIGURE 5.17 POVERTY INCIDENCE BY AGE GROUP



Source: TDRI

Without any changes to demographic policy, Thailand may choose to promote migration from neighboring countries to cope with its aging population. Thailand will need 6 million migrant workers in the next 10 years, to meet the excess demand and to continue its economic growth path (Potipiti, 2010). With a large pool of migrant workers, appropriate social policies must be conducted seriously. Migrant workers should be treated like Thai workers. Their children should be treated like Thai children. Therefore, social expenditure on education, medical care and other social insurance will increase. The public will have to weight this social cost with the cost of improving human capital and accumulating physical capital and choosing the growth path under the high labour productivity regime.



Urbanization and Migration Impact

Thailand has emerged as a middle income country in the past twenty-five years, and urban growth has proceeded rapidly. This growth is the result of both long-standing migration patterns and new population distribution trends. About one-third of the population now lives in urban areas. At the same time, international migration, both into and out of the country, has become an important economic and social force. This chapter explores trends and differentials in internal and international migration since the economic crisis of the mid-1990s. It also examines the trends in urbanization and urban settlement patterns, and the impact of these trends on sociodemographic differences and income disparity between urban and rural dwellers. An overview of the environmental consequences of urbanization and migration in Thailand is also presented. Finally, the implications of these trends for policy and planning are discussed with suggestions for strategic interventions as Thailand enters its next planning cycle.

Internal Migration

Long-term Thai migration patterns

Migration is not a new phenomenon in Thailand, nor does it result mainly from the industrialization and economic growth of the past twenty-five years. Rural people have migrated to supplement farm income since the 19th century, usually during the dry season when rice farming production is dormant. In the years before World War II, migration patterns were dominated by rural-rural migration streams to frontier areas for new cultivation of forested land. The abundance of unoccupied land and the ease of taking de facto ownership through cultivation and occupancy led to high mobility as the population increased (Sussangkorn, 1990; Phélinas, 2001).

At the same time, during the first half of the 20th century the high level of agricultural productivity discouraged movement to urban areas. The large numbers of Chinese immigrants to Bangkok meant that rice farming provided a relatively better livelihood than unskilled labor opportunities in the capital. When quotas on Chinese immigration began in 1947, wages for unskilled labor increased and lured rural migrants to Bangkok. This was especially true after 1950 when the population growth rate increased and rice productivity dropped. Seasonal migration was also common in the 1950s, for both men and women, driven partly by improvements in road transport (Ouyyanont, 1998, 2003; Phélinas, 2001).

Chamrathirong (2007) describes how the population explosion in Thailand of the 1950s and 1960s raised interest in studying internal migration, particularly rural-urban flows. An analysis of the 1960, 1970 and 1980 censuses revealed changing migration patterns during this period. By 1975-80, rural-rural five-year moves decreased and interregional and urban moves increased, including urban-urban moves. While the 1965-70 period saw in-flows to Bangkok, the North and the South, by 1975-80 only the Central region and Bangkok were gaining population through migration (Goldstein & Goldstein, 1986).

Several small-scale surveys were conducted during the 1970s and 1980s to examine migration patterns in more depth. Lightfoot et al. (1983) found high rates of short-term, circular moves in a survey of six villages in the Northeast. Bangkok was a primary destination, accounting for about 60% of moves, and while many of the short-term moves were driven by seasonal factors, 79% of the short-term migrants were away for more than one season. Other studies found that longer-term migrants were more selective than short-term migrants,

and that rural development projects tended to facilitate out-migration rather than discourage it (Chamratrithong, 2007).

The National Migration Survey (NMS), conducted in 1992, used month-by-month life history calendars to examine short-term and long-term migration in detail, as well as its interaction with other individual life events and household characteristics. The NMS found that short-term migration had been underestimated by other surveys and the census. If migration is defined as a movement of one month or more, the NMS found that 22.0% of the population had moved in the past five years compared with 8.0% in the 1990 census (Chamratrithong et al., 1995). Of these, 35.9% were repeat migrants (having moved two or more times) with 18.8% (about half of the repeat movers) migrating for seasonal employment. Households in the Northeastern sub-sample of the NMS were re-visited two years later for the NMS2 survey (Richter et al. 1996). Fully one in four (25%) of those interviewed for the 1992 survey had migrated in the succeeding two years, with 9% being seasonal migrants.

Two other important studies have fostered investigations of migration dynamics in Thailand and throughout the world. The Nang Rong study visited households in one district of Buriram province in 1984, 1994 and 2000. Migrants to four destinations (Bangkok, the Eastern Seaboard, Korat and Buriram city) between 1984 and 1994 were followed up in 1995. Following the 1994-95 study spatial data was added to the database. In 2000, an environmental component was added to the study, including spatial data (Entwisle et al., 1999; Rindfuss et al., 2003; Walsh et al., 2005). The Nang Rong studies have contributed to more in-depth understanding about the relationship between land use, population pressure and migration. Households with smaller land holdings were found to diversify their income sources through temporary migration, and out-migration from the household resulted in less land under cultivation (Rattanawarang, 2009; Van Wey, 2008). Subsequently, land became a less important factor in determining migration in villages with high out-migration rates (Garip & Curran, 2009).

The most recent significant study on migration is the Kanchanaburi Demographic Surveillance Survey (DSS), a longitudinal study of 100 urban and rural

communities in Kanchanaburi province. The study includes individual and household demographic, socio-economic, environment and health data linked to a community and GIS database. Data collection has been conducted since 2000 till now (2010), with several special topics on migration and its impact on household and family members, particularly children and the elderly. During 2007-2010, migrants who migrated to Bangkok and the capital city (amphoe muang) of Kanchanaburi province were contacted for a follow-up survey. This survey focuses on the migrants' employment status, social and health behavior, and includes both Thai and non-Thai migrants (IPSR, 2002). Findings to date include that residents of upland areas migrate at younger ages than those in the lowland rural areas, and that land pressure is a factor (Lam et al., 2007; Soe, 2005).

The 1990s economic crisis

While these studies greatly contributed to the understanding of migration dynamics in Thailand by the 1990s, the impact of the economic shocks of mid-1997—when the stock market and asset markets collapsed and the baht was devalued—was uncertain. If migrants in the construction, manufacturing and other sectors lost their jobs—both within Thailand and overseas—would they return to their rural hometowns? And if so, did rural areas have the capacity to absorb and sustain them?

The impact of the crisis on employment is difficult to estimate, since many workers who lost jobs moved out of the formal labor market into the informal economy. For this reason unemployment figures do not reflect the percentage who become underemployed or who are no longer reflected in official statistics. Most sources say that unemployment doubled during the crisis (cited in Skeldon (2004), p.58). The economic sectors most affected were construction (which was sharply affected by the loss of capital) and manufacturing; as money tightened, trade and commerce also contracted (Chalamwong, 2000). There is evidence that the service sector absorbed about 19% of employment losses in other sectors (Knowles et al., 1999). After decades of decline, poverty rates increased in countries where the economy had been booming. In Thailand for example poverty fell from 32.6% in 1988 to 11.4% in 1996, but increased to 12.9% in 1998 (NESDB, 1999).

Increases in poverty reflect in part the inability of the informal economy and the agricultural sector to absorb displaced workers. While most economies in the region recovered by 1999, Thailand was slower to recover and did not return to previous growth levels until 2001.

Internal migration flows greatly increased during the 1997-99 economic crisis, with a reversal of the prevailing pattern of rural-urban migration as migrants losing jobs in urban and peri-urban areas returned home. In Thailand, where manufacturing and construction were particularly hard-hit, it was estimated that two-thirds of the unemployed were rural migrants; return migration to rural areas increased four-fold as 75% of these returned home (Chalamwong, 2000).

Recent trends in internal migration

In this section we present trends in internal migration patterns from the financial crisis to the present. While census data is somewhat limited in its ability to examine the complexities of migration

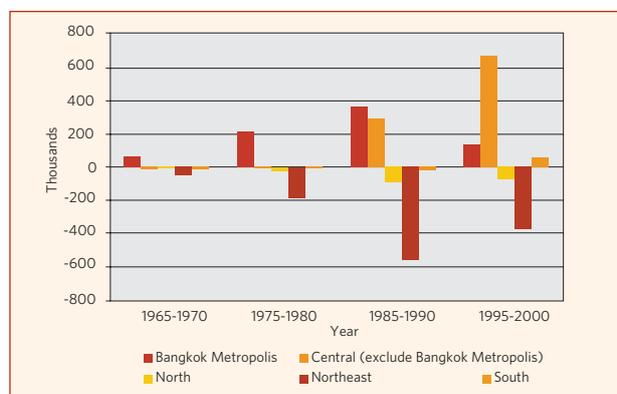
patterns, it is useful in providing a consistent series of measures over a long period of time. The census gives information on "lifetime" migrants (those living in a different province than that of their birth) and five-year migrants (those who have moved in the past five years).

As seen in Table 6.1, lifetime migration increased in the 1965-70 period, remained at the same rate from 1975-1990, and increased again 1995-2000. Five-year migration showed roughly the same pattern, except for the 1975-80 period when there was a decline from about 6% to about 4%. The 1995-2000 period showed the highest level of 5-year migration, at 6.3%.

Census data is also useful for giving a national overview of regional flows. As seen in Figure 6.1, outflows from the Northeast and in-flows to Bangkok increased steadily from the 1955-60 period to the 1985-90 period. In the final period of the 20th century however, in-flows to the central region outside of Bangkok outstripped that to Bangkok itself, and the size of the population stream to Bangkok declined. As will be discussed in more detail below, this is mainly due to the growth of urban areas in Bangkok's periphery, where employment opportunities expanded.

For a more detailed examination of migration since the 1990s economic crisis, we use the Migration Survey conducted by the National Statistical Office on a regular basis since 1997 (NSO, 1990). While the survey has been conducted annually since 2004, it was not conducted from 1998-2001 or in 2003. The survey uses a national sample; the questionnaire is identical to NSO's Labor Force survey with a migration module added. While the survey has changed the definition for some migration categories over the years, measurement of migration in the past year has remained constant and is used here.

FIGURE 6.1 REGIONAL NET GAIN/LOSS FROM 5-YEAR MIGRATION FLOWS, 1965-2000.



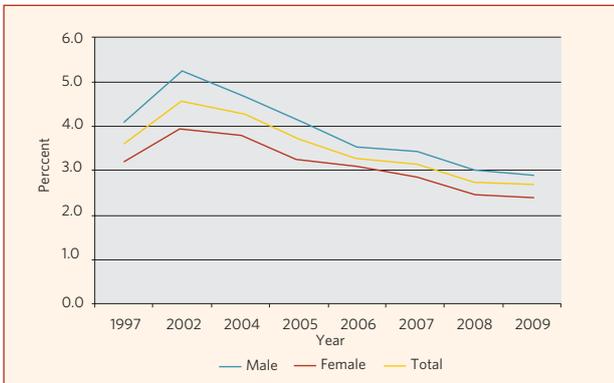
Source: National Statistical Office, 2003.

TABLE 6.1 CENSUS DATA ON THE PERCENT OF THE POPULATION WHO ARE LIFETIME MIGRANTS (LIVING IN A DIFFERENT PROVINCE THAN THAT OF THEIR BIRTH) AND WHO ARE FIVE-YEAR MIGRANTS (HAVING MOVED IN THE PAST FIVE YEARS)

	1960	1970	1980	1990	2000
Lifetime migrants	10.8	13.1	14.1	13.9	16.8
Five-year migrants	3.6	5.9	4.1	5.1	6.3

Source: National Statistical Office, 2003.

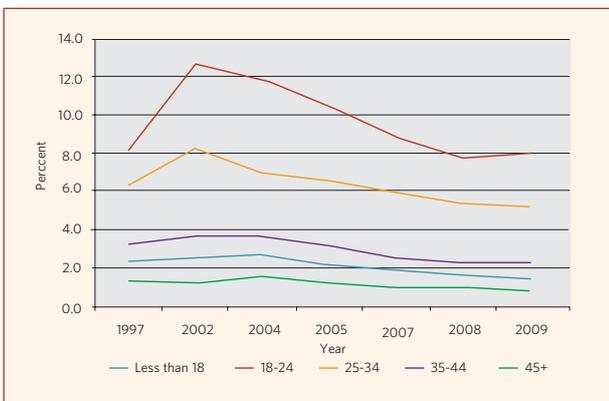
FIGURE 6.2 PERCENT OF THE POPULATION WHO ARE ONE-YEAR MIGRANTS¹ (TOTAL AND BY SEX), 1997-2009.



Note: The survey was not conducted every year prior to 2004 so the scale of the graphs using this data between 1997-2002 is distorted. Sources: National Statistical Office, Migration Survey, 1997, 2002 and 2004-2009.

Figure 6.2 shows migration rates for the total population, males and females for 1997-2009. The survey in 1997 was conducted in the rainy season, several months after the fall of the baht in July. Previous analysis of the impact of the 1990s financial crisis on migration maintains that migration rates should be high during this period—reflecting the fact that many rural-origin migrants returned home due to the decline of job opportunities in Bangkok and other destinations. However, the proportion migrating in 1997 is lower than that in 2002, when the economy was rebounding (3.6% vs. 4.6%). This issue is discussed in more depth below.

FIGURE 6.3 PERCENT OF THE POPULATION WHO ARE ONE-YEAR MIGRANTS BY AGE GROUP, 1997-2009.



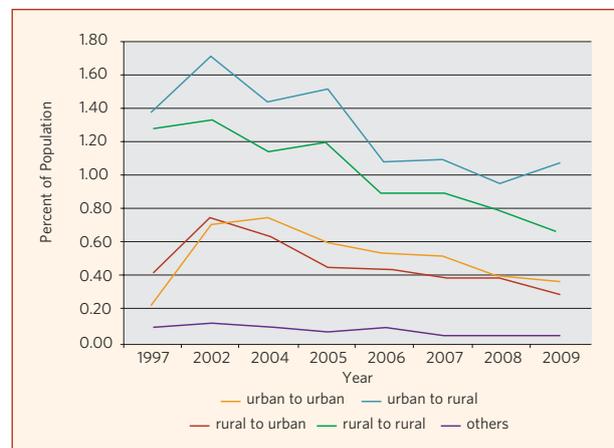
Sources: National Statistical Office, Migration Survey, 1997, 2002 and 2004-2009.

1 One-year migrants are living in a different subdistrict than they did one year ago (NSO, n.d.).

Since 2002, there has been a steady decline in migration rates. Males migrate at a higher rate than females, but the gap has narrowed in recent years. Looking at differentials by age (Figure 6.3), the young working age groups (age 18-24 and 25-34) have much higher migration rates than other groups. In 2002, fully 12.7% of those aged 18-24 migrated in the past year, as did 8.2% of 25-34-year-olds; other age groups migrated at a rate of less than 4%. Moreover, while migration rates of those less than age 18 or older than 35 remained fairly constant during this time period, young working adults had both a sharp increase in migration from 1997-2002 and a steeper decline from 2002-2009. While the differential between 18-24-year-olds and 25-34-year-olds was reduced in this time period, the 18-24-year-olds were the only group to show an increase in migration rates in 2009.

The migration rates by migration stream during this period are shown in Figure 6.4. Because migration streams are highly seasonal, it is important to note that the survey was conducted just after the rainy season during most rounds. This timing would capture most seasonal migrants in their rural home communities as they return for the rice harvest. The exception was in 2009, when the survey was conducted during the dry season in order to measure whether migration increased due to the economic crisis in 2008. As expected, the urban-rural and rural-rural streams are the largest during the rainy season, as seasonal and short-term migrants return home. In the 1997 survey the urban-urban and rural-urban streams are at their lowest point, likely

FIGURE 6.4 PERCENT OF THE POPULATION WHO ARE ONE-YEAR MIGRANTS BY MIGRATION STREAM, 1997-2009



Sources: National Statistical Office, Migration Survey, 1997, 2002 and 2004-2009.

TABLE 6.2 PERCENTAGE OF ONE-YEAR MIGRANTS WHO SAID THEIR MOST RECENT MOVE WAS TO RETURN HOME BY DESTINATION, 2008-2009

Year	Urban	Rural	Total
2008	42.1	66.4	58.9
2009	44.9	73.7	65.7

Sources: National Statistical Office, Migration Survey, 2008 and 2009.

reflecting the lack of urban opportunities during the 1990s financial crisis. Correspondingly, rural-rural migration is at its highest rate in 1997. While urban-rural migration is the largest migration stream, as expected, the fact that the rates increased further in 2002 and remained higher throughout the early 2000s calls into question previous findings that the 1990s crisis caused massive return migration to rural areas. However, the lack of specificity of the timing of the move and length of the migration makes it difficult to make firm conclusions about this response, as opportunities during the 2002-2004 period could have increased seasonal short-term migration over the rates during the crisis. Also, the relative importance of the urban-rural migration stream increased during the dry season in 2009.

Further detail on the nature of these moves is shown in Table 6.2, as 2009 saw an increase over the previous year in the percentage of migrants who said that they were returning home.¹ Boonyamanond and Punpuing (2010) contend that this provides evidence that at least some of this return migration was in response to the economic crisis in 2008.

Urbanization patterns

As mentioned above, most of the research on migration in the 1960s to 1980s was driven by concerns about rural-urban migration, especially to Bangkok. Bangkok's primacy among urban centers in Thailand has been well established since its foundation in the 18th century; by 1981, Bangkok's population was 50 times that of the second largest city. Bangkok's growth increased further when the country rapidly industrialized; by 2000, Bangkok had half of the country's urban population and produced 35.2% of its GDP. The dominance of the capital in providing job opportunities is seen by the

¹ This question was added to the survey in 2008 so it is not possible to look at the response in previous years.

FIGURE 6.5 AVERAGE ANNUAL POPULATION GROWTH RATE OF THAILAND BY URBAN STATUS

Figure 6.5a Rural and urban areas, Bangkok and peripheral provinces, 1960-2010

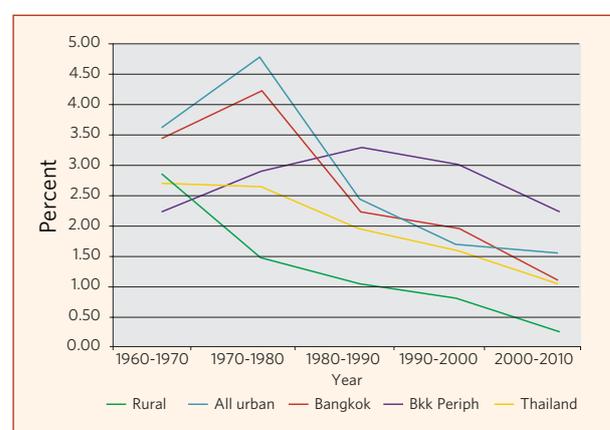
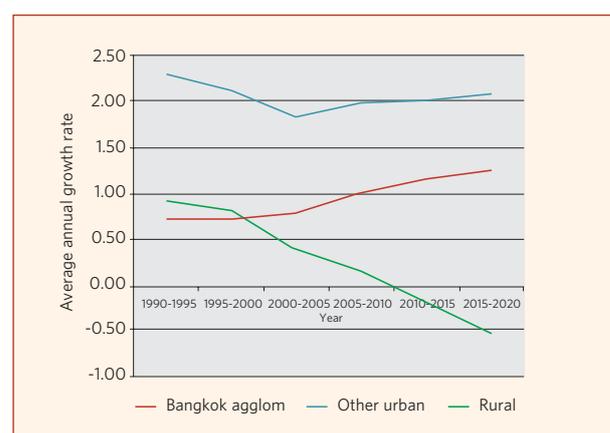


Figure 6.5b Rural, Bangkok agglomeration and other urban areas, 1995-2020



Sources: (Figure 5a) (Urban, rural) United Nations, World Urbanization Prospects Database, 2007; (All other) 1960-2000: Population and Housing Census, NSO; 2000-2010 Population projections, NESDB; (Figure 5b) United Nations, World Urbanization Prospects Database, 2007

fact that rural-urban migration has not historically followed a stepwise pattern in Thailand; many seasonal and long-term migrants moved directly to Bangkok without ever migrating to a smaller urban center. Bangkok is also a financial hub for the Mekong sub-region (Chamrathirong et al., 1995, 1999; Chubb, 1998; Glassman & Sneddon, 2003; Ouyannont, 1998).

In response to this rapid growth, the Thai government implemented decentralization policies in the Third (1972-76) and Fourth (1977-81) national plans. These included incentives to promote the Eastern Seaboard as a manufacturing hub and to encourage the growth of regional urban centers through industrialization. Efforts to diminish Bangkok's dominance during this period were not successful however, and by the late 1980s the Thai government focused on reducing the negative aspects of development. By that time Bangkok's peripheral areas were growing faster than the city itself. Many have argued that the absence of planning has led to urban problems such as congestion and pollution in the regional centers without alleviating them in Bangkok (CODI, 2006; Glassman & Sneddon, 2003; Guest & Jones, 1996; Punpuing, 1999).

Globally, urban growth rates are unprecedentedly high; and contrary to common belief the small and medium urban centers are growing more rapidly than mega-cities (UNFPA, 2007). As seen in Figure 6.5a, while Bangkok's growth rate was higher than that of the nation in the 1960s and 1970s, the gap has narrowed in recent years. Bangkok's growth rate

peaked in the 1970s at nearly 5%; by the 1980s the peripheral provinces were growing at a faster rate. At the same time, the growth rate for other urban areas is higher than the Bangkok agglomerated area (including peripheral provinces) throughout the 1990s and 2000s (Figure 6.5b), and Bangkok's proportionate share of the urban population has declined (Figure 6.6). According to Ministry of Interior estimates, Nakhon Ratchisima (in the Northeast) and Hat Yai (in Songkha province- in the South) are the most populated cities outside of the Bangkok agglomerated area; Chiang Mai, which was second to Bangkok throughout most of Thai history, now ranks behind them.

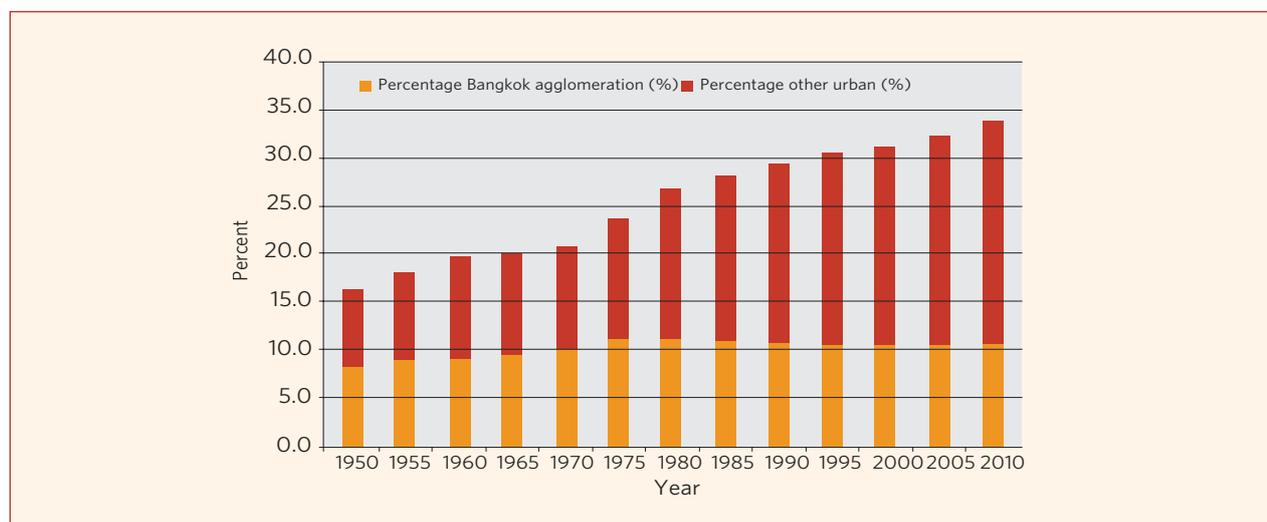
International Migration

In recent years, increasing differentials in the country's economic development level and demographic situation with other countries in the region have led to escalating international migration. The phenomenon is dominated by the movement of semi/unskilled workers from the weaker to stronger economy countries. For example, unskilled workers from the lesser economies in Southeast Asia move to Thailand, and semi- skilled Thai workers migrate to the stronger economies in East and Southeast Asia, the Middle East and other parts of the world.

Out-migration from Thailand

Most Thai out-migrants counted by official statistics are males (85%) and the majority of these are contract workers in low-skilled jobs. Looking

FIGURE 6.6 PERCENT OF POPULATION RESIDING IN BANGKOK AND OTHER URBAN AREAS, 1950-2010

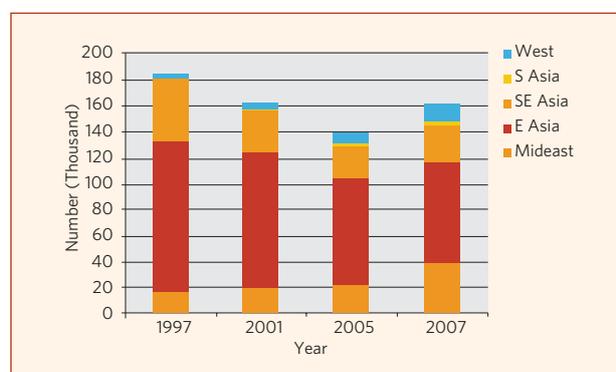


Source: United Nations, World Urbanization Prospects Database, 2007

at trends in the official number of out-migrants in Figure 6.7, there is a slight but steady decline in the 10-year period, from about 180 to 160 thousand, but with a slight increase in 2006-2007. Estimating the number of Thai migrants who returned from international destinations as a result of the 1990s financial crisis is difficult, since so many migrants are undocumented. The crisis occurred at a time where labor flows to the key destination countries in the region—Japan, South Korea, Taiwan, Hong Kong, Singapore, and Malaysia—were high and increasing (Skeldon, 1999). However, with the onset of the crisis several countries attempted to restrict migrant numbers by instituting policies to expel foreign workers. Despite these policies, during the crisis the number of foreign workers in the informal economy remained at stable numbers or even increased. Skeldon (2004) concludes that policies to expel foreign workers had no net dramatic effect on migration during this time period.

The destinations of Thai out-migrants also shifted during the period (Figure 6.7); the steady decline is seen to be a result of a reduced number in East Asia and in Southeast Asia, but the number in the Middle East nearly doubled from 2005-2007. The number in the West also increased steadily. In terms of specific countries in the Middle East, there is a large and fairly constant number in Israel of approximately 9-12,000. The increase in the Middle East in 2007 is almost entirely due to the UAE (Dubai) and the large construction projects there during that period; approximately 10,000 Thais were working there in 2007. A break-down of migrants to East Asia by country shows that the decline in that region is mainly due to a reduced

FIGURE 6.7 DESTINATION OF THAIS RESIDING OVERSEAS, 1997-2007 (OFFICIAL COUNT)



Sources: Huguet & Punpuing (2005); Sciortino & Punpuing (2009)

number in Taiwan (from over 100,000 to about 50,000). In SE Asia, other notable decreases were seen in Malaysia (from 9,000 to 3,000) and Brunei (from 18,000 to 4,000) (Huguet & Punpuing, 2005; Sciortino & Punpuing, 2009).

While it is difficult to estimate the number of irregular Thai migrants to other countries, it is likely that their numbers are larger than those of “official” migrants (see Table 6.3). The fluid borders with neighboring countries contribute to this. This is especially true for Malaysia; the cultural similarities with southern Thais mean that the numbers of short-term migrants to Malaysia are high. In other countries with a large number of migrants, such as Taiwan, contract workers may overstay their visas or break their contracts when they find other work. Women in less formal types of jobs, such as domestic work and agricultural labor, are also likely to have illegal status (Hugo, 2005; Martin, 2009; Sciortino & Punpuing; Skeldon, 1999).

TABLE 6.3 OFFICIAL COUNT OF THAIS RESIDING OVERSEAS, 1996-2007

Year	Thais residing overseas (' 1000)
1996	185.4
1997	183.7
1998	175.4
1999	159.6
2000	177.7
2001	165.0
2002	160.8
2003	147.8
2004	148.6
2005	139.7
2006	160.8
2007	161.9

Sources: Huguet & Punpuing (2005); Sciortino & Punpuing (2009)

Immigration to Thailand

Historically, Thailand has been a destination for migrants from other countries. The largest group was the traders and low-skilled workers from China,

who arrived in Thailand mainly during 18th and 19th centuries, and have now been settled in Thailand for generations. The 1909 census reported that 162,505 Chinese migrants were settled in the capital city-Bangkok (APMRN, n.d.). Particularly during the 19th century, other nationalities that mainly came to Thailand as traders, skilled workers or commercial networkers include those from India, Japan, United Kingdom, United States, and other European and Asian countries. A large number of Indians and Malays also assimilated into Thai society (Sciortino & Punpuing, 2009).

The second most visible migrant group in Thailand are those seeking refugee status. At the end of World War II, a group of migrants from Vietnam arrived, who escaped from internal conflict and deficiency in the country. It is estimated that about half of 68,800 migrants in 1959 were settled, particularly in the Northeastern region. Moreover, during the Vietnam war, a new wave of Vietnamese arrived in Thailand, but most of them were resettled in third countries (mainly in the United States). The exact number of migrants in recent years is not known, but the official figures during 1998 to 2004 showed that 24,914 Vietnamese ethnic migrants registered for 'alien status', which requires an application for 'Thai nationality' for the second and third generations (Sciortino & Punpuing, 2009, p. 81).

In the period after the Vietnam war (1975 and following), about 320,000 Laotians also escaped to Thailand, of which a majority was resettled in a third country or returned home. About 15,500 ethnic Hmong, who are former camp residents or the children who born in Thailand remained in the country, however they were sent back home in early 2010.

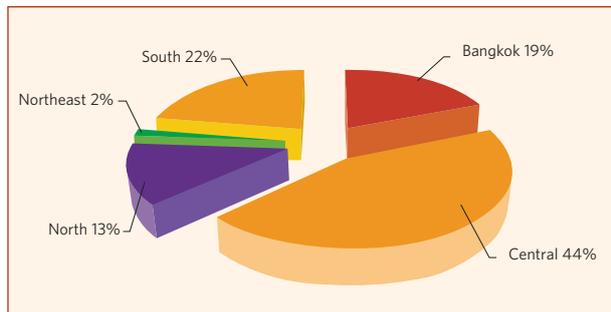
A group from Cambodia was forced to move to Thailand by various events in the country including the Khmer Rouge's victory in 1975, the fighting of the Vietnamese army against the Khmer Rouge in 1979, the Vietnamese offensive along the Thai border in 1984/85, the collapse of Cambodia's coalition government in 1997 and the Khmer Rouge's demise in 1998. The first refugee camp for Cambodians was opened in 1979, and the last closed in 1999. About 235,000 Cambodians have been settled in third countries, and 370,000 were deported back to Cambodia (Robinson, cited in Huguet & Punpuing, 2005).

Thailand is also the host of a large number of people who escaped armed conflicts between ethnic minority opposition groups and the central government in Myanmar. Now, there are nine camps located near the Thai-Myanmar border with a population as of December 2007 of 130,435 according to UNHCR (cited in Sciortino & Punpuing, 2009, p.83). Thailand has been an important receiving country for migrants since the early 1990s, when the influx of low skilled migrants from the Greater Mekong Subregion (GMS) countries- China (Yunnan), Vietnam, Lao PDR, Cambodia and, especially, Myanmar—began to outnumber Thai outflows (Tsay, 2002; Sciortino & Punpuing, 2009). The impact of the 1997-99 crisis on international migration is difficult to estimate, as it affected different countries and different sectors in different ways. Using statistics compiled from official sources, Skeldon (2004) showed that the number of international migrants in Thailand were stable or even continued to increase during this period.

The total number of foreigners working and living in Thailand was estimated at 2.8 million at the end of 2007 (Sciortino & Punpuing, 2009). Efforts are being made in the 2010 census to enumerate more of these workers than in 2000, where only about 70,000 workers from Myanmar, Laos and Cambodia were counted (Archavanitkul et al., 2009). By the end of 2009, an estimated 1,314,382 undocumented migrants², of which 82% were from Myanmar, 8% from Lao PDR and almost 10% from Cambodia, were resident in Thailand. This more than doubles the total number of migrants in the country, as it is in addition to the 1,093,237 documented migrants cited in Chapter 2. As most of the non-agricultural employment is located in urban areas, a higher proportion of the international migrants are concentrated in urban areas than is the case for the Thai population as a whole. As seen in Figure 6.8, about 1 in 5 (or 252,768) of the cross-border migrants from Myanmar, Lao PDR and Cambodia were working and living in Bangkok, while about 44%, 22%, 13% and 2% concentrated in provinces of the central, south, north and northeast regions respectively (Ministry of Labour, 2010). As discussed further below, for the most part cross-border migrants work at unskilled and low-paying jobs, which nonetheless pay them more than they could earn in their own countries.

² Undocumented migrants refer to those who enter Thailand without any immigration documents such as a border pass or visa.

FIGURE 6.8 UNDOCUMENTED MIGRANTS' DESTINATION, 2009



Source: Ministry of Labor, Report of Labor Situations, 2010

There are other types of international migrants who move for work or settlement reasons. There has been an increasing demand for experts with high managerial, technological, engineering or industrial skills. Most of these come from developed countries such as United Kingdom, United States and Japan. By the end of 2009, there were 210,745 foreigners who held Thai work permits, usually coming under a work contract or under the Thai government special scheme for foreign investment. Besides these contract workers, other foreign immigrants include students, those who live in Thailand because of marriage and those who settle there after retirement (see, e.g., Toyota 2006). Some tourists also overstay their visas or become permanent residents (Huguet & Punpuing, 2005).

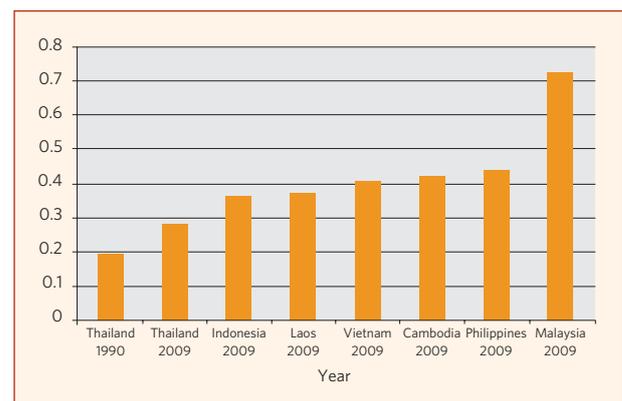
Impact of Migration and Urbanization

Concerns about migration and urbanization often focus on uneven development. If the lack of opportunity—especially for those with education and skills—leads to out-migration from rural areas, the result is increasing inequality between rural and urban areas. This inequality may be manifested by a drain from rural areas of the working-age and educated population, and by increased levels of dependency. Both of these patterns lead to greater inequality of income between urban and rural areas and between migrants and non-migrants.

Compared to other countries in the region, Thailand continues to have a high proportion of the workforce employed in agriculture. As seen in Figure 6.9, while the ratio of GDP from agriculture to employment in agriculture has risen in the past two decades, it remains the lowest in the region. This has been attributed to various reasons including the high level of land ownership, the frequency of seasonal and other short-term migration, and the rapidity of economic growth (Guest & Jones, 1996; Sussangkarn & Chalamwong, 1996). Some contend that the high proportion who continue to be employed in agriculture, combined with the primacy of Bangkok and the government's prioritization of rapid development and capital accumulation over sustainability, exacerbate rural-urban differences (Glassman & Sneddon, 2003).

Resources such as health care services tend to be concentrated in urban areas and especially Bangkok. Continued urbanization may further concentrate these resources. Migrants may also have limited access to these services for other reasons. The environmental impact of urbanization has global repercussions that affect livelihood in rural areas as well. This section examines how the migration and urbanization trends described above have had an impact on inequality and the environment.

FIGURE 6.9 RATIO OF PERCENTAGE OF GDP EARNED FROM AGRICULTURE TO PERCENTAGE OF THE WORK FORCE EMPLOYED IN AGRICULTURE FOR THAILAND AND OTHER SOUTHEAST ASIAN COUNTRIES



	Thailand		Indonesia	Laos	Vietnam	Cambodia	Philippines	Malaysia
	1990 ¹	2009						
Percent GDP from agriculture	12.4	11.6	15.3	29.9	21.3	29.0 ³	14.8	9.4
Percent employed in agriculture	63.5	42.4 ²	42.1 ⁴	80.0	51.8	67.9	34.0	13.0 ⁴

Sources: Except where noted, CIA World Factbook, 2009.

1. Sussangkarn and Chalamwong, 1996, p. 101.

2. 2008 data.

3. 2007 data.

4. 2005 data.

TABLE 6.4 AGE DISTRIBUTION FOR RURAL AND URBAN AREAS BY SEX, 1997 AND 2007(%)

Age	1997				2007			
	Urban		Rural		Urban		Rural	
	M	F	M	F	M	F	M	F
<15	26.9	25.6	31.0	30.2	24.8	22.5	27.8	26.2
15-59	64.6	64.6	60.0	59.3	65.5	66.0	61.4	61.1
60+	8.4	9.8	9.0	10.5	9.7	11.6	10.7	12.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Sources: National Statistical Office, Labor Force Survey, 1997 and 2007.

Sociodemographic differentials

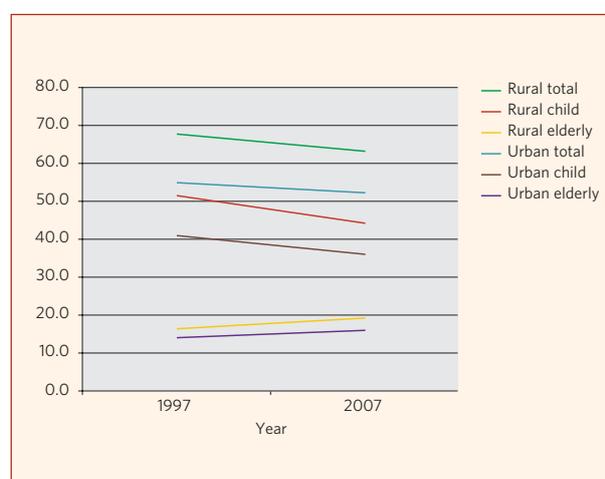
The sharp reduction in fertility in Thailand since the mid-1970s has resulted in a dramatic increase in the proportion of the population in the older age groups (Knodel et al., 2007). Table 6.4 shows differences in age structure between rural and urban areas over the ten-year period from 1997 to 2007. In both time periods there is a higher proportion of children in rural areas, but the difference does not increase over time. In both 1997 and 2007, the proportion of elderly people is only slightly higher in rural over urban areas.

These patterns are reflected in the dependency ratios for the two time periods (Figure 6.10). The total dependency ratio is higher in rural areas than in urban areas, and both decline at about the same rate between 1997 and 2007. The pattern is different for children and the elderly however. While the dependency ratio for the elderly increases over the 10-year period, the increase is very slight and there is little difference in the level of dependency between rural and urban areas. For children, there is a decrease in dependency, and rural areas have a much higher ratio than urban areas.

In sum however, there is no change in the difference between rural and urban areas in age structure or dependency ratios. In other words, the discrepancy between rural and urban areas in the economically active population has stayed about the same—and both rural and urban areas are more affected by the

overall aging of the population than by migration or urbanization patterns. Moreover, research has shown that the vast majority of migrant children maintain social and economic ties with their rural parents (Knodel et al., 2007). The large number of cross-border migrants of working age in Thailand may also have an effect on the age-sex distribution of the population, though the actual numbers are hard to estimate (see Chapter 2). Most migrants are young adults, aged 19-29 years, and they are predominantly male. While exact numbers are not known, children of migrants who are born in Thailand and migrants less than age 18 who migrate on their own to work may also contribute to a younger age structure (Sciortino and Punpung, 2007).

FIGURE 6.10 TOTAL DEPENDENCY RATIOS, CHILD DEPENDENCY RATIOS AND ELDERLY DEPENDENCY RATIOS FOR RURAL AND URBAN AREAS, 1997 AND 2007



Sources: National Statistical Office, Labor Force Survey, 1997 and 2007.

Another source of concern is the inequity between rural and urban areas caused by the “brain drain”, when more educated and skilled workers migrate to urban areas because they are unable to find appropriate jobs in rural areas. In Thailand, the modal educational attainment is the compulsory level of schooling, which was raised from Grade 6 (primary graduation) to Grade 9 (lower secondary graduation) in 1999. For this reason, educational attainment is closely associated with age cohort.³ Looking at rural-urban differences for each sex and year in Figure 6.11, the gap in secondary school attainment narrows considerably from 1997 to 2007. There is little gain in higher education in that time period however, and the percentage with some higher education in urban areas remains about three times that of their rural counterparts. Females in rural areas made the greatest gains in higher education in this period, from 6.2 to 8.4%; but in general the gender gap in education remained constant.

Occupational segregation

Though more attention is given to the situation of cross-border migrants, occupational segregation affects internal migrants as well. Table 6.5 shows national data for 1-year migrants and non-migrants, and it is clear that migrants continue to specialize at certain jobs. Migrants concentrated in manufacturing (16% of men and 14% of women); for men construction is an important category (8%) and women have a high proportion working in services (15%). For other categories such as sales and government work, the percentage of migrants employed is similar to that of non-migrants. However, fewer one-year migrants work in agriculture than non-migrants, particularly for women.

TABLE 6.5 OCCUPATION BY INDUSTRY FOR INTERNAL MIGRANTS AND NON-MIGRANTS BY GENDER, 2007(%)

Current industry	Migrant			Non-migrant		
	Male	Female	Total	Male	Female	Total
Agriculture/ fishery	42.2	36.3	39.9	47.9	48.7	48.2
Non-Agriculture	57.8	63.7	60.1	51.9	51.2	51.6
Production	15.9	14.5	15.4	8.8	8.2	8.5
Construction	11.8	2.7	8.3	7.8	1.8	5.0
Sales	13.7	16.4	14.8	14.5	15.3	14.9
Service	10.5	15.1	12.3	10.4	12.5	11.4
Financial/ real estate/ business	2.2	2.5	2.3	2.9	3.1	3.0
Government/ admin/ clerks	3.6	9.9	6.0	7.3	9.1	8.2
Domestic	0.1	2.5	1.0	0.2	1.2	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: National Statistical Office, Migration Survey, 2007.

³ Because educational attainment is closely associated with age, the percentage distributions in the figure are standardized by age. The figure thus shows what the educational attainment would be in 2007 if the age distribution in 1997 remained constant.

TABLE 6.6 UNDOCUMENTED MIGRANTS FROM MYANMAR, LAO PDR AND CAMBODIA WHO RECEIVED A WORK PERMIT BY SECTOR, DECEMBER 2009(%)

	All migrants	Myanmar	Lao PDR	Cambodia
All industries (Number)	1,314,382	1,078,767	110,854	124,761
Percent by sector:				
Agriculture	16.9	16.6	16.3	19.3
Fish processing/fisheries	14.7	15.7	2.7	16.7
Construction	16.7	16.2	11.4	26.1
Services	18.2	19.8	11.8	10.1
Domestic Helpers	9.9	9.5	19.2	5.3
Others	23.6	22.2	38.6	22.5
Total	100.0	100.0	100.0	100.0

Source: Ministry of Labor, Report of Labor Situations, 2010.

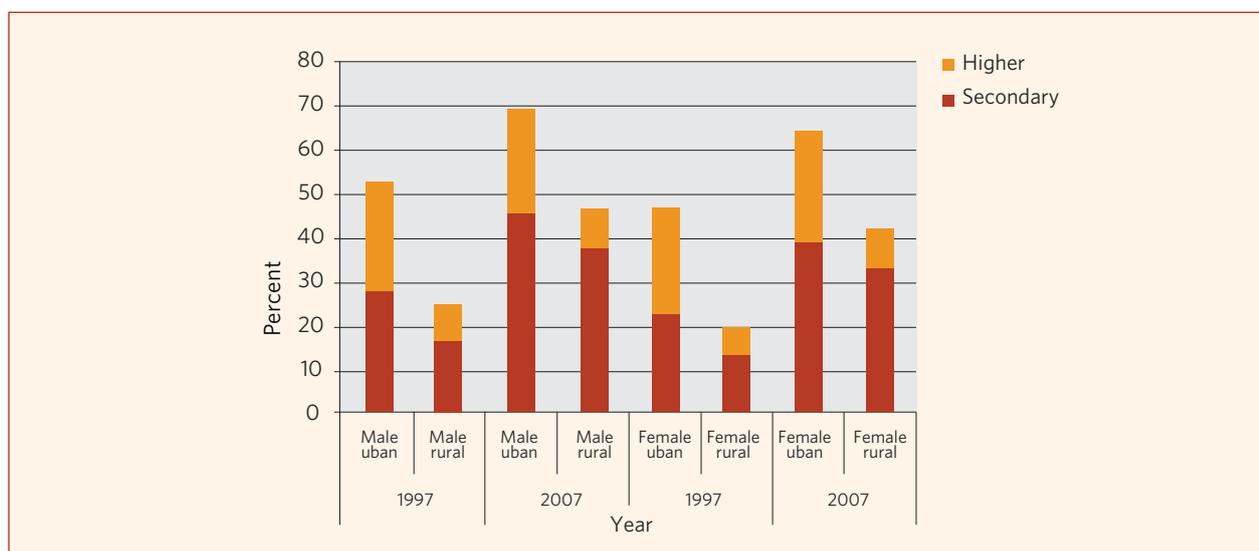
Table 6.6 shows that cross-border migrant workers are concentrated in agriculture and fisheries jobs (about 32%) followed by construction and services (about 18% each), domestic servants (10%), and a large “others” group (24%). The largest proportion of migrant workers from Myanmar are in agriculture and fisheries, followed by the service sector, while domestic servants are the largest sector for migrants from Lao PDR. The construction sector is particularly important for migrants from Cambodia (MOL, 2010). Thailand’s fisheries/seafood processing sector is dominated by migrants. Many migrant workers supply labor for large-scale agricultural production (mainly rubber) in the South, and for animal husbandry and crop production in the Northeast (Sciortino and Punpuing, 2009).

Income disparity

Though a great deal of concern has been raised about inequality in Thailand in recent years, the United Nations ranks Thailand’s Gini coefficient in the mid-range for countries in the region. In 2010 Thailand had a Gini coefficient of 42.5, compared with Vietnam at 37.8, the Philippines at 44.0 and Malaysia at 51.6 (United Nations, 2010). Figure 6.12 shows differences in average household income by urban status in recent years.⁴

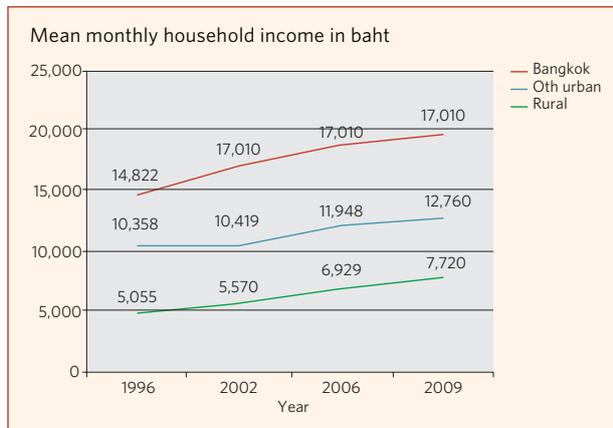
⁴ Household income is adjusted for inflation and by the OECD modified equivalence scale, which gives a more accurate measure for comparative purposes than per capita income. The OECD equivalence scale assigns a weight of 1.0 for the head of household, 0.5 for each additional adult and 0.3 for each child, whereas per capita income measures simply divide household income by the number of people in the household (OECD, n.d.).

FIGURE 6.11 EDUCATIONAL ATTAINMENT BY SEX FOR RURAL AND URBAN AREAS, 1997 AND 2007 (AGE STANDARDIZED)



Sources: National Statistical Office, Labor Force Survey, 1997 and 2007.

FIGURE 6.12 MEAN MONTHLY HOUSEHOLD INCOME ADJUSTED BY EQUIVALENCE SCALES FOR BANGKOK, OTHER URBAN AND RURAL HOUSEHOLDS, 1996-2009 (IN 2007 BAHT)¹

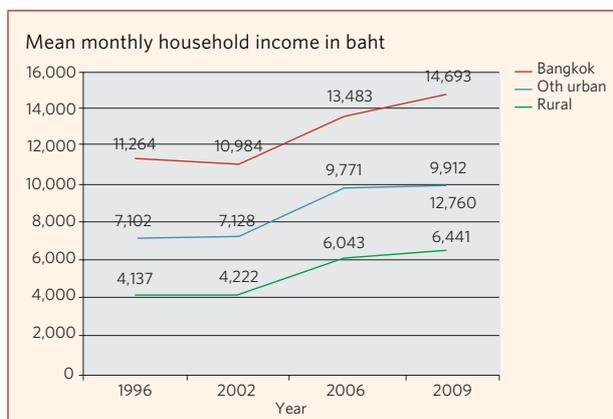


Sources: National Statistical Office, Household Socio-economic Survey, 1996, 2002, 2006 and 2009.

The gap between rural households and those in Bangkok and other urban areas is persistent and has narrowed only slightly in recent years, while the gap between other urban areas and Bangkok has widened. Rural households had 39% of the income of Bangkok households, with households in other urban areas at 65% of Bangkok income.

Data on expenditures from household economic surveys tends to be more accurate than that of income, which is often unreported or difficult to calculate. While expenditures are also much lower in rural areas than in Bangkok (Figure 6.13), the gap has increased in recent years. This finding indicates that inequality between rural and urban areas may be increasing.

FIGURE 6.13 MEAN MONTHLY HOUSEHOLD EXPENDITURES ADJUSTED BY EQUIVALENCE SCALES FOR BANGKOK, OTHER URBAN AND RURAL HOUSEHOLDS, 1996-2009 (IN 2007 BAHT)¹



Sources: National Statistical Office, Household Socio-economic Survey, 1996, 2002, 2006 and 2009.

Poverty head count ratios are another way at looking at relative well-being. As seen in Figure 6.14, while Thailand has successfully lowered poverty rates in the past 10-15 years, the gap between rural and urban areas and Bangkok is still large. Fully 10% of rural households were classified as living in poverty in 2009, while in Bangkok the percentage was less than 1%.

Impact of Migration and Urbanization on the Environment

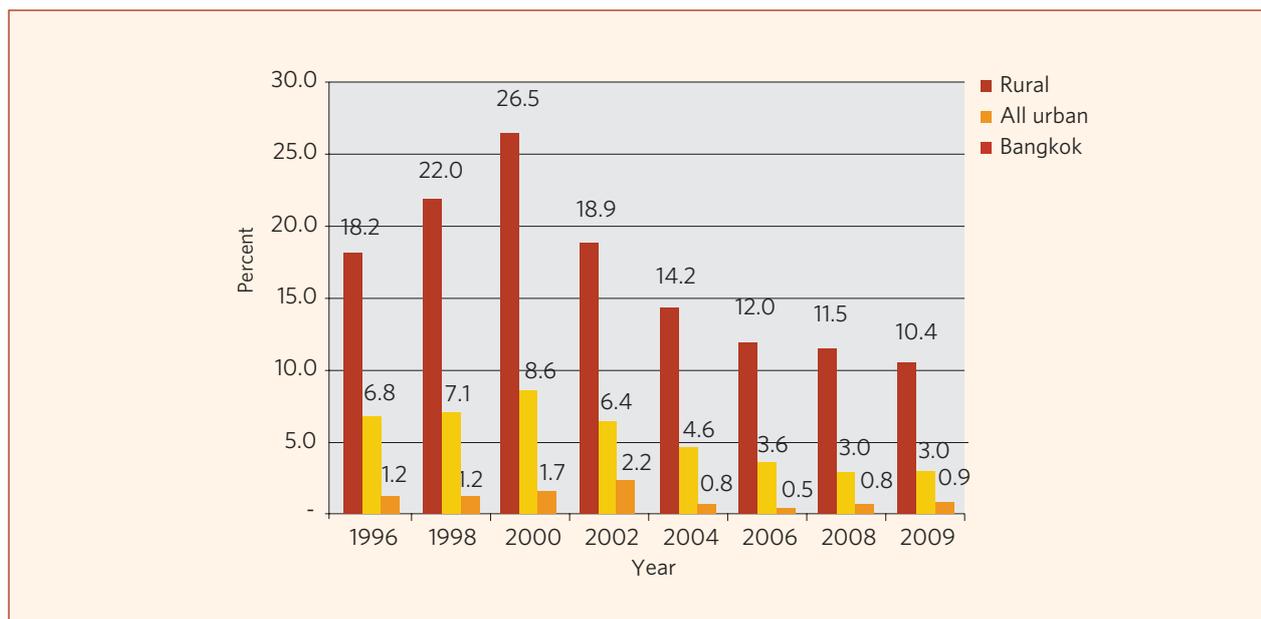
Two long-term settlement patterns have had an acute effect on Thailand's environment. The first is the migration to and appropriation of previously uncultivated land, which was the most common reason for rural-rural migration before the 1970s. Migration has been found to be closely related to land cover in the Northeast (Entwisle et al., 1998; Walsh et al., 1999). The second dominant settlement pattern with environmental consequences is urbanization, and specifically when urban growth incorporates previously productive land (Punpuing, 1999).

Environmental change can be both a cause and an effect of migration. Land productivity decline has been one of the major factors driving the migration of subsistence farmers to slums of major cities. Climate change can cause desertification, changes in water availability including both drought and flooding, and other natural disasters (Gleditsch et al., 2007; Richter et al., 2009). Environmental refugees are driven to migrate by these factors, which may be catastrophic and/or occur gradually over a long period of time. The resulting migration may be seen as voluntary (when income declines in relation to opportunities elsewhere) or involuntary (when land becomes uninhabitable due to environmental accidents or national disasters, or is expropriated for environmental reasons) (Hunter, 2004; Vine, 2005)

On the other hand, migrants can have an impact on the environment in both the origin and destination communities. In destination communities, relative poverty among migrants and the lack of ties to the community work against migrants' motivation to preserve resources (Cassels, 2006). In-migration to frontier areas affects land-use and land-cover change (LUCC) through deforestation (de Sherbinin

¹ Inflation rates from Bank of Thailand accessed at <http://www2.bot.or.th/statistics/ReportPage.aspx?reportID=409&language=eng>

FIGURE 6.14 POVERTY HEAD COUNT RATIO, 1996-2009



Sources: National Statistical Office, Household Socio-economic Survey, 1996, 2002, 2006 and 2009. Calculated by the National Economic and Social Development Board, Thailand

Note: Proportion of the poor is calculated by dividing population with consumption expenditures lower than poverty line by total population

et al., 2007). It is estimated that half of the forest cover in the Northeast was lost between 1973 and 1982 (Suhrke, 1993). Agricultural intensification and the drought cycle can be directly tied to migration flows to Bangkok during this period.

Commercial logging has also been a major factor in deforestation in Thailand. The lack of new land and the instability of the water supply have also led to a large number of landless people, who may migrate for daily labor or industrial jobs (Yoddumnern-Attig et al., 2004). Besides an increase in landlessness, the Nang Rong longitudinal study also found a decrease in the size of land holdings from 1984-1994, and that both were associated with migration (Rattanawarang & Punpuing, 2003).

Other recent studies have examined the impact of urbanization, and particularly Bangkok, on specific environmental factors and quality of life. Chamrathirong et al. (1999) relate the high density and high levels of consumption in Bangkok to air and water pollution and to hazardous waste. Air pollution grew rapidly in the early 1990s; about 60-70% of this is due to increased vehicular traffic and the rest to domestic and industrial use, including the shift to more modern fossil fuels. Increased land prices in central Bangkok contributed to the expansion to areas in peripheral provinces,

increasing the need for workers to commute and thus contributing to air pollution. It also pushed slum dwellers and the original residents of the area surrounding Bangkok to more densely populated and polluted areas. However, an increasing number of migrants go to these peripheral areas as well, since they have become industrial centers (Storey, 2005). No differences were found in gasoline consumption between migrants and non-migrants however. Pungsomlee and Ross (1992) examined the link between modernization and urbanization, and how the benefits of modernization go mainly to elite groups, with the problems affecting low income people thus increasing inequality. Storey (2005) points out that formal institutions tend to prioritize economic growth over addressing environmental problems in Thailand; for this reason, the government has been slow to move on environmental measures.

Discussion and Conclusions

Thailand's high rates of internal migration are a long-term pattern, driven by factors such as the seasonal cycle of rice cultivation, population pressure and industrialization. Longer-term migration is also common, and urban growth has

accompanied industrialization and the expansion of other nonagricultural sectors such as construction and services. But evidence also indicates that migration is a common response to economic shocks. Both the economic crisis of the 1990s and the more recent downturn in 2008 appear to have resulted in higher rates of return migration to rural areas. The fact that migrants are concentrated in production and labor jobs makes them particularly vulnerable to contractions in manufacturing and construction during economic hard times. As the proportion working in agriculture declines, it is likely that the ability of rural households to absorb these return migrants will also diminish. Hence the economic equilibrium that households achieve through migration—with remittances raising household income for those without land holdings or other assets—is in question.

At the same time, census and survey data from the past 15 years show that rates of internal migration are steadily declining. Further analysis shows that this decline is chiefly attributable to fewer moves among the younger working age groups. While seasonal and short-term moves are likely to be underestimated in this data, it would appear that these cohorts are making fewer moves than they did in the past. These same cohorts also are the first to benefit from compulsory secondary education, and thus may be finding more permanent jobs than the older age groups.

The balance of international migration, much of it in the form of undocumented migration, is adding to Thailand's population. The 2.8 million foreigners working and living in Thailand, mentioned above, are certainly not matched in numbers by Thais working and living abroad. Though a proportion of the foreigners working in Thailand are highly skilled, the majority are not, and international migration on balance can be seen as "de-skilling" Thailand's labour force.

To some extent, cross-border migrants are seen as taking the place of Thai workers in low-skilled jobs in the agricultural sector and in other "3D" jobs. A recent study investigates whether immigration, by supplying replacement labor, could alleviate losses to the workforce due to aging. The study uses various modeling techniques to investigate the issue. It estimates that one migrant worker is equivalent to 0.58 Thai workers in terms of productivity. Modeling also reveals that immigration cannot fully alleviate losses to GDP from population aging, due to the lower productivity of immigrant labor and consequent dilution of capital (Potipiti, 2010).

Urbanization patterns in Thailand also present a changing landscape. Bangkok's growth has slowed, but largely due to expansion to the more rapidly growing peripheral provinces forming Bangkok's mega-urban region. At the same time, other urban centers have higher growth rates, particularly in the South and Northeast. While decentralization of manufacturing and other jobs has positive implications, this growth has largely taken place without any regional or national planning strategies.

Moreover, analysis of socioeconomic characteristics shows that for the most part urban-rural differentials are declining only slightly. While the gap in secondary education between rural and urban residents has narrowed, little change has been seen in higher education. At the same time, there remains a sharp gap in income, expenditures and the poverty rate between rural and urban areas, implying continued inequality.

Demographic trends will continue to drive the forces affecting migration. This is particularly the case for population aging in Thailand, resulting in a lower proportion economically active and a higher dependency ratio. Dependency is often tied to those outside the household, and thus economic changes and urbanization are particularly critical. Thailand's strategic planning should include consideration of these dynamic demographic forces that both drive and respond to economic change.



Policy Implications of Thailand's Population Trends

This report has documented the trends in Thailand's population evolution and analyzed some implications and policy issues. This chapter will pull together the different threads of the argument and focus on the policy implications of Thailand's demographic trends. As noted in Chapter 1, Thailand has some unique features, and this is likely to mean that policies adopted in other countries of the region or other countries of the world with somewhat similar characteristics cannot be adopted unchanged in Thailand. Unique features may require unique policies. However, at the same time, lessons can undoubtedly be learned from other countries.

Population-responsive and population-influencing policies

The main emphasis throughout this report has been on understanding the demographic changes that have been taking place in Thailand, as well as likely trends in demographic variables into the future, and their implications for all aspects of human life and wellbeing in Thailand. Policies that take into account the implications of such demographic trends and attempt to strengthen the positive outcomes of these changes and to counter any deleterious consequences can be categorized as "population-responsive" policies. It can be argued that almost everything is affected by demographic trends, and viewed in this light, there is a danger that a study designed to address policy issues resulting from demographic trends will turn into some kind of general development plan. This is to be avoided. It is not appropriate to seek out every aspect of development that can arguably be related to demographic trends. Rather, we need to focus

on key issues in which demographic trends play a central, or at least an important role.

Policies that seek to modify the projected demographic changes in the interests of avoiding outcomes that are judged to be unfortunate can be categorized as "population -influencing". Over a long period in Thailand, the main plank of population policy - the aim of reducing fertility rates judged to be too high - was a "population-influencing" policy. As noted in Chapter 1, this aim was dropped in the Eighth Five Year Plan. The last two Five-year Plans (the Ninth and Tenth Plans, covering the periods 2002-2006 and 2007-2011 respectively) have specifically mentioned the need to maintain fertility at around replacement level. But the context has now changed. When these Plans were prepared, fertility was already below replacement, but not dramatically so. We know now that fertility has reached really low levels. Thus the situation has been evolving, and the key issue for Thailand at the current time is whether to introduce pro-natalist measures in the interest of avoiding excessively rapid ageing, decline in the size of the workforce and eventual population decline.

EVOLUTION OF THAILAND'S POPULATION POLICIES

Population policies in Thailand during the period since World War 2 can be grouped into 3 distinct periods: the period of pro-natalist policy (up to the 1st National Economic and Social Development Plan (NESDP), the period of anti-natalist policy (1st - 9th NESDP), and the period from the 10th NESDP to the present. The Thai government has supported quite distinct policies during each of these periods.

World War 2 to 1st National Plan: Pro-natalist policy

The first time that Thailand can be said to have had a population policy was in the period of Field Marshall Plaek Pibulsongkram's government. Plaek Pibulsongkram was Thailand's Prime Minister in the periods 1938 to 1944 and 1948 to 1957. His nationalist policy included the belief that it was necessary to have a large population to build a strong nation. Accordingly, he supported a healthy women policy on the conviction that only healthy women could give birth to healthy newborns. The following actions supported this policy (Podjanalawan, 2009):

- A midwifery school was established in the Vachira Hospital to improve maternal and child care in 1939. Women aged 19 to 30 who had graduated from the highest level of primary school (Pratom 4) could apply for a 1-year course with scholarship.
- In 1942, the Ministry of Public Health (MOPH) was established, integrating medical and public health services formerly conducted by many ministries. Maternal and child health was covered by one section of the MOPH.
- The Government intervened in marriage by announcing "a culture of husband and wife." They emphasized the importance of family for the strength of the nation. Wanting to make marriage affordable for the grooms, they asked women to limit the size of their bride price requested when arranging a wedding.
- A marriage promotion organization was established in the MOPH. Men and women were advised to have medical check-ups before marrying.
- Government took the role of match maker. The office of marriage information was established.
- A new law "tax to single individual" was enacted in 1944. Besides the income tax, single males age 25 and above had to pay additional tax, 10% of their income.
- The government recommended people to marry a healthy man or woman. People with genetic disease were discouraged from marrying. The government tried to enact a law that forced a couple to have a medical check-up before receiving a license to marry.
- The government provided more incentives to newly-wed couples, such as
 - they could get a loan, 50% above the level of their saving deposit.
 - their first child could get free education if the government arranged their wedding ceremony.
 - they could see free movies at Saha-cinema and its subsidiary theaters for 30 days after the date of their marriage registration.
 - pregnant women could get discount for public transport.
- Contraception was prohibited. Only prescription by a physician was allowed.
- Government recommended a suitable age of marriage: 20-30 for males and 18-25 for females. The marriage guideline was distributed in 1943.

The impact of the policy is hard to judge. Thailand's population increased from 21 million to 28 million in the 10 years between 1950 and 1960, with an average growth rate of 3.4 per cent per annum. This was the most rapid growth in Thailand's history. A major factor was the sharp decline in mortality rates over this period, but the pro-natalist policies may well have played a role.

The 1st – 9th National plans: Control population growth

During this period, the Thai government reversed its policy from pro-natalist to anti-natalist. The large cohorts born during the pro-natalist period entered the fertile age group and were ready to reproduce. This led to very high population growth during the 1st (1961-1966) and 2nd (1967-1971) NESDP—around 3%, causing high social spending. In 1963, the government started discussing the problem caused by high population growth (Robinson and Rachapetayakom, 1993; Rosenfield and Min, 2007: 223-7). The population policy was officially announced in 1970. The Planned Parenthood Association of Thailand (PPAT), was established under the patronage of H.R.H. the Princess Mother. It was the first non-profit organization aimed to promote family planning aggressively.

The government targeted population growth at 2.5% by the end of the 3rd NESDP (1972-1976). In 1976, the population growth was 2.7% (Table 7.1). The government continued to target declines in rate of population growth in the NESDPs for more than two decades.

Although the achievement did not quite reach the target in any of these plans, this non-achievement should definitely not be deemed a failure. The non-achievement resulted, not from poor performance, but from the setting of somewhat unrealistic targets. What happened over the period covered by the 3rd to 6th five-year plans was one of the most rapid declines in fertility in the history of the world – a decline from a TFR of 5.5 in 1970 to 2.2

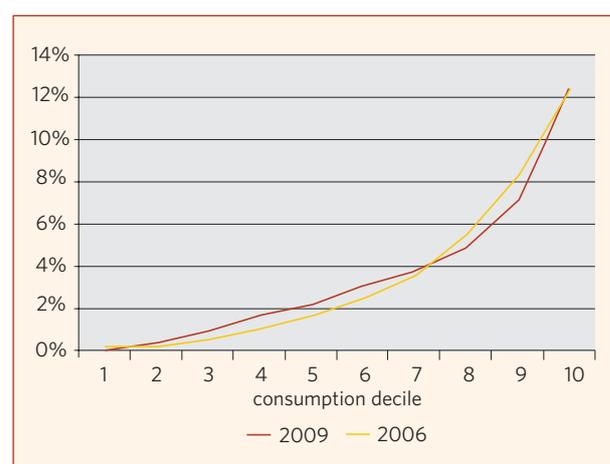
TABLE 7.1 TARGETED AND ACHIEVED POPULATION GROWTH RATE

NESDP	Target (%)	Achieved (%)
3 rd (1972-1976)	2.5	2.7
4 th (1977-1981)	2.1	2.2
5 th (1982-1986)	1.5	1.7
6 th (1987-1991)	1.3	1.4
7 th (1992-1996)	1.2	1.2

in just 20 years. The reason the population growth targets were not quite reached was that they were over-ambitious, and overlooked the effect of population momentum in holding back the declines in population growth rates even when fertility decline is very sharp. For example, it was extremely ambitious to think that the population growth rate could be reduced from 2.7 per cent per annum to 1.5 per cent per annum in just ten years (1976 to 1986), given the increase in the proportion of the population in the reproductive-age groups that would inevitably result from sharp fertility decline.

In the 1970s, private and public sectors worked together in family planning. Everyone knew about the motto “Having many children leads to poverty”, which was widely posted. The Ministry of Public Health ensured that family planning services were widely available and it took quite radical steps to ensure that women needing contraceptive protection were able to obtain it, including allowing midwife insertion of IUDs (Rosenfield et al., 1982). In 1979, Mechai Viravaidya, who was nicknamed Mr. Condom, emphasized that having many children did not only lead to poverty but also adversely affected the health of father, mother, and newborn (Veravaidya, 1979). Mechai’s private sector activities were an effective complement to the efforts of the Ministry of Public Health.

FIGURE 7.1 PERCENTAGE OF HOUSEHOLDS HAVING MEMBERS ATTENDING POST-SECONDARY EDUCATION



Source: National Statistical Office, Socio-Economic Survey (2006 and 2009).

We cannot measure precisely which factors among trends in socio-economic development, declining mortality and the effect of family planning programs have a stronger effect on the reduction of population growth. In the case of Thailand, it seems clear that these factors were all working together to reduce population growth rates.

By the time of the 7th plan, for Thailand as a whole, the number of children per family was steadily decreasing, and the aim of reducing fertility was targeted more to controlling population growth in some regions, such as northeast Thailand and the mountainous areas, where the birth rate remained relatively high, causing imbalances in allocation of resources to education and health.

As mentioned in Chapter 1, the 8th (1997-2001) and 9th (2002-2006) NESDP set no targets for reducing the population growth rate, but aimed at promoting an appropriate family size among Thai people, not too small and not too large. The 9th Plan did mention that this would ensure that fertility would be maintained around the replacement rate. In some regions, the fertility rate was considered too low, but no policies were proposed to counter this. Population growth at the end of 2005 was around 1.2% per annum.

National Plan 10th – present: Issues of Aging Population

The 10th plan expresses concern about aging population, both in Thailand and in developed countries, and notes that aging population in developed countries might cause a tremendous labour movement from developing to developed countries where job opportunities are better. Such movements could cause more labour shortage in Thailand. However, present policies at the ministry level are responsive policies, basically to cope with changing population structure. No attention is paid to raising the birth rate, but there is some emphasis on controlling the deaths of newborns and mothers. Policies are shown in Table 7.2.

The key concerns of the next development plan are economic growth, expenditures on healthcare and social welfare, low global economic growth and high public debt. One important challenge for the next development plan is the declining growth of labour force from 0.98% per annum in 2005-2009 to 0.45% per annum in 2010-2014. The labour force will begin to decline in 2018, but its share in the total population will begin to decline almost immediately.

TABLE 7.2 POPULATION-RESPONSIVE SOCIAL AND ECONOMIC DEVELOPMENT POLICY IN THE 10TH PLAN

Institution	Responsive policy
Ministry of Finance	Encourage people to save for retirement
Ministry of Labour	No long-term policy on migrant workers. Plan to promote part-time or temporary employment among elderly. Plan to improve labor productivity. Study retirement age extension.
Ministry of Public Health	Promote family planning Improve maternal and child care. Monitor reproductive health and fertility indices. Prepare long term care for elderly.
Local government	Cooperate with private sector to build community child care center. Extend social assistance for elderly. Promote social activities among elderly. Encourage people, public, and private sectors to participate in social welfare administration.
Ministry of Social Development and Human Security	Improve awareness of aging society. Protect social rights of elderly.

Note: These policies are not only responsive to population trends, but also to other social and economic changes in Thailand.

TABLE 7.3 FERTILITY ASSUMPTIONS (TFR) UNDERLYING THE UNITED NATIONS POPULATION PROJECTIONS

	2005-2010	2010-15	2015-20	2020-25	2025-30
High Projection	1.81	2.10	2.25	2.35	2.35
Medium projection	1.81	1.85	1.85	1.85	1.85
Low projection	1.81	1.60	1.45	1.35	1.35

Source: UN World Population Prospects, 2008

TABLE 7.4 EFFECT OF ALTERNATIVE FERTILITY ASSUMPTIONS ON MEDIUM-TERM GROWTH AND STRUCTURAL CHANGE IN THAILAND'S POPULATION

	2010	2015	2020	2025	2030
% aged 0-14					
<i>High projection</i>	21.5	21.4	21.9	22.4	22.1
<i>Medium projection</i>	21.5	20.7	20.1	19.3	18.5
<i>Low projection</i>	21.5	20.0	18.2	16.0	14.7
% aged 15-64					
<i>High projection</i>	70.8	69.9	67.7	65.2	63.4
<i>Medium projection</i>	70.8	69.8	69.3	67.8	66.2
<i>Low projection</i>	70.8	71.1	70.7	70.5	69.1

Source: UN World Population Prospects, 2008

RESPONDING TO CURRENT AND PROJECTED DEMOGRAPHIC TRENDS

Population growth and age structure

Population growth in Thailand is now very slow, and is projected to cease altogether within another decade or two. Foreseeable changes in fertility and mortality will make little differences to the age structure trends projected in the United Nations population projections. The fertility trends assumed in the different United Nations projections are shown in Table 7.3. As shown in Table 7.4, if the fertility trends of the high or low projection are followed, rather than those of the medium projection, the effect on age structure will be limited over the coming decade 2010-2020 (for example, % aged

0-14 would vary only between 18.2% and 21.9% and the percent in the working ages would vary only between 67.7% and 70.7%). Over the decade after that, the effects of different fertility assumptions on age structure would become greater, but because of offsetting effects of increased aged population and decreased child population, the variation in the share of the population in the working ages (between 63.4% and 69.1%) would not be very large.

When the fertility assumptions underlying the UN's projections for Thailand are examined (see Table 7.5) the high projection appears highly unlikely to be followed. And in view of the most recent estimates of Thailand's fertility reported in Chapter 2, the low projection appears more likely to be followed than the medium projection, given the evidence that TFR is already well below the figure assumed by the medium projection for the 2005-2010 period, which in the medium projection is projected to

continue unchanged over the next two decades. Therefore, in comparing the future growth of population, we will ignore the UN's high projection. When we compare the growth of population according to the medium and low projections, we see that in both projections, numbers in the labour force age groups will begin to decline in the early 2020s. However, in both cases, the younger segment of the labour force ages—those aged 15-29 – was already beginning to decline before 2010 (see Chapter 1, Table 1.5).

Ageing and its implications

Demographic trends as well as socio-economic factors have an important effect on the living arrangement of older persons, such as a decline in co-residence with an adult child among persons aged 60 and older. The declining co-residence is expected to continue as we expect that future elderly will be better educated, and likely in better health. Many of them will be covered by some form of retirement benefit. Any form of private or public institutions that can assist the elderly to live independently and safely should be fostered.

Children have been an important safety net for aging parents. Chapter 3 shows that filial material support has only modestly declined. Financial support does not require physical proximity and the size of monetary contribution increases—and could continue to increase in future—with the better employment opportunities of adult children. However, planning needs to take into account the possibility that in the future, filial material support may diminish due to the reduction in family size of the future elderly, and the clear evidence that the proportion of elderly who are childless will increase. It is important that the expansion of the retirement pension among insured workers under the Social Security system and savers under the upcoming National Saving Scheme is designed to counterbalance this likely loss of support.¹ In the meantime, it is important that the modest safety net provided by the Bt.500 government welfare allowance for all elderly persons be continued. Bearing in mind that the proportion of elderly in the population will continue to increase, each

working individual should prepare enough saving to supplement the government welfare allowance as it is hard for the government to increase such allowance.

Material well-being of the elderly could be promoted through improving the health of older persons to allow them to work longer. This needs to be linked with an extension of the retirement age from 60 to 65 or a new employment arrangement for elderly to work part-time. According to the 2007 Surveys of Older Persons in Thailand, about 70 percent of persons aged 60 and above are not in the labour force. The main reason (stated by 79 percent) is that those elderly think that they are too old to work. If job opportunities are open to them, some proportion of these elderly may want to work. Only 7 percent of out-of-labour-force elderly are unemployable due to sickness or disability.

As noted in Chapter 3, the government should encourage those who will later be entering the elderly age groups to make specific plans for their old age as early as possible through both formal and informal educational channels. It should also promote realistic expectations regarding how much financial support can be expected from the various measures and programs that it is establishing. Given limited national financial resources and rapid growth in the number of older persons, a substantial degree of self-dependency and positive life style practices need to be encouraged. At the same time, the government should recognize its responsibility to provide assistance with respect to the needs that individuals, their families, and communities cannot adequately meet by themselves. Given limited government resources, efforts will likely need to be targeted to those groups of elderly with greater need, such as the poor, the oldest old, or the disabled rather than to all elderly equally.

Long term care for severe disability or serious chronic illness presents the greatest challenge in the face of smaller family size, the greater dispersion of adult children, and increased proportion of elderly with no children. Government could be involved by promoting both family and non-family means. In terms of family means, government could promote 'elder care leave policies'. This should be done cautiously to avoid abuse. It must be made clear who will bear the cost and how to manage abuse. In terms of non-family means, government

¹ The National Saving Scheme is a new cabinet-approved scheme, aiming to encourage the working-age population to save for their retirement. Government promises to make a contribution if members of the fund save until they reach their retirement age.

TABLE 7.5 FUTURE GROWTH OF THAILAND'S POPULATION ACCORDING TO UN MEDIUM AND LOW PROJECTIONS

MEDIUM PROJECTION	2010	2015	2020	2025	2030	2035	2040
Population							
Aged 0-14	14,629	14,485	14,321	14,027	13,651	13,327	13,078
Aged 15-64	48,259	49,311	49,528	49,207	48,602	47,847	47,103
Aged 65+	5,251	6,143	7,594	9,394	11,209	12,736	13,823
Total	68,139	69,939	71,443	72,628	73,462	73,910	74,004
% growth over previous 5 years							
Aged 0-14	-3.3	-1.0	-1.1	-2.1	-2.7	-2.4	-1.9
Aged 15-64	4.6	2.2	0.4	-0.4	-1.2	-1.6	-1.6
Aged 65+	12.1	17.0	23.6	23.7	19.3	13.6	8.5
Total	3.3	2.6	2.2	1.7	1.1	0.6	0.1
LOW PROJECTION							
Population							
Aged 0-14	14,629	13,834	12,661	11,140	10,203	9,634	9,227
Aged 15-64	48,259	49,311	49,528	49,207	47,956	46,197	44,237
Aged 65+	5,251	6,143	7,594	9,494	11,209	12,736	13,823
Total	68,139	69,288	69,782	69,741	69,369	68,568	67,287
% growth over previous 5 years							
Aged 0-14	-3.3	-5.4	-8.5	-12.0	-8.4	-5.6	-4.2
Aged 15-64	4.6	2.2	0.4	-0.6	-2.5	-3.7	-4.2
Aged 65+	12.1	17.0	23.6	23.7	19.3	13.6	8.5
Total	3.3	1.7	0.7	-0.1	-0.5	-1.2	-1.9

Source: UN World Population Prospects, 2008

could promote and regulate private agencies that offer full-time help with eldercare. The demand for eldercare will increase with the number of elderly who have fewer or no children or who have never been married. Government intervention in monitoring and regulating is needed to protect elderly who have saved in their working period to spend in their last life span.

The Thai government is clearly aware of the challenge posed by long term care arrangements

in the context of reduced availability of family assistance, and is actively experimenting with pilot programs to promote community based home care assistance through either paid or non-paid volunteers. This could prove to be an effective strategy to help meet the need for assistance with instrumental activities such as meal preparation, shopping and cleaning that are typically required only on a part time basis, but is unlikely to meet the need of those who suffer serious chronic illnesses, are bedridden or severely disabled. For

this group, expensive government assistance will be needed, and this highlights the need to keep the group as small in number as possible through preventive health, active ageing measures, health interventions that target treatable problems that underlie disability, and promoting assistive aids as well as modifications of physical environment that facilitate mobility.

Planning for health services

As emphasized in Chapter 4, a health systems perspective on the demographic and health transition points inevitably to the increasing share of the health care needs of the elderly in the overall health budget. It is in the first year and in the last years of a person's life that medical costs are highest. Given the steady decline in the proportion of infants, and the steady rise in the proportion of the elderly in Thailand's population, this rise in the share of elder care in the health budget is inevitable. Whether this will prove to be really burdensome to the government budget will depend partly on policies adopted.

The main losses of disability adjusted life years (DALY) among elderly men and women are the same: cancer, cardiovascular diseases and chronic respiratory diseases. Disorders of the sensory organs such as vision and hearing loss and neurological disorders such as dementia were also important among the elderly, reflecting the frequent development of degenerative conditions during the ageing process. Among the pre-elderly group, cancer and cardiovascular diseases were also the most important categories, but unintentional injuries, HIV/AIDS and mental disorders were more important in the DALY profile than for the elderly.

Chapter 4 stressed the need to keep the pre-elderly cohort healthy, minimizing exposure to key risk factors such as tobacco, excessive alcohol consumption, unsafe sex, high blood pressure and high body mass index among pre-elderly men and women. Tackling these issues requires a range of approaches, from legislation and effective law enforcement through to health promotion campaigns and better urban design conducive to an active lifestyle. More effective collaboration between government and civil society can assist in these efforts.

For the health care needs of the elderly, a clear strategy is needed. Public health interventions need to be oriented to reduction of primary risk exposures such as use of tobacco and excessive alcohol, improving diet and promoting physical activities. Skill in home healthcare provision needs to be developed in conjunction with effective interface between home, community and institutional based care for the elderly.

Thailand has always suffered from a shortage of health personnel in areas considered less attractive to work in, resulting in a ratio of doctors per 10,000 population in Bangkok that is 10 times higher than in the northeastern region. Planning for the health workforce is complicated by the rapid growth in the private hospital share in the healthcare market, resulting from rapid economic growth and government promotion of medical tourism, which drew doctors and nurses from rural public facilities to private facilities. The ratio of doctors who moved out from MOPH public facilities to new entrants increased from 22 per cent in 2001 to 80 per cent in 2008, and although an increase in financial incentives implemented in 2009 reduced this ratio to 63 per cent in 2009, continuing attention needs to be paid to measures to ensure a better balance between supply of medical personnel and needs for their services in different regions of the country.

Marriage trends in Thailand have greatly altered the composition of the population needing access to reproductive health services, including contraception. It was never appropriate to ignore the reproductive health needs of the unmarried reproductive-age population. But the urgency of modifying policies and programs to effectively serve the needs of this section of the population is highlighted by the steady rise in the share of this group in the reproductive-age population, as a result of delayed marriage. Sensitivities surrounding the provision of services to the unmarried need to be tackled head-on in the interests of the wellbeing of this section of the population, not least because of the continuing danger posed by the HIV/AIDS epidemic.

Planning for improving human capital

The shares of children aged 0-14 and working population aged 15-59 to total population in

Thailand reached their peaks at different times: children were 45 percent in 1965 (down to 21 per cent in 2010) and the working age proportion reached its maximum share of 71 percent in 2010. Chapter 5 has shown that the first demographic dividend, defined as the growth rate of the ratio between the effective number of producers and the effective number of consumers, has ended in 2010, and the age structure will gradually become less favourable to economic growth. Policies such as improving human capital and increasing capital accumulation are needed in the medium and long terms.

Human capital accumulation has a major role to play in increasing labour productivity and economic growth. What seems to be a major obstacle is the quality of education. Thailand has increased its spending on education, but lagged behind neighboring countries, e. g. Singapore, Malaysia and Indonesia, in terms of educational indicators. The quality of primary and secondary education differs widely between rural and urban areas and between well developed and less developed provinces. Thai teachers, particularly in remote areas, do not have good knowledge in languages, mathematics and science. All these issues should be remedied to improve the quality of the future workforce. The smaller workforce in the future needs to be upgraded into a high productivity workforce. This has implications for the education budget. Declining numbers of school-age children do not mean that the education budget can be cut; investment needed to raise the quality of education will require considerably higher expenditure per pupil.

Another obstacle to improving human capital is access to higher education. The education law improves access to secondary education. Households in all income levels have equal access to lower secondary education (albeit of different quality). However, opportunities to enter higher education are highly unequal as shown in Figure 7.1. (See page 117). Student grants for the poor and student loans for middle income households should be extended. This is expected to improve not only Thai human capital, but also income distribution.

Increasing physical capital accumulation is another policy option to attain economic growth in the future. Physical capital accumulation can lead to

permanent increase in capital deepening, and thus a higher capital per unit of labour. Consumption could be maintained even in the aging society. Therefore, government promotion of saving for retirement should be encouraged. Pensions under Pay-As-You-Go arrangements should be minimized.

Policies such as increasing the reliance on migrant workers to replace low skilled workers may be suitable only in the short term as they tend to have a negative effect on per capita income. Low skilled workers are more likely to work in the informal sector. In about 5-10 years, about 30 percent of these workers who are now aged over 50 will not be able to work as they will be 60 years old or more. If Thailand chooses to replace retiring low skilled workers with migrant workers, social expenditure will inevitably increase. This includes expenditure on education for migrants' children, healthcare, and other social concerns, e.g. discrimination, and law enforcement in the labour market. The trade-off of the cost and benefit of replacing low skilled Thai workers with migrant workers should be publicly evaluated.

Given that social expenditure will continue to increase in the future, the Thai government needs to improve its tax capacity. In the past 20 years, tax revenue has accounted for only 16-18 percent of GDP. About 55% of tax revenues are from indirect tax (value added tax, excise tax, import duties, and other sales tax) and another 45% are from direct tax. The personal income tax base is narrow, covering only one-fourth of the labour force. About 44% of individuals who file an income tax form have income below the taxable income level. The government could increase tax revenues by introducing property tax (on land and real estate), abolishing tax exemption for large firms that receive investment promotion from the Board of Investment, adjusting itemized deductions for personal income tax, and increasing marginal tax rates (Jitsuchon, 2010; Anuchitworawong, 2010; Chandoevmit, 2010).

Urbanization, migration and regional depopulation

Thailand's population distribution and growth needs to be carefully assessed. First of all, growth of population is slowing and only between one

TABLE 7.6 PERCENTAGE OF CHILDREN LIVING IN A HOUSEHOLD WITH THEIR PARENTS

Household has	2006	2007	2008	2009
Both father and mother	64.5%	63.0%	62.0%	61.9%
Father only	2.4%	2.3%	2.6%	3.1%
Mother only	13.7%	12.8%	13.6%	13.8%
Relatives, no parents	18.9%	21.7%	21.4%	21.0%
Non-relative, no parents	0.5%	0.3%	0.4%	0.3%
Total	100%	100%	100%	100%

Source: National Statistical Office, Socio-Economic Survey.

and a half million more (low projection) and 6 million more (medium projection) are expected to be added before population levels off. Given the currently relatively low levels of urbanization, the proportion urban can be expected to increase considerably. Planning to enhance the quality of life of this growing urban population is crucial.

Planning must take into account where the growing urban population will live. It is likely that the decline in the share of the Bangkok mega-urban region in the nation's urban population (observed over the 1990-2000 period – see Jones and Douglass 2008, Table 3.4) will continue. The implication is that smaller cities and towns will be growing rapidly. Planning for the physical, social and environmental wellbeing of these smaller cities and towns must be accorded high priority. At the same time, differential growth in the core and the fringes of the Bangkok metropolis will lead to complex planning issues.

It is likely that some regions will lose population, because rural depopulation will not be fully made up for by the growth of towns and cities in these regions. The consequences of such declines can be very traumatic for populations of these declining areas. For example, difficult decisions may need to be taken about closure of some schools, and busing of pupils to larger schools where a broader educational experience can be gained. Problems will be faced in maintaining infrastructure designed for a larger population.

The wellbeing of migrants also needs to be planned for, both domestic migrants such as those moving permanently or seasonally from rural areas, and international migrants from neighbouring countries – Myanmar, Lao PDR and Cambodia—most of whom also originate in rural areas.

Population changes and socio-economic factors may have an impact not only on co-residential patterns of the elderly, but also of children. Many working adults leave their hometown to work in the city or in remote provinces. These adults are mainly in the fertile age group. When they have their offspring, they find it difficult to combine work and child care. Many of their offspring end up living in a household where either father or mother is absent.

The Socio-Economic Surveys in 2006-2009 show consistently declining percentages of children living in a household in which both parents are present. In just 4 years, this percentage has fallen from 64.5% to 61.9%, but the percentage of children living in a household from which both parents are absent increased from 19.4% to 21.3% (Table 7.6). The surveys consistently show that children in the northeast have the lowest percentage (around 55%) and children in Bangkok have the highest (around 76%) that live in a household with both parents present. Migration is the main reason for such absence of both parents from the same household (Table 7.7). Separation is the second most important reason.

TABLE 7.7 REASONS THAT CHILDREN DO NOT LIVE WITH BOTH PARENTS IN THE SAME HOUSEHOLD IN 2009

Household with	Father and/or mother were death	Parents are separated	Father and/or mother works in other province	Father and/or mother work abroad	Children want to attend school	Other	Total
Father only	10%	64%	23%	1%	1%	2%	100%
Mother only	12%	36%	38%	10%	0%	4%	100%
Relative, no parents	6%	25%	61%	2%	2%	5%	100%
Non-relative, no parents	17%	28%	19%	9%	0%	27%	100%
Total	8%	32%	49%	5%	1%	5%	100%

Source: NSO, Socio-Economic Survey 2009

Children living in a household without parents are vulnerable.² It has been estimated that half of such children could have been with their parents in their working provinces if infrastructure such as childcare had been appropriately provided. Assistance to families to combine work and child raising is needed. At the same time, it must be recognized that it may not always be in the best interests of young children to move from rural areas where they are in grandparental care to an urban setting with migrant parents who may be in a disadvantaged situation compared with other urban dwellers.

POLICIES TO INFLUENCE DEMOGRAPHIC TRENDS

Mortality

It is universally agreed that countering illness and lowering mortality are desirable, and therefore the "population-influencing" policy of extending life is a non-controversial goal. From a policy point of view, all that remains to be decided (and this, of course, raises major issues) is the share of public resources that should be devoted to this aim, and to the further aim of extending healthy life, in competition

with all the other desirable uses of public funds. We will not pursue that here; the policy issues of more effective utilization of resources for health in light of the projected changes in burden of disease etc. have already been dealt with above.

Fertility

Thailand's fertility rate is well below replacement level. It has been gradually declining, and shows no signs of leveling off. TFR is likely to fall below the level of 1.5 which many observers see as something of a "crisis point", for two reasons. First, fertility maintained for very long at this level or lower will lead to rapid ageing of the population and to a decline of each generation by about 30% compared to the preceding generation, leading eventually to a sharp contraction of population that is hard to reverse because of a negative "population momentum" – a built-in tendency for population to decline further, even if fertility increases, because of the increasingly smaller population in the reproductive-age groups. Secondly, once fertility falls below this level, there are few cases indeed when it has been raised again to replacement level. This is merely an empirical fact; there is no immutable logic to say that it cannot be done.

As noted in Chapter 1, most Asian countries have been very slow to reverse population policy once fertility falls below replacement level. Thailand is in exactly the same position as Japan, Singapore,

² The study by the Office of Welfare Promotion, Protection and Empowerment of Vulnerable Groups stated that these children are at risk of school drop out, aggressive behavior, drug addiction, under-age sexual relationship etc. [quoted by the Secretary-General of the Office of Education Council www.onec.go.th/cms/new_highlightview.php?ID=332]

South Korea, and Taiwan before it. It has waited a decade and a half or more, after fertility sank below replacement level, to introduce specifically pro-natalist policies. We believe that now is the time for Thailand's government to take some specific actions to foster an increase in fertility.

If it is agreed that pro-natalist measures are appropriate at this stage, the issue is to find measures that will have a non-trivial impact, while avoiding deleterious effects. This is an important issue, because it is generally believed that policies in other East Asian countries do not appear to have had much effect.

The argument that not much can be done because policies in other East Asian countries have not had much effect needs careful assessment. We would argue that in fact, other East Asian countries have either not used the full armoury of possible policies (and this applies to all low-fertility Asian countries) and/or have introduced policies so recently that there has not been time to assess their impact. This certainly applies to South Korea and Taiwan. Therefore the possibility remains that well-reasoned and formulated policies can have an impact in raising fertility rates. The average desired family size in Thailand, along with other countries in the region, remains at two children. The fact that fertility is lower than this indicates that there are institutional or other obstacles to people's achieving their desired family sizes. Policy should be addressed to removing, as far as possible, these institutional obstacles.

Another important point needs to be made. Just as some anti-natalist policies in the past have been criticized for treating women as instruments of population policy rather than taking a holistic approach to population policy in the context of family policy, so too must pro-natalist policies be considered in the context of family policy designed to allow women and men the best possible choices about marrying, having children and combining work and child-rearing. The aim should be to formulate family policy that will widen the choices open to parents and potential parents, in ways that will foster higher fertility.

What specific aspects of Thailand's situation need to be borne in mind in considering family and fertility policy measures?

1. Importance of delayed marriage in the fertility decline. This has also been an important factor in the other low fertility countries of East Asia (Jones, 2007).
2. Whereas in other East Asian countries, one important element in the decline to ultra-low fertility was rising female labour force participation rates (LFPRs) and the dilemma women faced in trying to combine a career and child raising, LFPR in Thailand has always been high (see Table 7.8), and it has not changed much over the period when fertility rates in Thailand were falling. Thus, unlike the situation in other East Asian countries, the decline to sub-replacement fertility does not seem to have been related to increasing LFPRs. However, it **may** have been related to changing employment patterns among women—change in occupational structure, and a rising proportion of jobs requiring women to be away from the home. It is clear from Table 7.8 that the structure of employment for women in Thailand has changed drastically over the period since 1980. Agriculture's share has almost halved, the share of manufacturing has more than doubled and that of services has almost trebled. There has been a sharp rise in the proportion of women working in the formal sector. These trends are likely to have impacted on fertility decisions of Thai women and their partners.
3. In Thailand, unlike the other East Asian countries, relatively low levels of urbanization mean that raising fertility requires that not only urban women but also rural women raise their fertility levels. Policies in other East Asian countries, developed in an overwhelmingly urban context, may have limited relevance to this need. On the other hand, it should be noted that real levels of urbanization in Thailand are undoubtedly higher than the official statistics reveal. Over the period since 1980, when the share of agriculture in female employment almost halved, the proportion of population recorded as rural fell only from 73.2 per cent to 66.0 per cent. While urbanization and the movement out of agricultural employment are certainly not in a direct relationship, the very slight decline in % rural is surprising in this context.

The issue is therefore to find policy levers that will influence childbearing patterns in the particular

TABLE 7.8 THAILAND: CHANGING FEMALE LABOUR FORCE PARTICIPATION RATES (LFPR) AND EMPLOYMENT STRUCTURE, 1980-2010

	1980	1985	1990	1995	2000	2005	2010
Female LFPR							
Ages 40-64	84.4	82.1	84.4	81.1	77.9	78.9	78.3
Ages 20-39	80.4	76.0	78.5	73.6	72.8	75.0	76.3
All ages 20-64	83.0	80.0	82.3	78.1	75.7	77.1	77.3
% female employment in							
Agriculture	71.7	67.4	63.4	52.9	46.9	40.0	38.4
Manufacturing*	8.0	9.5	12.6	17.4	17.9	19.8	18.7
Trade	10.7	11.2	11.4	14.3	16.1	14.9	16.0
Services	9.5	11.9	12.6	15.4	19.0	25.2	26.9
% female employment in informal sector							
Agriculture	47.6	46.9	45.0	48.1	45.0	44.2	43.5
Non Agriculture	31.6	35.0	39.0	39.4	43.8	45.8	45.8
Total	34.7	37.7	40.2	40.7	44.0	45.6	45.5

*including construction, transportation, electricity, gas and water supply
Source: National Statistical Office, Labour force surveys

context of Thailand. As noted in the points above, the seemingly wide differences between the context in Thailand and the other low fertility countries of East Asia may not be as wide as they at first appear.

A hint as to policies that work might be sought by focusing on policies followed by Western countries that have managed to either raise fertility to near-replacement levels, or to maintain them at near-replacement levels (Neyer and Andersson, 2007; McDonald, 2002). Examples of the former are the Scandinavian countries and France; examples of the latter are the United States and Australia. This is a very diverse group of countries, and it is hard to find common elements in their policies that might have relevance for Thailand. For example, strong family welfare policies, long maternity leave, provision of childcare facilities and gender-balanced workplace policies have been important in Scandinavia; France has provided significant tax deductions and excellent and free

childcare facilities.³ In Australia, cash grants have also been involved, with the institution of a direct baby bonus payment to parents (A\$5,000).

As mentioned in Chapter 1, policies in Taiwan and South Korea are too recent to have had much impact on fertility, if they do indeed have an impact. As recently as October 26, 2010, the South Korean government announced a new five-year plan which goes well beyond the policies reviewed in Chapter 1. This plan for 75.8 trillion won represents a 79 per cent increase over the amount budgeted in the previous five-year plan (2005 to 2010). Paid maternity leave will be extended from the current three months up to one year, the fourth to twelfth month on 40 per cent of their monthly salary. Flexible working hours will be introduced for female employees with children, and companies

³ The French family minister, when asked to comment on why France has higher fertility than most European countries, answered "We spend the most money and we offer good childcare, it's as simple as that" (*New York Times*, Saturday November 6, 2010: "French difference lives: women lag in equality").

encouraged to set up day-care facilities on their premises. Pre-school education will be subsidized and a second child's education up to high school will be free (*Straits Times*, 9/11/2010: "Baby incentive fails to excite South Koreans").

For Thailand, it appears appropriate for the government to introduce a number of policy changes with a view to encouraging marriage and childbearing, in the context of general family policy. While these policies would need to be considered carefully for budgetary and other implications, and the experience of other countries with similar policies assessed before introducing them, the following set of policies would seem to be relevant:

Paid maternity leave

The new ILO convention stipulates that cash benefits during maternity leave be paid at the rate of at least two thirds of the woman's previous or insured earnings for a minimum period of 14 weeks. Currently, fewer than half the world's countries meet this standard (United Nations, 2010: 104). In Thailand, maternity leave is provided to employees for 90 days at 50% of previous earnings, from funds contributed by government, the employer and the employee. More generous maternity leave provisions should be planned for.

Paternity leave

This is a short period of leave taken by a father around the time of the birth of his child. The aim here is to assist men to play a more prominent part in parenting.

Flexible working hours

Flexible working hours are designed to assist parents to spend more time with family at times when this is needed, and to take childcare leave where necessary. In Thailand, flexible working hours are not a common feature of employment arrangements.

Eldercare

In Thailand's declining fertility situation, the growing elderly population will have fewer adult children to take care of them, as detailed in Chapter 3. Subsidies for frail parental nursing care, better community care for frail older persons and compassionate leave for eldercare may lessen the burden on working women and provide an environment more conducive to having children.

Improved subsidized childcare

Most countries aiming to raise birth rates include the expansion of subsidized childcare facilities as an important part of their package. Without access to such childcare, women tend to find it hard to return to full-time employment within a reasonable time period, thus affecting their job continuity and chance of promotion and career development. This deters them from having a child, or an additional child.

Tax incentives and/or baby bonus schemes

Singapore provides substantial baby bonus payments, in a scheme to which both government and parents contribute. Many countries allow tax deductions for children, sometimes quite substantial. The basic principle underlying such schemes is that the social contribution of those who produce and raise children justifies transfer payments to compensate them to some extent for the costs incurred in raising their children.

The desirable aim is to develop a package of policies that strengthens the coherence and wellbeing of the family as well as raising the fertility rate. This should be the goal of Thailand's family and fertility policies. At the same time, Thailand's reproductive health program should continue to receive support. Though raising the fertility rate is in the national interest, the wellbeing of those wishing to avoid unwanted births should remain an important goal, requiring provision of effective family planning advice and services. Moreover, pockets of high fertility remain, affecting the Hmong ethnic group, the Muslim population in the far South, and some groups of cross-border migrants. Reproductive

health programs targeted to their needs should continue to remain a priority.

In the 1960s, as planners in Thailand were contemplating adopting anti-natalist policies, a series of national population seminars was held, at which the issues were discussed in depth. The current situation, in which the adoption of pro-natalist policies needs to be contemplated, would seem to require a similar approach to studying the issues and mobilizing support for altered policies. Up to this point, there seems to have been very little discussion of this issue in Thai planning circles or among the general public.

Teenage pregnancy and unwanted pregnancy

As discussed in Chapter 2, sexual activity is increasing (and increasingly considered acceptable) among unmarried teenagers. There are substantial numbers of teenage pregnancies in Thailand, many of which are unwanted. Teenage pregnancies are of two kinds: those to young married teenagers, and those to unmarried teenagers. Most of those to unmarried teenagers can be considered unwanted, and many of those to young married teenagers are also unwanted, particularly in cases where the marriage was in response to an unexpected pregnancy.

Unwanted teenage pregnancy is a serious issue for Thailand, because of the greater risks to health of children and young mothers when very young women give birth, because there are issues about the quality of childrearing in the case of unwanted babies, and because of the high number of induced abortions performed on unmarried teenagers. The issue is also related to the increase in sexual activity among teenagers, and the risks of sexually related disease, including HIV. Possible policy interventions raise controversial issues, but the need for intervention cannot be ignored. The rising number of adolescent pregnancies requires attention to provision of appropriate sexuality education and counselling to teenagers with adequate attention to male responsibility, to enable them to deal effectively with their sexuality. Those unmarried teenagers (as well as those beyond the teenage years) who nevertheless choose to engage in sexual activity need access to effective

contraception. Consideration must also be given to access to safe abortion in accordance with the existing policies for those who do not wish to continue with an unplanned pregnancy. The practice of schools of expelling pregnant students should be discontinued, in the interests of giving teen mothers a better future.

Urbanization, migration and regional depopulation

Governments are frequently strongly disposed to influencing population distribution. Over a long period of time, in most Asian countries there was a generally negative attitude towards the growth of large cities, and frequently specific policies to restrict rural-urban migration and to encourage the growth of smaller cities and towns through incentives for location of industry, infrastructure development policies, etc. However, the arguments against the growth of large urban agglomerations did not always hold up to objective scrutiny. In a recent study, the World Bank (2009) has cautioned against efforts to maintain or increase populations in disadvantaged areas and to restrict the growth of large cities. The report argues that spatial concentration of economic activity rises with development, and that governments should not resist it by seeking to target investment and policy attention to the lagging areas of their countries. Instead they should adopt a neutral stance on the location of development activities, but make judicious investments in transport and communications which will enable disadvantaged areas to become connected to the centres of growth. "The challenge for government is to allow – even encourage – "unbalanced" economic growth, and yet to ensure inclusive development" (p. 20) through a "well-calibrated blend of institutions, infrastructure and interventions" (p. 6).

Montgomery (2009), in a review of the World Bank study, makes the point that the World Bank report may be overly optimistic about some of the benefits of spatial concentration. He argues that in poor countries, inadequate urban management and governance may prevent firms from reaping scale economies of metropolitan location when the public sector cannot provide them with adequate and reliable supplies of electricity and water, and when the urban transport system is ill-managed,

congested and chaotic. His point is well taken, but more in relation to the poorest countries than to East and Southeast Asian countries, including Thailand, that are experiencing rapid and sustained economic growth. It can be argued that the role of spatial concentrations of economic activity in fostering rapid national economic growth is well illustrated by countries such as South Korea, China, Malaysia, Thailand, and Indonesia. Bangkok's role as an engine of growth for the whole economy can be demonstrated.

From a policy perspective, Thailand's population distribution and growth needs to be carefully assessed. As noted earlier, the growth of Thailand's population is slowing and only between one and a half and five million more are expected to be added to the population before it levels off. Given relatively low levels of urbanization, the proportion urban can be expected to increase considerably, and the absolute size of the rural population will decline. It is tempting for government to intervene to influence where the growing urban population will live, and to seek to limit the decline of rural populations. However, explicit or implicit policies to control the growth of the Bangkok mega-urban region population should be avoided, and policies to foster the growth of smaller cities should be pursued only with care, and in a broader regional development context. The need is not to try to slow Bangkok's growth but rather to create conditions in which location of industry and other economic activities in Bangkok are not artificially fostered, but at the same time costly incentives for location in lagging regions are not relied on.

It is likely that some regions will lose population, because rural depopulation will not be fully made up for by the growth of towns and cities in these regions. Planning for population decline is important. Many other regions of the world have had to do this, notably Europe and East Asia, and the lessons from managing population decline in rural areas in these countries need to be carefully studied.

Thailand will continue to experience substantial seasonal, short-term and long-term migration, both internal and international. The very slow increase in Thailand's labour force, along with wide earnings differentials between Thailand and a number of its neighbouring countries, will almost guarantee

continuing international migration flows into Thailand, which could be further fuelled by political instability in any of these countries. Migrant workers provide much needed flexibility to the labour market. But policies must take account of the need to effectively deliver social services, especially education and health, to these mobile groups, and to reduce their mobility-related risks, including malnutrition, unsanitary living environment, poverty, illiteracy, vulnerability to sexual abuse and exploitation and occupational hazards (Sciortino and Punpuing, 2009). Administrative data systems need to be further refined to enable better recording of mobile populations and their needs, and better data on the roughly two million migrants from the Greater Mekong Sub-region who are living and working in Thailand (Ministry of Public Health of Thailand, 2010: 17-21).

Conclusions

Population trends in Thailand are evolving in ways that require new policy initiatives. There are many policy issues related both to adjusting to population trends and to nudging population trends in desired directions. Unlike some other Asian countries, Thailand's population size does not appear problematic in relation to its resource and environmental base. A slow increase or decrease from its current level should not raise major issues. Trends in age structure are leading to rapid ageing, but this can be accommodated if the right policy mix is found. What does need to be avoided, however, is a continued decline in fertility to ultra-low levels, which would raise more serious issues of longer-term population decline and very high proportions of elderly population.

The policy issues raised in this chapter require continuing attention. Good research is needed to guide policy. For example, research is needed on population scenarios that go beyond the three assumptions used in United Nations projections, incorporating a range of assumptions on migration. Part of the concern with future migration flows is to avoid a lowering of Thailand's human capital through a balance between inflow of lesser skilled and an outflow of the more skilled. The strength of research institutes within Thailand able to conduct policy relevant research into such matters needs to be enhanced.

Appendix A



Notes on projecting the educational level of the older population

The 2010 first-quarter Labour Force Survey conducted by The National Statistical Office contained two items concerning education that were recorded for all members of sampled households who were aged 15 or older. The first question provided information on whether or not the person was currently attending school and if so what grade. The second question asked for the highest grade of school completed. Among the 20-24 age group 19% were still attending school but this declines to only 3% of those in the age group 25-29 and 1% of those 30-34.

Note that by 2050, persons age 60 are age 20 in 2010. Thus in order to project the level of education of persons age 60 and above all the way to 2050, the completed education of persons aged 20 and over in 2010 needs to be determined. For the purpose of the projections, the completed educational attainment of persons aged 20 and over in 2010 among those who are no longer in

school is assumed to be the level indicated as the highest grade completed. For those who are still in school, the completed educational level is assumed to be the one that they are currently studying at. It is possible of course that some of these people will continue their education beyond the current level that they are studying. However, given that the highest category of educational attainment used for the projections is secondary education or beyond, attributing the current level as the highest completed level for those who were still in school will likely place them in the correct category even if they eventually continue beyond their current grade. The reason for this is that almost all who are currently still studying at age 20 or older will already be at the secondary level.

Note also for the purpose of the projections, no account is taken of differentials across educational levels with respect to mortality or migration into or out of the population. Thus the current level of attainment assessed as described above remains fixed for each cohort indefinitely into the future.

Appendix B

The 1st Demographic Dividend Estimation

Methods to estimate demographic dividends are comprehensively formalized in Mason (2005). Effective number of consumers (N) and effective number of producers (L) are defined as:

$$N(t) = \sum_a \alpha(a)P(a,t)$$

$$L(t) = \sum_a \gamma(a)P(a,t)$$

where α and γ are the age profiles of consumption and labor income, and $P(a,t)$ is the population. Using mathematic formation, output per effective consumer (Y/N) can be shown as the product between output per effective number of producers and the support ratio:

$$\frac{Y(t)}{N(t)} = \frac{Y(t)}{L(t)} \times \frac{L(t)}{N(t)}$$

In order to identify the period and length of the dividends, output per effective number of producers and the support ratio can be converted from levels to rates of growth by taking the natural log of both sides and taking the derivate with respect to time:

$$g\left(\frac{Y(t)}{N(t)}\right) = g\left(\frac{Y(t)}{L(t)}\right) + g\left(\frac{L(t)}{N(t)}\right)$$

The rate of growth in output per effective number of consumers is the sum of the rate of growth of productivity and the rate of growth of the support ratio. The first demographic dividend is defined as the rate of growth of the economic support ratio. The second demographic dividend, to be discussed below, functions though productivity growth by inducing the accumulation of capital.

The 2nd Demographic Dividend Estimation

Following Mason (2005), the wealth held by those aged 50 and over is used to measure the effect of demography on life-cycle wealth and the second demographic dividend. Demand for life-cycle wealth is computed as the difference between the present value of lifetime consumption and the present value of lifetime production for adults.

The present value of the future lifetime consumption of the cohort born in year $b = t-a$ or earlier is:

$$\bar{y}^l(t)PVL(< b, t) = \bar{y}^l(t) \sum_{x=0}^{a-b} e^{(g_y - r)x} L(\leq b, t+x),$$

where \bar{y}^l is the number of effective consumers born in year b or earlier who are alive in year $t+x$, g_c is the rate of growth of the per capita age profile of consumption, r is the interest rate, and L is consumption per effective consumer in year t .

Similar to consumption, if the per capita age profile of production is fixed and shifted upward at rate of g_y , the present value of the future lifetime production of the cohort born in year $b=t-a$ or earlier is:

$$W(\leq b, t) = \bar{c}(t)PVN(< b, t) - \bar{y}^l(t)PVL(< b, t).$$

where \bar{c} is the number of effective producers born in year b or earlier who are alive in year $t+x$, and c is production per effective producer in year t .

Consequently, without bequests, the lifetime budget constraint guarantees that wealth in year t of those born in year b or earlier equals

$$w(\leq b, t) = [\bar{c}(t) / \bar{y}^l(t)] PVC(\leq b, t) / L(t) - PVL(\leq b, t) / L(t),$$

With algebraic manipulation, the ratio of wealth to total labor income for those who were born in year b or earlier ($b=t-a$) is

$$\bar{c}(t) PVN(< b, t) = \bar{c}(t) \sum_{x=0}^{\omega-a} e^{(g_c-r)x} N(\leq b, t+x),$$

where $PVN(< b, t)$ is the present value of future lifetime consumption of all persons born in year b or earlier per effective producer in year t . $N(\leq b, t+x)$ is the present value of future lifetime production of all persons born in year b or earlier per effective producer in year t .

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